

ALL OUT

for Defense







T

HIS book is for Bell System employees everywhere.

There is no part of the nation's defense effort which the telephone does not serve. This applies to the Army and Navy in their preparation and expansion. It applies no less to industry, which is charged with the task of producing, in huge quantity, the materials and weapons of defense. The Bell System's responsibility is nationwide.

The speed and vastness of our defense program and the importance of the telephone to its success are a challenge to every man and woman in the Bell System. So far I think we have done well, and I am confident that we shall continue to be successful in meeting whatever problems are ahead. Our equipment is good and our people are skilled. Above all, we have a tradition of service to the nation which is a living thing.

We are accustomed to difficult jobs and we welcome the opportunity to serve our country by doing our part well. We do not need to look at pictures to learn what our part is. Still, I hope this book may help a little to give Bell System men and women, in all departments of our organization, a renewed appreciation of the vital task in which every one of us has a responsibility — effective organization of the nation for defense production.

Walter S. Gifford

President, American Telephone and Telegraph Company

THE ARMY PREPARES



A new recruit holds up some of the equipment which he will use.



Soldiers in training at Fort Dix, New Jersey, march in review. Soon their fellows will number 1,400,000.



Men of New England arriving in Florida.



Signal Corps members using Bell System equipment in the field.

The Army uses
the telephone
every day and
everywhere . . .



Light tank takes leap at maneuvers.



Big — but it moves fast: 155 mm. gun.



Practice at chemical warfare.



New anti-aircraft sound detector.



U. S. parachute troops are now in training.

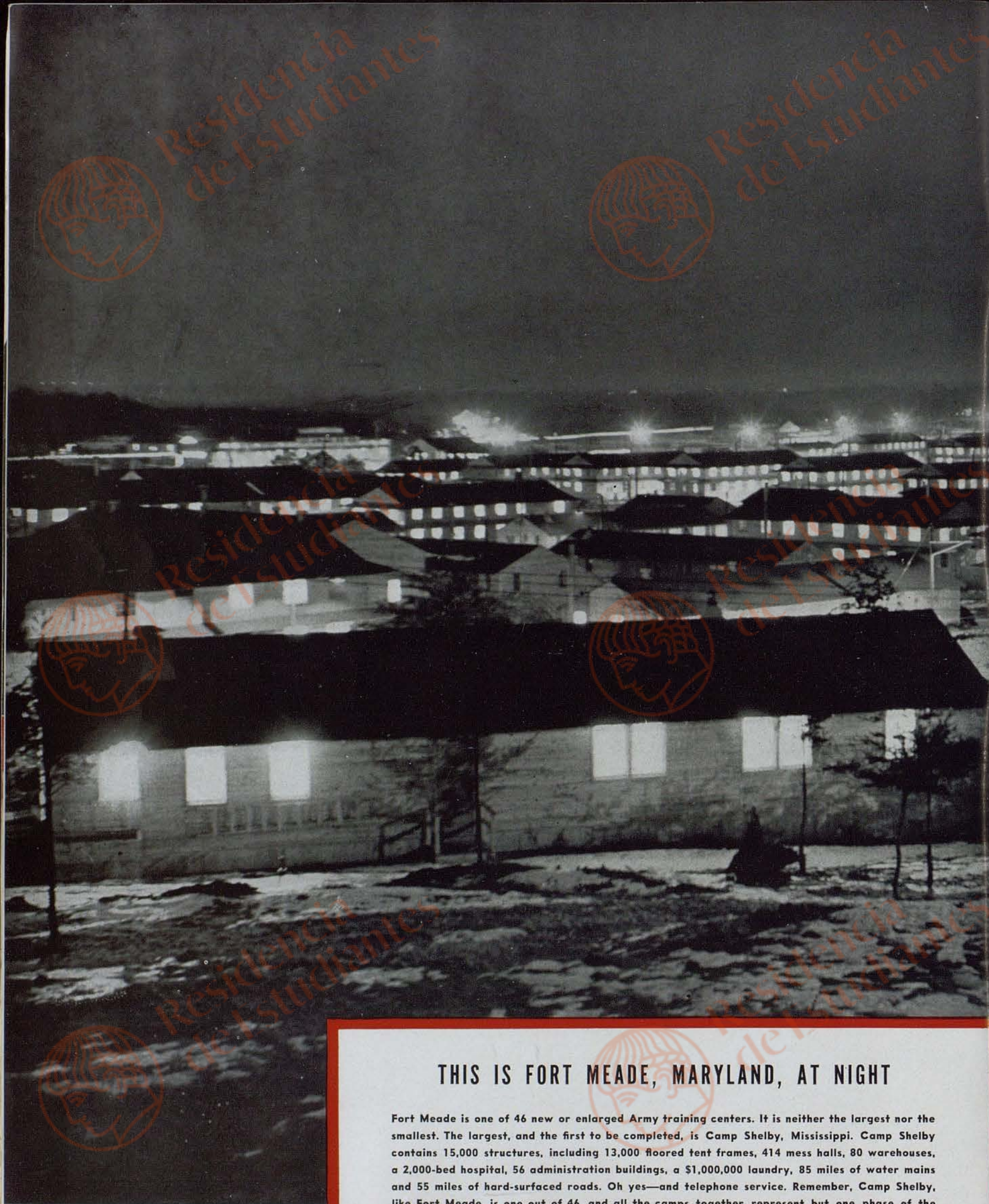
Vast and various are the needs of our Army.
The telephone is at the right hand of all
who are working to meet those needs . . .

Men plus motors for defense: part of a motorized Army division on review at Fort Benning, Georgia.



One of the Army's mighty midgets goes soaring on all four feet and takes a 37 mm. gun aloft with it.





THIS IS FORT MEADE, MARYLAND, AT NIGHT

Fort Meade is one of 46 new or enlarged Army training centers. It is neither the largest nor the smallest. The largest, and the first to be completed, is Camp Shelby, Mississippi. Camp Shelby contains 15,000 structures, including 13,000 floored tent frames, 414 mess halls, 80 warehouses, a 2,000-bed hospital, 56 administration buildings, a \$1,000,000 laundry, 85 miles of water mains and 55 miles of hard-surfaced roads. Oh yes—and telephone service. Remember, Camp Shelby, like Fort Meade, is one out of 46, and all the camps together represent but one phase of the Army's activity. A good way to grasp the meaning of the defense program is to think how small a part of the whole is represented by any one picture, no matter how big.



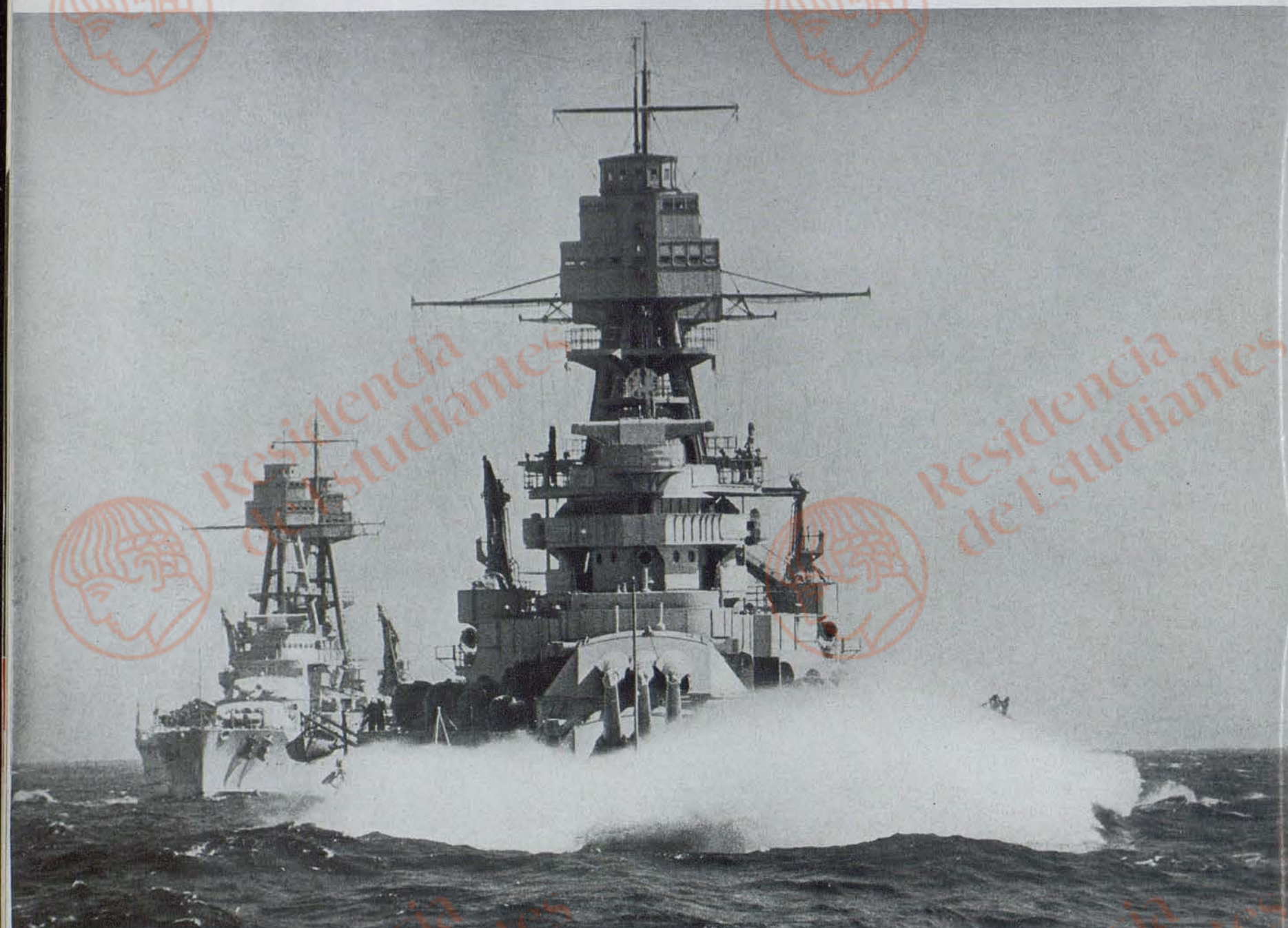
This scene of telephone lines being arranged to serve at military reservations could be repeated at each Army post. The job pictured here was at Indiantown Gap, Pa.



Small military posts as well as big ones need more telephone service. Here a Western Electric installer completes a P.B.X. job for an Army office near Utica, N. Y.



THE NAVY PREPARES



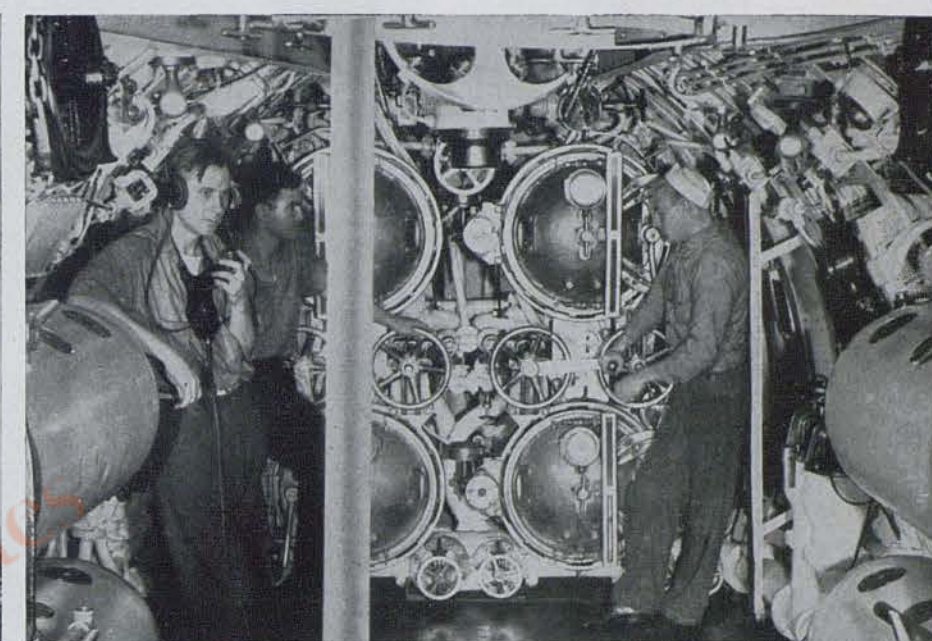
The greatest fleet in the world is being made ready to protect the United States against invasion by any hostile power.



Telephone plant engineers rushing design of facilities to provide service to the Naval Air Base at Banana River, Florida.



Exhaust from the engines of a submarine makes a pattern on the water. In the torpedo room, the telephone is in use.



On ships of all sizes, from battleship to motor torpedo boat, electrical communication helps the Navy defend America.



The telephone serves the United States Navy on two oceans and at every naval station on land.

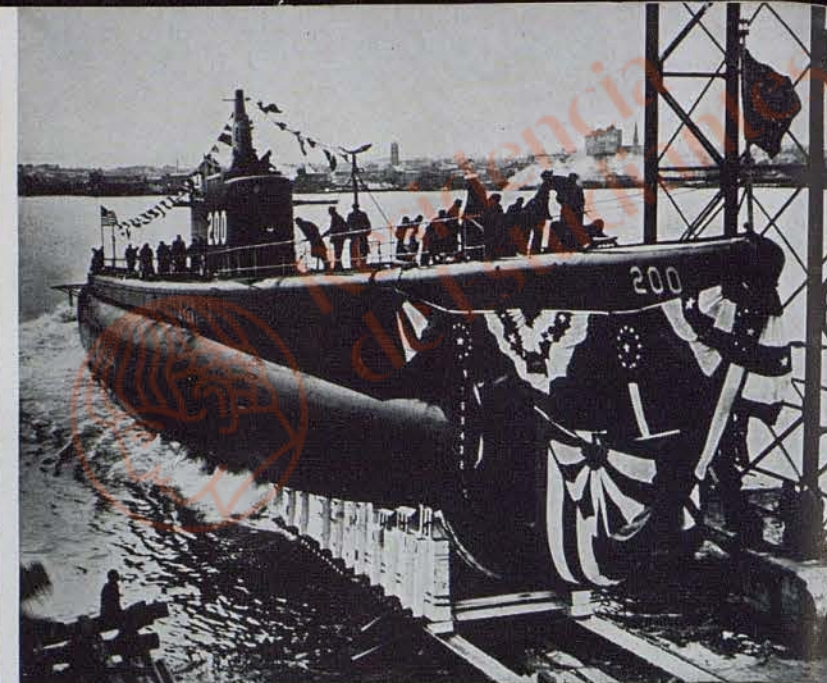
TELEPHONE CABLE
SERVING NAVAL AIR BASE
BURIED HERE
DO NOT DIG
CALL 5-9026 FOR
FURTHER DETAILS



The U.S.S. Humbolt is the first of 16 new seaplane tenders.



