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*"Chandelle
Over
Texas"*

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ROBERT S. JOHNSON
Editor

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Number Three

NORTH AMERICAN DELIVERIES BEGIN ON NEW CONTRACTS

With Army Air Corps advanced trainer orders completed, North American's assembly lines late in June were concentrating on the new BT-14 Basic Trainer for the Air Corps, together with orders for the military air forces of Great Britain, Brazil, Thailand, and Venezuela.

Deliveries of BT-14 Basic Trainers to the Army Air Corps under an extensive order were announced as approximately 60% complete by Major Donald F. Stace, Air Corps Representative at North American.

Aircraft being constructed for the Brazilian Army Air Corps are Model NA-44 Light Attack Bombers equipped with 550 H.P. Pratt & Whitney Wasp Engines. The type is a single-engine, low-wing monoplane carrying light bombs in the wing outer panels.

First of the Brazilian airplanes is expected to be ready for test flights early in July.

Captain Oswaldo Balloussier of the Brazilian Army Air Corps is representing his government at the North American factory during fabrication of the Brazilian ships.

North American previously delivered aircraft to the Brazilian Navy, but this marks the initial production for the Army air service of the South American republic.

Two types of aircraft are being built for the Royal Air Force of Thailand, formerly Siam. First of these is the NA-44 Light Attack Bomber equipped with a 745 H.P. Wright Cyclone Engine.

The Thai NA-44 differs from the Brazilian Army type in the use of a larger engine and provisions for

more extensive armament installations. Both are two-place low-wing monoplanes equipped to carry an auxiliary pilot-gunner in the rear cockpit.

Other type in production for Thailand is the Model NA-50 Single-Seat Fighter. This new pursuit type will carry four machine guns and two light cannon, as well as bomb racks in the wing outer panels. It is powered with an 840 H.P. Wright Cyclone engine.

**TRAINER
FINAL
ASSEMBLY**



NEW BUILDINGS STARTED

Further expansion of North American Aviation's productive area began early in June and will be completed August 15th, bringing the factory's total floor area to a new high of 740,000 sq. ft., it was announced by company officials.

Two units are included in the new extension program. One, an extension of the main factory building on the West side, will be 100 ft. x 400 ft. with mezzanine and main floor. The other building is a drop hammer unit 40 ft. x 60 ft. which will house three new drop hammers.

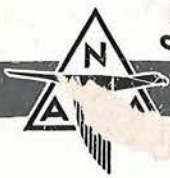
The prototype NA-44 for Thailand is expected to be in the air for tests late in June, with the first NA-50 scheduled for completion about two months later.

Resident representatives of the Thai Government during construction of the ships are Flight Lieutenant and Khien Somnabandhu and Flying Officer Vichien Yongchaiyudha, both members of the Thai Royal Air Force.

Model NA-16-3 General Purpose Combat Airplanes built for the Air Force of the Republic of Venezuela have been assembled and crated and will be shipped to Caracas early in July.

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Skyline

NORTH AMERICAN AVIATION, INC.

ARMY AIR CORPS WILL TRAIN 7,000 NEW PILOTS ANNUALLY

RANDOLPH FIELD, TEXAS.
Special to Skyline—Production of 7,000 military pilots annually, plus 3,600 aerial navigators and bombardiers, has been announced by the Air Corps. Thirty-six weeks from the time a young college man starts his elementary flight training he will graduate a full-fledged military pilot, wearing the wings and shoulder bars of a Second Lieutenant, Air Corps Reserve.

Hub of the greatly expanded pilot training program is Randolph Field, Texas, the "West Point of the Air,"

Uncle Sam's giant flight training school in south Texas, and headquarters for the Air Corps Training Center. From this Training Center, comprising Randolph and Kelly Fields, will go the veteran instructors, flight commanders, and key officers in general who will man in part the two other training centers soon to be established. Maxwell Field, Alabama, has been selected as one of them. The other will be at Moffett Field, California.

Randolph Field has been training pilots for the Air Corps since Octo-

ber, 1931, when this mammoth military airdrome, costing more than \$12,000,000 was opened. Thousands of man-years of experience in the art of imparting to thousands of student pilots the knowledge and experience necessary to fly military airplanes has been stored away at the "West Point of the Air." This experience will stand in good stead in the coming year when the present plan, calling for a maximum of almost 1300 Flying Cadets to enter training every five weeks, reaches its peak.

Nine civilian flying schools have been cooperating with the Air Corps for the past year in giving the student pilots their elementary flight training. These nine schools will be expanded to at least double that num-

Right—Randolph Field instructors and students in flight gear head toward North American BT-9 Trainers for another aerial session.

Below—BT-9 Trainers form an impressive spectacle lined up for inspection at Randolph Field.



ber in the next few months. At each school Air Corps officers supervise the flight training, given in Air Corps planes and according to Air Corps time-tested methods. Ten weeks of training will give each Flying Cadet about 65 hours in his log book when he completes this first phase.

Then he will be transferred to one of the three basic flight training schools, either Randolph Field, Moffett Field, or Maxwell Field, for another ten weeks training period. Racy low-wing monoplanes, powered with



450 horses and having a top speed of 175 miles an hour are used in this second phase. Seventy-five hours flying time in ten weeks are logged. First taste of night flying and instrument flying, commonly called "blind flying," will be given the pilots-to-be.

Third phase is the Advanced Flying School, another ten-week period. These Advanced Flying Schools will be located near the basic schools, within just a few miles in some cases, to eliminate any unnecessary time wasted in traveling. Wing tip to wing tip formation flying, navigation both day and night, and more instrument flying will be the major portion of the third phase.

Specialized Training

Final step before graduation is an intensive five weeks course of specialized flight training in either 300 mile an hour pursuit planes or giant twin-engined bombers. Thus, within thirty-six weeks, including one week for travel between the various schools, 7,000 young Americans will be transformed each year into full-fledged military pilots, ready to step into place alongside veteran pilots of the Air Corps.

Many people have the mistaken idea that Flying Cadets are Supermen, giant football stars, paragons of physical perfection. These persons are all wrong. Instead, the future pilots-to-be are just normal individuals, with normal physical health, normal eyesight, normal heart, normal lungs, etc.

For example, let's take the eye portion of the physical examination as given every Flying Cadet applicant. Some candidates are able to read letters only ten millimeters tall from a distance of twenty feet. Many others can read 15 millimeter letters. All the army medicos require, however, is the ability to read letters 20 millimeters tall.

Another example is the heart test. Through long research, a complete heart examination, known as the Schneider Index has been devised.

(Continued on Page 12)

NORTH AMERICAN SPONSORING AIRCRAFT TRAINING COURSES

Centering around a full curriculum of aircraft trade extension courses at Inglewood Evening High School in which eleven North American employees serve as instructors, an elaborate educational program is being encouraged by North American in high schools, junior colleges, and trade schools throughout Southern California.

Personnel Director Howe Thayer and Employment Director George W. Stone of North American are currently serving on the Vocational Advisory Boards of almost all schools in the Los Angeles district, as well as Compton Junior College, San Bernardino Junior College, Fullerton Junior College, Santa Monica Technical School, the Frank Wiggins School,

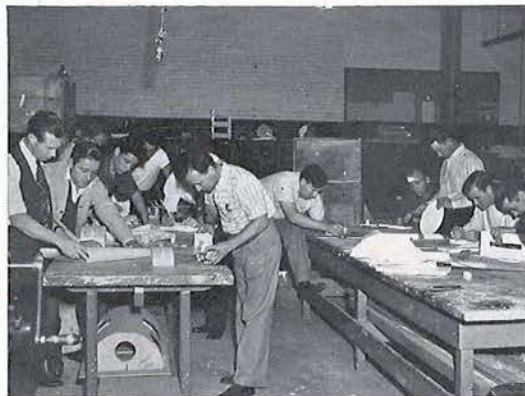
Inglewood High, Redondo High, and Torrance High.

Courses offered in Inglewood mark a new departure in aircraft trade extension work, being the first to include so-called "staff" work such as Material Control, Production Control, and Manufacturing Supervision in addition to regular shop courses and specialized engineering instruction. R. K. Lloyd, Principal of Inglewood Evening High School, is in charge of the rapidly expanding Inglewood program, which is fully accredited by the state and national educational agencies.

Leaders point out that the trade extension courses at Inglewood are definitely not intended as pre-em-

(Continued on Page 14)

Photos below were taken during regular trade extension class sessions at Inglewood Evening High School. From left to right the photos show, top, James Mills' Aircraft Pattern Making and H. V. Schwalenberg's Advanced Lofting and Layout; below, James Andrews' Aircraft Factory Supervision and J. P. Weed's Aircraft Welding.





Harvard Trainers Praised by War Correspondent . . .

By Gault MacGowan
N. Y. Sun Correspondent

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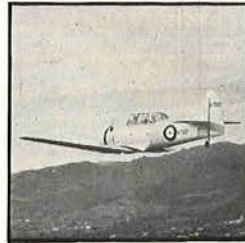
SOMEWHERE IN ENGLAND—Twenty-five per cent of Great Britain's budding aces who are earning fame in the North Sea learned their job on American-made airplanes hurriedly purchased when the war broke out.

I visited a training school today where the 1940 class of sophomores of the skies are undergoing intensive instruction in applied aeronautics ready to replace those in the front line of the air as soon as the call comes for reinforcements. They comprise the flower of British Empire manhood, who came over here and joined up as soon as a prospect of a scrap was in the offing.

