

1943

NAVAL WEAPONS CENTER 25TH ANNIVERSARY

1968



Festive Anniversary Includes Open House

Residents of the entire Indian Wells Valley as well as all other communities are invited to participate in the 25th Anniversary celebration that will take place at the Naval Weapons Center this Saturday, November 9.

Special buses will be operating during the "Open House" period and will be used to transport visitors to the three main areas in which the 25th anniversary celebration activities will be centered — namely, the Weapon Exhibit Center, Michelson Laboratory and the Naval Air Facility.

Visitors to the Weapon Exhibit Center will see many new displays which have been recently added to make this an outstanding exhibit of naval

ordnance, all of which was developed or tested at this Center.

Among the new exhibits is the outer casing of an atomic bomb accompanied by the recently released story of the Center's work for the Manhattan Project in World War II and its later work for the Atomic Energy Commission on explosive components for nuclear weapons.

A special anniversary exhibit will show photographs and documents of the early days of the Center. Motion pictures on both early and contemporary weapon projects will be shown. Of special interest will be a new film on "25 Years of Naval Weaponry."

During the period that the Exhibit Center is open, as shown in the accompanying program, the Maturango Museum will be open with its historical displays on the local area. At 10:30 a.m. the Center's Fire Department will demonstrate its fire fighting techniques against a blazing structure which will be located opposite the Exhibit Center on Halsey.

At the Naval Air Facility from 9:30 a.m. to 12:30 p.m. there will be a showing of a cross-section of different aircraft with a wide range of a demonstration will be given of the remote control system for drone aircraft. At 10 a.m. a tethered hot-air balloon will make an ascent to 500 feet.

A full spectrum of NWC technical projects will be displayed in Michelson Laboratory between 9 a.m. and 2 p.m.

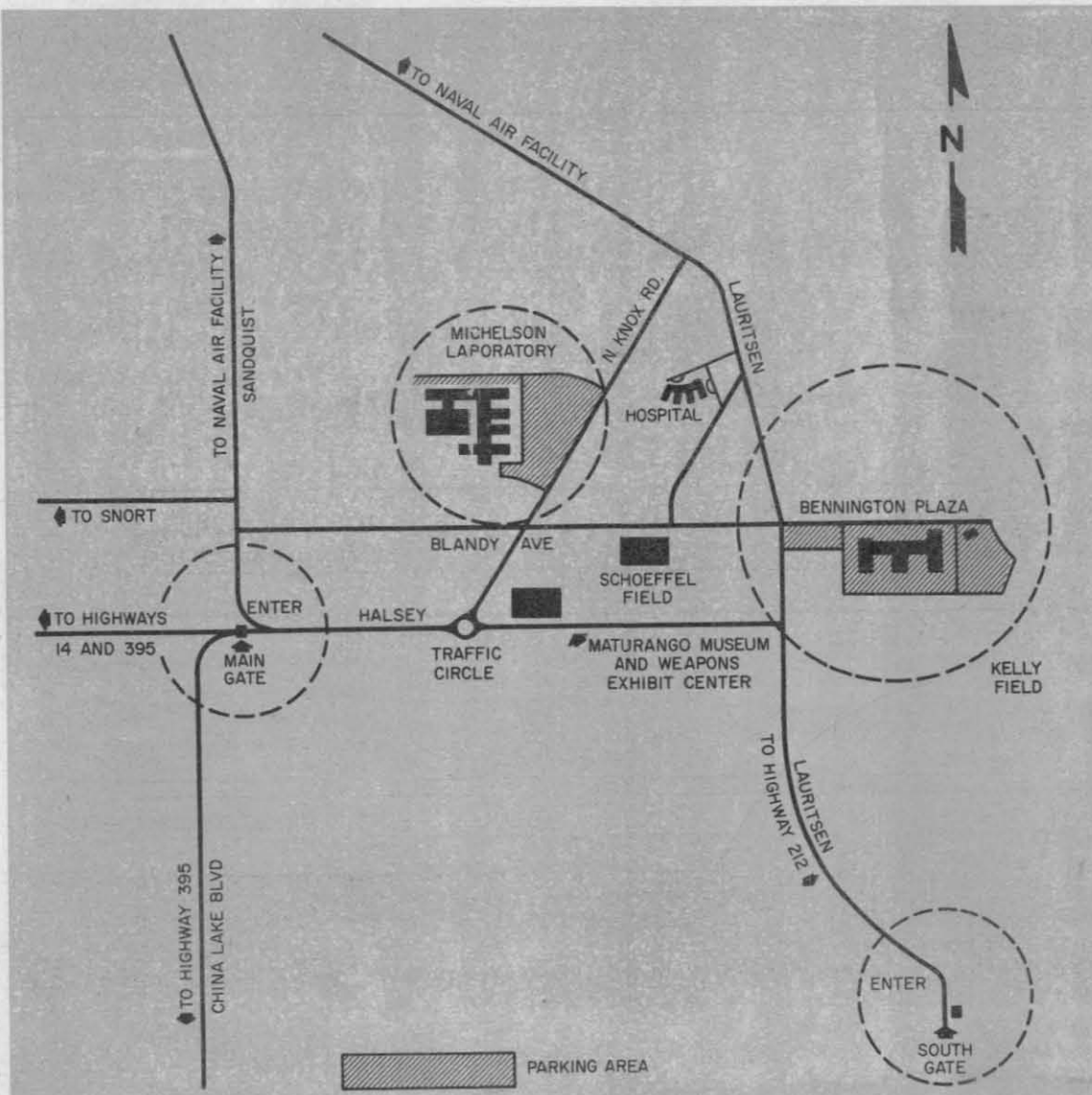
Among the items on display are the following: a working model of a SNIPE missile tracking a miniature target; a SIDEWINDER missile tracking heat targets; a head-coupled TV which operates as an extension of man's senses; Vu Sphere; a videasonic trainer; a voice recorder which shows you your voice pattern on an oscilloscope; the million-volt X-ray room; a tape operated machine for automatic production of metal parts; a glass blowing exhibit; a wide variety of range instruments; the Chaparral surface-to-air missile system; and a photo lab tour.



CORONA LABORATORIES — Aerial view shows complex of Corona Laboratories. In a regrouping of selected Navy laboratories into Centers in July, 1967, Corona became part of NWC. The Corona Laboratories employ approximately 1,000 personnel.

Veterans Day

NOVEMBER 11



- ★ FOR AMERICA
- ★ AND FOR YOU
- ★ Sign up for
- ★ U.S. Savings Bonds
- ★ New Freedom Shares

From _____

TO _____

STAMP



Fri., Nov. 8, 1968 Naval Weapons Center, China Lake, California Vol. XXII, No. 45

25TH ANNIVERSARY

NAVAL WEAPONS CENTER

1943 * 1968

Capt. S. E. Burroughs
First Commander

Capt. M. R. Etheridge
Present Commander

MICHELSON LABORATORY is the nerve center for most of NWC's Research and Development effort. Dedicated on May 8, 1948, this 10 million dollar facility houses ten acres of technical shops and specialized equipment.

NWC 25th Anniversary Program

FRIDAY, NOVEMBER 8

8:00 A.M.
Reception Center for visitors open at Main Gate. All out-of-town guests other than those arriving at Air Facility are requested to stop here upon arrival.

9:00 A.M.-12:00 NOON
1:00 P.M.-2:30 P.M.
Tours for visiting and local Early Timers will leave from main lobby and conference rooms from the main entrance of Michelson Laboratory.

9:00 A.M.-12:00 NOON
1:00 P.M.-3:30 P.M.
Meet and Mix time at Weapons Exhibit Center. Weapons displays. Display of early time pictures. An opportunity for local persons and out-of-town Early Timers to meet and revive memories of early days. Planners of Indian Wells Valley especially invited to meet with NWC Early Timers from 1:00 to 3:30 p.m.

3:30 P.M.-4:45 P.M.
Address of Vice Admiral Thomas Connolly at the Center Theater on "25 Years of Value" and a film "25 Years of Naval Weaponry." To be attended by Early Timers and other invited guests of the Center and spouses. In addition a number of personnel from each department will be invited under a departmental quota system.

6:30 P.M.-8:00 P.M.
Informal reception at Community Center. 8:00 P.M.

Early Timers' dinner at Community Center. For invited guests to the Early Timer events.

SATURDAY, NOVEMBER 9

9:00 A.M.-2:00 P.M.
Open House:
-Buses leave from parking lot at main entrance to Michelson Laboratory.
9:00 A.M.-2:00 P.M.
-Weapons Exhibit Center open with new weapon displays and picture display of early station.
9:00 A.M.-3:00 P.M.
-Michelson Laboratory Exhibits.
9:00 A.M.-12:30 P.M.
-Naval Air Facility activities including aircraft and weapons, and a balloon ascent.
10:30 A.M.
-Fire fighting demonstration opposite Maturango Museum.
All Open House events open to the public with a special welcome to all of Indian Wells Valley and neighboring communities.
1:00 P.M.-4:30 P.M.
Informal Mix and Meet time at the Bar-foot Bar at the Commissioned Officers' Mess. Also an appropriate time for local persons to invite visitors for visits or receptions in homes.

6:00 P.M.
Informal reception, Commissioned Officers' Mess.
7:00 P.M.
25th Anniversary dinner featuring talks by Rear Admiral S. E. Burroughs, USN (Ret.) and Vice Admiral John Hayward, USN (Ret.). Attendance by reservation. (Phone 71759 in mornings.)

Holiday Hours

The following holiday hours of operation are announced for China Lake facilities over Veterans' Day, November 11. The China Lake Golf Course, Center Theater, China Lake Bowl, Golf Course Snack Bar, Malt Shop, Fedco, Shopping Bag, Enlisted Men's Club, and Beauty Shop will be open as usual.

The gymnasium and swimming pool will be open from 1 to 5 p.m., the Youth Center from 1 to 5 p.m. and 7 to 9 p.m., and the Auto Hobby Shop from 12 to 5 p.m.

All other facilities will remain closed Veterans' Day. The Center Restaurant will have special week-end hours due to the NWC anniversary celebration: Saturday, November 9, 6:30 a.m. to 7 p.m.; Sunday, November 10, 7 a.m. to 1 p.m.

Plaza Parking

On Friday, November 8, during Vice Admiral Thomas Connolly's presentation at the Center Theater, all shoppers are urged to conduct any business at Bennington Plaza prior to 2:00 p.m. or after 4:30 p.m. due to parking requirements in the immediate vicinity of the theater.

From: Chief of Naval Operations

As you celebrate your 25th anniversary, I want to pass my personal congratulations to the NWC and those who have helped make the Center's record of achievements so brilliant. I count my tour of duty at China Lake as one of the more challenging and rewarding ones.

Your superb performance in providing our country's military forces with new capabilities has earned worldwide recognition of your ingenuity and technical expertise.

My best wishes for continued success in your vitally important work.

(s) T. H. Moorer
Admiral, U.S. Navy

Entertainment Info As Close As Your Phone

Visitors to the Center during the 25th Anniversary Celebration will be able to take advantage of a new system for disseminating recreational and entertainment information for the local area.

Special Services has inaugurated Code-a-phone, which for all intents and purposes means that you may get timely information, day or night, on the availability of recreational events, movies, etc. simply by picking up the phone and dialing 72411.

All times, dates and titles will be continually updated with this system.

Naval Weapons Center Mission

The Naval Weapons Center is a major laboratory of the Chief of Naval Material. Its formal mission is to conduct a program of warfare analysis, research, development, test, evaluation, systems integration, and Fleet engineering support in naval weapon systems, principally for air warfare, and to conduct investigations into related fields of science and technology.

Established in 1943, the Center was known as the Naval Ordnance Test Station until July 1967. Over the years, the Center has applied its scientific creativity and engineering skills in the fields of rockets, guided missiles, underwater ordnance, aircraft fire-control systems, and limited-warfare weapons.

Present Center assignments include analytical and experimental derivation of advanced concepts for total weapon systems and the technical management of major system development projects as well as other facets of research and technology. Also, the Center provides engineering services required for successful production of new systems and their introduction into the fleet.

From: Commandant, Marine Corps

I wish to extend my sincere congratulations on the achievement of 25 years of outstanding weapons development. Your unique contribution to the strength of this nation during this period is an accomplishment of major significance within the Defense Establishment.

It is my understanding that a joint Marine Corps Birthday and 25th Anniversary Ball will be held at the Naval Weapons Center on Nov. 9. Although the sharing of the Marine Corps Birthday celebration in this manner is an unusual event, I can think of no scientific and technological organization with whom marines can more proudly recognize a long period of outstanding service to our country.

May your next 25 years be as productive as the last.

