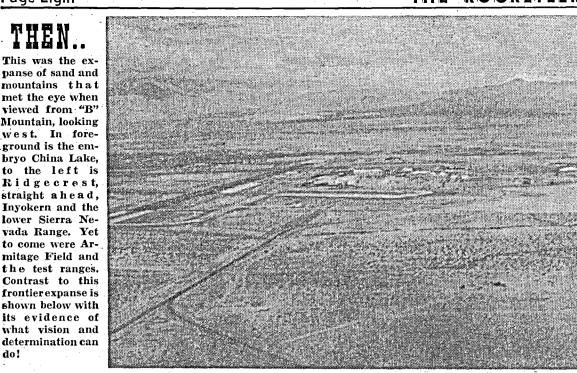
This was the expanse of sand and mountains that met the eye when viewed from "B" Mountain, looking west. In fore ground is the embryo China Lake, to the left is Ridgecrest straight ahead. Invokern and the lower Sierra Nevada Range. Yet to come were Armitage Field and the test ranges.



Research Function 2-Fold Aims to Explore, Develop

ment looks ahead and plans ahead. as it was in 1945. A far cry from the few Bunsen are now equipped with tools adaptable to the study of projects now no more than vague dreams in the ninds of man. And, with constant accessions of the most modern of to be explored and the possibility scientific equipment, the Depart- of new discoveries are almost ment is preparing itself for future projects of NOTS.

Through the 15 years of NOTS' existence, most departments have changed and interchanged. This is not so with the Research Department; they began as "Research," and except for the acquisition of

From a staff of 70 in 1945 to over few minor department alterations. 160 in 1958, the Research Depart- their structure has remained much

The role of the Research Departburners and miscellaneous test ment in carrying out the Station's tubes making up the chemist's lab- mission has become more impororatory in 1945, Research chemists tant with the passing years. Departures from conventional ways of doing things have placed a new responsibility on the scientists of the Department. There are new areas limited. Not only do de face the

challenge of space but the mysteries of the deep ocean as well. Scientists in the Research Department are preparing to meet this challenge. Already a group in oceanography research has been established and has a number of projects underway. As over two-thirds of the earth's surface is covered with water, this type of research is extremely important. The influence of the ocean on man, his food supply, climate, and general well-being is little understood, as well as its features that might be important rom a military point of view.

New and important uses are conemplated for earth satellites. Equipped as it is with the best of omputational equipment and rained scientists to formulate probems and operate the machines, scientists in the Research Department? expect to make significant contrioutions to the knowledge of outer space. Backed up by a team of skilled scientists and engineers, researchers hope to put their ideas: nto practice with minimum delay. A special group has been formed or the express purpose of "testing" an idea" with minimum formality: of design drawings, job orders, and

In the interests of efficiency and maximum utilization of man power. a small group of psychologists will study the behavioral characteristics to determine the human factors important to productivity in research. Thus, the Research Department is

assuming an increasing role of lead-Wells Pilot Plant up to the time of ple working on the project. The NOTS scientists, actual history of buildings were finished on the al Ordnance Test Station, Inyo his death in 1954, at which time he plant operated as a contractor to the Naval Air Facility dates back China Lake site, the field served kern, California, as a separate

name "Inyokern" became a part of sulted in a recommendation that all First Commanding Officer of the designation of the Station until air facilities at the Station be es- NAF was Cdr. J. M. Elliott. USN. Supporting the testing and deand complexity of the Salt Wells was definitely an art, not a science. - Harvey Field was originally built in May, 1944, and the official cere-velopment of new weapons and

fact that the Plant was largely employees of the Explosives Depart Authority as an emergency mea- Field," named in memory of LCdr. Facility does virtually all-of the sure during the first part of the Warren W. Harvey, USN, an out-flight testing of NOTS-developed niques which literally "put them "Inyokern Airport." When land for killed in action on June 28, 1944. Maintenance personnel maintain

An interesting problem faced by out of business" in 1954. The per- the Naval Ordnance Test Station In a formal ceremony on May approximately 20 different models

Salt Wells Stars In **Vital AEC Project** ForNational Defense By K. H. Robinson

One of the Station's contributions to the National Defense was the work performed for the Atomic Energy Commission. During the first few months of this project, only a handful of CalTech scientists and engineers were aware of the end product. Thousands of construction workers and engineers; were employed in the construction but almost none of them knew the end product of their work. The project began officially dur-

ing conferences held between General Leslie R. Groves, Admiral William S. "Deke" Parsons, USN, (then and Dr. B. H. Sage in Pasadena on January 1, 1945. Active in starting Salt Wells Pilot Plant project at USN, now RADM (Ret), and the only one of its kind in the United first OinCC, Commodore Lewis N. States. This uniqueness accounted

CalTech Responsibility

The CalTech group was asked to sion was to develop, refine, and imdesign, construct and operate a prove high-explosive components for large high-explosive processing fa- fission-type bombs and to produce cility and to be ready for operation such components. in 100 days. Those of you who are familiar with construction time schedules and have seen the size known about fabricating bombs. It later. ready in 100 days and the first pro- ment turned this into a science and

explosives was settled. Up until this time, the plant was being designed methods. With typical Manhattan was generous in providing almost efficiency, truck loads and carloads cilities in support of the program. of motors, valves, pumps, and reg- The Groves Street School, named ulators arrived on the day desired for General Groves, is quite obvious for installation.

Highly Classified

vious to those concerned what the ments, extension of the runways at project was all about, but for the the Naval Air Facility, two barracks next eight and a half years the (B1B and B2B), two dormitories, plant, its operators, and the rest of three SSQ-type houses, one-half of ern view. Commu the Station guarded with extreme the commissary, the present barber vigilance both the plant and its shop, the material for a 14-inch wa-

The group operating the plant from Inyokern to the Base.

was transferred to Civil Service under the Explosives Department in Wells effort averaged from 15 to partment status as the Explosives port activities. Department. As processing meth- The advent of the new type of nuods were modified and expanded, clear weapons, the commissioning there were three significant addi- of other production facilities con- the future may tions to the plant—in 1948, 1950 and structed with Salt Wells, aid in de-hold for NOTS its tions to the plant—in 1948, 1950 and Structed with Sale from held for NOTS its 1951. A total plant evaluation, ex-sign and training, and the higher Navy and civilian cluding equipment, ended up at cost of operating for production a about 9.5 million dollars with 52 plant designed as an R&D facility, personnel will be

mos Scientific Laboratory and the 1954. Thus ended a little known but Atomic Energy Commission, creat vital contribution to the National ed by the Congress in 1947 as suc- Defense



Commander), Dr. C. C. Lauritsen, NAF AERIAL VIEW-Shown at extreme right is the ject at NOTS since Michelson Lab, VX-5 hangar in new \$3,500,000 hangar, the largest construction pro- foreground, and NAF hangar 1 to the left.

the Bureau of Ordnance. Its mis-

From Art to Science

AEC Contribution The Atomic Energy Commission

but not so well known are the following: 380 Normac houses, 15 In August of 1945, it became ob- groups of the Card Street Apartter line, and telephone cable lines

November 1945, and was later op- 20 percent of the entire Station erated by the Rockets and Explo- budget. At the peak of operation, sives Department. Between - 1951 the plant utilized 550 employees plus and 1954, the organization held de- an estimated 300 others in the sup-

resulted in the phasing out of the permanent buildings. resulted in the phasing out of the meet.

Working closely with the Los Ala-Salt-Wells operation as of July 1, lenge!

NOTS were the Station's first Commander, Captain S. E. Burroughs, ing District, the operation was the Manhattan Engineer-Established to provide flight faci- sioned at the Naval Air Station, ership in helping accomplish the

Moeller, USN, now RADM (Ret) for the high security restrictions lities and support for the aviation San Diego, arrived at the desert ever-widening mission Admiral Parsons retained a vigi- and also created a very high morale ordnance research, developmental, airfield. lant and helpful interest in the Salt and urgency factor among the peo- test and evaluation programs of Until April, 1944, when adequate lished the Naval Air Facility, der the technical coordination of ance Test Station itself was no become NOTS. more than an unlocated dream.

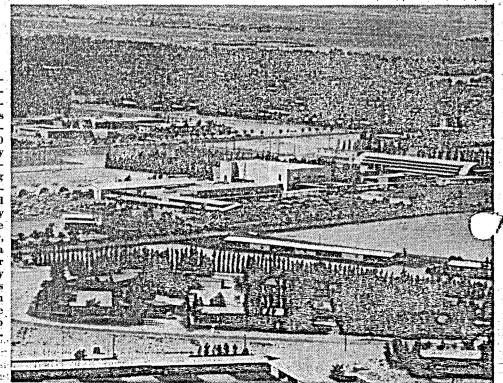
was the Deputy Chief of the Bu- the Atomic Energy Commission un- to the era when the Naval Ordn- as headquarters for what was to command under the military com-NAF Established Pioneers of China Lake knew The growth of the Naval Ordn- Test Station, Inyokern, California, Harvey Field, near Inyokern, as ance Test Station and the increas, and under the management control the first home of NOTS. Thus, the ing scope of its air activities re- of the Bureau of Ordnance...