Last time, they would have been in the front line long before this. Flying was then a simple matter of a joystick, a rudder bar, a few instruments and a willingness to risk your neck in a crate. Many pilots went over the German lines with no more than half an hour's dual control in their log book. Today, before he is given one of the new modern high-speed aircraft that bristles with armaments, the pilot has recorded more than 150 hours of practice on slower machines.

All the young men here have graduated from Tiger-moths, British machines that do about 125 miles an hour—quite fast enough for a freshman. They didn't go up higher than 13,000 feet or fly more than 200 miles or so.

Now they are learning to fly aircraft that give them an idea what real speed—the death point. These sophomores are speed fiends. do 218 miles an hour and go up into the stratosphere, where life cannot exist without oxygen feeding. For this they are given one of two aircraft—the British machine known as the Oxford, or the American known as the Harvard trainer. Thus Oxford and Harvard work side by side on the same flying field. The Oxford is a twin-engined monoplane that can do about 200 miles an hour and range nearly 1,000 miles. The Harvard is the single engined North American trainer. As a faster monoplane than the Oxford, it is the favorite of the sophomores. They have one ambition: to graduate into the fighters and bombers



that do the real fighting today—machines capable of about 300 miles per hour and reaching a ceiling of 32,000 feet. Harvards are the half-way house to that ambition.

Flying is a progressive science. Hawk-eyed youngsters hope to go on and on and up and up.

"When is America going to let us have faster and better fighters?"

This is the question they ask every visitor from the United States. They want to be sure that before the war ends they will have flown to the ultimate speed—the death point. These sophomores are speed fiends.

They lined up today a dozen Harvard trainers for me to look at. Trim, young aircraftsmen in blue wheeled them out of their hangars and put them into line to show their pride in their craft and the way they kept them.

"The Harvards are very good—too easy, if anything, to handle," Chief Flying Instructor Maxwell told me. "They are very gentlemanly aircraft."

I was invited to climb inside one of them; test the controls and get the

feel of handling them.

"What I think so good is their marvelous cockpit layout," the instructor explained. "It's like a car.

"In some airplanes the controls seem to be put anywhere there is space. The result is knobs, buttons and levers everywhere; under the seat, behind your back, over your head, under your arms. The Harvard trainer gives the impression that the designer sat down and made a plan of his controls before he began to build his machine. It was decided that one place was just right for every instrument and gadget and there it went. We call it the Yankee layout."

The densely packed array of dials, switches and gadgets for this and that is completely bewildering to any one who sees them for the first time. Flying commercial routes, passengers take it for granted that the pilot is a veteran accustomed to his many instruments by long practice and specialized training.

But here we are dealing with a bunch of boys just out of college who not so long ago were thinking in terms of Euclid and geometrical designs on squared paper. Twenty-one, twenty-two and twenty-three they are. Yet they are going to take valuable aircraft into the skies with about as much diffidence as Junior displays when he takes out Pop's car from the garage for the umpteenth time.

"Don't you ever touch the wrong lever by mistake?" I asked one of the pupils.

He looked me over carefully be-

The Cover

High over Randolph Field, Texas, one of the Air Corps' new basic training planes, a North American BT-14, executes a chandelle with a Flying Cadet at the controls. More than 100 such planes are now being used at the "West Point of the Air" for student pilot training, and additional ships are being delivered daily from North American's busy factory.



fore replying. Then he said:

"Once! I was returning full of pride from my first successful solo flight when instead of pulling the landing brake lever, I grabbed the retractable undercarriage handle by mistake. My Harvard collapsed like a scuttled ship!"

There was a roar of delighted laughter from the crowd of student pilots gathered around us in their flying kit. The Empire kid had not been spared his kidding.

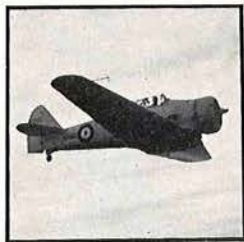
Old Flying Custom

"The next fellow to make that mistake will be fined a dollar!" I heard the instructor say. "The dollars will go to pay for the instructor's tea. It's an old flying custom."

The crowd's laughter subsided. They are flying a million dollar bunch of machines, but they only get a couple of dollars a day while they are learning. A dollar fine is big money with them.

The instructor winked at me.

"Accidents do happen sometimes," he whispered aside. "When that collapse occurs it usually breaks the propeller and the engine has to be taken out and overhauled. However, you can't run a flying school without writing some of your equipment off—even in peacetime."



It is really rather wonderful what war does for the youngster who loves flying. He gets into uniform one day at the

age of twenty; within a few months he is fooling about in the sky with an aircraft that in peacetime would be beyond his wildest dreams of possession. The boy becomes the man he dreamed about before he has a real bristle to his beard.

The mud, wet weather and snow of this winter have done everything they could to put the Harvards out of commission. The war-time airdrome

is short on tarmac and runways. Aircraft have had to plow through seas and lakes of mud to take off.

The principal change in the appearance of the machine is the result of paint. All British training machines are yellow-bellies. They camouflage them on top in khaki and black. Underneath they paint them a bright yellow so that anti-aircraft batteries will not mistake them for an enemy raider.

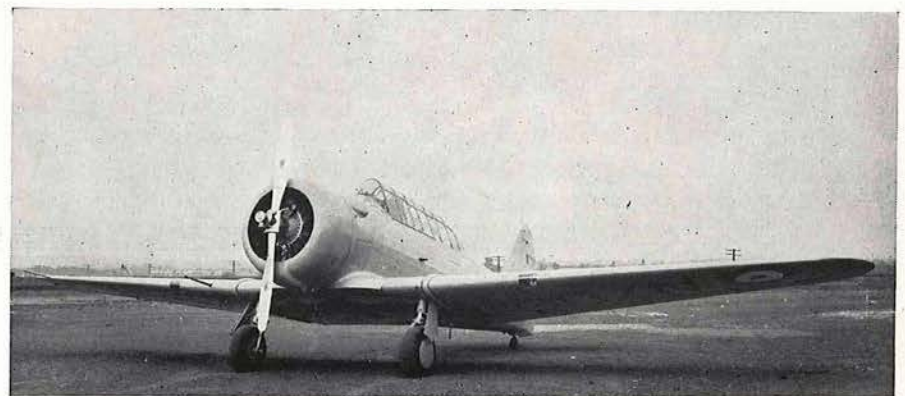
Sophomore pilots are likely to lose their way in the skies. The average sophomore does twenty-five hours dual on a Harvard and twenty-five hours solo before he is passed out as competent to fly it.

Then he goes to an advanced training section where, still flying Harvards, he is initiated into the fast-flying use of machine guns, bombs, photography and so forth. Again he does twenty-five hours dual and twenty-five solo.

Graduation Day

Then he is allowed to graduate. It is the proudest day of his life. He has just been adjudged competent to go to a conversion pool. There his skill and temperament is appraised. He is earmarked for battle work on interceptors, bombers, army co-operation or reconnaissance aircraft.

A Harvard I Trainer of the type described by Gault MacCowan is shown below on North American Aviation's flight ramp before shipment to England. North American is now delivering the Harvard II type.



His dream comes true. He gets into the faster warplanes available. Real war pilots teach him his job.

But whatever aircraft they eventually get into they all seem to remember their sophomore days with the "good old Harvards." . . . the days when they were graduated from slow machines to "power with knobs on!" That's a reference to the 100 or so controls and levers that they had to learn about.

One Complaint

The only people who don't seem enthusiastic about Harvards are the country folk in their quaint little village that nestles on the edge of the flying field. Not since the Wars of the Roses has there been greater excitement than the curfew bell . . . till now.

"When they start those things up for night flying practice," the landlord of the village inn told me, "no one round here gets any sleep! You can hear their roar six miles away."

This complaint is being attended to. The Harvards are being moved further into the depths of the country. There will be no villages at all where they are going next. Sleepy Hollow, that has been kept awake for six months, can go back to sleep again beneath its thatched gables.

AIRCRAFT MACHINE TOOLS AT N. A. A. . . .

By **HAROLD F. SCHWEDES**

Assistant Factory Superintendent

North American Aviation, Inc.

The machine work required to produce a modern airplane has increased enormously with the advent of retractable landing gear, swivel tail wheels, hydraulic flaps, and the numerous other refinements in controls. The essential machine operations—turning, drilling, milling and grinding—reach a proportion and complexity that would stagger Archimedes himself.

In order to be able to make these parts on a production basis, North American Aviation has built up one of the best equipped and most modern aircraft machine shops on the Coast. Under the able direction of Mr. N. Chase, it makes all small jigs and fixtures, parts for experimental ships, machined parts for wind tunnel models, and all machine work for maintenance—in addition to the 25,000 to 30,000 parts per week required for production.

In the past several months our Machine Shop has acquired a number of interesting new machine tools.



First and probably the most expensive among these is the Keller Tool Room Machine, generally known the plant over as the "Keller." The machine is in re-

ality an over-grown milling machine, capable of being controlled automatically in three dimensions by the contact of a stylus traveling over the surface of a form of wood or plaster. This machine will duplicate the model to within tolerances of .002" to .005" in all dimensions. Due to the fact that the cutting tool is usually of the end mill type, the finished part appears to be covered by a large number of shallow parallel ridges.