(s) Leonard F. Chapmen, Jr.
Commandant, U.S. Marine Corps

Top NWC Civilian Veterans' Day Announced

The observance of Veterans Day in thousands of American communities on Nov. 11 will be celebrated this year on the 50th anniversary of the end of World War I.

The annual Nov. 11 ceremony at Arlington National Cemetery begins at 11 a.m. and is open to the public. The ceremony is sponsored by the Veterans Day National Committee with Administrator of Veterans Affairs William J. Driver serving as chairman.

Service organizations rotate as hosts with the American Legion serving this year. Legion national commander William C. Doyle will be one of the featured speakers.

Since the armistice ending World War I was effective at 11 a.m. Nov. 11, 1918, Congress proclaimed that date a national holiday.

The name was changed from Armistice Day to Veterans Day following World War II and the Korean Conflict so all of the nation's veterans—past, present and future—could be honored at the same time.



DR. THOMAS S. AMLIE is the current NWC Technical Director. He replaced Dr. Wm. B. McLean, who is now the Technical Director of the Naval Underwater Weapons Center. Dr. Amlie has been at the Center since July, 1952 and has served as a Naval Officer and as a project engineer. He resides at 112, Blueridge Rd.

NWC Commanders Through The Years



Capt. S. E. Burroughs 1943-1945 Capt. J. B. Sykes 1945-1947 RAdm. W. G. Switzer 1947-1949 Capt. W. V. R. Vieweg 1949-1952 Capt. P. D. Stroop 1952-1953 Capt. D. B. Young 1953-1955 Capt. R. F. Sellars 1955



Capt. F. L. Ashworth 1955-1957 Capt. W. W. Hollister 1957-1961 Capt. C. Blenman, Jr. 1961-1964 Capt. Leon Grabowsky 1964 Capt. John I. Hardy 1964-1967 Capt. G. H. Lowe 1967 Capt. M. R. Etheridge 1967

Burroughs and Lauritsen Prime Movers for Center

(Continued from Page 10)

The Chief of the Bureau of Ordnance was RAdm. W. H. P. Blandy. He, along with Capt. William Moses and Capt. James Byrnes, were the chief proponents in the Bureau for the Station at the time of the founding.

The change in concept between the first proposal and the official establishment is significant. Burroughs' first thoughts appear to have been for a large proving ground for aviation ordnance.

Concept Expanded
On the basis of the CalTech needs this concept was expanded to meet all forms of wartime rocket work. By the time final plans were being prepared Burroughs was also thinking the new station could become a kind of American Peenemunde where new weapons could be developed in secrecy.

It is impossible to trace the individual influences on the wording of the final order of November 8 that established the station. However, the main content originated in Blandy's office. On November 2 Blandy sent a memo to the Secretary of the Navy recommending the establishment of the Naval Ordnance Test Station, a name that Blandy personally endorsed in rejecting others.

Adm. King Signs Letter
The German submarine was then the U.S. Navy's number one problem and Adm. Ernest King, Commander in Chief of the U.S. Fleet, wasted no time in authorizing a large program for forward-firing anti-submarine rockets, the 3.5-inch aircraft rocket. The letter of June 7, 1943 from King's office became the justification for the subsequent expenditure of funds by the Bureau of Ordnance to implement the proposal for a West Coast proving ground.

into this problem and one day when we had a demonstration at Goldstone, a number of Navy officers were aboard the airplane back to Burbank. Among them was Capt. Burroughs who was one of our staunchest supporters. He had for a long time been advocating that the Navy should have its own facilities and not rely on a little piece of real estate that had been borrowed from the Army.

"So on this trip back to Burbank we flew over various parts of the Mojave Desert. Among other things, we flew over this area and they agreed that we had made the right choice, that this was the right place for the Navy to establish a station."

Proposing a station and finding a suitable location are distinctly different from obtaining official approval and funding.

Knox Signs Order
Six days later when Secretary of Navy Frank Knox signed the official order establishing the station the mission statement was cut to "research, development and test of weapons" without any restriction as to the type of weapons.

Entirely developed at China Lake was Sidewinder, the air-to-air guided missile, originally conceived by technical director Dr. William B. McLean, who, in December, 1956, received a \$25,000 superior accomplishment award, the highest award ever made by the Government in recognition of an employee's superior service.

Sidewinder became operational with the Fleet in mid-1956, and was adopted by the U.S. Air Force and NATO countries. It has proved itself a reliable weapon in Vietnam.

In a span of 25 years, NWC has developed rockets and missiles with the beginning of Holy Moses, a 5-inch high-velocity aircraft rocket, which broke the enemy's back in the Battle of the Bulge; Tiny Tim, a 11.75-inch aircraft rocket, with a Sunday-punch that left the Korean Reds reeling; RAM, an aircraft rocket, which could pierce 12 inches of tank armor; Lark, another spectacular weapon of the Bumble Bee family; and Mighty Mouse, a 2.75-inch folding-fin aircraft rocket.

Others have been Sidewinder, probably the most widely used air-to-air missile in military service today; Zuni, a 5.0-inch folding-fin air-to-ground or air-to-air rocket; RAT (Rock-

McLean Receives High Fed Award

(Continued from Page 9)

Also, in July, 1956, the first liquid-propelled rocket sled was fired at SNORT. Shortly before, a SNORT sled topped previous Center records with a 1,350 mile-per-hour run on July 6.

Retired last year with 25 years of Federal Service.

In addition, NWC has contributed to Polaris, Caleb, High-Hoe, Terasca, SLV (Soft-Landing Vehicle); the testing of Bullpup; porpoise studies; SeaLab; and more recently an arsenal of Free-Fall weapons; Shrike, an antiradar missile; Snipe, a self-propelled, television-guided air-to-surface weapon; and Condor, a standoff missile using television homing.

et Assisted Torpedo); ASROC, a surface-launched antisubmarine weapon.

Second T.D.



DR. F. W. BROWN succeeded Dr. L. T. E. Thompson as Technical Director of NOTS (now NWC) October 15, 1951. Born in Enid, Oklahoma, he received his Ph.D. in physics from the University of Illinois. In June 1954 he became director of the National Bureau of Standards Laboratory at Boulder, Colorado. He retired last year with 25 years of Federal Service.



The Rocketeer

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NWC Commander

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News Stories.....Tuesday, 4:30 p.m.
Photographs.....Tuesday, 11:30 a.m.

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DIVINE SERVICES

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.

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

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

Confessions—7 to 8:00 p.m. Saturday.

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

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

Unitarian Fellowship—(Chapel Annex 95, King Ave.)—Sundays, 7:30 p.m.

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Conception of Center

BY AL CHRISTMAN

How did it all start?

This is the question many are asking as the Naval Weapons Center celebrates its 25th birthday. This is also one of the questions presented to some of the Center's "founding fathers" as part of a joint historical project of the Naval Weapons Center and the Office of Naval History.

This project, which will culminate in published interpretive histories on the early period of the Center, is not yet complete; however, it is possible to extract from the draft and from interviews enough information to answer the question of "how it all got started."

First Center Commander

S. E. Burroughs, Jr., the Center's first Commanding Officer (now Rear Admiral retired), was a key figure in setting in motion the events that resulted in the establishment of NWC. Lt. Burroughs was an aviator and as an ordnance officer in pre-World War II days knew what it was to fight unsuccessfully for experimental funds for better aircraft weapons.

Of this period he later commented, "Red Schoeffel (now Rear Admiral Malcolm Schoeffel, Retired) and I drew up a very modest budget; I think it was \$120,000 we wanted for research and development work in aviation ordnance. We never got a nickel. We could get money for production, . . . but not for research and development."

"There just wasn't anybody really interested in aviation except Schoeffel and myself in that Bureau (at that time) . . . I know a great many non-fliers who thought these fliers were just a bunch having fun flying around in the air . . ."

WWII Proved Value

It took World War II to prove the hard way the value of aircraft in modern combat, as well as the need for weapons designed specifically for aerial use. Commander Burroughs as a squadron commander in the war in the Pacific would have experiences that would influence his later efforts in proposing a new proving ground for air weapons.

Burroughs recalled, "I was influenced greatly by our feelings of frustration which a lot of people felt. The torpedoes we had didn't do anything at Midway. . . . We sent out 43 torpedoes from the carriers, and as far as I know there wasn't a single hit registered. All but three of the planes were shot down. But most of them dropped their 'fish' and what happened to the 'fish' nobody knew."

In the spring of 1943 Burroughs, a decorated combat aviator, was rotated back to duty in the Bureau of Ordnance in Washington where he became the Head of the Aviation Ordnance Section of the Research Division. A result of Burroughs' tour of various ordnance facilities, particularly that of Eglin Field, Florida,

was the recommendation that the Navy obtain "a very large area where all the testing of weapons by airplanes could be carried out."

Visits Goldstone Lake

Shortly afterward Burroughs visited Goldstone Lake near Barstow, to witness some rocket tests being conducted by the California Institute of Technology under Dr. C. C. Lauritsen. Burroughs' recollection of the visit follows: " . . . Charlie Lauritsen talked me into getting into an airplane and firing some of those rockets. And I was very much impressed with the CalTech group and what they were doing and the limited facilities."

"I expressed to Charlie Lauritsen the feeling that we needed a very large station to conduct all the things that I felt were needed in the aviation weapons field, particularly with accent on testing at that time. He jumped right in and said it was a wonderful idea."

To understand Lauritsen's enthusiasm for a new proving ground we need to back up to the spring of 1941 when Lauritsen first became convinced of the potential of rockets as weapons.

Lauritsen's account of that period was: "In May of 1941 Dr. (Lawrence) Hafstad and I went to UK (United Kingdom) to discuss with our colleagues over there many of the military problems."

"I was very much impressed by the performance of their rockets . . . I don't think they ever shot down any bombers, at least I did not see any and I have not seen any records of it, but they made a beautiful fireworks display over Hyde Park across the street from the Grosvenor House where we were trying to get some sleep."

Submits Report

"When we got back from the UK, I submitted a report to Dr. Vannevar Bush (Head of the National Defense Research Committee). One of the main things I recommended was that we should produce a better propellant for rockets, a dry extruded propellant, and also put on a more substantial project for rockets. Well, Bush with his characteristic expression said, 'Well, why don't you do something about it?' So the monkey was on my back."

In the months ahead Lauritsen as Vice Chairman of the NDRC for Armor and Ordnance fought hard for a large rocket program. The greatest obstacles were indifference and a general lack of confidence in rockets.

To overcome this, the early goal was to produce as promptly as possible rockets which would demonstrate the practicality of this approach. The first rocket development under Lauritsen's NDRC group was a target rocket for training gunners.

This unsophisticated rocket not only served its purpose, but also pointed up the need

for improved firing ranges if more accurate rockets for tactical purposes were to be developed. Lauritsen's account of the episode that opened the way to the first solution of the range problem is as follows:

"We went out to visit the Commanding General at March Field armed with some of our target rockets, and he wanted to see them in action. So we fired some of them on the lawn in front of his headquarters. And it was a pretty good show. It turned out that he was Commanding Officer also of what is now called Camp (Fort) Irwin, which is an artillery training range. So he said that we could go to Camp Irwin and use Goldstone Lake which was in one corner of Camp Irwin."

Goldstone Lake proved to be a good test area for the rockets, but when the California Institute of Technology with Lauritsen as the Director of Research was given a large rocket development program covering experimental work on a whole series of weapons, Goldstone proved inadequate, even when used in conjunction with ranges at Camp Pendleton and Salton Sea. In particular the air launched tests tied up the whole range and brought all other testing to a halt.