When this work started, little was changed to China Lake some years tablished as the Naval Air Facility, assuming duty May 5, 1947. Invokern. This was accomplished Pilot Plant may well marvel at the With a community-like spirit; the and used by the Civil Aeronautics mony resignating it as "Harvey weapons systems at NOTS, the Air cessed explosives came off the line perfected methods, tools, and tech- war. It was then known as the standing aviation ordinanceman items.

the designers of the plant was that fected techniques were turned over was acquired, the land including 30, 1945, Armitage Field was dedi- of aircraft utilized by the Facility

it was not until mid-April that the to the AEC, and the mission of the the airport was controlled by the cated to the design, development in their part of development of the U.S. Army, who traded it to the and testing of aircraft weapons, nation's newest weapons. Navy for swampy Louisiana waste- and named in honor of John M. Indicating future growth of the lands. In December 1943, the Avia- Armitage, USN, killed on one of Station, and acceleration of the for either one of two processing in its desire to increase production, tion Ordnance Development Group the air firing tests of Tiny Tim. planned program of the Naval Air. 1, with LCdr. T. F. Pollock, USN, A letter from the Secretary of the Facility is the \$3,500,000 hangar Engineering District secrecy and \$5,000,000 worth of community fa- as Officer-in-Charge, just commis- Navy, dated April 28, 1947, estab- now under construction,

gether over 12,000 persons to carry forward the Navy's far-reaching program for missile creation and testing. Already such weapons are being used by air, land, and sea





1943-1958

15th Anniversary Edition



TEST STATION S. NAVAL ORDNANCE

CHINA LAKE CALIFORNIA

Home of Sidewinder

7522 COPY DO NOT REMOVE FROM THE FILE

Station Missiles

Guided Missile Unit 61

Marine Corp Officer from NOTS.

Guided Missile Unit 25

Another important objective of

development testing.

Rigorous Testing of Weapons A Must in Functional Success

By Frank H. Haymaker

way since that day in 1590 when farther, and in some cases, faster, Galileo huffed up the last flight than rockets, demanded superlative of stairs in the Leaning Tower and facilities—and were blessed with winder is Guided Missile Unit SIX- logical advances is readily acces- to continue publishing NOTS reheaved two dissimilar cannonballs over the lee rail to see which one would hit the ground first. Today no right-thinking red-blooded American corporation or government bureau would dream of producing a piece of machinery—be it a zipper or a space probe-without first subjecting it to rigorous developmental testing. Even the simplest items seem congenitally reluctant to do man's bidding. The only way to beat the rap is to test, redesign, and

It is, therefore, no accident that weapon development station such low their intact recovery after fir- related equipment. as NOTS has a test organization. Historically, what is now Test Department took first root in the early experimental rocket firings, fifteen years ago, in Eaton Canyon just back of Pasadena. World War II was then in full fury, and Cal-Tech was engaged in a hectic race high-speed ballistic testing, and the and frequent briefing for visiting cessed all test data. to develop rocket motors for a Project Engineering Office had be- Navy and civilian personnel. whole family of brand new rockets desperately needed at the fighting | ment that it, too, attained division fronts. Test facilities in Eaton status. Canyon then were little better than at Galileo's highly uninstrumented test range three centuries earlier temperature data was recorded by crouching behind a sandbag barricade and reading the gages by means of a telscope poked between the bags, and the human eye was used as a documentary camera.

Better Ranges Came

With time came better ranges First, Goldstone Lake, then in 1943, NOTS, itself. The wartime ranges spawned such rockets as Old Faithful, Minnie Mouse, Holy Moses and Tiny Tim. But, by the end of the war, two lessons had been learned: First, you can't get very far testing Einsteins' weapons with Gali- 1956 to handle the greatly increased leo's instruments, and second, test workload in this area, by setting up

of the NOTS ranges was transferred from the Office of the Experied Experimental Operations De- mente Island. partment, led by A. H. Warner.

"Test" Takes Shape Under Dr. Warner the embryo of it is a safe guess that if he were what was to become Test Depart- alive today, and working at NOTS,

size for an embryo, consisting of

472 people distributed through an

administrative office and two op-

erating divisions: Aviation Ordn-

The Department was renamed

Aviation Ordnance and Test in

January, 1949, and in 1950, split

into two separate departments.

Test was reshaped into essentially

a Project Engineering Office and

Meanwhile, both instrumentation

and range facilities had increased.

At war's end, only K-2, functioning

as a terminal ballistics range, and

G-1 and G-2, primarily rocket

ranges, existed, G-1, as a guided

missile range, did not exist, nor did

K-3, B-4, G-3, Randsburg Wash, or

SNORT. San Clemente Island slept

among the abalones as it had for

eons past, unmodified except for a

slight gain in weight from Navy

The needed instrumentation and

range facilities, slowly came. Per-

haps, the greatest impetus was the

advent of guided missile testing.

gunnery practice.

ance and Measurements.

four operating Divisions.

Old SNORT ...

ment began to take shape. By Aug- he would like it here.

ust of 1948 it had attained fair New SNORT . . .

Scientific testing has come a long, Missiles, designed to go higher, priority and hence, funds.

> Whole new ranges sprang up. G-1 was converted to a guided-missile range. B-4 was developed for general purpose track tests, K-3 for crosswind firing, G-3 for prooftesting and gun-launched tests of rocket heads, and Randsburg Wash for the testing of gun and rocket

The year 1953 saw the first firings from SNORT, an all-purpose sist in the development and testing Probably the only time in the track to test items at speeds rang- of the Sidewinder guided missile in- Station's history when the problems ing into the supersonic and to al- cluding missile improvements, and of technical information were mining. The same year also witnessed the establishment of the Projectile vital job performed by the unit. 1944, when initial construction went Range Office as a division to better This includes indoctrination of pi- into full swing. handle the increased workload in lots and ground personnel from fuze testing at Randsburg Wash fleet and Air Force fighter squad-By the following year, G-4 range— rons, and training units, lectures to with rockets, not reports. Through big brother of K-2—was opened for U.S. Naval Academy Midshipmen, 1945, however, the Institute procome so vital a part of the depart-

G-1 and G-2 Ranges Move

Several years of planning and by the Chief of the Bureau of Ordnance, its function is to assemble. toil paid off in 1955 with the moveback of the G-1 and G-2 firing ranges from a lash-up arrangement of long standing to a permanent and well equipped headquarters area geared for the efficient testing of rockets and guided missiles. Organizational changes this year were spurred by the lure of private industry for E. R. Toporeck, who GMU-25 is to train personnel who tion pictures on special occasions work at NOTS. Robert Thomas was replaced as Department Head by I. E. Highberg.

Terrier or Tartar missiles. Further demands in weapon testing were met by establishment of equipped with Terrier are the USS the Supersonic Track Division in will be equipped with these missiles ranges must have qualified people a test-firing range at Walker Lake in the near future. in 1957 to expedite development Air Development Squadron Five of ASROC, and by the creation of a Pasadena Test Division early this

One of the Navy's top test squadyear to handle the underwater test rons, Air Development Squadron mental Officer to the newly creat- range for POLARIS at San Cle- Five, is helping the Navy stretch the reach of its light attack bombers. In-flight refueling of the light Galileo had no way of foreseeing attack bombers is one of the strike the shape of things to come. But techniques being evaluated by VX-5 here at China Lake.

VX-5, commanded by Captain R. A. Beveridge, writes the instruction books for the Navy's hardware. Ex- APG-44 Radar; Bomb Directing haustive trials of new techniques by fleet-trained pilots develop the System Mk 10; AAR-18 Search Set; do's and don'ts of naval aviation. Information gained by these dedi- WINDER; Computer Indicators cated men with marks of ogygen AWA-3 and 4; and High-Speed wrestling with the problems of gas masks on their faces is trans- "Dart" Tow Target. lated into the jargon of the fleet and becomes the bible of the carrier the Station was like in 1943, talk to

g of the Navy's fastest aircraft Marine Corps Guided Missile

Test Unit

tems and components for the U.S. served at NOTS since 1950 with the Its personnel complement consists 1st Provisional Marine Guided Mis- of 248 productive married couples sile Battalion, now designated as with approximately 420 children; in the 1st Medium Anti-Aircraft Mis- addition, there are 74 single persile Battalion, the only completely sons.

ization in existence. Continued participation in a joint ried couples have worked in AOD at Budd Gott NOTS-Marine Corps Bu-Ord eval- the same time. A standing joke in Phillys Wair uation of advanced Terrier missiles the department is that some PDs Glenna Mayden has resulted in significant improve- are marked "His" and "Hers." ments in the design of these mis- The "esprit de corps" which pre-

The unit is presently evaluating tered and nurtured by Dr. Newton different types of ground coverings E. Ward, head of the department Nova Semey that will withstand the terrific blast since July, 1954. Dr. Wm. B. Mc- Shav Monsen, A. E. Block, of the Terrier booster as it leaves Lean, present Station Technical Dithe launcher and yet be light, com- rector, had been the previous depletely mobile, and still be capable partment head since its inception in crest, Calif., with appropriated funds in comof installation without the use of April, 1950.

The original home of AOD was Service material. All are official U.S. Navy special equipment. special equipment.

In addition to developing modern located in the Sight Lab at the Naphotos unless otherwise specified. technical skill, Marines are required val Air Facility. The parent Fireto maintain the legendary skill of Control section was led by Dr. Mcthe Marine Corps for marksman-Lean, and the Aircraft Projects ship for which they have been far group got its start in Hangar 1 unmous for generations.

Attached Military | TID Produces Vital Reports Activities Flght Test In Technological Advancement

By Earle E. Kirkbride

Synonymous with the name Side- mation on past and current techno- the Station arranged for CalTech TY-ONE (GMU-61), a small organ-sible. Because of the vital link be-ports until December, 1945. ization, but one which contributes tween weapon development and in- By January, 1946, the organizasignificantly to the developmental formation requirements, an effection had become the Editorial and work being accomplished at NOTS. tive information system has evolv- Technical Library Section of the Under its Officer-in-Charge, Cdr. ed over the past 15 years at NOTS. Technical Services Division. S. N. May, the unit comprises two The center of this mechanism is

officers and 28 men. Working as now the Technical Information Deadditional members of the unit are partment, best known simply as from the Naval Air Facility and a 1954, consolidated the central information functions after a decade The mission of GMU-61 is to as- of experimentation.

or was late 1943, when the Station Sidewinder training is another was officially established, and early Technical Reports Few

CalTech's experts were concern

Between late 1944 and April, 1945 the nucleus of the editorial group and the library was established Guided Missile Unit 25 was es-Known as the Editorial and Publithe time. For example, out of 17 tablished by the Secretary of the lishing Section of the Research and approved positions in the organi-Navy on June 25, 1955. As directed Development Department, their zation only eight were filled. quarters were destroyed by fire in March, 1946. Collecting records operate, maintain, and repair the from wherever they could, the Edi-Terrier and Tartar surface-to-air torial and Technical Library Sec guided missiles, missile test equiption moved into a former mess hall ment, fire control radar equipment and associated computers, directors, and guided missile launchers during Michelson Lab in 1947.