When the tops of these ridges are smoothed off with a file, the part presents the smooth contour of the original model.

Right—Milling landing gear struts on the Keller.

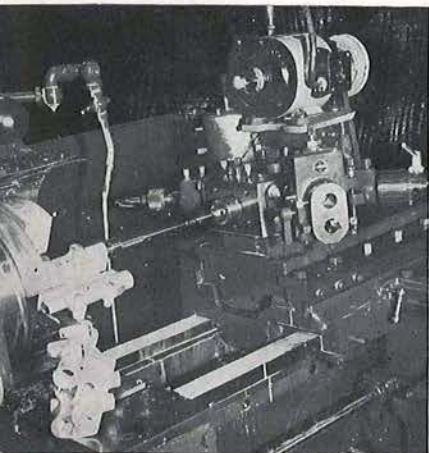
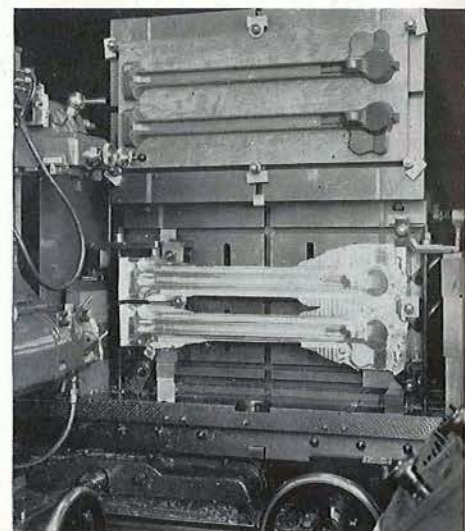
Below left—Drilling and reaming long, straight holes on a 4-way selector valve with Jones & Lamson Turret Lathe.

Below center—Grinding motor mount lugs on the Blanchard Grinder.

Below right—Milling bellcrank forgings from billet stock on the Keller.

This machine was purchased primarily for cutting from solid blocks of dural or steel the first few sets of forgings for a new model, since it is impossible to get delivery of new forgings in time. It took only one set of wind tunnel model tail surfaces made on the Keller to convince the Aerodynamics Department that here was the machine they had always been looking for. Hinge two blocks of magnesium or dural together, cut the profile and contour on the Keller and we have a wind tunnel model fin and rudder with less time and worry than was ever thought possible.

Some weeks ago the Aerodynamics Department brought in a magnesium casting seven feet long, a complete wing and center section with nacelles attached, weighing some 156 pounds,





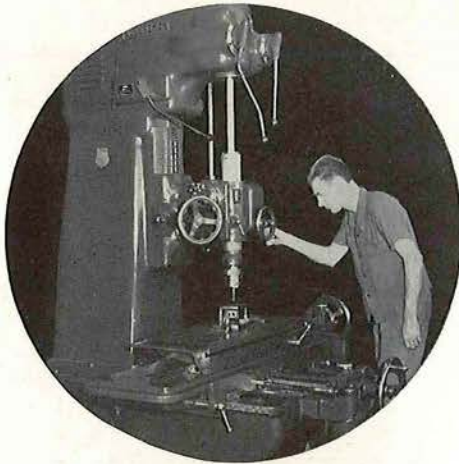
and suggested that we see if the Keller could handle it. They also informed us that we had three weeks in which to complete this model. This would not have been so bad were it not for the fact that the Keller was working two ten hour shifts, six days a week, on a stack of dural billets which were to be the first set of forgings for the new job. Some of these billets weighed in the rough as high as 75 pounds each and when finished barely tipped the scales at 10 pounds. Needless to say,

time.

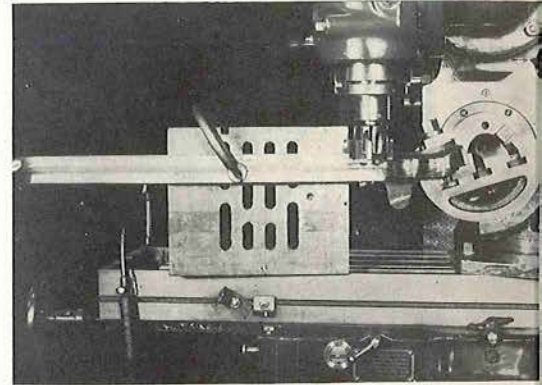
Note in the picture on Page 6 that 100 motor mount lugs are being ground parallel at one time and to very close tolerances. This job formerly was a slow lathe job which necessitated one piece being machined at a time. The magnetic chuck on this machine is equipped with the latest type of Neutrol Demagnetizing Unit, which demagnetizes the parts directly on the chuck before they are removed from the machine. This usually requires a separate unit;

if not demagnetized the parts will stick together and cause considerable trouble by their tendency to pick up metal particles. With the Neutrol Unit the operator merely flips a switch, a small signal light blinks on and off for a few seconds, goes out completely, and the parts are completely demagnetized right on the chuck, saving many minutes in unloading, and also saving the extra operation of demagnetizing them later.

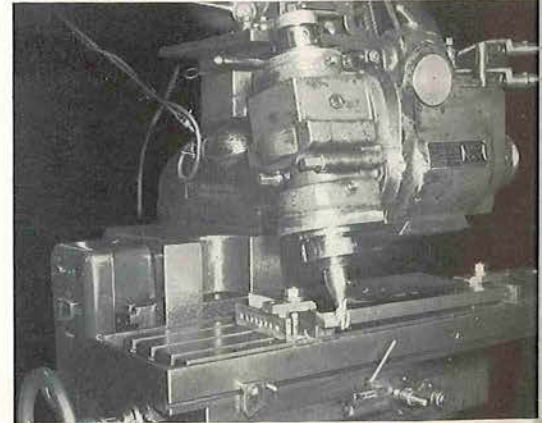
A rather interesting operation of



The Cleereman Jig Borer in action.



Top—The method of milling compound angles on landing gear struts using the Cincinnati Mill with a special overarm attachment.



Center—Milling an angle on a jig plate with the Van Norman.



Bottom—The Van Norman demonstrates its versatility on a forming die for instrument panels.

the model was finished on schedule and is the pride of the Aerodynamics section, as well as all those who worked on it.

The Blanchard Grinder, another of the large machines, is a surface grinder having a 30-inch diameter magnetic chuck which revolves beneath an 18-inch diameter grinding wheel mounted on and driven by a vertically mounted 25 H.P. motor. This machine is used for all flat surface grinding. All tool steel blanks for blanking dies formerly were surfaced on the shaper, taking from 20 to 35 minutes each. They are now ground, several at one time, in approximately 20 per cent of that



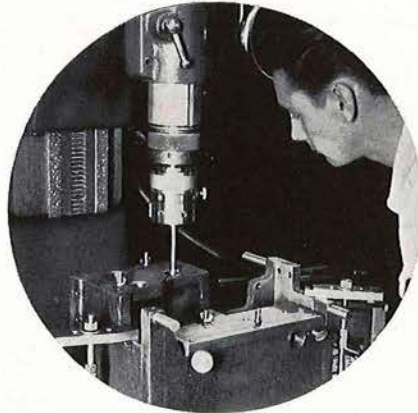
MACHINE SHOP . . .

drilling two holes, each 6" long and .500" in diameter, to close tolerances of $-.000''$ and $+.0005''$ in the 4-way selector valve body, is being handled on one of the several new Jones and Lamson Turret Lathes. These particular holes must be perfectly straight, and concentric within .003" with the threads and counterbores at both ends. This is accomplished with the aid of a specially designed unit mounted through the turret of the machine with the driving motor mounted above. The work is rotated in one direction and the drill rotated in the opposite direction at a different speed, resulting in a straight hole. Before we hit upon the idea of rotating the drill along with the work, the holes ran out of true considerably at the inner end. Drilling from both ends was tried, but this was not successful because the holes were not sufficiently straight to allow the close fitting plunger to operate freely. Consequently the valve would not function.

Complex Angles

A typical illustration of the complexity of angles which are encountered in this business is shown in the milling of a brace strut for the landing gear. This part, which was originally "Kellered", is mounted on a compound angle fixture for milling an angular face. It is being machined on one of the several new Cincinnati Milling machines with vertical attachment. This sort of part is extremely intricate to machine at the start of any new job, due to the fact that it is practically a custom-built part. On the other hand, it becomes comparatively simple later in the contract when it can be machined with fixtures equipped with setting gauges to insure accuracy.

Another interesting machine tool is the new Cleereman Jig Borer. This machine is used almost exclusively in the manufacture of jigs, fixtures, and other tools which require extremely accurate spacing of holes. The machine employs meas-



Precision is the watchword during this operation on the Cleereman Jig Borer.

uring rods accurate to .00005" in lengths and straight micrometer adjusting gauges in conjunction with indicators graduated in tenths of thousandths inches. In most cases a jig with numerous holes can be set up and bored with no preliminary layout whatsoever; the spacing can be regulated entirely with the use of the rods and indicators, and the result is a job with all hole spacings accurate to .0001" if necessary. The machine is so extremely sensitive to changes in atmospheric temperature that it should in reality be set in an air-conditioned room; since that was not practical at the time of installation, the windows were painted to protect the machine from the direct rays of the morning sun.