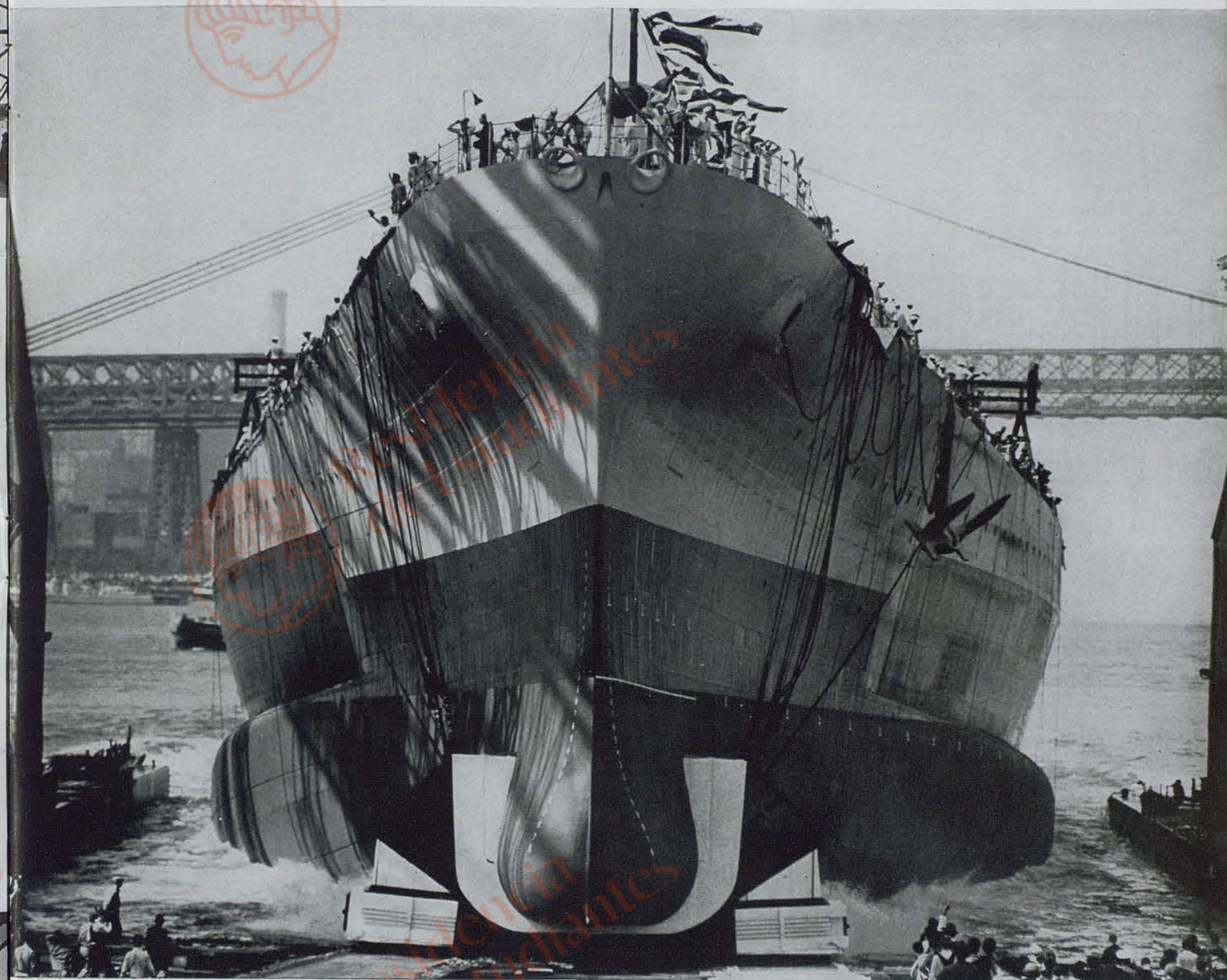
The U.S.S. Kearny, one of many new destroyers, slides in.



Splash!—another submarine takes to water at New London.

NEW SHIPS for the Navy

Gun turrets are made here at the Philadelphia Navy Yard.



The 35,000-ton battleship "North Carolina" was launched in June, 1940, and commissioned for service in April, 1941.



The Bell System is making
communication equipment
for many ships now under
construction.



Vought fighters operate from aircraft carriers.



Four-engined Boeing B-17 "Flying Fortress."

WINGS FOR DEFENSE



Zing! one of the Army Air Corps' basic trainers as seen from another.



One of the U.S. Navy's Douglas torpedo bombers.



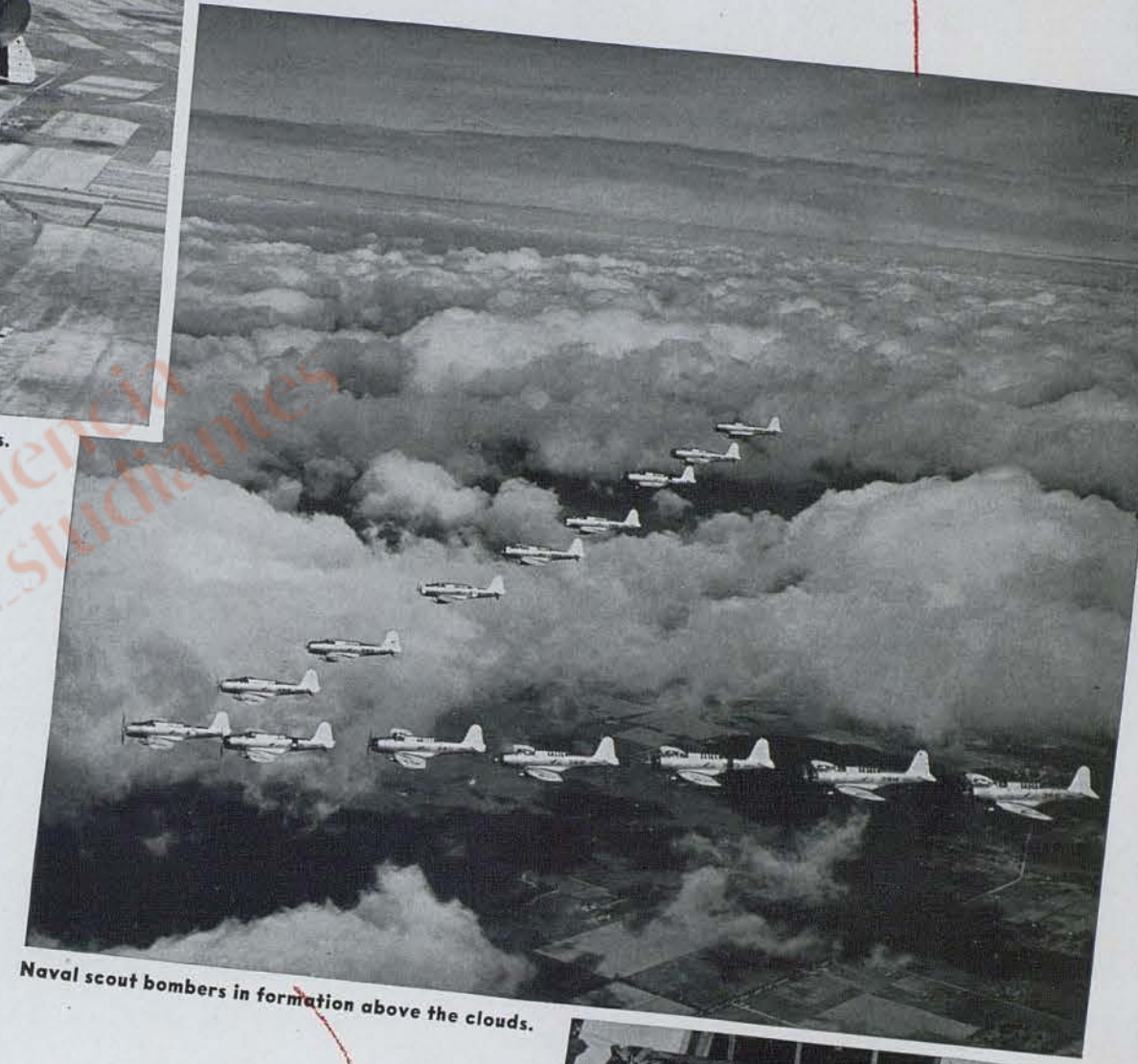
Bell P-39—commonly called the "Airacobra."



The Army's long-range Consolidated bomber.



Wings over the air training center at Randolph Field, Texas.

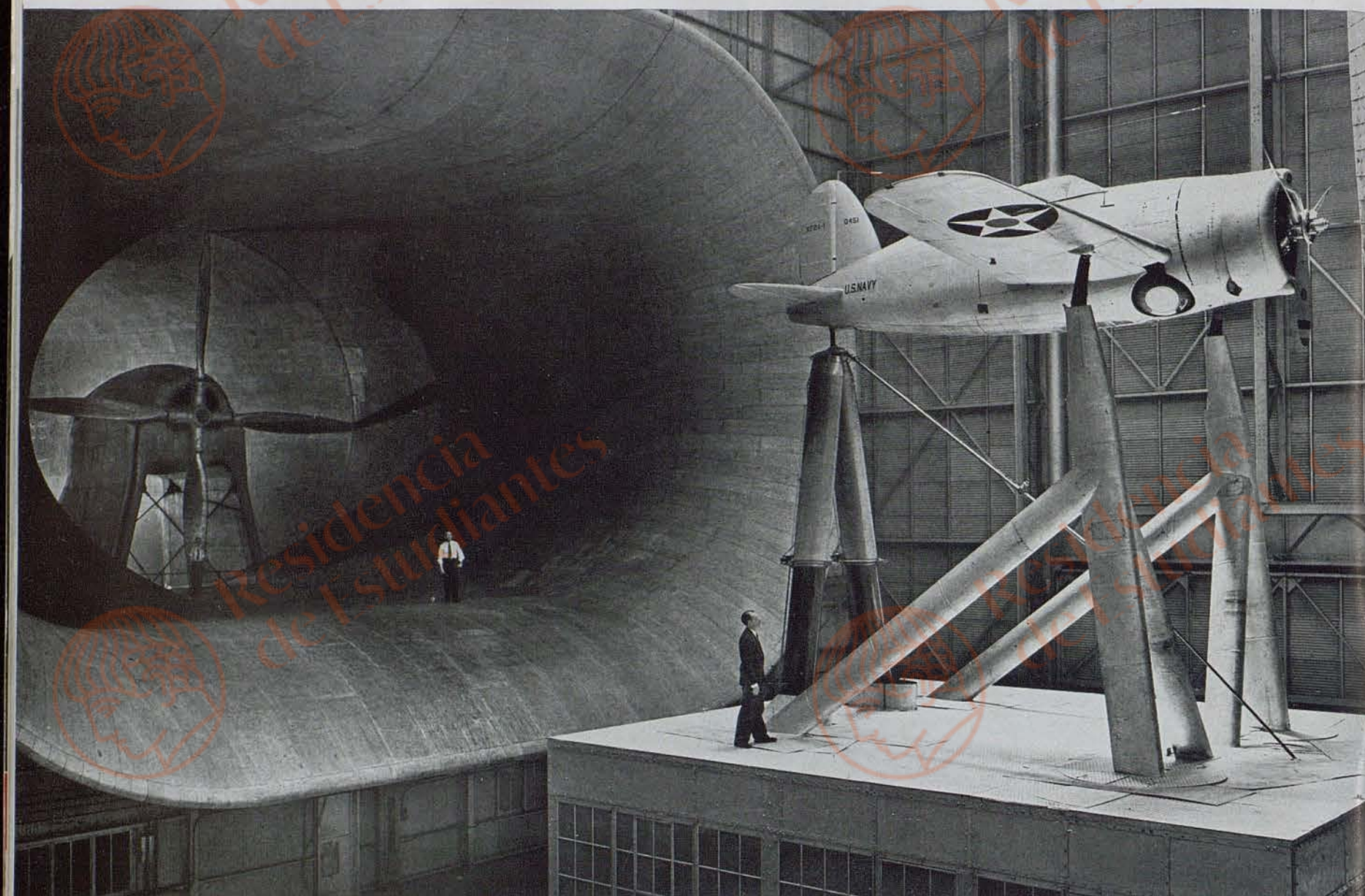


Naval scout bombers in formation above the clouds.

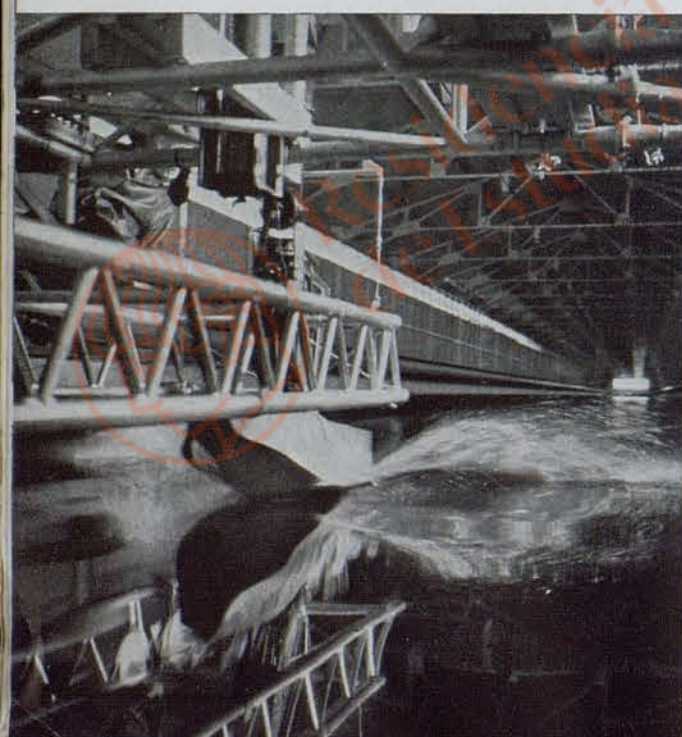
The Bell System is making
radio-telephone equipment
for the nation's air forces.



An Air Corps instructor demonstrates the radio-telephone.



A wind tunnel for aviation research. In the field of communication, scientists of the Bell Telephone Laboratories are performing research work in full cooperation with the U.S. air, land and sea forces.



To test seaplane hulls, models are carried along this tank at 80 miles an hour. Both the tank and the tunnel are part of the research facilities of the National Advisory Committee for Aeronautics.

Communication is the Flyer's Lifeline



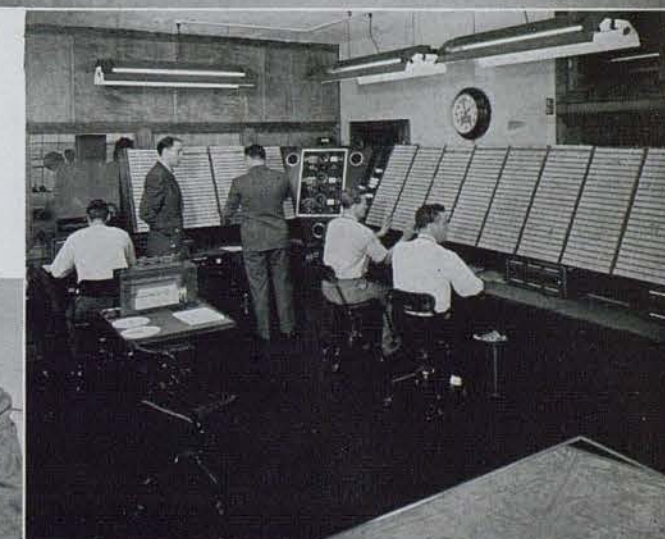
Flying cadets of the Army Air Corps at Randolph Field well know the uses of the radio-telephone.



When the Link trainer is in use, student and instructor maintain communication by phone.



Elementary pilot training: all civilian pilots and students are served directly or indirectly by the telephone, for . . .



. . . the Civil Aeronautics Board uses telephone service to regulate, in the interest of safety, the movement of aircraft within wide control areas. Pictured is a typical control station.



Getting ready to build tanks, Chrysler engineers drew these plans for the tank arsenal pictured on the next page.