With this background we can pick up Lauritsen's account shortly after Burroughs first visited him at Goldstone and they both agreed on the importance of the Navy having a new large facility for aviation ordnance and rockets:

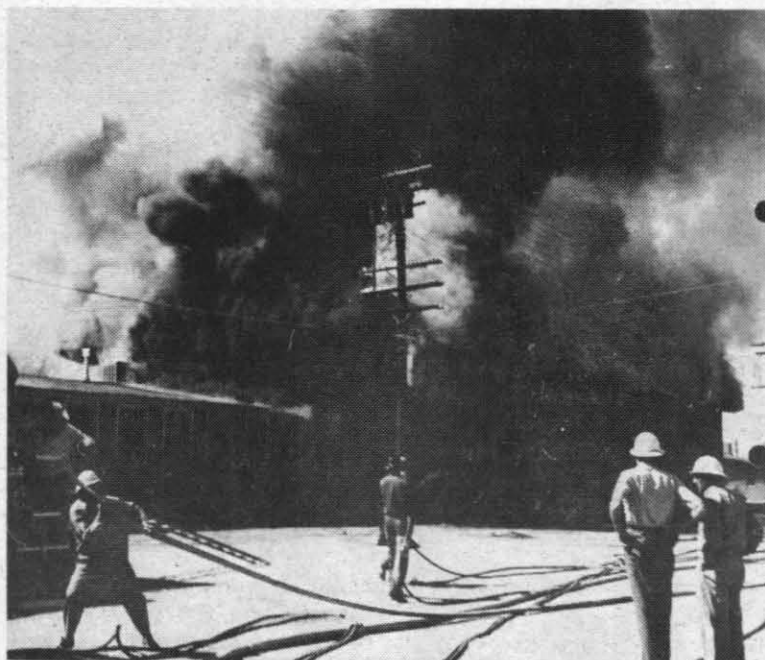
"By that time it was clear to us and to the Navy that we needed much more range than we had at Goldstone and much better facilities. So after some searching, studying maps of Southern California and dis-

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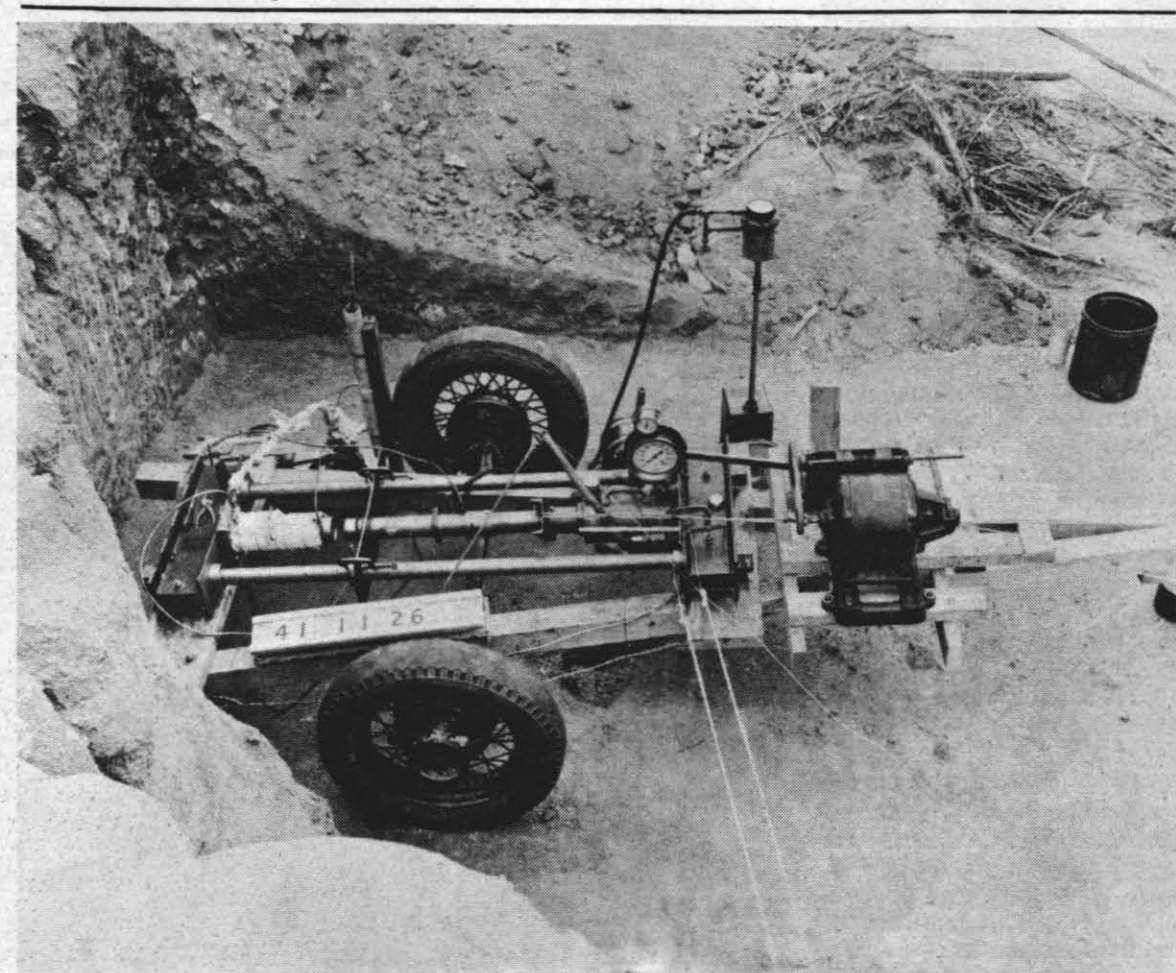
JFK Visited Center



JFK VISIT — At exactly 12:50 p.m., June 7, 1963, the late John F. Kennedy, then President of the United States, paid a visit to Michelson Laboratory. The event concluded days of planning that were known as Project 1-63. Mr. Kennedy was the only Commander-in-Chief ever to inspect the Center's facilities.



O-IN-CC BUILDING FIRE — To many "old timers" the date of the O-in-CC Building fire is a bit hazy after 22 years, but not to Nan Halsey, of NAF, she was in the building when it broke out at 9:30 a.m. on Friday, March 8, 1946.



FORERUNNER OF SALT WELLS? — Could be. This primitive press, is believed to be the first constructed on the West Coast in 1941 for the dry extrusion of solid propellant by Dr. C. C. Lauritsen and his son Dr. Thomas Lauritsen.

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NWC Dedicated 25 Yrs. Ago

Secretary Knox Signed Order

Prior to Autumn, 1943, the area now within the boundaries of the Naval Weapons Center was known only to the few hardy prospectors who traversed the shimmering sands of the Indian Wells Valley and from their mines and to the 26 who bravely filed homestead claims.

Today, the swish of rockets and missiles and the whine of supersonic jets rend the still air of the Mojave Desert where once only the sharp crack of mule skinner's whips broke the stillness of the desert air as 20-mule borax teams and the Nadeau freight teams plod the roads across the Valley.

This contrast between the old and the new is a product of 25 years of research and development by the Naval Weapons Center (NWC) since its official establishment as the Naval Ordnance Test Station (NOTS) on Nov. 8, 1943.

NOTS, or NWC as it is known today, was born out of the urgent need for aircraft rockets during World War II when the United States trailed a poor fourth to Germany, Russia, and England.



DR. C. C. LAURITSEN
 . . . rocket pioneer

Started by CalTech During WW II Days at Goldstone

The Wartime Office of Research and Development assigned the California Institute of Technology the task of overcoming Germany's lead in rockets.

Dr. C. C. Lauritsen, a World War II rocket specialist, at the request of the Government, returned from England to take charge of the CalTech program.

Serving primarily during the war years as adjunct to CIT's rocket development and testing, the NWC mission was that of research, development and testing of weapons, with particular emphasis on aviation ordnance and additionally to furnish primary training in the use of these weapons.

Development and testing undertaken by the Institute from 1939 to 1942 was accomplished in the populated Pasadena area. In 1942, CalTech's test operations were moved to Goldstone Dry Lake, near Barstow, where the first actual rocket firing was on July 2. A rocket-driven retroacting depth-charge, it was known as a "retro-bomb."

Goldstone's area soon proved inadequate, and on Nov. 8, 1943, the Naval Ordnance Test Station, Inyokern (changed to Naval Weapons Center on July 1, 1967), was established by directive of then Secretary of the Navy Frank Knox as an activity of the 11th Naval District under the cognizance of the Bureau of Ordnance.

First Operations From Harvey Field at Inyokern

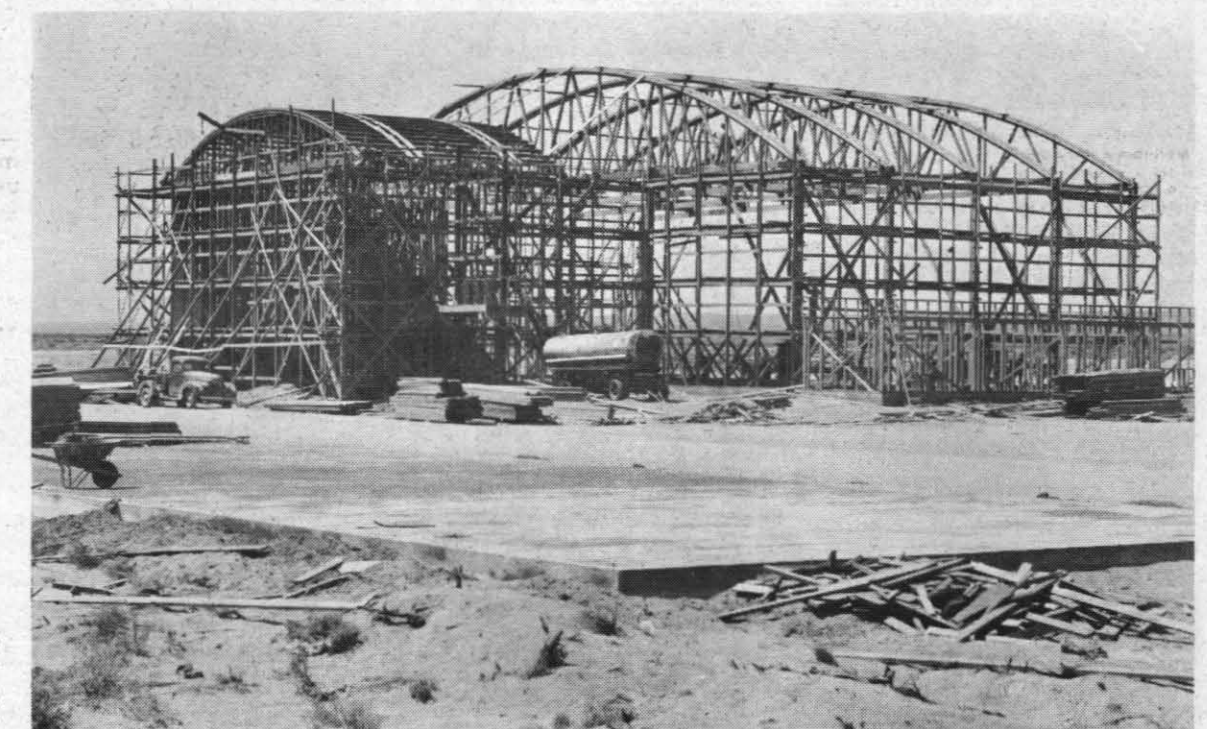
Nine hundred square miles of level and comparatively mountainous desert were set aside for the permanent Navy rocket and related weapons research facility.



GOLDSTONE LAKE 1942 — CalTech's test operations moved to Goldstone Dry Lake near Barstow in 1942. First rocket was fired on July 2. Area proved inadequate. On Nov. 8, 1943, CalTech moved to NOTS, Inyokern (now NWC, China Lake.)



BARREN DESERT IN 1943—This was the scene that faced those who were to build NWC. But a world-wide war was on. "We need it—build it," was the order. They did!



KODIAK HANGAR UNDER CONSTRUCTION AT HARVEY FIELD, JUNE 14, 1944

Most of this land was public domain; a small part was owned by the State of California; another small parcel was under Army jurisdiction and an even smaller portion was privately owned by homesteaders.

By the winter of 1943, the first 3.5-inch rockets, modifications of an English weapon, were fired from the dry bottom of China Lake on what is now C-Range. These tests used the CIT high velocity aircraft rocket (HVAR) and were flown by FAW Squadron 14, an experimental squadron assigned to the rocket development program.

Arrangements were made to transfer or trade unclaimed land to the Navy, and that under State or Army control was "traded." Privately owned acreage was condemned and subsequently purchased under the Second War Powers Act.

In November 1944, 338 sq. mi. of land was added to the original 900.

The first construction was authorized in November 1943, calling for \$160,000 for erection of temporary housing at the airfield and for an ordnance test area on the China Lake site, which was to include

barracks, mess halls, storage facilities, shop buildings, recreation huts, dispensary spotting towers and some roads. Still in its infancy, the Center, on Feb. 29, 1944, was comprised of eight Quonset huts and the test ranges which were then being set up. Rocket development was speeding ahead. The first permanent facilities were provided for in contracts, signed March 7, 1944, involving \$25,932,140. Fifteen

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China Lake Begins to Take Shape

(Continued from Page 3)

months later this contract was terminated by the Government, 93 per cent complete, after an expenditure of \$54,952,221, over twice as much as the contract had originally specified.

Several hundred specialized buildings, barracks, sewage disposal, telephone, electrical and water systems, runways and roads were provided. This construction project furnished facilities for about 8,000 persons (no family quarters) and included buildings still utilized today.

At the beginning of construction, no labor force was avail-

24,000 Hired 1st Year, Work Force Only 7,000

The turnover was tremendous — during the first year, some 24,000 people were hired, yet the maximum work force at any one time was only 7,000.