Besides the library and editorial services, the group also ran mowill later be assigned for duty for the technical meetings, a serthe early beginning of presenta

At present, three combat vessels tions work at NOTS. By October, 1945, the group had BOSTON, USS CANBERRA, and grown to four. At this time a Navy on the Bumblebee program. This the USS GYATT. Several more ships print shop existed on the Station,

The development of modern wea-| but it was not set up for handling pons is efficient only when infor- technical reports. For this reason

Saturday, November 8, 1958

Progress reporting in 1946 was

fairly simple matter. In addition two officers and two enlisted men TID. The creation of TID in July, projects, every two weeks extra brief monthly formal reports on copies of significant memorandums, unofficial reports, minutes of meetings, etc., were sent to the Technical Director's office where thev were sorted into 16 categories. The material in each category was then put into packets that were sent to interested persons on the Station

and in the Bureau of Ordnance. By November, 1946, the job of coordinating patent applications had been added to the functions of the group, then known as the Editorial, Technical Library, Reports and Patents Section.

No Billet Problems

There was no billet problem at

Printing facilities were not the best, and even formal reports were bound collections of mimeograph. ozalid, and photostat copies. Late in 1946 electric typewriters were -the present Boy Scout Hut, re- purchased and the beginnings of maining there until the move to improvements to the print shop were being made.

The year 1946 also marked the beginning of documentary film then head of the motion picture aboard missile ships equipped with vice which might be interpreted as processing section of the Research Development, and Test Organization, obtained two cameramen and started the production of color film

Bomb Directors

bomb directors from bomb sights.

ing bomb directors began before

there was a Station, when Eugens

Cooper at Franklin Institute, Dr.

McLean and Joe Hibbs at the Bu-

reau of Standards, and Henry Swift,

A. G. Hoyem, L. E. Ward, and Rob-

ert B. Allen at Iowa University were

In 1945, air-to-air fire-control was

a problem largely unsolved. By 1955.

AOD had provided four solutions.

Most outstanding of its programs

hand constructed by AOD and the

Engineering Department when these

two departments were in their ear-

ly years of existence. Since then,

it would be impossible, in one short

article, to describe the significant

contributions of all the departments

at NOTS which perfected the Side-

winder until it became operational

THE ROCKETEER

OFFICIAL WEEKLY PUBLICATION

of the U.S. NAVAL ORDNANCE

TEST STATION

China Lake, Calif.

Captain W. W. Hollister, USN

Station Commander

R. L. Kearney, PH3, R. L. Lyles, PH3

Art Illustration by Technical Information

PASADENA

bombardiers.

in the fleet.

The first Sidewinde

AOD and its Bomb Directors were

Progress Is Aviation Ordnance Slogan

By Virginia Spafford

Aviation Ordnance Department's Paul Flahive. slogan is "For Progress, Look to AOD." This, of course, means progancestor organizations and have ress in the fields of research, development, testing, and evaluation contributed much to developing of aviation ordnance. AOD's role in developing and test-

A-sample of its accomplishments include: Aircraft Fire-Control Systems Mk 8. Mk 16. and EX-16: SETS ASB-7 and 8; Bomb Director Guided Missiles SARAH and SIDE-

Duane Mack of AOD. He was part June 18, 1951, has been engaged in tactical development for the delivery of special weapons and the testing of the Navy's fastest aircraft. what is now C-Range. He remembers vividly the crude shelters, whistling winds, and "recreation" The Marine Corps Guided Missile on the desert that winter of 1943. Test Unit (MCGMTU), consisting of Today, Duane is in charge of Csix officers and forty-five men, was Range, the Special-Weapon-Delivestablished at NOTS on May 1, 1956, ery Training Range at NOTS, where for the purpose of testing and eval- fleet pilots learn toss, loft, and overuating selected guided missile sys- the-shoulder bombing maneuvers.

Young Employees The people in AOD are young-Previously, Marine personnel had the average age is a little over 32.

mobile surface-to-air missile organ- Another interesting statistic about AOD personnel is that several mar-

> vails throughout AOD has been fos-Printed weekly by Hubbard Printing, Ridge pliance with NAVEXOS P-35, Rev. Nov. 1945.

der the direction of Dr. Ward and Arts Branch.

To Mind People and Events A scanning of old Rocketeers Pfaff, security guard, wins first from 1947 to 1957 reveals these prize in safety slogan contest. J. H. Jennison miraculously escapes 1947-Cdr. H. D. Hilton assumes serious injury in train wreck. Last duties as OinC. Virginia Zaremba, piece of heavy machinery goes to ex-WAVE, and Arthur Bannister, China Lake from Foothill in conformer Navy serviceman, are mar- solidation move.

ship. Ed Sterkel selected Man of

the Year in the shops. Last ap-

prentice, G. A. Nelson, completes

training. Over a thousand people

attend hobby show.

honored at going-away party at hill completed right on schedule. China Lake on eve of departure Twenty-year awards go to Mabry for NOTS Pasadena. Van Reed, John Lee, and Fred 1948—William White is new ad- Pierce. Walter Lumpp receives madition in chemistry lab. Three chinist rating and certificate of aphundred seventy-seven loans made prenticeship. by NOTS Pasadena Credit Bureau. 1956-Julia Kinard named "Miss Arrangements completed for in- Federal Secretary." Ted Gautschi

auguration of the Navy Beneficial attends M.I.T. under Sloan Fellow-Suggestion Program at Pasadena. 1949—Patent issued to W H Christie for the VAL installed at NOTS Pasadéna Morris Dam ranges. Cyprus trees come down so

Foothill Boulevard can be widened. 1950-J. H. Jennison wins \$5,000 prize for design of all-welded tied \$50,000 San Clemente project for contest.

1951—K. H. Booty to head Design San Clemente for high velocity ings of OPERATION_POP-UP. rockets. Edward A. Davey marks fortieth year in Boy Scout work.

1952-Security officers Virgil Un derwood and Ralph Hardestry commended for bravery. Willard R. Nary and Ed Sterkel get 20-year service pins. Margaret Rau and John Cox engagement told. 1953-Robert Leard wins first-

e gold medal in shoot using 50fold rifle. D. J. Wilcox and bun Cozen are among passengers on the first Southwest Airways flight from Burbank to Inyokern. Dirk LeMair and Charles Merrill share responsibility with Central Engineering staff in designing Continuous Spiral Wrap Machine. Construction work on 59 projects performed at total cost of \$1,017,

198.94 and inch ourse. England where he represented NOTS in symposium. Sgt. Henry

GLENN BLOWLUS, of UOD, hired in at

CalTech on V.J. Day.

Prominent in his mem-

ory is the informality

And the VAL was

just in the planning

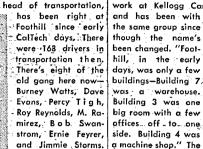
stages then, he adds.

where the VAL is

Looking Back Memories. Of Early Days

Rubber Company—the conversion to Civil Service. From it, what do you remember? This was the question asked of some "old ' at Pasadena, some of whom are origalTech employees. By each person, ular things are remembered.

BILL AITCHISON, head of transportation,



were 168 drivers in been changed. "Foottransportation then, hill, in the early There's eight of the days, was only a few old gang here now- buildings-Building 7 Burney Watts, Dave was a warehouse. Evans, Percy Tigh, Roy Reynolds, M. Rabig room with a few mirez, Bob Swan- offices off-to-one strom, Ernie Feyrer, side. Building 4 was and Jimmie Storms. a machine shop." The CATHY WOOD, of communications, in vast changes, she marvels,

room on campus to NOTS as it is now. 46 was the receptionist at Green Street. The bus depot was in ELMER PRICE of Pasadena's Administration

ges From The Past Recall

ried. Mr. and Mrs. A. B. Poynter 1955—Consolidation move to Foot-

the lobby there, she Division, was head of the Pasadena group of says, and whole Services Department families used to in 1948. His group come down from Chi-then did all the hirna Lake. The lobby ing and related perwould be filled with sonnel work, all the kids. A BOQ was mail functions, the operated there too, TWX room, and travadding more to the el. Incidentally, Dotraffic. The OinC's reen Reddick and Jo secretary ran the Rofer ran the travel BOQ in addition to office in those days numerous other things such as buying flowers too. Helen Hahn was or the church at China Lake. She remembers in charge of the mail







nouses and weapon-assembly units to underwater weapons. were at Foothill. Firing ranges were six miles from Azusa, were the pedoes under water, a gyro shop, a runs. carpenter shop, and a paint shop. Officer in Charge of the Morris Dam project which later included the new NOTS Pasadena.

General Tire Takes Over

the various CalTech groups in 1945, it negotiated with General Tire and Rubber Company to operate the machine shops and maintain the Foothill plant. This company had previously held a contract with Calrector for Pasadena.

1957 — Public Works completes many research and development sci- Production Department was an ex- a new division of the Underwater arch highway bridge in nation-wide UOD. Carney Brewer receives Mer- accumulated technology, research not only the prototypes produced by two established headquarters at itorious Civilian award. Bennie Waldrup honored for forty years ready in the planning stage was the but inspectors were sent to the facand Production Department. UOD of service. Nation's newspapers tell Variable-Angle Launcher, a device tories of outside manufacturers to In addition, representatives of reorganized to meet goals under the story of Pasadena's Rocket- by which torpedoes could be fired trouble-shoot and help solve prob- other departments whose duties stepped-up weapons program. Gleb Assisted Torpedo (RAT). Newsmen into the water at any desired angle. lems of tolerance and quality con-Spassky tells of Island Range at witness San Clemente Island fir- Construction was completed in 1948, trol. bringing to NOTS a powerful re-

Pasadena Probes Undersea Weapons Frontier GROWTH FROM WORLD II TOLD

The U. S. Naval Ordnance Test Station at Pasadena actually came into being in July 1948. From scattered groups working on various projects, NOTS Pasadena today of the early days. is an integrated military-civilian team working onward to more and more advanced

weapons systems.

