

Phileo News

FEBRUARY

1946



PHILCO NEWS

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Employees of the Philco
Corporation Plants in Phil-
adelphia and Vicinity.

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Articles, photographs and drawings are
invited. Please send to Editor.

VOL. 3 FEBRUARY, 1946 NO. 12

EDITORIAL

One of the main purposes of the PHILCO NEWS is to bring to the employees of Philco a better understanding of the operations of the various departments in the Company. In this issue we are giving on pages 4 and 5 a brief description of the functions of the Engineering Department. From the very first day of the Philadelphia Storage Battery Company (now Philco Corporation) the need for good engineering was appreciated by the management of the Company. As the result of this forward thinking from the early days of the Philco "Diamond Grid" battery through the "Twenties" and the days of the Philco "Socket Power" and on into the "Thirties" which saw Philco up on top of the world as the largest manufacturer of radio sets, engineering played an ever-increasing role of importance. Finally, during the war years Philco Engineering hit an all-time high. In previous issues of the NEWS we carried articles which elaborated on Radar and other equipment to which Philco Engineers made important contributions. In this age of science and invention, no progressive company can stand still. Products which today appear to be the last word in their field are likely to become obsolete tomorrow. We are indeed fortunate to be living today in what tomorrow may be called the age of greatest scientific development. The high-grade engineering which has helped us set the pace in the past will play a tremendously important part in keeping Philco products out in front of competition in the future.

Greater PHILCO Battery Output Forecast for Coming Year

Manufacturers of industrial storage batteries are already completely re-converted and ready with manpower and manufacturing facilities to meet the pent-up demands of heavy industry in 1946, according to a year-end review and forecast as to the industry's prospects by M. W. Heinritz, vice-president in charge of the Storage Battery Division of Philco Corporation.

"Shipments of the Storage Battery Division of Philco Corporation in 1945 were seven per cent greater than the year before, and a further substantial increase is expected in 1946 as general industry resumes full peacetime activity. Plant facilities at Philco have recently been increased to provide one-third more productive capacity than ever previously attained.

"Largest post-war markets for the industrial storage battery industry will include railroad air conditioning both for new streamlined trains and the replacement of batteries in existing passenger equipment. Both the communications and power distribution groups of the public utility industry will be in the market for large numbers of batteries, which will also be in heavy demand for the mechanization program of

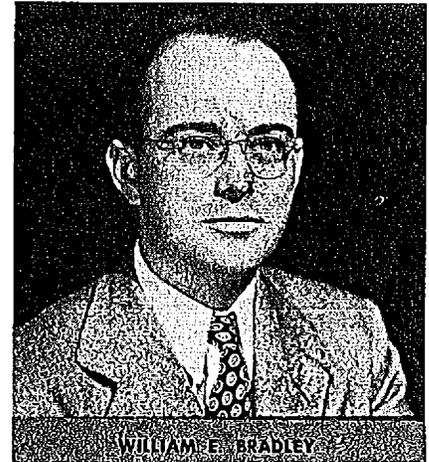
the mining industry in order to employ all available manpower most effectively.

"Electric industrial trucks are one of the fastest-growing users of industrial batteries. These trucks, powered entirely by batteries, are rapidly coming into general use for more economical and faster handling of materials. This trend is expected to proceed at a much faster tempo in view of new war-developed techniques and the incentive all industry will have to achieve greater efficiency in its operations."

