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UNITED STATES STRATEGIC AIR FORCES IN EUROPE

AIR INTELLIGENCE SUMMARY No. 33

For Week Ending 25 June, 1944

COPY NO. 14

TO BE SAFEGUARDED CAREFULLY AND NOT TO BE TAKEN INTO THE AIR

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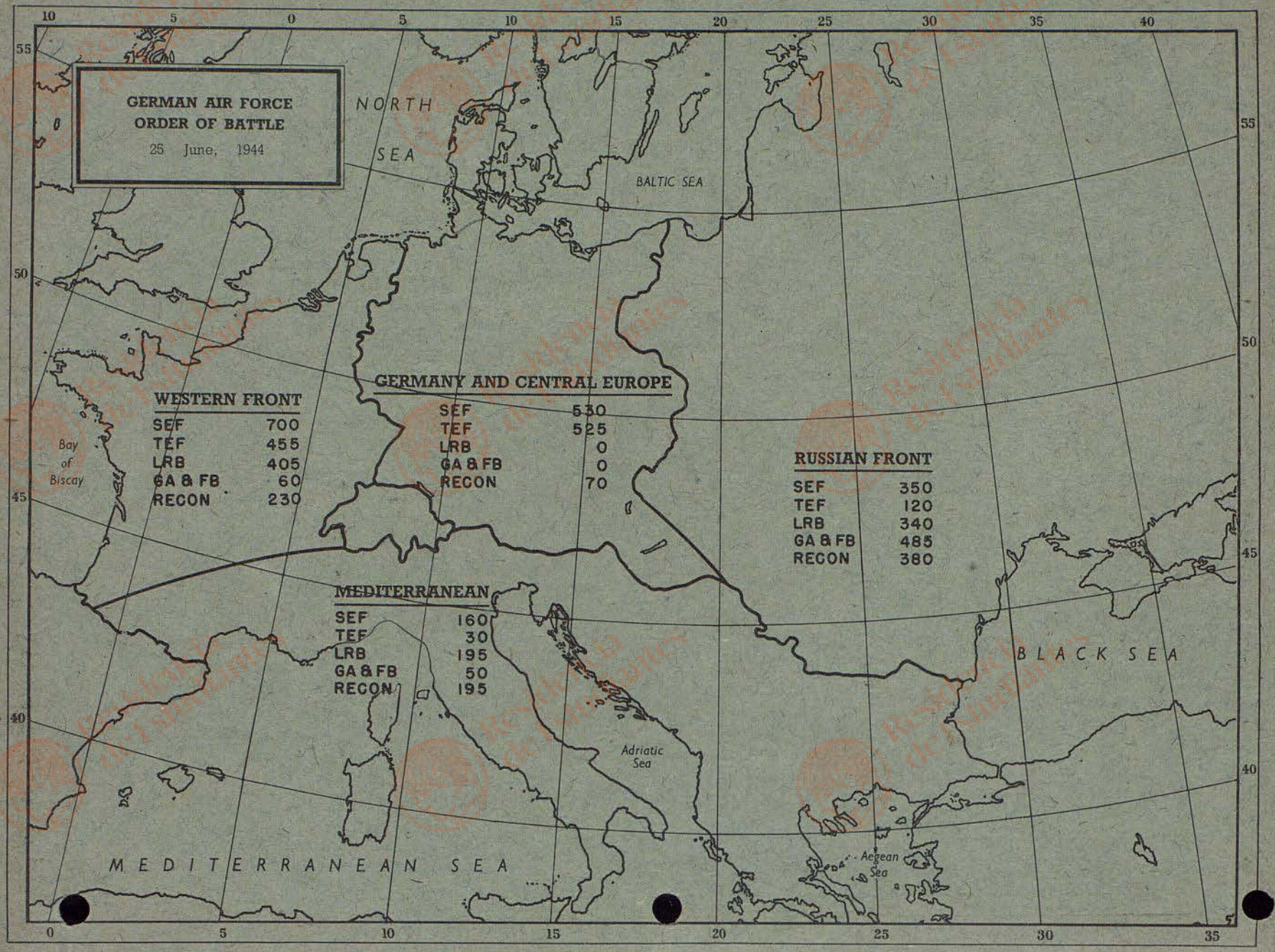
GERMAN AIR FORCE
ORDER OF BATTLE
25 June, 1944
NORTH SEA
BALTIC SEA
BLACK SEA
Bay of Biscay
Adriatic Sea
Aegean Sea
MEDITERRANEAN SEA
WESTERN FRONT
SEF 700
TEF 455
LRB 405
GA & FB 60
RECON 230
GERMANY AND CENTRAL EUROPE
SEF 530
TEF 525
LRB 0
GA & FB 0
RECON 70
RUSSIAN FRONT
SEF 350
TEF 120
LRB 340
GA & FB 485
RECON 380
MEDITERRANEAN
SEF 160
TEF 30
LRB 195
GA & FB 50
RECON 195

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United States Strategic Air Forces in Europe

AIR INTELLIGENCE SUMMARY

No. 33 — Week Ending 25 June, 1944

PUBLISHED 27 JUNE, 1944, BY OFFICE OF THE DIRECTOR OF INTELLIGENCE

GERMAN AIR FORCE ORDER OF BATTLE

Western Front : Single-engine fighter establishment is presently estimated at 700, a decline of 60 (two groups) during the past week. Approximately 20 groups are operational in the Western Front battle area, plus a few additional Staffeln attached to some groups to provide stronger fighting units.

Thus, according to establishment figures, there should be some 650 fighters available for operations in the beachhead area. There appears to be sufficient evidence, however, that these units are below strength and that 60 percent of the figures probably would represent actual strength. This has been confirmed both by prisoners and by sightings. Serviceability of these units, which are driven from one field to another without respite by Allied bombing and strafing, is believed to be gravely affected. Therefore the number of effective fighters available to the GAF in France at any one time probably does not exceed 300 planes. Sorties flown during the past week have averaged about 300 per day, including a high percentage of double sorties, bearing out the above estimate.

Despite the weakened condition in which the GAF finds itself at this juncture, it has reacted vigorously in some instances during the latter part of the week, though never in such a force as to suggest an all-out attempt to gain control of any part of the air. In the face of the overwhelming Allied superiority such procedure would be quick suicide, and the Luftwaffe realizes that fact clearly, and appears to be playing sort of a waiting game while hoping for aircraft reinforcements from a supply system which is at present badly disorganized, but which should soon show some signs of recovery.

Although the order of battle on the Western Front has settled down into some sort of pattern, there are indications that the unhealthy situation among the fighter units is forcing the High Command to bring up more units to this front than it originally cared to commit. There is a late indication of an additional full group being withdrawn from the Eastern Front, and one prisoner of the past week came from the 7th Staffel of II/JG 51, which has been in the Balkans for some time. He reports that the other two Staffeln are still in the Balkans, while his own Staffel left its aircraft there and was re-equipped in Germany with FW-190s. It is now subordinated to II/JG 1, which was operating in the Alençon area at the time of his capture. The policy of stripping one Staffel from groups in the Mediterranean and Balkan areas to strengthen Western Front groups has been confirmed now in several instances, and is but one more indication of the total lack of depth in the strength of the Luftwaffe. Thus it appears that the widespread USSTAF bombings of fighter assembly and component plants in Germany and the occupied countries during the past several months are now bearing fruit on a scale far beyond the mere reduction of the Luftwaffe.

The Germans are feverishly developing satellite fields, usually within a radius of about 10 miles of one principal field which is well equipped for repairs and servicing. One of the developments of this sort is in the Angers area, where some 125 fighters are now based at various fields. Dispersal discipline has apparently not yet been perfectly enforced, for on 24 June Eighth Air Force fighters which strafed an Anger satellite found and destroyed 25 German fighters on the ground.

Other areas in which numbers of fighters are presently based are :

Rennes Area	40
Alençon	45
Le Mans Area	40
Conches-Dreux Area	50
Cormeilles Area	70
Beauvais-Montdidier Area ..	95

In addition, one group of single-engine night fighters is now in Eastern France, unlocated.

Twin-engine fighter strength has decreased by 80, to 455, on the entire front, with ample indications that bombing of night-fighter bases such as Châteaudun, Juvincourt, and Laon is causing as much dislocation among these units as among the single-engine fighters. The twin-engine day-

G A F DISPOSITIONS BY AREAS

(Establishment Strength)

	SEF	TEF	FB	LRB	RECON
Western Front (Excluding Germany)					
WESTERN FRANCE	455	105	—	115	115
EASTERN FRANCE and BELGIUM	195	230	60	250	15
HOLLAND	—	105	—	30	20
DENMARK AND NORWAY	50	15	—	10	80
TOTAL	**700**	**455**	**60**	**405**	**230**
Germany and Central Europe					
N. GERMANY (N. of 49°)	350	340	—	—	60
SOUTH GERMANY, AUSTRIA and W. HUNGARY	180	185	—	—	10
TOTAL	**530**	**525**	—	—	**70**
Mediterranean					
SOUTH FRANCE	—	—	—	175	30
ITALY	120	20	20	20	65
YUGOSLAVIA and ALBANIA	10	—	30	—	25
GREECE, CRETE and DODECANESE	10	10	—	—	75
BULGARIA	20	—	—	—	—
TOTAL	**160**	**30**	**50**	**195**	**195**
Russian Front					
ALL FRONTS	**350**	**120**	**485**	**340**	**380**

fighter group which moved to Leeuwarden last week has now been withdrawn, probably to Germany, where it is needed for the defense of the Reich.

There is little change in overall bomber strength, which is presently estimated at some 405 aircraft. This is the establishment figure, and actual strength and serviceability are at an even lower level than is found among the single-engine fighter units. It is now confirmed that three groups have come up from Italy and are based in Belgium, probably in the Brussels, Chièvres and Le Culot areas, which are the principal well-equipped bomber fields of that region. In Eastern France a concentration of about 100 bombers is to be found in the Juvincourt/Laon Area. In all there are now some 250 bombers based in Eastern France and Belgium.