NEW DEFENSE PLANTS
dot our Country

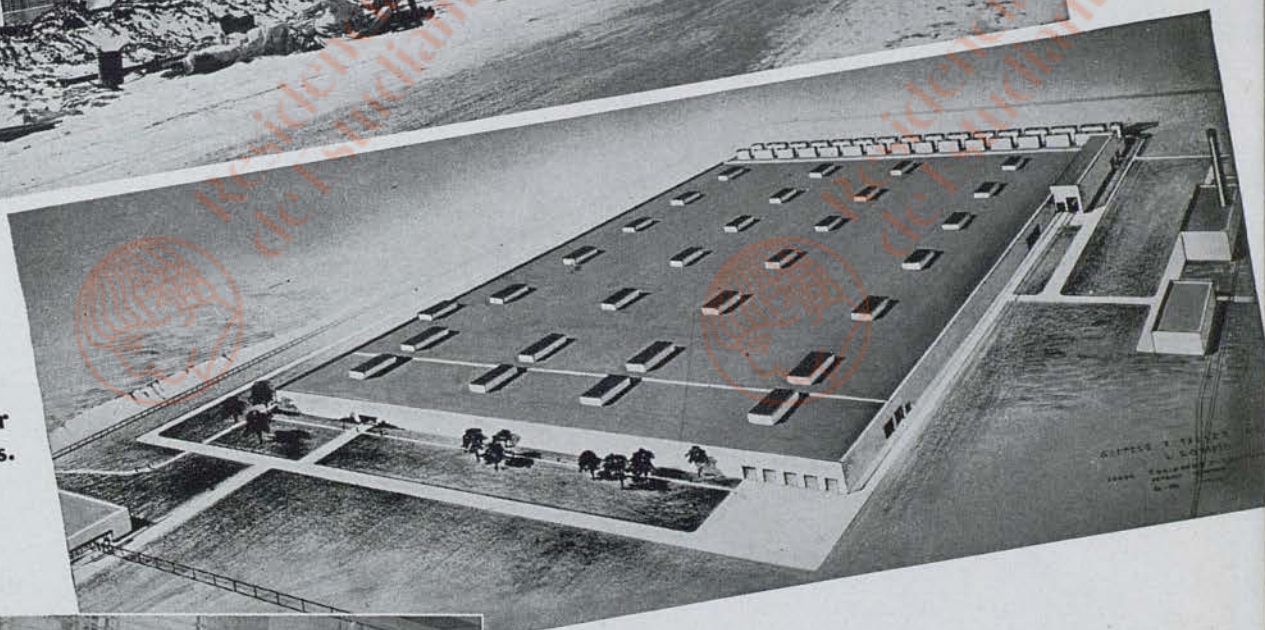




**New high explosive plant
rising at Ravenna, Ohio.**



**Chrysler tank arsenal as it
looked on January 17, 1941.**



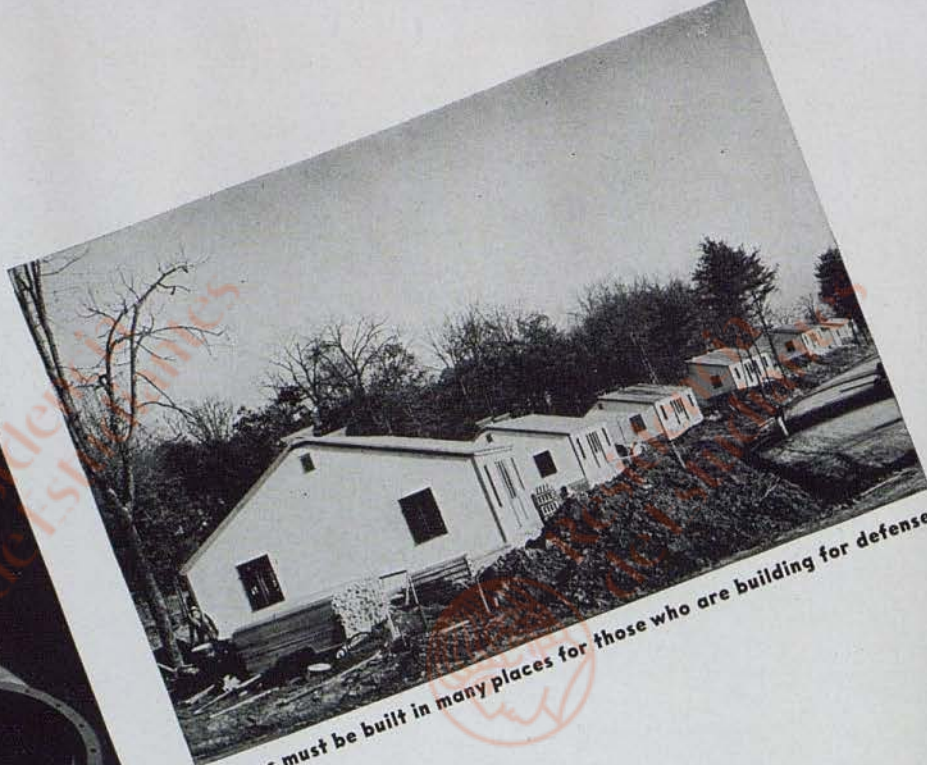
**In this plant Studebaker
will make plane engines.**



**Each new plant needs telephone service — fast!
These operators are working at a switchboard
in a new California airplane plant which had
not been completed when the picture was taken.**



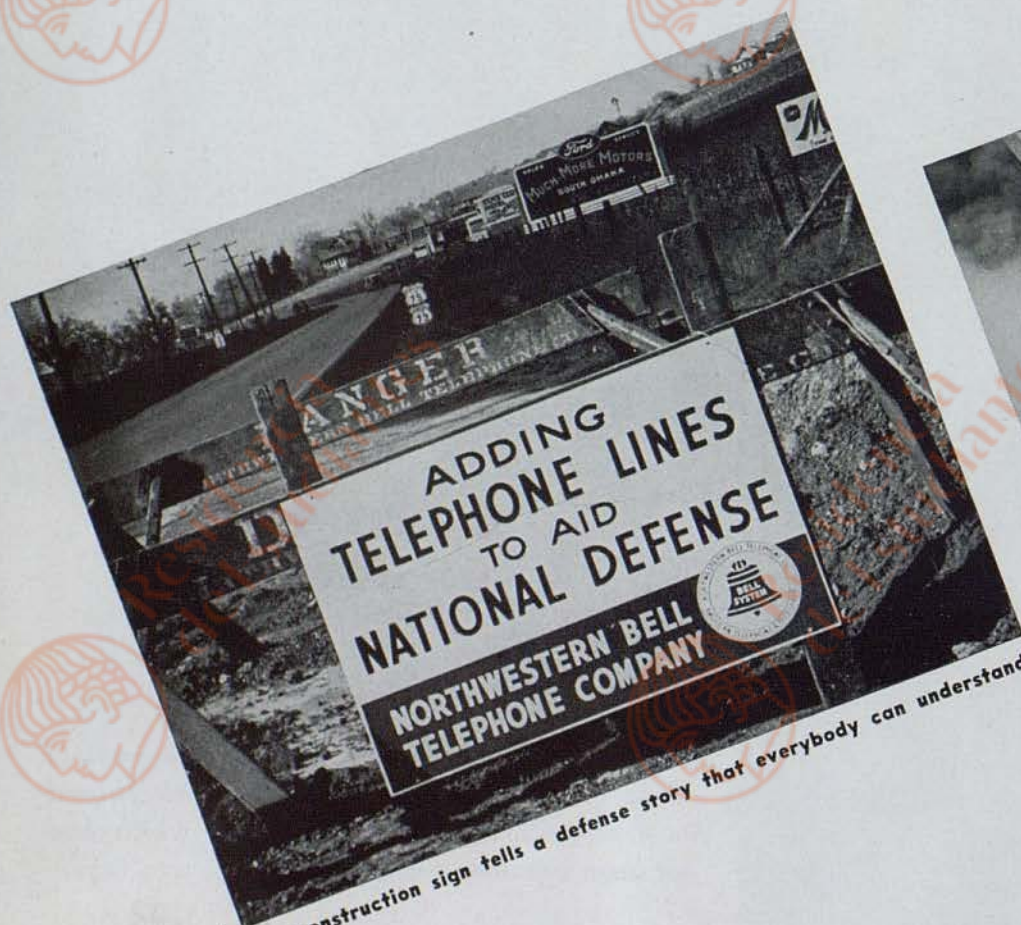
These are castings for tanks that will be built in the Chrysler tank plant.



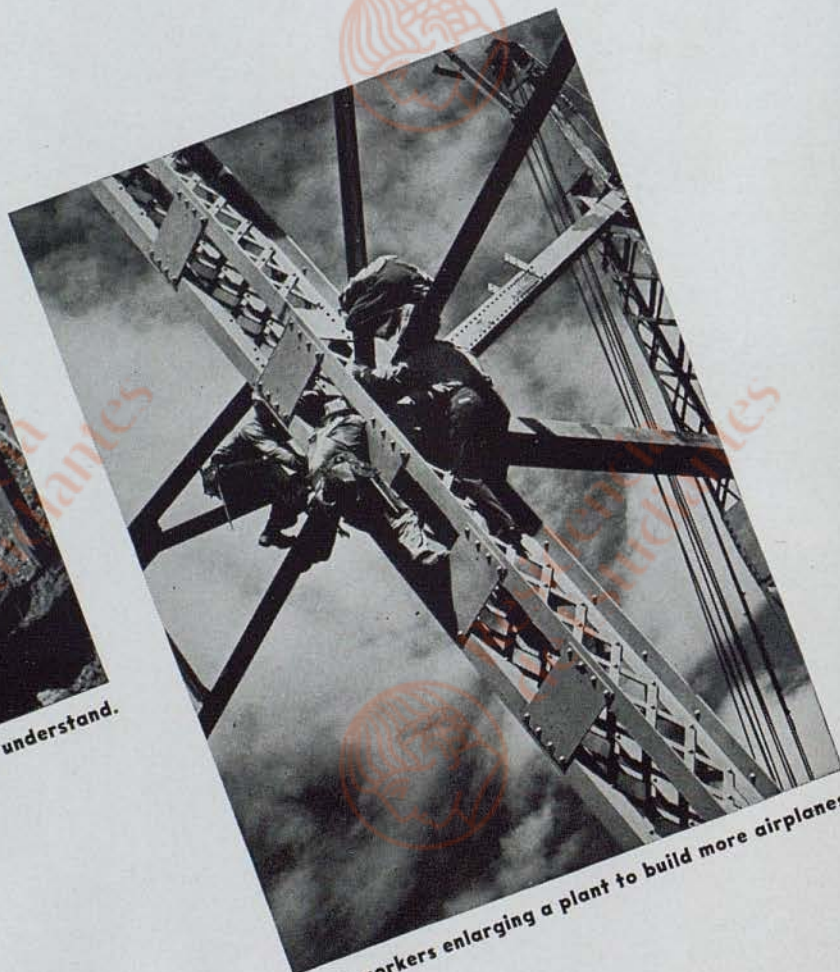
Houses must be built in many places for those who are building for defense.



Night and day the telephone
is working to help builders
build arsenals, factories,
and ordnance plants



The construction sign tells a defense story that everybody can understand.



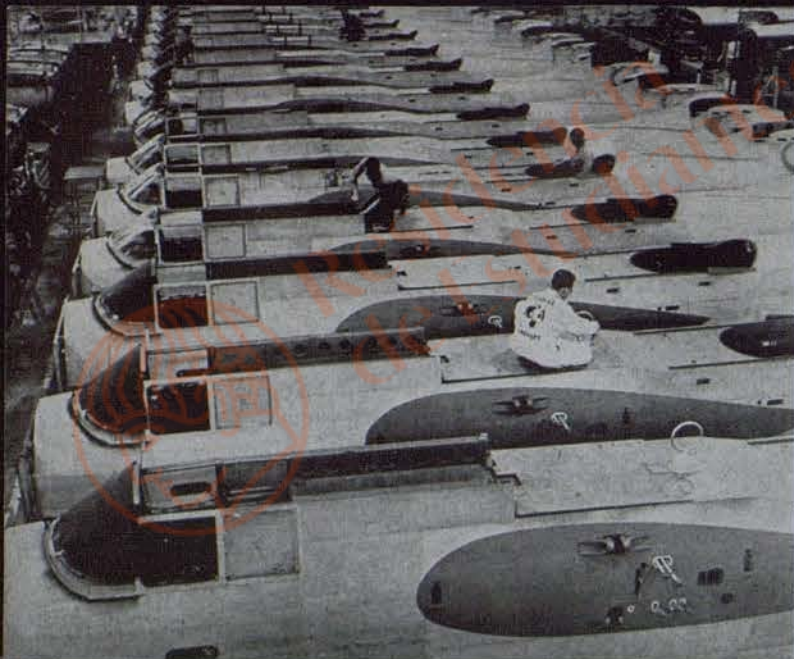
Steel workers enlarging a plant to build more airplanes.



Tractors work around the clock, leveling ground to make ready for construction of new aircraft engine plants.



These are some of the 16 thousand workers engaged in erecting the vast ordnance works at Charlestown, Indiana.



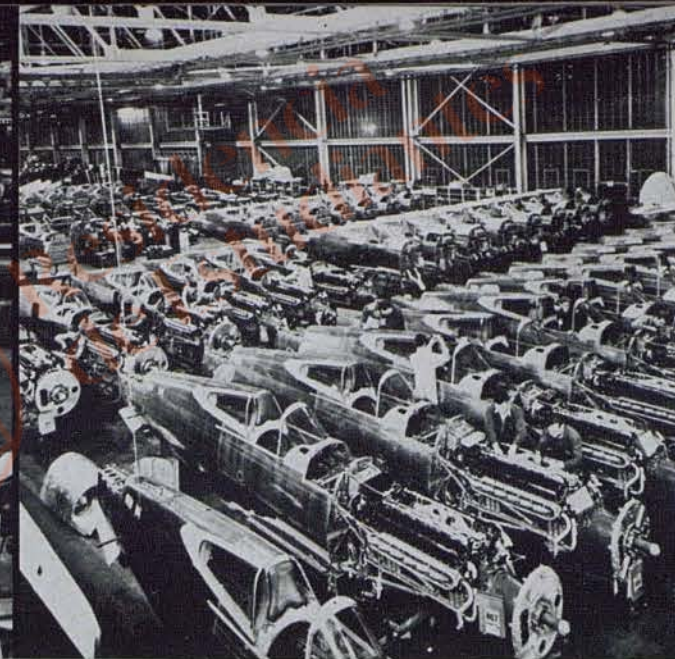
Douglas attack bombers.



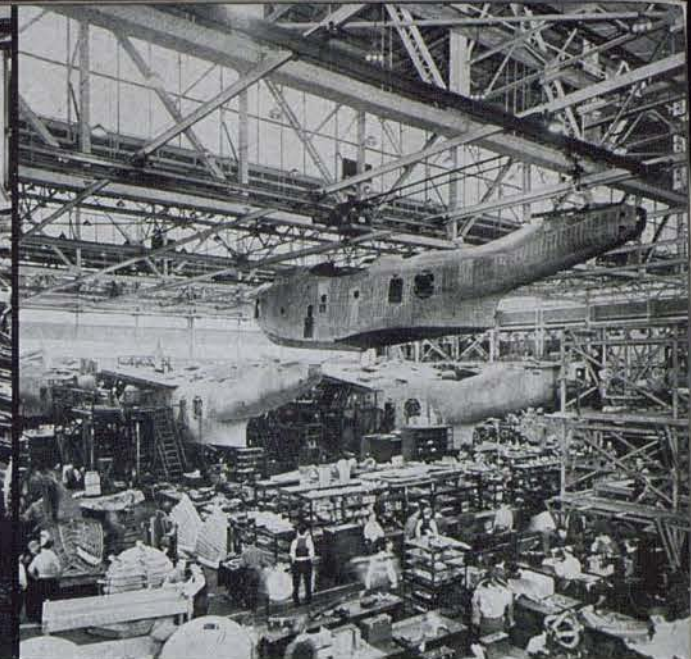
Boeing "Flying Fortresses."