WILLIAM E. BRADLEY NEW DIRECTOR OF RESEARCH AT PHILCO

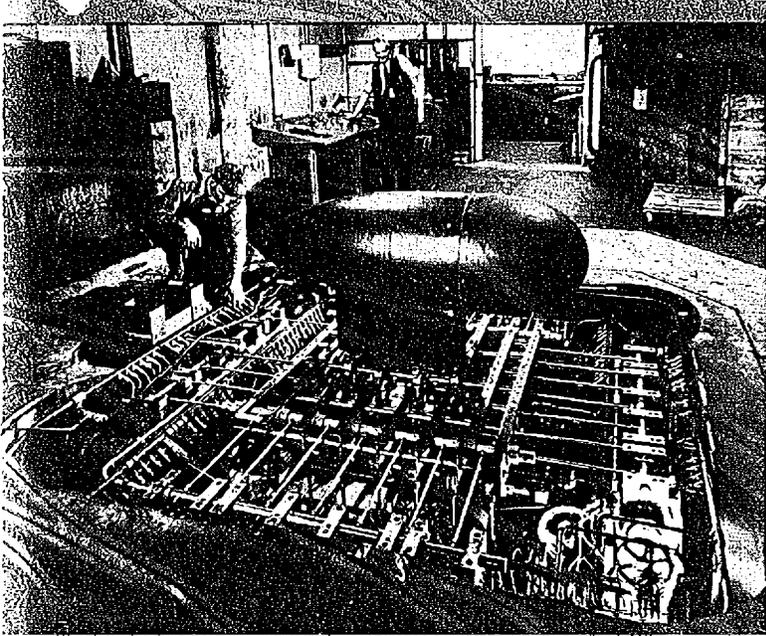
Appointment of William E. Bradley, who played a leading part in developing the new Philco Advanced FM System, as director of research of the Philco Corporation has been announced by John Ballantyne, President. He succeeds David B. Smith, who was recently named vice-president in charge of engineering.

Joining Philco in 1936 after graduating from the Moore School of Electrical Engineering of the University of Pennsylvania, Bradley



served as a factory test engineer in the Radio Receiver Production Department. In 1937 he became a research engineer in the Philco Television Engineering Department and helped to design wide band amplifiers for experimental television receivers. He also contributed to the development of an entirely new amplifier theory now beginning to be extensively used in the television industry.

Five years ago Bradley was placed in charge of the advanced research section of the Philco Research Division, and early in 1945 he became Assistant Director of that division.

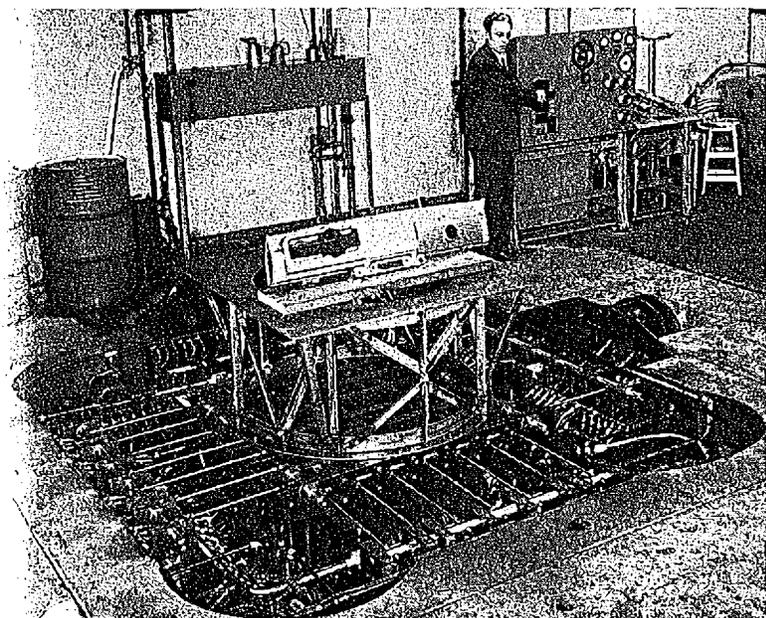


BEFORE—DURING THE WAR—Aircraft nacella containing part of a Philco-built airborne radar system is subjected to the shakes and shocks of a simulated flight on this unique vibration machine developed by the Factory Engineering Department and installed in Plant 374.

