

# NAVAL AIR IN ACTION

NAVAL operations covering the wide expanses of the Pacific reached another climax in the invasion of the Marshalls. Naval planes performed a vital mission by striking from the air at the heart of Jap defenses, before and during invasion.

These photos, taken aboard a carrier before the all-out invasion of the Marshalls began, show destruction of a *Kate*, Jap Navy torpedo bomber, foiled in its attempt to make a strike on the American flattop which had launched squadrons of planes for attacks on Kwajalein Island. Accuracy of AA fire has kept Jap approaches at a distance while Navy planes fulfill their bombing missions on the enemy.



1

AFTER COMING IN LOW, KATE PULLS AWAY TO AVOID DEADLY AA FIRE



2

BROUGHT DOWN, PLANE PLUNGES INTO DRINK, EMITS SMOKE STREAM

3

CARRIER CREWS AND U. S. SHIPS IN BACKGROUND WITNESS DRAMATIC FINALE OF EMBATTLED KATE AS EXPLOSION CHURNS UP BILLOWS OF SMOKE





## AXIS SUICIDE TRENDS

**A**LTHOUGH HARA-KIRI is a common practice among the Japanese who sanction self-destruction and consider it more honorable than being taken captive or meeting defeat in battle, until recently little has been known of prevailing suicide trends among Nazi troops. SHINTO worshippers are traditionally schooled in the art of self-eradication, but their Nordic Axis partner, the self-styled *supermen*, frown on the practice. When the Nazi suicide trend became quite pronounced, it received the recognition of German medical authorities.

Normal suicide rates in Germany and Japan have always been considerably higher than in the U. S. On the basis of 1936 figures (latest available on the Axis nations), rates were respectively: Germany 28.6 per 100,000 population; Japan 22.0, and U. S. 14.3. During 1941 and the war year 1942, U. S. rates dropped to 12.9 and 12.0 respectively. Meanwhile, the frequency of sui-

cides and the increasing trend was sufficiently high in the *Luftwaffe* to cause a medical directive to be issued, back in the days when the *Fuehrer* could still make a plausible prediction of victory for the *Reich*.

On the basis of information received it appears suicides have more than doubled. Using the total number of suicides as 100 percent, 47.6 are placed in the category of "causes which would have occurred in civilian life," revealing that 52.4 percent are service connected.

**U**SING the 1936 figures as an index, although they are probably low, this would mean *Luftwaffe* suicides had increased to nearly 60.1 per 100,000 by 1941, approximately five times the U. S. rate. Of this total, 31.5 deaths were admittedly from service connected causes, certainly a strong indication that morale among German aviation personnel is not everything that could be desired.

# SUICIDE IS LUFTWAFFE WAY OF ATTAINING 'FREEDOM FROM FEAR'

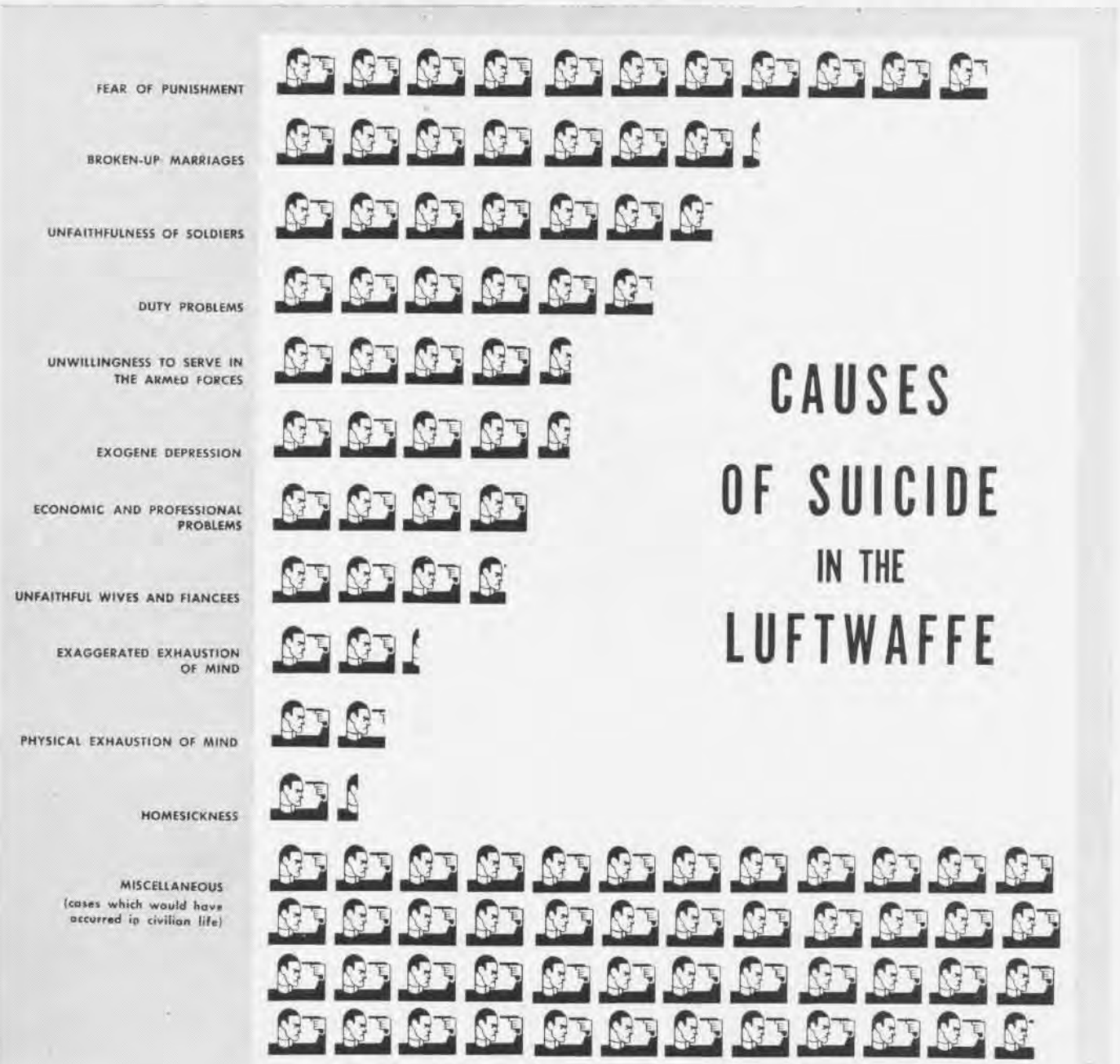
LUFTWAFFE PERSONNEL probably never heard of the *Atlantic Charter*, but according to their own report an increasing number are seeking escape from fear *via* the suicide exit. "Fear of punishment," "unwillingness to serve in the *Luftwaffe*," and "duty problems" are listed as three causes.

"War experience shows that soldiers who ordinarily possess sufficient self-control are suddenly inclined to commit suicide for trivial reasons after enduring severe physical and psychological stress, especially after heavy action," a Nazi medical treatise disclosed.

"It is known that a commander ordered a soldier to do punitive exercises in front of the company because some

coffee was found left in his field bottle on parade. This was done immediately after action in which the soldier actually distinguished himself. The soldier, who was physically exhausted and still under the impression of the fight, shot himself. This is where medical counsel is desired."

THE ADVICE GIVEN is medically sound but from a practical standpoint of doubtful military value. Unit medical officers are recommended to keep an eye on each individual man. If a man shows moody signs of a morbid nature, he is to be treated with utmost tact and sympathy. His comrades are likewise expected to aid. This sympathetic attitude is obviously impracticable in the armed forces and offers a free hand to would-be shirkers. The fact that in spite of these important considerations the document has been recommended for serious study and attention, seems to indicate suicide among *Luftwaffe* personnel had already reached considerable—though in retrospect not alarming—proportions even before U. S. entry into the war.



Nazi News CHART



# GRAMPAW PETTIBONE

## Physical Injuries in Accidents

Data are being compiled on aircraft accidents, correlating material damages with physical injuries sustained by flight personnel. This study is being made in the interest of flight safety, looking to changes in design of aircraft and to the development of additional safety equipment, as may be indicated. ▶ It is requested that members of Aircraft Trouble Boards insure a more complete listing of injuries than has normally been the case in the past. The body location and nature of all injuries is desired, including those that are fatal. Data should be obtained from flight surgeons or medical officers in attendance. The term INJURIES, MULTIPLE EXTREME without further elaboration is of no value in this study.

A good example of what may be accomplished as a result of these studies is the shoulder harness which was developed because it was noted that a large percentage of aircraft accidents resulted in head and face injuries only.

## PBY Spin

A PBY-5 was seen to enter a spin at about 5,000 feet and crash. From testimony of the surviving crew members, it was believed that the student under the hood was being instructed in wing-overs. The student had, on two previous occasions during this flight, approached a stalled attitude and the instructor had been forced to take over. The plane spun out of the third stall, killing seven of the crew.

 Grampaw Pettibone says:

Perhaps the instructor was making his student recover from unusual positions. In this connection all instructors and pilots must bear in mind that abrupt elevator control movements may cause a stall at any air speed. Whether recoveries from unusual positions were being attempted or whether wing-overs were actually being practiced is of little consequence now, but



as a reminder to other PBV pilots who may not have aircraft restrictions in mind, let me say this: The PBV and all other VP and VPB airplanes are specifically restricted from wing-overs and violent turns by Technical Order 84-42.

## Cease Firing

A portion of a letter received from an aviation chief machinist's mate is quoted as of general interest:

DEAR GRAMPAW PETTIBONE:

Please get a firm grip on your old armchair and hang on to your spectacles, as I am going to cut loose with a salvo from the main battery.

Mindful of the fact that your column is not a Vox Pop, I think you missed the boat in regard to your article entitled "The Right Way," in the issue of November 1, 1943, of NAVAL AVIATION NEWS. Paragraph *b.* reads: "The fuel line connection to the droppable wing tank came loose on one plane. The engine started running roughly because of slugs of air getting into the gas line. The pilot brought the plane back on one engine." Now Grampaw, doesn't the yellow sheet inspection form cover fuel systems, or was this flight so strenuous that the connection was loosened during flight; and was the fuel supply used from the proper tanks in order, or does this pilot save his drop tanks for reserve supply?

Paragraph *c.* reads: "The propeller governor on another plane froze and chewed up the gear train; the propeller went up to full speed. The pilot brought it back, mostly on one engine." I'll have to use the

secondary battery on this one, Grampaw. The author states that the pilot brought it back, mostly on one engine. However, the take-off and landing procedure is accomplished with the propeller in low pitch position and I should think the engines could be synchronized and throttled to enable a plane to be successfully flown back to the base.

Paragraph *d.* reads: "On another plane, the hose going to the droppable wing tank had deteriorated and failed; the fuel pump became airlocked. The pilot brought it back on one engine." Oh! Dear Grampaw, now you have me repeating myself as of paragraph 2. That old yellow sheet again, or did the hose deteriorate during flight, and was this same pilot flying the plane?

Paragraph *f.* reads: "During an engine run-in flight, the pilot feathered the propeller for test. When he could not unfeather it, due to a high pressure oil line failure, he brought the plane home on one engine." Oh, dear! Now I sound like a broken record, Grampaw. That yellow sheet again; or perhaps the same pilot. Why, oh why, wasn't the propeller tested on the ground? Surely one feathering operation on the ground or perhaps two, should have sufficed, or does the pressure increase with altitude?


Now Grampaw, you state you are in the "kick in the pants division," so don't go



soft by back-patting in such cases as the above-mentioned when it is quite obvious that they were the direct cause of faulty pre-flight inspection and unfamiliarity on the part of the pilot. And, Grampaw, isn't the type of plane involved designed to fly on one engine, and doesn't the training syllabus teach single engine operation?

Now, Grampaw, if you don't think you missed the boat, I will train in and secure and humbly apologize.

Very truly yours,  
AVIATION CHIEF MACHINIST'S MATE

 Grampaw Pettibone says:

Here I was, in my big-hearted way, trying to give a squadron a boost for some snappy one-engine operation, and

ADVANCE  
BASES!

LET NANews  
HEAR FROM YOU...



somebody has to spoil it all by pointing out that better maintenance and inspection and more familiarity with equipment on the part of some of the pilots would have forestalled most of those engine troubles!

When these salvos started coming over I jumped in the foxhole back of my desk and from there I entreat the squadron commander concerned to re-investigate these cases carefully to see whether courts-martial should not be given in lieu of any medals he may have contemplated awarding on the strength of my praise.

### Targets Can Hypnotize You

This is a piece of advice for dive bomber pilots from a patient in a U. S. Naval Hospital. His advice is sound because it is based on personal experience. He is lucky because he is alive, or, rather, he is alive because he is lucky. And his advice is this:



"Don't get so fascinated with your target that you forget about your altitude. The ground is very hard. I know, because I landed on it on my face."

This student aviator *did* forget about his altitude with the result that he has a slight concussion, two broken ankles, several minor cuts and bruises, and a black eye. His SBD was spread over an area of 100 square yards, but he was thrown clear when it hit.

It all happened while the pilot was making dive bombing runs on a land target. Coming in at a 70-degree angle, he was practically hypnotized by watching the target grow as it came nearer and nearer in the reflector sight. He forgot all about his altimeter until he was well below the minimum safe altitude for pull out. He wanted his bomb in the center of the circular target so much that he almost carried it there in the SBD.

"It was entirely my fault," the pilot said. "I was so intent on the target I didn't realize I was getting into trouble until I saw the tops of the

trees. Then I pulled back on the stick, but it was too late. The plane knifed through the treetops and smacked into the ground so hard that it plowed a three-foot furrow before disintegrating."

Direct hits on the circular target are very satisfying, but there is no satisfaction in making hits if you get your congratulations posthumously.

### Visibility Zero, Judgment Zero

One pilot was injured when his FM-1 crashed shortly after taking off, and a second pilot, also in an FM-1, was killed when he followed the first ship into the ground. The accident occurred at MCAS Mojave on a particularly dark night when it was necessary to go on instruments immediately after take-off inasmuch as no surface reference was visible.

The pilot of the first plane—No. 2 in a four-plane formation—said he had started to join up after taking off, looked at his instruments, found he was in a right turn, but crashed before corrected attitude was attained. The pilot of the second plane apparently followed the first into the deck while attempting to join up. Both pilots had well over 300 hours and had completed the instrument syllabus.

► **COMMENT**—A pilot must watch his instruments when the visibility is low. Although the ceiling was 11,000 feet, it was so dark the pilots had absolutely no natural reference points by which to judge the attitude of their planes. Had the pilots referred to their instruments to determine the planes' attitude, instead of attempting to maintain control by reference to surface objects, one man's life and two costly airplanes would have been saved.

### Reversed Controls

During interim overhaul of a K-type airship, the rigger in charge inadvertently put the drive chain of the elevator control on backwards which reversed the action of these controls. The controls were not checked after installation. The pilot apparently thought a visual check for proper operation of the



control surfaces was not necessary and made none when the airship was released for flight. He did, however,

### Aircraft Trouble Reports

In the future all requests for Aircraft Trouble Report forms (NAVAER-339) will be filled with tissue sheets only. Bond sheets now on hand should be used as originals until stock is depleted, after which a signed tissue should be used as the original for each Aircraft Trouble Report.

turn on the elevator indicator, but paid no attention to it when the needle gave an "erratic" reading.

A take-off was begun and while "down" elevator control was applied to raise the tail, the airship reacted normally to the reverse elevator control, took off quickly and climbed steeply in response to the "up" elevator then being applied by the pilot who thought he was giving "down" elevator to ease off the climb. At 1,700 feet ascent was halted and approximately 30 minutes later the airship was flown into the ground with the pilot holding "up" pressure on the elevator controls, still unaware of the cause of the trouble.

► **COMMENT**—The carelessness of the rigger who reversed the controls and of the petty officer who was responsible for inspection after overhaul, are readily apparent.



The Trouble Board, however, considered the pilot equally to blame for this accident, assigning to him, in fact, 51% of the cause. He had 1,625 hours' flight time and should have been able to prevent this accident. First, he should have made a visual check for proper operation of the control surfaces, since the airship had just come out of overhaul and especially after the "erratic" reading of the elevator indicator.

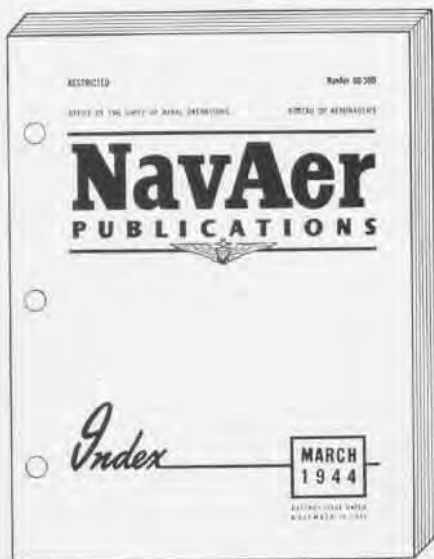
Even after becoming airborne with elevator controls reversed, there need have been no accident. The pilot showed poor judgment, when he noted that some major control fault existed, in not ballasting the ship to near static equilibrium, obtaining weigh-off at sufficient altitude, and then deliberately checking to determine cause of trouble.



# DID YOU KNOW?

## Publish a Quarterly Index Changes in Monthly Supplement

The new *NavAer Publications Index*, a catalog of naval aeronautical publications, has been distributed to air activities, and will be followed by complete revisions every three months, with in-



terim monthly supplements. The index catalog uses airframe, power plant, accessory, instrument, radio, and radar technical publications in addition to training literature, allowance lists, aerology, recognition, and flight publications. Additional copies may be requested from BuAer Publications Section.

