

# Radar--New Secret Super Weapon of War--Operates As Radio Eye in Battles

(Editor's Note: Radar is the United States' secret super-weapon—the radio "eyes" of our armed forces. The story of its development is a story of how a small group of naval scientists kept the project alive in the face of official inertia. John M. Hightower of The Associated Press tells the story—so far as it may be told now—in six daily installments, of which this is the first.)

By JOHN M. HIGHTOWER  
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WASHINGTON, June 21 (AP)—Radar, the most revolutionary new weapon of this war—an instrument that has secretly shaped the course of victory in many historic battles—was originally developed in the United States by a by-product of radio research by a little group of naval scientists, long on faith and short on funds.

Had they not persevered in their work in the face of official inertia, compounded in many instances by scoffing disbelief, the United States might have lost the war about 10 to 20 years before it began.

To military and naval men now, it is inconceivable that we should have entered this struggle without Radar. The record shows that the scientists began to realize that fact more than 20 years ago.

### Radio Eyes

Long before the battle of Guadalcanal, they envisioned radio "eyes" to let warships "see" through fog and darkness. Long before the battle of Britain, they foresaw a wall of detective rays ringing the frontiers of nations endangered by air attack. Almost before airplanes flew at night, they conceived the ideas which make today's allied night fighters the deadly killers they are.

This is the story of Radar, so far as it may be told now, and of the men who made it.

Two months ago the story could not have been told at all. Radar was so secret and its secrecy was considered so vital to the United Nations that even mention of the name was taboo.

### Similar Instruments

It is true that the axis had a similar instrument; but the admirals and generals who decide such things believed ours was a lot better than theirs—knew it by performance if nothing else. They did not want any loose talk about Radar so they ordered no talk at all.

What the scientists, being naval research men, apparently did not fully anticipate is that they were spawning a new branch of the radio industry in the field of electronics. Today Radar is a multi-million-dollar industry for war; tomorrow it will become a billion-dollar industry for peace. Radar will guide tomorrow's sea and airliners through stormy nights to safety, just as it is guiding today's warcraft through the smoke of battle to victory.

On April 25, the army and navy put out a joint and unspectacular release admitting the existence of a radio detecting and ranging device and naming it. Radar is a navy code word meaning logically enough, "radio-detecting and ranging." Possibly never has such a remarkable instrument been camouflaged under a more wooden title.

### Disclosure Influence

The British previously had broken down their usually barbed restrictions to some extent and this undoubtedly influenced the American decision in favor of disclosure.

But there were other reasons, too. Many skilled workers in Radar construction were being caught in the draft or were under other compulsion to get into uniform. Neither their draft boards nor their sweethearts had been told the vitally important nature of their work. From that point of view, publicity about Radar was urgent. Moreover, thousands of recruits were needed for Radar operation and these had to be raised by recruiting, which means publicity. So the barriers came down.

A series of researches and discoveries in this country led to the creation of Radar not only among the allies but apparently among the axis nations as well.

### Early Workers

The central figure in that early work, and the man who literally begged, borrowed and stole when necessary to transform his ideas on radio into reality, is a slight, baldish, one-time physics professor whose professional career began in 1903 at the University of Wisconsin. Albert Hoyt Taylor now is chief navy physicist and superintendent of

the radio division of the naval research laboratory here.

Taylor's direct contributions to radio detection dealt mostly with the fundamental discoveries of how radio waves behave and with some of the first crude instruments and experiments. As the naval research laboratory expanded and Taylor's duties became more complex, it fell to the lot of a younger genius to develop the first modern Radar equipment and perfect many of the improvements which have made it a battle instrument of uncan-ny precision.

Robert M. Page, sensitive, soft-voiced chief of a research section of the laboratory's radio division, is credited by his colleagues with doing more for Radar's technical progress than any other man on the staff.

### Chief

The naval research laboratory, at which these men and their colleagues still work on the advancement of Radar, is, of course, a regular naval station and thus is under command of an officer. The present chief is Admiral A. H. Van Keuren, a veteran of many years service both at sea and ashore. Previously he had served as chief of the bureau of construction and repair and bureau of ships.

Van Keuren succeeded Rear Admiral Harold G. Bowen at the laboratory. The records clearly indicate that it was fortunate for Radar and therefore for the country that Bowen got interested in the laboratory's work about 13 years ago and began to promote it.