**PHILCO PROGRAM
IN NEWSREELS**

Paul Whiteman, representing the New York Film Critics, presented the awards for the best in motion pictures to Ingrid Bergman, Ray Milland, Director Billy Wilder and Producer Charles Brackett on the Philco Radio Hall of Fame from Hollywood recently. Newsreels of the event are now being shown at local theaters throughout the country.

**Testing PHILCO Products
the Rugged Way**



AFTER—IN PEACETIME PRODUCTION—A similar vibration machine for testing the performance of the new Philco automobile and portable radios. These radios take more jiggles and bumps in a short time from this machine than in years of ordinary service and they still perform perfectly.

A unique vibration machine, designed during the war by Philco engineers to shock-test secret aircraft radar equipments, is now "reconverted" for giving the most rigorous of tests to automobile radio sets and portable receivers, it was announced by Joseph H. Gillies, vice-president in charge of radio production of Philco Corporation.

"This huge new machine, which cost us \$85,000 to design, construct and install in one of the Philco Test Laboratories, has already paid its cost many times over," Mr. Gillies declared. "During the war, our test engineers used it to check the performance of such vital airborne radar devices as the famous Mickey Radar Bombsight. Vibration tests, duplicating actual flight conditions, were invaluable in making sure that Philco-built radar sets would perform perfectly in combat.

"Today, the same vibration machine is not only helping us to test new aircraft radar equipment for the Government but also aids us in designing and building better automobile and aircraft radio receivers and portable sets for civilian customers."

Equipped with more than 500 oiling points, this complex vibration tester has a table six feet square, mounted on a 300-ton foundation of steel and concrete. On the "shake-table," a complete automobile instrument panel and radio assembly can readily be vibrated in all three planes to duplicate driving over the roughest corduroy or "washboard" roads. Speeds of vibration can be varied, too, so that the new Philco portable and auto radio receivers are subjected to jiggles, bounces and shocks far worse than they would encounter in normal travel.

The Engineering Department of the Philco Radio Division is an important cog in the machinery that puts Philco electronic products on the market because, almost without exception, it is the starting point for the actual product. The ideas and the planning which govern the operation of the Company and the products it will manufacture funnel from various sources into the Engineering Department in the form of actual requirements.

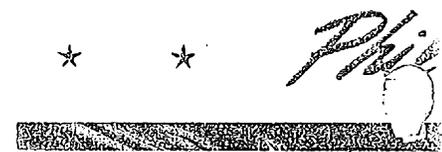
There may be requests for a certain type of radio receiver, a particular automobile receiver or certain Government equipment for which the Company has decided to contract. Many of the products result from ideas conceived in the Engineering Department itself. As fast as these requirements enter the department, they are resolved into detailed plans for arriving at the best possible design for the finished product.

The project is assigned to one of the ten sections into which the department is divided, each section specializing in a certain kind of de-

sign. Palmer Craig, chief engineer of the Radio Division, keeps watch over these various sections and the section engineers who supervise them. Projects must be assigned to the proper section, engineering personnel must be made available for each project, test equipment must be available when needed, and the basic design of all pieces of equipment must be carefully guided.

When the section engineer receives an assignment he must, with the help of his engineers, plan the smooth flow of the design from then until it is finally turned over to the factory for production. First of all he must plan the actual design. The best decisions must be reached as to what circuits, tubes and components go into the equipment.