## Keep Hourly Weather Form Aerology Section Desires a Copy

NAAS CAMP KEARNEY—A new method has been devised to keep hourly and daily records in aerology. This record presents a clear, compact picture of all data necessary for forecasting.

The new record consists of loose-leaf notebook with filler of previously prepared sheets of two kinds. The first consists of a pseudo-adiabatic diagram on which is plotted the raob (radio observation of air temperature and humidity aloft) at the reporting station. This chart gives, at a glance, temperature and moisture content of air over immediate vicinity up to 25,000 ft. In the right-hand margin of the sheet is a form for recording winds aloft over the reporting station and adjacent area.

Second sheet consists of a map of the United States, Northwestern Canada, and entire North Pacific area. A synoptic weather chart is transposed over the area daily. In lower portion of this page a form is supplied on which to record complete weather data for every hour of the day. One page of each kind is used daily.

► **CNO COMMENT**—Any method of simplifying or visually presenting weather information to pilots is highly desirable. It would be appreciated if samples of this new record be forwarded to CNO, Aerology Section, for inspection.

All Navy activities that have developed forecasting aids should forward sample copies to CNO, Aerology Section, in order that they may be considered for general use. Activities that are using experimental forecasting aids and weather records should continue to use standard forms and submit them in accordance with instructions, so that uniform and complete aerological records may be maintained.

## Combine Training Command Locate Chief at NAS Pensacola

The Naval Air Training Command, with headquarters initially at NAS Pensacola, has been established to consist of all activities of Naval Air Primary

Training Command, Naval Air Intermediate Training Command, Naval Air Operational Training Command, and other units that may later be assigned by the Commander in Chief, U. S. Fleet, and Chief of Naval Operations.

NATC is commanded by Rear Admiral George D. Murray as Chief of Naval Air Training. He will report to the CNO and will be the direct representative of the Navy Department in all matters affecting activities under his command. He also serves as field training representative of the Deputy Chief of Naval Operations (Air).

CNAT is charged, within his command, with:

1. Coordination and direction of all naval aviation training
2. Establishment and operation of naval aviation flight and ground training activities
3. Preparation of recommendations for procurement and readjustment of shore facilities, training aircraft and equipment, and instructor personnel
4. Establishment of courses and methods of instruction for ground, flight training.

Within each naval district, activities specifically and exclusively assigned to NATC are excluded from jurisdiction of the commandant of the district, excepting their coordination with the general plan of military defense of district.



## LTA's New Visual Program

### Training Films Being Reviewed

LTA has developed and put into operation a new and comprehensive visual training program. Last fall a staff visual training aids officer was appointed, and directed to establish a preliminary system for distribution of films to stations and units of WING ONE. Commanding officers of LTA stations, squadrons, hedrons, and detachments were directed to appoint visual training aids officers.

Under the new plan, all new training films are supplied to NATEC for review and evaluation. Films applicable to LTA use are ordered by the staff VTO for LTA distribution centers at Lakehurst, Moffett Field, WING FOUR, and WING FIVE. From these centers films are routed to VTO's at all bases for showing.

"As this plan has worked successfully in the units of WING ONE and the sta-

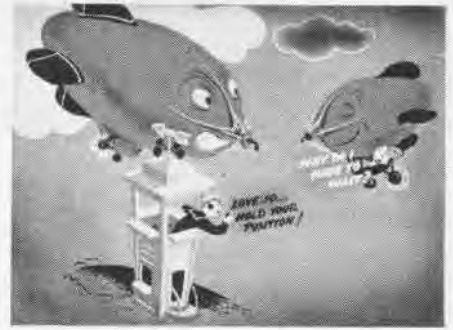
tions at which they are based, it is desirable to enlarge the distribution throughout the LTA organization," the LTA chief of staff and aide said.

While successful distribution methods were under survey, extensive work was done on production of specific LTA training films. Now catalogued are 11 slide films on L-type airship and 10 slide films on K-type airship. Two new moving pictures in color have been completed covering take-off and landing operations of K-type patrol ships. Moving pictures on history of balloons and history of pressure airships are in production, and one covering history of rigid airships is scheduled.

In addition to training films, general interest films are also allocated to LTA distribution centers. These are circulated as "unit shows" along with training films. A list of films for permanent custody of squadrons and hedrons is being prepared, and the films will be sent to all these units in the near future.

Similarly, training literature publica-

### HOW NOT TO CALL TOWER—



tions are being supplied to VTO's at all LTA bases, WING FOUR, and WING FIVE for re-distribution to units in their local areas. It is planned to maintain a limited stock of these publications at centers so that requests for back copies or additional copies may be filled immediately at the local source rather than through official requests to issuing agencies.

LTA units are directed to route all requests for films and literature to the VTO at their distribution center to expedite service and delivery.

### Use Real Tank for Target Marines Get Skip Bomb Practice

MCAS EL CENTRO—To vary routine training, a Marine torpedo bombing squadron cooperated with an Army ordnance testing command and ran skip bombing hops, using a Sherman tank as target. Runs were made with Mark V miniature practice bombs and 100-pound water-filled bombs. Both were dropped on stationary and moving target.

One pilot dropped a miniature practice bomb that hit tracks of tank, and caused the rubber to burn. Next plane in flight had a water-filled bomb, hit tank in exactly the same spot and put out the fire.

### GSAP Camera Is Successful Ordnancemen Do Photography

NAS WILLOW GROVE—Some squadrons seem to have little success with their A-N type gun cameras, but results at this station are quite the opposite. This is due to the close cooperation between CASU 23 ordnancemen and NAS photographic laboratory technicians.



SUCCESSFUL LOW ALTITUDE ATTACKS REQUIRE PRECISION IN DETERMINING EXACT RELEASE POINT



DEADLY ACCURACY OF SKIP BOMBING IS SHOWN BY NUMBER OF PRACTICE BOMBS HITTING TARGET

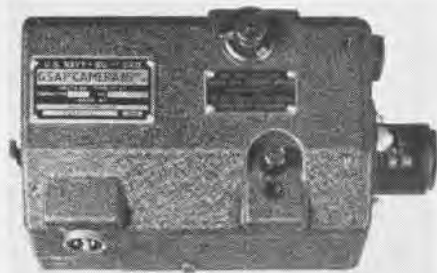
ADVANCE BASES!

LET NANews  
HEAR FROM YOU...





When the cameras first arrived, several 3rd class ordnancemen were as-



**A-N TYPE GUN CAMERA REQUIRES EXPERT CARE**

signed to the laboratory to learn fundamentals of photography. Ordnancemen instructed photographers how to install GSAP cameras. Photographers also learned something about boresighting and camera wiring. At present, ordnancemen load the magazines and do everything except develop film (and can do this in an emergency). This

station believes that if this same arrangement were used by other squadrons and stations using the cameras, much of difficulty would be eliminated.

## 100% Bond Allotment Goal Navy Civilians Reach 90% Mark

Civilian employees of the seven major naval air stations are pushing forward in the payroll deduction bond program with 95.4 percent of personnel investing 10.2 percent of gross payroll, according to latest figures. Percentage of participation of civilian personnel throughout the entire aeronautic organization is over 90.

The bond allotment program for uniformed personnel likewise is making progress. Shore activities within the continental limits of the U. S. show 62 commands with over 70 percent participation; 27 between 50 and 70 percent, and 15 commands below 50 percent of entire complement registered.



ABANDON DRILL practiced at NAS Alameda combines various procedures to accomplish the end result: 1. knotted line, 2. straight line, 3. Jacob's ladder, 4. cargo net and 5. jumping. All men wear kapoc jackets. A little practice beforehand may save lives later.

## BEST ANSWERS

### XVII—Naval History

Pick the best choice to complete the statements below, then check your answers on page 40.

1. The U. S. Navy made two important contributions to the winning of World War I which are also helping to win World War II. These were—

- a—convoying and extensive mine-laying
- b—dive-bombing and mine-sweeping
- c—torpedo bombing and skip-bombing
- d—commerce raiding with submarines and surface craft, and high altitude precision bombing

2. The year 1798 is significant in Navy history because in that year

- a—we launched our first ships of the line
- b—John Paul Jones became the first commodore of the Fleet
- c—the Navy Department was founded
- d—war was declared against Tripoli

3. The *Graf Spee* in the present conflict was a German commerce raider finally defeated by the British at Montevideo. Its mission in this war was the same as the mission exemplified by the—

- a—*Oregon* in the Spanish-American War
- b—*Tennessee* in the War between the States
- c—*South Dakota* in World War II
- d—*Essex* in the War of 1812

4. The United States Fleet entered the harbor at daybreak and immediately engaged the enemy's ships and batteries. The enemy's fleet was completely destroyed. Our casualties were only eight men wounded. This is a brief description of the battle of—

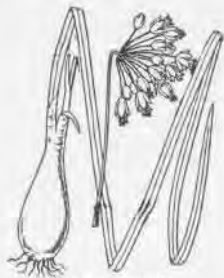
- a—Manila Bay
- b—Santiago
- c—Mobile Bay
- d—New Orleans

5. John Paul Jones established the fighting tradition of our Navy with his famous words, "I have not yet begun to fight." These words were addressed to—

- a—Captain Barnstable of the *Drake*
- b—Lieutenant Preble of the *Bonhomme Richard*
- c—Captain Pearson of the *Serapis*
- d—Admiral Landais of the *Alliance*



# ROOTS



**WILD ONION**

Small plants are found in North America, Asia, Europe. Year around but difficult to locate in winter. Bulb is eaten, boiled or raw.



**SPRING BEAUTY**

Small plants found in Africa, Europe, Australia, Asia, North America. Bulb, boiled or raw. Leaves only of some species eaten.



**WILD RICE**

Tall grasses, North America, Asia, along swampy streams, bays. Lower stem, root shoots are sweet. Remove covering, chew center.



**WATER CHESTNUT**

Available in many parts of world, particularly in southern Asia and Pacific islands. Grows wild in U. S. Tubers, raw or cooked, are eaten.



**WILD AND SWEET POTATOES**

Trailing plants are found in all warm climates of the world. Large tuberous roots are edible; leaves and stems are eaten as greens.



**SOLOMON'S SEAL**

Small plants in North America, Europe, northern Asia, Jamaica. Roots boiled, roasted taste like parsnips. Young shoots also edible.



**BRAKE FERN**

Year around in nearly all temperate and tropical regions. To eat, it is preferable to roast and chew starch out of roots, raw if necessary.



**ARROWHEAD**

Small plants, North America, Europe, Asia; in U. S. year around. Grows in wet ground, water. Boil or roast. Tastes like potato.



**BULRUSH**

Tall plant, North America, Africa, Australia, East Indies, Malaya. U. S. year around. Roots and white stem base, raw or cooked.



**CATTAIL**

Tall plants, many regions, available year around, always near water. Bake or roast roots, chew out starch, discarding fiber, or eat raw.



GATHERING TUBERS OF SOLOMON'S SEAL; ROOTS, WHEN BOILED, TASTE LIKE PARSNIPS



PULLING ROOTS OF CATTAIL PLANTS; DIGGING FOR ARROWHEAD TUBERS

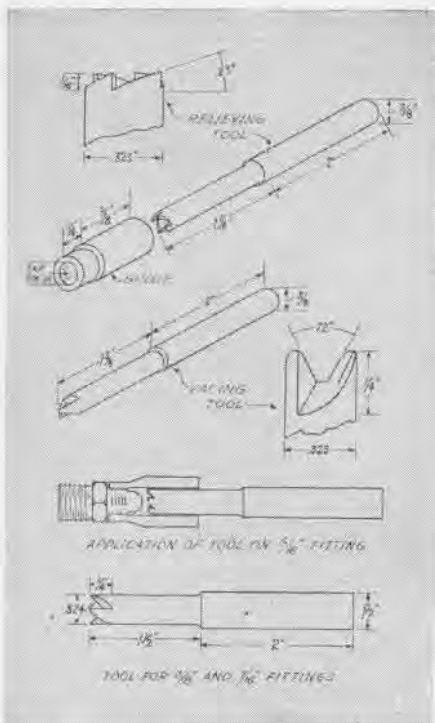


# TECHNICALLY SPEAKING

## Refacing Tool Is Developed Prevents Wasting Tool Fittings

NAS ALAMEDA—A mechanical refacing tool developed here is used on tube fittings on which the flared section is scored or distorted. Use of the tool makes it possible to return the tube fittings to service. Previously such fittings were scrapped and replaced with new fittings.

The new tool also makes it possible to change Parker fittings to Weatherhead by altering bevel of flared section.



TUBE FITTINGS ARE SALVAGED BY HANDY TOOL

In operating the tool, the tool guide is screwed on the fitting and the facing tool secured in a drill press which is turned at slow speeds.

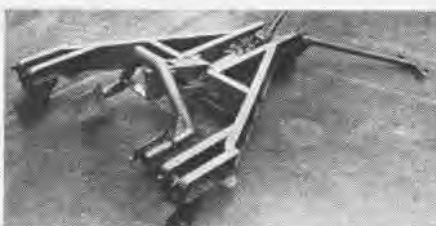
[DEVELOPED BY F. ROLL, TOOLMAKER]

## Make Handy Spotting Dolly BuAer Will Consider NAS Needs

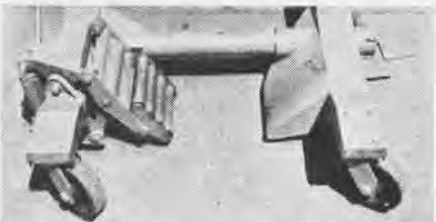
NAS PEARL HARBOR—In order to cope with the problem of handling and stowing planes in compact and enclosed areas of cargo ships and carriers, the supply department of this station designed a hydraulic plane jack dolly. Engineered and built by a local trailer manufacturer, the dolly has had several

months of successful operation here and favorable reports have been received from several ships of the Fleet which have been equipped with this device.

It is heavy-duty and capable of lifting and carrying a total of 10 tons, five tons on each after wheel. The dolly has a single pivot wheel forward with a tongue for steering and two full pivot wheels aft which may be locked in either of two positions, 90 degrees apart. All wheels are equipped with hard rubber tires.



DEVELOP PLANE JACK DOLLY AT PEARL HARBOR



BUAER SPOTTING DOLLY A MORE COMPACT UNIT



DOLLY IS ADJUSTABLE TO FIT CARRIER TYPES

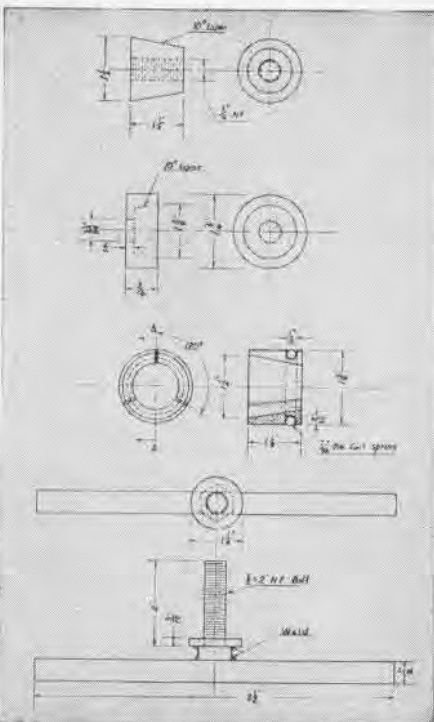
Jack is standard five-ton hydraulic type, mounted horizontally. Lifting fork is designed to fit any standard carrier plane wheel and swivels in a total arc of 80° (40° to each side of center).

►BuAER COMMENT—The Pearl Harbor hydraulic plane jack dolly is a useful device. BuAer has under production a hydraulic spotting dolly of slightly different design and is now issuing them to aircraft carriers and aircraft transports. It is described on page 12 of *Aircraft Carrier Bulletin No. 3*. BuAer dolly was designed to supersede crab dollies specifically for carrier and shipboard use where weight and space are at a premium. Its use on rough terrain will probably result in damage. It has adjustable jaws at lifting points which permit use with airplanes of various tire sizes up to

and including the TBF, a feature which is not apparent in the photograph of the Pearl Harbor dolly. As all aircraft carriers and aircraft transports will shortly be equipped with dollies, loading of ships can be effected with them. Should shore bases have need for such dollies for use on smooth surfaces, BuAer will consider any requests received.

## Tool Aids in Fitting Gaskets Expands Opening, Compresses

NAS HUTCHINSON—In assembling exhaust stacks to cylinder exhaust ports of a Lycoming engine, fitting the asbestos



HANDY TOOL MAKES EXHAUST PORT GASKET FIT

cored copper ring gasket which serves as seal between pipe and ring clamp often proves difficult when it is not pressed or compressed thin enough to allow a free fit of the clamp ring over stack pipe. This often results in damaged or ruined gaskets and wasted man-hours.

The A&R engine change shop has developed a simple, efficient tool which eliminates difficulty of this assembly. Tool is simple to make and operate, being on the much-used principle of two conical surfaces acting one within the other. Outer cone, being split, allows for expansion or increase in circumference when male, or inner cone, is forced into it. This expansion is



NAVAL AVIATION

# NEWS

FILE COPY

FILE COPY



Annapolis of the Air  
Grampaw Pettibone  
Technically Speaking

Mar. 1, 1944  
RESTRICTED



# WILD PLANT FOOD

## Recognition of Plants Is Key to Wealthy Source of Food

**F**OOD FOLLOWS WATER in the order of its importance in survival, and plants will be one of your most valuable food sources. To use them intelligently in an emergency you must have some practical knowledge of what they look like and where they grow.