For Bowen became the needed link between the scientists on one hand and the navy and congress on the other. The admiral's great enthusiasm always has been to get hold of and promote sound but revolutionary ideas; the depths of his belligerent soul are stirred most violently against conservative preference for keeping things the way they are.

### Farsighted

A vigorous and confident missionary of progress, Bowen was one of a handful of farsighted men who campaigned for years to sell Radar to the fighting navy and to congress, which as usual held the money bags. He cut red-tape and regulations to deal frankly on Radar with members of the house and senate appropriations committee. They came through in the grand manner.

"They were mighty impressed with what they learned, and they offered us a hundred thousand dollars," he said. "That was in 1935. We took it, and it was all we could use at that time. You can't buy inventions, you know. All we needed then was a little money for salaries to increase the staff a bit."

About 1940, when the crash of falling France was heard across the Atlantic, the appropriations grew in keeping with the increasing importance of the laboratory's preparations for war. The institution that had started out as a single gray concrete building rising alone out of the Potomac river mud flats below Washington blossomed, after 18 lean years, into a thriving center of naval science in many fields—the only place of its kind in the world.

### Before Pearl Harbor

Bowen performed another important function, too. He interested industrialists in the manufacture of Radar equipment and thus cleared the way for its production on a quantity basis. The first Radar sets went into the fleet, in the Pacific, in December, 1940, a year before Pearl Harbor.

Skepticism as to their value vanished rapidly as they went on ship after ship and proved themselves by amazing performance. Thus officers and men were ready to use them to the fullest when war came, and in battle they proved themselves all over again, enabling our warriors of the sea to pull off feats they had not deemed possible in pre-Radar days.

### At Guadalcanal

Late on the evening of November 14, 1942, among the Solomon islands in the South Pacific, one of our warships was out looking for Japanese warships.

The sea battle for Guadalcanal was in its final phase, the issue still undecided. Aboard the American vessel, a Radar, like an invisible searchlight, probed

the enshrouding darkness with its magical waves.

Suddenly the indicator on which Radar registers its discoveries disclosed the presence of an enemy vessel more than eight miles away.

The big ship lifted its gun muzzles toward the stars. They flashed and thundered by salvos.

The second salvo, despite the darkness and 16,000-yard range, landed squarely on the target.

The American ships went on not only to win but to turn the battle for Guadalcanal into one of the most costly routs in Japanese history.

### British Version

The British version of Radar, known as Radio-Locator, matched in military results the heroic sacrifices of the handful of fighter pilots who saved England during the Nazi aerial blitz of late 1940. Land-based Radar ringed England's coast and rode in its night fighter planes. Radar's unerring fingers picked up the range, direction and speed on Hitler's bombers far out over the water, sometimes even over Europe itself.

Assured of adequate forewarn-

ing of each attack, the handful of RAF heroes who saved the British Isles from destruction by air found it unnecessary to maintain incessant fighter patrols which would quickly have exhausted men and planes.

They rested until the foe approached and went into action at the last minute. It was this conservation of energy, machines and fuel which enabled England to fight back until the blitz collapsed.

## CIVILIANS WARNED OF DANGER AREA

CAMP WHITE, Ore.— Entry upon the area near Upper Table Rock is exceedingly dangerous at the present time, it was announced by the training division of Camp White. All military and civilian personnel are warned against entering this section.

Rifle ranges and machine gun courses are situated east of Upper Table Rock, and unauthorized trespassers are in danger of being seriously injured by bullets which ricochet from the face of the rocks.

If it is necessary to enter this area, permission should first be secured from the training division, Camp White. The telephone is 5221, Extension 3228.

The University of Pavia, Italy, was founded in 825.

## AP TO FILE AFFIDAVITS IN TRUST ACTION

NEW YORK, June 21 (AP)—The Associated Press prepared to file in federal court today more than half a hundred affidavits in opposition to a government motion for summary judgment in the anti-trust civil action against the non-profit, cooperative newsgathering agency.

Other affidavits also were to be placed in the record by the Chicago Tribune, a co-defendant which has made a separate answer to the government charges seeking to open AP membership to all who are willing and able to pay their share of the cost.

Arguments on the summary judgment motion, by which the government seeks a decision against the AP without the taking of testimony from witnesses in open court trial, are scheduled to be heard by a three-judge federal court July 8.

Chief among the AP affidavits was one prepared by Frank B. Noyes, publisher of the Washington Star and president of the AP for 38 years until 1938, who

declared that "it was not contemplated by the men who organized the AP that all newspapers in the United States should become members" but that it was recognized that in order to establish "a true cooperative organization, the members must have the opportunity to select their own associates."