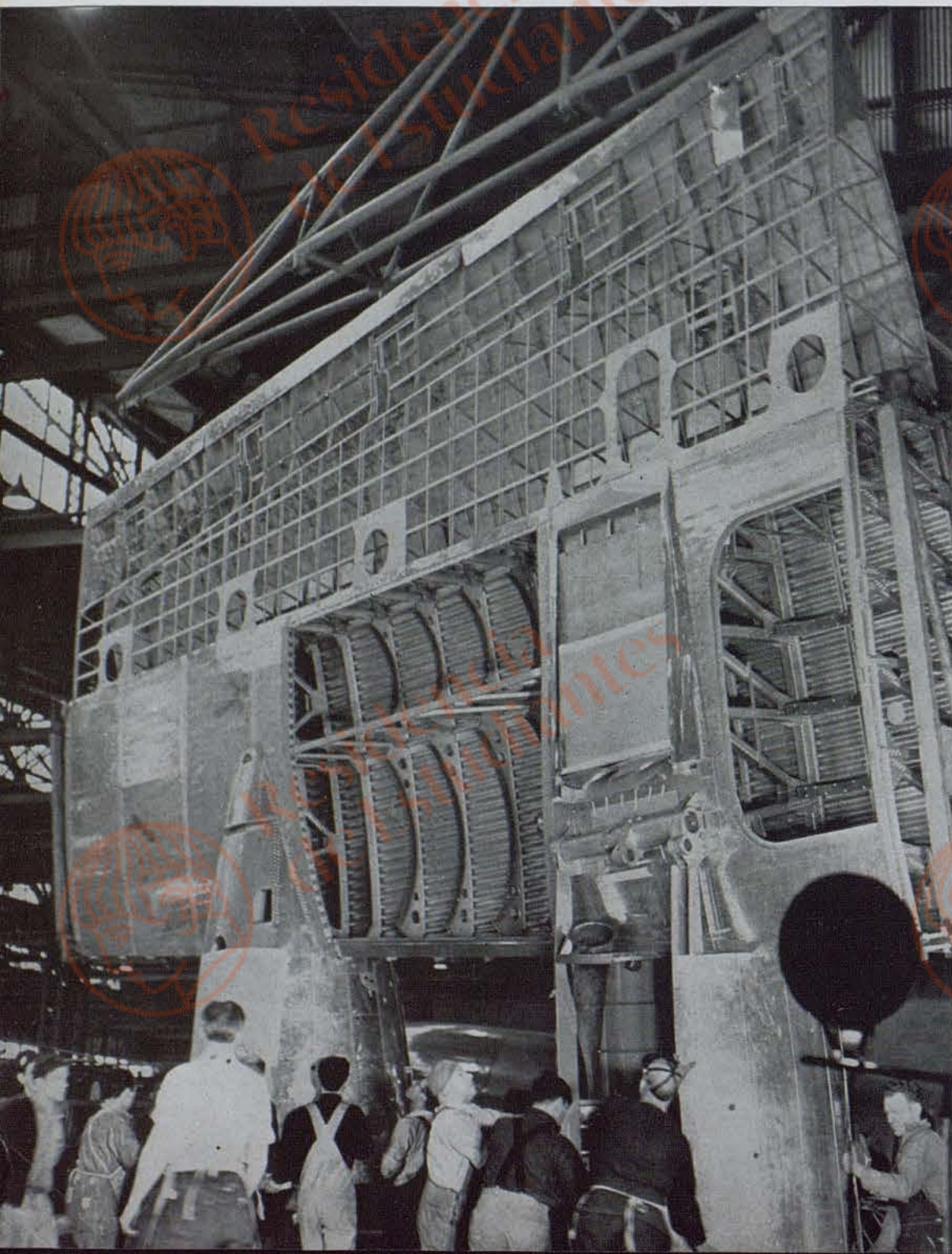
Lockheed bombers on the line.



Ten Curtiss P-40's a day.



Martin patrol bombers.



Wing panel for a Boeing B-17 being transported to wing production line.

HERE COME THE PLANES

Checking completed wing panels in Boeing plant before final assembly.



... and this is another telephone going into still another aircraft plant being built in California . . .

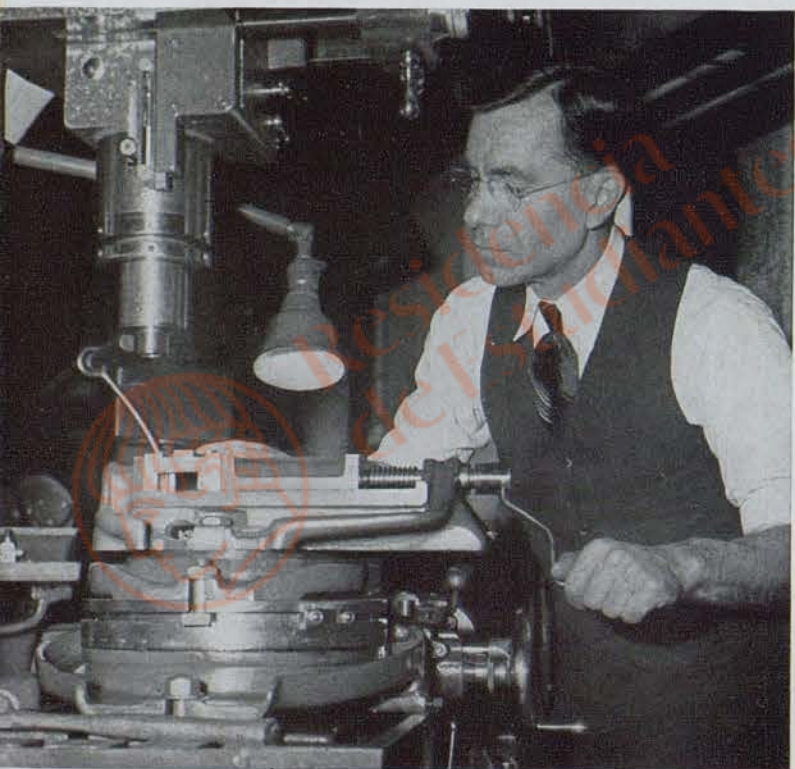




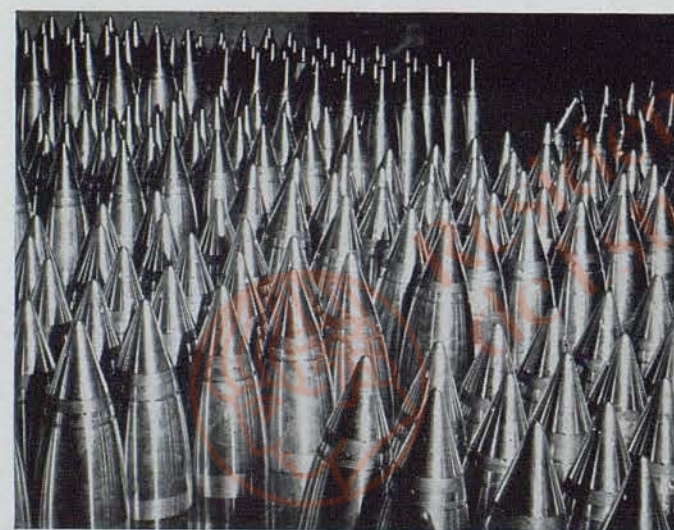
Another "Archie," three-inch anti-aircraft gun, is about ready.



Rolling out sheet brass for the manufacture of cartridge cases.



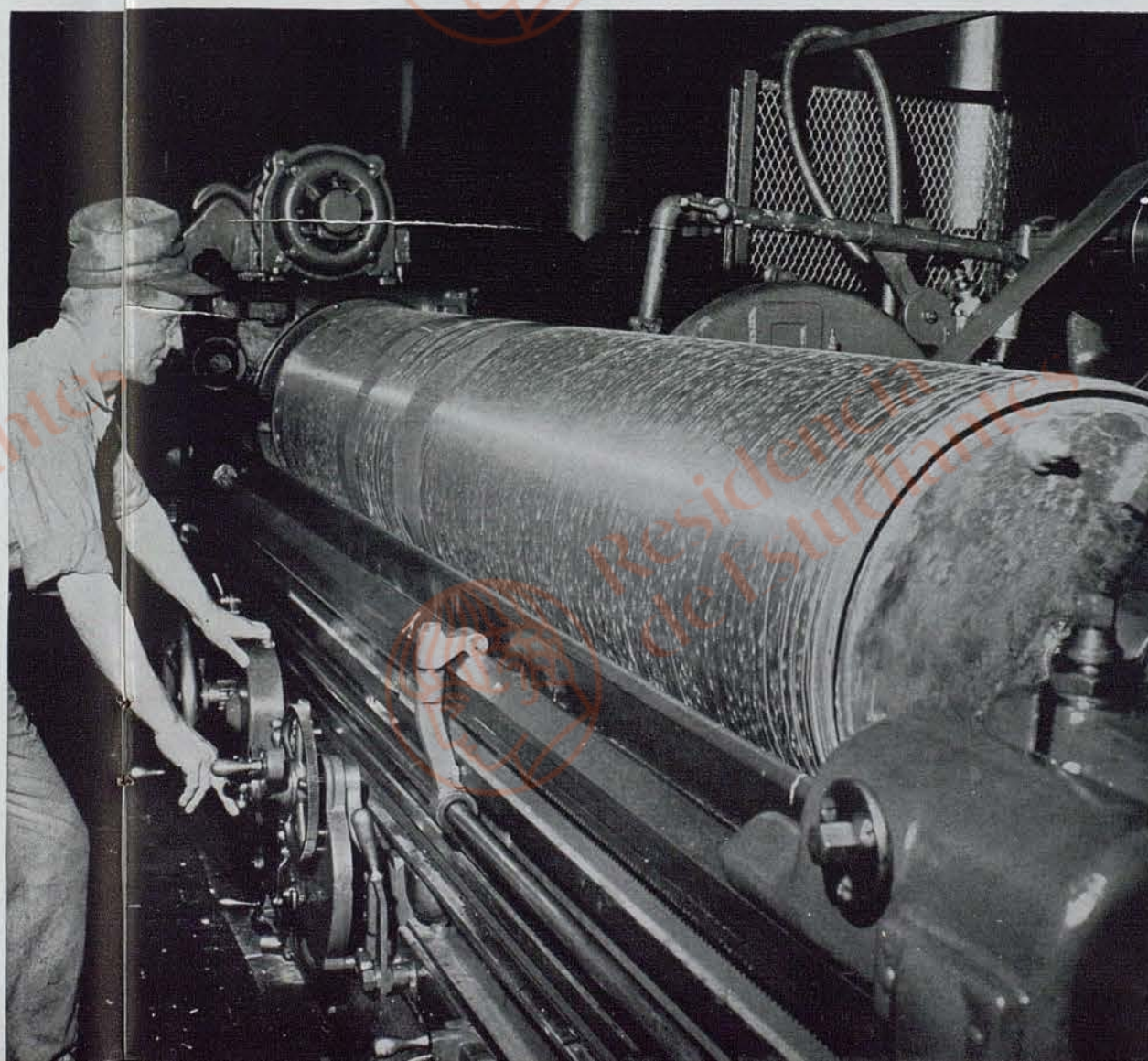
John C. Garand, inventor of the automatic rifle bearing his name.



Casings for 155-millimeter shells are stacked in storage.



Row on row of tubes and liners, for guns now in the making, await the inspector's approval. Below, machining the air flask of a torpedo tube. Torpedo is fired by compressed air.



Measuring with micrometer inside a big gun barrel.

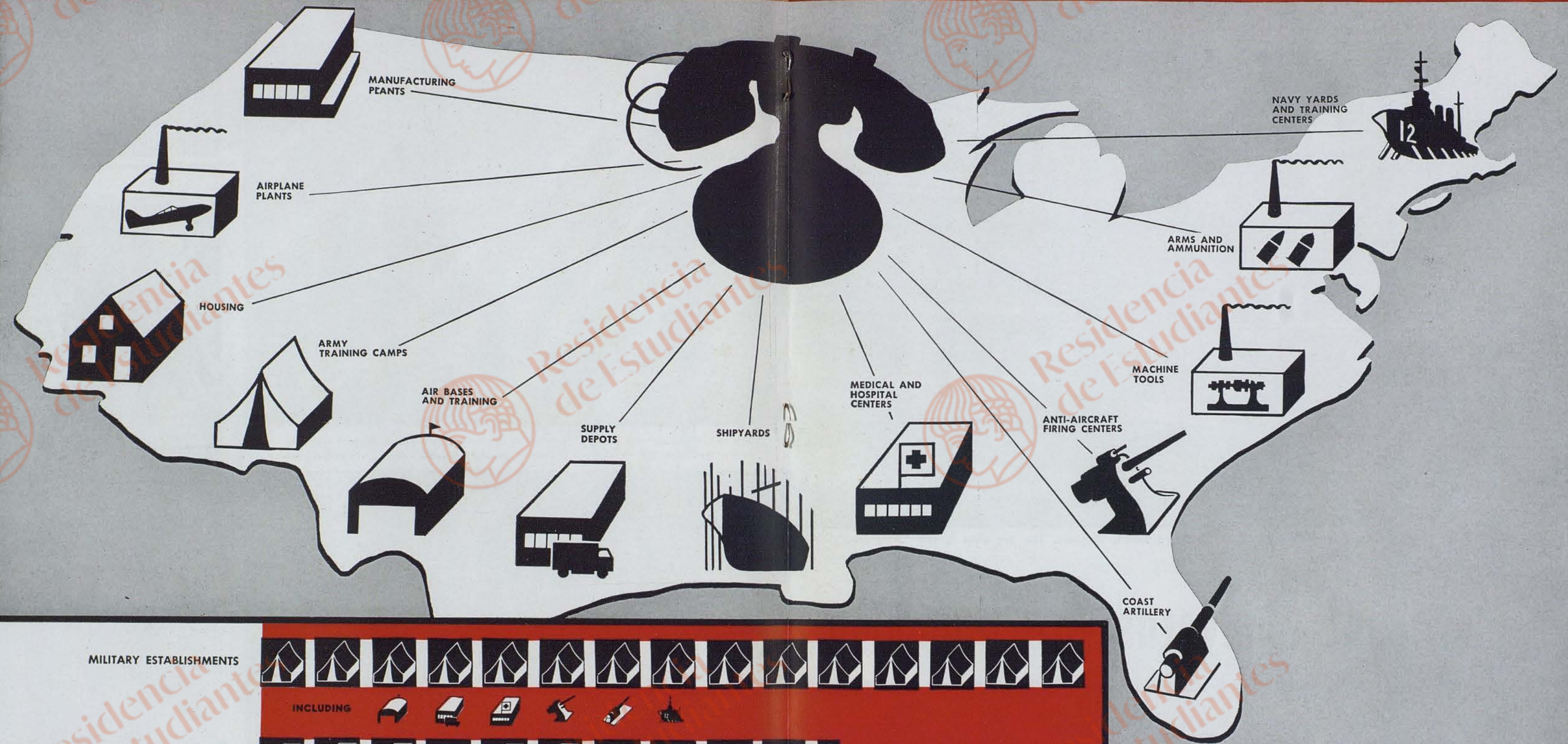


The last step—inspecting .50 cal. ball cartridges.



More telephones in a hurry! This shack houses a temporary telephone center to serve during building of a new arms plant.

GOVERNMENT DEFENSE PROJECTS REQUIRING NEW OR ENLARGED TELEPHONE FACILITIES



MILITARY ESTABLISHMENTS



INCLUDING



GOVERNMENT-OWNED OR FINANCED ORDNANCE AND MANUFACTURING PLANTS



INCLUDING



DEFENSE HOUSING PROJECTS



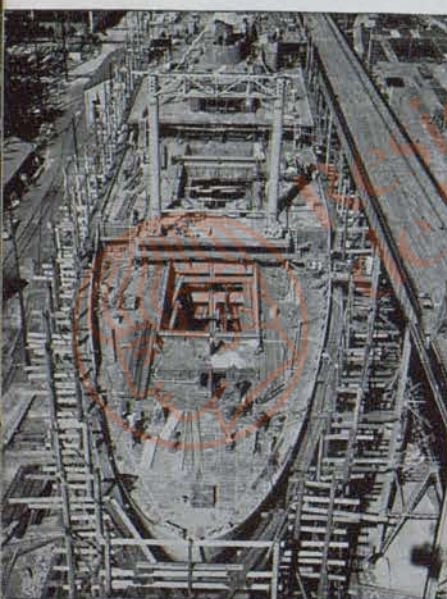
Each large symbol in this panel represents 25 projects

As of March 24, 1941



Above is a partial view of the shipbuilding and repair yards at Newport News, Virginia. The big ship is the "America."

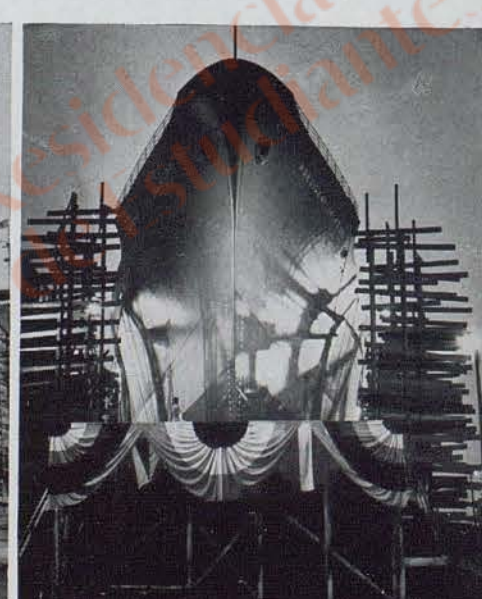
★ Merchant Shipyards Are Humming ★



Building the "President Jackson."