There are thousands of edible plants distributed throughout the world. Descriptions and pictures will help you identify them, but the best way to familiarize yourself with the appearance and use of edible plants is to have someone point them out to you. Each time you are shown a plant, make a mental note of the kind of place (the *habitat*) in which you find it. Without any particular effort you may soon find that you know just where to look for the best food plants of a region.

Mastery of a few general facts and principles that you can learn beforehand will help you to find and recognize food plants all over the world.

Many groups of plants found at home are widespread throughout the world. Some of those found in North America also grow in the Philippines, in Malaya, Africa, India, China, Europe, the Arctic, and other remote places. Although the different kinds or species which compose a group may be limited in distribution and habitat and may vary in minor details, all are similar in general appearance.

Many plants store food (starch) in

underground parts. This is especially true of aquatic plants. Tubers are a source of food in all parts of the world and are often available throughout the

### SURVIVAL HINTS—NO. 4

*This is the fourth in a series of articles condensed from How to Survive on Land and Sea, new U. S. Naval Institute textbook issued by Aviation Training Division of CNO. Individual copies may be purchased from the U. S. Naval Institute, Annapolis, Md.—Ed.*

year. In cold climates when plant food appears completely absent, bulbs and roots can be found by digging where the dried plant stalks remain.

The roots and young curled fronds of many ferns are edible and none are known to be poisonous. The food value is not great, but it will help sustain life. The brake fern is eaten by natives all over the world. A fern called Pako furnishes edible young fronds which are eaten either raw or cooked by Philippine natives. It grows in wet ground, on gravel bars, and along the banks of streams.

The young shoots of a high-climbing fern are eaten cooked or raw by natives of the South Pacific area and India. This fern grows in thickets in the vicinity of brackish or salt water. The young leaves and terminal buds of tree

ferns are edible. These huge ferns may be 20 or more feet high and are found in wet jungle areas. The succulent foliage of the common swamp fern is boiled and eaten as a vegetable. It is found either floating or attached to the soil in shallow, still, or slightly moving fresh water in the subtropical and tropical regions of Asia, Africa, America, and Australasia.

**M**ANY MUSHROOMS are edible and may furnish a source of food, particularly in temperate regions; but no species should be tried unless you are sure of its identity, for some species are deadly poisonous.

The inner bark from numerous trees can be eaten raw or cooked. The thin, green, outer bark and white, innermost bark are the most normally usable for food since brown bark ordinarily contains too much tannin. Among trees whose bark is used as sources of food are the poplars (including the cottonwoods and aspens), birches, willows, and the inner bark of a few species of pine, including the Scotch pine of northern Europe and Asia.

Some plants may be eaten only after poisonous or irritating substances are removed. Among these are a large group known as the Aroids, of which the taro root, a staple food of the Polynesians, is a good example. It is pungent and bitter when raw, but perfectly palatable after proper cooking.

### FERNS



HIGH CLIMBING FERN



TREE FERN



PAKO FERN



SWAMP FERN



ALMOST EVERYONE has picked and eaten raspberries or blackberries from thorny brambles near the edges of woods, fences, roads and trails. They will look the same when found in the Philippines, Pacific Islands, Africa, Australia, Siberia, Alaska, the Arctic, and other areas. When a plant appears to be familiar, use it as you would that kind of plant at home. The persimmons of the Philippines or China, for example, differ somewhat from our American ones, but they have characteristics by which you will recognize them as persimmons. Most Americans have

picked and eaten the round, dark blueberries that grow on low bushes in areas where the soil is acid, such as the borders of bogs and swamps or sandy mountain or coastal plain areas. Blueberries and their close relatives are found in practically all parts of the world except Australia. In temperate zones fruit of some kind can be found the year around, though most of them are available only in summer or fall. In tropics fruits are available at all times.



**WILD GRAPES ALL OVER THE WORLD WILL LOOK LIKE THOSE AT HOME**



**JUNE BERRY**

Small trees, found in North America, northern Asia, Europe, in forest and mountain areas. Small purplish fruit is eaten fresh or dried.



**PAPAW**

Papaw trees, found along streams, are related to the custard apple family in tropics. Banana-like tasting fruit is skinned and eaten raw



**HACKBERRY**

Trees, North America, temperate Asia, northern India, Europe, either in arid or moist habitats. U. S. in fall and winter. Raw or cooked.



**HAWTHORN**

Bushes, open waste lands of temperate Asia, Africa, Europe, North America, Mexico, East Indies. Red, yellow apples: raw, cooked.



**PERSIMMON**

Trees found in North America, South America, Asia, Africa, Australia, and Pacific Islands. Ripe fruits only are eaten raw, cooked.



**MULBERRY**

Trees in all north temperate regions and in sub-tropical regions. Common in U. S. in summer. Mulberries are good either raw or cooked.



**CHERRIES, PLUMS, APRICOTS**

Trees and bushes, north and south temperate zones, U. S. in summer and fall. Fruit containing single seed, raw or cooked, is edible.



**CURRENTS, GOOSEBERRIES**

Low, sometimes prickly, shrubs throughout Americas, Europe, Asia, North Africa, Australia, elsewhere. Berries are edible, raw or cooked.



**BLACKBERRIES, RASPBERRIES**

Shrubs, nearly worldwide, found in the United States in summer, in open land and forest margins. They are eaten either raw or cooked.



**ELDERBERRY**

Bushes found in North and South America, Europe, Asia, and Australia. Reddish or purple berries are good eaten either raw or cooked.



**BLUEBERRIES, CRANBERRIES**

Shrubs found in the Arctic, north temperate and tropical areas. Abundant in burned areas of the north. Edible either raw or cooked.



**GRAPES**

Climbing grapevines are found nearly worldwide; abundant in the United States in fall and winter. Grapes are eaten raw or cooked.

## LEAVES, STEMS

**E**DIBLE PORTIONS of plants vary greatly in their food value. A diet of leaves alone is at best like eating only spinach. Select young, tender leaves in preference to old ones, and boil them. Change the water if they are bitter. Buds are still more nourishing. The stems of some plants are excellent, furnishing starch, sugar, oils, and greens. By far the largest part of human food comes from such grasses as oats, wheat, corn, and rice. Grasses are distinguished by their joined and hollow stems.



**GOOSEFOOT**

Weeds found in all temperate and tropic regions, U. S. in spring and summer. Leaves are eaten cooked as greens; seeds are eaten roasted.



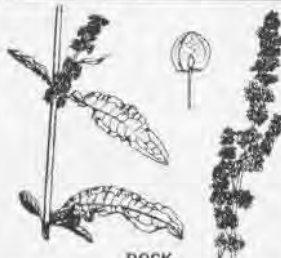
**SORREL**

Small plants are found nearly worldwide. Leaves are eaten raw, as salad. Tubers of some species are edible when thoroughly cooked.



**DANDELION**

Weeds are found in most of the civilized world. Young leaves are edible when cooked, and tapering and milky roots may be eaten raw.



**DOCK**

Weeds, found in north and south temperate regions and in the U. S. throughout spring and fall. Young basal leaves are eaten boiled or raw.



**PURSLANE**

Fleshy plant with worldwide distribution; found in U. S. in summer and fall. Fleshy leaves and stems are eaten when thoroughly boiled.

## NUTS, SEEDS

**E**DIBLE NUTS are the most sustaining of all raw forest foods and are found throughout the world. Pine trees grow throughout the North Temperate Zone and seeds from the cones of many of them are edible and very sustaining. The single leaf pine, the sugar pine, the limber pine, the nut or pinon pine, and the Coulter pine of our American West produce cones containing seeds or nuts that are both tasty and nourishing. It is not necessary to be able to differentiate between pines. Recognizable members of the pine family bearing edible seeds also grow in the Tropical and South Temperate Zones.



**BEECH**

Large forest trees producing triangular nuts. Bark smooth varying from light to dark gray. In north temperate zone. Nuts are eaten raw.



**OAK**

Trees, and shrubs producing acorns, leaves either evergreen or deciduous. Edible species found in India, China, North and South America.



**SINGLE LEAF NUT PINE**



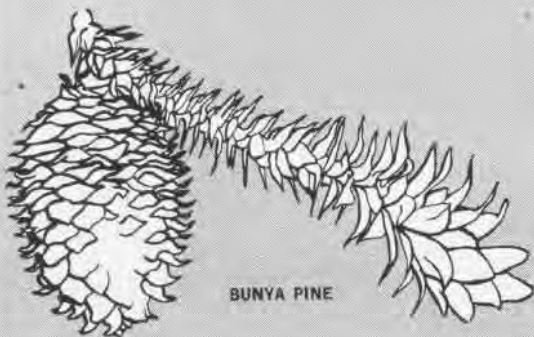
**HAZELNUT**

Small trees or bushes with nuts in clusters, covered by leaf-like husk. Found in North America, West Indies, Europe, Asia. Eaten raw.



**PANAMA NUT TREE**

Immense forest tree; hand-shaped leaves. Fruits in 5 pods containing black, peanut-like seeds with irritating hairs. Raw, boiled, roasted.



**BUNYA PINE**



**PILI NUT**

Large forest tree; hard inner nuts, triangular in cross section, pointed ends. Pacific islands, Malaya. Raw, but toasting improves the taste.

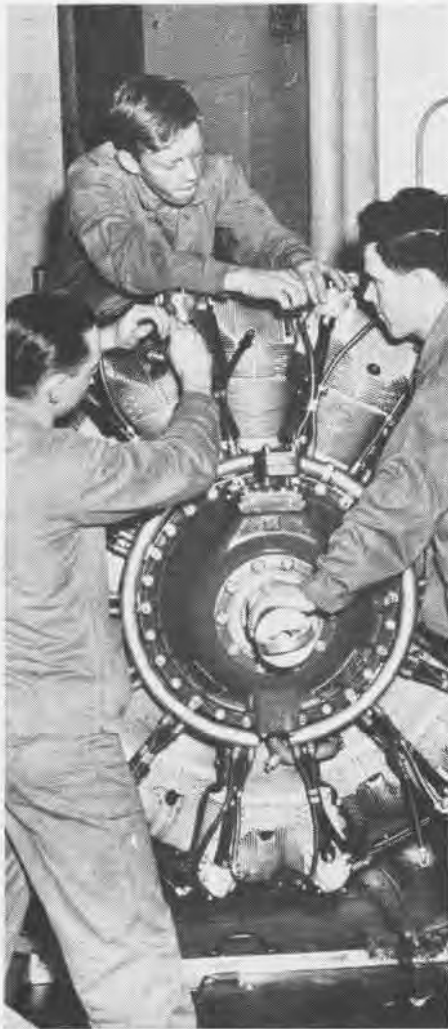


**BRAZIL NUT**

Tree grows in immense forests in Brazil, the Guianas, and Venezuela. Growth reaches 150 ft. in height, and 4 ft. in diameter. Eaten raw.



# MARINE MECHANICS KEEP PLANES FLYING



Aviation machinists get general training in mechanical work, then have opportunity to specialize in one phase of the training



Propeller specialists learn maintenance and overhaul procedure as well as ground adjustment, testing and trouble shooting



Instrument technicians master art of repair, complete overhaul and testing of electric, pressure, magnetic, gyroscopic types

## Marine technicians specialize in propeller, instrument, carburetor, hydraulic and engine maintenance procedures

FOR EVERY Marine plane in the air, there are technically trained men on the ground who have made its flight possible. Carefully trained Leathernecks, graduates of technical schools scattered throughout the country, are well qualified for duty in tactical units or A&R shops to disassemble, overhaul and test aircraft parts and accessories.

After boot camp, Marines selected for mechanical training report to a Naval Technical Training Center for introduction to the aviation machinist course. This general background permits him to specialize, providing his

scholastic standing is satisfactory. When accepted for specialized training, Marines report to NATTC Chicago for work in one of five schools.

Propeller school gives instruction in maintenance and overhaul of Curtiss-Electric and Hamilton Standard props including ground adjustable and two position constant speed. Trouble shooting is stressed and students must learn to identify and correct shortcomings, whether it is internal leakage in the governor or fatigue points in the blade.

Engine specialists learn use of hand tools and fundamentals of aircraft en-

gines before receiving instruction on Wright R-1820, R-2600 and Pratt & Whitney R-1830, R-2800 types. Overhaul practice, test cells and line operations complete the 16-week course. Instrument training includes repair, overhaul, calibration, installation and testing of pressure, electrical and gyroscopic instruments as well as magnetic compasses and other instruments.

STUDENTS in the carburetor school are capable of setting up their own flow bench for testing all types of pumps, float and injection carburetors and fuel systems. Hydraulic specialists learn basic principles, types of oil, packing functions, locations of units, typical systems and their arrangements, hydraulic turrets, as well as miscellaneous equipment such as de-icing systems, fire extinguishers and engine fuel systems.

## MARINE NURSED CRIPPLED CORSAIR THROUGH ACTION

"I got that old feeling!" remarked one of the Marine Corps lieutenants as he and his squadron discussed a scheduled strike against the Japs. As it happened, that hunch turned out to be as sure a forecaster



as grandpa's rheumatism, for it presaged heavy action between their squadron and the enemy.

The formation headed north up the slot

and skimmed along under an overcast, for the sky was clouded. Just as they were circling for the strike, they met a formation of B-24's returning from their mission. Jap planes were snapping at the heels of the *Liberators*—so the *Corsairs* rose to the attack. They climbed to 24,000 feet and circled down.

Lieutenant A. suddenly realized his motor had a bad cylinder, but the fight was on! *Zeros* were making passes at the squadron commander's tail, so Lt. A. guided his limping plane around the sky long enough to ward off two attacks. It didn't take the Japs long to recognize a cripple, and Lt. A. soon had three *Zeros* on his tail, and Jap tracers whistling by his ears.

He pushed the stick forward for an abrupt dive—good defense against a strong tail attack. Suddenly his motor quit. He swiftly manipulated the controls, got his motor going spasmodically, headed for home with his motor missing and losing altitude by the seconds.

Lieutenant A. radioed ahead "Prepare for an emergency landing." He came over the ridge to the north of the strip, and sud-

denly saw that it was covered by trucks, bull-dozers and men working. He had no choice. He kicked his rudder, set the plane down to one side and dodged trucks and bull-dozers by kicking the right and left rudder. Looming up in front of him was a huge ditch. He unbuckled his strap, knelt down on the floor of the cockpit and held on as the plane struck something solid and turned over.

He was lifted out, unhurt, by a man who gazed into his face, and said: "Jeez . . . you're from Davenport, Iowa, aren't you?"

## MARINES AUTHORIZE DISTINCTIVE INSIGNIA

MARINE CORPS today wears more shoulder insignia than ever before in its history. Corps, divisional, and even unit patches in vari-colored designs now emblazon the left shoulder of the uniforms of Marines on leave and on duty—save in the forward combat areas.

From the two insignia used by Marines in World War I—the Star and Indian Head of the 2nd Regular Army Division, of which the 5th and 6th Marine Regiments were a part; and the Fifth Brigade insignia of the 11th and 13th Regiments—the Corps has expanded its authorized shoulder insignia to no less than a dozen such different patches.

Origin of such insignia generally is attributed to the Allied forces in World War I, and originally adopted for purposes of swift identification of units on the field of battle—mainly by the British and their colonial forces. In the present war, the British forces still use the shoulder patch (with corresponding hat band in many cases) for identification purposes. But the Americans, with few exceptions, prohibit divisional insignia from being displayed in any area where it may be seen by the enemy.

It has been said that such insignia is the modern phase of the heraldry of ancient times—and support to this is given by the fact such insignia are worn on the left shoulder as the left arm of the knight of old was the one which carried his shield, emblazoned with his rank or crest. In America the first such shoulder patch was authorized

by General George Washington in the American Revolution, for purposes of distinguishing rank in battle, and the present Purple Heart Medal was originally a shoulder patch and also worn on the left shoulder of the uniform.

Such shoulder insignia are comparable to the college colors and the fraternal emblems so widely displayed. It is important, in its military usage, not only as an aid to recognition but as an element to instill pride of outfit into the wearer.

General use of shoulder insignia, however, began with the official approval in World War I when the Eighty-first Division, en route to France in 1918, created their Wildcat shoulder patch, made of felt, and sewn on the left shoulder. Subsequently all Divisions, both at home and abroad, received authorization for individual designs, and soon special branches, Army Corps, and other units had their distinctive markings. There are more than 125 such insignia now in existence in the forces of the United States.

In designing a new shoulder patch the first rule is that it shall not conflict with nor closely resemble any existing one, nor any used by the enemy. Instant recognition of any insignia is a primary essential. Only one such insignia may be worn at any time by any member of the armed forces—and always on the left shoulder. Wearers may continue to use the insignia until joining unit having its own design.

[Headquarters Bulletin Supplement]







ATHLETIC OFFICER ASSIGNED TO EACH CARRIER CONDUCTS PROGRAM DESIGNED TO BE OF GREATEST POSSIBLE BENEFIT TO PERSONNEL ABOARD

# KEEPING IN TRIM ABOARD CARRIERS

Limited time and space is problem

FACED WITH THE PROBLEM of limited time and space, athletic officers aboard carriers have taxed their ingenuity to provide a naval aviation physical training program which will fulfill the dual purpose of keeping men fit and at the same time provide relaxing recreation. Enthusiasm with which the program has been accepted by officers and enlisted men attests to the success of the plan.

