THE ALAMANCE GLEANER, GRAHAM. N. C.

# Washington Digest **Radar Magical Beam That Bounces Back on Contact**

Lightning Calculator Estimates Distances Upon Deflection of Electrons; Study Of Apparatus Still in Infancy.

#### **By BAUKHAGE** News Analyst and Com

(In a previous article Mr. Baukhage told some of the little known facts in the history and development of radar and recorded many of its possible peacetime uses. In this article he explains what makes radar tick and how it performed some of its marvelous feats in this war.)

"Impact," a publication of the of-fice of the assistant chief of air staff, intelligence branch, for the first time lifting the veil which has covered descriptions of radar, says suc-cinctly: "A radar set is nothing more than a machine for sending electrons out into space in a steady stream in a desired direction. These electrons travel with the speed of light in a straight line until their energy is dissipated, or unless they bump into something."

That bump is important. If a stream of electrons is shot into the air like a searchlight and a plane flies across the stream, the elec-trons which hit the plane bounce back. They bounce right back to a screen in the radar scope and are revealed in the form of a "blip" of light, just as an echo bounding back on your eardrum is reflected in the form of a sound.

back on your eardrum is reflected in the form of a sound. The principle of the real echo is used in "sonic" location of obsta-cles-ships use it to locate shoals, for instance. And, recently, it has been demonstrated that bats use the same principle in avoiding ob-stacles (which they can't see since they are blind) by uttering a tiny "beep," the pitch of which is prob-ably too high for the human ear to catch. Their beep bounces back in time to warn them to duck. But radar's electronic "blip" is better than a sonic "beep." One reason is that an electron moves with the speed of light which is fast-er than sound. "Echo" Courset

### 'Echo' Caught

#### On Radar Receiver

Perhaps at this point we ought to recall to your minds what an electron is. A short definition of an electron is "the most elementary charge of negative electricity." Electrons plus protons (the positive charge) are what atoms are made of and atoms are what molecules are made of and you and L and the of and atoms are what molecules are made of and you and I and the universe and all it contains are, as we learned in high school, nothing but various groups of molecules. Ordinarily electrons pursue the even, if rapid, tenor of their ways well within the bounds of their own atoms. But radar has changed all that It has made it rossible to

atoms. But radar has changed all that. It has made it possible to project those electrons out into space and then, if they hit some-thing and bounce back, to catch the "echo" on the "scope" of the radar set in the form of a "blip" or blob of light of light.

of light. • We can't go into detail as to how this operation takes place, but we can tell you in a general way. The scope of the radar set is round. It is like a map. North at the top, south at the bottom; east to the right and west to the left. So that you will know where you are a little light appears on the screen just where your set is located on the where your set is located on the "map" you are looking at. By moving the instrument, you can keep yourself in the middle. If you see

WNU Service, Union Trust Building, veyor makes these calculations by Washington, D. C. observation from two known points. And you don't have to be an en-gineer to do it either—if is done automatically by a lightning calculator.

I have stood in awe before these I have stood in awe before these calculating machines, which can "think" more accurately and a thousand times faster than I could figure, and watched how they direct the aim of the turret, waist and tail guns on a B-29.

As I said in last week's article, the enemy has radar, too. The Ger-mans were working on it with investigation and experiment which paralleled ours and those of the Brit-ish. In the early days of the war the Germans had receiving sets on high hills along the coast of France. The electron beam, like that of tele-vision moves in a stratist line and vision, moves in a straight line and since the surface of the earth is

curved, this curve gets in the way if the image and receiving set are too far apart. Therefore, land sets are placed as high in the air as

possible. We knew that the Germans had some kind of an electronic device and they knew we had one. One of the early commando raids, which the papers said was successful in destroying a German "radio sta-tion," really destroyed the radar installati

## Poke Out

Japs' 'Eyes'