Those hardy souls surviving the demoralization effects of heat, sand storms, and the most primitive of living accommodations laugh about the "old days" now.

Says one, "There were three kinds of people — those coming, those working, and those leaving."

Another states, "Unless you had your own trailer, you had no family. Wives lived in the women's quarters; husbands stayed in the men's dorms; and the kids, well, they stayed with Grandmaw!"

A third old-timer tells of a sand storm in mid-summer. Trenches for water, sewer, and other lines were dug, hundreds of acres had been scraped of all vegetation. A hot wind came up, sweeping tons of silt-like sand, filling trenches, and causing a cessation of all activity. The workers ran to their barracks for protection only to find them just as sand-filled as the area outdoors.

One Quonset Occupied By CO, Exec., Exper. Officer

First administrative offices of the embryonic Naval Weapons Center was the Quonset hut at Harvey Field, jointly occupied by Center Commander Capt. S. E. Burroughs, the Executive Officer, and Experimental Officer, as both living and working quarters.

Soon after the Center was established, a need was determined for technical aviation facilities and experiments. In December 1943, Aviation Ordnance Development Group 1 was commissioned at the Naval Air Station, San Diego, with LCdr. Thomas F. Pollock, as Officer-in-Charge.

The combined mission of the Group was to provide technical aviation facilities and equipment for the development of aviation ordnance, to flight test such ordnance, armament, and experimental items, and to provide aircraft utility services.

First Technical Group Moves From Harvey to Armitage

First based at Harvey Field, the unit, eight months later, moved to their permanent facilities at Armitage Field on the China Lake site.

In fulfillment of its secondary mission of training, the Group initiated a two-week course of instruction on Aug. 25, 1944 on rockets, fuzes, and handling procedures. Some 150 officers and enlisted personnel received instruction on the 5-inch HVAR "Holy Moses" and the 11.75-inch AR "Tiny Tim" before the course discontinued in May 1945.



FIRST O-INC — LCdr. Tom Pollock was the first officer in charge of the Aviation Ordnance Development Group 1 at Harvey Field. He recently retired as a captain.



COMMANDER'S OFFICE, 1944 — Standing outside the No. 1 Quonset hut at China Lake in earlier times are: (l-r) Cdr. John Richmond; RAdm. W. L. Friedell; Cdr. Sandquist; Congressman Sheperd; Cdr. Bob Atkins; and first C.O., Capt. S. E. Burroughs.

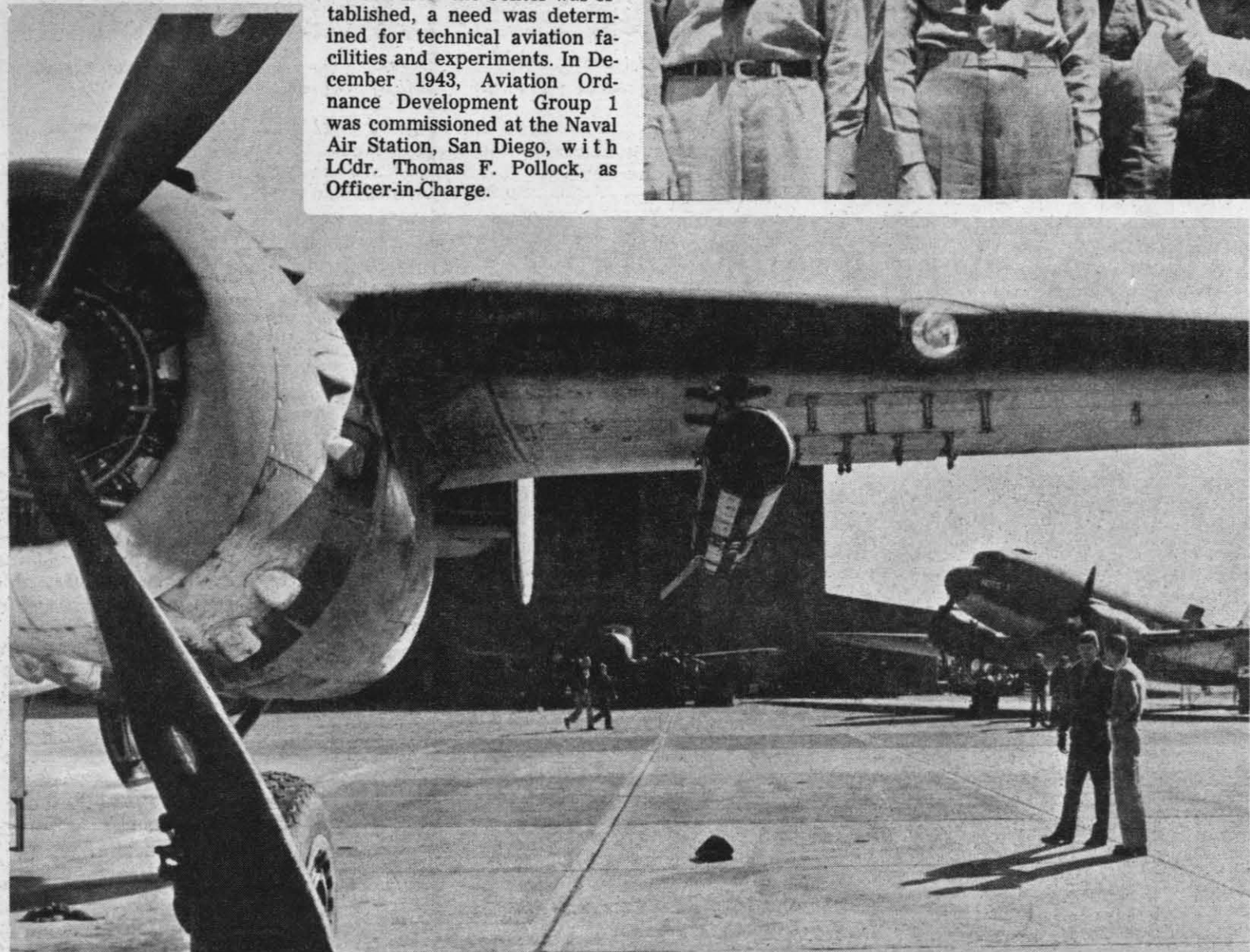
Navy Takes Over CalTech Projects During 1945

CalTech's work was primarily concerned with the development and testing of rockets, propellants and launchers. When it was decided that the Center should become a permanent facility of the Bureau of Ordnance, it was also determined that the Navy, in order to house the expected thousands of personnel needed, would begin a vast construction program.

Between April and October, 1945, the Center took over most of the CalTech projects. Homes, schools, shopping facilities, Michelson Lab and other permanent buildings rose to transform the desert outpost into a community with a single purpose — to provide weapons.

(Continued on Page 5)

ing pilot for test firing. The Center was even then perfecting launchers. Three were being tested.



1944 HARVEY FIELD ACTION — "Tiny Tim," a 11.75-inch, 1,250-lb. rocket hangs under wing of fighter aircraft awaiting pilot for test firing.



Dr. Wm. McLean Named New Technical Director

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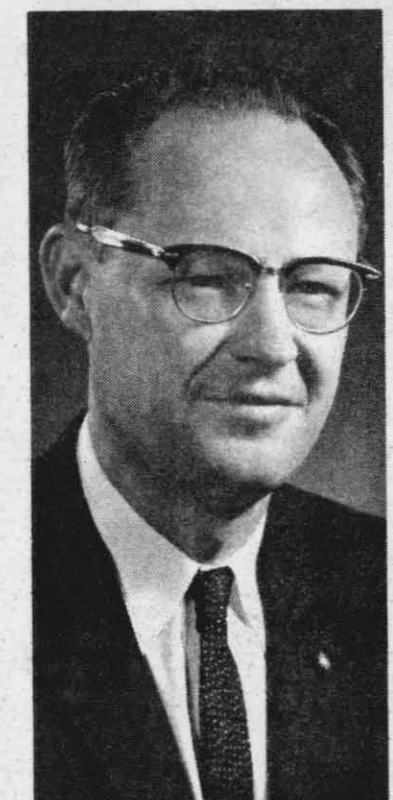
gy Commission; J. A. Hutcheson, Director of Research Laboratories, Westinghouse Electric Corp.; R. H. Kent, Ballistics Research Laboratories, Aberdeen Proving Ground; C. C. Lauritsen, Professor of Physics, California Institute of Technology; and F. C. Lindvall, Chairman, Engineering Division, California Institute of Technology.

From 1948-1951 about 1,000 family dwelling units were added, as well as dormitories and trailer spaces to provide more housing for the ever increasing populace.

New Ranges Added

Two new ranges were added in 1951. One of them, T-Range, was opened in January for rocket proof firing. The other, K-3 Range, was opened in March for use in cross-wind rocket firings. The Projectile Range, at Randsburg Wash, 25 miles southeast of the Center's headquarters, was opened during ceremonies on May 16, 1952.

The Projectile Range, covering 320 square miles and including countless test facilities, greatly broadened the scope of test and evaluation work accomplished here.



Dr. Wm. B. McLean

Television came to China Lake in 1953 upon completion of the Laurel Mountain Repeater Station, the only one of its kind in the nation.

Community recreation activities were enhanced in 1954 with the completion of the Community Center. A focal point for social activities. The 16,000 square foot, highly flexible building is used for meetings, parties, dances, and general community functions.

Dr. William B. McLean assumed responsibilities as the Center's Technical Director on April 2, 1954. Dr. McLean was named to succeed Dr. F. W. Bown, who left to assume direction of the Standards Laboratories at Boulder, Colo. The appointment was made by RAdm. M. F. Schoeffel, Chief BuOrd, upon the recommenda-

tion of the Center's Advisory Board.

Completed in mid-1954 was the Supersonic Naval Ordnance Research Track — SNORT — used in captive testing of ordnance items. SNORT gained acclaim with the development of RAPEC (Rocket Assisted Personnel Ejection Catapult), the ejection seat capable of propelling pilots 225 feet into the air from their low-altitude flying craft, thus saving lives of jet pilots faced with low-altitude crash emergencies.

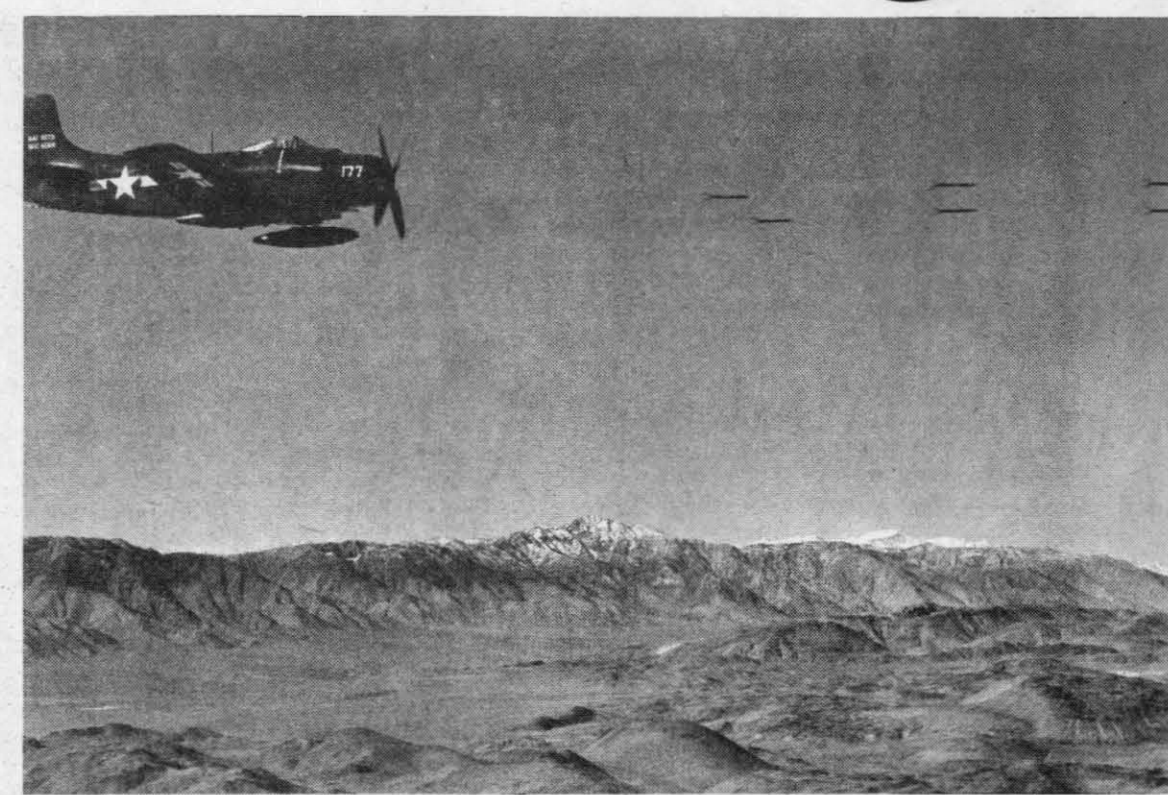
G-4 Range, for high-speed terminal ballistic studies with rockets and similar ordnance, was opened on December, 1954, and in February, 1955, the move was completed from the temporary G-1 Range to the permanent G-1 Range, putting into operation one of the nation's most up-to-date and most completely instrumented ranges for guided missiles. The move to the permanent G-2 Range was completed in August.