Athletic programs are as diversified as climates in which they are conducted. Basically, however, they are similar in that they stress competitive games. Miniature gymnasiums have been built by personnel on several carriers and are the scene of much activity from dawn until after dusk. Flight and hangar decks are marked for volley ball, badminton and basket ball courts while plane elevators, in a



OFFICERS COMPETE IN FORWARD-BACKWARD RACE FOR SPECIAL LIBERTY



PLAY COMMANDO TENNIS, OTHER COMPETITIVE SPORTS ON FLIGHT DECK



INGENUITY IS KEYNOTE OF PT PROGRAM WHERE SPACE IS SO LIMITED



ACTIVITIES THAT CAN BE PICKED UP ON SHORT NOTICE ARE POPULAR

half-raised position, often double as handball and volley ball courts, as well as provide a raised boxing arena.

One flattop which has seen considerable action had a football team which worked out regularly during the season and played one of the pre-flight squadron teams during a liberty period ashore. Another had a basket ball league in which 28 teams competed; with winning squad members being presented gold basket balls by the skipper.

The problem of fitting an athletic program into an already full plan of the day has been solved on one carrier by virtue of an executive officer's memorandum which reads in part: "Athletic hour may be held at any time. When practicable it will be scheduled on the plan of the day. Whether or not scheduled, the hour will be announced."

WHEN IN PORT, swimming is the major activity and several thousand non-swimmers have been taught how to handle themselves in water. Emphasis is placed on life-saving skills rather than on speed and style. The fact that some of the personnel aboard have seen men drown because of an inability to swim has heightened interest in swimming.

Competitive team sports are also enjoyed ashore, with interest centered in baseball, softball and touch football. Public-spirited citizens in some cities where carriers dock have provided facilities at local athletic fields and gymnasiums. In the Pacific theater several fine recreation centers have been constructed by naval physical training officers in order to give carrier crews an opportunity to exercise.



# APPROVED ARMY-NAVY AIRCRAFT DESIGNATIONS

ORIGINAL DESIGNER	MODEL ARMY	MODEL NAVY	APPROVED NAME	ORIGINAL DESIGNER	MODEL ARMY	MODEL NAVY	APPROVED NAME
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## BOMBERS

Boeing	B-17		FORTRESS	Curtiss	A-25	SB2C, SBW, and SBF	HELLDIVER
Douglas	B-18		BOLO	Lockheed	A-29	PBO	HUDSON
Douglas	B-23		DRAGON	Martin	A-30		BALTIMORE
Consolidated	B-24	PB4Y	LIBERATOR	Vultee	A-31, A-35		VENGEANCE
North American	B-25	PBJ	MITCHELL	Brewster	A-34	SB2A	BERMUDA
Martin	B-26	JM	MARAUDER	North American	A-36 (P-51)		MUSTANG
Boeing	B-29		SUPERFORTRESS	Grumman		TBF, TBM	AVENGER
Vega	B-34	PV	VENTURA	Consolidated	OA-10	PBY, PB2B, and PBN	CATALINA
Douglas	A-20 (P-70)	BD	HAVOC (BOSTON)*	Consolidated		PB2Y	CORONADO
Douglas	A-24	SBD	DAUNTLESS	Martin		PBM	MARINER

## FIGHTERS

Lockheed	P-38		LIGHTNING	Northrop	P-61		BLACK WIDOW
Bell	P-39		AIRACOBRA	Douglas	P-70 (A-20)		HAVOC (BOSTON)*
Curtiss	P-40		WARHAWK (KITTYHAWK)*	Vought-Sikorsky		F4U, FG, F2G, and F3A	CORSAIR
Republic	P-43		LANCER	Grumman		F6F	HELLCAT
Republic	P-47		THUNDERBOLT	Grumman		F4F, FM	WILDCAT
North American	P-51 (A-36)		MUSTANG				

## LIAISON

Taylorcraft	L-2 (O-57)		GRASSHOPPER	Piper	L-4 (O-59)	NE	GRASSHOPPER
Aeronca	L-3 (O-58)		GRASSHOPPER	Vultee	L-5 (O-62)	OY	SENTINEL

## OBSERVATION

Vultee	O-49		VIGILANT	Piper	O-59 (L-4)		GRASSHOPPER
Curtiss	O-52		OWL	Vultee	O-62 (L-5)		SENTINEL
Lockheed	O-56 (B-34)		VENTURA	Curtiss		SO3C	SEAGULL
Taylorcraft	O-57 (L-2)		GRASSHOPPER	Vought-Sikorsky		OS2U, OS2N	KINGFISHER
Aeronca	O-58 (L-3)		GRASSHOPPER				

## TRAINERS

North American	AT-6	SNJ	TEXAN (HARVARD)*	Fairchild	AT-21		GUNNER
Beech	AT-7	SNB	NAVIGATOR	North American	BT-9, BT-14		YALE
Beech	AT-10		WICHITA	Fleetwing	BT-12		SOPHOMORE
Beech	AT-11	SNB	KANSAN	Stearman	PT-13, PT-17	N25	CAYDET
Boeing	AT-15		CREWMAKER	Fairchild	PT-18, PT-27		CORNELL
North American	AT-16		HARVARD	Ryan	PT-19, PT-23	NR	RECRUIT
Cessna	AT-17 (UC-78)	JRC	BOBCAT (CRANE)*	Timm	PT-26	N2T	TUTOR
Lockheed	AT-18 (A-29)	PBO	HUDSON	Curtiss	PT-21, PT-22	SNC	FALCON
Vultee	AT-19		RELIANT				

## TRANSPORTS

Beech	C-43	GB	TRAVELLER	Howard		GH	NIGHTINGALE
Beech	C-45	JRB	EXPEDITOR	Lockheed	C-63 (AT-18)		HUDSON
Curtiss	C-46	R5C	COMMANDO	Curtiss	C-76		CARAVAN
Douglas	C-47	R4D	SKYTRAIN (DAKOTA)*	Cessna	UC-78 (AT-17)	JRC	BOBCAT
Douglas	C-49, C-53	R4D	SKYTROOPER (DAKOTA)*	Consolidated	C-87	RY	LIBERATOR
Douglas	C-54	R5D	SKYMASTER	Vought-Sikorsky		JR25	EXCALIBUR
Lockheed	C-56, C-60	R5O	LODESTAR	Grumman	OA-9	JRF	GOOSE
Fairchild	UC-61	GK	FORWARDER (ARGUS)*	Grumman		J4F	WIDGEON

\* British name which will be retained.

NAVY AIRCRAFT



# MARSHALLS

**I**N 1920 the League of Nations mandated to Japan certain islands in the Micronesian area of the Pacific to be administered as an integral portion of her empire. As a matter of fact, Japan had already, after the outbreak of World War I, seized these islands from Germany, who had purchased them from Spain in 1899. The exception was Guam in the Marianas, which had belonged to the U. S. since 1898.\* The mandate, therefore, came in the way of a confirmation, or vote of confidence, to Japan. When Japan withdrew from the League (1933), no pressure was placed upon her to give up the mandated islands.

The islands are in four contiguous groups: *I.* PALAU ISLAND, lying nearest the Philippines, *II.* CAROLINE ISLANDS, stretching across an east-west axis north of New Guinea and the Solomons, *III.* MARIANAS ISLANDS, on a north-south axis above the Carolines, and *IV.* MARSHALL ISLANDS, which form the eastern rim of the Japanese Pacific empire.

\*Guam was disarmed under terms of the Washington Disarmament Conference (1922) and seized by Japan after the attack on Pearl Harbor.

Japan's policy of fortifying the Marshalls and neighboring island positions was intended to protect her ultimate goal of seizing sources of raw materials in the lands to the south, as well as of spreading her aegis over more and more territory in the Asiatic domain. Soon to follow, if not automatically, was the elimination of Britain, France, Netherlands and the U. S. from the Orient. These aspirations are reflected in the doctrine of the "Greater East Asia Coprosperity Sphere," which Japan has loudly shouted from Tokyo rooftops as the beacon light of her destiny. It is an expansionist doctrine.

**O**UR seizure of the Marshalls has the double-barreled effect of cutting off Japan's furthest springboard in the Pacific while placing the United Nations closer to the rest of the Japanese mandated islands and to Tokyo itself. Naval Aviation plays a smashing rôle in accomplishing this main objective, and its fighters, bombers, patrol and reconnaissance planes fly over broad expanses of the Pacific performing missions that will culminate in the final silencing of the enemy in the days to come.





IN BALMIER DAYS MARSHALLS OFFERED PALM-SHADED STROLLS BY WATER



ISLANDS DERIVE NAME FROM BRITISH CAPT. MARSHALL, 1788 EXPLORER

# NANYO-CHO GOVERNS MANDATED ISLANDS

**N**ANYO-CHO is the name of the system of administration applied to the Japanese mandated South Seas islands. Its boss, or director, who is appointed theoretically by the emperor but actually by the cabinet, lives at Koror on Palau Island. He answers directly to the Minister of Overseas Affairs in Tokyo on broad policies, and to other ministers in matters coming under their portfolios.

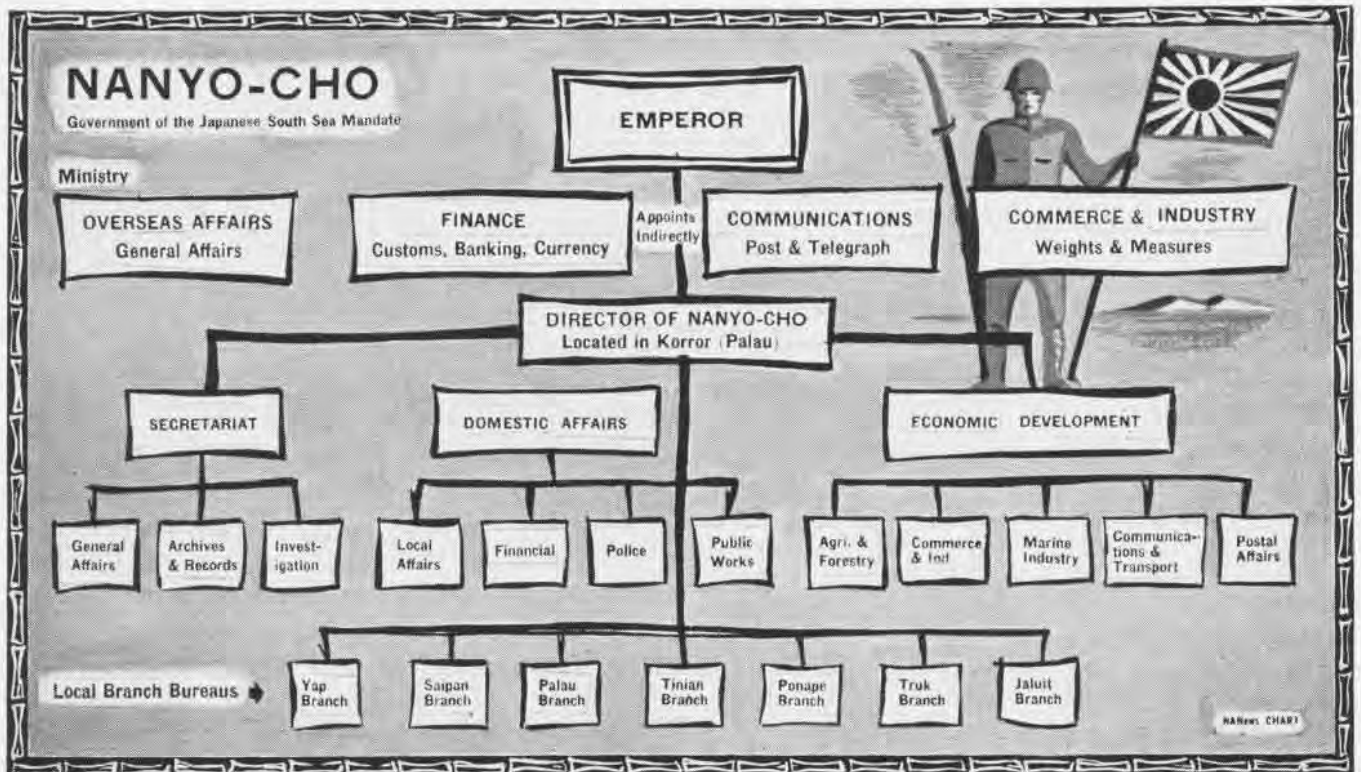
The director of Nanyo-cho administers his scattered charge outside the sphere of legislation of the Imperial Diet. General laws are laid down by Imperial ordinance, and often the director's responsibility consists in applying to the mandated territory laws that already exist in Japan proper.

His administration is divided into three sections: SECRETARIAT, including general affairs, archives and records and investigation; Department of DOMESTIC AFFAIRS, which handles local affairs, schools, finances, policing and public works; Department of ECONOMIC DEVELOPMENT, to which is assigned responsibility for agriculture, forestry, commerce

and industry, marine industry, communications, transport and postal affairs.

Branch bureaus situated in strategic towns among the islands spread the influence of Nanyo-cho locally. Bureau chiefs appointed by the director back at Koror oversee census taking, almsgiving, policing, hygiene, tax collecting, education, religion, industry, engineering and harbor works. They may administer the law locally and, in some cases, issue special regulations.

**N**ow that our advance in the Pacific has crashed through the outer limits of the Japs' mandated empire, Nanyo-cho must give way to American processes of government. As each Marshall position fell to the American forces, Admiral Nimitz, as theater commander, was proclaimed Military Governor to the natives. This government is administered by officers specially trained in the Naval School of Military Government and Administration set up in 1942 at Columbia University in preparation for this development.





Permanent nature of defense installations contrary to peaceful mandate conditions is reflected in airstrips on Eniwetok Island

## KWAJALEIN: ATOLL'S PULSE

**K**WAJALEIN, world's largest atoll, which received the brunt of the U. S. Navy-commanded assault on February 1, was not the only heavily fortified atoll in the Marshalls. But situated as it is at the strategic heart of the Group, it is not difficult to understand that the element of surprise, exploited by the Navy for all it was worth, proved highly effective.

For to beach invading Marines on Roi and Namur Islands in the north, and Army troops on Kwajalein Island in the south of Kwajalein Atoll, naval surface units by-passed and risked air attack from neighboring fortified atolls: Jaluit, Mille, Maloelap, Wotje. This threat was lessened, however, by the thorough job previously done by Navy and Army air forces of singling out Jap defenses by camera and of shattering installations, planes and air facilities by ceaseless pounding.

Withering salvos from the guns of advancing surface units of the Fleet added to the destruction that poured down on the Japs from the air. Operations of air, fleet and ground forces proceeded with perfect timing and coordination.



Roi Island connects with Namur Island by causeway, forming northern boundary of fortified Kwajalein, world's largest atoll



AERIAL VIEW OF BOOMERANG-SHAPED KWAJALEIN ISLAND, SOUTHERN TIP OF KWAJALEIN ATOLL, REVEALS JAPANESE DEVELOPMENT FOR AIRCRAFT





HEAVY U. S. BOMBARDMENT OF TAXIWAYS, SERVICE APRONS INTERRUPTED JAPS' NORMAL AERIAL OPERATIONS ON STRATEGIC MILLE IN MARSHALLS

## MILLE IS OUT ON LIMB

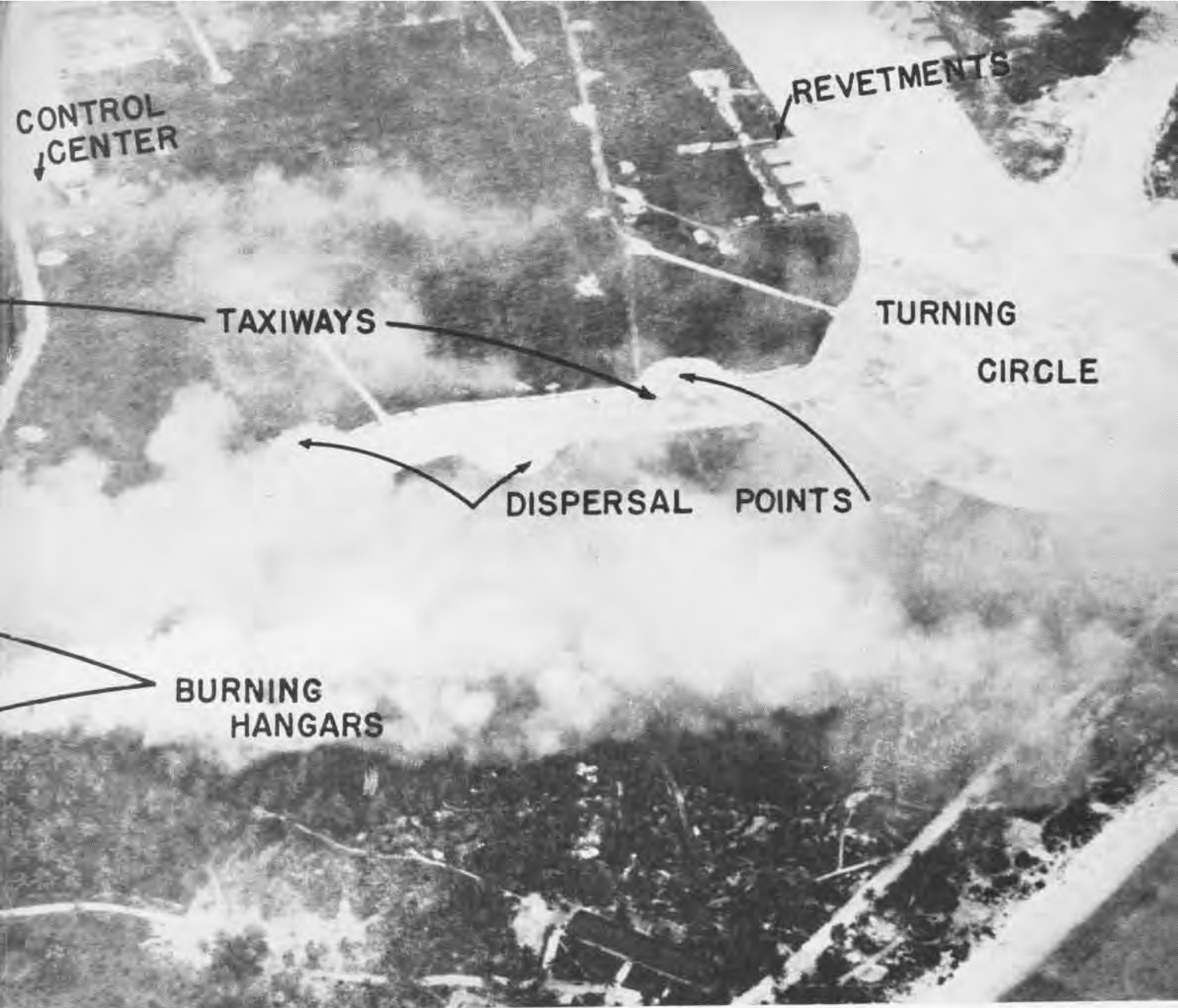
**M**ILLE, triangular-shaped island on Mille Atoll, typifies the strongly fortified pre-Pearl Harbor defenses erected by the enemy on the sprawling islands of the Central Pacific, in spite of the League's mandate authorizing promotion only of peacetime industries. It formed the southern anchor of the Japs' Eastern Marshalls defense zone.