THIS TIME IT WAS TWINS



Ready for next day's ceremony.



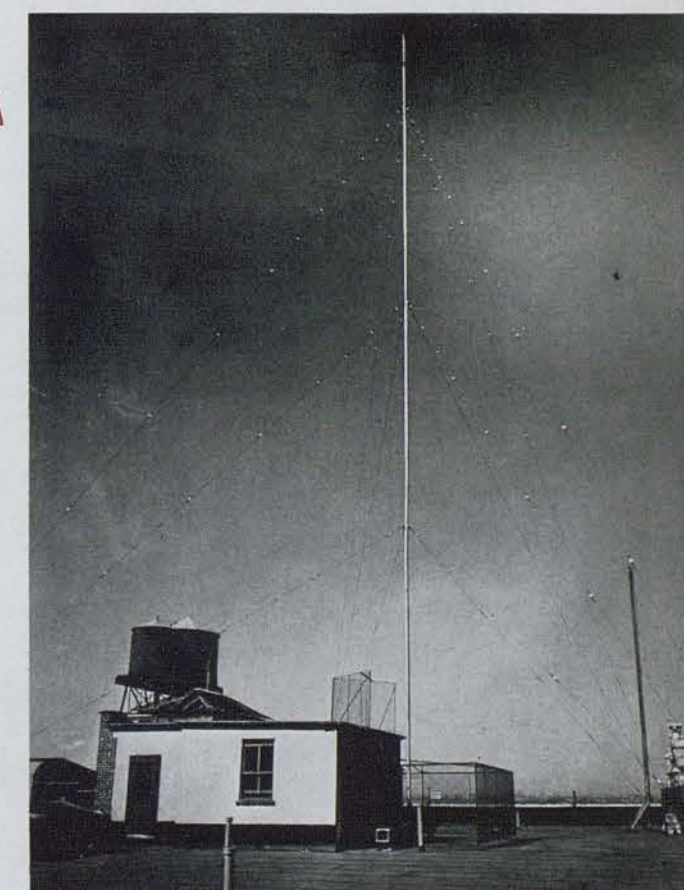
The "American Press" gets all wet at San Francisco.



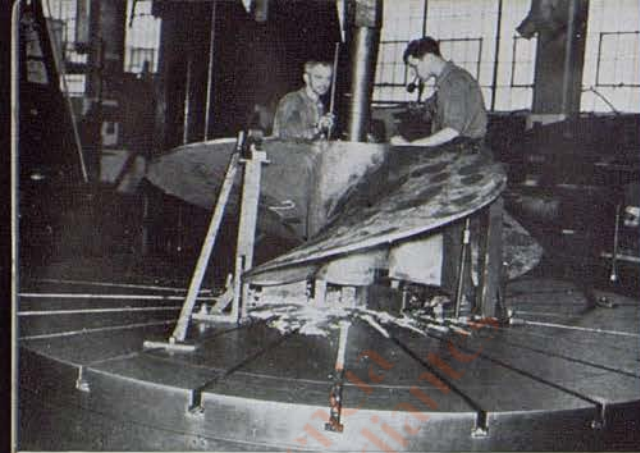
The "Stanvac Calcutta," big tanker launched in March.



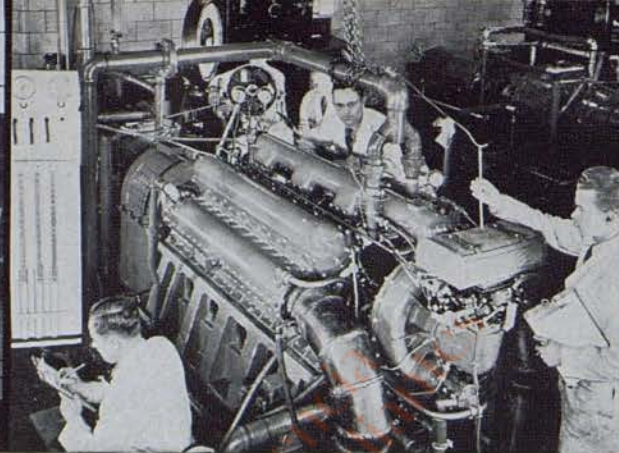
Right after the launching of the "American Builder."



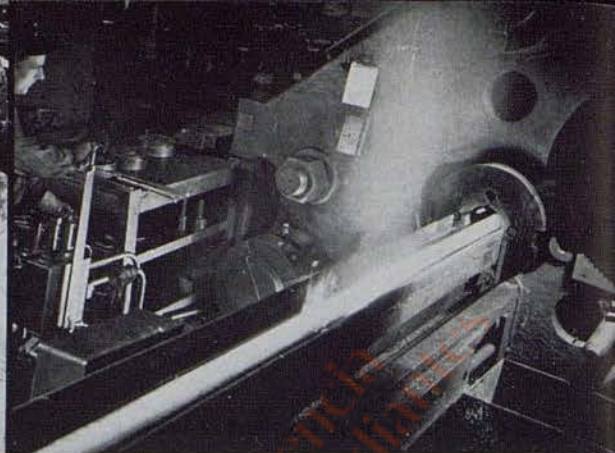
Radio-telephone service already links more than 2,500 coastal and harbor vessels to the land network. This transmitter, one of many, is in New York.



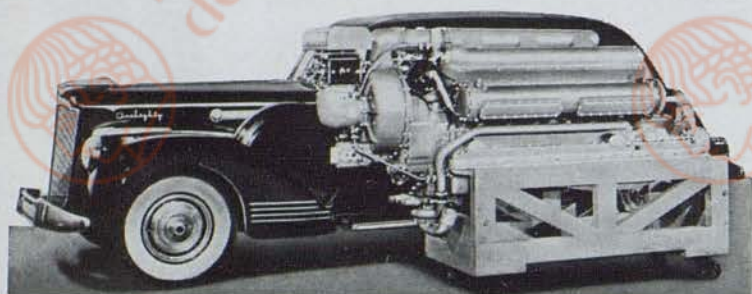
Machining the bore of a propeller for the Navy.



Checking an engine for a motor torpedo boat.



Extruding brass for battleship condenser tubes.



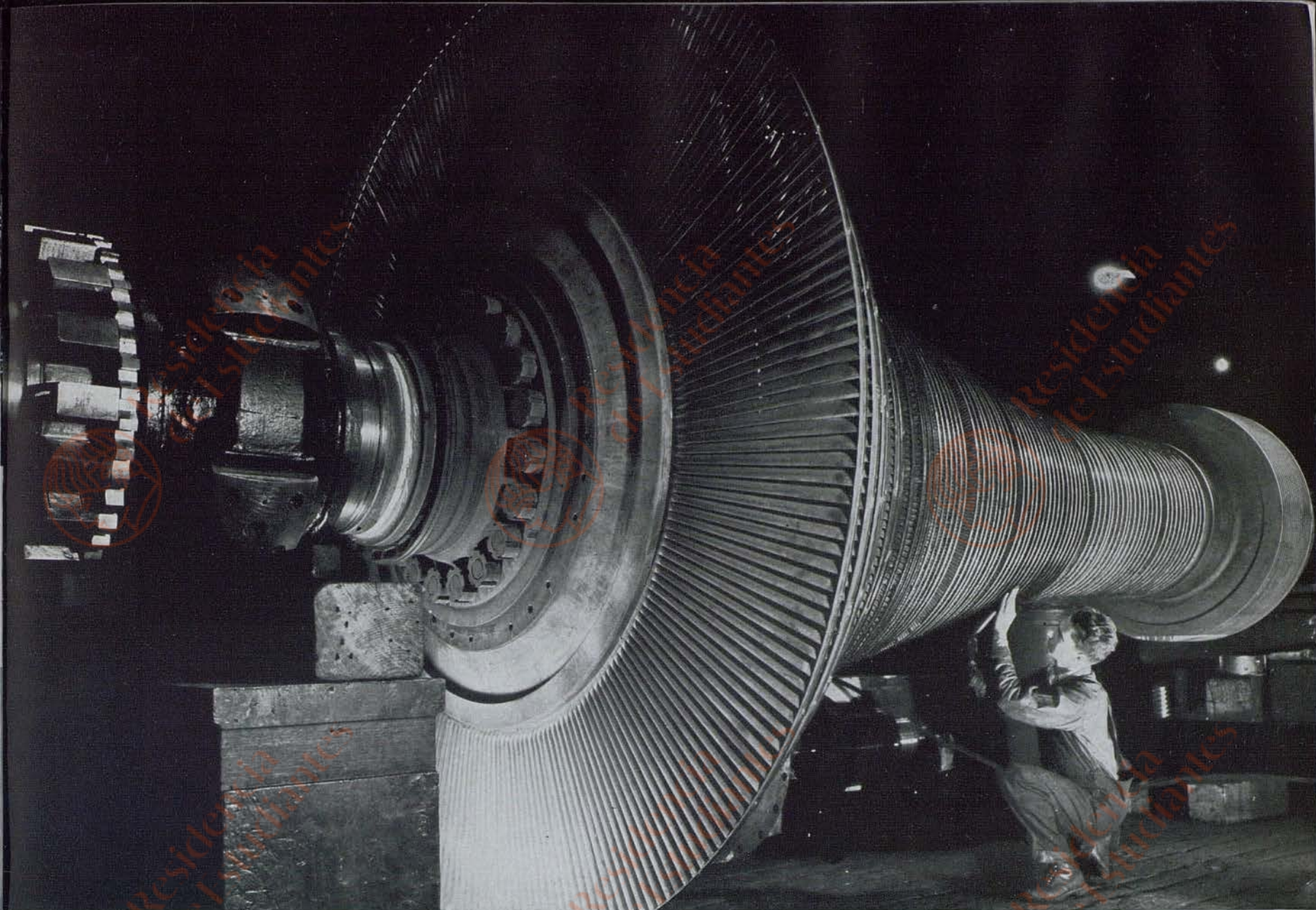
How the engine, center above, compares with a car.

DRIVING POWER

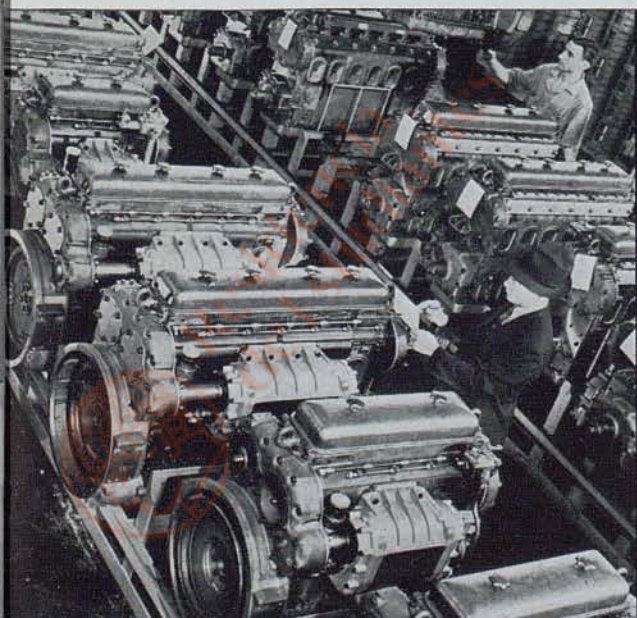
*In plants turning out the engines,
propellers, and driving mechanisms of
defense, the telephone helps make
the wheels go round.*

Air-cooled radial aircraft engines make a pretty pattern, a handsome photograph, and a lot of power for defense.

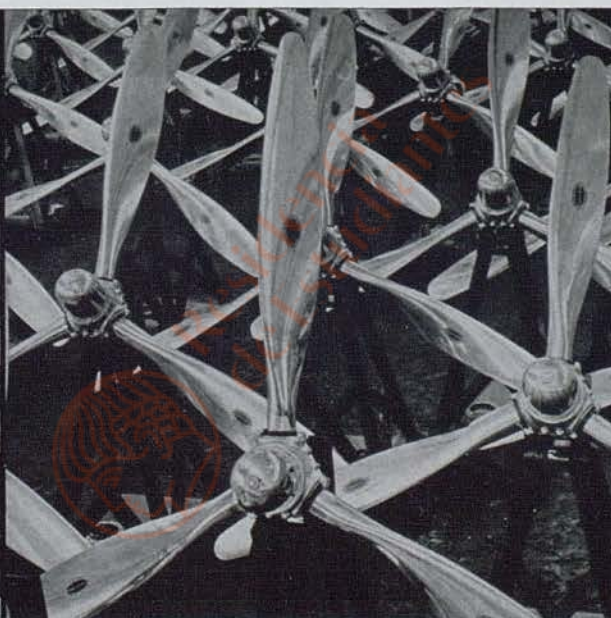




The strength of forty thousand horses lies sleeping in this turbine that will help generate electric power for defense.



All set to go — Diesel engines for the Navy.



Propellers—propellers—propellers—propellers.



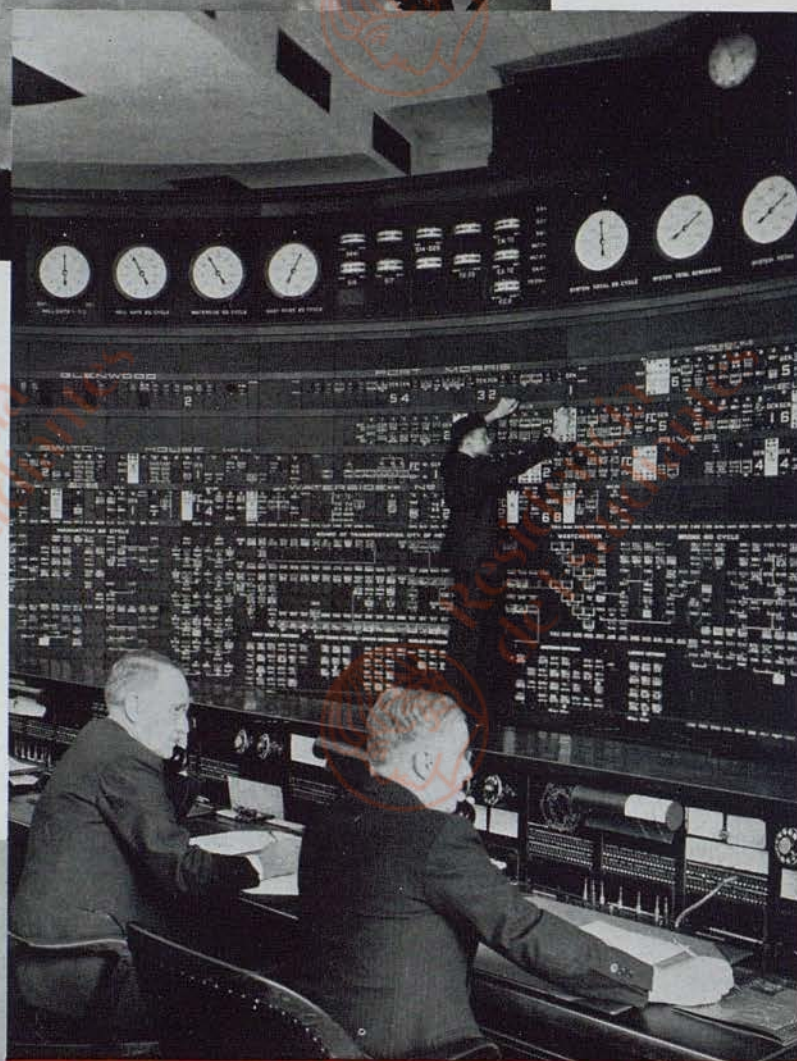
Checking gears that will go into Army trucks.



Transmitting the Giant Electricity to turn the wheels of industry.

MIGHTY CURRENTS of defense

A steam generating plant of the Consolidated Edison Co. in New York.



Dispatchers control the flow of power by telephone.



Bonneville Dam, Oregon, one of the new steps in electric power development.

Defense industry demands electric power.
"Loads" change hourly. Distribution of
power to meet the loads requires a dis-
patching system like that of a railroad.
 ★ **To the load dispatcher, swift and sure**
telephone communication is an essential.

Beneath the dams, huge turbines whirled by water generate defensive power.