At this point it would be difficult not to mention the part that the Van Norman Milling Machines play in the Department. These milling machines are extremely versatile machines. They are employed in most cases on tooling work. They are built so that the head and spindle, into which are mounted the various tools, move in a 90° arc from a horizontal to a vertical position and can be set at any intermediate angle. They capably handle compound angular milling without the aid of compound angle fixtures. They are equipped with sub heads, which are mounted vertically with the spindle and can be revolved 360°. This of

course makes the machine capable of thread milling, spiral milling, etc. Being equipped with slotting heads, these machines are also capable of doing difficult slotting operations. Without a doubt they are the most versatile milling machine built today, and since "angular" is merely another synonym for "aircraft," then it is easily grasped why this type of milling machine is practically indispensable in our aircraft manufacturing of today.

Another interesting machine illustrated is the small Excello Boring machine, of which the Department boasts three. These small machines are employed almost exclusively in the boring of extremely accurate holes, such as holes which retain anti-friction bearings. All production parts with holes of this nature, which have tolerances of $-.0005''$ and $+.000''$, are handled economically and efficiently on these machines. The machines are constructed with a boring spindle mounted at each end of the machine. The hydraulically operated table moves back and forth between the spindles, into which are mounted the boring tools. This construction enables holes to be bored in both ends of the part in perfect alignment. The table feeds, stops, and adjustments are operated hydraulically and function extremely accurately. The machine is capable, with the proper tools, of boring holes of extreme accuracy in both diameter and depth for hours at a time with very little attention.

Accuracy and Speed

This gives just a brief outline of the machining problems on the present day airplane. In the machinery developed to meet those problems, we find that accuracy is the first essential and production speed the second. To the men who operate the machines, many of whom are skilled machinists with years of precision work behind them, a genuine satisfaction is derived from maximum proficiency in these two essentials.



PLANT SAFETY+

By **EARL A. RAFTERY**

Safety Engineer, North American Aviation, Inc.

The Safety Committee celebrated its annual dinner-dance in April at the Wilshire Bowl, enjoying a very fine evening of dining and dancing to the music of Phil Harris and his band. This party is an annual affair sponsored by the Committee, at which time the wives and friends of the Committee members enjoy a get-together becoming more popular each succeeding year. Besides the regular Committee, representatives of the Welfare and First Aid Departments, and Mr. and Mrs. Lawrence Hayes of R. L. Kautz' office were present.

Re-organization

Now that the latest additions to the factory have been completed and occupied, we have found it necessary to re-organize the Committee in order to avoid overlapping of areas and duplication of effort. This change is taking place at the present time, and a new layout indicating the changed areas has been prepared. This will require a considerable expansion of the Committee personnel.

The group has been functioning in the past with approximately fifteen

active members. The new arrangement will step this up to at least twenty-two and possibly more, depending upon the increase in factory personnel. The new scheme will provide complete coverage of the plant and will assure all departments of representation on the Committee.

Committee Men Promoted

Another change in Committee personnel is occasioned by the promotion of several of the original committee men to foreman and assistant foreman positions, thereby getting away from our basic thought in keeping the Safety Committee a representation of the shop personnel. The duties of these men in their supervisory capacities are going to require their full attention so that there will be little time for administration of safety duties.

Some of the men affected by the

change have served several years as members of the organization, and all have put forth loyal and conscientious service in the interests of Plant Safety. So it is with extreme regret and a million words of thanks that we see them leave our group.

Safety Council

The last meeting of the Southern California Industrial Safety Council before their summer recess was held in May, and the meeting was turned over to the aircraft industries for a general discussion of Safety in Industrial Aviation. The chairman was William Rhodes, Safety Engineer at the Santa Monica plant of Douglas Aircraft, who had several talks prepared pertaining to aviation, and also showed a series of films produced by Douglas and Vultee. Members from every aircraft factory in this area were present, North American being represented by several members of the Safety Committee.

In conclusion, a word of caution to the foremen and leadmen: Be sure to explain the hazards of his particular job to each and every new man hired, and give him a chance to familiarize himself with his new surroundings.

The Wilshire Bowl was the scene of this year's Safety Committee dinner-dance.

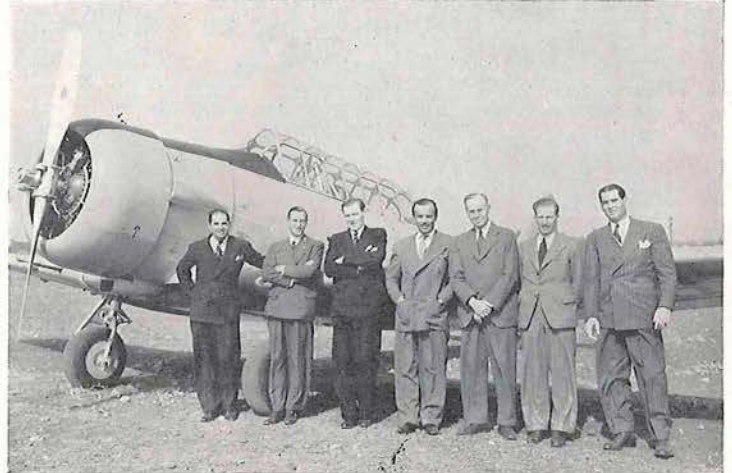




Through the C



Spring in France brought rain, rain brought mud, and North American trainers again demonstrated their ability to operate under adverse conditions.



Standing before the first Harvard II on the occasion of Air Vice Marshall Cave-Brown-Cave's visit are, left to right, Kenneth Bowen of N.A.A.; Captain A. S. Fletcher of the Royal Air Force; R. K. B. Bridges, Resident Inspector-in-Charge at North American; Wing Commander James Addams of the R.A.F.; Air Vice Marshall Cave-Brown-Cave; H. S. Howat, Resident Technical Officer; and H. C. Tafe of N.A.A.

Straight-line production from fuselage frame to assembled airplane is evident in this view of North American's trainer assembly floor from the flight ramp. In the background ten fuselage assembly lines are discernible.



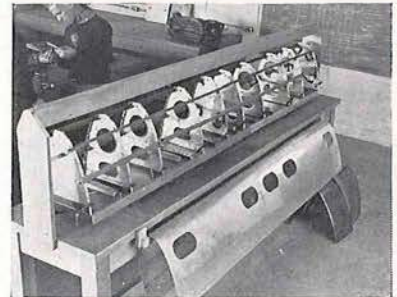
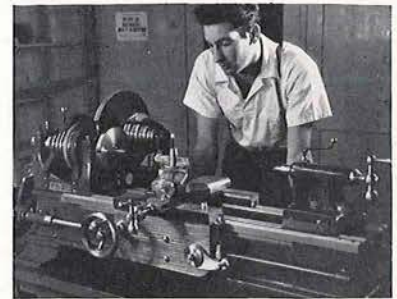
Camera Doors



No. 504, the Randolph Field BT-14 Trainer which appears on the cover of this issue, caught in level flight over Randolph.



Just down from a busy morning of check flights, Major Donald F. Stace, Air Corps Representative at North American, pauses a moment for the photographer on the walkway of a BT-14 Basic Trainer.



Significant of the new attention to aircraft training in public schools are these views of facilities and work in progress at Compton Junior College and Fullerton Junior College.



FIRST OF NA-66 HARVARDS DELIVERED FLYAWAY IN JUNE

Production of Harvard II Advanced Combat Trainers for the British Royal Air Force is going forward at full speed following completion of flight tests on the prototype airplane in May and the first flight deliveries in June.

According to J. L. Atwood, Vice President of North American, the factory will achieve a production peak of eighty aircraft monthly in January, 1941, under the contract for 600 of the Harvard II type.

Most of the airplanes ordered will be delivered flyaway to various Empire training bases in Canada, it was announced.

Canadian Firm

Concurrent with North American's preparations for large scale production, preliminary tooling operations are underway in the Montreal plant of Noorduyn Aviation, Ltd., which has contracted to build the North American Harvard II for the Royal Canadian Air Force under manufacturing rights negotiated with North American Aviation.

An additional order for 100 more of the Harvard type was recently placed by the Canadian Government directly with North American Aviation.

A previous advanced combat training type known as the Harvard I has already been delivered in a quantity

of 400 to Royal Air Force training establishments abroad, where the fast, low-wing ships are serving as advanced trainers for future fighter, interceptor, and bomber pilots of the R.A.F. In addition, thirty Harvard I airplanes were delivered to the R.C.A.F. in Canada. Reports from these training bases indicate that the type has won general approval because of its close similarity to actual combat craft, its ease of handling, and the low cost of maintaining the ships in service.

The NA-66 Harvard II is a two-place, all-metal, low-wing land monoplane. The fuselage consists of two main units exclusive of the welded tubular steel engine mount. These are the front section, housing the two tandem cockpits, which uses a welded chrome-molybdenum steel frame over which metal panels are fitted, and the rear section, which is a semi-monocoque aluminum alloy structure.

Maintenance Features

Wings are full cantilever and all-metal. The single-spar outer panels are detachable from the center section, and in turn have detachable wing tips which simplify maintenance on fields where ground loops are not infrequent.

Landing gear is fully retractable, folding upward toward the center

line of the ship, where a faired recess permits the wheels and tires to form part of the normal wing contour when retracted.

Empennage fixed surfaces are full cantilever and of metal construction. Rudder and elevators consist of aluminum alloy frames with flush type fabric covering.