Like its many counterparts in the Central Pacific, Mille became, under Jap hegemony, nothing more than an island airfield, or an anchored carrier, with buildings, installations and personnel based there to maintain this link in a closely knit circuit of advanced air bases.

Mille, like other atolls in the Marshalls Group, was cut off from sources of supply and communication by the Fleet's swift stab at Kwajalein to the northwest. To aid its helpless outposts, the Jap Navy would have to risk the gauntlet of the powerful U. S. Fleet now in control of Kwajalein.



Low oblique covering detail in photo at farthest right shows demolition of hangars and repair shops. Bombs punched deep craters in service apron



U. S. AIR ACTIVITY REVEALS EXTENT TO WHICH JAPS HAD FORTIFIED MARSHALL ISLANDS MANDATED BY LEAGUE FOR PEACEFUL DEVELOPMENT



Smoking planes on Mille's runway prove accuracy of bombers' aim in shattering Mille's defenses

Bombs destroyed Mille's plane runways, hangars and repair shops, damaged barracks; powerful U. S. Navy air offensive during many strikes steadily drained Jap resistance



# SHORE STATIONS

► **NATC PENSACOLA**—A new "Dilbert Dunker," regarded as an improvement over similar training devices at other stations, has been added to the survival course at the Naval Air Training Center, Pensacola, to give flight students a highly realistic lesson in escaping from a sinking plane after a forced landing at sea.

The "Dunker" is a complete SNJ cockpit, mounted on twin rails 25 feet long and set at a 45-degree angle at one end of an indoor swimming pool. The student enters the cockpit at the top of the incline, straps himself in with safety belt and shoulder harness and signals he's ready. An operator releases a brake and the "Dunker" dives into the pool at an estimated 20 knots, rolling down slide on ball bearings.



At the instant of impact, the forward edge of the cockpit strikes a tripping device and the "Dunker" is thrown violently over on its back, remaining submerged in that position while the student makes his escape. He's allowed 30 seconds to get out of the cockpit, and if he doesn't show up in that time, a life guard goes to the rescue.

Instructors say that a trip in the Pensacola "Dunker" is the nearest thing to an actual forced landing—and resultant submersion—yet devised as a training aid.

► **NATTC MEMPHIS**—A bulletin of prime importance concerning the serious shortage of fuel oil confronting the station this winter has been issued by the executive officer.

Surveys made by the Bureau of Yards and Docks have shown that savings of 10 to 25 percent can be made through the use of an efficient conservation program. If, on this station alone, 10 percent can be conserved within a 30-day period, enough fuel will have been saved to furnish the power to move an escort carrier 1,590 nautical miles.

► **NAS LIVERMORE**—A program for employment of personnel in confinement was instituted at this station recently with highly satisfactory results. Utilizing the services of prisoners from a nearby Naval Personnel Distribution Center, an average of 90 men per day have been employed.

Buses call for and return prisoners to the personnel center daily, and the men are provided their noon meal while aboard the station. As a result of this activity much work has been accomplished in various fields. Special attention has been given sorting material for salvage, handling stores, digging ditches and similar tasks. Proper and adequate provision has been made for safeguarding prisoners made

available for this work. Not only has the program been of material benefit to the station, but it is felt that the men engaged have been bettered as a result.

► **NAS BUNKER HILL**—A recurring problem of what to do with worn flying boots has been economically solved by securing aid of a neighboring tire repair company. Boots costing from \$12 to \$18 a pair, which were wearing out mainly at the heels, now are getting a vulcanizing job and results have been excellent. Vulcanizing a pair of boots costs \$5, refinishing costs 50 cents, and the repaired boots are outlasting new boots.

Another conservation measure successfully developed has been securing linings and spare parts for repairing gosports. Interlinings for gloves are being acquired and will provide added protection against cold weather during winter months.

► **NAS MEMPHIS**—The bayonet and hand grenade ordinarily are considered weapons of soldiers and Marines, but a short program has been devised here at NATTC to make every bluejacket student proficient with these weapons before going to sea or to more advanced training elsewhere.

This is believed to be one of the first naval establishments of this nature to institute teaching bayonet and hand grenade fundamentals.

► **NAS CLINTON**—The phone rang in operations tower. "Hello, this is the commander," said the voice at the other end. "Do you see my house riding down the road?"

"Your house coming down the road? Say, brother, do you think I'm nuts? If you're the captain, I'm Lana Turner! Now leave me alone, I'm busy," was the reply.

One minute later the phone rang again. This time the voice was insistent. "This is the commander," pleaded the voice, "Listen carefully. My house is being moved from the west side of the station to the south side. Please take a look and tell me if you note any progress. The house is three days overdue and I'm rather anxious."

The tower operator seemed half convinced. He strolled to the window and, sure enough, there was the house creeping down the road at snail's pace. He returned to the phone, rather sheepishly.

"Yes sir, your home is on the way," he reported. "Beg pardon, sir, but for a moment I thought it was me, and not the house, that was being taken for the ride!"



► **NATC CORPUS CHRISTI**—"Salute and Ride"—that's the slogan adopted by the Exchange Club at a recent meeting, designed to give servicemen and women in Corpus Christi a lift.

Club members are distributing windshield stickers for automobiles whose owners agree to give rides when service personnel indicate desire for a ride by giving a salute. Corpus Christians, it was pointed out, have been liberal in giving rides and this program was instituted to give even more when the desire is indicated.

► **NAS LAKEHURST**—The largest class in the history of Lakehurst's Parachute Riggers' School was graduated recently, with sailors, Marines, WAVES, Marine women and SPARS being assigned to duty upon completion of three months' training here. It was the first graduation of SPAR trainees on the station.

The school teaches students—who work in pairs—to pack and repair parachutes of all types, as well as maintenance of flight clothing and life-saving equipment. Male personnel must make one jump from a blimp here, a "graduation jump" to qualify for a rating. Self-packed chutes are used in the leaps.



► **NAS JACKSONVILLE**—In a move for broad coverage of news from all parts of the station, the NATTC "Sleeve" and the "Jax Air News" have merged. Personnel benefit from the move in many ways. First, NATTC is able to get the "word" each week, rather than wait for every other week to read the "Sleeve." Second, certain general items which interest all hands will not appear as a duplication in both papers. Third, due to labor shortages, difficulty of printing more than one paper is eliminated, and fourth, standard cartoons and comic strips of entertainment value are available to NATTC via the "Jax Air News."

► **MCAS CHERRY POINT**—In order to stimulate interest in current air intelligence on the part of officer personnel, weekly meetings are being held on this station.

The program, lasting about an hour and a half, normally consists of a brief training film, intelligence report and discussion by an officer on subjects of general interest. These discussions have covered such topics as "The Geography and Fortifications of the Marshall Islands," "The Battle of Midway," "Early Operations at Guadalcanal," and "The Carolines, Marianas and Bonins." Refreshments and possibly an informal discussion conclude the meetings which are becoming increasingly popular every week.

# TOKYO TALKS

►NAS NORMAN—Special curtains have been fitted out for windows of cadet ready rooms at the flight line to facilitate showing of training films in connection with foul weather schedules. Curtains are hung over window areas to black out the light and are taken down after each film session. A portable projector and screen complete the set-up which precludes necessity for marching cadets to buildings in other parts of station where films are regularly shown. By having an improvised theater at the flight line no time is lost in getting flight operations under way in event weather clears.

►NAS MEMPHIS—To facilitate placing flare pots and range lights for night flying, their proper location has been indicated by circles painted in a series of eight courses on both maps.

Circles are 2 feet in diameter with numerals 1 foot high, painted with yellow traffic paint which wears well under heavy activity. Courses are numbered clockwise, each starting on the edge of the ground traffic circle. Spots for range lights are at far end of each course on opposite sides of mat and are three 1-foot discs located 15 feet apart.

►NAS DALLAS—Matériel officers are constantly confronted with the problem of keeping enough boots, goggles and heavy jackets on hand for issue when the supplies have to be checked in and out for each hop. Invariably a score of Dilberts keep jackets out overnight and forget to turn in goggles.

The matériel officer at the primary squadron here hit upon a novel way of handling the situation. He had a large board made with row after row of little numbered hooks. Then he had small tags made with a number on one side and a solid color on the other. For each numbered hook, four or five numbered tags with varying colors were provided. A red tag is good for a pair of goggles, a blue tag for boots, green for heavy jacket and so on.

As each student reports to the squadron, he receives a number and is given the chits from the hook with that number. When he needs a pair of goggles, he turns in his red tag. It is hung on the hook, face up, and the color stands out like the proverbial sore thumb. When he brings the item back, he gets his colored chit. If he fails to turn it in by the time his wing secures, the tag is there, alone in a sea of white numbered tags, and it takes only a minute to call him back.

►MCAS CHERRY POINT—Initial step in a comprehensive conditioning schedule recently was completed by all officers and enlisted officers of the air station and Third M.A.W. Methods of abandoning ship and a combat swimming program have groomed amphibious Marines for action on a moment's notice. Those who qualified on the first practice swim were required to complete 200 yards in waves of four, using breast, side, and back strokes. Jumps from two platforms of 15 and 25 feet completed the first phase of program.

## —TO THE U. S.

Tokyo voices an appeal to the people of the U. S. to "cooperate and join with us in the New Order, righteous for the entire world." In a radio address reported by Domei, Publicity Minister Lin Pai-sheng says: "You Americans, the time has arrived for you to welcome back your young men, husbands, fathers and sons from the battlefields to your cozy firesides." After criticizing the "Open Door" policy of the U. S., Lin emphasizes that "Japan is firmly determined never to surrender to any nation whose policies aim solely at penetrating Asia and dominating Asiatic peoples economically and culturally for their own selfish ends."

## —TO CENTRAL AMERICA

Japan is pushing gigantic plans for a Tokyo-to-Berlin railroad "that will be beneficial to the whole world." The broadcast visioned locomotives driven "partly by propellers and probably also by rockets, passing by tunnel under the Sea of Japan and traversing plains, deserts, mountains and marshlands—not to mention the Pamir Plateau, the 'ceiling of the world.'" The idea is for the Japanese segment of the line to meet the Berlin-to-Bagdad railway after the Japanese trackage passes Teheran. The Japanese "blueprint" calls for seven days' travel time. "However great the diffi-

culties may be, the benefits to be derived from such a line can easily be imagined."

## —TO JAPAN

Premier General Hideki Tojo is quoted as saying that "Japanese military operations in all theaters of war are going on smoothly according to plan." Japanese air units, he said, are "constantly maintaining a defense of the vast area" of Burma, French Indo-China, Thailand, and Malay. Other air units, he said, are "also successful in patrolling the Bengal Bay area and the area over the seas south of Sumatra and Java." In Manchuria, he declared, Japanese defensive forces are constantly on the alert, while an "airtight defense" is being maintained in Japan proper.

## —TO EAST ASIA

"Green tea, miso, shooyu, and shakuhachi, as entertainment materials which have been sent by way of the second repatriation ship, *Teia Maru*, to comfort Japanese nationals in the enemy nation, America, have all arrived safely at New York. These goods have been distributed among 92,500 Japanese nationals in the U. S., Canada, Hawaii, Cuba, and other areas."

## —TO INDIA

"If Allied airmen bomb private homes and machine-gun women and children they are manifestly not entitled to the protection of certain international laws afforded to war pilots. Enemy airmen shot down over Tokyo almost in the act of machine-gunning children were punished in an exemplary manner. Similarly, those recently caught over Nuremberg and Hamburg are now being tried as war criminals. If such punishment does not deter the Anglo-Saxons from repeating such loathsome crimes, they must remember that those who live in glass houses must not throw stones."

## —TO EAST ASIA

Japan may have had its reverses in the Pacific, but "on the continent" it is "still superior." Moreover, says Tokyo: "There is no indication that the British, who value the fighting on the European front very highly, will transfer their fleet for operations in the Indian Ocean." A Japanese admiral is quoted as saying that from a military standpoint "Japan stands geographically almost impregnable to any enemy attack."

## —TO LATIN AMERICA

Attacking "the American design for world conquest," Sadao Iguchi, spokesman of the Board of Information, denounces the decision made at the Teheran and Cairo conferences to concede to the U. S. all the Pacific islands under Japanese mandate. He proclaims that "the islands under Japanese mandate are securely in Japanese hands and will always remain in Japanese hands as a bulwark against any American ambition to dominate the world." Domei further stresses his statement that "it is inconceivable that Britain, Soviet Russia, and China have agreed to any concession of that kind to give the U. S. a lone hand in the war."

**SHOW ME THE WAY TO GO HOME**

**Pictures in the Sky**

Identify the lettered navigational stars in the diagram above:

A .....  
 B .....  
 C .....  
 D .....  
 E .....  
 F .....  
 G .....  
 H .....

(Answers on page 40)



# PENSACOLA



## NAVY'S FIRST AIR STATION HUB OF TRAINING

**T**HIRTY YEARS AGO Navy built its first air station at Pensacola to train pilots for aerial combats which farsighted leaders foresaw covering the seven seas. Today, the Naval Air Training Center there provides intermediate training for half the Navy's 30,000 pilots each year, using its seven fields to full capacity. Specialists in

the fields of photography, aviation medicine, and gunnery get training at NAS Pensacola, fitting themselves for jobs with the Fleet. The station's history dates back to days of Andrew Jackson, when it was Navy yard. Its rosters of bygone classes contain most of naval aviation's biggest names. In 1914 it had only 3 instructors.

# The Navy's Annapolis of the Air

PENSACOLA, called the "Annapolis of the Air" because it is the Navy's first air station and now one of its largest, plays a key rôle in training naval aviators as it enters its 30th year of operations. The 30th "birthday" anniversary fell on January 20.

It is the center of naval aviation training following recent creation of an over-all organization known as Naval Air Training Command. Under this come the existing Primary, Intermediate and Operational training commands. NATTC, formerly with headquarters at Pensacola, has shifted to Corpus Christi, which provides intermediate training with Pensacola for the entire pilot output of the Navy.

Pensacola has a complement of many thousands of officers and men. It was selected as the first naval air station because of its situation on the Gulf of Mexico, where many bays and inlets, flat terrain, sandy soil, and good weather make it ideal for year-round flying.

Six auxiliary air stations are within a 40-mile radius. Whiting, Bronson, Barin, Saufley, Corry and Ellyson, all named for pioneer naval aviators. Because of space limitations at the main station, all of the satellite fields have larger landing facilities than Chevalier field.

Hundreds of SNV's, SNJ's, SNB's and OS2U's, in addition to PBV's for patrol training, are assigned to Pensacola training center. Each auxiliary air station offers a special type of training within the intermediate curriculum, the student pilot making a "tour" of them during his period at Pensacola.

Specialized schools, such as aviation medicine, photography, and gunnery also draw thousands of students for training that will fit them for work with naval pilots in one way or another.

Because of its spacious grounds, moss-hung live oaks, and many fine permanent buildings, the naval air station appears much like a college campus. Graduations are held twice a week as various types of students finish their work and go on to other schools or to the Fleet.

Its "campus" has an international flavor not found at many continental stations. Besides the usual complement of

officers and men, Pensacola has students from Royal Air Force, Royal Navy's Fleet Air Arm, French, Coast Guard, Marines, U. S. Army Air Forces, plus Navy "boots," "Tarmacs" and cadets.

British and French trainees learn to fly patrol boats, as do Army and Coast Guardsmen. All Coast Guard aviators get intermediate training at Pensacola. Men and sentry dogs of that branch also carry on security patrol of the station.

RAF cadets get primary training elsewhere in United States before coming to Pensacola for p-boat work. This fits them for flying the sea lanes around the British Isles for Coastal Command. They return to Britain for operational training.

Trainees of the Royal Navy Fleet Air Arm attend the same basic and instrument flight classes as RAF men. Since FAA flies fighter and torpedo bomber aircraft instead of PBV's in action, its pilots branch into different classes after completing those two courses.

TRAINING methods for air cadets in United States and Britain differ, so that some instructors at Pensacola for RAF and FAA personnel are English, Canadian, Australian and New Zealanders. FAA students go on to Jacksonville or Fort Lauderdale for operational training.