But let's begin at the beginning. Only trees and a hill At the close of World War II, groups of people were working on various projects under the direction BLANCHE REUST, of Engineering, started of the California Institute of Techwork at Kellogg Campus in February 1943 nology. There was a rocket group developing rockets and testing them in firings in Eaton Canyon. There was a torpedo group at 1070 Green

THE ROCKETEER

Street. There was an Inyokern Range Operations group. There was a campus group that worked in the Kellogg building on the CalTech ampus.

With the close of World War II the Office of Scientific Research and Development, which had financed the crash programs at Cal-Tech, was disbanded and CalTech felt that it should not continue

s when the Navy took over. Navy Takes Over When the responsibility for rockt and torpedo development was tions transferred to NOTS, the various and widely scattered groups were

Morris Dam. Instrument shops and Laboratory was founded to test dy- to 1300. Now they were distributed offices were at Green Street. Ware- namic loading materials that go in- between Green Street, Foothill, Mor-

When NOTS assumed control of viously need a contract with Cal-Tech for rocket production. There shops, and foundry, simplified meth-is consequently a period in the his is consequently a period in the his-ods of manufacture which would was established at San Clemente tory of NOTS Pasadena when some save time and money were tried out. Island, sixty miles off the California people were working for the Navy New light-weight metals—magne- coast. but were actually in the employ of General Tire. Most of these people worked at Foothill, and most of them were eventually converted to Civil Service status and employed

New light-weight metals — magnesium and titanium — were experimented with for ordnance components. Plastics and other nonmetals tion movement changed the pattern of Pasadena operations. The Design metals — were made and Production Department was discontinuous coast. by NOTS. The coordinator was William H. Saylor, later Associate Di- with the welding of rocket tubes in vided three ways—into a new Engi-

NOTS inherited from CalTech entists and engineers in addition to tensive inspection division, where Ordnance Department. The first tools, and development facilities. Al- the Station were carefully checked, China Lake. The third remained at



weapon development work for the DEDICATION-Ceremonies mark the conversion from General Tire and Navy in the postwar period. This Rubber Company to Civil Service operations in July 1948 at Foothill.

search tool for testing torpedo wa- pedoes were propelled while highter entry under controlled condi-speed cameras made split-second

Variable-Angle Launcher

transferred, not only for the pur- tion of the Variable-Angle Launch- and the Variable-Pressure, Variapose of operating test ranges, but er is typical of the efforts put forth ble-Angle Tank was the result. o serve as a nucleus for the growth in the early days of NOTS Pasa- These were busy years at NOTS f the Research and Development dena activity. Before actual protoand Test Organization which was type weapons could be designed and ferred to the Navy Cviil Service to be headed by Dr. L. T. E. Thomp- built, facilities and specialized in- from the General Tire and Rubber on, later Technical Director for the strumentation had to be acquired Company. By 1951, partly due to and perfected. A Hydroballistics the rapid development of the Un-At the time of the transfer, fa- Laboratory was established to study derwater Ordnance and the Design ilities were located in Pasadena at the performances of service torpe- and Production Departments, and 030 and 1070 East Green Street, at does at small scale and under con- partly as a result of the Korean Foothill, in Eaton Canyon, and at trolled conditions. A Structures crisis, the number of employees rose

The Hydrodynamic Simulator was tories—a new installation in the at Eaton Canyon. At Morris Dam, one of the major accomplishments former Vista del Arroyo Hotel, of this era. Begun in 1944, complet- leased from the Army. Fixed-Angle Launcher, the only ex- ed in 1948, and continuously imsting facility for the launching of proved since, the mission of the the Green Street building; moving full-scale torpedoes under controlled Simulator is to subject torpedoes vans and Navy trucks carted files conditions, a sound house for the re- mechanically to the same condi- and desks and drafting tables to cording of data transmitted by tor- tions they would encounter in sea Foothill and to Thompson Labora-

Although the development of un-Commander W. H. Keighley was derwater ordnance was one of the principal reasons for the establish- entists and engineers at NOTS had ment of a Pasadena activity of progressed beyond the design stage NOTS, another important mission and complete weapons were emergwas being fulfilled. The Design and ing. The need for sea ranges where Production Department, now called ready-to-go torpedoes could be test-Engineering Department, was es- ed was apparent. Morris Dam fatablished in 1949 to see that the cilities were adequate for simupreliminary designs for rockets, tor- lated firings, but the weapons takpedoes, and guided missiles were ing shape needed to be tested in adaptable to manufacture. In the ex- | Fleet environments. A test range

an effort to replace extrusion. Also a part of the Design and nical Information Department, and

Scale Models Used

was built, into which model tor- and public works people.

records of their behavior at water entry. The matter of atmospheric The development and construct pressure posed a problem, however,

Pasadena. In 1948, 430 people transris Dam, and Thompson Labora-

In 1952, it was decided to vacate

Sea Range Established By this time, the work of the sci-

neering Department, a new Tech-

at China Lake retained their Pasadena offices - source inspectors, Beginning with a group at Cal- purchasing agents, representatives Tech during the war, the idea of of the weapons planning group inbuilding small-scale models of rock- volved in the underwater ordnance ets and torpedoes for testing in program, the patent division, induswind tunnels, water tunnels and trial planners, a documentary film tanks was fostered. An open tank group, plus the necessary personnel

Officers-In-Charge

Officer in Charge of the Morris Dam project which later included the new NOTS Pasadena was Cdr. W. H. Keighley. Others to hold this position through the years include: ... April 1947-July 1948 Cdr. H. D. Hilton July 1948-January/1952 Cdr. W. A. Hasler ___ January 1952-January 1953 Cdr. A. S. Goodfellow Cdr. M. M. Cain, Jr. ____ January 1953-April-1953 Cdr. R. F. Sellars April 1953-June 1954 Cdr. R. A. Thompson June 1954-September 1954 Capt. W. T. Groner September 1954-September 1956. Cdr. J. J. O'Brien if wat sanis branc. September 1956-April 1958. LCdr. W. H. Robinson, Jr. Wath Lead Sapril 1958-June 1958 Cdr. C. J. Beers antisagali sal | -nas asisab orjune 1958-Present

GROWTH THRU THE YEARS KOREAN ACTION 1951 -EXPANDED OPERATION TOTHOMPSON LABORATORY LONG BEACH STAGING CONSOLIDATION NOTS PASADENA

(Continued from Page 2)

First Reparts

the years to come.

as the name of an independent post office and thereby ended the designation of the Station 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 at the Pasadena Annex on May 7. This Launcher is a \$2,000,000 test facility for studying water-entry problems of tor- the development and growth of the pedoes and other underwater missiles.

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

From 1948-1951 about 1000 family dwellings were added, as well as dormitories and trailer spaces to provide more housing for the ever increasing populace.

The NOTS-developed RAM, an antitank rocket, was significantly seven Quonset huts, 16 teachers, utilized during the Korean conflict against enemy tanks. Fired from 365 students, makeshift furniture aircraft and capable of penetrating the heaviest armor, RAM was de- and a \$65,030 budget-to the present veloped and delivered to Korea in only twenty-six days.

Two new ranges were added in 1951. One of them, T-Range, was tary schools with one presently under construction, the high school, opened in January for rocket proof firing. The other, K-3 Range, was 2943 pupils, 120 teachers and opened in March for use in cross-wind rocket firings. The Projectile over a million and a half dollars Range, at Randsburg Wash, 25 miles southeast of the NOTS' head- budgeted for the 1958-59 school quarters, was opened during ceremonies on May 16, 1952. This Range, year, covering 320 square miles and including countless test facilities, greatly While the Quonset huts did serve broadened the scope of the test and evaluation work accomplished here. the purpose, their oval construc-

One of the few such facilities in the entire country was made tion left much to be desired insofar available to NOTS technical people in 1953 with the opening of the Thompson Aeroballistics Laboratory named for the Station, first Thompson Aeroballistics Laboratory, named for the Station's first ed. On the morning of January 3, Technical Director. It provides for aerodynamic research and develop- 1945, fifty new pupils awaited first- construction project, in 1944-1945, the oversize Quonset hut was remodelment work with models of rockets and other ordnance items. Author- time enrollment. During the 1944- ed in 1947, becoming the Station's first Chapel. With the completion of ized in 1945, the Lab was not dedicated until November, 1956, al- 45 term, the year of the Station's the All-Faith Chapel last year, the hut became "The RAFT," Recreation though its facilities had been in use for several years.

Television came to China Lake in 1953 upon completion of the 777 children entered the school Laurel Mountain Repeater Station, the only one of its kind in the while 540 left. A constant enrollnation. Community recreation activities were enhanced in 1954 with the completion of the new Community Center. the completion of the new Community Center.

Dr. Wm. B. McLean assumed responsibilities as the Station's Technical Director in April, 1954.

Completed in mid-1954 was the Supersonic Naval Ordnance Research Track-SNORT-used in captive testing of ordnance items. SNORT recently gained further acclaim with the development of tember, 1945, and the one existing need for providing a satisfying swimming pool, and the library. RAPEC (Rocket Assisted Personnel Ejection Catapult), the ejection seat capable of propelling pilots 225 feet into the air from their lowflying craft, thus saving lives of jet pilots faced with low-altitude crash emergencies.

G-4 Range, for high-speed terminal ballistic studies with rockets were added as the need for them come a long way in satisfying these reation activities—the existing poland similar ordnance, was opened in December, 1954, and in Feb- arose. By 1948 there were four per- needs. ruary, 1955, the move was completed from the temporary G-1 to manent and a few temporary buildthe 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. and federal funds.