The Harvard II, like the Harvard I, is powered by the 550 H.P. Pratt and Whitney Wasp R-1340-S3H1 engine, and uses a Hamilton Standard two-blade constant speed propeller.

Production of the Harvard II is concurrent with production under extensive U. S. Army Air Corps trainer and bomber contracts.

Buzz Holland Wed

N.A.A. photographer Martin "Buzz" Holland and Miss Marjorie Boggs (Purchasing) were married in a morning ceremony Saturday, June 22, at San Juan Capistrano Mission. A brief honeymoon trip into Mexico followed. Holland, a native of Baltimore, has been with North American since the firm was organized.

AIR CORPS TRAINING...

(Continued from Page 3)

In it, points are awarded for certain pulse rates and blood pressures when the examinee is reclining, standing and immediately after a prescribed exercise. According to the medicos, a score of 18 points is perfect, the highest attainable. However, Cadets and potential cadets are required to make a score of eight, less than half of perfection!

All other phases of the physical exam are the same. The Air Corps is seeking normal young men between the ages of 20 and 27—normal men with normal eyes, normal hearts and normal muscular reactions—not supermen.

Shown below are two views of the NA-66 Harvard II, latest advanced training type developed for the British R.A.F.





SHEET METAL DEPARTMENTS EMPLOYING ALMOST 700 MEN

Despite rapidly increasing production, North American Aviation's Sheet Metal and Sheet Metal Sub-Assembly Departments find themselves well equipped to meet almost any demands upon men and machinery. Having steadily grown during the years from a nucleus of experienced sheet metal workers, the departments now cover approximately 45,000 sq. ft. of floor area.

The two departments, which will be considered as one for the purpose of this review, now employ 425 men on the day shift and approximately 250 men on the night shift. With the help of tons of equipment, including large power brakes, power rollers, punch presses, saws, drill presses, and myriad specialized bench devices, an average of between 6,000 and 12,000 parts per day are being produced—the quantity depending upon the detail in design of the parts. At times, when intricate sheet metal parts predominate,

the day's production barely tops 3,000 parts. Because of this factor the output is widely variable and requires careful planning from Production Control right down to the bench.

It is the function of the Sheet Metal Department to supply all assembly departments with sufficient parts and material to maintain smooth production with a minimum of parts shortages. Hence the department not only must make the parts; it must also, through its internal production control system, establish priority of manufacture in order that close coordination will exist between actual fabrication and the master production schedules.

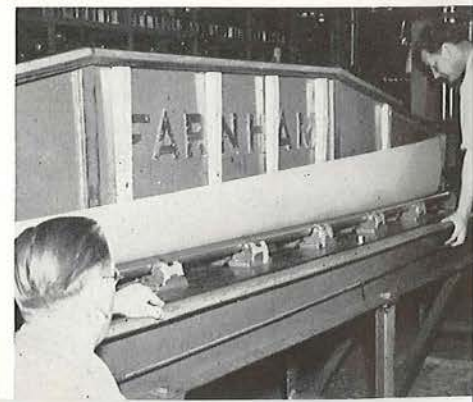
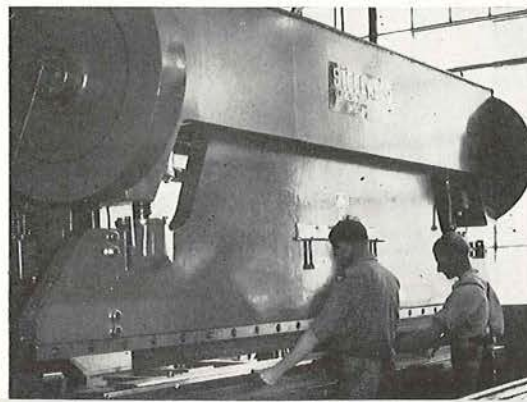
Sheet Metal receives its material from the Material Preparation Department, where form and size cuts are made in the manner described in the last issue of *Skyline*. Incoming parts are delivered by truckers to the Sheet Metal Control Station located

centrally in the department. Here production control men remove the salmon colored job ticket and place the parts, together with the green duplicate job ticket, in racks labeled "Punch Press," "Drill Press," "Power Brake," "Sheet Metal Bench," etc. These racks form a square around the Control Station, and each rack is divided into "First Priority Section," "Second Priority Section," etc. The applicable blueprint usually accompanies the parts when they arrive in Sheet Metal, together with necessary templates or dies.

Bench men and machine operators obtain their next job from the rack and, upon completion, return it to the section reserved for finished parts. If another operation is to be performed in the same department, the parts are then placed in the rack labeled for that operation; otherwise the green order is removed and sent to the Production Control office for record, and the parts are sent on with the salmon work order for inspection and final removal to one of the parts store-rooms.

In North American's logical layout of sheet metal operations, machines such as power brakes, punch and

Photo at right is a partial view of the line of punch presses in North American's Sheet Metal Department. Below are one of the large power brakes and a power roller in operation.





SHEET METAL . . .

blanking presses, radial drills, saws, and power rollers are located in a line extending the length of the South wall under the mezzanine floor. Fabrication and sub-assembly benches extend from this line out into the main factory floor. Aisles for movement of parts are provided in the layout of benches and religiously kept clear at all times. The main sheet metal inspection crib extends North and South at one side of the Sheet Metal Sub-Assembly area.

A brief review of the principal machine equipment used in North American Aviation's Sheet Metal Department is given below:

Power Brake—A long, narrow press into which male and female dies are fitted. When the upper die descends over the part it forces it into the angle required.

Punch press—A small, power-operated press which uses blanking dies to stamp out parts from a sheet of metal of the required hardness and thickness.

Power roller—A machine consisting of two rollers above and one below, all adjustable, through which the metal is fed by the operator to obtain the desired curve radius.

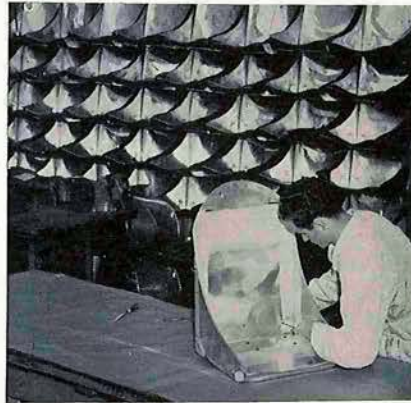
Radial drill—A drill mounted on a movable arm which permits movement of the drill over stationary material. Drilling is done through a steel template into several thicknesses of metal.

Drill press—A stationary drill for use in precision work. These are usually power-impelled and hand-operated.

Disc saw—Identical in form and operation to a wood buzz saw, but with a blade cut and hardened to handle metal.

Band saw—Conventional metal band saw equipped with a large table in which ball bearings are set, enabling the operator to handle large sheets of metal.

Tumbler—A hexagonal revolving drum containing ball bearings, in



which small metal parts are placed to remove burrs.

All power equipment in North American Aviation's Sheet Metal Department is electrically operated.

Completed pilot seats form an unusual background for this view of a sheet metal bench man at work.

AIRCRAFT TRAINING COURSES . . .

(Continued from Page 3)

ployment training. One of the requisites for enrollment is actual experience in the field of study, and it is stated that approximately 90% of those enrolled at Inglewood are employees of North American Aviation and other aircraft firms who seek either to better themselves at performance of their present work or qualify for more advanced positions.

High schools and junior colleges throughout the area are planning highly specialized vocational courses to prepare students for possible employment, and are requesting accredited instructors from North American and other manufacturers. At the present time it appears that such courses, all of which are in the pre-employment category, will be offered during the coming summer session at most Los Angeles schools under the supervision of the Frank Wiggins Trade School. These courses will consist of daily 4-hour sessions extending over a six-week period, with further amplification of the program possible if additional funds are made available.

At present the greatest need is in trades which require a longer training period. It is stated by those close to the movement that, in machine shop work, turret-lathe and milling

machine operators are in greater demand than any others.

Among North American employees who have been instructing at Inglewood Evening School are James Andrews, Wm. Cooper, Geo. Eberle, Don Gallant, D. N. League, E. C. Martin, James Mills, H. V. Schwalenberg, N. A. Veland, J. P. Weed, and W. L. Smeton. All of these hold supervisory positions with North American Aviation.

Regular high school credit is given for trade extension work. Employees who did not finish high school are urged to contact George W. Stone, Employment Director, for information regarding the application of actual factory work toward a high school diploma. By this method, a person who dropped out of school to begin work may, in a very short period, receive his high school diploma.

A further educational procedure has been developed by North American within the factory itself. Starting apprentice employees in certain departments work two weeks in the shop under careful supervision. During this period their wages are charged to education, and every effort is made to orient the apprentices to shop procedure and acquaint them with the specific requirements of a given job.



North American Visitors

Foreign visitors to North American Aviation's plant during recent months include several distinguished air force and purchasing mission officials.

On April 10th, Captain Oswaldo Balloussier of the Brazilian Army Air Force arrived to make his residence in the area during work on Brazilian aircraft. Accompanying Captain Balloussier for a two-week visit was Joao Mendes da Silva, Brazilian Representative to the Stearman factory in Wichita, Kansas.

April 11th saw the arrival of Captain S. Gordon Young, and A. E. Marsden of the British Purchasing Commission, here for one day. Mr. Marsden is Chief Inspector for British Aircraft being constructed in the United States.