Only a small number of French students are trained at Pensacola. Students able to speak and understand English are given the same general type of flight training as American youths, specializing in p-boats. Prospective aviators from Latin American countries once were trained at Pensacola and Corpus Christi, but now all go to the latter station.

Pensacola's A&R Department is one of the five largest at any naval air station, being housed in numerous buildings scattered all over the grounds. Its engine overhaul shop is one of the most modern in the United States. A&R's main task is to keep as many as possible of station's aircraft in flying condition with as little waste time and effort as possible.

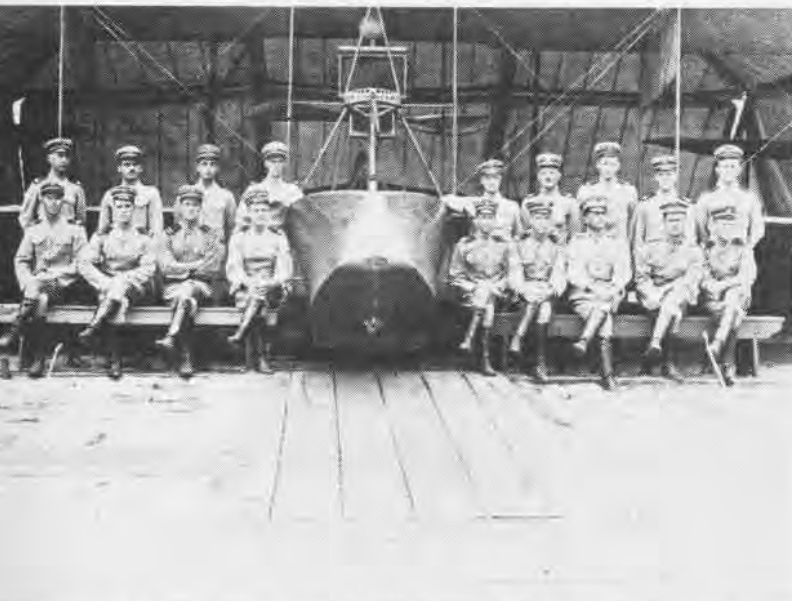


MASS PHYSICAL EXERCISES BY SQUADRON THREE AT NAS PENSACOLA TRUSTY PBV'S FIND LOTS OF FLYING SPACE OVER GULF OF MEXICO





PENSACOLA, IN PRE-WAR DAYS, SMALL IN CONTRAST TO SIZE TODAY



MANY FAMED NAVY AVIATION NAMES IN THIS FIRST PENSACOLA CLASS



PENSACOLA'S NAVAL AIR STATION LOOKED LIKE THIS 30 YEARS AGO

## PENSACOLA MARKS SPOT OF FIRST WHITE SETTLEMENT ON CONTINENT

PENSACOLA'S history goes back into the past centuries almost to Columbus' discovery of America. The bay on which the naval air station is located was discovered by the Spanish in 1528. It was first colonized in 1559, six years before St. Augustine, which is credited with being the first continuous white settlement in North America.

In intervening years Pensacola lived under five flags—Spanish, French, English, Confederate and United States—and changed governments 17 times. It was burned by Indians, destroyed by hurricane, and razed by the Confederates. It was the site of a Navy yard in 1825, nearly 100 years before it became the Navy's first air station.

The yard was the center of naval action against Gulf slave trade and piracy early in the 19th century. During the Mexican war it outfitted the squadron which blockaded the Mexican coast. In the Civil War it changed hands twice, its facilities helping Admiral Farragut achieve his victory at nearby Mobile Bay. In 1906 a great hurricane and tidal wave severely damaged the yard.

The yard had played a small part in the Spanish-American war and was decommissioned in 1911. About that time aviation began to develop and a board headed by Admiral George Dewey recommended that the U. S. Navy develop an air arm. Pensacola Navy yard site was its unanimous choice for the first training site and first air installations were constructed in 1914.

The school first boasted a complement of three instructors, 12 mechanics and eight seaplanes in tent hangars along beach, illustrated in accompanying photograph. Lt. John H. Towers and Ensign G. de C. Chevalier made the first hop.

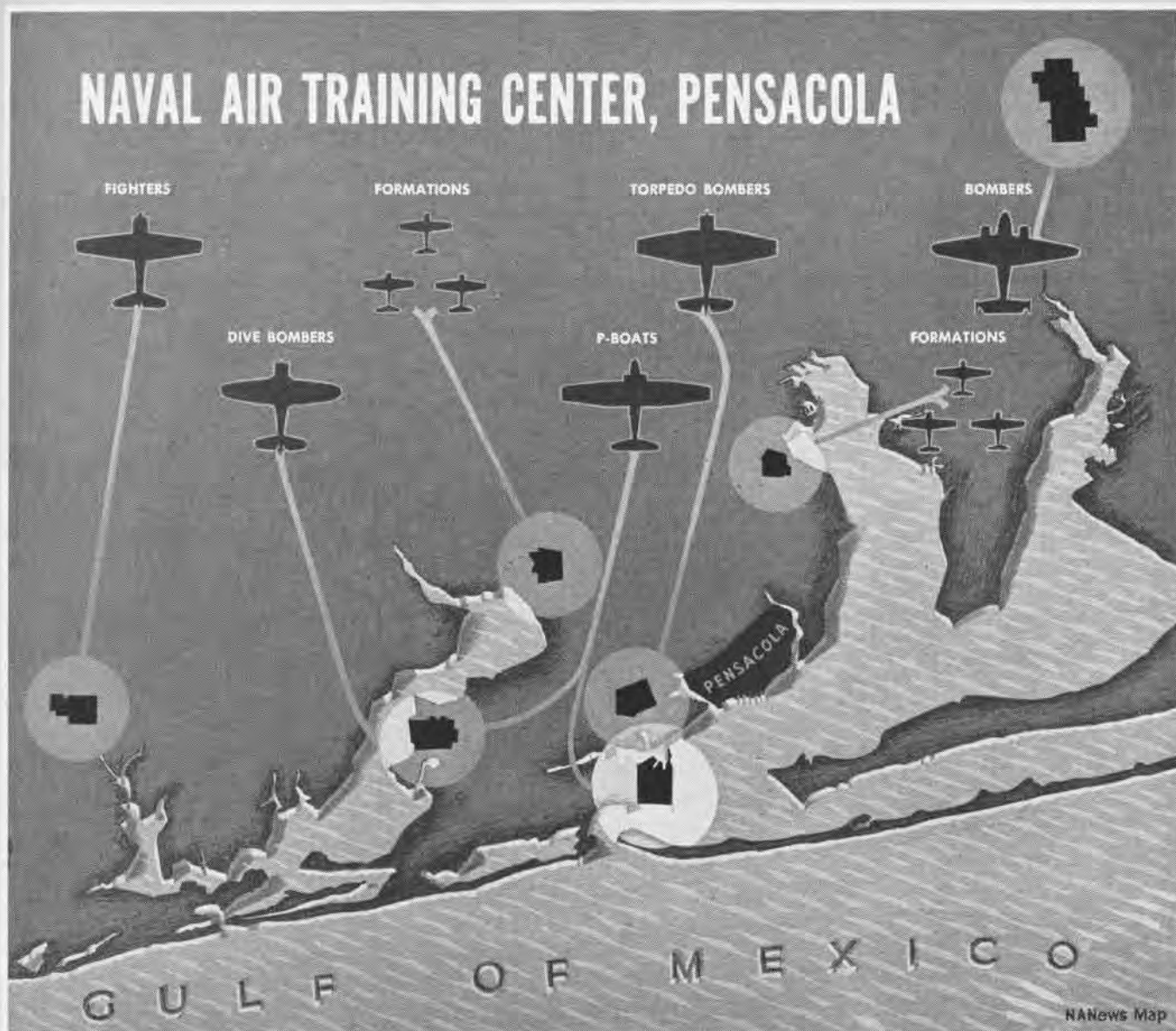
By the end of World War I, Pensacola training had expanded to a personnel of 438 officers and 5,539 men. It had trained 921 seaplane pilots, 63 dirigible pilots and 15 free balloon pilots. For a time lighter-than-air training was offered there, until transferred to Lakehurst in 1921. A disastrous hurricane and tidal wave hit the station in 1926 and did damage estimated in excess of \$3,000,000, just 20 years after a similar storm had struck the area.

THE top photo on this page shows Pensacola as it appeared in 1932, after the town of Warrington, comprising about 300 buildings, was moved from the left side of the station and homes and swampland above the station removed, to make room for expansion.

The second photograph shows a group of the first instructors and students at NAS Pensacola, including some of the most famous names in naval aviation. In the front row, left to right, are R. C. Saufley, P. N. L. Bellinger, Kenneth Whiting, H. C. Mustin, A. C. Read, E. F. Johnson, A. A. Cunningham, F. T. Evans and E. G. Hass. The back row has R. R. Paunack, E. W. Spencer, Jr., H. T. Bartlett, W. A. Edwards, C. K. Bronson, W. M. Corry, Jr., J. P. Norfleet, E. A. McDonnell, and H. W. Scofield. Ellyson was Naval Aviator No. 1, Cunningham No. 5, Bellinger No. 8, Muston No. 11, Saufley No. 14, Bronson No. 15, Whiting No. 16 and Spencer No. 20.

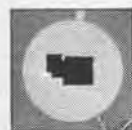
In the lower photograph is shown the naval air station as it looked during the first weeks of its organization, 30 years ago, at the site of the abandoned Navy yard on the Gulf. The tent hangars were adequate during normal weather conditions, but when a heavy blow was in prospect planes were moved to the brick structure in the background.

# NAVAL AIR TRAINING CENTER, PENSACOLA



## AIRFIELDS HONOR FAMOUS FLIERS

Names famous in the history of naval aviation are found in the list of auxiliary air stations around NAS Pensacola.



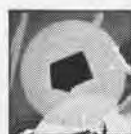
**BARIN FIELD**—Named for Lt. Louis T. Barin, one of first reserve officers to qualify as a naval aviator. He was a noted stunt flier and flew in NC-1 to Azores area. Field is in Alabama.



**BRONSON FIELD**—Named for Lt. (jg) Clarence K. Bronson, Naval Aviator No. 15. He participated in the occupation of Vera Cruz, shortly after qualifying as a naval aviator.



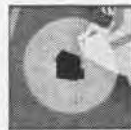
**SAUFLEY FIELD**—Named for Lt. (jg) Richard C. Saufley, who was Naval Aviator No. 14. He drew first aerial map of combat territory at Vera Cruz in 1914; one of first instructors.



**CORRY FIELD**—Named for Lt. Cdr. William M. Corry, Jr., early Pensacola graduate and World War I hero. Corry was Naval Aviator No. 23. Corry was Pensacola's first auxiliary field.



**CHEVALIER FIELD**—Located at NAS Pensacola, named for Lt. Cdr. Godfrey de Courcelles Chevalier, Naval Aviator No. 7. Made first landing on U.S.S. *Langley*, first night flight.



**ELLYSON FIELD**—Named for Cdr. Theodore G. Ellyson, the first Naval Aviator. He made first successful flight of a Navy plane from a catapult at the Washington Navy Yard in 1912.



**WHITING FIELD**—Named for Capt. Kenneth Whiting, commander of first American aeronautic unit to reach Europe in 1917. He helped develop arresting gear to stop planes on carriers.



## THOUSANDS OF STUDENTS RECEIVE THEIR NAVY WINGS AT PENSACOLA

THE UNITED STATES NAVY is training thousands of airplane pilots a year, and a half of these pass through the intermediate training at Pensacola, the rest being turned out at NATC Corpus Christi.

Because of the immense size of the program, intermediate training is the number one activity at Pensacola, whose seven local and auxiliary fields take aviation cadets out of "Yellow Perils" and turn them out ready to train in *Hellcats*, *Corsairs* and other operational types.

Students going through Pensacola for intermediate training make the rounds of auxiliary air stations for specialized work. At Whiting, which has the largest landing fields of the lot, they get instrument flying and twin-engine bombers. Ellyson and Sauffey fields train them for formation flying and basic work.

Bronson, Barin, and Corry fields specialize in cv training, introducing them to torpedo bomber, fighter and dive bomber types. *PBY's* operate from Bronson field and from the naval air station proper.

Many thousand students pass through the intermediate course every four months. The first month is devoted to basic training, flying *SNV* or *SNJ* aircraft, larger and heavier than primary trainers, to bridge the gap between primary and operational planes. Cadets get their first taste of formation and divisional tactics.

After they have familiarized themselves with the aircraft they get basic instrument training, meeting the Link trainer, radio range flying and flying on instruments, all highly important things for future fighter or patrol pilots to know.

Next step is assignment to a specialized type of aircraft—patrol bombers, observation, fighter, torpedo bomber, and scout bomber. Once the student knows in which branch

he will be operating, he begins to learn the special problems going with the aircraft.

If he is going to be an observation or vcs pilot he starts making water landings in *N3N's* on floats. *OS2U's* are used for scouting and spotting problems, gunnery and bombing runs, navigation and instrument flights. During the course he also gets his first taste of catapulting.

The *VPB* group learns twin-motor operation either in *SNE's* or *PBY's*. These men concentrate on long navigation and instrument hops, bombing runs and free gunnery.

The *cv* group flies *SNJ's* and goes in for flight gunnery, navigation, instrument flying, glide bombing, torpedo tactics, primary combat and formation tactics. Aerobatics taught include loops, slow rolls, Immelmans, precision spins, and wingovers.

ALONG WITH flight training, the intermediate cadet also gets intensive ground training and continues to receive attention in his physical well-being. Fitness programs of pre-flight school continue in modified form, with other recreational type athletics thrown in to keep him from going stale.

Included in the training given the cadet are such instruction as life-raft technique, how to use various repellents, dyes, and sunburn-protection methods, how to get out of cockpits under water, and how to use emergency life-saving gear. He is familiarized with types of rations he will be issued, how to "ditch" his plane in water or belly-land ashore and how to live in jungle areas.

The high point of his career as a naval aviator comes when the cadet finishes intermediate training and has his gold Navy wings pinned on his chest. He is commissioned an ensign in the naval reserve or second lieutenant in the Marine Corps and goes on to operational training or to instructors' school.

To handle the influx of cadets from the various primary schools over the country, Pensacola's facilities had to be expanded almost overnight. Where swamps, ponds and sand wastes once were located the Navy built miles of concrete landing runways, hangars and maintenance buildings.



STUDENT PILOTS FLY OS2U'S AT PENSACOLA



RADIOMEN FIGURE DRIFTS ON PLOTTING BOARD



PILOTS PRACTICE WATER LANDINGS WITH N3N'S



**SUNNY SKIES AND FLAT TERRAIN AT PENSACOLA HELP INTERMEDIATE STUDENTS MASTER PILOTING OF SNJ'S AND OS2U'S, WITH PLENTY OF WATER FOR PB7'S**



**Cadets get first taste of formation and divisional tactics in their basic training with SNV's and SNJ's at Pensacola**



**Catapulting of OS2U gives pilots training in type of take-off which they will use if assigned to battleship, cruiser**



**Radio instruction, part of the curriculum for all types of flight students before they win their gold Navy wings**



**Link trainer gives cadets a chance to test their hands at flying blind, using only plane's instruments for piloting**



# GUNNERY SCHOOL TRAINS AIRMEN

THE UNITED STATES may have the finest Navy fighter planes in the world in the *Hellcat* and *Corsair*, but they would be worth about as much as Wright biplanes if the pilots could not hit what they were shooting at.

It is the job of the gunnery school at NAS Pensacola to train intermediate cadets and enlisted men in the intricacies of fixed and free machine guns and to give them the practice that enables them to bring down Japs or Germans when they get them in their sights.

Recently the training program was expanded to include WAVES, who are being turned out with petty officer ratings as full-fledged air gunnery instructors. They instruct airmen how to shoot pistols, revolvers and machine guns on the range, and teach gunnery theory in classrooms, as well as operate special training devices.

Two general types of gunnery are taught at Pensacola, flight-student-ground gunnery and free gunnery, the latter mostly for enlisted men who will serve as rear gunners on SB2C's, TBF's and other planes. All flight students receive

48 hours of ground gunnery training prior to their work with actual firing in the air. During that time they receive instruction in pistols, shotguns, .30 and .50 cal. machine guns.

They learn how to estimate range and speed of enemy planes. They take apart and reassemble machine guns, study bombs, bombing equipment, theory of bombing, and use of pyrotechnics. All training is designed to show them how to fight their aircraft when they get in the combat zones where accurate shooting is the most important.

The second type of student, free gunners, also learn to recognize Allied and enemy planes, estimate range and line of apparent motion, strip guns and keep them operating. Operation and servicing of various combat turrets is taught them against the day when they go into real action.

Climax of intermediate training is reached at Gulf Beach where the gunner gets first practice firing at moving targets while being himself on a moving platform. Here he has first contact with firing a .50 cal. gun set in a turret. Hours spent shooting clay pigeons with shotguns pay off in results later on when the gunner knocks down his first deflector shot.