## Arguments to Be Heard On Potato Grading Question

Because of office of price administration regulations, labor shortages, and the fact that competing states are packing combination rates on potatoes, the Oregon department of agriculture has been requested to establish a commercial grade for potatoes conforming or similar to the United States commercial grade.

A public meeting has been called for Tuesday, June 22, at 8 p. m. to hear arguments for and against inclusion of this grade in Oregon standards for potatoes. Anyone interested is invited to attend the meeting at 619 Pine street, or to submit their views in writing to the Oregon department of agriculture there.

### THE STAND-IN

KANSAS CITY, (AP)—It can happen to anyone.

Rep. Frank Carlson (R-Kans.) was a passenger on a Chicago to Kansas City train, an eight-hour trip. He stood the entire distance.

## CANCELLATION OF CITIZENSHIP HIT

WASHINGTON, June 21 (AP)—The supreme court reversed today the action of the federal court at San Francisco in ordering cancellation of United States citizenship on the ground that the alien obtaining it was a member of the communist party.

Justice Murphy delivered the majority opinion which asserted that clear and unequivocal evidence was necessary to cancel American citizenship and that this had not been produced against the communist involved when he became an American citizen.

### WELL-BRED, AND BUTTERED

KANSAS CITY, (AP)—The Stanley Stewart's dog ate two pounds of butter: Value, 16 cents.

"Did our Cocker Spaniel eat up all those points?" inquired Mrs. Stewart, unbelievably. "He's no Spaniel," corrected Stewart. "He's a pointer."

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## Frisco Area Has 40 Minute Blackout

SAN FRANCISCO, June 21 (AP)—The San Francisco bay area underwent a 40-minute blackout over the weekend, the first one in more than a year.

The sirens sounded at 1:07 a. m., Pacific war time yesterday and the all clear came at 1:47 a. m. The western defense command announced only that the alarm came as the result of an unidentified target approaching the area. They later were identified as friendly.

Woodpeckers do not have to carry nesting materials. They lay their eggs on a soft bed of sawdust and wood chips.

### Attention To Comply With The New

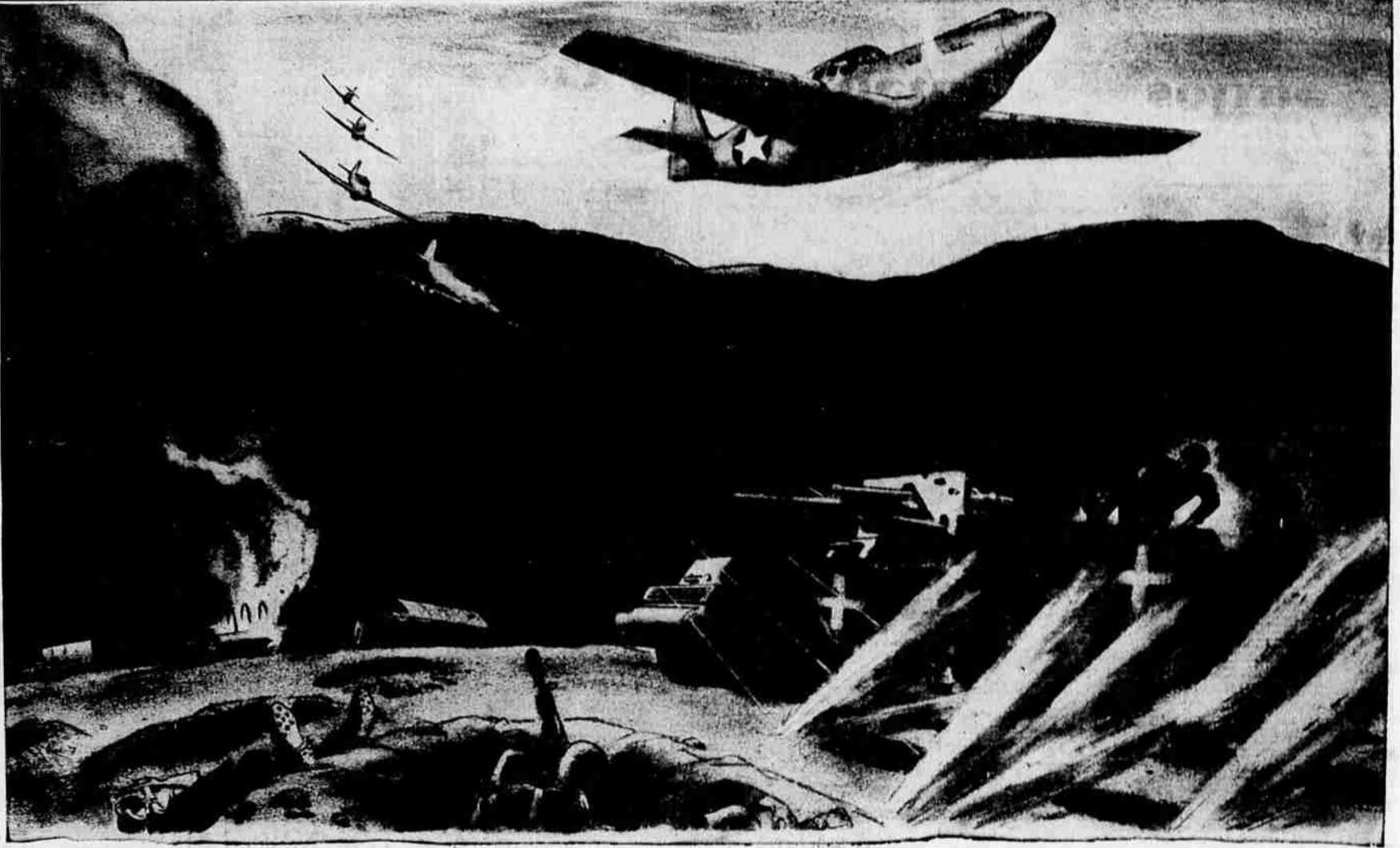
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# The inside story of 100 octane gasoline