In mid-1956, development of the 19-round Mighty Mouse Rocket Launcher was announced. Two military units joined the Center during this year. The Marine Guided Missile Test Unit was activated to test and evaluate selected missile systems and components for the Corps and to assist the Center in the evaluation of the Terrier missile. The Unit continued the work begun by the 1st Terrier SAM Battalion.

VX-5 Arrives

Air Development Squadron Five (VX-5), the Navy's top test squadron, arrived on July 6, 1956, under the command of Capt. F. B. Gilkeson. It was here on Charlie Range that VX-5 made itself more well known with the development of loft bombing techniques, the most effective techniques yet devised which permits the aircraft to get away after the release of nuclear bombs. VX-5 continues to write the instruction books for pilots.

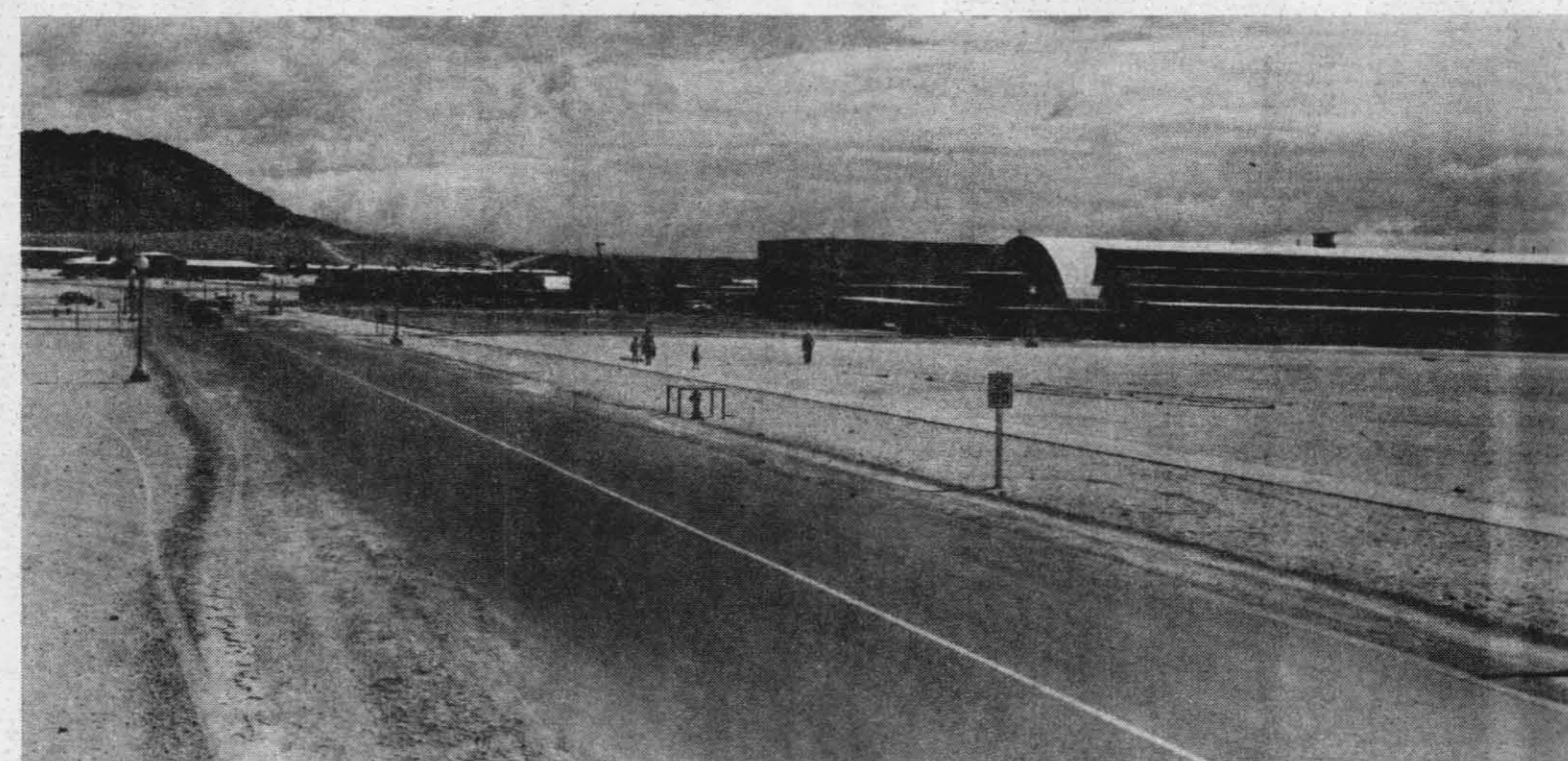
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MIGHTY MOUSE — A 2.75-inch folding-fin rocket, developed at NWC, is fired in salvo by a Douglas Skyraider during tests in 1950 over China Lake ranges.



TINY TIM — An 11.75-inch torpedo-shaped rocket, developed during World War II, is fired over China Lake ranges during 1944. Operations were conducted from Harvey Field before the air units moved to Armitage Field. Tiny Tim weighed 1,250-lbs.



BLANDY AVENUE, 1945, SANS TREES — This is the sight that greeted China Lake pioneers. The community from the Center Commander on down, helped plant the trees furnished by Public Works along Blandy.



Scientific Community Becomes Reality

(Continued from Page 5)

Since 1945, there has been a continuing stress on a fully integrated weapon program, utilizing the best of tools and the most competent engineering and scientific personnel available. Because of this emphasis, NWC has been able to make significant contributions to the nation's defense arsenal and has prepared to undertake increasingly more complex weapon development tasks.

Ground firings of aviation ordnance items was begun in mid-1945. About this time, too, the Salt Wells Plant was opened for experimental work in the field of explosives.

Waves Arrive July 18, 1944, Marines on July 17, 1945

Contingents of Waves began to arrive on July 18, 1944 and reached a total strength of 150 during their assignment here. Their ranks depleted to 28, the group was transferred to San Diego in April, 1946. During their tour here the Waves were quartered in what is now the Personnel and Housing Buildings.

Former China Lake Waves still in the area are Maria Kochman, Rose Gonzales, Hazel Coleman, Terry Wiruth, Joey Deffes, Marilyn Nomploggi, and Laura Patton.

On July 17, 1945, the Marines arrived at China Lake to supplement the civilian Security Police and the Marine Barracks was commissioned. Throughout the years several additional Marine groups were assigned to NWC from time to time, the SAM Battalion, the Marine Corps Guided Missile Training Unit, the Marine Corps Guided Missile Test Unit, the Marine Corps Sidewinder Project Unit, and the Marine Corps Redeye Project Unit. The all time high of the Marine Barracks was 280 men.

The Marine Barracks was disestablished during June, 1963. The last official act of the Marines was to provide an honor guard for President John F. Kennedy when he visited the Center on June 7, 1963.

Bennington Plaza Almost Complete, Community Grows

The community began to be a real community, in August, 1945, a nursery school was opened; shopping facilities at Bennington Plaza were nearly as complete as they are today; the old Movie Hut was remodeled into a small chapel, utiliz-

ed by all faiths until Nov. 3, 1957, when the new \$350,000 All Faith Chapel was dedicated.

In 1946, Dr. L. T. E. Thompson was formally named Technical Director, though he had come to the Center in 1945 as Director of Research, Development, and Tests from the Na-

val Ordnance Plant, Indianapolis, Ind.

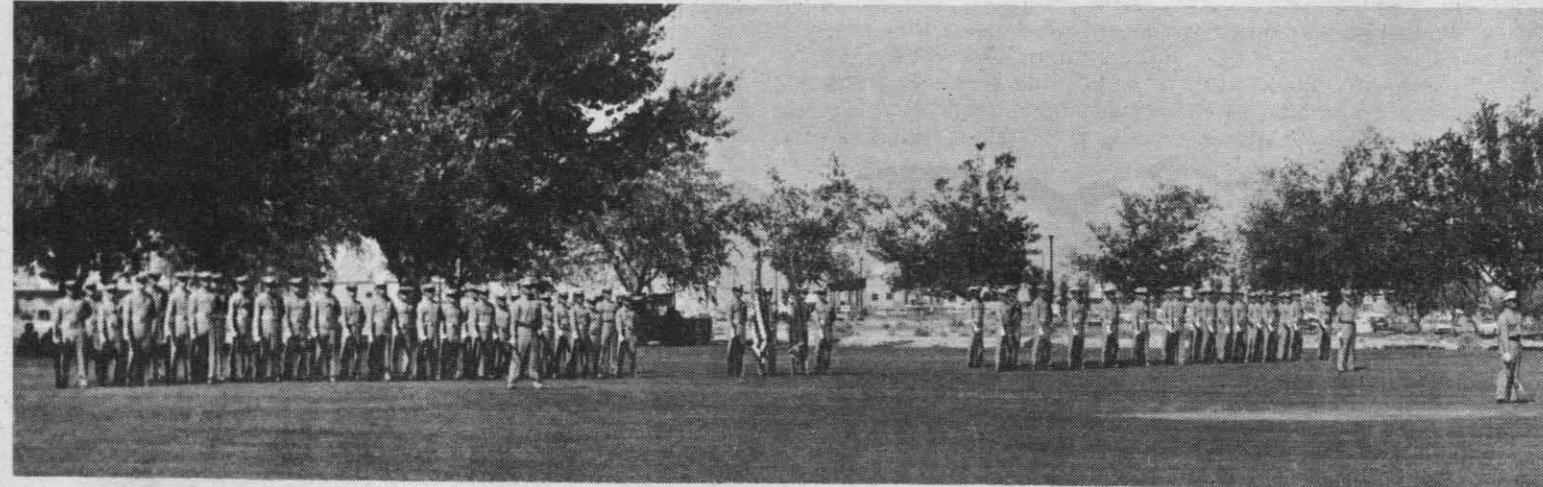
Late in 1946, B-4 Range was put into operation for captive ordnance testing.

Named China Lake in 1948 By Post Office Department

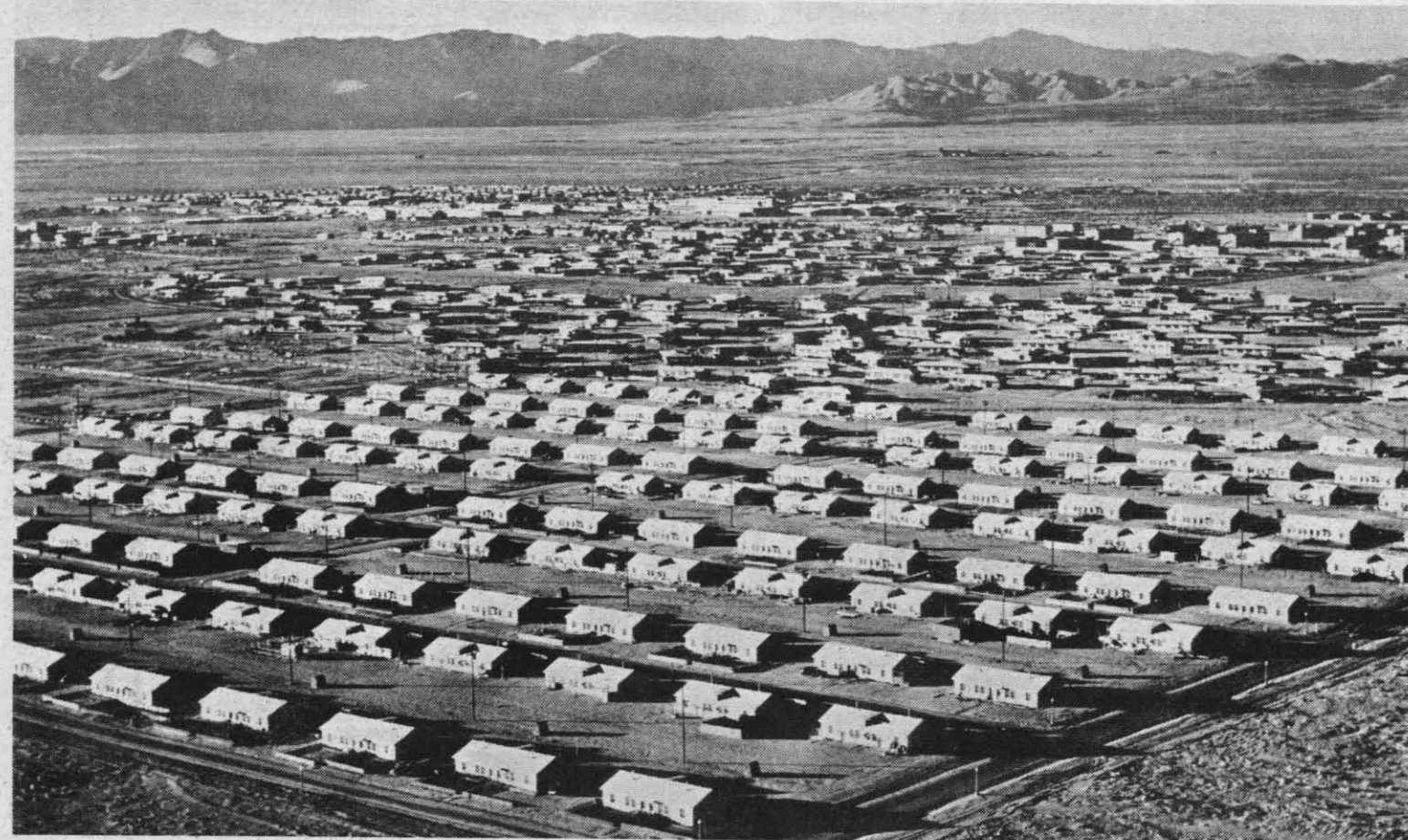
China Lake became the name of the Center community on Jan. 16, 1948, when the Post