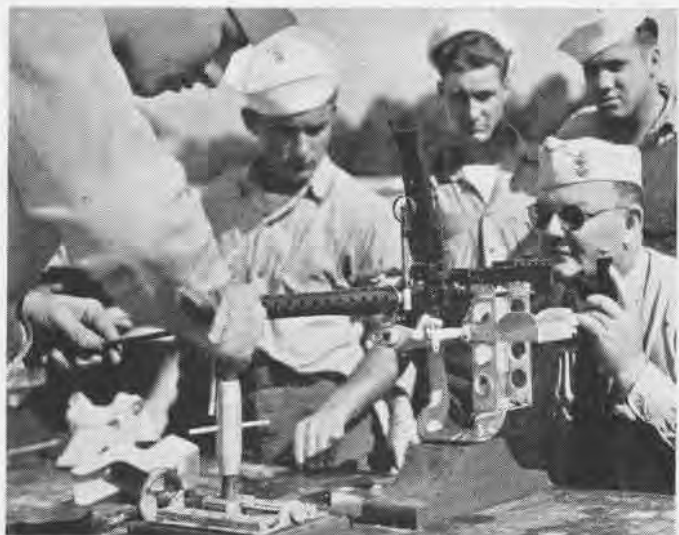
Free gunners, after finishing five weeks of intensive training, are assigned to operational training squadrons where they actually go into the air for firing practice on tow targets.



Turret firing is vital to air gunners; here turret mounted on truck aids mobility; gun camera mounted on right barrel



Shotgun mounted on swivel with spade grip is used to fire at incoming target; helps stress correct lead and follow-through



Boresighting of the .30 cal. machine gun tests the accuracy of its sights; gunner secures barrel before beginning the operation



Synthetic training devices are widely used at Pensacola to help gunners; motion picture sighting trainer proves popular



PIPER CUB AMBULANCE PLANE AT PENSACOLA IS EQUIPPED TO CARRY PILOT & SINGLE INJURED MAN; WIRE BASKET IN REAR OF FUSELAGE CARRIES LATTER

## FLIGHT SURGEONS PILOT PLANES

**T**HE MISSION of aviation medicine, whose officers are trained at the School of Aviation Medicine, NAS Pensacola, is to keep as many fliers in as many airplanes as many days as possible.

Two types of medical officers are graduated at the school, flight surgeons and aviation medical examiners. Both groups of doctors receive 60 days of instruction in the school. Their subjects consist of physiology, neuro-psychiatry, eye, ear, nose and throat, cardiology, tropical medicine, and allied subjects.

Emphasis is placed on application of these topics to aviation. In addition to lectures, practical work is given in mental and physical examinations of cadets. Students also receive training in high altitude problems in the three low-pressure chambers connected with the Medical Department.

In the low-pressure chamber work, medical officers see ear and sinus troubles and expansion of abdominal gas that is associated with changes in barometric pressure. Another feature of the school is a physiological acoustics laboratory where pilots and instructors check their intelligibility over aircraft noises. Recordings of their voices are played back to assist them in overcoming speech defects or weak points.

After two months in the school, about half of each class remains in Pensacola for six weeks of flight training. These men receive primary training in N3N's and the majority of each class solo these primary planes. Passenger time is spent in OS2U's and PBV's.

Ground school subjects are given to these officers in engine theory, navigation, and aerodynamics so that the medical officer may gain an insight into aviation problems.

Flight surgeon wings are worn by graduates of the school who have completed either the regular flight course or 60 hours of flying in naval aircraft and six months' duty with an active squadron following graduation as aviation medical examiners. Need for aviation medical examiners and flight surgeons was recognized in World War I, but was not so pressing until recent years when flying of today's high-speed planes brought nervous and physical disorders. Tension increases as the pilot spends more time in readiness for combat.



Oxygen flight chamber at Aviation Medicine School gives men high altitude tests; familiarizes them with their equipment



Acoustics room where pilots, wearing lip or nose-shield microphones, test voice intelligibility over engine noises





PHOTOGRAPHY STUDENTS GET MANY HOURS IN AIR TAKING MOVIES AND STILL; HERE STUDENTS OPERATE MITCHELL 35 MM. CAMERA IN PB4Y BLISTER

## NAVY'S ONLY PHOTO SCHOOL TURNS OUT CAMERAMEN IN FOUR MONTHS

**T**HE GOAL of the Navy's School of Photography at Pensacola is to take an enlisted man or officer who may not know how to operate a box camera and in four months turn him out equipped to take ground, aerial or motion pictures. Or for that matter, to perform almost any task involving film and lenses.

A Navy photographer is not a specialist in one type of picture-taking. He must know how to cover any Navy photographic assignment, anywhere, at any time, under all conditions.

The school is believed to be the largest school of naval photography in the world, occupying six large buildings with millions of dollars' worth of equipment at its disposal. An inkling of its size can be obtained from the fact that its laboratories have 50 contact printers, 50 en-

largers and several hundred still and movie cameras in continuous operation.

Training is divided into three phases. The beginner spends four weeks learning optics, chemistry of photography, exposure, darkroom procedure, with plenty of field assignments mixed in. He enters the advanced basic phase the second month, studying enlarging, flash photography, copying, slide making, photography of colored objects, filters, reduction, intensification and toning. In the final phase, student photographers take to the air for eight more weeks' training in aerial and movie cameras.

They learn aerial photography with fixed and hand cameras, map making, obliques, stereos, and vectographs. They process, edit and project their own movie film. Several kinds of cameras, including Eyemo, Mitchell, Akeley, and Bell & Howell, are mastered.

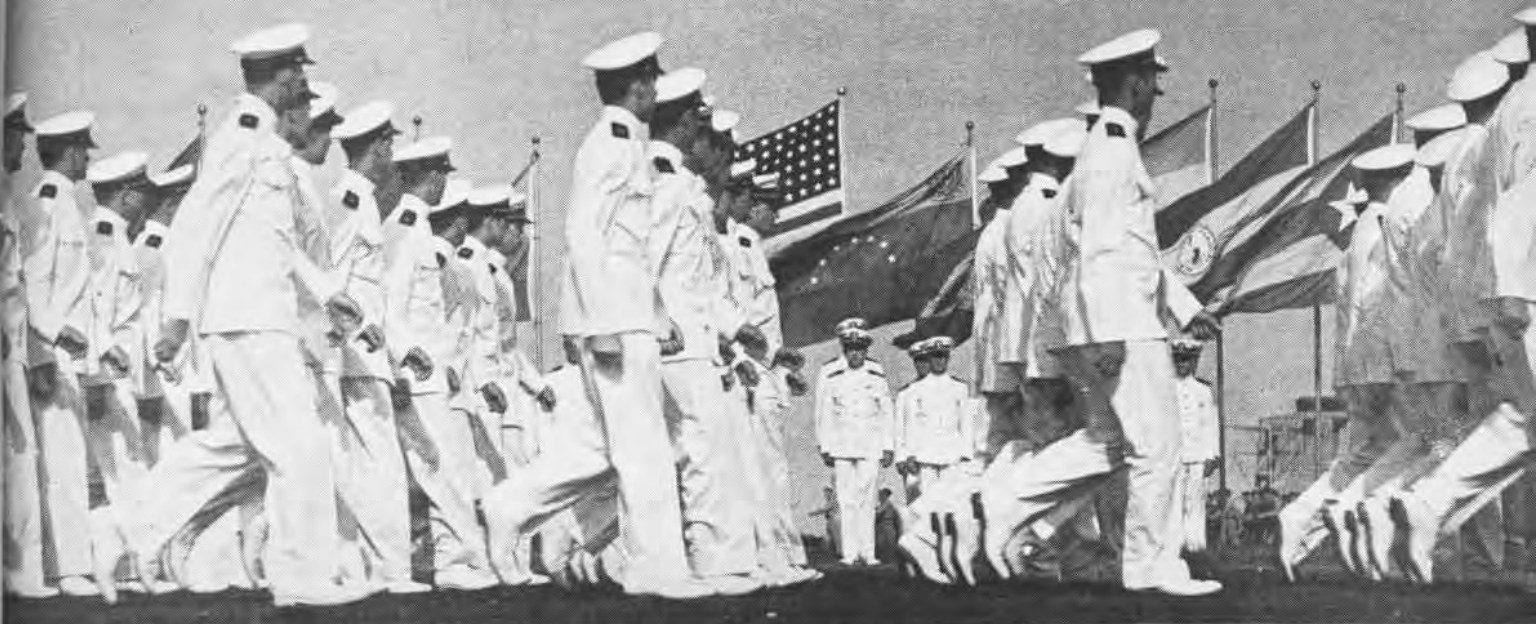
Although officers take the complete course along with the men at school, they usually take no pictures after graduating, but administer Navy photography afloat or ashore. Many students are experienced pilots sent back from the field to learn the problems of being photographic officers.



Advanced students check out on use of F56 aerial camera; photo school has 35 aircraft to fly its cameramen on assignments



Enlarging negatives he exposes gives photographer chance to see what good prints need; school has more than 50 enlargers



↑ Cadets marching by reviewing stand at NAS Pensacola during flight brigade parade; "graduations" are held twice weekly; station helps produce 30,000 pilot quota

Mass water taxiing in practice as O52U's and N3N's on floats leave beaching area prior to formation take-off; intermediate cadets fly many plane types at Pensacola ↓





utilized to press copper gasket tightly against clamp ring, thus compressing it enough to increase its diameter sufficiently to fit over exhaust stack. Ring gasket being of copper does not spring back to its original size when expander is removed, therefore no awkward manipulation of tool is required on actual assembly of the part.

[DEVELOPED BY W. E. BUNTE, AMM20, AND D. ALLEY, AMM10]

## Change Emergency Rations Substitute Hard Candy and Gum

Bureau of Medicine & Surgery reports that a daily ration of 1½ oz. of hard candy with a fruit flavor will maintain an individual for a reasonable time in a fair state of well being. This ration is almost totally absorbed and requires no water from the tissues for elimination of residual salts in the urine, thus conserving body fluids.

During the process of digestion of foods such as pemmican and chocolate, certain salts are formed that require considerable water for their elimination



JACKS UP ENGINE STAND TO PREVENT MOVING

in the urine, thus increasing the rate of dehydration of the body.

BuAer has requested that the following changes in aeronautical emergency rations be made as soon as possible:

Remove all pemmican and chocolate. Substitute approximately nine ounces of LIFE SAVERS, CHARMS, lemon drops; also one package of fruit flavored chewing gum and retain malted milk tablets presently supplied. This ration is considered ade-

quate for one man for six days. It is essential that new items be made as waterproof as possible, using scotch tape or other suitable materials available. Space saved should be used for stowage of additional water where practicable.

## Replace Wood Wheel Chocks Safety Feature for Work Stands

NAS PEARL HARBOR—A "fool-proof" safety feature for engine work stands has been developed at this station. This device is a jack consisting of a threaded crank and nut brazed into a steel plate. With this device it is possible to relieve wheels of all weights so that stand cannot move, eliminating a serious hazard to safety and personnel. It replaces the conventional movable wooden chocks which invariably became lost, misplaced or broken. It has also eliminated many bruises.

[DEVELOPED BY T. F. ANDERSON, CM10]

► **BuAER COMMENT**—This appears to be a good suggestion which could be applied at any overhaul station by A&R shop.

# HOW TO RIGHT CAPSIZED LIFE RAFTS



**SERVICE** reports indicate the need for a practicable means of righting capsized life rafts. A righting line for this purpose is being provided in rafts in production, and BuAer recommends that those now in service be fitted with a righting line as follows: a. Attach an independent piece of ¼" cotton rope 10 ft. long to the life line on either port or starboard side center of raft between life line patches; b. secure

to life line by two half hitches and serve; c. serve loose ends to prevent fraying. An overturned raft equipped with a righting line may be righted by tossing the line across to opposite center of raft and then, with knees braced against that side, pulling hand over hand until raft is righted. [When pulling righting line, be on lee side of life raft. When getting into raft from water, climb in on windward side.]

# CASU 'X' DEVELOPS ORDNANCE IDEAS



CASU 'X,' operating in the South Pacific area, has devised a number of useful adaptations of material and equipment for an advanced base service unit connection with ordnance operations. NANews presents a series of photographs and descriptions showing how CASU 'X' met the problems in the field and by using ingenuity solved them. Possibilities of advanced base aviation units adopting the schemes naturally are limited to the materials they have at their disposal. There the problem is as much procuring the materials as it is putting the ideas to work. Lumber and nails may be scarce.

►To keep trailers and equipment from deteriorating due to heavy rainfall and hot sun in the South Pacific, this bomb cover was constructed by handymen of the CASU. Sunshine is hard on rubber tires and rain never was noted for its beneficial qualities on metal gear. The cover is 10 feet high in front and five feet high in back to give it improved drainage qualities. Material used for the ready service bomb shelter was 2x4, 2x6 and 20x40 tarpaulin. An eight-foot earthen bank or revetment was constructed around three sides of the shelter by the Seabees for protection against blasts from bombs or shells.



►An air gunner's cleaning hut was constructed from a few boards, nails and tarpaulins. The hut was set aside for squadron personnel with one CASU ordnanceman in charge to keep them supplied with rags, cleaning rods, cleaning solution and other equipment that is needed to maintain guns in fighting trim. The hut is built with a 20x40 ft. tarpaulin and 2x4 lumber. The rectangular shaped hut was an advantage over a square or round building in that it provides ordnancemen and others working on the guns with elbow room.

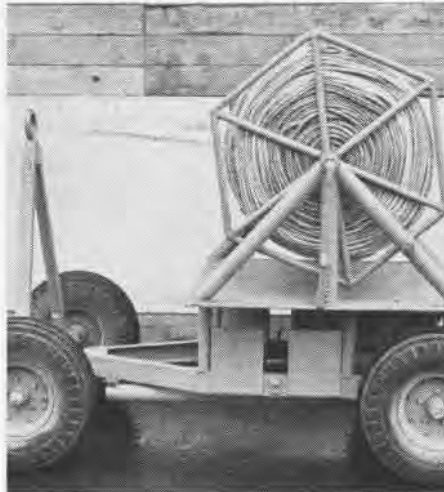


►This aircraft service unit showed its resourcefulness by adapting the Mark I bomb trailer as a portable gun-cleaning trailer. Due to great distance between the ordnance shop and the line, some means of cleaning guns on the line had to be set up. This Mark I bomb trailer was converted into a gun-cleaning device and proved very satisfactory, it was reported. Materials provided for workers who use the trailer were a rag container, gun-cleaning pan, tool box, cans of cleaning solution, portable fire extinguisher and four cans of oil. A slotted holder retains the guns.

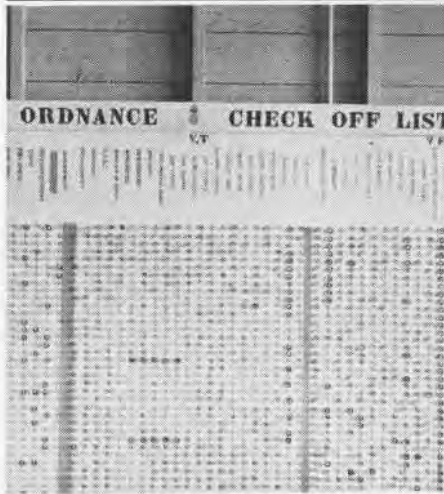




►A tow target trailer was constructed from a Mark II bomb trailer. The reel shown (upper left) will hold 9,000 feet of line or more, depending on size of the reel. It is so constructed that it will last indefinitely and gives greater portability to tow target line. The reel is constructed of steel tubing with a crank on one side to permit rewinding with facility. The tongue provided on the bomb trailer makes it easy to hitch to a power vehicle, which can haul it to any part of the station on short notice. BuOrd suggests that squadrons, particularly fighter squadrons and CASU's may find it advantageous to make provision in the field for this device or something similar based on this scheme.



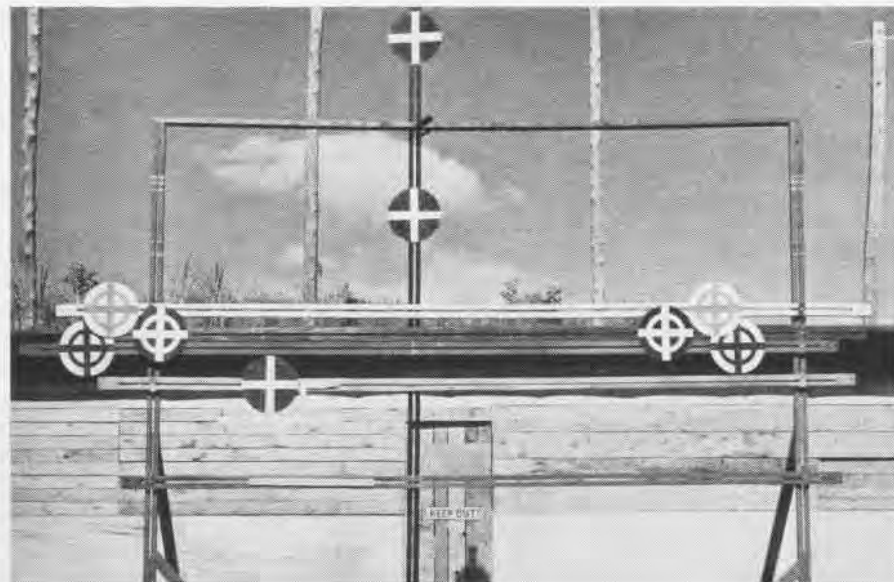
►When building materials are scarce and permanent installations for storage of belted ammunition are not feasible, an ammunition hut (upper right) such as was developed by CASU 'X' may prove useful. The marine tent was valuable for belting and stowing practice ammunition where there were no magazines to store the shells in. Standard tent floor construction would be a suitable base for the hut or the illustrated type of flooring could be adopted. Inside the structure, shelves about waist high were constructed to provide working space for ordnancemen. By leaving a space between base and tent covering, ventilation, so necessary to tropical workshops, can be introduced.