One of the reasons why Iwo Jima and Okinawa were so important, be-sides the fact that they make excellent naval and air bases, is be-cause the Japs had their radar detection stations on these islands and were able to detect the presence of tection stations on these islands and were able to detect the presence of our bombers and intercept their flight. You will also recall that a number of little adjacent islands that hardly seemed of any impor-tance were seized by our troops. In all probability it was because they had radar installations which could detect and give warning of planes leaving the larger island for Japan. As we put out her "eyes" one after another, Japan becomes more impotent. There have been many cases, you may have noticed, where the Japs, on land or on small ships, have been taken by surprise. I have no information on this sub-ject, but in some cases it may have been due to the fact that they lacked radar euipment. It is be-lieved that what radar knowledge Japan has came from the Germans. lieved that what radar knowledge Japan has came from the Germans. Of course, there is one phase of radar detection which in the past has sometimes prevented use of data concerning the detection of a plane or ship. That is the fact that until the object is very close it can-not be identified. It is merely a "blip" of light. Therefore, it is im-possible to tell friend and enemy apart. Some sort of identification has been developed, details of which äre still, I believe, "top secret." An example of how this worked to the disadvantage of the British was in the engagement in which HMS

the disadvantage of the British was in the engagement in which HMS Hood was lost. On May 21, 1941, the Hood was lying in the strait be-tween Iceland and Greenland when suddenly out of nowhere she was hit by a salvo from the 15-inch guns of the powerful Bismarck. The Bismarck had accurately located the Hood with radar equipment the Hood with radar equipment, the first reported successful use of radar in such a naval operation in the war. It is said that the Hood had likewise detected the presence of a ship at the spot where the Bis-marck was, but knowing that a number of friendly warships were in the vicinity, did not dare to take the chance of attacking first.

Three B-29 superfortresses are seen in flight over Fujiyama, Japan, during recent strike against the enemy. The famous Fujiyama volcano forms a colorful backdrop for the big bombers. Some "authorities" claim that the entire island can be wrecked by unloading tons of bombs into the mouth of Fujiyama and other Japanese active volcanos.

Superforts All Over Japan

**Fishes in His Private Pool** 



It is not every boy that has his own private fishing pool. This young farm boy baits book hopefully and prepares to fish in the family pond. Private waters like these can be used the year around, and hun-dreds of inland farm kids who never had a chance to fish are grow-ing up into a larger generation of sportsmen. The government has encouraged building of private ponds. Some states, such as Missouri, offer special inducements for farm pools, not only stocking with fish but supply-ing at cost shade trees and water plants for the pools. Even in postwar, the addition of fish to the farm diet will be welcomed.





Christmas in July

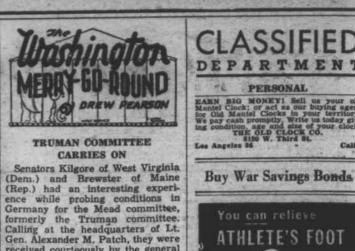
Recruiting of .65,000 additional workers for railroads, needed ur-gently to carry out the army's re-deployment program, gets under way in Chicago with Cpl. Edward Solotke, 6th service command M.P., decked out as Santa Claus in this Christmas in July crisis. Man of War



One of the busiest men in the administration, Under Secretary of War Robert P. Patterson, relaxes, whenever he can get away from Washington, by running his farm at Cold Spring, N. Y.

**Postman and His Pal** 





received courteously by the general himself, who talked with them for ten minutes, then went off to keep

The two senators then proceeded with their usual investigation. Set-

tling down in one of the U. S. mili-tary offices, they called in witnesses,

and cross-examined them with a stenographer taking down every-

This continued for nearly three nours. Unlike most visitors, Sen-

ators Kilgore and Brewster seemed

intent on really finding out what was happening in that part of occu-

"Gentlemen," he said, "ahem . .

"It's the same procedure we've always followed," replied Senator Brewster.

"Yes," continued Kilgore, "it's the same procedure fol-lowed by this committee under former Chairman Truman."

"You probably recall him," added Brewster, "he's now President of the United States."

Next day General Patch himself invited the two senators to dine with him at the villa which

he had taken over from a Ger-

. .

an appointment.

thing that was said.

hours.





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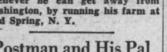
pied Germany. Finally, Gen. Ar-thur White, chief of staff to General Patch, appeared nervously in the background. this procedure . . . it's a little un-usual. I'm not sure that we can permit you to continue."

man princess. JUDICIAL EXIT There was a day when everyone in and around the Roosevelt admin-

istration wanted to be a judge. This ambition was largely precipitated by the Supreme court fight and the fact that the courts in those days had put several obstructive decisions squarely across the path of the New Deal. But now it is just the opposite. There is a growing exit from the courts. Judge Schwellenbach has just resigned from the bench to be secretary of labor. Judge Sherman Minton is itching to get off the cir-cuit court of appeals in Chicago. And there will soon be four vacan-cies on the court of appeals of the District of Columbia, considered one of the most important courts in the country. But now it is just the opposite

country.

places.



another spot of light on the screen up where 12 o'clock would be on your watch dial, you know there is a plane (or other object) north of a plane (or other object) north of you. If it should be a plane and it were coming toward you (which the instrument would reveal) and it finally appeared right on top of the light that showed your location, you'd know that there was going to be a collision. Radar can "see" a ship 30 miles away—and see it in the dark, through a wall of cloud or mist, which no human sight could pene-trate.

trate.