Air Commodore C. B. A. Baker of the R.A.F. and British Purchasing Commission made a one-day visit on April 18th, accompanied by H. L. Stevens of the British Purchasing Commission.

Representing Noorduyn Aviation, Ltd., of Montreal, J. R. Chadborn spent approximately two weeks in the factory beginning April 23rd.

Three officials of the National Steel Car Company of Canada, R. S. Hart, M. A. Marchant, and George Burlison, were at the factory several days during the last week of May. Another Noorduyn representative, George Davies, arrived May 27th for a two-weeks stay.

H. A. Ziegler, Chief Engineer of the French Air Commission, was here on May 28th.

James P. Donnelly of Noorduyn began a two-week visit on June 4th.

Accompanied by Captain A. S. Fletcher of the R.A.F. and H. S. Howat, R.T.O. at North American and Lockheed, Air Vice Marshall Cave-Brown-Cave paid North American a brief visit on June 6th.

RESIDENT REPRESENTATIVES AT N.A.A.

Top—Captain Oswaldo Balloussier, of the Brazilian Army Air Force.

Top—Pierre Bistaudeau, Inspector-in-Charge, French Air Commission.

Bottom—R. K. B. Bridges, Inspector-in-Charge, British Supply Board.

Bottom—Flight Lieut. Khien Somnabandhu of the Thai Royal Air Force.



LUTTMAN TRANSFERRED TO EAST COAST . . .

Appointment of H. C. Luttmann, former Inspector-in-Charge for the British Supply Board at North American Aviation, as Supervisor of Inspection for the Eastern U.S.A. (Aircraft) Group was announced recently by A. E. Marsden, Chief Aircraft Inspector in the United States for the British Supply Board.

Replacing Mr. Luttmann as Resident Inspector-in-Charge for the British Supply Board at North American is R. K. B. Bridges, functioning under the direction of J. G. Brown, who has been appointed to take charge of the Western (U.S.A.) Aircraft Group.

Another new arrival, H. S. Howat, is serving as Resident Technical Officer for the British Supply Board at North American and Lockheed.





Skyline

NORTH AMERICAN AVIATION, INC.

SKYLINE——SILHOUETTES

At the airport end of the factory, in a walled-off portion of the main assembly floor, the writer found Carl Walterhoefer, foreman of the Experimental Department, sitting at his desk examining advance blueprints of a newly designed airplane. In personality and background he seems typical of the successful shop man—possessing a quiet air of assurance in his work which can come only from varied and carefully digested experience over a long period of years.

Walterhoefer got his start in a Baltimore sheet metal shop. He was born in 1905 in Baltimore and finished grammar school in that city. Almost as far back as he can remember, he has worked for a living. Even as a boy he did odd jobs here and there for spending money—including two years of caddying at the Maryland Country Club in Baltimore. From those years on the greens and fairways he recalls carrying clubs for Gene Sarazen and Walter Hagen, two of his steady customers who later became famous.

Like most normal boys, Carl was interested in athletics—playing soccer and baseball and doing a bit of running in grammar school.

Three years of architectural training followed at Maryland Institute, during which he worked each day for a sheet metal contractor and studied in the evenings. Still not content with his technical training, Walterhoefer next took an I.C.S. sheet metal pattern layout course, completed it, and went right on working in the sheet metal shop.

After eleven years of sheet metal experience, he went into his first aircraft job in 1931—starting as a sheet metal bench worker in the Berliner-Joyce factory at Dundalk, Maryland.

Walterhoefer's rise was rapid through the years that saw the company changed to General Aviation and then consolidated into North American Aviation, Inc. After two months of sheet metal bench work, he became leadman of sheet metal small parts. When North American's NA-16, experimental version of the industry's most successful trainer series, was built in Dundalk,



CARL A. WALTERHOEFER
*Experimental Dept., North
American Aviation, Inc.*

Walterhoefer got the leadman job on the wing center section crew.

From that first taste of experimental manufacture Walterhoefer knew his chosen field and stayed pretty close to it. After serving as night leadman for the outer wing panels of the GA-15, later famous as the O-47 Observation Airplane, he supervised skin and walkway assembly for the SOC-1 Floats. Next to the company's new factory in Inglewood and supervision of center section construction of the first BT-9 Trainers for the Air Corps.

Appointed Foreman

The start of work on North American's NA-21 Army Bomber brought foremanship of the experimental department to Walterhoefer, and he has held that position ever since. Six experimental airplanes of new design have been turned out by Walterhoefer's gang since the NA-21.

Today Carl likes to recollect the ships that have taken shape in his department, but even more is he interested in "those new jobs over there"—and his eyes turn to the beginnings of airplanes which were beyond even the most optimistic dreams of sane designers a few years back.

Family Life

On April 9, 1922—Carl still remembers the date—he married Ella Ritter in Baltimore. With Carl, Jr., age 17, and a 16-year-old daughter, Mary, they live now in Venice, where both children attend Venice High School.

For recreation, Carl bowls in the N.A.A. League, does a little fishing, putters about his garden, or takes in the wrestling matches and midget races. One suspects, however, that his greatest satisfaction comes on the memorable day when "that new job" takes to the air for the first time. That's still a thrill for Walterhoefer and for every member of his experimental crew.



Arvin Meet Reviewed by North American Glider Pilot . . .

By STANLEY A. HALL

Encircled in red on the maps of soaring enthusiasts the nation over is Arvin, California. Conditions there are such that powerful upward currents of air rise from the broad expanse of Kern Valley to aid the soaring pilot.

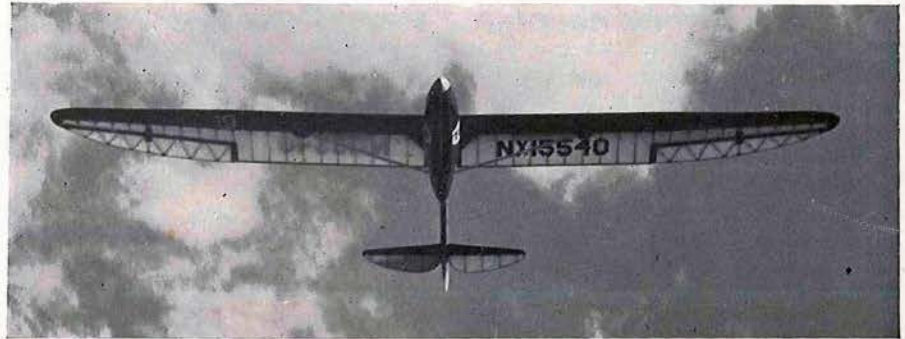
A few miles east of Arvin, in the blue hills of the White Wolf Range and in the shadow of seven-thousand-foot Bear Mountain, there is located a small plateau reaching perhaps a thousand feet above the valley floor. This is Arvin-Sierra, locale of the annual championship soaring contests for the region west of the Mississippi. Arvin-Sierra forms the big toe of the Bear's right front paw, and this spring its grassy slopes lured some twenty-eight sailplanes and forty-seven pilots into competition.

Upwards of ten thousand spectators personally witnessed these twenty-eight sailplanes make 427 takeoffs, travel a total distance of 1785 miles, and remain aloft for a total of 390 hours.

Woodbridge Brown of San Diego piloted his sleek Bowlus Super Albatross to first place, with John Robinson, also of San Diego, finishing a close second. The Bowlus Super Albatross, the latest development in soaring efficiency, made its debut at this contest and startled all soaring enthusiasts by hurtling along at better than 100 miles per hour in straightaway flight!

Conditions Bad

Pre-contest enthusiasm all but wilted on the opening day of the nine-day event. On that Saturday, April 16th, there developed a stable atmospheric condition made evident by a thick haze hanging low over the valley. Little soaring was accomplished other than a few spasmodic attempts to utilize upward air cur-



"He landed at Bakersfield . . ."

JACK CANARY

rents which were almost throttled by the haze. Sunday, the second day, saw hopes falling rapidly with a recurrence of the same phenomenon. But along about 3:00 o'clock in the afternoon, the haze lifted and, as small cumulus clouds rapidly developed into big ones and swooped in over the valley to the hills, hopes rode high as sailplaners jockeyed their ships high over Bear Mountain's scraggly back. Jack O'Meara, veteran Eastern pilot, lifted his machine to over 9000 feet. Henry Stiglemeir, Douglas engineer, held his ship aloft for over eight consecutive hours.

First Fatalities

As the day wore on, the clouds dispersed and the air jockeys were forced to descend from their lofty elevations back to Arvin-Sierra. As evening approached and the sky darkened, we gazed into the embers of our campfire and felt keenly the loss of two valiant soaring enthusiasts. Earlier in the afternoon the first fatal accident ever to be recorded in the annals of contest soaring in the United States had occurred. It dimmed the embers at Arvin-Sierra that night. The cause? Precisely the same as might at any time happen to anyone while driving through city

streets: violation of traffic regulations.

Monday, the third day, brought forth a deluge of wind, rain, and snow. We spent the day checking equipment and making new plans for the morrow. Frank Hutchinson, a little more adventurous than the others, battled his way through the elements to Arvin and return, a truly spectacular flight from the pilot's standpoint.

During the following week-days when most of us were busily at work, Woody Brown and John Robinson rode the tops of tremendous "thermal bubbles" to the city of Twenty-Nine Palms, an airline distance of approximately 169 miles. Dick Esery, piloting his new two-place sailplane, carried Victor Korsky to Gorman, located deep in the Ridge, and thereby copped a valuable cash goal prize. Harold Huber of Pacoima, California, landed at Bakersfield and strode into a meeting of the Bakersfield Chamber of Commerce for one of the prizes.