Office Department designated it as the name of an independent post office and thereby ended the designation of the Center office as a branch of the Inyokern Post Office. Home delivery of mail was begun in June.

A second major technical facility was dedicated in 1948 — the Variable - Angle Launcher



MARINE BARRACKS WAS COMMISSIONED JULY 17, 1945 AND DISESTABLISHED JUNE 7, 1963.



CONSTRUCTION OF HAWTHORNE HOUSING FOR CHINA LAKERS WAS WELL UNDERWAY IN MAY, 1948.



WAVES' CONTINGENT ARRIVED JULY 18, 1944 AND LEFT APRIL 30, 1946. SEVEN OF THOSE WAVES ARE STILL HERE.

at the Pasadena Annex on May 7. A \$2,000,000 test facility for the study of water-entry problems of torpedoes and other underwater missiles.

The Center Advisory Board was activated in December, 1948, to provide counsel by outstanding scientists, industrialists, and administrators.

Members of the first Advisory Board were L. M. K. Boelter, Dean, College of Engineering, University of California at Los Angeles; R. B. Brode, Professor of Physics, University of California at Berkeley; W. R. Brode, Associate Director, Bureau of Standards, Washington, D.C.; R. W. Cairns, Assistant Director of Research, Hercules Powder Co., Wilmington, Del.; H. W. Emmons, Professor of Engineering Science, Harvard University; L. R. Hafstad, Director of Reactor Development, U.S. Atomic Ener-

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Michelson Laboratory Dedicated May, 1948

(Continued from Page 4)

Its new concrete shining in the intense sunlight, Michelson Laboratory, was dedicated May 8, 1948. It is the focal point of NWC's activity. Built at a cost of \$10 million, it is the largest and the most completely equipped laboratory of its kind in this country.

Comprised of 16 units, the structure is joined in such a way as to minimize possible earthquake damage. The added expense involved was repaid in a 5-minute span in 1952 when the nearby Bear Mountain Fault slipped, leaving Tehachapi and Arvin in shambles.

Presently housed in the huge laboratory are five departmental organizations of the Naval Weapons Center. Among these is the Systems Development Department whose major functions is to develop the means for testing hardware such as rockets and missiles, propellants, explosives and products of other department's research and development efforts. The Aviation Ordnance Department, the Weapons Development Department, the Research Department and the Engineering Department also occupy Michelson Lab. The Weapons Planning Group is also housed in the structure.

Pasadena, Once the Only Facility of Its Kind

Pasadena, once the only facility in the United States devoted to Navy rocket, aviation ordnance and underwater weapons development, gave the nation such weapons as the now famous Polaris, RAT, ASROC, and the Mark 46 torpedo.

When the Navy took over weapons development operations from CalTech in 1945, the existing scattered groups were combined into the single unit of the Naval Ordnance Test Station, under the direction of Dr. L. T. E. Thompson, who later became the first Technical Director.

Some Pasadena projects were taken over by the General Tire and Rubber Compa-

ny, under contract, and remained under jurisdiction of that company until 1948 when the 430 Pasadena personnel were transferred to Navy Civil Service. Personnel at the Pasadena Annex numbered about 1,000 when it became a separate facility in July, 1967.

G-Ranges Developed in '43, First Rocket Fired March '44

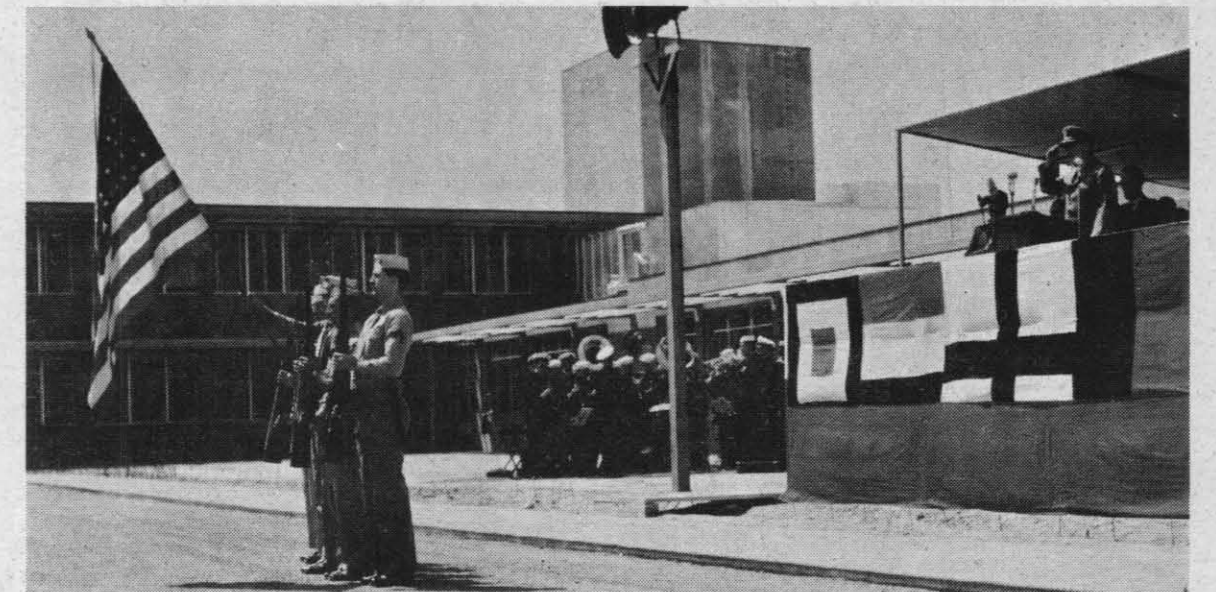
During the late 1943 and early 1944, temporary G-1 and G-2 ranges, for ground firings of rockets, had been laid out, and the first rockets were fired on G-2 Range on March 30, 1944. By the middle of April temporary towers had been constructed along the boundaries of the ranges so that spotting of impacts could begin, and on May 1, spotting actually began on G-1 Range. Permanent spotting towers replaced the temporary structures in December, 1944.

Launchers, range buildings, and other test facilities were added at these temporary ranges to meet the Center's immediate needs. In the meantime, the permanent ranges were begun, and in 1945, the first testing for a guided missile program was undertaken with the result that G-1 Range became the area for testing of guided missiles rather than rockets.

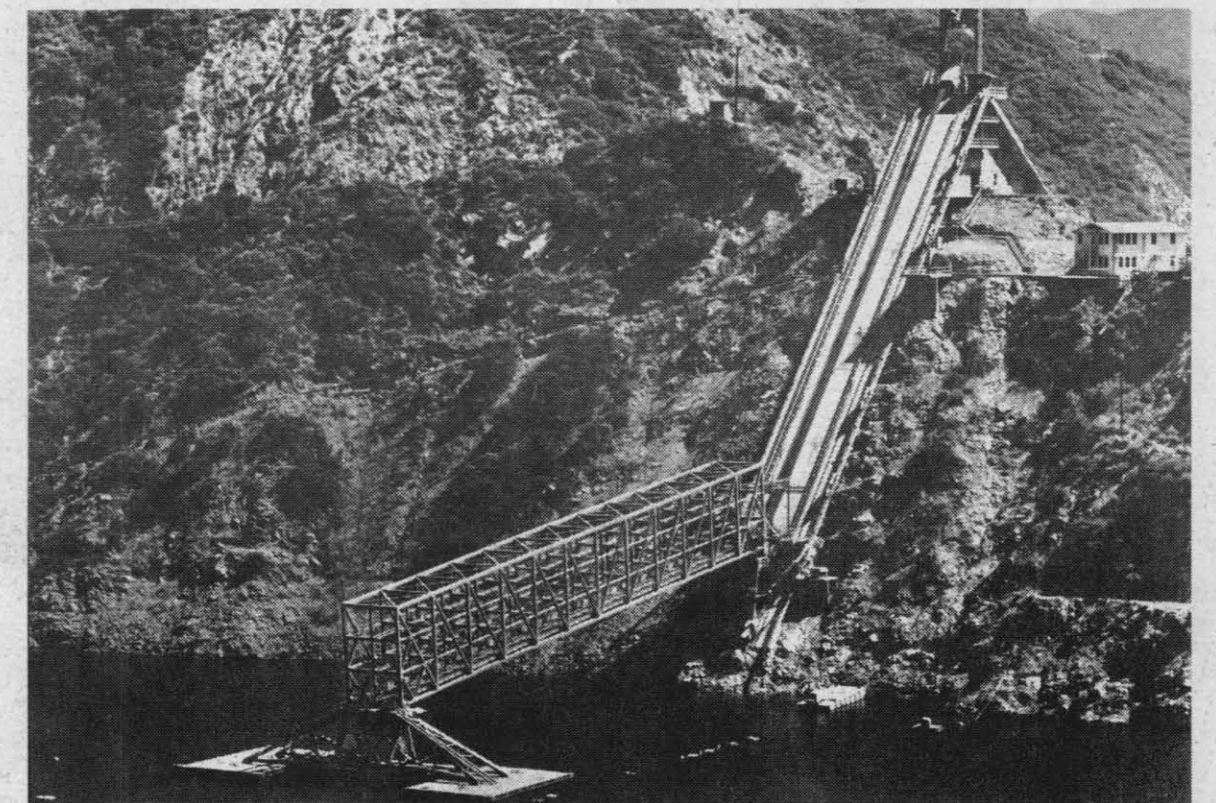
By July, 1944, B-1 and B-2 Ranges were opened for air-to-ground firings of rockets.

Frenzied Construction in '44, 1,070 Dwelling Units Built

Finally, after a year and a half of frenzied construction of buildings to carry out the mission of the Center, in 1944 and 1945, a number of homes were begun. In a short time, 1070 units — duplexes, apartment buildings, senior and junior officers' quarters, dormitories and prefabricated housing — rose to contain both construction people and scientists, engineers and other personnel engaged in rocket and missile development.



MICHELSON LAB DEDICATION — The Marine color guard opens ceremonies for the dedication of Michelson Laboratory on May 8, 1948, with RAdm. Switzer, Center Commander, on the speaker's stand. Dr. Robert A. Millikan gave the dedication address.



VARIABLE ANGLE LAUNCHER — This Pasadena Annex Morris Dam, for the testing of torpedos was dedicated 1948.

The first elementary school at China Lake was opened in eight Quonset huts in September, 1944. By the end of the term, 13 huts were in use. Prior to 1944, both high school and elementary school students travelled to schools in Ridgecrest, Trona, Randsburg, and Johannesburg, up to 26

miles from the Center and 34 miles from Inyokern. The Sherman E. Burroughs High School was begun in 1945, and November of that year, classes were started.

Today, Burroughs High School is housed in a new modern plant in Ridgecrest and shares its campus with the Bak-

ersfield College Desert Division. Contract Let for Salt Wells Pilot Plant January 30, 1945

On January 30, 1945, a contract was negotiated for the construction of the Salt Wells Pilot Plant. During this month the permanent Naval Dispensary was commissioned, then responsible for full medical care of both Civil Service and CalTech employees as well as for service personnel.