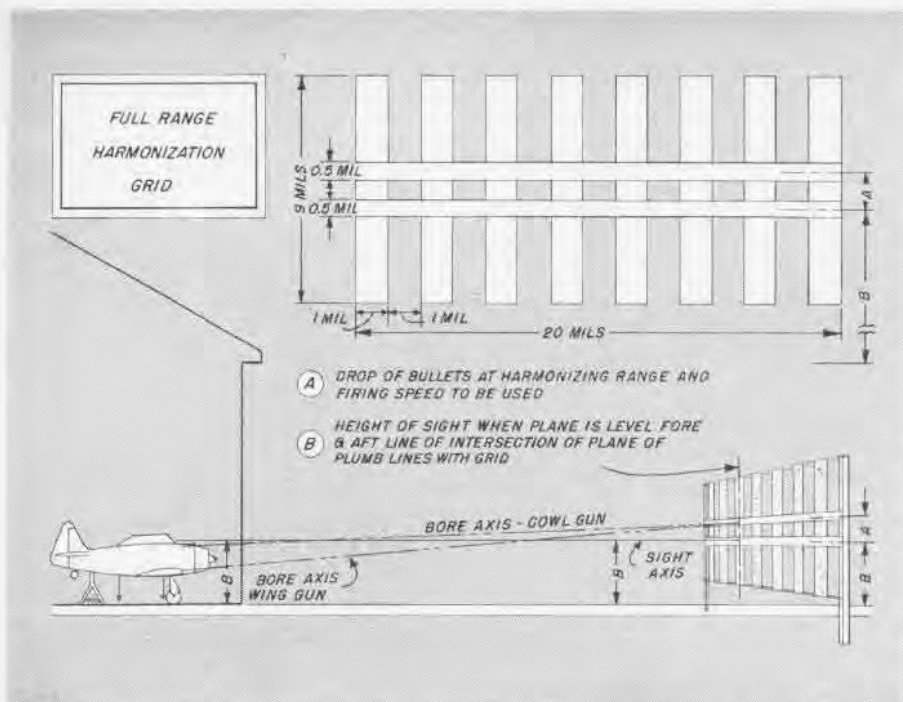
►An ordnance checkoff list was perfected by CASU 'X' which simplified the job of the CASU and Air Group gunnery officers in keeping track of what work had to be done on an aircraft's ordnance before it could leave. Check sheets were handed to all crew leaders, who in turn checked all equipment in that squadron. On the sheet they marked red or

green and comment. Red indicated work had to be done on that particular ordnance part, green that it was in working order and comment meant that it required minor adjustments. Sheets were turned in to storeroom checker, who put red or green washers on the board (picture lower left, above). The idea has proved valuable.

►Another use for bomb and torpedo trailer Mark II has been found—to hoist the tail of an aircraft so that its guns can be leveled off and boresighted. There have been many methods of lifting the tails of fighters and other aircraft. With this particular method, illustrated above, lower right, one of the good features of using the Mark II trailer is utilized—facility of operation by one man. A small U-shaped tooth was installed on the crossbar of the lifting arm so that it would engage a tail bracket.



►Because of the non-existing hangar doors CASU 'X' did not have to set up a boresighting pattern, the stand illustrated in the picture at the left was designed and found satisfactory. They were constructed from 2x4 lumber, with a half-inch slot cut in them to permit adjustment of the targets for the particular type of plane being boresighted. Targets were 16 inches in diameter and made from sheet steel. The entire stand was mounted on rollers for portability. BuAer suggests that diameter of the target screen discs (or the diameter of the circle circumscribing crosses if crosses are used instead of discs) be made equal to 10 mils (12 inches at 100 ft. range) for most satisfactory results.



FULL RANGE BORE AND SIGHT AXIS HARMONIZATION IS MADE EASY WITH GRID WHICH ALLOWS FOR DROP OF BULLET AT 750-FOOT FIRING DISTANCE

## Build Harmonization Grid Improve Aerial Gunnery Scores

NATC PENSACOLA—A new method of quickly and accurately harmonizing guns and sights on SNJ's has been developed at NAAS Bronson Field, through use of a full-range harmonization grid.

Station for plane is established at a point with an approximately level surface. If a hangar is used, harmonizing may be done in foul weather. Grid is erected at full range, 750 feet from plane, with lower horizontal bar of grid on a level with center of gunsight reflector plate.

In harmonizing, tail of plane is raised until it is high enough to permit sighting along plumb lines suspended from fittings provided in the underside of fuselage. Tail is then shifted laterally, if necessary, until plumb lines are in line with any part of grid. Tail is then raised further until longitudinal axis of plane is at desired angle, as indicated by sensitive protractor level used in conjunction with longitudinal leveling lugs. Plane need not be leveled laterally except by inspecting tires for equal inflation and struts for equal extension.

Center dot of the sight is moved to

point of intersection of lower grid horizontal bar and vertical bar with which plumb lines happened to be aligned. Using breech sight of Mark I boresighting kit, gun is boresighted on intersection of that vertical bar and upper horizontal bar. Distance between upper and lower bars is equal to the drop of a bullet at harmonizing range used. Various bars are painted different colors for easy identification when sighting through gun bore.

### Gunnery Officers List Advantages

No corrections or allowances are made for variation in tire and strut inflation, as these errors are .7 mil or less for gun or sight individually, at a range of 750 feet. Such an error causes gun to be "off" in the same direction and angle, thus partially reducing its effect.

Gunnery officers at the field claim these advantages for the system:

1. More accurate than use of a template mounted on engine, because of full-range harmonization
2. Requires only one man after tail is raised
3. It is unnecessary to shift tail laterally, as any part of grid may be used
4. Lateral leveling is unnecessary
5. Two or more planes may be boresighted simultaneously, side by side
6. Work may be done in a hangar so that plane and personnel are covered

Many instructors at the squadron consistently made scores of forty, fifty and sixty percent on high side, flat side and low side runs, using planes that were harmonized by this method.

## Correct Prop Overspeeding Control Hydromatic Propellers

Pilots operating planes equipped with hydromatic propellers should be familiar with recommended procedure of correcting overspeeding, should it occur.

Momentary overspeeding can result from governor malfunctioning or loss of oil pressure. This might permit rpm to increase to such an extent that even if the trouble immediately corrected itself and the governor endeavored to control overspeeding, oil pressure available from it might be insufficient to overcome centrifugal twisting movement of the blades at overspeeding condition.

In case such a situation arises, pilot should take immediate action to bring propeller under control. Power should be reduced by closing throttle and airplane speed reduced as much as possible by pulling up into a climb. Normally this will result in slowing the propeller sufficiently to again come under control of the governor. If these attempts are unsuccessful, feathering pump on multi-engined airplanes can be utilized. It is entirely satisfactory to operate pump for short periods.

### ANSWERS TO NAVIGATION QUIZ on inside back cover

1.2 2.1 3.2 4.5 5.5 6.1

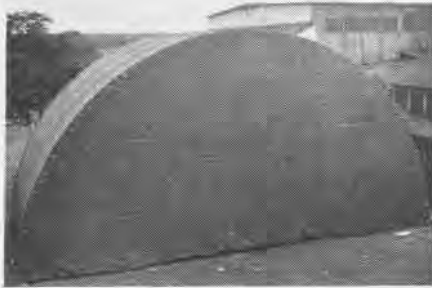
Visual quizzer films are available from BuAer's Special Devices Division. Standard slide film versions may be obtained from Training Films.





## New Nose Hangar Perfected Takes Many Types of Aircraft

Bureau of Aeronautics has procured a quantity of portable hangars of a new design for advanced bases and continental stations having limited hangar facilities. The new hangar is a portable knock-down type of arch-roof design, constructed of hot-rolled structural steel and covered with a newly developed laminated fabric which is durable and capable of withstanding hard use for at least three times normal expect-



**NOSE HANGAR ADAPTABLE TO MANY PLANE TYPES**  
any of single-thickness canvas.

This fabric is of laminated construction, using two thicknesses of No. 12 standard numbered duck with a laminating core of vinyl resin. Tests and actual use show the fabric to be water impermeable and to have a high tensile strength. It does not crack at low temperatures.

The hangar is a 78-ft. span arch with 30-ft. depth and is designed to carry a snow load of 20 lbs. per sq. ft., a wind load of 60 mph, the dead load of the structure, and two 4,000-lb. crane loads

simultaneously. Two cranes roll on I beam runways 53 ft. of the 78 ft. width and chain hoists operate on the crane I beams traveling 27 ft. of the 30 ft. width.

Essential purpose of this equipment is as a nose hangar for all multi-engined aircraft, both land and seaplanes, and as a maintenance hangar for carrier-borne aircraft. Front and rear curtains are 25 ft. high, travel on tracks and rollers and each is fabricated with cut-outs and socks to fit various fuselage and engine cowling sizes. The front curtain is equipped to handle PBM, PB2Y, PB4Y, RB, R5C and R5D. Rear curtain will accommodate PBJ, R4D, PV, R50, J4F, JRB and JRF. Smaller carrier-borne aircraft can be accommodated entirely within the structure.

Light is provided through four flexible glassed windows in each valance above the curtain openings. An explosion port and personnel exit also are provided. Heat is conducted into the hangar through duct openings and 12-inch canvas ducts from a portable gasoline heater located outside.

## Using Steel Storm Cables Securing Equipment Adjustable

CASU 24—Plane securing equipment utilizing over-age, surveyed  $\frac{3}{8}$ " galvanized steel cable, has been designed and manufactured by the operations department. This gear can be easily adjusted to fit most types of service planes by use of U-clamps and turnbuckles.

In the accompanying photograph, storm cable A secures nose of plane



**U-CLAMPS AND TURNBUCKLES TIGHTEN CABLE AND PERMIT ADJUSTING TO FIT ALL PLANE TYPES**



**FOUR STEEL CABLES, WITH FITTINGS TO ATTACH TO PADEYE AND PLANE, ARE EASILY ADJUSTED**

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## NANews recommends as REQUIRED READING!

with leather chaffing strip where turn is taken around propeller shaft. Cables B and C secure wings and consist of galvanized hooks for securing to padeye in deck while sisterhooks clamp into wing securing ring. Adjustment is made by use of U-clamp and turnbuckle. Cable D secures tail by attaching to tailhook fitting on lower side of fuselage or, where there is no ring, hook is slipped off, chaffing strip is put on and turn is taken on tailwheel strut.

► **BuAER COMMENT**—Securing lines other than manila are not favored on carriers for ordinary operations due to flexibility required in securing, time required to rig with wire and hazard of turnbuckles and fittings in high winds and slip streams. Wire securing might be useful under gale conditions, however, and has been used in CVE airplane transport jobs where airplanes are secured only once for the trip.

# LETTERS

Sirs:

Congratulations are again in order to the editors of NANews which has received unanimous praise aboard. The feeling about News is that it serves as a "clearing house" of ideas for all aeronautical activities and as such can, and does, decrease the exchange of letters either to BuAer or to other activities.

COMMANDING OFFICER

U.S.S. *Saratoga*



Sirs:

Besides keeping aircraft in flying trim, men of the A&R Department on this station

fine knife blade. Anything can be used that will take an edge and keep it. Handles usually are made of aluminum and laminations of Plexiglass, both having proved serviceable. Aluminum is a hard metal but is very strong and easy to work.

The odd looking knife (third from the right in illustration) is an original design thought up by one of the men. The weapon is a combination brass knuckle, short dagger, and cutting knife. At the extreme left is a sheath made of leather from a strap found around an old suitcase. It is the sheath for third knife from left.

Quality of work represented in these knives might indicate that they had been made by expert cutlers. Rather, this fine



A&R MACHINISTS TURN SALVAGED MATERIAL INTO EFFECTIVE WEAPONS FOR USE IN COMBAT AREAS

are preparing to meet Japs in hand-to-hand combat if the opportunity arises.

These men have spent much of their spare time in fashioning various types of knives out of material salvaged from scrapped planes. One man found an old hack saw blade and formed it into a very

workmanship was done by men who have creative ideas and who look into the future for tougher things to come.

COMMANDING OFFICER

MCAS Mojave



Sirs:

Attention is called to the article entitled "Trains Air Storekeepers" in NANews of January 1, 1944. The second sentence of the first paragraph indicates that the students are given a two-week course of instruction, whereas the instruction period is actually six weeks.

The publicity given this school is very much appreciated.

OFFICER IN CHARGE

NTS (Aviation Storekeepers)

NAS Alameda

## PUBLICATIONS

Write to PUBLICATION SECTION BUAE

The following Aviation Circular Letters, Technical Notes, and Technical Orders have been promulgated since 1 January 1944. Circular letters originating in the Aviation Divisions of Chief of Naval Operations and in BuAer are now designated *Aviation Circular Letters* and are issued in one numerical series regardless of office of origination.

### AVIATION CIRCULAR LETTERS

- ACL No. 0-44 *Aviation Circular Letters—List of Those Canceled and Those Effective. Includes reprinting of those effective.*
- ACL No. 1-44 *Protection of Transient Plane Crews and Passengers Traveling Through Malarious Regions. Medical Abstract, Duplicate of; Personnel En Route to Overseas Destination Via Air.*
- ACL No. 2-44 *Post Flight Weather Reports. RUDM's and ATR's, TBF-1, TBF-1C, TBM-1, and TBM-1C Airplanes.*
- ACL No. 3-44 *Submission of BMP-625 Report as of First of Each Month, Revised for.*
- ACL No. 4-44 *SNC-1 Aircraft, Policy Regarding Overhaul.*
- ACL No. 5-44 *Miscellaneous Flight Operational Letters in Effect. Compilation.*
- ACL No. 6-44 *Instructions in Regard to Ferrying of Naval Aircraft. Modification of ACL No. 35-43.*
- ACL No. 7-44 *Amendment*
- ACL No. 35-43 *Amendment*

### TECHNICAL NOTES

- TN No. 1-44 *General Information on Insulated Aircraft Engine Cores.*
- TN No. 2-44 *Operating and Maintenance Instructions for York Model 50-II Aircraft Engine Heater.*
- TN No. 3-44 *Thunderstorms. Cancels and supersedes TN's No. 34-43, No. 49-43.*
- TN No. 4-44 *Jack & Heintz JH-5E and JH-5F Engine Starters. Replacement of Connecting Bolts in.*
- TN No. 5-44 *Aircraft Storage Batteries—Terminal Studs.*
- TN No. 6-44 *Distribution of Torpedo Starting Launchers for All Torpedo Carrying Aircraft.*
- TN No. 7-44 *Re-work of Pesco Hydraulic Pumps, Model Series 1E-280 and 1E-301. Not yet released.*
- TN No. 8-44 *Reworking of the Base on Existing Motors for Pesco Pumps Model Nos. 1E-A280-BH, 1E-A280-BH, and 1E-AE280-BHC Motor Driven Hydraulic Pumps.*
- TN No. 9-44 *Maintenance of American Bosch Induction Vibrator Starting Coils.*
- TN No. 10-44 *Inspection of Tires for Reconditioning (Repair or Retreading).*
- TN No. 11-44

### TECHNICAL ORDERS

- TO No. 1-44 *Interometer—Type K-2—Feed-Back, Correction of.*
- TO No. 2-44 *Model TDN-1 Airplanes, Model XDDN-1 Airplanes, Restrictions on Maneuvering.*
- TO No. 3-44 *Electrical Connections to Generators Equipped with Terminal Boards.*
- TO No. 4-44 *Fluids to Be Used in Hydraulic Equipment of Naval Aircraft. VLF Mast Antennas.*
- TO No. 5-44 *Hydraulic Hose Assemblies—Medium Pressure—Flex-O-Tube.*
- TO No. 6-44 *Engine Starters to Be Maintained on VR Aircraft.*
- TO No. 7-44 *Camouflage of Aircraft—Policy.*
- TO No. 8-44

### ANSWERS TO NAVIGATION PROBLEM on page 23

- A—Betelgeux
- B—Bellatrix
- C—Rigel
- D—Sirius
- E—Procyon
- F—Pollux
- G—Capella
- H—Aldebaran

### BEST ANSWERS

- to questions on page 7  
1.a 2.c 3.d 4.a 5.c




**PIX QUIZ**

**WHAT DO YOU KNOW ABOUT**

# NAVIGATION?

**M**AN used to find his way from place to place principally by memory. In those days, the North American Indians were great ones to travel long distances and then return home with little or no trouble. Keen memory, an accurate sense of direction, and instinct were probably the redskins' stock-in-trade. Naval aviators can well use these attributes, but in modern warfare they must be supplemented with more exact methods of navigation. Try questions, then see p. 38.

[QUESTIONS FROM VISUAL QUIZ FILM NO. 9, NAVIGATION]




Write answers here

1 ..... 4 .....

2 ..... 5 .....

3 ..... 6 .....


**Question 1**



If magnetic course is  $105^\circ$ , variation is  $9^\circ$  east, true course is:

1.  $90^\circ$    2.  $114^\circ$    3.  $111^\circ$    4.  $120^\circ$    5.  $100^\circ$


**Question 4**



By what other name is Polaris known:

1. Capella   2. Venus   3. Morning  
4. Evening   5. North


**Question 2**



A radio direction finder station gives a plane's bearing as  $230^\circ$  True. From the plane the station bears:

1.  $050^\circ$    2.  $010^\circ$    3.  $310^\circ$    4.  $140^\circ$    5.  $040^\circ$


**Question 5**



When the image of the lower limb of the sun touches the horizon how is it termed?

1. Touch   2. Dip   3. Contact  
4. True altitude   5. Kiss


**Question 3**



Height of eye relates to what?

1. Parallax   2. Dip   3. Refraction  
4. I.C.   5. Altitude

**Question 6**



When the sun is on the observer's meridian, what is the L.H.A.?

1.  $0^\circ$    2.  $180^\circ$    3.  $15^\circ$    4.  $5^\circ$    5.  $30^\circ$



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