In Western France, there are now about 115 bombers, as compared with last week's figure of 195. It is believed that attacks by the Eighth Air Force on the bases of these anti-shipping units on the west coast have driven a large number of them south to the Toulouse area, and reduced both their strength and serviceability almost to impotence. These anti-shipping groups of KG 40, plus those of KG 26 and KG 77 which are already based in Southern France, have so far failed almost completely in their avowed mission of disrupting Allied shipping to the beachhead.

Germany and Central Europe : Single-engine fighter strength in Germany has increased considerably during the past week, the present estimate of 230 representing an addition of five groups, consisting both of units which have been withdrawn from operations in the West, after being badly beaten up, and groups which have been brought up from both Italy and Russia. The latter units are probably in Germany for re-equipment before being sent to the West for battle area operations, but since the Germans realize that the United States Air Forces have no intention of giving up strategic bombing in Germany, the problem of protecting vital industrial targets and supporting the army at the same time has now become acute. It is obvious that they are attempting to solve it with the more aggressive use of twin-engine day fighters, covered and supported by small numbers of single-engine fighters which attempt to engage and draw off our fighters while the twins go in for the kill. At no time have large numbers of single-engine fighters been seen in Germany during the past week.

Twin-engine fighter strength in Germany has increased by some 130, and is now estimated at 525, largely as the result of the movement of night fighters back from the Western Front. The principal movement of interest was the withdrawal which has already been mentioned of 30 day fighters from Holland, which are probably based somewhere in the Berlin area. From the large numbers of Me-410s encountered during US attacks of the past week, it would appear that the day-fighter units in North Germany are now completely re-equipped with Me-410s and that those based in South Germany are well on the way to being so re-equipped. The aggressive spirit displayed by these aircraft also indicates a complete about-face from their former tactics of flying fugitive sorties, probably by order of the High Command, which must now regard them as a principal bulwark against daylight attacks. Ju-88s which are believed to be night fighters were also encountered in small numbers, indicating another reversal of policy, for night fighters had not attempted to intercept American bombers for several months previous to the past week. The strength of the twin-engine day-fighter units in Germany is believed to amount to about 235 aircraft, and they are probably well up to establishment after a long period of relative inactivity.

Mediterranean : The one item of interest in the Mediterranean is the increase in bomber strength from 165 to 195. This in reality does not represent an increase at all, because the 175 now based in Southern France are wholly engaged in anti-shipping work over the Western Front battle area, and as things now stand are of no comfort whatsoever to the retreating armies in Italy. Within Italy itself there now remain but about 20 long-range bombers, due to movements to Belgium, and it is unlikely that such a weak force will be retained there for long.

Russian Front : Although the expected large-scale Russian offensive appears to have opened in earnest, there are as yet no indications of any major changes in the disposition of the Luftwaffe in Russia, although there are reasons for believing that one or two fighter groups have been withdrawn and sent to Germany for ultimate transfer to the Western Front.

ENEMY OFFENSIVE ACTIVITY

Western Front Battle Areas : GAF activity during the period under review continued on about the same scale as during the previous week, with an average of about 250-300 daylight fighter sorties increasing to about 400 on two days, and the night offensive effort dropping to as low as 30 sorties on 24/25 June from a high of 185 on 18/19 June.

On the day of the 18th, fighter activity amounted to 250-300 sorties, of which 20-25 were by ground-attack aircraft. The effort was concentrated in the Cherbourg area, but there were few reports of combats. By night, about 180 bombers and torpedo-carrying aircraft operated in two or three phases in the beachhead area, and probably engaged in sea-mining as well. Approximately 20-25 night-fighter sorties were plotted.

Adverse weather on the 19th limited fighter activity to about 25 sorties during the day. By night about 50 bombers were on sea-mining in the beachhead area. Reconnaissances were flown over the battle areas at first and last light.

Fighters were considerably more active on the 20th, some 300-350 sorties being estimated for the day in the area from Britanny to Paris, 30-40 of which were by fighter-bombers. During the night about 50 bombers sea-mined. Fighter activity on the 21st dropped to about 250-300, 25-30 of which represented ground-attack units, the largest part developing towards evening, as weather improved. Some 40 bombers carried out another minelaying operation off the Normandy beachhead by night, but a strong defensive effort was made during darkness, when as many as 125 night-fighters may have been up against Allied aircraft.

The fighter effort on the 22nd was the highest in some time, amounting to about 400 sorties. Of these possibly 30 may have been by ground-attack planes. Patrolling by small formations was carried on throughout the day, especially in the Paris area. No opposition was put up to the strong Allied attacks on Cherbourg. By night, there was minelaying off the beachhead, and 5-10 fighter-bombers, together with torpedo-carrying Ju-88s from South France, operated against shipping off Normandy. A total of about 130 sorties is estimated, in addition to those flown by fighter-bombers.

On the 23rd, the fighter effort dropped to about 300-350 sorties, of which only 15-20 were by fighter-bombers. Those encounted over the battle area showed determination, and many combats were reported, particularly with one large formation which appeared over the beachhead when weather improved towards evening. Darkness brought out another 50 aircraft on minelaying. Up to 10 fighter-bombers also operated, and 50-70 night fighters were up against Allied aircraft.

The fighter effort over France on 24 June increased to the neighborhood of 380-400 sorties, of which not more than 30 were by fighter-bombers. Though up in large numbers, the German aircraft were not aggressive and showed no enthusiasm for combat. By night, the bomber effort was on a very small scale, only about 20 being plotted, probably on minelaying. Not more than 10 fighter-bombers were up, and from 40-60 night-fighters operating against RAF Bomber Command

over Northern France little concentrated opposition was experienced.

Preliminary reports for 25 June estimate some 115 enemy aircraft over the Evreux area, of which a number appeared over the Normandy beachhead. By night, approximately 140 were plotted over Northern France and Holland, and the presence of some of these off the beachhead indicated another mine-laying effort.

United Kingdom : Attack by pilotless aircraft continued throughout the week, but few German aircraft carrying crews were over the country.

Reconnaissance on the 19th was on a slightly higher scale than in the few days preceding. Three recon planes were overland in the Fife area during the night, and several single-engine aircraft patrolled the Straits of Dover, two making brief landfall over Dungeness. On the 20th, in addition to routine reconnaissances, Eastern Scotland was covered, with one plane over Ronaldshay, two over shipping in Moray Firth, and another in the Peterhead area. There was also a recon flight over the Central London area. Probable intruders were also plotted, one of them coming overland.

Reconnaissance on the 21st/22nd was on a reduced scale, probably because of weather. Two Ju-188s covered the southern part of the North Sea, and one the Southwestern Approaches.

Intruder activity was noted again on the 22nd/23rd, with two aircraft plotted off the Suffolk coast. Reconnaissance was flown over the usual sea areas, and one aircraft flew up the Thames Estuary a short distance before turning back. There was less reconnaissance the following night, probably because of weather, but one enemy aircraft which had covered East Anglia was destroyed.

There was slight daylight reconnaissance over the Straits of Dover and Thames Estuary on 24 June, some activity of a similar nature off the Norwegian Coast, and routine weather flights. By night, reconnaissance aircraft were active over the southern part of the North Sea and over the Atlantic west of Brest.

No reports of activity have been received for the 24 hours through 25/26 June.

Pilotless aircraft attacks continued, both by day and night, with a larger proportion of the missiles coming over during hours of darkness. In the period from 0600 hours, 19 June, until 0600, 26 June, a total of 649 pilotless aircraft were dispatched, of which 533 came overland and 279 reached the Greater London area. Of these, 242 were claimed destroyed, the majority by fighters, but a number by AA and balloons as well.

Mediterranean : Activity continued on a small scale, with enemy aircraft appearing either singly or in small numbers at infrequent intervals.

For the period ending at dawn of 18 June, there were four long-range sorties from Italy, including one weather flight over the North Atlantic, and one Ju-88 operated in the morning from South France. Only activity during the next 24-hour period, ending dawn of 19 June, was one Me-410 by morning and three Ju-88s by night. Long range reconnaissance was normal up to dawn 20 June, when there were two Ju-88s in the North Tyrrhenian and one in the Adriatic.

Russian Front : Two attacks were carried out by enemy aircraft on USSTAF Eastern Command bases during the week. On 21 June, a two-hour attack on Poltava Airfield shortly after Eighth Air Force planes had landed caused destruction of 53 B-17s, two C-47s and a P-38 on the ground, and resulted in casualties to US and Soviet personnel. Night of 22nd/23rd an attack was made on Mirgorod Airfield, causing damage to fuel tanks and bomb dumps. No aircraft were affected ; they had flown to another field before nightfall.

GROUND DEFENSES

Changes of Flak Disposition : A large number of changes in heavy flak dispositions were listed in SUMMARY No. 32 (*page* 4), and the significance of some of these was discussed. The probable reasons for changes at other localities :

Italy : Retirement of operational aircraft to bases in Northwest and Northeast Italy is indicated by increased defenses at Aviano, Ghedi and Novara. Priority for the defense of oil refineries at Fiume and Trieste has been respectively decreased and increased. Successful attacks on the Padua railway facilities and the railway bridge at Pontassieve are no doubt responsible for the respective decreases in defenses. The Varzo entrance to the Swiss-Italian railway tunnel has now been fortified, while the movement of bombers from the Villaorba Airfield is indicated by the decrease in defenses there.

Germany : The considerable increase at Stettin is indicative of the desire to prevent further successful attacks on the synthetic oil plant at Politz.