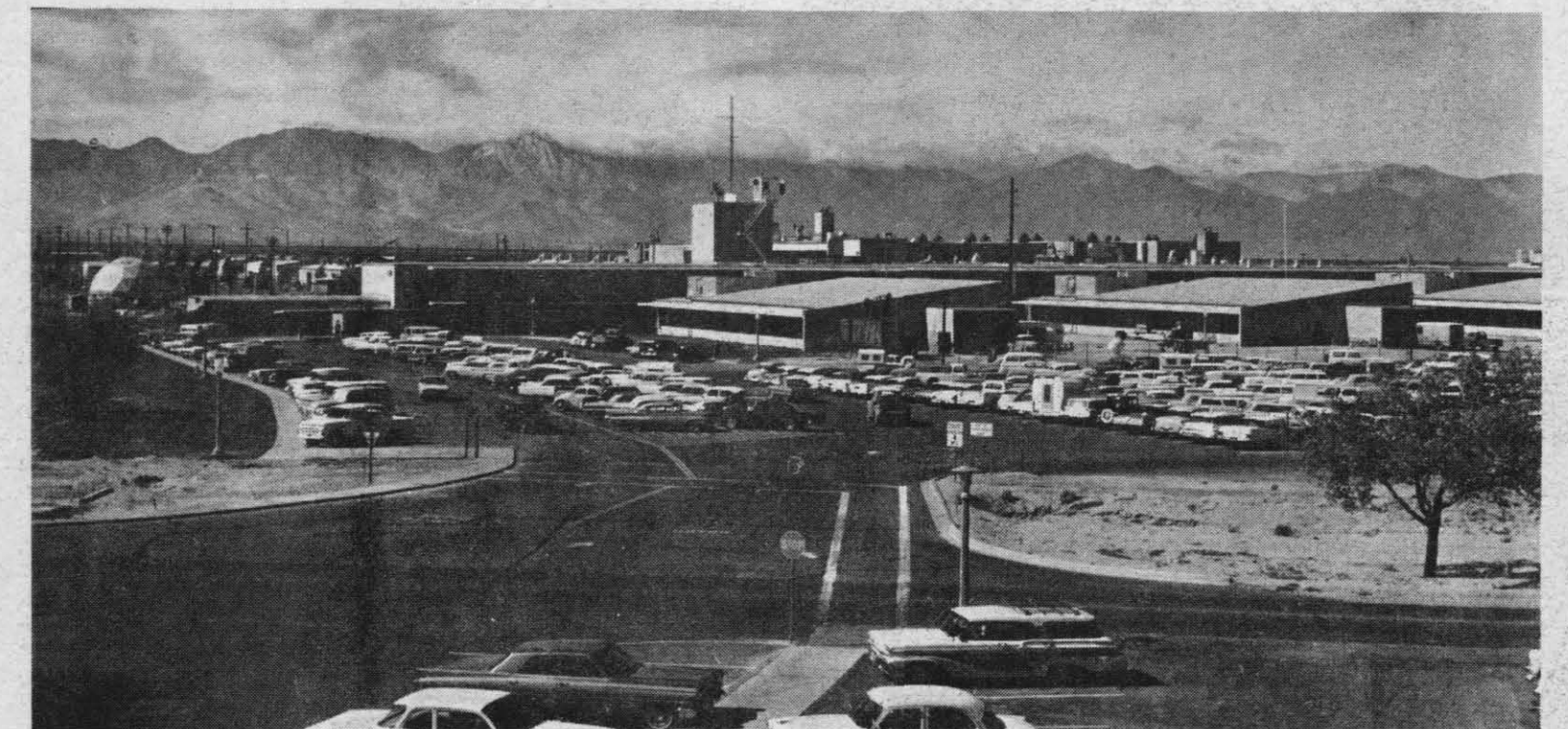
Families first occupied single-family dwellings in the fall of 1944, and as more and more housing was completed, they were immediately occupied. The last Hill Duplexes were completed in 1952, with an additional 500 Capeharts in 1961.

With the vital, immediate construction now almost finished, testing operations assumed an amazing urgency. In March, 1954, the K-2 Range was opened for use in rocket terminal ballistics studies.

1945 Facility Established As BuOrd Independent Activity

In April, 1945, the Center was established as an independent activity to carry out the research and development program of the Bureau of Ordnance.

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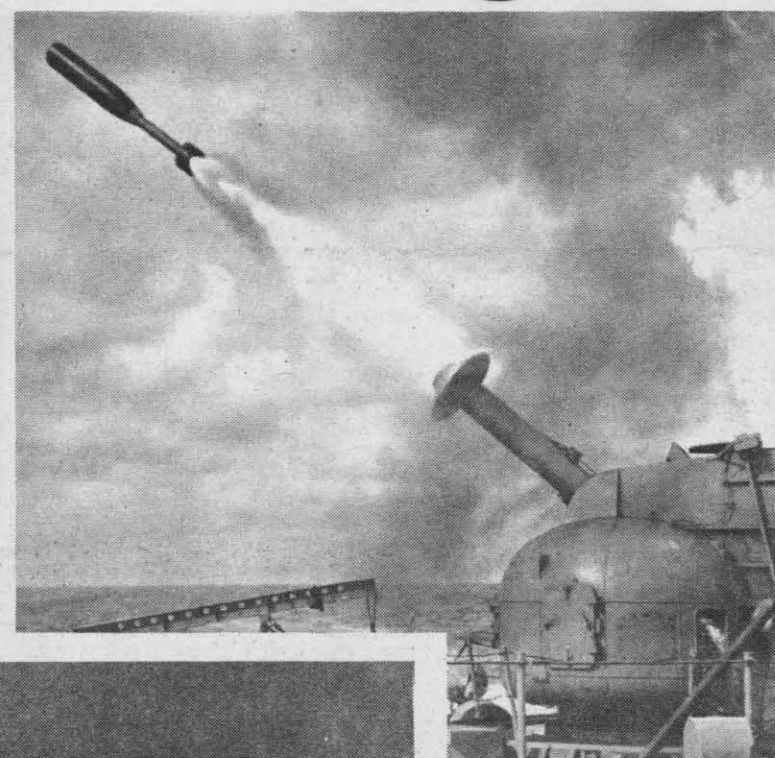
MICHELSON LABORATORY — From this focal point of research and development NWC's scientists and engineers

have contributed over 75 per cent of the airborne weaponry of the free world today, including Zuni and Shrike.

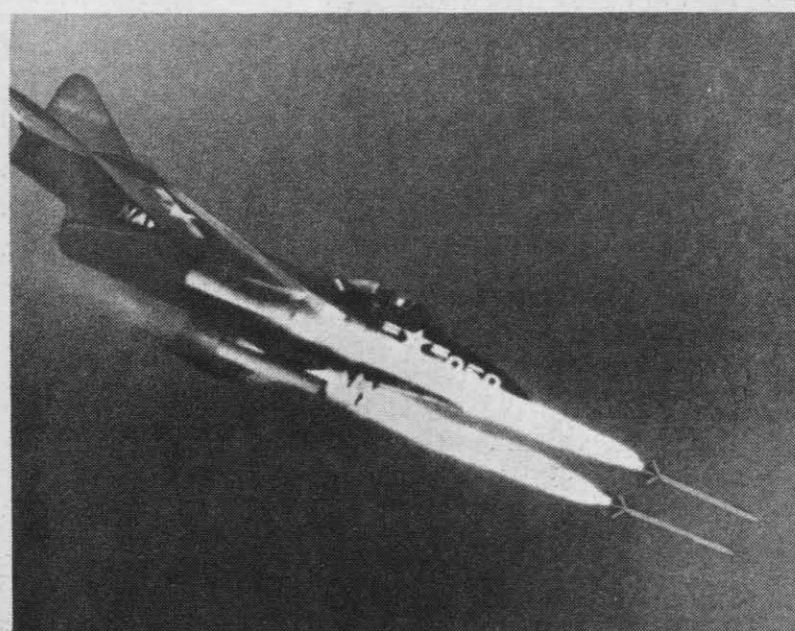


NWC History Features Ingenuity, Responsive Effort, and Solutions

Monumental Achievements Highlight Radiant Quarter Century of Engineering Excellence



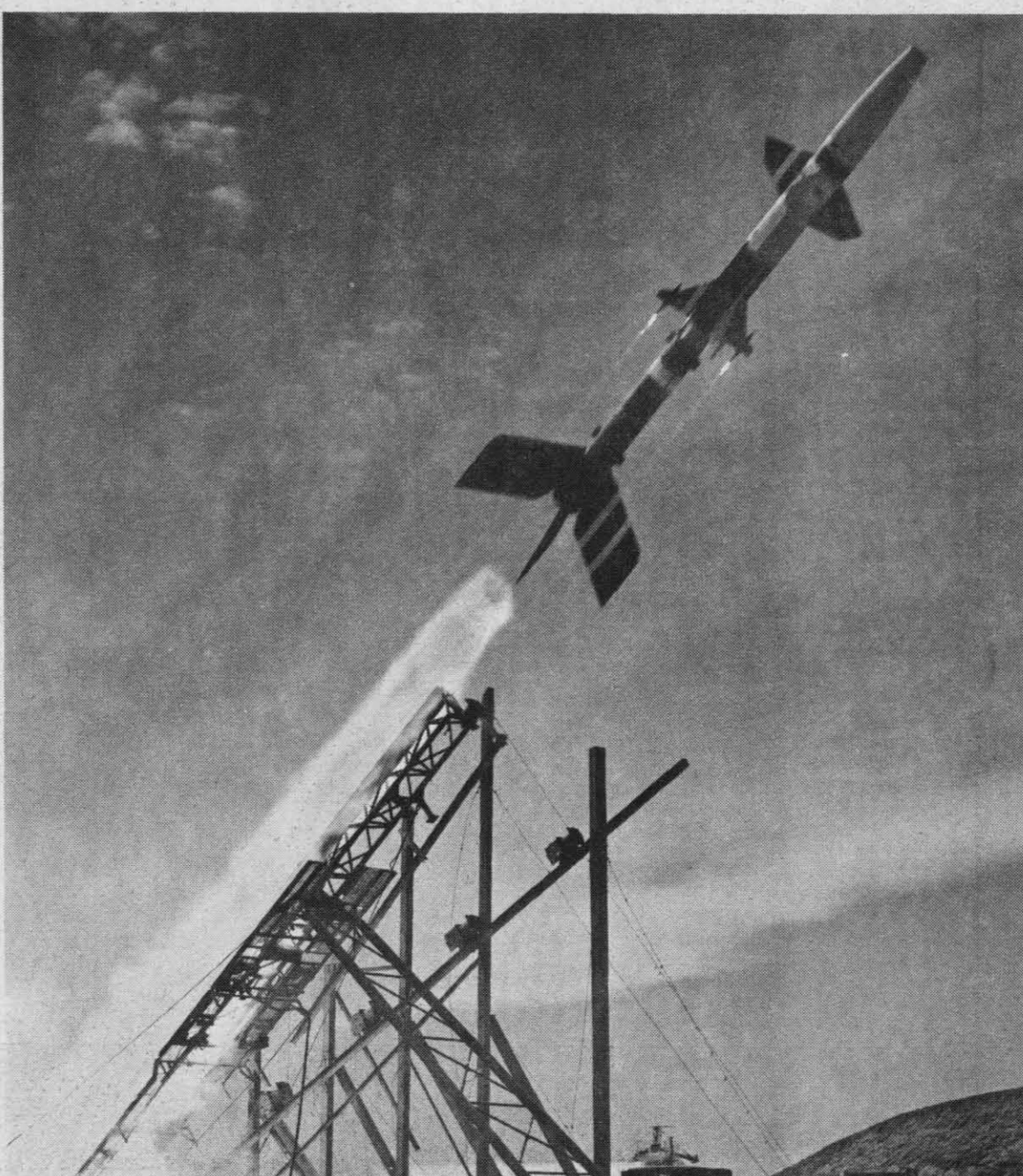
WEAPON A — An antisubmarine rocket, forerunner of ASROC, was developed at China Lake in the 1950s. It had a range of 1,000 yards and was fired from launchers mounted on bow of destroyers.