1. In 1937, 100 octane aviation gasoline was just emerging from the oil company laboratories. Production was hardly great enough to keep one squadron of fighter planes in combat, and it cost \$25 to make each gallon.



2. Today, the American oil companies are turning out enough 100 octane to fuel the greatest Air Force in the World. They are shipping millions of additional barrels to our Allies. And they have cut production costs to an average of 13 1/2¢ per gallon.



3. The inside story of this accomplishment is a typical example of American Free Enterprise at work. For 100 octane was perfected by our oil companies in their own laboratories before we ever entered the war—without one cent of government subsidy.



4. This was largely the result of just one peacetime influence—competition. You don't decide to make 100 octane one morning and start producing it the next. You have to learn how over a period of years. Back in 1920, the best gasoline our oil companies could make was 52 octane.



5. But by 1930, they had hit 71; by 1937 they were shooting for 100, and by 1939, for 100 plus. Why had they made such progress? Not because they expected a war all those years. But because each company kept struggling to put out a better product than the others and get more customers.



6. If the oil business had been controlled by one company, or by the government, this wouldn't have happened. For there's not much incentive to go after more customers when you already have them all.

The company that became Union Oil was founded in 1886 out of the personal savings of nine Santa Paula, California business men. Today, it is owned by 31,652 people, most of whom live right here in the West—3,628 in San Francisco, 434 in Seattle, 7 in Grants Pass, Oregon, 274 in San Diego, etc. The Company's profits which, in 1942, amounted to 3.8% on capital invested, are shared among these people. Last year this net profit amounted to \$174.94 per stockholder. Of this sum, \$147.42 was paid out in dividends—\$27.52 was left in the business. In return for these profits, the 31,652 owners have financed the tank ships, oil wells, refineries and service stations that make Union's operations possible. This is the story of most American corporations. By pooling the money and talents of a lot of people, we are able to do a job collectively that we could never do alone.

## GRAY HAIR TURNING DEEP BLACK

says Mrs. J. B., Chicago "After using Grayvita only a short time, I noticed my gray hair was turning to a real deep black, exactly as it used to be. What a difference this makes in my appearance."



Mrs. J. B.'s experience may or may not be different than yours. Why not try GRAYVITA? This anti-gray hair vitamin discovery, Calcium Pantothemate when tested by a leading magazine showed 88% of those tested had positive evidence of some return of hair color. A GRAYVITA tablet is 10 mgm. of Calcium Pantothemate PLUS 450 U.S.P. units of "pep" vitamin B<sub>12</sub>. Get GRAYVITA now! 30 day supply \$1.50, 100 day supply \$4.00. Phone 4514 CURRINS FOR DRUGS Ninth and Main

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