This Detroit Edison plant reflects power — and beauty too.

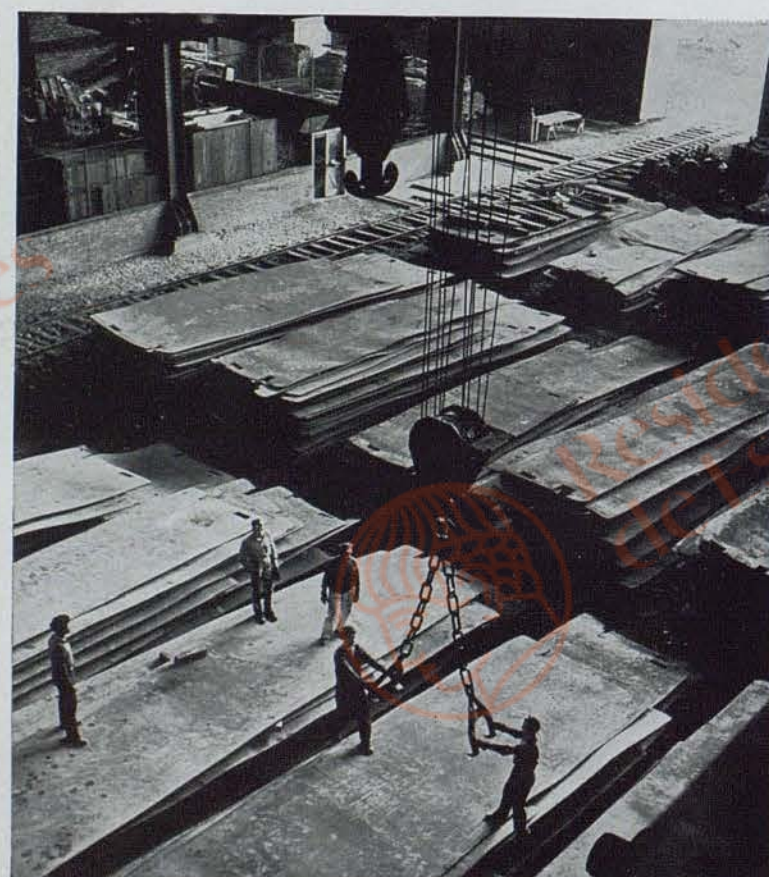
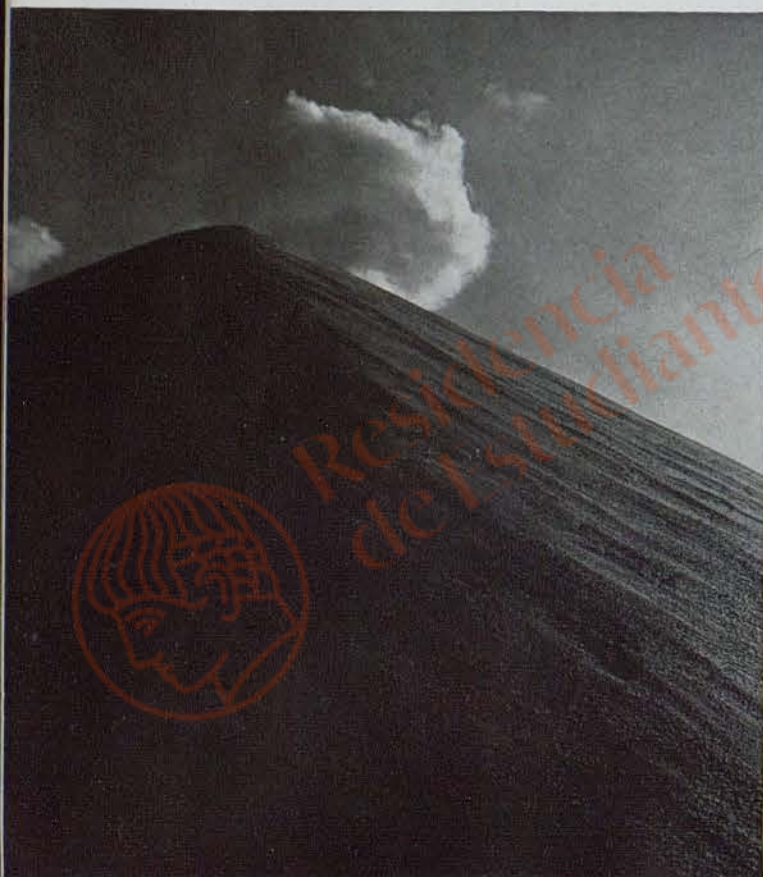




This is the Hull Rust open pit iron mine in Minnesota. It is the biggest man-made cavity on the face of the whole wide world.



TRANSFORMATION ★ ★



From mountains of coal like this one and mines like that above comes the armor that America will wear.

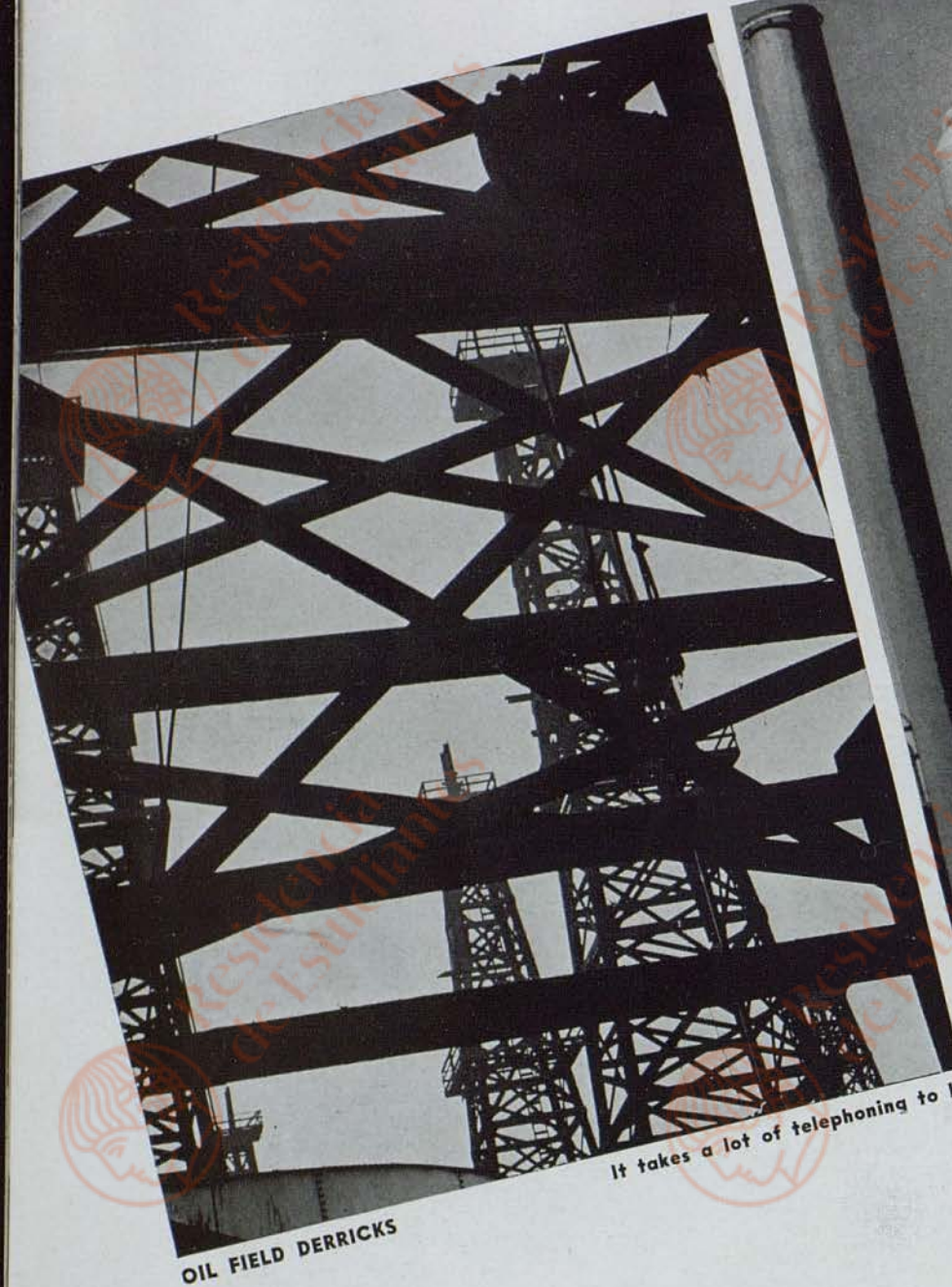


Carnegie-Illinois Steel Corp., South Works.

*In every step from
mine to machine,
the telephone helps
to get things done.*



Machine tool at work. The telephone has a job here—to help keep the tool busy.



OIL FIELD DERRICKS

It takes a lot of telephoning to bring oil from the earth . . . refine it . . .



OIL REFINERY

*The boundless
resources of our
country are all
marshalled for
defense with the
telephone's help*



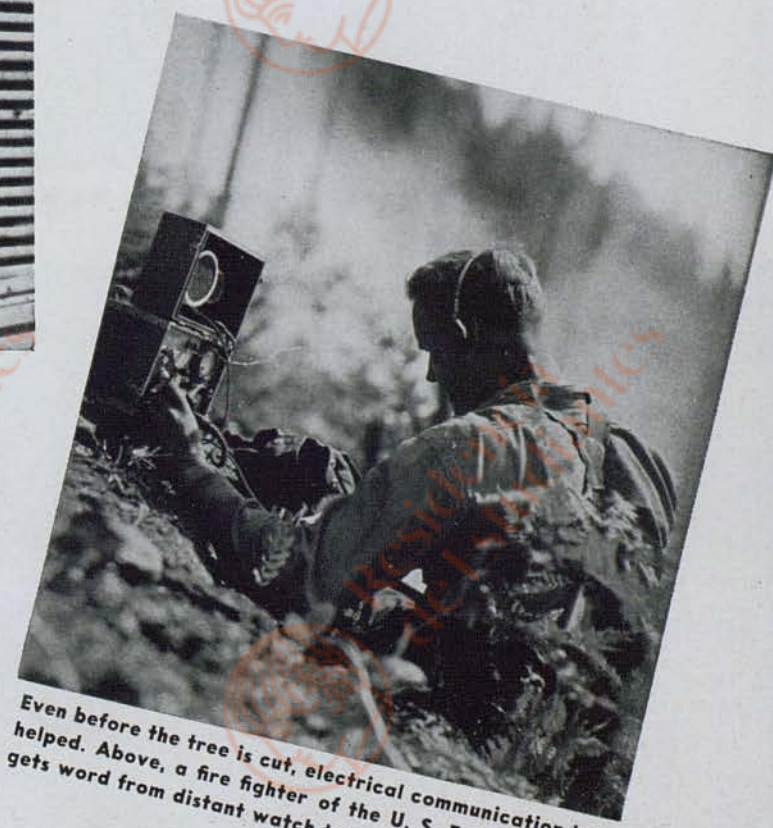
... and fill the waiting tanks of Army and Navy aircraft with the highest grade gasoline.





... and the telephone helps turn forest timber ...

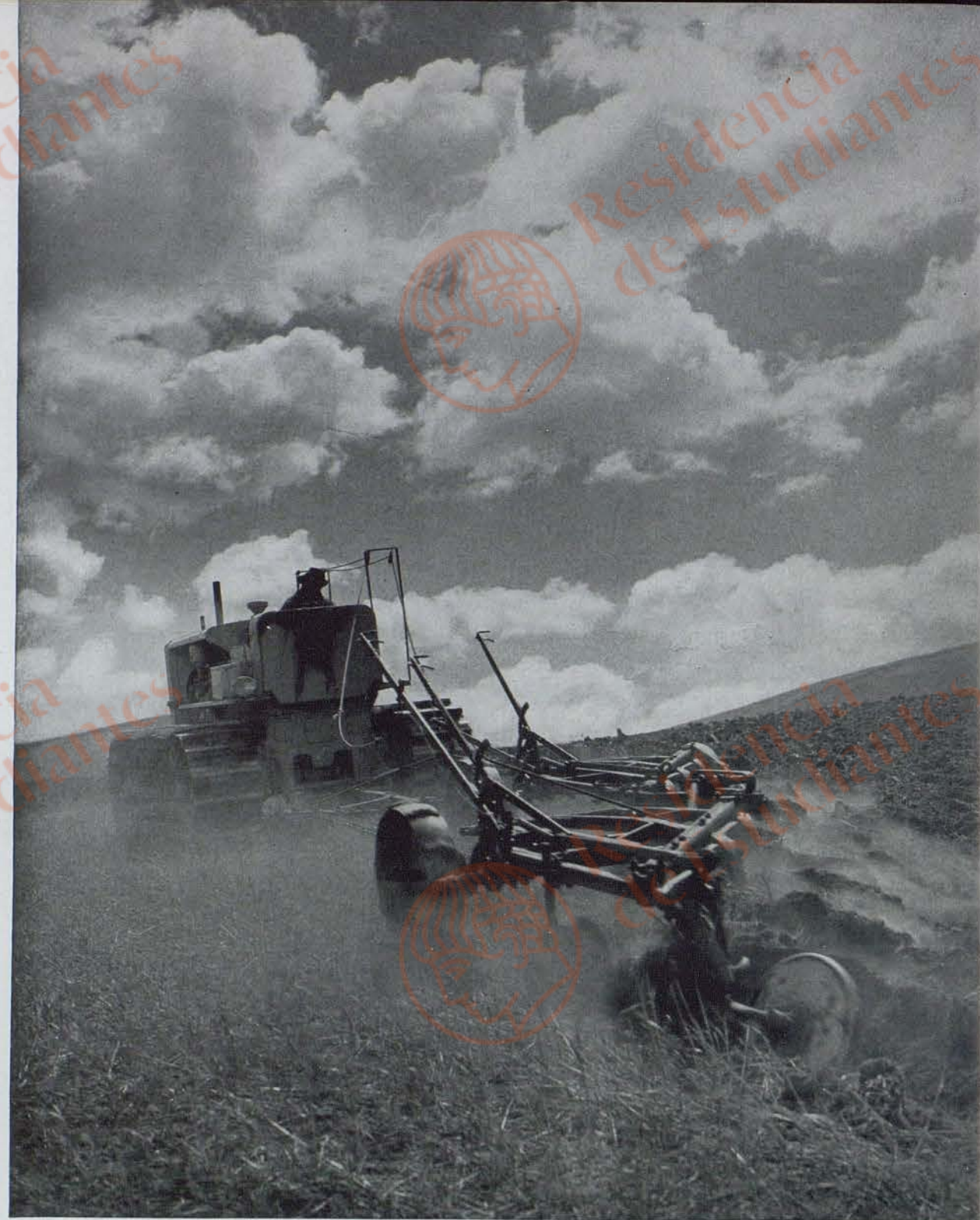
... into this useful lumber



Even before the tree is cut, electrical communication has helped. Above, a fire fighter of the U. S. Forest Service gets word from distant watch tower by radio-telephone.

to build Army cantonments...

Food for Defense



From the time of plowing until it is time to plow again, the telephone serves the farmer.



Food, clothing and the High Sierras, near the California-Nevada line.



Wheat in shock and on the baker's shelves. In the processing and distribution of food, the telephone is busy all the time.



These cows seem contented about their defense contribution; at right, cotton is for food and explosives as well as khaki.



The Army's emergency ration has a gas-proof, water-proof, heat-proof wrapping. At right, a recruit's first Army meal.