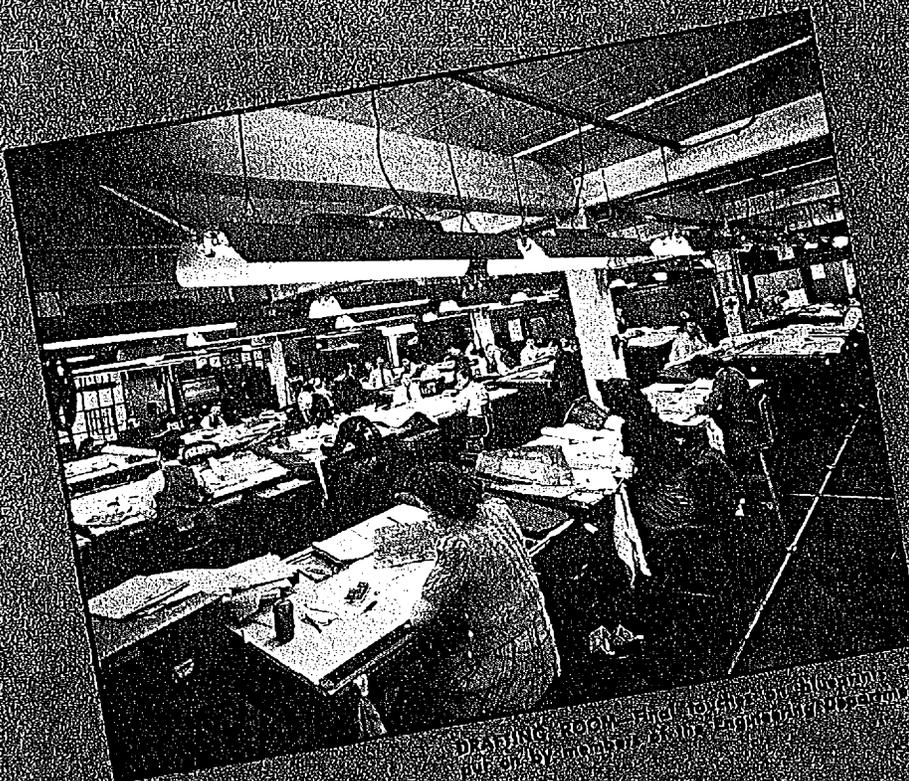
It is here that the superior performance and extra reliability of Philco equipment must get its start. Second, he must plan the best use of his engineers to carry through the project with speed and efficiency. He must call on the contributing engineering services, such as the large staff of mechanical de-



signers and draftsmen which work out the mechanical details and make the production drawing. He must arrange for the right kind and right amount of test equipment to do the job. The Components Section of the department must be called on to give all necessary information and help regarding the best components to use. He must secure the help of the supplier contact group to make the best use of the suppliers' latest developments. It is extremely important in maintaining Philco leadership that the best use be made of the wide and varied experience of our many suppliers.

From this point on the design is completed in the Engineering Department according to a schedule that has been agreed upon. First a laboratory sample is put together incorporating all of the basic

PHILCO ENGINEERING DEPARTMENT



PHILCO ENGINEERING DEPARTMENT
 PHILCO RADIO DIVISION
 PHILCO ELECTRONIC CORPORATION
 PHILADELPHIA, PENNSYLVANIA

cuits and features, but not at all final in its mechanical construction. This sample is thoroughly tested both in the laboratory and in the field under operating conditions. The engineers call this latter test "plastering." The term might have derived from the fact that in these tests the set is given the "works."

The result is that certain design and correction is necessary and this is the next step. While these corrections are being made, the many components are being drawn up by the draftsmen and detailed specifications are written by the engineers for every component in the equipment. Additional samples are built incorporating all changes found necessary in testing and with all details of construction and operation correct.

The final samples are again tested thoroughly and these tests,

in the case of radio receivers, usually involve considerable actual use in the homes of the engineers and, in many cases, in the homes of officials of the Company. Before these tests, which may run to several weeks, are completed, the equipment will have been processed; that is, every part in the product down to the last wire and rivet will have been assigned a part number and placed on the material list.