Poland : The sizeable decrease in defenses at Krosno and Stanislavov is an indication that operational aircraft were being moved to bases further to the west in anticipation of the Russian attack which has since begun.

Rumania : All the airfields reported are undoubtedly being heavily used by operational aircraft operating on the Eastern Front.

Yugoslavia : The decrease in guns at Brod is probably due either to an evacuation of operational aircraft as a result of Partisan activity, or to the success of attacks on the Oil Refinery located there.

MORE ON PILOTLESS AIRCRAFT

Two Types of "Robot" Are Now Known To Be Operating in Continuing Attacks

INVESTIGATION of a large number of pilotless aircraft incidents and the examination of one reasonably intact specimen has made it possible to provide a more complete description of this weapon. The following report is from AI2(g), Air Ministry.

It has been established that at least two types of aircraft have been sent over England. One of these, as described in SUMMARY NO. 32 (*page* 9), and illustrated on page 6, has a tapered wing with a span of 16 feet. The other has a wing of parallel chord, with squared tips, and a span of about 17 feet 6 inches. Its nose also differs from that illustrated on the following page, being longer and more pointed. So far it has not been possible to detect any other significant differences between the two types, but the propulsion unit installations may differ in detail.

The Propulsion Unit : The propulsion unit, which is mounted above the fuselage towards the rear, has an overall length of 11 feet 3 inches. It tapers down from a maximum diameter of 1 foot $10\frac{3}{4}$ inches at the forward end to 1 foot 4 inches about half way along its length. The rear portion is parallel. The unit is carried above the fuselage on two supports with shock-absorbing mountings to insulate the control system from vibration.

At the front of the unit there is a rectangular grill opening which is built up from a series of finned die-cast strips. Between each pair of die-castings there is a flat strip built up from two pieces of steel sheet. A series of small spring leaves is disposed along each side of the strip. Each pair of leaves is secured by two hollow rivets which also serve to hold the strips together.

The spring leaves, in their normal positions, bear on the die-cast strips. The latter, in cross section, are curved on the sides and come to a sharp edge at the rear.

Air pressure on the front of the grill, probably combined with a depression at the rear, causes the spring leaves to open and admit a charge of air. The fuel (a low-grade aviation gasoline) is forced by air pressure from the tank in the fuselage to nine jets projecting from the back of the grill. There is evidence that provision has been made to produce a pulsating flow of fuel synchronized with the opening and closing of the spring leaves. Three of the jets have auxiliary air supply pipes whose purpose is not yet known.

The jets, which are disposed in three rows, project into three venturi openings. These openings are formed by two shaped hollow members extending across an open box structure secured to the rear of the grill, and having two sides shaped to complete the upper and lower venturis.

At the top of the unit, some 16 inches to the rear of the grill, is a single spark plug. There is at present no indication as to whether this plug provides for starting only or for firing each charge. In the latter event the spark is presumably synchronized with the pulsations of the unit.

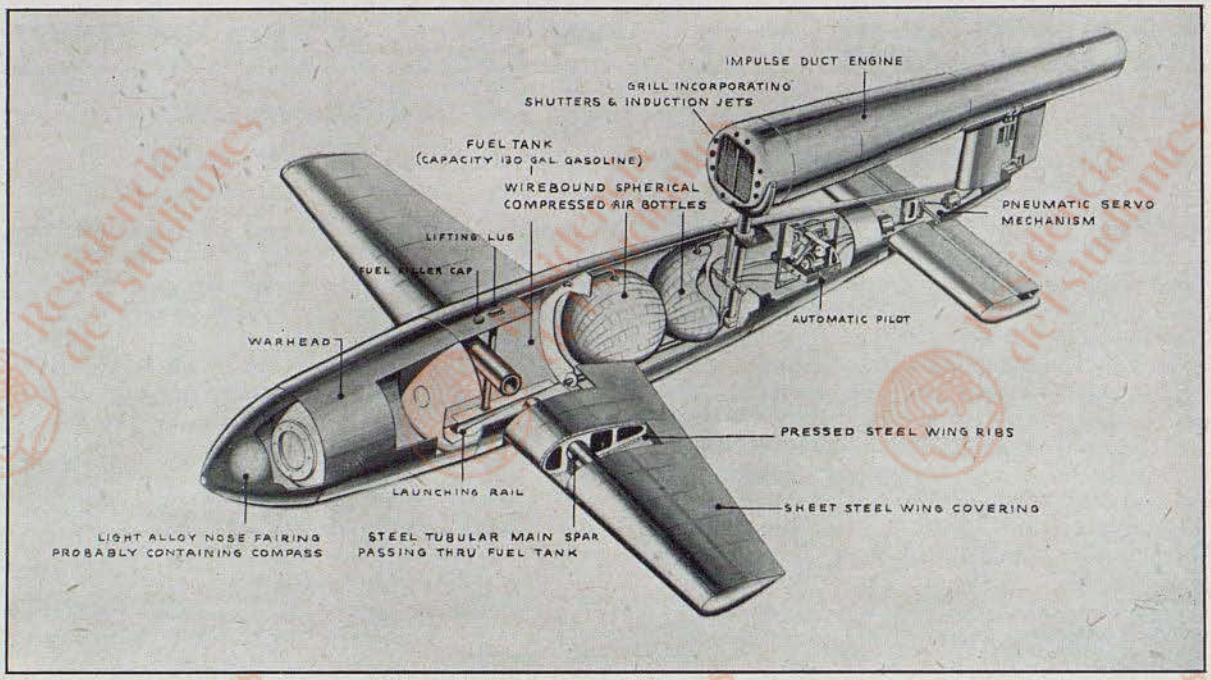
In operation, a charge of air is admitted, the fuel is injected, and combustion takes place. The rise of pressure inside the combustion chamber closes the spring leaves and the exhaust gases are expelled through the open rear end of the tube. As the pressure in the combustion chamber falls the ram pressure again causes the leaves to open, a fresh charge of air is admitted and the cycle is repeated.

Air from the spherical pressure bottles, shown in the drawing, is supplied to the upper part of the fuel tank. The gasoline is thus forced through a pipe leading from the bottom of the tank to the jets in the combustion chamber by way of a control unit incorporating diaphragm-operated valves.

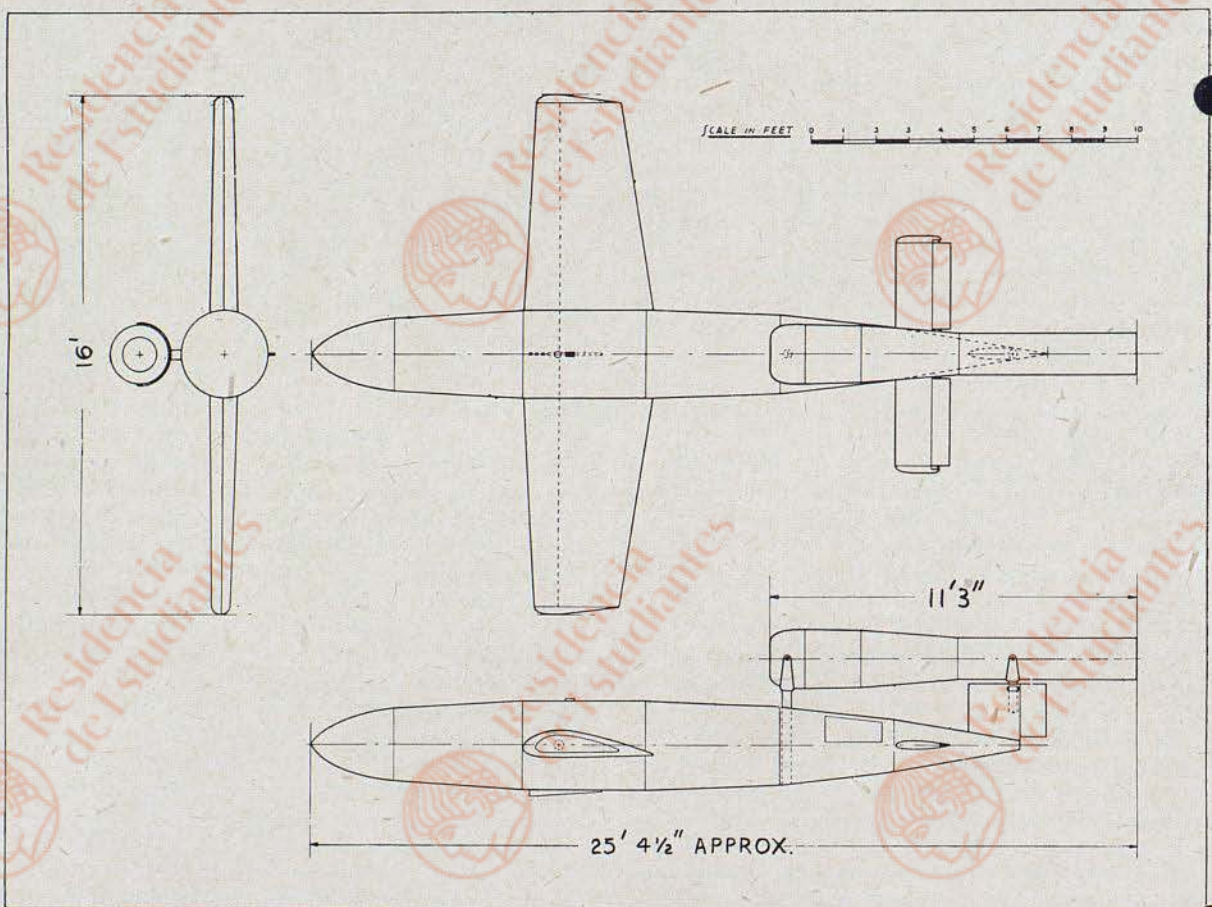
The Mainplane : The mainplane is built round a continuous tubular spar which passes through a sleeve extending across the middle of the pressurized fuel tank. The two wing sections, which are of steel construction throughout, are designed for rapid assembly on the spar. There are no ailerons and the mainplane has no dihedral.