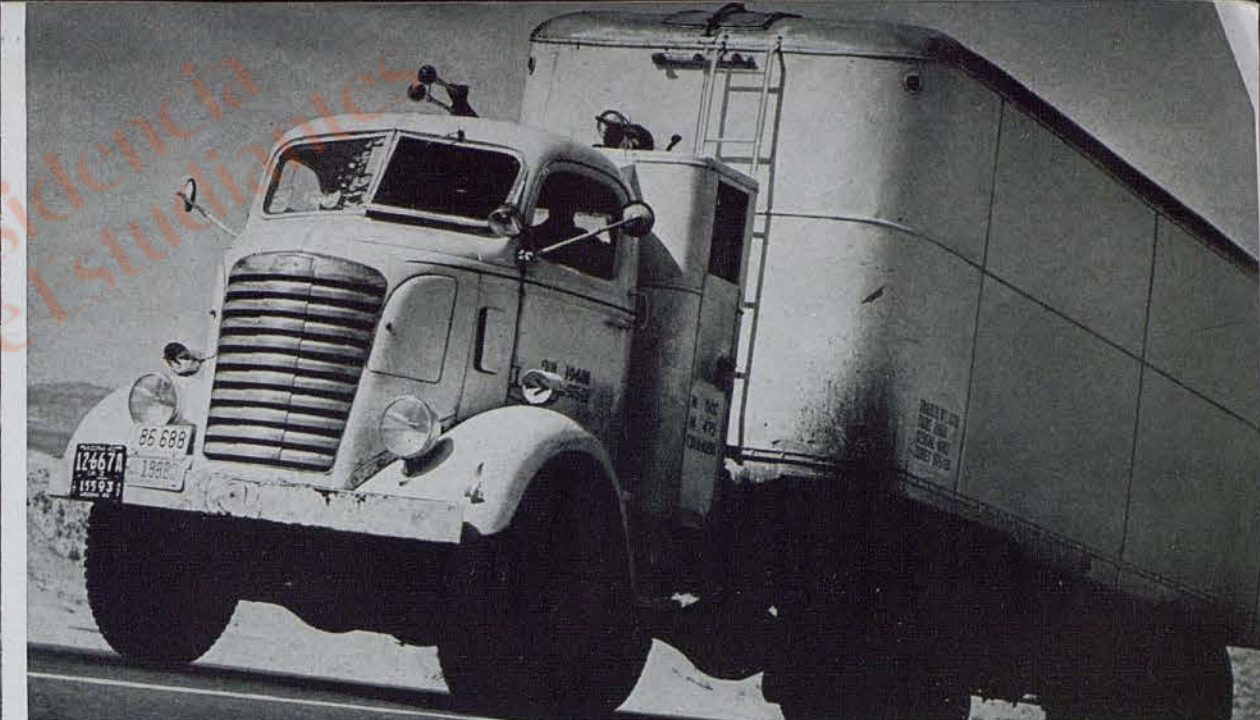
FREIGHT YARDS



COASTAL SHIPPING

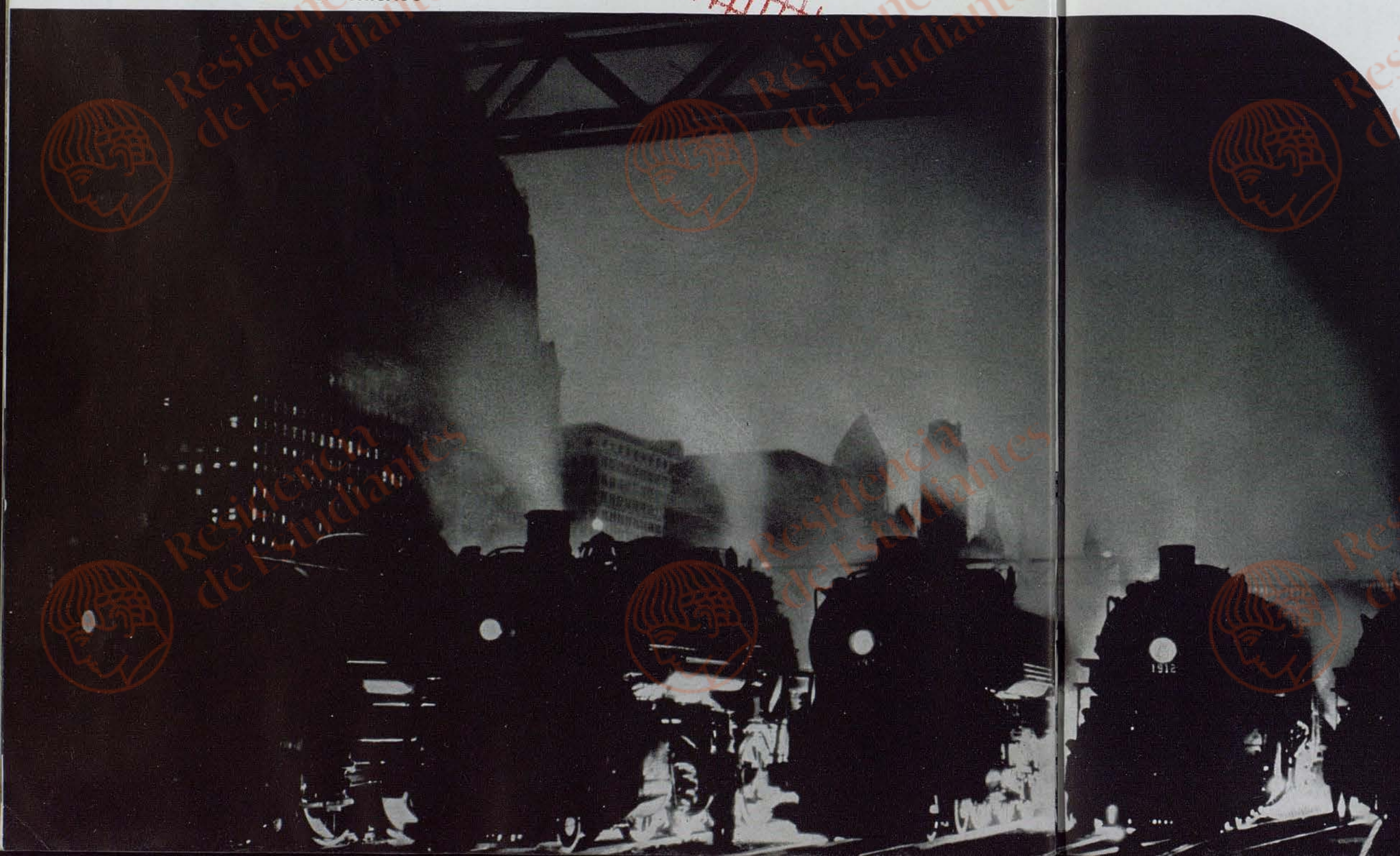


AIR EXPRESS



HIGHWAY HAULER

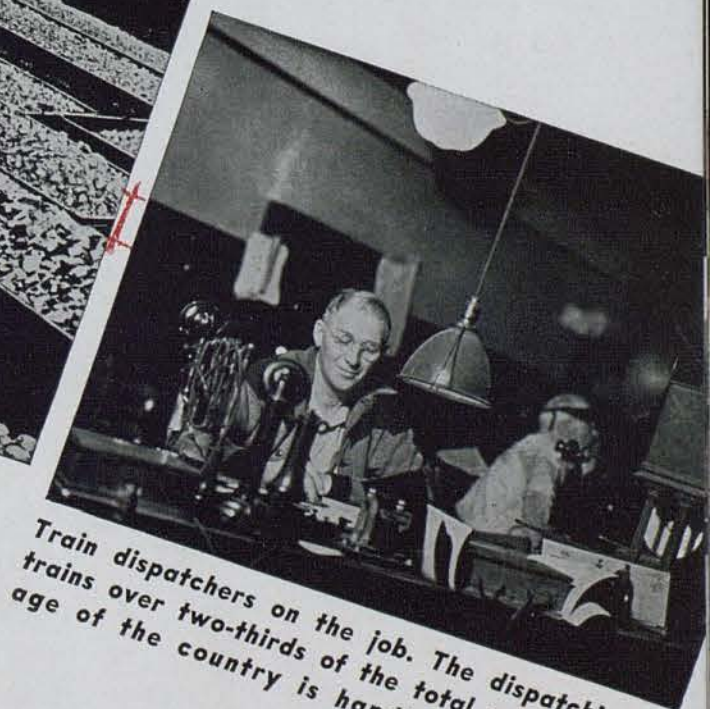
NIGHT MERCHANDISE TRAINS AT CHICAGO



TRANSPORTATION Is Vital to Defense



COAL CARS



Train dispatchers on the job. The dispatching of trains over two-thirds of the total railroad mileage of the country is handled by telephone.



Spoons for Army mess halls; an Army of more than a million needs them.



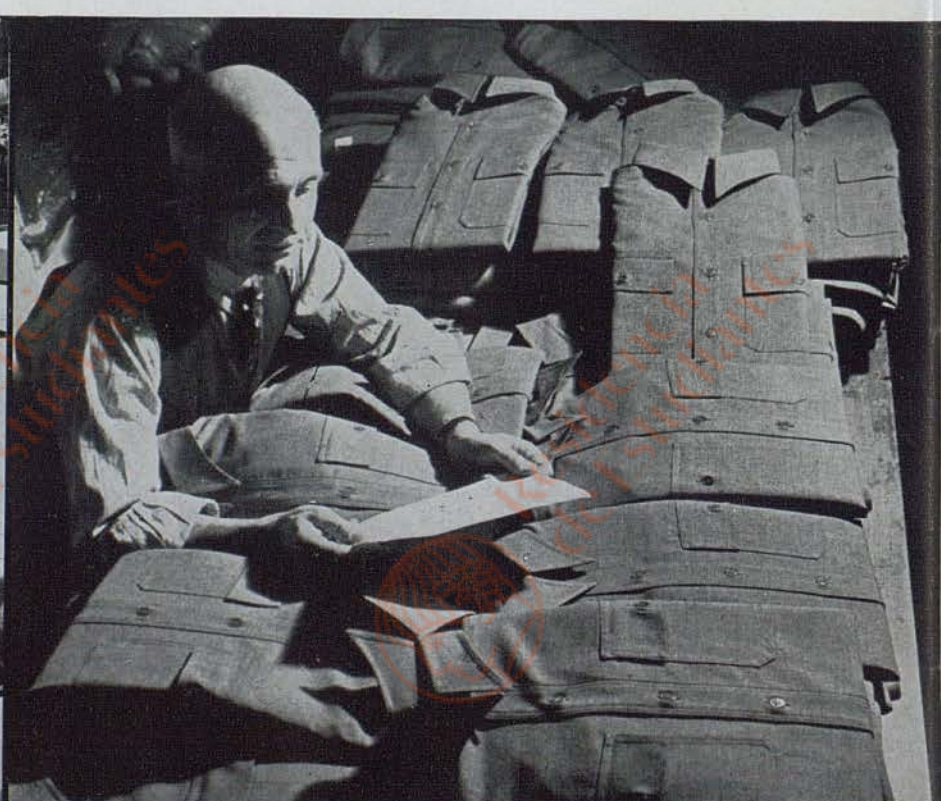
Human lives are in the hands of this girl and others who sew parachutes.

Spoons, Shirts and Sauerkraut

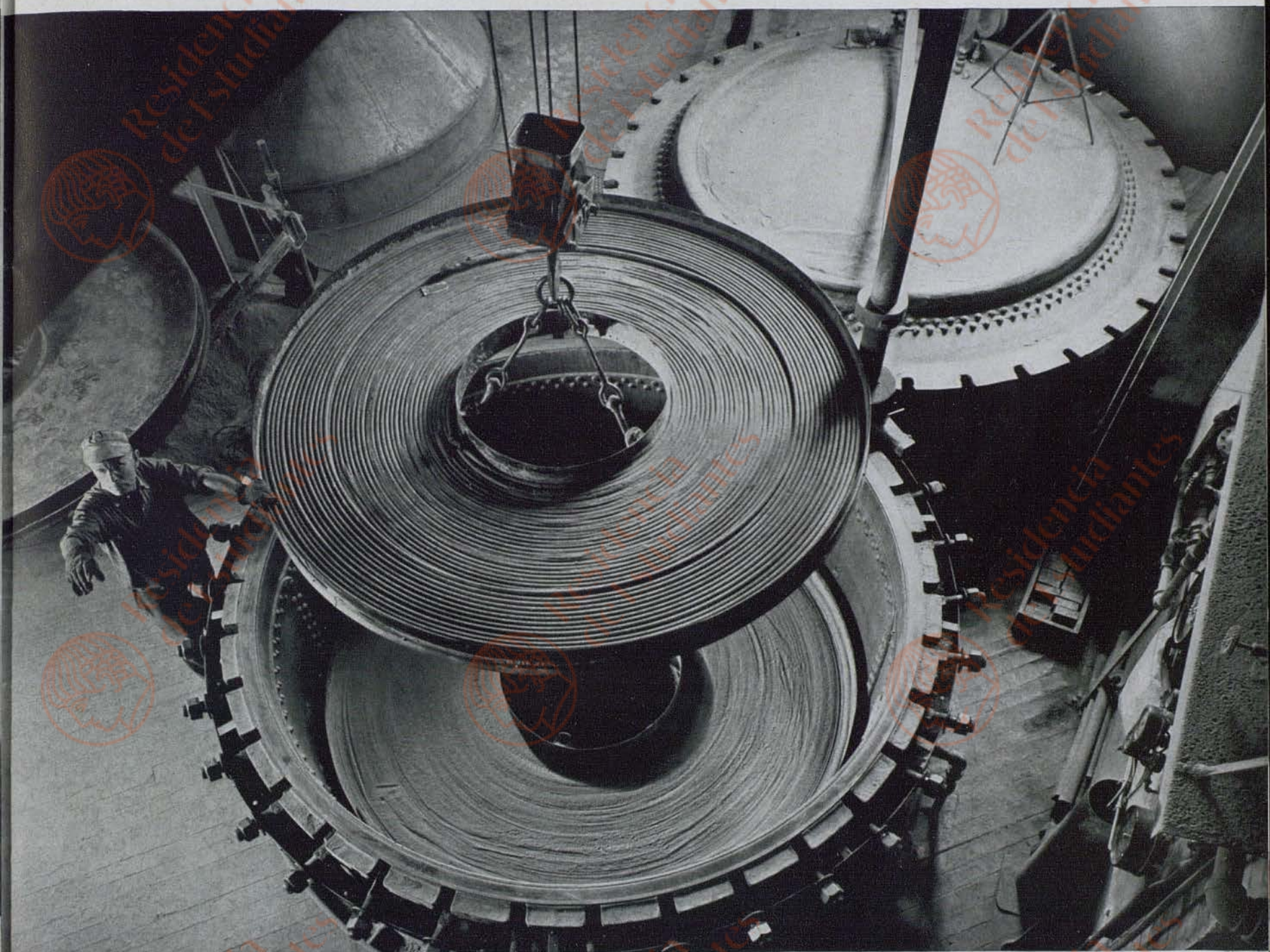
People in every walk of life are using the telephone to meet the million and one needs of the defense program



The cold fact is that the Army and Navy need refrigerators—a lot of them.



Military tailors know there's something going on. Here are officer's shirts.



Making vulcanized wire for the Navy. The wire goes into cables that link different parts of the control systems of ships.



Two curious girls; one mountain of gas masks.



The navy orders \$250,000 worth of sauerkraut.



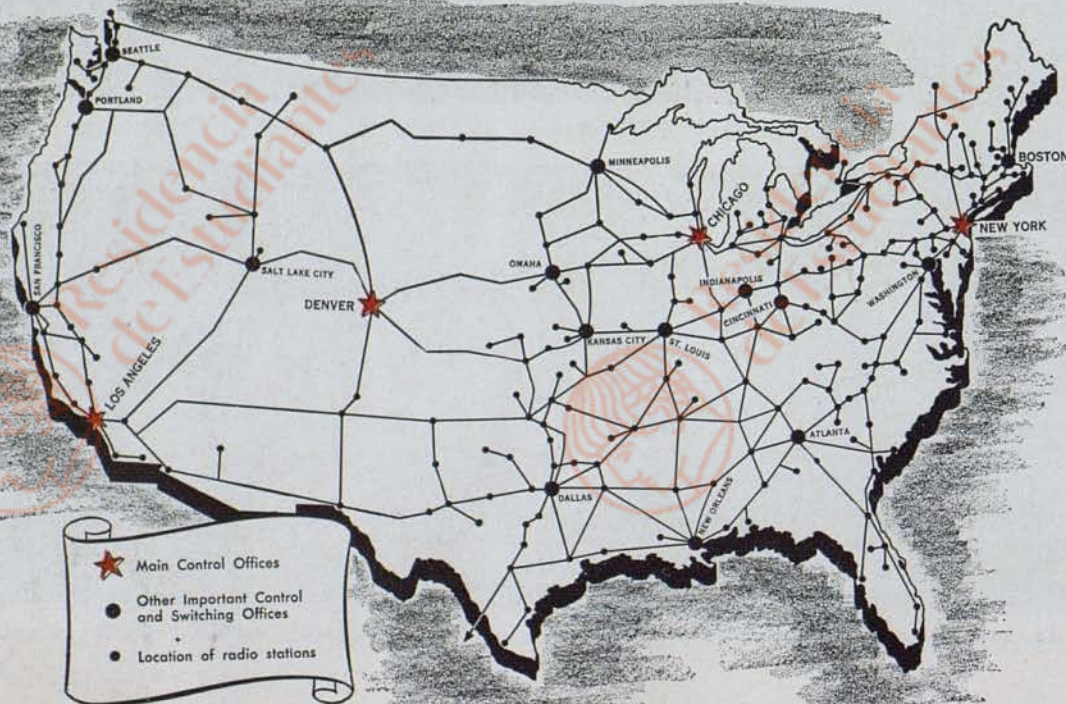
Making inflatable rubber rafts for aircraft.