Different substances give stronger or weaker "echoes" on your screen, water little or none. Land more, built-up areas more than fields. Rocks more than softer surfaces.

In addition to locating an object in relation to the observer (the locaon of the radar set), the distance from the object can be calculated by the length of time it takes for the electrons to reach the object and bounce back. The elevation (angle of height from observer) and the deflection (how far to the right or from the object can be calculated by the length of time it takes for left) are calculated just as a sur- route to Germany.

Many improvements have been made in radar which are not as yet made in radar which are not as yet ready for the public eye and all those familiar with the subject say the study is only in its infancy. Scientific achievement seems limit-less and the one virtue of war is that it spurs inventive genius to great strides of progress. When peace comes radar will

When peace comes radar will likewise open new vistas of which the layman hardly dreams.

BRIEFS... by Baukhage

Japs are making kitchen knives from American incendiary bomb cases. They ought to be ready to set up housekeeping soon since we have begun throwing everything at them but the kitchen stove.

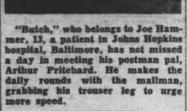
One of Hitler's favorite tunes was Who's Afraid of the Big Bad Wolf." hat was before he got a bear by

An American filer back from a Jap prison camp says the Japs, real-izing they are beaten, are treating our prisoners better. Nothing like a good licking to bring out one's. . . .

The new DDT insecticide perfect-ed by the army kills everything but human beings. Another secret weapon against Japan.

With thousands of U. S. troops scheduled to fly home from Europe each month, the most effective air-sea rescue system ever devised in safeguarding the men has been put into effect. (1) The waters are well protected, while from the Azores to the U. S. many ships are on well pr guard.

**Fixes Grave for Dog Mascot** 



**Back From Prison** 

the marble quarries of Vermont, and got to know Harlan F. Stone, who brought him to the justice de-partment when Stone became attorney general under Coolidge.

Judges Vinson and Thurman Ar-nold have already made two vacan-cies on this court. Two other va-cancies will occur when Chief Jus-

tice Duncan Groner and Judge Jus-tin Miller resign.

It may keep the White House busy looking for good men to take their

**ITALIAN UNDERGROUND** 

It is not often that anyone can get a first hand report on the results of psychological warfare direct from his own family in an enemy coun-try. However, Ugo Carusi, director of immigration and naturalization, has bud that emperiode

has had that experience.

And during the war, Carusi has been broadcasting to the Italian people urging them to surrender. With the end of the war, Carusi has received letters from his relatives in Italy telling how his broadcasts helped inspire the battle against the Nazis.

"Ugo," wrote a cousin, "you can "Ugo," wrote a cousin, "you can really be proud of your relatives here in Italy. From the oldest down to that little, charming young lady (Carusi's 10-year-old niece) you you were always so happy to hold in your lap while in Carrara, they have proven themselves to be great patri-

"One of your cousins, the brother of Enrice, was the colonel who led a Partigiani band in the capture of Carrara from the Germans last November. From that time on, the Partigiani controlled all the public offices in the town. The caves with which you are familiar were used to good advantage by the Partigiani, and the Nazis refrained from reentering the city."

#### . . . WAR NOTES

C Despite the heavy bombing of the Schweinfurt ball-bearing plant, in-side sources reveal that it is in side sources reveal that it is in reasonably good condition and with-in one month could be producing 50 per cent of its wartime schedule. . . The Nazis had removed a lot of Schweinfurt's intricate machinery before the air raids, and hidden it. The manager of the plant told U. S. officials that within three or four months he could be turning out 20 per cent more ball-bearings than during the war.

Pic. Joseph Samson of Detroit, Mich., fixes the grave of his pet dog, "Sgi. Chipps," who died in the "line of duty" after participating in four Southwest Pheilie campaigns. Men of Samson's outlit, a signal de-tachment with the lat envalvy division, built the grave on Lesson. The dog milling at the headstops is alternative and the second second Col. Hubert C. Zemke, 31, as he arrived in New York City. The air ace, credited with 30% Nazi planes before being shet down and taken prisoner, was released from Stettin. ace, cre

ots.