The Fuselage : In the extreme nose of the fuselage there is a compartment for the magnetic compass which is enclosed in a light alloy housing. Next is the warhead, which is described in more detail later in this report. Aft of the warhead is the pressurized fuel tank, followed by the pressure bottle compartment.

The bottles are in the form of spheres enclosed in a rather complicated wire winding built up of superimposed layers. The filling pressure is probably 150 atmospheres and it is believed that the bottles are proof-tested to 225 atmospheres. Aft of the pressure-bottle compartment is a section of the fuselage housing the automatic pilot, the main fuel control unit, and a master time controller. The radio transmitting set, when carried, is housed immediately aft of the automatic pilot compartment. In the extreme tail of the fuselage are the pneumatic servo motors for operating the control surfaces.



THIS SECTIONAL DRAWING SHOWS THE GENERAL ARRANGEMENT OF THE PILOTLESS AIRCRAFT AS FIRST REPORTED



TOP, SIDE AND FRONT PLANS OF THE PILOTLESS AIRCRAFT. DIMENSIONS ARE APPROXIMATE

The Controls : Air is supplied from one of the pressure bottles to the cylinders of the control servo motors. The admission of air to one side or the other of the piston in each unit, and consequently the position of the relevant control surface, is determined by the automatic pilot operating through pneumatic controls. When the pre-set time of flight has expired the elevators are depressed and are then locked in the down position by the release of a spring-loaded lever. This lever is released by two electrically-fired detonators. The release of the spring-loaded lever also frees two small hinged plates beneath the lower surface of the tailplane. One of these plates is larger than the other so that a definite bias is imparted to the aircraft in its terminal dive. The precise object of this arrangement has not been determined, but the plates obviously have some dive-braking effect in addition to diverting the aircraft in its dive.

The tripping of the spring-loaded lever serves, in addition, to isolate the rudder servo motor from the automatic pilot. The rudder is thus presumably locked in position during the dive.

The Warhead: The warhead, bolted to the front of the fuel compartment, is approximately equivalent in size and effect to a German SB 1,000 thin-case bomb, the charge/weight ration being exceptionally high. The type of high explosive employed is also the same as that in the SB 1,000. Two electrical fuses, and possibly one mechanical fuse are employed. The electrical fuses, designated ELAS 106 and ENT 106, are of new and complex design, and are at present under examination. It is clear that they function very sensitively to give detonation on impact. A short nose rod, with pressure-plate operation to make electrical connection on impact, insures minimum penetration and maximum blast effect.

Automatic Pilot and Master Time Control : Control of the pilotless aircraft in flight is solely by an automatic pilot monitored by a magnetic compass housed in the nose. No automatic pilot has been recovered in a working condition and the electrical circuits have yet to be traced. It is possible, however, to describe the general operation.

The unit consists of a master pneumatic gyro with restricted movement and sensitive to azimuth and pitch. The monitoring action from the master compass is not yet clear, as the pick-up from the compass is pneumatic and the processing on the main gyro is electro-magnetic. Detailed study should clarify this point. There are two rate-of-turn gyros, both pneumatic, which counter an inherent lag in the system due to the length of tubing. These secondary gyros have their axes at right-angles to each other and control, via the pneumatic servo-motors, the movement of the elevator and rudder. This control is transmitted to the servos by means of a sensitive diaphragm which actuates a slide valve on the servo motor and directs the main pressure to one side or other of the main pistons.

During the initial acceleration period on the launching ramp the master gyro is caged by means of a lever. This is to prevent any rudder upset which would otherwise certainly occur. On reaching the end of the ramp a small electrical switch on the bottom of the fuselage is tripped, perhaps by some projection on the ramp. This energizes a solenoid, releases the lever, and permits the master gyro to take control.

The main frame on which the main gyro gimbal is mounted is capable of rotation through an arc of about 10 degrees. This rotation is controlled by a barometric capsule, the operating height of which is capable of being pre-set by means of a dial. When the aircraft has climbed to the selected height, the capsule, through a servo-motor, tilts the main mounting frame so that the aircraft continues in level flight. The capsule control is marked in millibars from 100–700 (0–10,000 feet).

A clockwork timing mechanism gives further control over the flight of the pilotless aircraft. The time of flight, and consequently the range, is pre-calculated and set on the clock in minutes and seconds. At the end of the pre-set time the fuel supply is probably cut off and the elevator depressed. At the same time two electric detonators are fired, releasing a spring and locking the elevators in the diving position.

The clock offers a facility for introducing a turn to port or starboard, the turn lasting for 0–60 seconds. The choice of port or starboard turn is controlled by the switch seen on the top of the clock. It is not clear how it is possible to choose the moment of starting the turn. The amount of turn, however, is limited by the restricted azimuth movement of the main gyro to about 10°.

The electrical supply is a 42-cell battery, wired in two parallel banks of 21 cells, and giving an electromotive force of 30 volts.

Further details will be available when circuits of the main distribution box have been traced.

Radio : A certain percentage of the pilotless aircraft are equipped with a radio transmitter. There are two types of radio units, S23a and S23b. Up to the present time no identifiable parts of the S23a have been recovered, except the coding unit which appears to be identical with that in the S23b. Unfortunately, up to the present all the pilotless aircraft carrying radio have detonated and it it is not possible to give a full description of the apparatus. The transmitter is contained in a small plywood-lined, metal box located in the tail of the fuselage just behind the auto-pilot, and is complete with coding unit and battery for supplying current to both coding motor and tube filament.

The tube is a type LS 50 and appears to be wired as a Hartly oscillator. The H.T. is obtained from a separate battery and would appear, from evidence of recent remains, to be about 600 volts.

The aerial is wound on a long paxolin rod and then enclosed in a cylinder of the same material. To the end of the aerial wire is attached a paxolin disc. This catches the air stream and unwinds the aerial without recourse to moving parts. The total length of the aerial is about 450 feet.

The coding unit consists of a small electric motor which, through a reduction gear, drives a paxolin coding wheel. The serrations of the wheel are of Morse characteristic, but for most of the rotation the transmitter is off.

From the fragments it was estimated that frequency would be about 500 kcs. The listening services report that during the night of 19/20 June they picked up three signals on 438 kcs., 450 kcs. and 525 kcs.

The undoubted purpose of these transmitters is to provide plotting and wind data. The presence of the coding mechanism, with the facility for easy change of the coding wheel, suggests that each launching point may have its own code and so be able to follow these aircraft by DF.

Performance : It has not yet been possible to make any reliable estimate of the thrust of the propulsion unit and consequently any assessment of performance must depend on practical observations. There have been well-authenticated reports of true air speeds up to about 400 m.p.h. at 3,000 feet, but level flight speeds at varying altitudes up to that height as reported by pilots and ground observers show considerable variations.

Captured Launching Sites Inspected

SEVERAL launching sites for pilotless planes have been inspected in captured territory in Northern France within the past week. Complete reports are still not available, but preliminary inspection of three modified sites at Mergot, Le Quesnoy and Piquet has shown the following basic installations common to all three :

(1) A square concrete building, which has doors providing an opening of about 20 feet.

(2) A long rectangular slab. A double row of small square holes several feet deep was found in this ; the rows are three to four feet apart, and toward the northern end of the slab the rows become small rectangular holes.

(3) A small sunken concrete building located near the rectangular slab and with an opening facing toward it.

(4) A large, almost square concrete slab marked with a semi-circular groove. From the circumference of this groove a line was drawn to the center of the circle, which appeared oriented in the same direction northward as the rectangular slab (2).

(5) A number of concrete pits, each about five by six feet and six feet deep.

All the installations were connected by a heavy concrete road, which usually followed the line of existing roads and was camouflaged with several inches of dirt along the line of old roads and with sod where wider than the old road.

Likewise, all installations were heavily camouflaged. Concrete slabs, ties and rails were covered by sod. Where hedgerows had to be broken, wooden horses covered with brush were placed in the gaps. Of the larger buildings, one was camouflaged with netting, another with artificial brush, and another with painted windows and doors and a false wooden roof to give the appearance of a farmhouse.

Civilians in the neighborhood were told the sites were artillery emplacements or railway gun emplacements for firing on Cherbourg or England. Just before the Allied landings, the civilians were told construction was complete.

The sites were constructed by the Todt Organization.

Turbo-Jets Add 62 m.p.h. to He-219 Speed

A DESCRIPTION of the auxiliary turbo-jet device installed on the new German He-219 fighter (SUMMARY NO. 26, *page* 9) has been obtained from a German Army prisoner captured in Normandy. Until he was drafted in February of this year, he had worked for seven months as a draftsman in the Heinkel factory at Schwechat.

According to the prisoner the turbine is of the same type used on the He-280, and is mounted below the gun bay, under the fuselage of the plane. Both the turbine and the conventional gasoline engines run on the same type of fuel.

The turbine, he said, was used from time of takeoff, and added about 100 k.p.h. (62 m.p.h.) to the maximum speed of the plane. Though he reported that the mounting for the turbine was discontinued in autumn of 1943, supposedly because of excessive fuel consumption, later information does not bear this out.

REPORTS FROM PRISONERS

A Slight Decline in Morale Has Begun To Show Among Captured GAF Personnel

MORE prisoners from GAF aircrews continue to be captured in the Normandy area as Allied planes and AA knock down enemy aircraft, and interrogation reveals further information on the activities of Luftwaffe units in the current operations.

Crews from all types of units—single- and twin-engine fighters, torpedo- and heavy-bombers—are among those on whom reports have been received, and it is significant that in contrast to those first captured after D-Day (SUMMARY NO. 32, *page* 7), a decline in morale is evident among the latest prisoners. This must be discounted for the present, however, in view of the boost given to German morale in general by the launching of " secret weapon " attacks on England. All of the prisoners reported on below were captured before the beginning of this attack.