During the last three years, NOTS, concerned little with construc- Pupils first entered Groves was not much of a problem. Occa- group, a Photography Club, a Chortion, has helped in the nation's giant strides toward more effective Street School in 1948, and in 1950, sionally they found time for recra- al Society, small metal workers and military weapons.

In mid-1956, development of the 19-round Mighty Mouse Rocket erational. Vieweg and Richmond they travelled a long way for it. bridge club, and Ski Fans Launcher was announced. Two military units joined NOTS during Schools were occupied in 1952. The That is, unless they went to the were active. this year. The Marine Corps Guided Missile Test Unit was activated to test and evaluate selected guided missiles systems and components pletion of Murray School is set for theatre. People in the front rows tor and participation activity in for the Corps and to assist NOTS in evaluation of the Terrier missile. September, 1959. MCGMTU continued the work begun by the 1st Terrier SAM Bat- Junior high school students still tables. The view was somewhat ob- attraction. Some of the best teams talion. Air Development Squadron 5 (VX-5), the Navy's top test attend classes on the High School structed by the posts that held of Central and Southern California squadron, arrived in July. C-Special Test Range, known as Charlie campus. Upon completion of the the roof up. But, they recollect, the played the NOTS All-Star team. At-Range, affords development of special weapon delivery techniques and new Sherman E. Burroughs High movies were good and they didn't tendance would hit the 3,000 mark. general evaluation of ordnance items or components. It is here, at Charlie Range that VX-5 has made themselves more roll because the 1959-60 school year, the present In those da Charlie Range, that VX-5 has made themselves more well known than the 1959-60 school plant will be devoted er on a do-it-yourself basis. Some da League. Softball was not limited

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

Entirely developed at China Lake was Sidewinder, air-to-air guided school building came in November, back riding, and encounters with men's teams. missile, originally conceived by Dr. Wm. B. McLean, Technical Director, 1945, while yet-to-be-completed con- Sidewinders. who, in December, 1956, received a \$25,000 superior accomplishment struction operations were being finaward the highest award ever made by the Covening in the light of the jurisdiction of the award, the highest award ever made by the Government in recognition | Isned. Under the jurisdiction of the Kern County Union High School of a few homes, a grocery store, a Capacity crowds gathered for these of an employee's superior service. Sidewinder became operational with and Junior College District, 460 couple of gas stations, and a Post outdoor matches. the fleet in mid-1956, and has since been adopted by the U. S. Air Force. ninth through twelfth grade stu-Office. When folks wanted to dine

Early in 1957, the Navy announced development of the 5" high-dents had enrolled, with 120 living somewhere other than the mess With the more recent installation velocity missile, Zuni, which made obsolete the slower "Holy Moses," off the limits of the Station. There hall, they drove to Trona, the of the TV booster station, lighted used in World War II and during the Korean conflict.

Ground-breaking ceremonies were held for the \$3,500,000 Naval \$122,360 budget, provided jointly by Lone Pine. Air Facility Hangar on December 30, 1957. This is the largest construction project on the Station in the last nine wars.

The Federal Government and the Station in the last nine wars.

State of California.

By 1944, the need for more reconniced and Goil Course, like station facilities was recognized.

By 1944, the need for more reconniced and Goil Course, like station facilities was recognized. struction project on the Station in the last nine years.

On February 14, 1958, RAT (Rocket-Assisted Torpedo) was un- pils, instructed by 42 teachers un- picnics and outdoor dances every such as concert series, foreign films, veiled. Developed by NOTS Pasadena personnel RAT greatly mini-der a half-million-dollar budget. mizes the effect of enemy submarines.

In fifteen years, the Naval Ordnance Test Station has grown from E. Burroughs High School was laid was provided; consisting of a "small vice organizations." a desert wasteland to a community of some 12,000 people with recrea- September 6, 1958. To be completed library," a ping pong table, card This year has seen the opening tional, educational and other activities almost as well developed as those in much larger cities. China Lake is a modern community, a friendly one and a unique one. Built for the sole purpose of weapons. friendly one and a unique one. Built for the sole purpose of weapons students. With its final completion tion Hut and an Enlisted Men's clubs and organizations has swoldevelopment, China Lake is a highly integrated city of highly intelli- date yet unset, the new secondary Recreation Facility were establish- lengto well over 160-everything gent and highly trained people. Its history, like itself, is a unique one, school will eventually include faci- ed. and one that could scarcely be covered adequately in this short account. Ities adequate for 1,500 students. | By 1945, recreation facilities both societies.

cal Services Department was des- Engineering Department.

China Lake School **Plants Unparalleled**

most modern of educational facilities in 1958, development and growth of elementary and secondary schools at China Lake parallels entire Naval Ordnance Test Sta-

Prior to 1943, pupils in the elementary grades attended classes in Ridgecrest; high school students traveled to Randsburg and Trona. Our present school system has

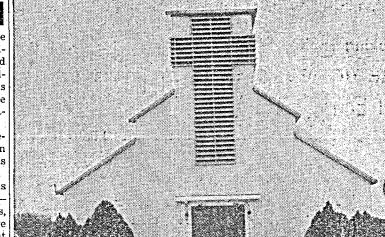
evolved from its first facilitiesplants, consisting of five elemen-

great construction boom, a total of ment of around 500 pupils was months of the term.

School District Formed The China Lake Elementary

Ordnance Test Station.

High School Occupied were 22 teachers working with a Homestead, the "Y," Kernville, or ball fields, club buildings, Com-



"OLD MOVIE HUT"-Dances, school proms and parties, weddings, church services, Sunday schools, Boy and Girl Scout affairs, flower shows, nursery school, club meetings, lectures and movies—this hut of many uses keeps well secrets of NOTS' past. Built as a part of the first and Fun Time Club for teen-agers.

School District was organized prior were fired in November, 1943, on the Station then boasted were the to the beginning of classes in Sep- the dry bottom of China Lake, the gymnasium, a bowling alley, a school was named for Captain community life and leisure time In 1946, the first joint meeting of Sherman E. Burroughs, USN, first activities for Station employees the Navy-Civilian Recreation Councommanding officer of the Naval has existed. Looking back at the cil was held. These joint meetings "good old days" at the Station, you were held to facilitate and pro-Additional elementary schools realize the recreation program has mote integrated Navy-Civilian rec-

ings in service. Twenty-nine teach- hands," many employees worked time organized many hobby and ers and six staff people manned the from 10 to 15 hours a day at the special interest groups. For inschools, utilizing \$180,000 of state accelerated NOTS project in those stance, the Rockhounds, the Checkthe Rowe Street School became op- tion and, gas rationing permitting, silver smiths, an archery Rowe School was then disestablish- movie. After the evening meal, the ed, to be reactivated in 1955. Com- mess hall was converted into a

entirely to seventh and eighth of the old-timers still chuckle as to men in those days. Women's Occupancy of the present high cues, jackrabbit hunting, horse- but very nearly beat some of the

Early Ridgecrest

Registration, now, shows 875 pu- During the summer of that year, to us with sophisticated programs Friday night were held at Sand- Yacht Club, and chapters of num-Cornerstone for the new Sherman, quist Spa. A civilian recreation hut erous National fraternal and ser-

Since the first aircraft rockets greatly increased. Among facilities

Saturday, November 8, 1958

icy of Station recreation today! According to some of the "old Station residents had by this

wartime years and leisure time er and Chess Club, a Ceramics

Sports Emphasized Sports reigned as the star spectasat on benches; those in back on the 40's with softball the major In those days recreation was rath- hardball team won the Sierra Nevathey talk about their turtle rac- amateur and professional teams es, amateur shows, burro barbe- would not only dazzle the crowds

Boxing was also highly successful with bouts arranged with teams At that time, Ridgecrest consisted from Bakersfield and Los Angeles.

High Level Entertainment

munity Center and Golf Course, life

from calorie clubs to speleological

Engineering Department Determines Producibility of Concepts In 1948, an outgrowth of Techni-, engineers and specialists from the 450 people. It operates tools and sembled into gyros and servome-, missile components to sample

ignated as the Design and Produc- A successful weapon must be pro- 000,000, expending annually \$4,000,tion Departments at China Lake ducible in quantity and require a 000 on labor, materials and con-improvise new techniques and and Pasadena. Both groups were minimum of the nation's supply of tracts. consolidated in 1954 at China Lake. critical materials and skills. A design engineer with an idea, This producibility is an import partment will find teams of eng- often need to be devolped. a slide rule and a drafting board, ant concern of this Department ineers and technicians, machinists. In the Engineering Evaluation knowledge furnished to industry and a new weapon concept is born where talents and facilities are for and model makers engaged in pro- Branch, professional personnel for pilot and full-scale production but to help guide this new weapon from the initial drawing board signs, for ultimate; full-scale; proprocesses, Lathes and milling maprocesses, Lathes and milling stage to its acceptance and final duction by, industry, if y all its linear calls upon the production with a personnel complement of most minute parts are being as-

equipment valued in excess of \$5,- chanisms. The teams are daily required to and hangars.

methods to produce pilot models

concrete to be used for runw

The "end-products" of this team A visitor walking through the defor which new jigs and fixtures
ments, procedures, designs and

Propulsion Laboratories Create New Explosives, Propellants led to other similar productions

In January, 1947, the first sys-Early in 1944 the design, for what tematic attempts to get NOTS project personnel to submit records Propulsion Laboratories, started to of inventions and disclosures of in- take form on the drawing boards in ventions through the information the offices of O. G. Bowen Combruary, 1947.

was the establishment of the Spec- contractors. ial Photographic Services Section in Test Department for the production of documentary films. During 1948 more formal procedures for filing patents disclosures 1944 extruding the 5" cruciform of Systems Division. were established. These resulted in JPN propellant. In rapid succession

Research in Pasadena. In January, 1949, the information

group. Department Expands

became a separate group and the materials were purchased on a na- by the Navy's critical needs for 700 employees. In planning weaplustration, and composition funclishing Division. One of the main lishing Division was the geographical separation of its units between China Lake and Pasadena. Accordit was like operating a production line with the ends 150 miles apart.