Spreading the News



From the nation's capital, the news of America's defense effort is flashed by telephone and teletype to newspapers and radio stations in all parts of the country.

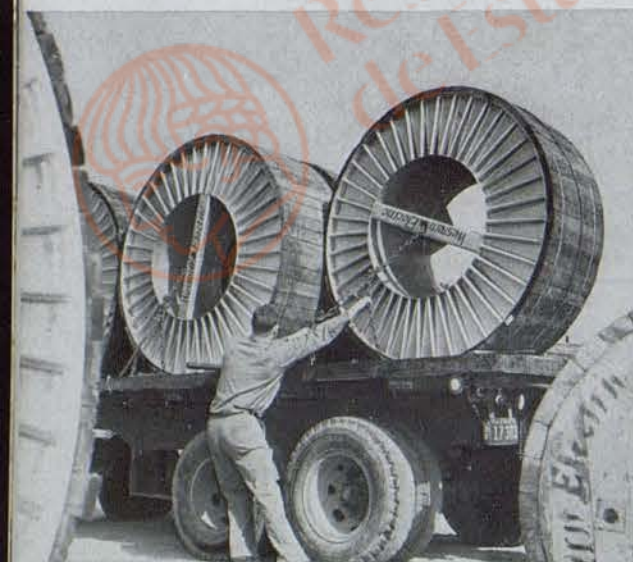


Washington newsmen spread a story to the nation's papers. Left: a network of 67,000 miles of wire brings radio news to some 400 broadcasting stations.

Making telephone cable at
Point Breeze Works of the
Western Electric Company.

THE TELEPHONE JOB SPEEDS ON...

FROM COAST TO COAST



Trucks in Southern California take on cable to be spotted on the routes of defense jobs.



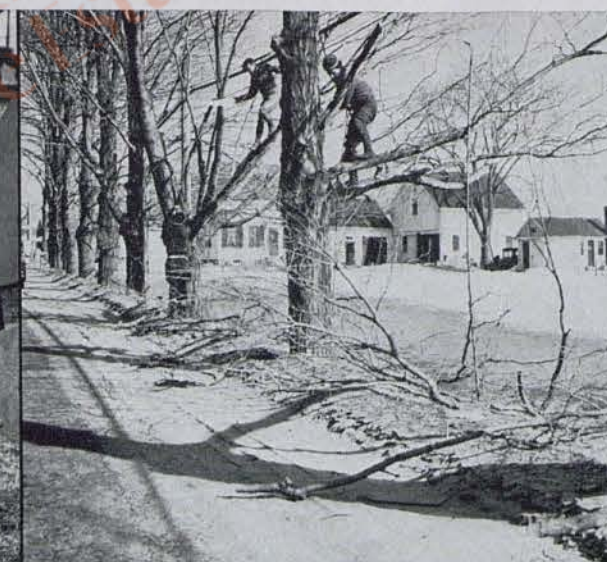
Crossbar dial equipment for nation's capital is assembled at Western's Hawthorne Works.



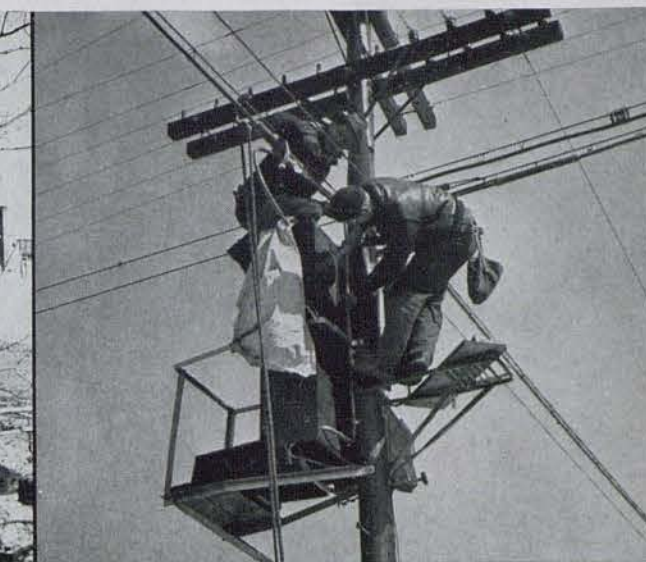
New York telephone men deliver supplies to the Signal Corps at Camp Upton, Long Island.



Plant men in Illinois construct facilities to serve a huge munitions plant near Wilmington.



Tree trimmers north of Boston pave the way for a new toll cable to handle increased traffic.



Ohio Bell splicers arrange toll cable to serve a new arsenal in connecting company territory.



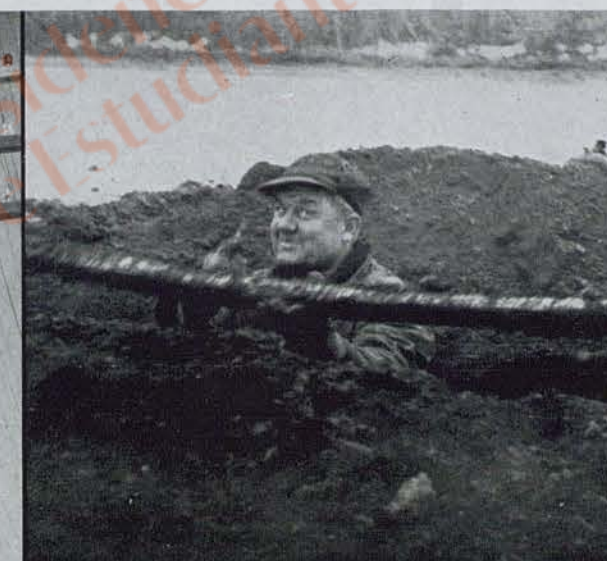
Left, more submarine cable for Alabama. Above, an Army base near Orlando, Fla., needs service.



This splice is part of the job of giving service to a new California aircraft factory.



And this one helps to extend service to a new small arms plant located near Denver, Colo.



Up to his neck helping the new transcontinental cable cross the North Platte River in Nebraska.



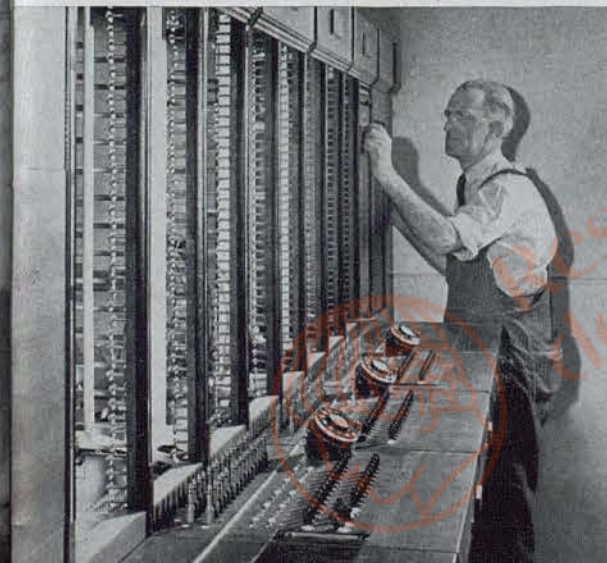
These booths are leaving a Western Electric distributing house for Camp Edwards, Cape Cod.



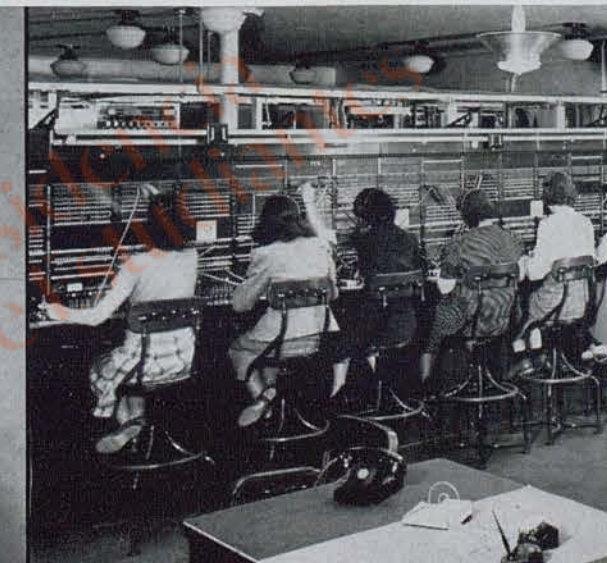
Carpenters are still working on the building at Camp Grant, Illinois, as the board goes in.



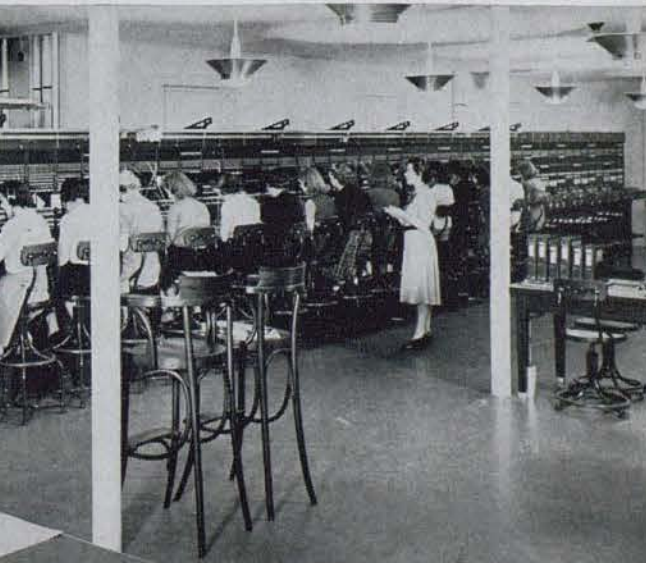
This telephone room and another next to it were the first built in one new defense plant.



Western Electric installs a big dial P. B. X. to serve an expanding plane plant in Seattle.



A brand new central office was engineered, built and placed in service in the record-breaking time of four months to meet the needs of Camp Edwards. This office is at Cataumet, Mass.





At the left, the central office at Mount Holly, New Jersey, which serves Fort Dix, as it looked in August, 1940. In the center are Western Elec-

tric installers putting in additional positions. At the right, the same office in February, 1941, with still more positions being prepared in rear.



Employees of the Bell System have been helping to train men of the Army Signal Corps. At the left, soldiers in California receive instruction in



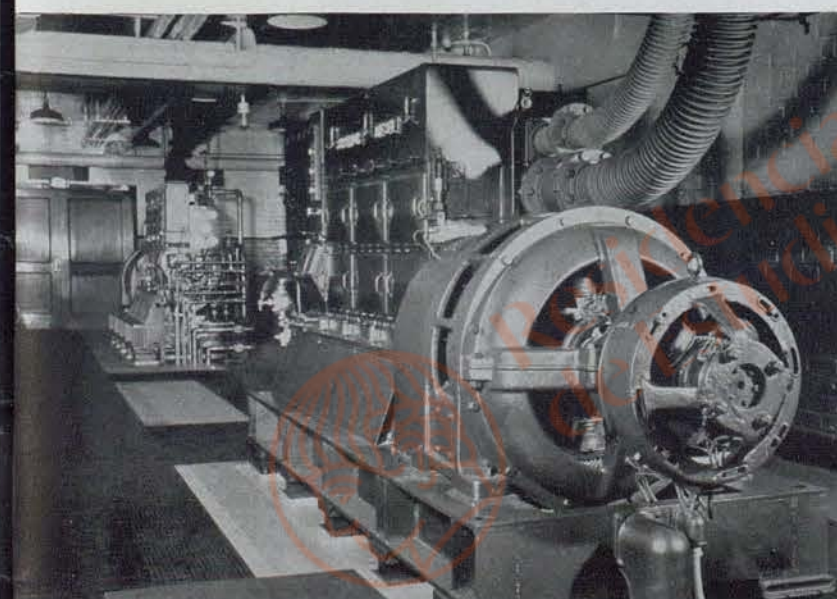
teletypewriter operation. At right, men from Fort Sheridan, Illinois, learn about P. B. X. maintenance in the telephone plant school at Chicago.



Large numbers of portable radio-telephone sets are now available at strategic points in order that wire gaps may be bridged in an emergency.



Portable generators help assure continuous power in emergencies.

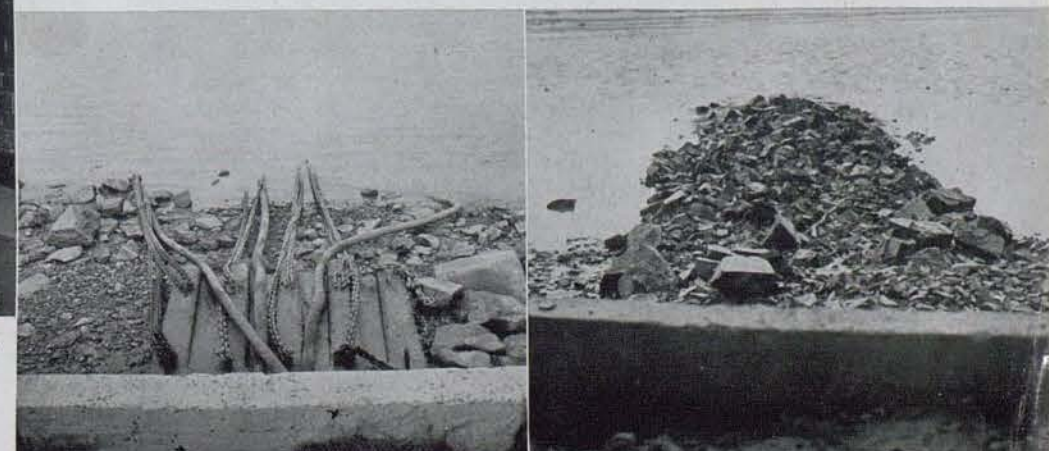


Stationary engines have been placed in important central offices.



Watchers atop the Empire State Building in New York look aloft during an anti-aircraft preparedness test.

At first warning of the approach of "enemy" bombers, word is flashed to defending airfields by telephone.



Before and after bomb-proofing of cable crossing at Carquinez Straits, California.



A WORD OF APPRECIATION

THIS book has been made possible through the courtesy and cooperation of numerous Government departments and industrial concerns in lending pictures. Sincere thanks are extended to the U. S. Army Signal Corps, the U. S. Army Air Corps, the U. S. Navy, the National Defense Advisory Commission, the National Advisory Committee for Aeronautics, the U. S. Departments of Agriculture and the Interior, and the Farm Security Administration; also the Boeing Aircraft Company, General Motors Corporation, the Studebaker Corporation, the U. S. Steel Corporation, the United Aircraft Corporation, Allis-Chalmers Manufacturing Co., the Standard Oil Company of Indiana, the Packard Motor Car Company, E. I. duPont de Nemours and Co., the Pioneer Parachute Co., the Consolidated Edison Co. of N. Y., the Detroit Edison Company, the International Silver Co., the Caterpillar Tractor Co., the American Brass Co., Hazard Insulated Wire Works, the Association of American Railroads, the New York Central System, the Illinois Central System, the Norfolk and Western Railway, and the Western Pipe and Steel Co. Equal

thanks are due to all who loaned pictures for which space could not be found.

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