Single-Engine Fighters : The pilot of an Me-109G-6 of 7/JG 2 was shot down near Condé sur Seulles, in the beachhead area, while on a strafing mission June 17. With three other planes, he took off from an unidentified airfield about 12 miles southwest of Creil to beat up ground targets in the Bayeux area. While flying at about 150 feet he was shot up by AA ; he pulled up to about 500 feet and bailed out.

The pilot was a freshman, with only 10 missions, and of the 16 pilots of his staffel, ten, like him, had joined a combat unit from a fighter-pilot pool only five weeks before. At the fighter pool—*Ergänsungs Jagdgruppe Ost* (Fighter Pool East) at Leignitz—they had had some operational experience, however, for it was customary when a large-scale USSTAF attack developed to send up as many as half the 100 trainees against it.

When the invasion started, Gruppe III of JG 2, which includes the prisoner's staffel, was resting at Gütersloh. They were immediately equipped with new planes and shipped off to their current base near Creil, where they arrived on 14 June. The gruppe had a total of 40 planes, and 7/JG 2 had 12 of these for its 16 pilots.

The prisoner's morale was described by ADI(K), Air Ministry, as low, but that of the rest of the unit as high because of the fact that they were all new to the game.

Twin-Engine Fighters : In addition to the two prisoners from 2/ZG 1 reported upon in SUMMARY NO. 32, an observer from 7/ZG 1 has since been captured. He has not yet been interrogated, but it is known that the Ju-88 in which he was flying was shot down by AA north of Caen early on the morning of 10 June. The plane is believed to have taken off from Nantes to bomb shipping off the mouth of the River Orne.

I/ZG 1's role in the invasion was as a ground-attack gruppe. Prior to D-Day it operated as a day-fighter organization in the Bay of Biscay, and it appears now that in the past two weeks at least some of the units of the gruppe have been returned to these duties after scoring something less than a triumph in the beachhead. Further interrogation of the first two prisoners captured has shown that six Ju-88s from 2/ZG 1 alone—two-thirds of its establishment strength—were lost on the first two days of the Allied landings, four on June 6, and two others on June 7.

Gruppe II of the geschwader is apparently not yet in France ; one of the previously-captured prisoners locates it on the Russian Front and says that it is still equipped with Me-110s, whereas the other two gruppen are flying Ju-88C-6s. This same prisoner stated that Gruppe III was in South France, alternating between Salon and Cazaux Airfields. However, the destruction of a plane from the Seventh Staffel may indicate it is now operating farther north.

Bombers : Further information on KG 40, prisoners from which had been previously captured, was obtained from a radio operator of an He-177 brought down in the sea off Carentan, 14 June, at 0200. The aircraft had been one of four or five planes of 4/KG 40, each carrying two Hs-293 bombs, which started from Toulouse at 2300 hours on 13 June to bomb shipping off shore, northeast of Carentan. At a height of approximately 10,000 feet the aircraft had been brought down by a night-fighter over the target area and fell into the sea without releasing its bombs. Only the radio operator was rescued.

Holder of the Iron Cross, Class II, and the Bronze Warflights Badge, the captured radio operator stated that the Fourth Staffel, which on 14 June had a strength of 7-8 aircraft and crews, had flown continuously from Toulouse since 6 June, putting up four to five aircraft each night and always carrying Hs-293 bombs. The Fifth and Sixth Staffeln are still reported at Bordeaux/Mérignac. Indications of Allied air superiority were borne out by the prisoner's assertion that his He-177 had made only three complete operations between 6 and 13 June, having to turn back for " minor failures." The prisoner's morale was low, but the morale of the Staffel as a whole, however, continues

high, he reports, due to the youth of the other crews.

Three members of the crew of a Ju-88 of 1/KG 66, hit by AA and brought down in the sea north of Carentan on 11 June at 0400, further substantiated reports of depleting German air strength, due partly to crashes during training and partly as the result of recent Allied daylight raids. Pilot, observer and aerial gunner of crashed aircraft indicated present strength of First Staffel to be five aircraft, that of the Second Staffel four aircraft, and the so-called " E " Staffel is believed to be in a similar plight.

The captured crew members stated they were one of four aircraft, two of which were from the First Staffel and two from the Second, which started from Montdidier shortly after 0200 hours to act as target illuminators for an attack against Allied shipping in the bay northwest of Isigny. They were carrying twelve 50-kg. LC white flares and three 50-kg. HE bombs, and were flying at 8,000 feet when hit by ship AA.

The present crew joined 1/KG 66 at Avord about the middle of March, from 8/KG 2, then based at Gilze-Rijen. At that time all three Staffeln of 1/KG 66 were based at Avord, and remained there until 8/9 June, when they transferred to Montdidier. It was indicated that crews are in more plentiful supply than aircraft, and the First and Second Staffeln have some 8-10 crews each, and the " E " Staffel is thought to have only slightly less.

Activities of the First Staffel have included the use of the " Y " system as a navigational aid. Training in the use of this system was carried out at Avord, and the present crew had used it only twice on operations. The first occasion was against Plymouth about the beginning of May, when the receiver went out soon after the start, and the second attempt was against Portsmouth towards the end of May, when the apparatus was jammed to such an extent that it was useless. On both sorties Rennes was used as the forward base. Morale of these three crew members was considered high, and they were very security conscious.

Indications that the First Staffel of LG 1 started the move of the Gruppe northwards from Italy on 11 June, 1944, to strengthen waning anti-invasion airpower was given by a captured radio operator of a Ju-88 of 1/LG 1 brought down in the Channel, due north of the mouth of Seulles River, 13 June, at 2350 hours, by AA. The aircraft was one of four planes from the First Staffel which started from Melsbroek to bomb landing craft and shipping off the beachhead, each carrying two 500-kg. bombs and ten 50-kg. bombs. The Ju-88 was flying northwards over the beachhead at about 600 feet when hit.

The captured radio operator stated that the First Staffel left their base at Aviano on 11 June; an intermediate landing was made at Munich, and seven aircraft landed later at Melsbroek. The other two Staffeln were to come up later as well. On the night of 12 June, six aircraft of the Staffel started from Melsbroek to attack shipping north of the beachhead. This particular aircraft carried two 500-kg. bombs and ten AB 23 containers, and flying at some 8,000 feet attacked a ship about 20 miles north of the beachhead, which was believed to have been hit.

On returning to base the aircraft failed to find its airfield, and the prisoner believed that he landed at Chièvres Airfield. He stayed an hour at the airfield, which was attacked by intruders, before flying on to Melsbroek before dawn. A veteran of 92 war flights and holder of the Iron Cross, Class I, and Gold War Flights Badge, the prisoner has been in the GAF since February, 1941.

In March, 1943, he was assigned to 6/KG 100, equipped with He-111s at Eleusis, for activity against Greek Partisans. In February and March, 1944, the entire Gruppe moved to Aviano, where this radio operator flew 40 missions, principally against the Anzio beachhead. His morale was not very high.

Torpedo Bombers : An observer from a Ju-88 brought down in the Channel northwest of Le Havre, 13 June, en route from Istres, on the Mediterranean coast of France, for unarmed reconnaissance of the beachhead, gave the first information on the role of torpedo aircraft since D-Day. Lone survivor of the Ju-88, which took a direct hit in the port engine from a nightfighter at about 1,000 feet, and having spent seven hours in the water after bailing out, the captured observer talked comparatively freely, indicating that the Sixth Staffel would probably be used as a Pathfinder unit, presumably in connection with the torpedo attacks by the rest of KG 77, Gruppen I and II of which are now equipped to carry torpedoes. 6/KG 77, with ten aircraft and crews, arrived at Istres only a few days before this operation from Gross Schiemanen, East Prussia, where the other two Staffeln of the Gruppe II remained.

It was the prisoner's second warflight, the first having been a reconnaissance of the Western Mediterranean undertaken from Istres. He joined the GAF in November, 1940, at Wurzen. About 18 months ago, while with IV/KG 77 at Montpellier, he was in a crash, and after a session in the hospital joined II/KG 77 at Gross Schiemanen six months ago. The most interesting feature of his report is that his unit is operating from a South France base against targets in Northern France.

Indications that 9/KG 77 had recently been at Lyon/Bron were obtained from a pilot and aerial gunner of a Ju-88 brought down in the Channel between England and the beachheads at 0030 hours on 15 June, presumably by fire from an AA ship. The crashed plane was among 10-12

aircraft of III/KG 77, each carrying two torpedoes, en route to attack cross-Channel shipping, and was flying at approximately 200 feet when hit.

Until the invasion III/KG 77 was based in Southern France and the Staffeln were dispersed on different airfields, although the place from which this operation originated could not be definitely ascertained. On 20 April, these two survivors were in a crew that had taken part in an attack on a Mediterranean convoy and had claimed a hit on a 7,000-ton vessel. Their aircraft was shot down and the same two men, the only ones saved, were later picked up and landed in Majorca from where they were repatriated to France.

The gunner joined KG/77 last August at Wormditt in East Prussia, where preliminary low-flying practice was carried out before torpedo training proper. The crew of the plane had flown four missions since the opening of the invasion, and two before. Both prisoners were reported to be very security conscious.

German Airborne Torpedoes

TORPEDO-carrying aircraft have been used consistently, if unsuccessfully, by the GAF since the Allied landings in France (and equally consistently and unsuccessfully in the past in the Mediterranean). For this reason, a brief summary by MAAF Intelligence of the types of torpedoes employed is of current interest.

Two standard types are in use, the F5B and the F5W. These appear to be used indiscriminately, according to the supplies available.