February, 1952, was a notable China Lake Pilot Plant.

son Laboratory in Pasadena. printing, reproduction, composition, Energy Commission items. and illustration) moved from the Design and Production Depart- ple employed at both plants was in old Design and Production Depart- shutdown of Salt Wells Pilot Plant ment was the China Lake component of the Library Division. The Patent Division was transferred TID Print Shop from the Associate Technical Di-

rector's office.

The Presentations Division was the only organization that did not move almost intact from some other Station department. The function of programs coordinator for Station visitors was moved to TID from the office of the Assistant Director for Education under the Technical Director. (This function has since been transferred from TID to the Experimental Officers office.)

Documentary Films The documentary film work of the Presentations Division was started with the transfer of part of the Pasadena Training Aids and Films Branch of the Technical Publishing Division. A year later the Documentary Film Branch of the Presentations Division was expanded by the addition of the Test Department's Special Photographic Services Section.

To complete the Presentations Division, a new branch known as the Development Branch was formed in July, 1954, for the development of visual aids for lectures, Station-brochures, journal articles. and ordnance exhibits. In addition. a distribution staff was organized to take over distributing NOTS re-

At the time TID was formed, the authorized strength was 100 persons. About one-third of these were in China Lake and the others in Pasadena. Since then, most of the positions - have been shifted to China Lake.

The period from 1954 to the present has been one of relative stability in the information business at

duced. Today the China Lake Pro-

today is known as the China Lake proximately 600. group were begun. These records pany, Architects and Engineers, un- and organizational structure women of the Weapons Develop- needed. This department then and descriptions were then trans- der contract with California Insti- changed several times, and in mid ment Department are at the draw- streamlined itself and bolstered itmitted to the Los Angeles Patent tute of Technology. The prelimi- '58 the name officially became the ing boards, are feeding formulas self with new skills to meet the Branch of the Office of Naval Re- nary design was completed and the Propulsion Development Depart- into electronic machines, and are challenge of the guided missile age. search. Five were transmitted in construction of the pilot plant be- ment under the direction of Dr. gathering information from other The department quickly adapted to gan in March 1944 with Macco. Mc- Hugh W. Hunter. The Department Departments for weapons system the task of weapon system direction A major step forward in 1948 Kittrick & Morrison, as general now consists of the following divi- proposals that meet these needs. | and the department was renamed Building No. 1, which houses the Propellants Division, Test and Eval-

12-inch press was the first one to uation Division, Explosives and in the air, the know-how for that be completed. It was placed in operation on the 18th of November, sentative of the Office of Naval line and the motor loading areas.

Section was added to the main around the clock, and at such a tion Catapult. pace, that the designers were hard put to keep abreast of the rapid About two years later the library progress. Equipment, motors and energy propellants brought about Explosives Department with over sonnel complement of 220. editing, reproduction, printing, il- tionwide scale, and were flown in missiles of vastly increased thrust ons for defense, in the rapidly when necessary. By late 1946 prac- and range has led to the installa- changing world situation, an organ- hicle for space exploration; a lighttions became the Technical Pub- tically all installations as we know tion at the China Lake Propulsion ization must be dynamic and fluid weight inertial guidance system for them today were completed, includ- Laboratories of a new propellant to be abreast. The chronological air-launched guided missiles highproblems of the old Technical Publing the administration area and the development facility by the Pro- history of this Department's growth performance inertial guidance platmanning of the Salt Wells Pilot pulsion Development Department. reflects this flexibility. Plant was well underway.

ing to Charles Van Hagan, Head Institute of Technology was the the Composite Propellant Pilot development programs that placed and shore bombardment weapons of of the present Publishing Division, driving force behind the design and Plant. The conversion of buildings our nation in the forefront in the long-range capability; a long-range construction of both the China Lake | built by the AEC at the old Salt | field of small and intermediate cal-Pilot Plant and the Salt Wells Pi- Wells Pilot Plant is now nearly iber aircraft rockets. The depart- dynamics for all weapons systems— Material edited here was sent to lot Plant. Upon completion of the complete and a limited capacity for ment also became active during this these are a few of the ideas of the Pasadena for composition and art- construction he became the Head development of small rocket mo- era, along with the Underwater future. Just as the MIGHTY work, then back to China Lake for of the Explosives Department, with tors has been a reality for several Ordnance Department, in antisub- MOUSE and SIDEWINDER were offices both in Pasadena and at months.

By 1950 the total number of peo-



pulsion Laboratories employ ap-

sions: Missile Propulsion Division, Pyrotechnics Division, Process De- weapon is available at NOTS. the field of propulsion were moved velopment Division and Propulsion Whether it is a tiny 2-inch GIM to the China Lake Pilot Plant to

periodic visits to NOTS by a repre- followed the completion of the 12" Development Department has ac- are here. tively participated in the develop-In January, 1945, work began on ment and manufacture of many of the design and construction of the the nation's most important degroup (known since early 1947 as Salt Wells Pilot Plant. Architect- fense arms and weapons systems the Technical Library and Editorial Engineers were Holmes and Narver, among which are: the 2."75 Rocket, segments of NOTS-it originated as same time, a number of highly Section) was reorganized as the however design of equipment and Tiny Tim 11."75 Rocket, HPAG a section of CIT that moved to the skilled aerodynamists and ballisti-Technical Information Division installations were prepared by Cali- (High Performance Air to Ground), and put under the new Design and fornia Institute of Technology de- Weapon A, the 2."0 GIMLET pro-Production Department. At this signers. The construction work at gram, SIDEWINDER and RAPEC time the Printing and Reproduction Salt Wells Pilot Plant went on (Rocket Assisted Personnel Ejec-

Work initiated over two years ago In November, 1951, the Rocket

With this new capability NOTS is month for NOTS patent work. At | China Lake Pilot Plant was de- able to secure detailed engineering that time the Patent Branch, un- signed both for research and de- data on propellant processing and der direction of the Office of Nav- velopment work in the fields of quality control methods necessary Research, was established with explosives and propellants, as well for the development of composite Branch Head at China Lake as designed to carry out an interim propellants from raw materials to his two assistants at Thomp- production of new rockets, until finished rocket motor. The heart such time as contracts could be let of the new composite line is in In July, 1954, the Technical In- for large scale manufacture of these Building 573 where nine processformation Department was estab- weapons. Salt Wells Pilot Plant, on ing bays house the quality control lished under K. H. Robinson, the other hand, was largely devoted laboratories, small mixers, grind-The Publishing Division (editing, to the production of certain Atomic ers. distillation kettles, blenders. classifying screens, delumping equipment and small curing ovens

Building No. 575 was converted in and effecting appointment actions. ment. Also moved over from the excess of 1300. However, due to the to a large walk-in type oven where This was provided by Carl Sanpropellant may be cured at tem- didge, a detached representative of peratures ranging up to 200°F. Three walls of this building are of Long Beach, California. concrete, 4-ft. thick and constructed so that an explosion will be relieved through a blow-away roof and 79 ungraded. The first Personand the fourth wall thereby requir- nel Officer. Lt. A. M. Dean, served ing a minimum of construction to from November, 1944, until Novem-

Another interesting part of the new propellant facility is the Chem- complement grew to approximateical Engineering Pilot Plant in 19 3,000 people during 1945. The in-Building 576 where processing work crease came chiefly from transfer gredients is carried out. Here en- and torpedo projects. In one 6ineering operations such as liquids week period, 1100 people were promixing and blending, centrifuga- cessed. At the end of 1946, records ion, filtering, colloiding, and many others can be carried out in equipment of maximum versatility.

Documentary Films



Flexibility Is Keyword in Performance Of Weapons Development Assignments

"We need a better rocket, a more they became the Rocket Developintelligent guided missile, an anti- ment Department. With the rapidly submarine weapon, a simple and re- advancing weapon technology and liable vehicle for space explora- aircraft designs on the horizon in Through a series of reorganiza- tion." These are the words from the May, 1957, it became apparent that tions both the department names Navy. Crash! Rush! The men and another change of emphasis was, Whether the weapon is for use the Weapons Development Depart-

under the water, on the ground or ment.

Growth Keeps Pace

wide open spaces of the Mojave des-

gineers, ordnancemen, administra- who are conceiving, analyzing, and tors, and clerical workers and in 8 managing the development of com-Recent developments in high- years evolved into the Rockets and plete weapon systems. It has a per-

to the introduction of Weapon A will be a reality soon.

More recently, those working in LET rocket or a many-ton POLAR- help form the new China Lake Pro-During the years the Propulsion IS missile, the engineering skills pulsion Laboratory for greater emphasis on propulsion development and to add to the capability of the Although the department, as now Station in designing and developnamed, is only 1½ years old, it is ing the larger, more complex weapan outgrowth of one of the oldest on systems of the future. At the cians from the Research Departert to make and test rockets in 1943. ment joined the Department. Now, The oldtimer remembers that the the Department has a versatile department began with a few en- group of scientists and engineers

A Look Into the Future What does the future hold? A ve-Dr. Bruce H. Sage of California was culminated by the start-up of Department undertook a series of siles; submarine-launched surface marine rocket development leading only ideas 15 years ago, these ideas

Personnel Records Disclose Problems

The first recorded history of occupied ungraded positions.

the U.S. Board of Examiners at

By November, 1944, there were 137 civilians on board, 58 graded

ber or December, 1945. The Station's civilian personnel of people from the CalTech rocket show 9 people were hired and 8 lost every day.

Several personnel officers came and went during that period. At this time, the Personnel Office handled such details as security clearance, arranging for housing, operating snack bars and poker games, and made arrangements for feeding personnel at the Station's messhall for 70 cents a day. Housing cost very little since people were housed mainly in barracks and dormitories and paid 50 cents a

week for the facilities. Many strange things happened in those early pioneering days. One incident is told by Jack McLaughlin while he was acting as personnel officer in 1945. A man asked if he would be paid for the time spent processing in. When told that ne would, he spent one day processing in, then quit, demanding a day's pay for his time.