This material list and the specifications which apply to each particular part are the "Bible" which guides other departments of the Company such as Material Control, Purchasing, Factory Engineering, etc., in the mass production of the equipment. When samples are turned over to the factory and material lists and specifications are released, the design is complete but the Engineering Department has not finished its job. Samples must be submitted by suppliers on all parts that go into the production equipment and it is a large part of the Engineering Department's re-

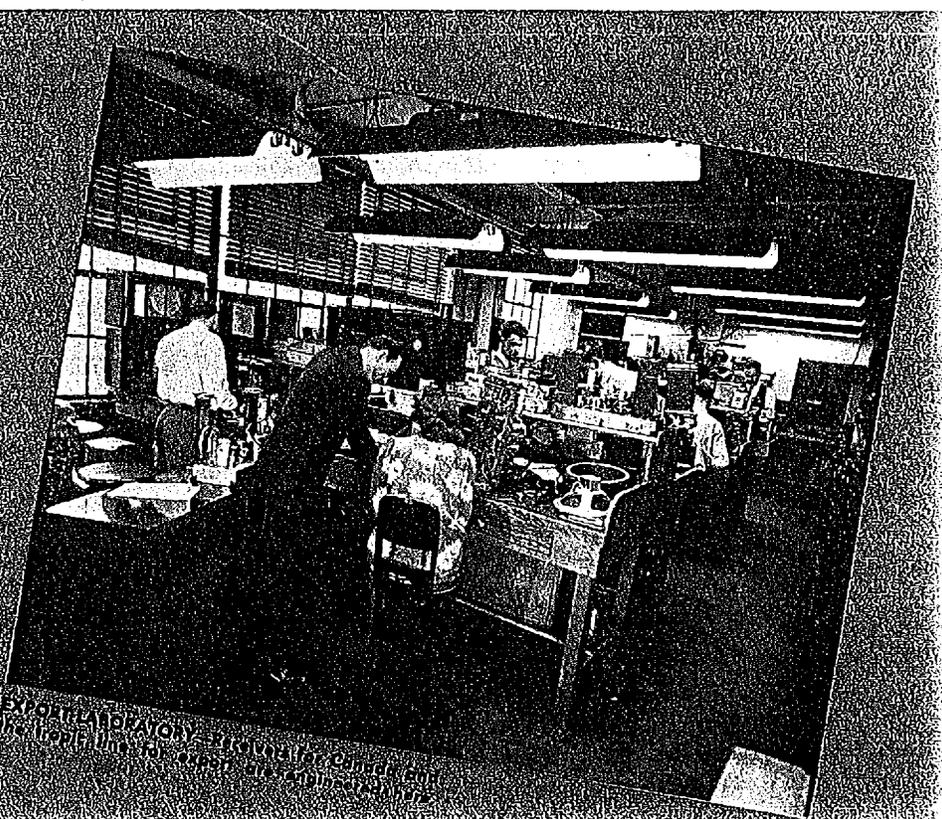
sponsibility to check carefully these components, making sure that they fit properly with other parts of the equipment and that they do the required job. This checking of components will be taking place throughout the several months that are required to obtain materials and prepare for production.

When production finally starts, Engineering has another equally important task, and that is to guide the start of production by checking production equipments, and, in general, giving every possible aid to the Factory Engineering group whose responsibility it is to guide production of the equipment. Only when the factory has reached its production schedule and when rejects are reduced to a minimum can Engineering relax on that particular assignment. Even then the Department must always be on call, at a moment's notice, to give whatever help it can if production falters, for Engineering is part of a production machine—and the final reason for its existence—is to keep that machine running to capacity.

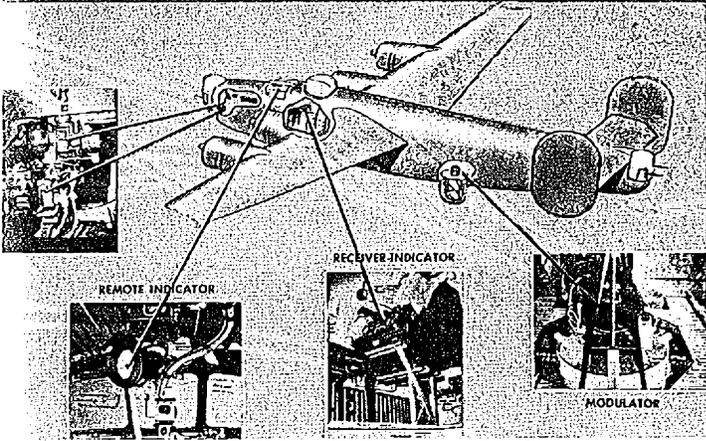
IT STARTS THE WHEELS ROLLING



(Left) The company's chief engineer, Mr. J. H. ...