Both torpedoes are driven by hot gas motors, both are approximately 16 feet in length and require a minimum depth of water of 50-60 feet in which to be released.

In each case also the gyro starts to run up immediately the torpedo leaves the aircraft and the engine is started by the pressure of water pushing back a flap as the torpedo enters the water.

The torpedoes are usually set for a depth of approximately 11 feet 6 inches and released from a height of about 150 feet. Typical speeds at moment of release laid down for Ju-88 and He-111 are 187 m.p.h. and 177 m.p.h. respectively.

F5B (German): This torpedo weighs 1,650 pounds, with an explosive charge of 550 pounds, and has a range of about 3,300 yards at 33 knots. It normally becomes armed after travelling 220-230 yards through the water, though this time can be reduced by previous adjustment on the ground.

The air rudder fitted to this torpedo carries away when the torpedo enters the water but remains just long enough to prevent the torpedo rolling while the engines start up and gather speed.

F5W (Italian): This is the Italian Fiume "Whitehead" torpedo. It weighs 1,980 pounds but has an explosive charge of only 430 pounds. It has a speed of 36 knots and a slightly greater range than the F5B.

The air rudder of the F5W, which is very light, being made partly of cork, is much more complicated than that of the F5B, and incorporates a form of aileron controlled by the gyro.

This air rudder also carries away upon entering the water, carrying with it the shaft controlling the ailerons. Unlike the German F5B, the F5W has no stabilizing fins on the torpedo itself. This torpedo is dropped from heights up to 328 feet.

Taking everything into consideration, the F5W is, nevertheless, considered to be the better torpedo of the two. Apart from its slightly greater speed and range, it is highly sensitive, much more so than the F5B, and even glancing blows will cause detonation. The F5W can also be dropped from a greater height.

LT 350 Circling Torpedo: This torpedo, which is of Italian make, but frequently employed by the Germans as well, is cigar-shaped, dark green in color, and has a brass or aluminum propeller in the stern. It is approximately 8 feet long, 19½ inches in diameter, and weighs about 840 pounds. It is dropped into the water from a height reported to be from 6,500 to 13,000 feet on a parachute (similar to that on a German magnetic mine) secured to the tail of the torpedo. The parachute attachment dissolves after being in salt water for approximately half-a-minute, and the parachute sinks.

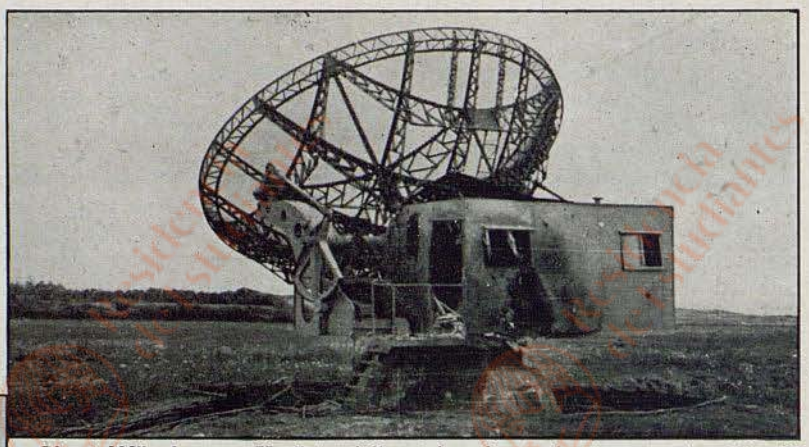
The torpedo is driven by an electric motor run off batteries providing 250 volts at 14 amperes, which drives the torpedo at a speed of six knots at commencement of run, dropping to one knot over a period of about half an hour.

There is no gyroscopic directional control, but a device operated by the motor puts on port rudder at intervals, during which time the torpedo describes a series of circles of approximately 50-80 yards diameter. When the rudders are freed the torpedo pursues an erratic course for a few hundred yards before the device operates again and makes the torpedo circle. This device incorporates provision for decreasing amount of rudder each time it operates, which has the effect of increasing the diameter of the circles progressively. Reports state that the torpedo traverses an area 4,920 feet square.

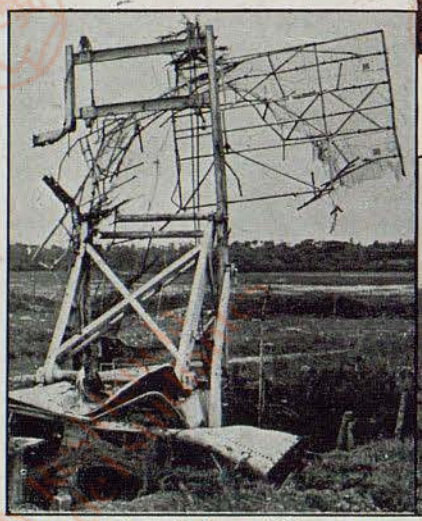
The torpedo contains a self-destroying device which functions upon the stoppage of the motor, although recent reports suggest that the latest type is not self-destroying but assumes the function of a mine upon cessation of travel.

GERMAN RADAR SITE WRECKED

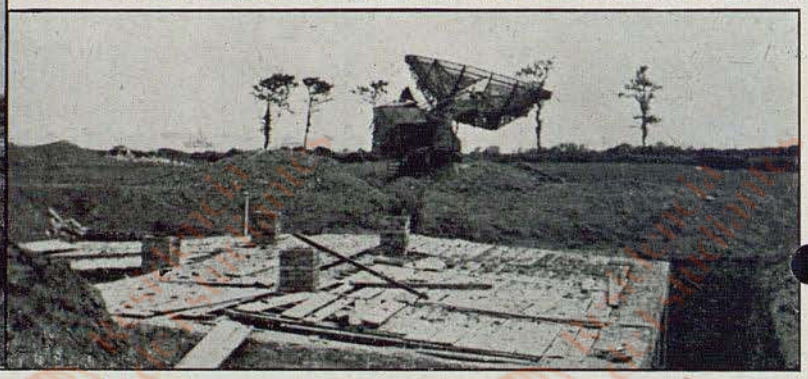
THESE photographs show what pre-D-Day attack by Allied aircraft on a German radar site a mile west of Pointe et Raz de la Percée, in the Isigny area of Northern France, did to the equipment and installations there. The site comprised two Giant Würzburgs, a pole-type Freya and a Gema Coast Watcher ; it was attacked three times, with weapons ranging from machine guns to bombs, and was completely unserviceable by dawn of D-Day.



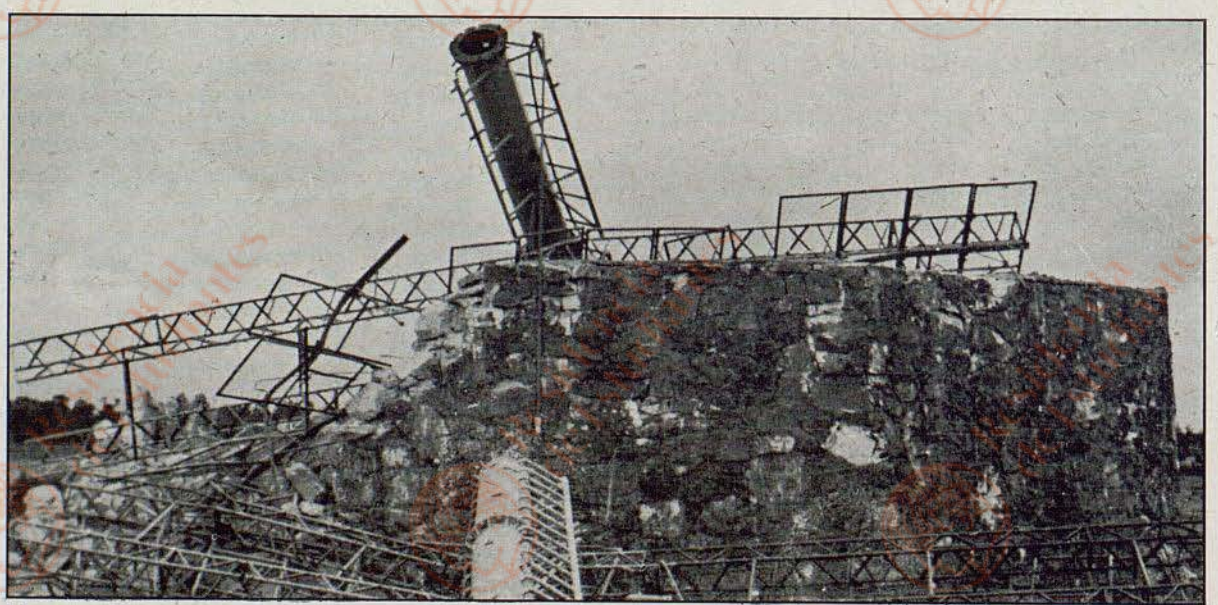
Giant Würzburg : Used to follow aircraft at short range (roughly 50 miles), this equipment may be used for vectoring friendly night-fighters as well as detecting hostile aircraft. The 25-foot bowl-shaped aerial, together with the control cabin, was one of two such installations on this site.



Coastwatcher Radar : This small set was used to detect approaching surface vessels. It was completely destroyed.



Control Room or plotting room operating in conjunction with Giant Würzburg was apparently incomplete at time of capture. Concrete had been cast, but it had not yet been covered over. Note the torn aerial.



Freya : This badly wrecked installation nevertheless gives a good idea of the enemy's most generally-used long-range radar. Originally the large pole rose to a height of about 50 feet, with the aerial array on it measuring about 20 by 25 feet. The first of three rocket-projectile attacks by RAF aircraft put it completely out of business.