Last Week-end

The last two days of the contest, Saturday and Sunday, again brought back multitudes of spectators and more pilots. Records were not established on these days, but more con-

sistent record attempts were made than during any other period. On Saturday, it was announced that \$135.00 in cash was waiting for the first pilot to land his ship at the Grand Central Air Terminal in Glendale, or within a twenty-five mile radius thereof. A mad scramble to get into the air ensued. And soon it was that several sailplaners were exploring the freezing cold over the Bear's back in order to obtain as much altitude as possible before heading toward Los Angeles. Woody Brown soared, soon out of sight, toward Grapevine, with Harland Ross snapping at his heels. Here at the Northern entrance to the Ridge, difficulty was encountered. The air had, for some inexplicable reason, stabled. Powerful updrafts slowed until both lads found themselves helplessly sinking into gorges where the mountains tumble into the valley. With last minute despair, they turned and glided back to the level plains below the Ridge. Many more attempts were made to reach Los Angeles, but the prize was never claimed. Even Sven Ingels and myself, flying faithful but slow "Cherokee," placed Los Angeles as our goal, with the thought, "Of course we can never hope to make it, but it can do no harm to write 'Los

Angeles' on our takeoff card. And, if by chance a miracle . . ." And so goes gliding!

As the evening of Sunday, last day of the contest, approached, the most impressive sight of the entire event occurred after the spectators had departed homeward. Three sailplanes, silhouetted against a darkening evening sky, spiralled slowly downward in a semblance of formation. A fourth, much higher in altitude, looped gracefully to lose altitude before darkness overcame. Three, sometimes four loops at a time, each of tremendous diameter,

were executed by the tiring pilot. Apparently, as two approached the plateau with a few hundred feet to spare, the up currents of air had not yet lost their power, for one pilot remarked to another, clearly audible to us on the ground, "Say, how does one get these things down?" The other pilot, amused, replied, "I don't know, I've been trying to get this one down for two hours!" As darkness finally closed in, they whirred softly overhead, each to a graceful landing. Thus the third, and most successful, soaring contest to be held West of the Mississippi came to a close . . .

"And if by chance a miracle . . ."

JACK CANARY



New Beach Quarters Announced By Officials Of Aviation Club

Announcement was recently made that the Pacific Aviation Club, an organization dedicated to the interests of members of the aviation industry, will move into its spacious new home located on the beach-front in Santa Monica on July 1st.

Formerly known as the "Grand Hotel", the eight-story building was originally constructed and furnished at a cost of more than a million dollars. Available to club members and their friends will be 220 feet of private beach and complete facilities within the building, which boasts 136 rooms with private baths, a large indoor plunge, five private dining rooms, 3000 individual lockers, and numerous colorful lounges, game rooms, and cocktail bars.

The organization is headed by Lt. Colonel Joseph L. Stromme of the Army Air Corps Procurement Planning Division, President. Other officers include: Orville A. Rogers, Los Angeles attorney, Vice-President; Major Howe Thayer, Personnel Director of North American Aviation, Inc., Treasurer; and G. H. "Jerry" McClelland, who has guided the affairs of the club since its inception

in May, 1939, Secretary.

Other directors include Carl B. Squier, Vice President in Charge of Sales, Lockheed Aircraft Corporation; Jack Frye, President of Transcontinental and Western Air, Inc.; Randolph C. Walker of Sutro & Co. and Lockheed; LaMotte T. Cohu, Chairman of the Board of Northrop Aviation Company; and Richard Millar, President of Vultee Aircraft Company.

President Stromme has announced that charter memberships were closed as of June 1, 1940, but that plans have been made to secure a total of 2000 resident members and 1500 non-resident members.

Pacific Aviation Club leaders plan to make their new quarters a focal point in Southern California for social activities of the aviation industry. Among affairs which will be featured are dances, dinners, luncheons, and special activities sponsored by the societies, associations, and manufacturers of the aircraft industry.

Both military and civilian memberships are open, according to officials of the club.



The Skyline Reporter...



THE Flying Horsemen's first annual Variety Ball on Saturday, May 4th, at the Brentwood Country Club, brought out 900 North Americans and their guests for the most enjoyable company dance within memory.

Announced as a huge success by Chairman Thurman Wood, the semi-formal ball caused so much favorable comment that another similar affair is being planned for the near future.



The North American Bowling League brought its most successful season to a close with the awarding of \$1400 in cash prizes to winning teams and individuals. Jack Richards took individual honors with

a high season average of 187 for 75 games and the highest individual series, without handicap, 676.

Winning team in Division 1 was Engineering Team 1, composed of Hartle, Houston, Weir, Bentley, and Richards. The Division 2 title went to Material Control's team, including Hoffman, Bresnahan, Casaletti, Anderson, and Zierden. Second place winner in Division 1 was Welding Team 2, and Welding Team 1 took second in Division 2.

Highlights of the season were: George Bentley picking up the almost impossible 7-10 split during league play; Welding Team 1's highest team game of 1102, closely followed by Final Assembly Team 1's 1100; Frank Basey's highest single game of 276 and L. Young's 275.

Plans are already being made for

next season by President Sid Spohn, Vice President Jack Sneyd, Secretary Bob Hartle, and Treasurer Jesse Hill. League President Spohn was honored June 3 when the Los Angeles Bowling Association, at its annual dinner-meeting held at the Hotel Hayward, elected him to the eight-man Executive Committee for the coming season.

Women interested in forming a league, to be composed of employees and employees' wives, are requested to watch the bulletin boards for an announcement.



North American Aviation's tennis team is marking time pending the scheduling of matches. In an early season match already played, the N.A.A. racket men defeated the Santa Monica Tennis Club for the first time in history, eleven matches to two. According to Dean Phillips, manager, matches will be played with Lockheed, Douglas, and Vultee as

The man with the camera took a few random photos of North Americans enjoying themselves at the Flying Horsemen's first Variety Ball at the Brentwood Country Club.

—LEE GLAZE





soon as they can be arranged. The season will extend well into October.

Meanwhile, George Shull (Maintenance) holds top position in the N.A.A. competitive pyramid, having downed Bob Miller (Sheet Metal Sub-Assy), winner of the North American singles title this year. Others in high positions in the pyramid are Francis Schmidt (Material Cont.), Oakley Druliner (Maintenance), Edwin Brewster (Machine Shop), and Ogden Bodenheimer (Engin.).



BUSILY engaged in summer riding competitions are North American's Flying Horsemen; trophies already captured speak well for their skill and precision. On May 18th the Troop entered the Whittier Horse Show and returned with a fine trophy after competing with some of Southern California's best riding groups.

Riding in competition with the Long Beach Vaqueros and the Vultee Vanguarders at the invitational Orange City Fair and Horse Show at Santa Ana on Saturday, June 8th, nineteen Flying Horsemen under Captain Gordon Throne trotted off with first place and a beautiful trophy. Invitation to the Show is an honor coveted by California riding organizations.

At an election of officers early in June the following were chosen to lead the Horsemen during the coming year: Gordon Throne, Captain; Herb Snow, 1st Lieut.; Dave Hoffman, 2nd Lieut.; Thurman Wood, Secretary; Bob Walker, Treasurer; Harry Rankin, 1st Corp.; Bob Hartle, 2nd Corp.

New members taken in since the last publication include Charles Wolf, Al Maxian, Joe Huseck, and Max Basey. Beginners' classes are still being conducted each Tuesday night at the Inglewood Riding Stables under "Shorty" Fowler, and

those interested are urged to ask any troop member for more details.

During recent weeks Al Maxian, Bob Walker, and Fowler all gained membership in the "Happy Landing" Club by hitting the dirt at the wrong time during drill.



With twelve games of a summer season behind them, ten of which were victories, North American's baseball team was honored guest of the Los Angeles and Oakland Baseball Clubs on June 21. Special honors went to Harry "Peanuts" Lowery, flashy young short-stop who has made good with the Angels; Lowery is employed by North American during the winter months, and plays on the championship N.A.A. Winter League Team.

During the evening a trophy was presented to the North American team by the Los Angeles Club for the splendid contribution the team has made to semi-professional baseball in the Southland.

A game was scheduled for Wednesday evening, June 26, with the May Company team at Torrance City Park.

It is announced by James Sutherlin, Manager-Coch, that North American has qualified to play in the California State Baseball Tournament at Torrance. The playoffs start on Saturday, July 6. All games will be played at night under the lights, and employees and their friends are urged to attend.

Wedding Bells

For Veronica D. Brown (Tool Design) and Kenneth P. Edlund on February 3 at San Francisco.

For William Drusen (Machine Shop) and Helen Clouthier on March 30 at Burbank.

For Owen B. Embree (Final Assy.) and Helen Pattison on March 17 at Yuma, Arizona.

For Forrest W. Fahnstock (Wood Shop) and Gladys Kealey on June 2

North American Aviation's basketball team, led by Coach Bud Moon, completed an eminently successful season. Standing are Jim Ward, Paul Wierk, Bob Murphy, Jim Lanahan, and Dick Wilkins. Seated, Coach Moon, John Huddleston, Ed Sheets.





at Redondo Beach Methodist Church.