EXPORTING TO ...



Philco News

"'Radar on Wings' makes public for the first time the salient facts about the Corporation's development and production of airborne radar equipment for the United States Army and Navy," according to John Ballantyne, President of Philco. "Airborne radar represented more than 80 per cent of Philco's war work and involved the exploration and utilization of micro-waves and the ultra-high frequencies, which now hold such great promise for our peacetime future."

"Superforts that carried the atomic bombs, incendiaries and high explosives that crushed Japan without the need of an invasion were

AIRBORNE RADAR SECRETS BARED—

How airborne radar was used in Allied bombers to crush the Luftwaffe and bomb Nazi industry into extinction, to sink U-boats and Japanese shipping, to guide aircraft on transoceanic flights, and to distinguish the planes and ships of the United Nations from those of the enemy is told in detail for the first time in the Philco booklet "Radar on Wings," prepared by Philco.

Over half a million complete radar equipments with a value of more than \$250,000,000 were produced on Philco production lines during the war, according to the Corporation's report on its war work. This was the largest number of radar units manufactured by any company.

guided to their targets and back to their bases in the Marianas by Loran, the most revolutionary navigation device developed since the invention of the first compass," the report states. "This radar system of aerial navigation, which Philco research scientists helped to develop, will make world-wide travel safer and more rapid."

Highlights of the Allied air war against the U-boats show how the major airborne radar equipments were used in sinking several hundred German and Japanese submarines. One system developed in a few months by Philco engineers was "George," first modern micro-wave aircraft radar manufactured in quantity, and first to present a complete map on its picture tube. "George" showed the way to well over 100 kills of Nazi U-boats.

Another anti-submarine radar, the light weight "Dog-One" developed by Philco for torpedo bombers and other carrier aircraft, spotted surfaced U-boats over 30 miles away and convoys at 93 miles, playing a successful rôle both in the Atlantic and Pacific.

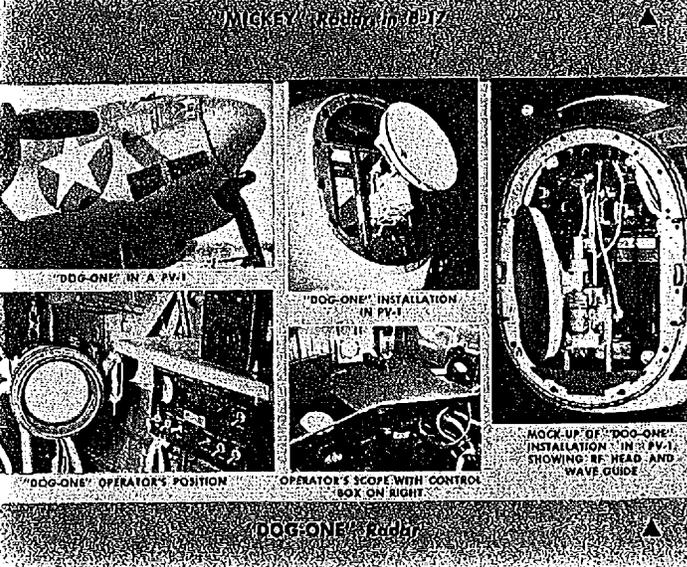
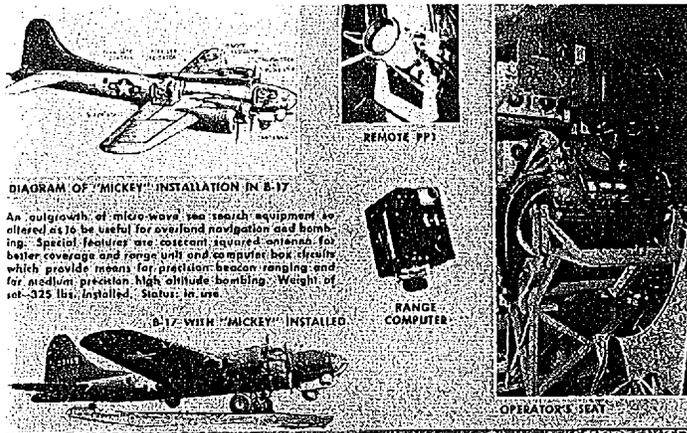
Among all the varied types of radar equipment developed and manufactured by Philco, none was more spectacularly effective than "Mickey," the famous Radar Bombsight. Built solely by Philco, "Mickey" made precision bombing through overcast skies possible for the first time, helping to demolish Axis industries, oil supplies, transportation and other military objectives. This radar was developed and put into combat service in less than five months, even though each complete set weighed 325 pounds, with 11 separate units and about 15,000 parts, including over 80 special tubes.