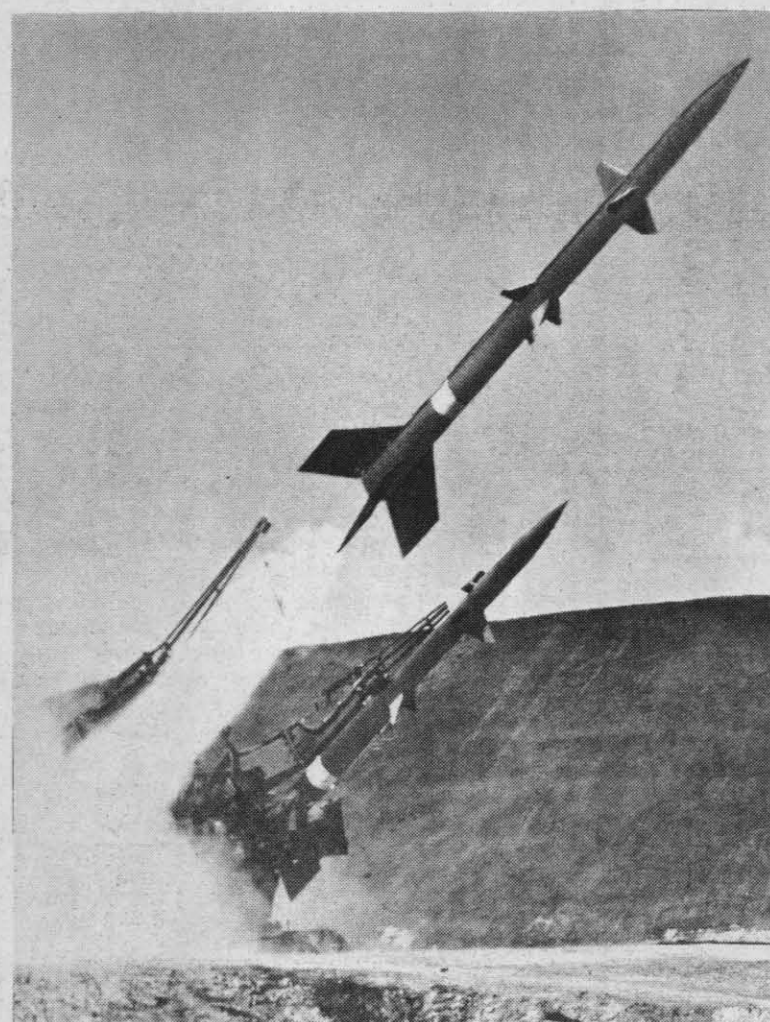
ZUNI ROCKET — A versatile 5-inch air-to-ground or air-to-air rocket, is fired from an F9F during its early development here. It became operational with the Fleet in 1960.



ASROC, SUBMARINE KILLER — This supersonic anti-submarine rocket was developed by the Pasadena Annex.



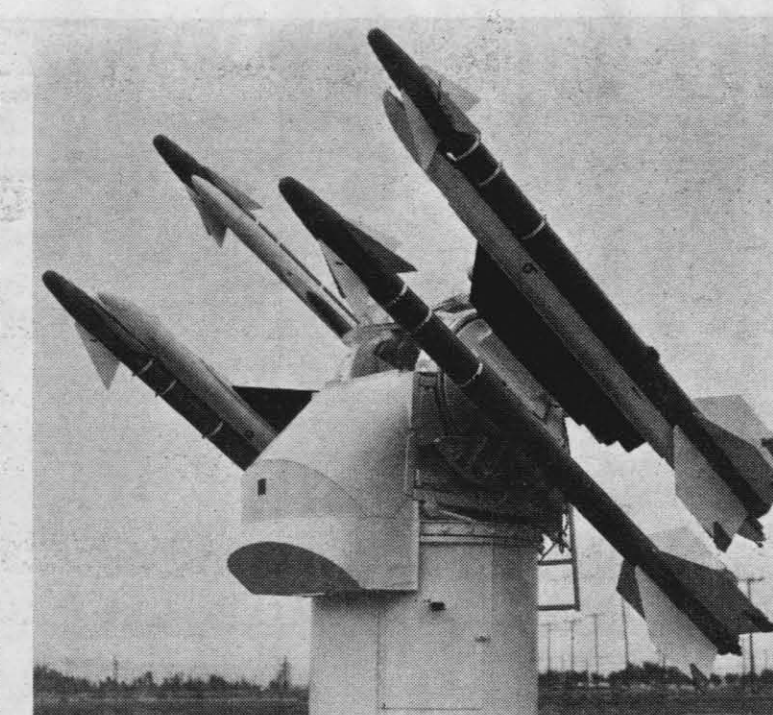
"BIG STOOP" — A two-stage surface-to-surface experimental rocket is fired from the Vantos 1 launcher on the old G-1 Range in 1950. Many successful rockets and missiles evolved from such tests. A whole series of the "Bumble Bee" family were fired.



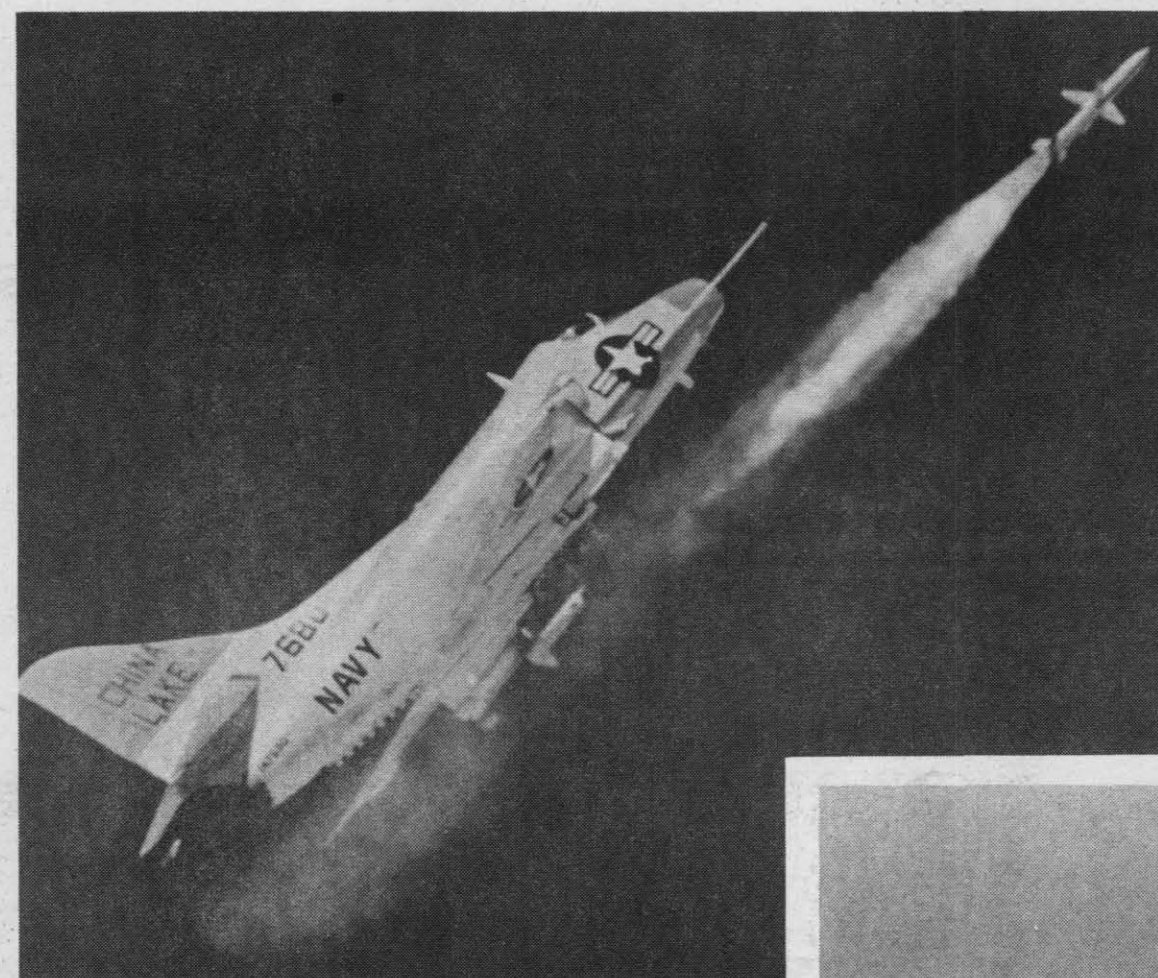
TERRIER MISSILES — These anti-aircraft missiles were tested here in 1957 by GMU-25 and the Marines.



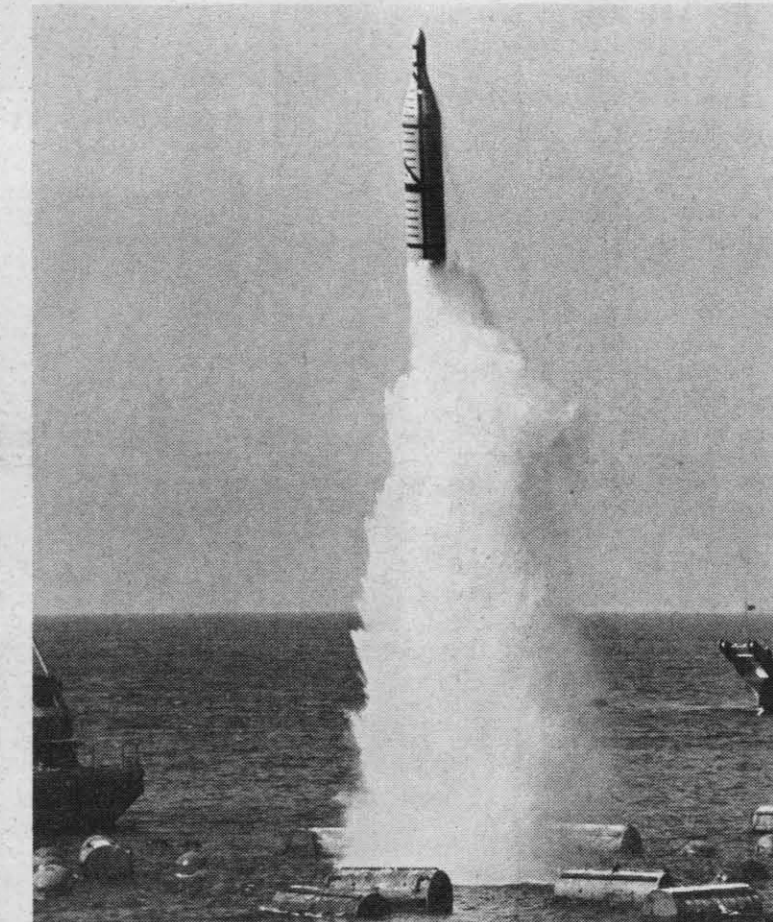
SIDEWINDER IN FLEET — The famous Sidewinder, air-to-air guided missile, is loaded on an F8 aircraft aboard the aircraft carrier USS Ticonderoga. The missile was conceived and developed at China Lake in 1956. It became operational in 1957.



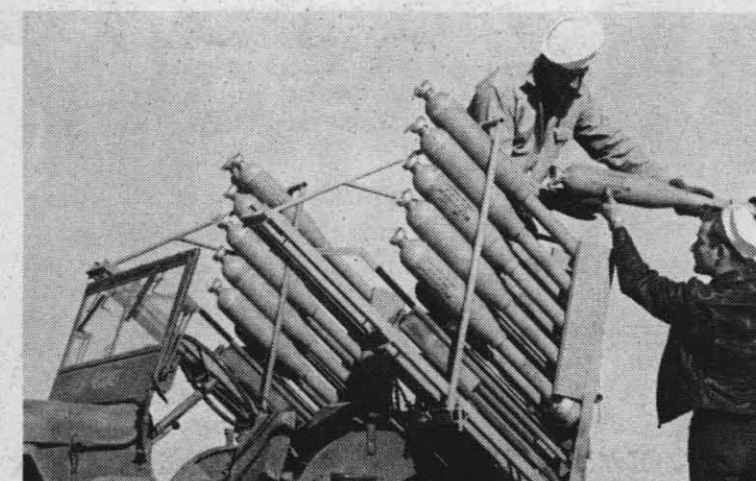
LETHAL CHAPARRAL—System, developed here for Army, 1965-66, has the deadly sting of four Sidewinder missiles.



SHRIKE MISSILE — The nation's first anti-radar guided missile was conceived here in 1959 and introduced into the Fleet in 1965.



POLARIS — The famous Polaris missile shows its ability to accomplish transition from underwater launch to powered flight at San Clemente Island in 1960.



BARRAGE ROCKETS — World War II days included the testing of barrage rockets. Men ready rockets for firing from a Jeep launcher on one of the Center's ranges.



EARLY RETRO ROCKETS — It is reported these retro rockets, before the forward firing rocket, were being tested at Salton Sea in 1942 as a defense against submarines.