During the first portion of our the Station staffed; primary effort issues. was expended in recruiting and obduction in force caused a serious the treatment of their offerings. loss of personnel.

With the Korean conflict, the the Station's Personnel Department scene reversed itself, and the deshows an operational personnel sys- partment was back in the process em existed, such as it was, as early of hiring personnel. In June, 1955, as June, 1944. At that time, there the Personnel Department came to were 23 civilians, 14 of whom occu- the conclusion that the needs of the pied graded positions and 9 who Station had changed. Now that the Station's personnel requirements Primary service was recruiting had become stabilized, it was decided to reorganize the department

to provide a better service. The Station broke with the traditional form of personnel organization and formed an Operations Division whose job is to service specific departments.

To better serve the interest of the Station as a whole and to as sist in maintaining equitable treatment to all, functional Specialty Divisions were established. Since 1955 the Personnel Department has trained its personnel generalists in the fields of employment, position classification and employee management relations, so that a well rounded service may be provided to operating departments by the personnel service branches.

It is now possible for a department to call one office to obtain information and advice on all personnel matters. The specialty divisions provide advisory service for the Station as a whole and work on the extension of general policies and programs which will eventually be put into operation through the Personnel Operations Division.

Thanks Extended To Contributors

When the Rocketeer requested contributions from NOTS personnel for this issue, the response was most gratifying. So much material was received that it far exceeded the limits of this issue.

Some material had to be shortened: other material, part of which was received after press deadline, missed this issue entirely. It was decided, therefore, that some of the history, it was touch and go to keep articles should be printed in future

Appreciation is extended for the taining people to fill our many va- time spent by writers contributing cancies. In 1949, employment began to this anniversary edition, and it to stabilize somewhat; in fact, a re- is hoped that they will understand

Yesteryear's Wasteland Evolves Into Workshops for the Future

Michelson Museum **Publicly Exhibits**

Many people pass through the oratory every day, yet it seems that few pause to view the dramatic exhibit regularly on display in the istence of this exhibit. The display, more formally known as the Michelson Museum, is a prized collection of the effects of Albert A. Michel-

Professor Michelson, who in 1907 al figures in American science" by Branch of the Technical Information Department at NOTS, is the author of "Albert A. Michelson," a book-length biography published in September, 1958, by Julian Messner, Inc., of New York, Copies of Wilson's book are available in all three Station libraries. The biography describes many events and accomplishments of the Navy scientist's life that are directly connected with some of the exhibits in the

Museum Exhibits The museum display includes some of Dr. Michelson's laboratory equipment, papers, letters, medals, and awards. The University of Chicago, the U.S. Naval Observatory, the Mount Wilson Observatory, and friends of Michelson have made contributions to the museum.

The Mount Wilson Observatory has lent the museum its model of the Hooker telescope with the Michelson Stellar Interferometer. Professor Michelson was the first to determine the diameter of a star by direct measurement. The star, Betelgeuse, was measured, and its diameter of 260 million miles was reported to the American Physical Society in 1920.

museum the quarter-scale model of these weapons. the Michelson-Morley Ether Drift

(Continued on Page 5)

NOTS Rocketeer Reflects Progress

In observance of the U.S. Naval the future.

quality of paper stock and the newly-designed flag (name plate) by Charles Nardone of the Graphic Arts Branch of Technical Information Dept.

Beginning as a typed, mimeographed sheet, started in January, original 900. 1944, by volunteer secretaries, the informal publication was distributed weekly as "The N.O.T.S. News."

In April, 1945, it was felt that the Station had arrived sufficiently to warrant a professional publication. A "name the magazine" contest was held offering a \$25 defense bond as the winning prize. Cdr. Gordon N. Lantz, Supply Officer, won the prize for submitting the publication's present name, N.O.T.S. "Rocketeer."

The first Rocketeer edition was published on May 10, 1945, once a month by a full-fledged staff of writers and an Editor-in-Chief. On August 27, 1945, the publication became a semi-monthly periodical and was printed commercially for the first time. On March 12, 1946, the Rocketeer became a weekly

NOTS, China Lake -- Desert Turned Frontierland for Airborne Rockets and Missiles (Editor's Note: The reader, particularly the "old timer," is invited

Priceless Collection to submit facts and anedotes regarding the historical accuracy of this article. Source material often proved inadequate to verify authenticity of certain historical dates and events. In many instances, no records were available—even the date of the 1949 "big snow" differed, as south entrance of Michelson Lab- did the time to complete and deliver RAM to Korea:)

Prior to autumn, 1943, the area now within the boundaries of the Naval Ordnance Test Station was known only to the few hardy proslobby. Other Station residents, pectors who traversed the Indian Wells Valley to and from their mines many of whom never have occasion, and to the 26 who bravely filed homestead claims and subsequently to visit the laboratory, are only raised crops which they couldn't sell because of the lack of adequate dimly-if at all-aware of the ex- transportation between here and the nearest town, Mojave.

Conceived from World War II's vital need for rocket-powered weapons in which the United States trailed a poor fourth to Germany, Russia and England, the Navy's Office of Scientific Research and Development instituted such a program, administered until April, 1945 by the California Institute of Technology. The CalTech program was became the first American Nobel headed by Dr. C. C. Lauritsen, a World War I rocket specialist who Prize winner in Physics, has been returned to this country from England to assume responsibility for called "one of the most inspiration- America's rocketry projects, upon request of the Government.

Serving primarily during the war years as an adjunct to CIT's John H. Wilson, Jr. (Mr. Wilson, rocket development and testing, the NOTS' mission was that of research, former head of the Editorial development and testing of weapons, with particular emphasis on avia-



RECREATION HUT-A bookcase library; a card table; and ping-pong equipment, all housed under one roof. This was recreation?

Mount Wilson has also lent the tion ordnance, and additionally, to furnish primary training in the use

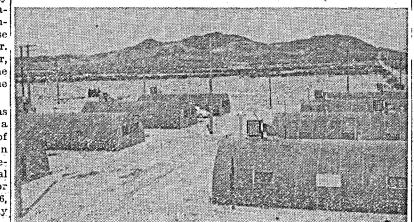
Development and testing undertaken by the Institute from 1939 Equipment. This model floats on a to 1942 was accomplished in the populated Pasadena area. In 1942, pool of mercury as did the origin- CalTech's test operations were moved to Goldstone Dry Lake, near al equipment. The Michelson-Morley Barstow, where the first actual rocket firing was on July 2. A rocketdriven retroacting depth-charge, it was known as a "retro-bomb."

Goldstone's area soon proved inadequate, and on November 8, 1943, the Naval Ordnance Test Station, Inyokern, was established by directive of Secretary of the Navy Frank Knox as an activity of the 11th Naval District under cognizance of the Bureau of Ordnance. Nine hundred square miles of level and comparatively mountainous desert were set aside for the permanent Navy rocket and related weapons re-Ordnance Test Station's 15th Anni- search facility. Most of this land was public domain; a small part versary, today's special edition of was owned by the State of California; another small parcel was under Army jurisdiction and an even smaller portion was privately owned by homesteaders. The portion under Army responsibility was MESS HALL-Multi-purpose hut served as mess hall, movie hut, and all-In a small way, the Station's pro- the Inyokern Airport—Harvey Field—which later became the first acgress is reflected in the improved tual operations point of the NOTS organization.

Arrangements were made to transfer or trade the 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 square miles of land was added to the

The first construction was authorized in November, 1943, calling for \$160,000 for the erection of temporary housing at the air field and for an ordnance test area on the China Lake site, which was to include barracks, mess halls, storage facilities, shop buildings, recreation huts,





OLDEST BUILDING-The training building at the corner of Parsons Road and Halsey Avenue is one of the oldest buildings at China Lake.

dispensary, spotting towers and some roads.

By winter of 1943, the first rockets, 3.5" 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 F.A.W. Squadron 14, an experimental squadron assigned to the rocket development program.

Still in its infancy, the Station, on February 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 months later this contract was terminated by the Government, 93% 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

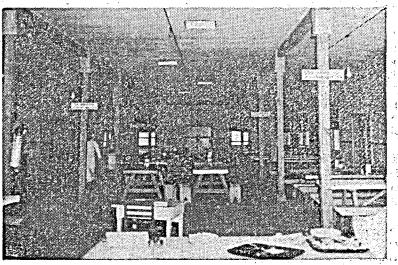
At the beginning of construction, no labor force was available; therefore, a nation-wide recruitment program was established. Some 4,500 workers traveled to NOTS via government-paid transportation,: helping to swell the ranks of construction crews. The turnover was tremendous—during the first year, over 24,000 people were hired, yet the maximum working at any one time was 7,000.

Those hardy souls surviving the demoralizing effects of stinging sandstorms, blistering heat and the most primitive of civilized living eccommodations laugh about the "old days" now.

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

Another states, "Unless you had your own trailer, you had family. Wives lived in the women's quarters; husbands stayed in the men's dorms and the kids, well, they stayed with grandma!"

A third old-timer tells of a sandstorm in mid-summer. Trenches



hands meeting place. Front rows used benches, back rows sat on tables.

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

First administrative offices of the embryonic Naval Ordnance Test Station was the Quonset hut at Harvey Field, jointly occupied by Station Commander Capt. S. E. Burroughs, USN, and the Executive and Experimental Officers, as both living and working quarters.

Soon after the Station was established, a need was determined for technical aviation facilities and equipment. In December, 1943, Aviation Ordnance Development Group 1 was commissioned at Naval Air Station, San Diego, with LCdr. T. F. Pollock, USN, as Officer-in-Charge. The combined mission of the Group was to provide technical aviation facilities and equipment for development of aviation ordnance, to flight test such ordnance, armament and experimental projects and to provide aircraft utility services. First based at Harvey Field, the unit, eight months later, moved to their permanent facilities-Armitage Field on the China Lake site.