ENEMY VIEWS OF AIR ATTACK

Radar and Coastal Battery Personnel Describe the Damage We Inflicted

INFORMATION regarding the effectiveness of Allied air attacks on enemy radar stations and the relative success of weapons employed against these installations has been obtained from interrogation of German naval and GAF personnel who were attached to two sites in Northern France during the two-week period before D-Day. Two of them were stationed respectively at Arromanches and Pointe et Raz de la Percée, while the third was attached to a mobile repair unit. During this period, both stations were attacked three times, and prisoners testified to the excellent results. This testimony has been substantiated by inspection of the site at Pointe et Raz de la Percée, and photographs on opposite page show the present condition of its Giant Würzburg, Freya and Gema Coast Watcher.

All three prisoners were of the opinion that the most damaging form of attack was machine-gun fire, which caused extensive damage to vulnerable small parts of the installations, severed cables and did other damage which, in one case, required two weeks to repair. Bombs and rocket projectiles, according to the prisoners, were less effective in most cases; bombs which had fallen quite close to radar instruments caused little damage, and rocket projectiles merely drilled a neat little hole which was comparatively easy to repair.

The radar station at Pointe et Raz de la Percée was situated a short distance from the cliff edge, and comprised two Giant Würzburgs and one pole-type Freya, defended by three 20-mm. flak positions. Photographs show the results of three attacks on the station, in which the Freya was destroyed by rocket projectiles and both Würzburgs were hit by machine-gun fire. Bomb-bursts on the telephone exchange and an emergency radio station temporarily isolated the site and more bombs and MG fire wrecked the barracks.

According to the prisoners, the Freya was written off as a dead loss after the first attack, and no attempt was made to repair or replace it. Similarly, no real effort was made to repair the Würzburgs, although technical personnel did some work inside the cabins. Operators were withdrawn after the first attack, and sent to reinforce the troops responsible for manning local ground defense positions. On invasion day, the prisoner was still on the site, and stated that while no attempt was made to blow up the Würzburgs, they had sustained still further damage by shell fire, and were believed to be of little value.

The site at Arromanches was also situated on a cliff edge, and consisted of a Coast Watcher and a Giant Würzburg, defended by three 20-mm. flak positions. The Arromanches station was subjected to three attacks, the first two being so effective that the prisoner has no recollection of the third, as by this time most of the personnel were in a dugout some 40 feet underground. During the first two attacks, machine-gun fire damaged the Giant Würzburg and the Coastwatcher, and several of the crew were wounded. Rocket projectiles struck points all around the site, penetrating a concrete roof two and a third feet thick under 12 feet of soil, but the prisoner states that the projectiles made only a small neat hole in the material they struck, and that they apparently did not explode until they hit the ground.

The third attack was not as successful as the first two, and the prisoner recalls only that bombs were dropped and the place machine-gunned. Both the Coast Watcher and the Würzburg had been put out of action by the first raid, and repair work was begun immediately. While the replacement of broken instruments was not a serious problem, the severed cables were a headache; the crews achieved some sort of a "tie-up," assisted by specialists from Boulogne, but the Würzburg would not work, and it was not until two hours before the invasion that they succeeded in repairing it.

Breaks in the reflector of the Coast Watcher had to be welded, and this job took three days, as special equipment was required. Although replacement instruments were obtained, cables could not be gotten, and the Coast Watcher was still unserviceable when the invasion started.

SUCCESS of air attacks on enemy coastal batteries, which played an important part in the D-Day landings on the Normandy beaches, has been testified to by inspection of captured sites. But a new angle has been provided as well in a captured document—a German battery commander's official report on the bombing of his position by RAF Bomber Command, night of 28/29 May.

The battery was at St. Martin de Varreville, attacked by 64 Lancasters and four Mosquitoes after three PFF Mosquitoes had marked the target. RAF reports had described the bombing as "concentrated," and mentioned "a large explosion, followed by black smoke."

The captured document is couched in strict military terminology, but the implications of the scene during the attack are of utter chaos.

The warning was given none too soon, it appears, and the guards had scarcely time to get to shelters before the first bombs fell. The noise was described as "intense," and parachute flares were dropped in great numbers.

Several direct hits with very heavy bombs were made, the commander reported, and said that the position was left "covered with craters." The ammunition store caught fire, and after the attack was over, about 900 rounds exploded together. This was presumably the explosion reported by the attacking crews. The equipment hut was demolished. Communications trenches had direct hits; shelters, food stores, and mess hall were all destroyed or heavily damaged.

Stables belonging to the battery were damaged, and the horses were hurt or sent running wildly away. One shelter was reduced to such a pile of rubble that the two men who were killed in it could not be dug out for nearly two days.

Of the complement of 37 men present, five were killed or missing, six injured, only one seriously. The commander winds up his unpleasant duty by reporting that a full list of equipment destroyed will follow later.

In an endorsement, the Coast Artillery Battalion Commander recommends the complete re-location of this battery, on the ground that the alternate gun-site, though undamaged and apparently unobserved by the Allies because of its camouflage, lies too close to the main site to escape detection on a subsequent attack, which he evidently expected.

The Enemy's Ground-Observer Organization

NOT only radar stations (*see page* 13) but ground-observer posts as well are used by the Germans in plotting our aircraft over enemy territory. Last week the Allied advance into Normandy brought into our hands several prisoners from one of these posts, and they have provided a fairly comprehensive picture of the organization and operations of the *Fluko* (*Flugwachkommando* = observer corps) system.

These prisoners were under Fluko Caen, which was considered a model of the newest type of reporting center, and whose methods are said to have been adopted by many other such centers in France and Germany.

Fluko Organization : All information covering the movements of aircraft, whether friendly or enemy, are reported to and plotted by the Fluko reporting centers placed throughout Germany and France. The prisoners knew of such centers at Vesoul, Strasbourg, Brussels, Paris, Lille, Troyes, Rheims, Amiens, Rouen, Rennes, Angers, Gap (Savoy) and Bordeaux, as well as some in Germany at Stuttgart, Augsburg, Munich, Vienna, Prague, Pilsen and Brno.

The Fluko organization in the Caen area consisted of 64 observer posts, placed at intervals of from 6 to 15 km. along the coast, which were responsible for passing reports of aircraft sightings to the main *Flugmelde Zentrale* (plotting center) at Caen. Of these posts, some were manned throughout the 24 hours, others only by day.

Reports of aircraft spottings were passed to the plotting center on the civil telephone network and were collated with other reports from the radar stations in the area and passed on to the fighter, flak and Civil Defense organizations.

The two day posts in the section of the reporting chain given above were attached to the Wassermann radar station at Douvres, to which they made direct reports, as well as to the *Flugmelde Zentrale* at Caen.

Fluko Post : The posts which kept a 24-hour watch were manned by five or six men under the command of a corporal, and the day posts usually consisted of no more than four men under the command of a pfc.

Post No. 60, at St. Aubin, of which the prisoners were members, was sited in a villa and observation was carried out from the roof; some of the other posts merely consisted of a shoulder-high trench.

Both day and night posts were equipped with the Zeiss Flak Fernrohr (telescope), a pair of field-glasses and a telephone—and in the case of night posts, also visual signalling equipment. Aircraft observations were telephoned to the plotting room in terms of sectors on a circular plate known as the Melderose, which was marked like a clock so that the direction of approach of aircraft could be uniformly reported and plotted.

The number of aircraft, their height and direction of flight were reported as very low when they were between 50 and 100 meters (328 feet); low, between 150 and 1,500 meters (5,000 feet); medium, between 1,500 and 3,000 meters (10,000 feet); and high, between 3,000 and 5,000 meters (16,500 feet).

During daylight the posts were only required to report to the *Flugmelde Zentrale* when identification of aircraft had been established; thereafter any changes in altitude or direction of flight would be reported. In cases of fighter activity in the immediate area, it was the practice for the posts to give a running account of proceedings.

At night, the only reports made were to the effect that the sound of aircraft could be heard from a given direction.

Plotting and Report Center : The duties of the main plotting center (*Flugmelde Zentrale*) con

sisted in collating reports on the movements of enemy aircraft from the long and short range radar stations, Fluko observation posts and other Fluko plotting centers, as well as reports from GAF airfields on intended operations by their own aircraft. It was also usual for the civil defense spotting service to report their sightings to this center.

After collation and plotting, the movements of enemy aircraft were passed on to the Flak, other Fluko centers and, as far as Fluko Caen was concerned, to Jafü 5, the fighter area control; additionally the civil and railway ARP services had their representatives at the plotting-center who passed information to their own services and made decisions as to the sounding of civilian air raid warnings.

Another duty of the plotting center was to pass warnings of hostile aircraft to airfields in the area for which it was responsible.

Outgoing reports were made in the form of a running commentary on situations as they developed, the German fighter grid being employed as a pin-point reference.

Plotting Room : The Fluko plotting center, of which the one at Caen was a typical example, is divided into two parts, one of which, the *Leitstelle*, is responsible for reception of information and the other, the *Weitergabestelle*, for its dissemination.

The plotting room provides space for telephonists to receive reports from other Fluko centers. It is equipped with a plotting table, a starter table, a map for plotting movements of German aircraft, and another map on a transparent glass screen which can be seen by the operators in the distribution room.

The plotting table consists of a map, overprinted with the German fighter grid, of the area covered by the plotting center. Placed round the table is a series of red lights, each of which represents a Fluko post or radar station ; when one of these posts telephones a plot, the corresponding point lights up so that the plotter can see at a glance the source of the report and can make his plots accordingly. There are normally about five plotters on duty, although in cases of heavy activity this number may be increased.

Plots are marked on the table by means of colored pencils, conventional signs being used to indicate various types of aircraft and their course and height.

Reports from neighboring Fluko plotting centers are simultaneously received and these take the form of a running commentary of the situation rather than plots of positions.

At the starter table, advance reports of aircraft about to operate from neighboring airfields are collated and plotted on a separate map, so that the plotters at the main table can be assisted in identifying enemy from friendly tracks.