For Ralph W. Garvis (Shipping) and Iva Mae Jones on April 13 at Las Vegas, Nevada.

For Robert G. Hartley (Final Assy.) and Susanna E. Henry on April 27 at Las Vegas, Nevada.

For Donald W. Huston (Wood Shop) and Nora Mae Thorsrud on May 3 at Wilshire Wedding Chapel.

For Robert G. Jacob (Stores) and Ida de la Moro on May 4 at Los Angeles.

For Datus L. Marchant (Prod. Cont.) and Evelyn Belmont on February 3 at Inglewood.

For Russell W. McIntosh (Planning) and Jean Gordon on June 15 at Las Vegas, Nevada.

For Richard E. Rush (Final Assy.) and Jacqueline Mott on April 13 at Broadway Wedding Chapel.

For A. J. Schooley (Sheet Metal Sub-Assy.) and Ruth Marks on March 23 at Los Angeles.

For Anthony J. Setting (Final Assy.) and Ruth Duncan on April 21 at Los Angeles.

For William C. Shonsted (Sheet Metal Sub-Assy.) and Ruth Wood on May 31 at Los Angeles.

Personnel Director Howe Thayer receives two additions to North American's trophy collection. On the left Captain Gordon Throne of the Flying Horsemen receives congratulations upon winning the Orange City Horse Show trophy,



For Thurman Sunderland (Sheet Metal Sub-Assy.) and Leona McAmis on April 20 at Pasadena.

For James Thompson (Processing) and Harriett Call on May 16 at Douglas, Wyoming.

For Aaron F. Vance (Final Assy. Sub-Assy.) and Alva L. Marshall on March 23 at Las Vegas, Nevada.

For Roland P. Vedder (Wing Sub-Assy.) and Helen Burke on April 6 at Yuma, Arizona.

For John A. Walker (Wing Sub-Assy.) and Winona C. Benjestorf on March 31 at Yuma, Arizona.

For Raymond A. Watt (Wing Assy.) and Nadine Foutts on March 16 at Little Chapel of the Dawn, Santa Monica.

For Garland L. Williams (Sheet Metal) and Peggy Bowen on May 11 at Las Vegas, Nevada.

Death Came

To Carl L. Fingado, 45, on May 9. Employed since June 15, 1938.

To Guy William Huffaker, 33, on May 27. Employed since December 7, 1936.

To Howard Franklin Jones, 20, on May 18. Employed since January 24, 1940.

Janosco Convalescing

Expected back to work after the July 4th holiday is Steve Janosco (Experimental), who has been abed in Santa Monica Hospital since a bone operation early in May. Janosco's many friends in the factory have visited him frequently during the two months.

N.A.A. RESIDENCE SURVEY

Results of a recent survey on the distribution of North American employees' residences in surrounding cities indicate that more than 100 Southern California cities and towns are represented on the payroll.

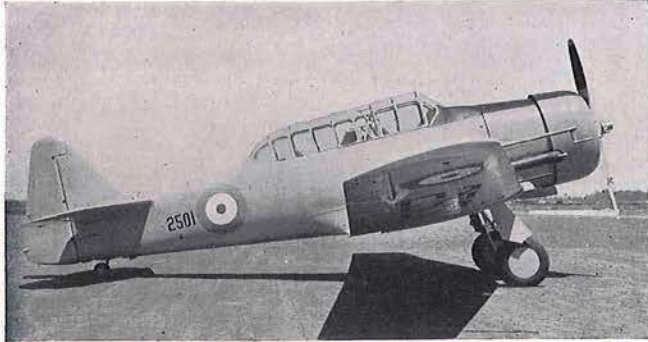
Thirty per cent have their homes in Los Angeles, and Inglewood is second on the list with twenty-three per cent. The other leaders, in order, are Santa Monica, Hawthorne, Venice, Manhattan Beach, West Los Angeles, Hermosa Beach, and Redondo Beach.

Surprisingly, many drive from such distant points as Santa Ana, Covina, Eagle Rock, Pomona, Balboa Island, Fontana, and even Riverside, Redlands, and Fillmore.

and on the right Coach Sutherlin of the baseball team presents the championship cup from the Winter League of the Southern California Baseball Association, won by North American with an almost perfect record.



At The End Of The Line



North American's NA-66 Harvard II, an advanced combat trainer of which a large quantity have been ordered by Great Britain and Canada for an important role in the Empire Air Training Program, has been put through complete flight tests at the factory. Flight deliveries have already begun and will probably reach a peak of eighty aircraft monthly late in 1940.



Deliveries have been completed on North American Model AT-6 Advanced Trainers, the latest advanced training type developed for the U. S. Army Air Corps. These ships are used at Air Corps training establishments for the final transition period before cadets are assigned to tactical types.

Constituting the second order placed by the Ministry of War and Marine, Republic of Venezuela, for North American aircraft, delivery is now being made of three Model NA-71 General Purpose Combat Airplanes to Caracas. The first NA-71 was test flown late in May. The ship is powered with a 550 H.P. Pratt & Whitney Wasp Engine.

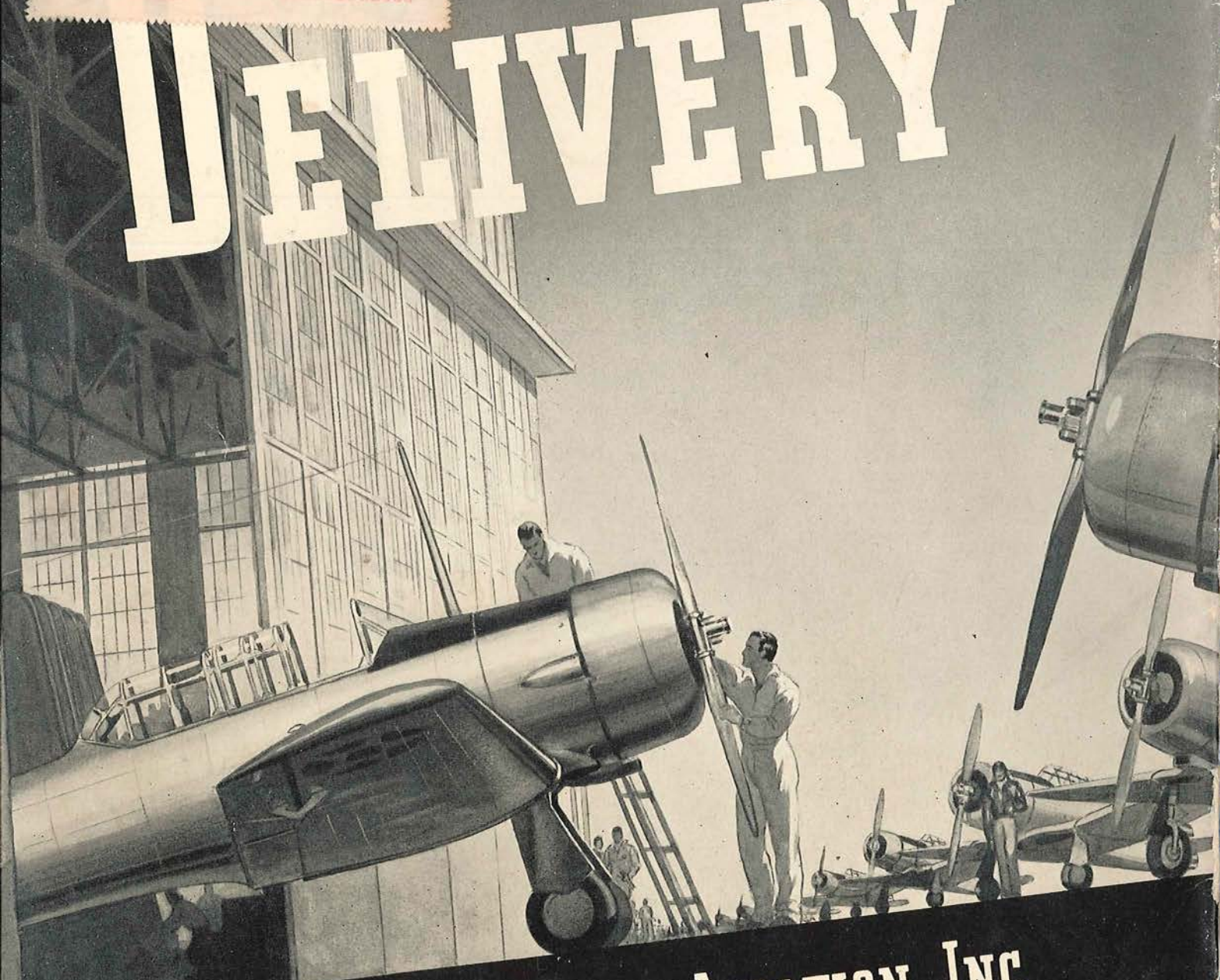
Third in a series of two-place trainers built by North American Aviation for the U. S. Navy, the Model SNJ-2 Scout Trainer is currently being delivered flyaway to Naval Training Stations. North American low-wing trainers are used by the Army Air Corps, U. S. Navy, Air Corps Reserve, and National Guard.



P. Gauffreteau
French Air Commission
Consolidated Aircraft Co.
San Diego, California



DELIVERY



NORTH AMERICAN AVIATION, INC.
INGLEWOOD, CALIFORNIA, U.S.A.