"Mickey" provided a virtual map of the terrain over which a bomber flies, for a radius of 100 miles or more. Using "Mickey," Army Air Force bombers flattened most of Hitler's aircraft and ball bearing plants in a single month—a blow from which the Luftwaffe never recovered. With "Mickey" radar to guide them, AAF bombers blew up 1,500,000 tons of Axis oil in one mission! In modified form, super-sensitive "Mickey" became the Allies' ultimate radar weapon against the last U-boats equipped with the "Schnorkel."

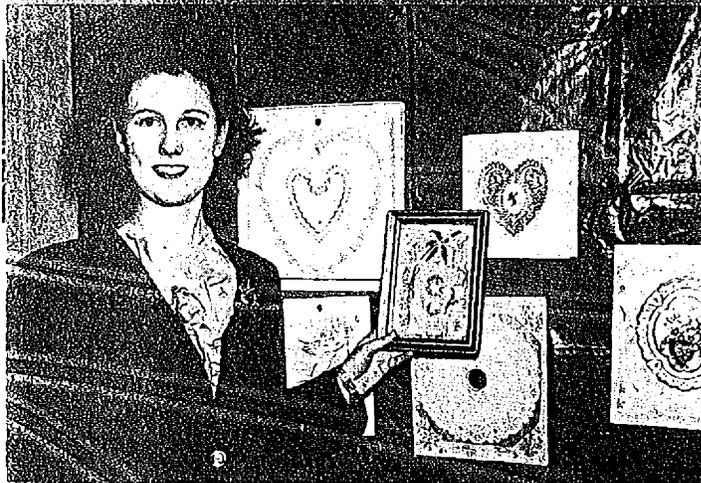
This radar demonstrated such precision in directing the pre-invasion bombing of the Normandy beaches that General Henry H. Arnold, Army Air Forces chief, is reported to have called the Radar Bombsight "the most important piece of airborne equipment used in the invasion of France."

"Many of the notable radar devices developed by Philco engineers during 44 months of World War II will have far-reaching peacetime applications, principally for air and marine travel," Philco reports. "Even more immediately important to the general public will be the refinements and improvements in radio circuits for both AM and FM."

"In television, too, which promises soon to become a nation-wide service, Philco has long been known as a pioneer. Its early experience in television research formed the basis for many Philco achievements in radar. Now the current of ideas is reversed and flows from radar toward developments in television transmission, relaying and design of improved receivers for American homes."



★ HOBBIES ★



A TIMELY HOBBY: A century-old Valentine is displayed by June Rippe, Dept. 10. This is part of an exciting collection of sentimental paraphernalia available for February 15.

★ SAFETY DRAWING ★



DRAWING WINNING NUMBER from the Box Office Drawing will be drawn at the Metal Division, while General Office Drawing will be held at the division location.