In fulfillment of its secondary mission of training, NOTS' first twoweeks course covering instruction on the latest-rockets, their fuzes and handling procedures began August 25, 1944. Studying the 5" HVAR ("Holy Moses") and the 11.75"AR ("Tiny Tim"); some 150 officer and enlisted personnel received training before the course was decommissioned in May, 1945.

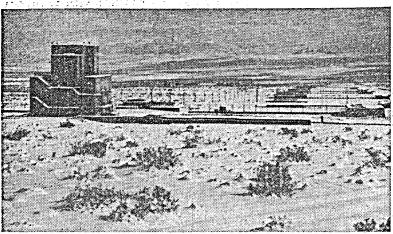
CalTech's work was primarily concerned with the development and Except for occasional variations in size, its style has remained con-Men occupied one side; women the other. Children lived with grandma. of the Bureau of Ordnance, it was also determined that the Navy, in

order to house the expected thousands of personnel needed, would virtually create a city. Between April and October, 1945, the Station took over most of the CalTech projects, and homes, schools, shopping facilities, Michelson Lab and other permanent buildings rose to transform the sert outpost into a community with a single purpose—to provide

Its new concrete shining in the intense sunlight, Michelson Laboratory was dedicated May 8, 1948. It is the focal point of NOTS' test activity. Built at a cost of \$10,400,000, it now contains 10.3 acres of floor space utilized by scientists, engineers and shop personnel, and containing scientific equipment valued at over \$10,000,000, making this the largest, most completely equipped institution of its kind in

It is composed of 16 units, joined in such a way as to minimize possible earthquake damage. The added expense involved was repaid in a 5-minute span in 1953 when the nearby Bear Mountain Fault slipped, leaving neighboring Tehachapi and Arvin in shambles.

Presently housed in this gigantic laboratory are five departmental organizations of the Naval Ordnance Test Station. Among them the Test Department whose major function is to develop the means for



DESERT WINTER WONDERLAND—The Rocketeer receives more in quiries about the "big snow of '49" than any other Station event.

testing, and to test propellants, explosives and products of other Department's research and developmental efforts. The aviation Ordnance Department, the Weapons Development Department, the Research Department and the Engineering Department also occupy the huge

Pasadena, once the only facility in the United States devoted to y rocket, aviation ordnance and underwater weapons development. snow primarily concerned with underwater weapons, such as torpedoes, and the recently tested Polaris, the submarine-to-land missile, proving for the Navy that the missile could be airborne after an underwater launching.

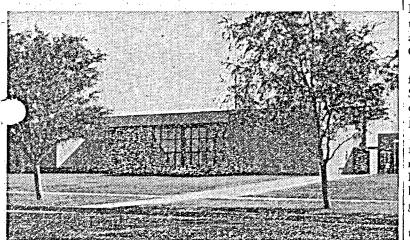
When the Navy took over weapons development operations from CalTech in 1945, the existing scattered groups were combined into the single unit of NOTS, under the direction of Dr. L. T. E. Thompson, who later became the first Technical Director of the Station. Some Pasadena projects were taken over by the General Tire and Rubber Company, 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 now number

The Pasadena Annex of the Naval Ordnance Test Station consists today of the administrative Foothill Plant, Morris Dam Test Range, operations assumed an amazing urgency. In March, 1945, the K-2 Long Beach Sea Range and the San Clemente Island Sea Range, all con- Range was opened for use in rocket terminal ballistics studies. ducting research, developmental and test activity concerning all phases

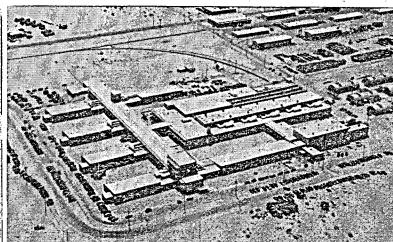
During late 1943 and early 1944, temporary G-1 and G-2 ranges, program of the Bureau of Ordnance. for ground firings of rockets, had been laid out, and the first rockets were fired on G-2 Range March 30, 1944. By the middle of April temporary structures in December, 1944.

Launchers, range buildings, and other test facilities were added at meantime, the permanent ranges were begun, and in 1945, the first experimental work in the field of explosives. testing for a guided missile program was undertaken with the result

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



MEETING PLACE FOR ALL—This modern Community Center building is the hub for community activities and official Station conferences.



of the world's most complete research and development centers.

ings to carry out the mission of the Station, in 1944 and 1945, a number of homes were begun. In a short time, 1070 units—duplexes, apart- sketches. In a special display case ment buildings, senior and junior officer's quarters, dormitories and are the original citations and medprefabricated housing-rose to contain both construction people and als awarded Dr. Michelson. Inscientists, engineers and other personnel engaged in rocket and missile cluded are the medal and parch-

The first elementary school at China Lake was opened in eight Prize. 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 traveled to schools in Ridgecrest, Trona, Randsburg and Jorefraction, and interference of hannesburg, up to 26 miles from the Station and 34 miles from Inyo- light to his studies are still in use, kern. The Sherman E. Burroughs High School was begun in 1945, and unchanged, today. in November of that year, classes were started.

On January 30, 1945, a contract was negotiated for the con- that accurately and precisely restruction of the Salt Wells Pilot Plant. During this month the perma-cords minute and nearly instannent Naval Dispensary was commissioned, then responsible for full taneous pressure changes has been medical and hospital care of both Civil Service and CalTech employees, as the best for many specialized 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 machine, a 10-inch grating ruled occupied. Last houses completed were the new Hill Duplexes in 1952. on speculum metal, had been ruled With the vital, immediate construction now almost finished, testing on a heavier piece, it would be a



NEW BUILDING-One of the newer buildings on the Station is the modern Chief Petty Officers Club located on Lauritsen Road.

Then, in April, the Naval Ordnance Test Station was established as an independent activity to carry out the research and development

Since 1945, there has been continuing stress on conducting a fully Command Inherits integrated weapon development program, utilizing the best tools and Overflow Divisions temporary towers had been constructed along the boundaries of the ranges most competent engineering and scientific personnel available. Because so that spotting of impacts could begin, and on May 1, spotting ac- of this emphasis, NOTS has been able to make significant contributions tually began on G-1 Range. Permanent spotting towers replaced the to the nation's defense arsenal and has prepared itself to undertake in- by Commander S. W. Mitchell, and creasingly more complex weapon development tasks.

Ground firings of aviation ordnance items was begun in mid- ment Staff, controls a varied numthese temporary ranges to meet the Station's immediate needs. In the 1945. About this time, too, the Salt Wells Pilot Plant was opened for ber of Station support groups.

Marines, for security, came to NOTS on July 17, and on July 31, partment is the administration of that G-1 Range became the area for testing of guided missiles rather the Station's allowance of Naval personnel was fixed at 149 officers Navy enlisted personnel and the and 1,838 enlisted men and women. Present strength of all military provides religious, legal, communipersonnel is 150 officers and 1161 enlisted men.

The NOTS community began to be a real community. A nursery maintains fire protection, safety, seschool was opened in August, 1945; shopping facilities at Bennington curity of personnel and property, Plaza were nearly as complete as they are today; in 1947, the old and supervises the publication of theater building was remodeled to become a small chapel, utilized by the Rocketeer. all faiths until November, 1957, when the new \$350,000 All-Faith Other areas coming under the Chapel was dedicated.

More schools were built as the need for them arose. There are now tration are: the Commissioned Offive completed elementary units and one more to be finished by next ficers Mess; the Travel Branch, Mail, Files, and Records Control September; the new Sherman E. Burroughs High School will also be Branch, administers military and completed in time for the opening of the 1959-60 school year, with civilian recreation programs, and junior high students to then occupy the present high school plant, coordinates ground electronic com-

In 1946 the Bureau of Ordnance approved an operational charter munications for technical operafor NOTS stating the principle that directional control of the ord- tions. nance development programs would be the job of a civilian Technical Command Administration, first Director. At the same time it provided for close collaboration by members of the military service and the civilian technical staff in providing formed during 1949 when the States of the military service and the civilian technical staff in providing from had grown to the point that guidelines for successful weapons programs.

Later that same year, B-4 Range was put into operation for cap-necessary. Previous to this time, e ordnance testing.

China Lake became the official name of the NOTS community on January 16, 1948, when the Post Office Department designated it

xperiment was designed to detect lifferences between the velocity of a light ray traveling parallel to he earth's motion in space and one traveling perpendicular to the earth's motion in space. Scientists obtained negative results, providing further proof of the relativity

Michelson Papers

The museum contains large display cases filled with documents that refer to the scientific career of Professor Michelson, Included among the many letters are those from Professor H. A. Lorentz, Professor S. P. Thompson, Emil Picard, and Rear Admiral Ralph Earle, USN, then of the Bureau of Ordnance. There are letters that announce Michelson's election to the several scientific societies. In addition, there are display cases filled with collections of original manuscripts, data sheets, and

Many of the techniques used by Michelson 50 years ago to apply

An interferometer pressure gage applications. If the first diffraction grating made on Michelson's first highly valuable piece of laboratory equipment today.

Other items on exhibit indicate the versatility of Professor Michelson's talent. Two of his watercolor paintings are shown, and the manuscript of one of his original musical compositions, "Grandpa's Lullaby," is a part of the exhibit. Dr. Michelson was also an accom-

The exhibits of our Michelson Iuseum are priceless, and would ecupy a place of honor and disinction in any museum in the world. The Museum is open to all -no pass is required to enter the Michelson Laboratory lobby — 24 hours a day. NOTS people are encouraged to visit the Museum and to read Mr. Wilson's biography of

The Command Administration T. H. Kelley, head of the Depart-

Under the cognizance of the decations and information services;

headed by Cdr. George Cairnes, was a major reorganization had become most of the functions now administered by the department were duties of the Station's Executive Of-