LUCKY NUMBER: Odds of winning are 1 in 100,000. Prizes and bonds awarded to winners are subject to the usual conditions of the drawing.

Welcome Home

TO OUR RETURNING SERVICE MEN AND WOMEN

- | | | |
|-----------------------|--------------------|----------------------|
| JOHN MORAN | STEPHEN CURLE | WILLIAM N. ANDRUS |
| WALTER D. KUDLER | JOSEPH H. HLINICKI | JOSEPH M. GIANNINI |
| FRANCIS J. O'BRIEN | PHILIP R. GAUGHENS | WM. P. KEEN, JR. |
| JAMES HANEY | WILLIAM R. BOULDIN | ERNEST L. SNYDER |
| CHARLES LANG | JAMES FOLEY | GEORGE EDWARDS |
| JOSEPH F. SMYTH | ELMER F. POTTS | GEORGE J. KENNEDY |
| JAMES J. PARK, JR. | JOHN M. SULLIVAN | FRANK McSHEA |
| FRANK J. BRANDLE, JR. | ABRAHAM HOLTZ | JOHN C. FRETZ |
| WALTER S. MILLER, JR. | ANNA MAY FOLEY | HORACE N. CARNEY |
| GEORGE HENGERT | JOSEPH BASSO | MAMIE H. LOWDEN |
| ROY J. CUMMINGS | EUGENE McCONVILLE | DOMENIC OWENS |
| ROBERT LUKENS | THOMAS J. BROWN | FRED BEYERS |
| WALTER KOZIEL | WILLIAM JACOBS | FREDERICK L. SHARP |
| ERNEST H. WURSTER | FRED WEBER | MATTHEW MARR, JR. |
| ANDREW PEPPER, JR. | WILLIAM PEARSON | JOSEPH CAGGINAO |
| KENNETH S. MICH | JOHN P. CONNOLLY | JOHN PETERSON |
| FRANCIS X. FRIEL | GEORGE T. MILBY | BENJAMIN MIZZA |
| JOHN F. YAMRICH | THOMAS A. SEDDON | WM. C. LIVINGSTONE |
| GERARD J. JONAS | GEO. R. CLAYPOOLE | JOHN J. O'NEILL |
| ALBERT J. MANN | JAMES W. LANEY | EDWARD WIERCINSKI |
| JOHN IDE | JOSEPH TACCHINO | FRANCIS N. MILLER |
| JOHN R. FINLAYSON | T. M. WONDERLY | ADAM KRAYGER |
| JAMES H. SHERWOOD | GEORGE PERKINS | WILLIAM HOUCK |
| WILLIAM KRAUSS | JOHN J. MATHIAS | WALTER J. FAUNT, JR. |
| ALBERT ZUCCARINI | EDWARD CAMMER | EDNA HAYNES |
| F. M. SANTIAGO | PHILIP PANARELLO | ARNOLD LUTZ |
| GEO. JOHNSTON, JR. | W. I. HOLLENBERG | JOHN J. WOODS |
| PETER KOMPARE | FRANK McDONOUGH | ALBERT REMENTER, JR. |
| F. T. HENDERSON | MILLARD BAEUERLE | ARTHUR ANDREWS |
| ROBERT E. BRETZ | GENERO ROMANO | PASQUALE DeMASI |
| THOMAS H. FORCEY | THOMAS D. WINTERS | FRANCIS P. DECKER |
| WILLIAM STEVENSON | EDWARD CONWELL | GEORGE WILDONGER |
| WM. E. McCAMMITT | ARMIN ALLEN | ALFRED SEYMOUR |
| NEAL DUNLEAVY | PIO V. BARDI | ROBERT G. EHRENFELD |
| JOHN BOYLE | | THOMAS WALSH |
| MORRIS LEMPert | | FRANK BRADLEY |
| HARRY FISHER | | HOWARD AMBRON |
| WILLIAM CAHILL | | WAYNE BRADDOCK |