The *Weitergabestelle* is separated from the plotting room by a transparent glass panel on which is a reproduction of the map on the plotting table. Any plots which are considered worthy of further dissemination are marked on this map with chinagraph pencils and can be read by the personnel of the distribution room.

The plotting room is in theory controlled by an officer, but in practice is usually under a sergeant, and only on his instructions may tracks which have been plotted on the table be transferred to the transparent glass wall map.

Distribution Room : The distribution room (*Weitergabestelle*) is normally under the control of a corporal, who is responsible for passing the plots appearing on the glass screen to the active and passive defenses. Representatives of the civil and railway ARP organization are present in the room and they decide as to whether or not an air-raid warning shall be given. The prisoners were uncertain as to how the distribution room passed the information on to the various bodies concerned, but stated that radio channels were available and that telephone messages were passed on the French telephone network through the exchange in Caen.

Projected Improvements : According to the prisoner, it had been intended to reduce the area for which the Fluko plotting center was responsible, since under the present system of operation there was a serious time lag in reporting from the large number of observer posts, radar stations and other sources. It had been planned to split up the Fluko headquarters at Caen into several small plotting centers located at radar sites in the area.

Prisoners Describe a German DF Station

DESCRIPTION of the operation of a German DF safety-service station in Northern France has been secured from some of its personnel who were made prisoners when the station itself, at Coulombs, near Bayeux, was captured on 7 June.

This station, known as a *Peildorf*, was one of several in Northern and Northwestern France under control of *Flugsicherung Zentrale Frankreich* (Central Safety Service, France), near Paris. Its personnel, numbering between 50 and 60, were supplied chiefly by the 12th Company of the 3rd *Luftnachrichten* (Signals) Regiment, which had its headquarters at Marly, near Paris.

The *Pieldorf* consisted of seven separate small stations, five of which operated on long and medium wave, and two on short wave. Equipment of each station consisted of two EP 2a and EP 3a receivers. A telephone tie-line passing through

the French telephone network connected the site with the *Flugsicherungs Zentrale*. The station worked on a 24-hour basis.

The *Peildorf* had a station code name as well as operational call signs. When it heard a German plane asking for a fix, the *Peildorf* noted the time and obtained a bearing, which was passed by telephone to the Central station. A small wireless transmitter was provided in case of breakdown on land lines, but it had never been used and was actually out of order.

The station was occasionally asked by Paris to pass bearings direct to the similar Central Station in Holland.

Its principal job was to obtain bearings on planes over the Channel and Bay of Biscay areas, but occasionally fixes were obtained on aircraft over Sicily and Ireland.

The prisoners reported that the station had been jammed ever since last summer, but that this consisted of a continuous note which gave no trouble to an experienced operator.

Balloon Barrages in France

IN THE past few months there has been a gradual decrease (possibly only temporary) in the numbers of balloons in the barrages on the west coast of France ; in addition Nantes/Lion D'Or transformer and switching station, and Rouen/Grand Quevilly power station have been recently photographed and show a decrease in balloons. They were absent on the last cover of Bordeaux/Pessac. This is the first time that a transformer and switching station protected by a balloon barrage has been seen without its balloons.

The decrease at Rouen has been gradual and suggests that a scarcity of balloons has not been confined to the west coast of France. There have been reports from sources other than photographic of the removal of the barrage at Paris/Bellevue and rearrangements of other Paris barrages, but no confirmation has so far been possible from photographs. Only two balloons, however, were seen at Paris/Gennevillers power station on 10 May, where four had formerly been reported.

The position of a number of barrages in France where comparison is possible can be summarized as follows :

Location	*Present Status*	*Former Status*
Donges	Discontinued ..	12 originally present
Bordeaux/Bassens N.	Probably discontinued	18 originally present
Bordeaux/Pessac ..	Balloons absent ..	6 originally present
Brest	12 balloons now present on nearly full cover	23 present on 12-4-44
Bordeaux/Pens ..	13 balloons now present	30 present on 29-3-44
Lézardrieux ..	9 balloons now present	11 present on 25-4-44
Lorient	16 balloons now present	22 present on 22-2-44
Nantes/Lion D'Or..	6 balloons now present	12 present on 9-4-44
Rouen/Grand Quévilly	6 balloons now present	11 present on 21-2-44
St. Nazaire.. ..	11 balloons now present	20 present on 26-2-44

La Pallice shows little change, but only 9 balloons are present and further reduction would be difficult without greatly weakening the defense of the U-boat pens.

In the eleven barrages listed above the number of balloons has been gradually reduced since the latter part of February from approximately 174 to approximately 72.

It is interesting to note that the construction of lattice masts for the possible protection of the U-boat pens from low-level attack (SUMMARY No. 30, *page* 24) at Bordeaux, St. Nazaire and La Pallice began during February at approximately the same time the number of balloons began to fall.

How to Get a Laugh in the " Happy Geschwader "

THOUGH they belonged to an outfit known as the " Happy Geschwader " (*KG Lustig*), the crew of a Ju-88 of 5/KG 76 shot down over Cassino on 17 May were a pretty glum bunch. Their morale was low not only because losses in their unit had been heavy, but because, according to their own story, their Staffel was being run by a clique of officers who were more interested in collecting medals for themselves than in getting recognition for the combat crews.

In fact, the only time the prisoners betrayed any of the happiness which is alleged to permeate their Geschwader was in describing the sad fate of an administrative officer, evidently a member of the unpopular commanding clique, who went on a single operational mission to win himself an Iron Cross, Class I.

This character flew as gunner, and unfortunately the plane was forced to ditch. Everyone else got out, but the Admin man had such a large waistline that he couldn't make it through the emergency hatch.

The prisoners brightened perceptibly every time they thought about him.

RESULTS OF ALLIED ATTACKS

OIL INDUSTRY

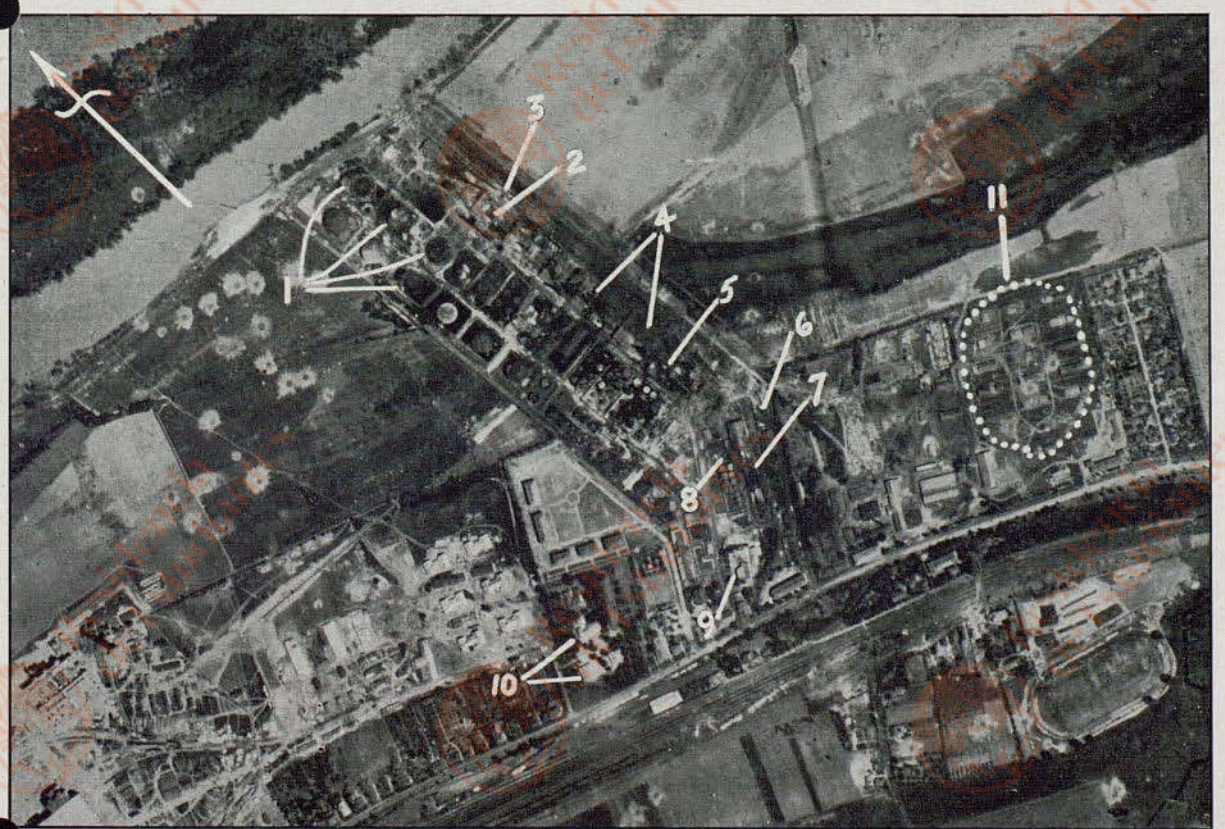
Sisak/Caprag : This Yugoslavian refinery was well covered with hits and damage was widespread when 73 B-24s of the Fifteenth Air Force dropped their bombs on 14 June. A total of 19 tanks and a number of buildings were completely destroyed ; other buildings were damaged. Smoke rising from the destroyed tanks three days after the attack prevents full assessment of damage, but it can be seen that the boiler house was hit, and several storage sheds close to the railroad siding were destroyed. There was considerable derailment of rolling stock, and the main line serving the plant was cut in one place.

Almasfuzito : Refinery installations in this Hungarian oil center suffered heavy damage when 39 Fifteenth Air Force Wellingtons and 9 B-24s bombed by night on 12/13 June. At least one-third of the boiler house and power station were destroyed by direct hits, and were still smoking two days after the attack. Two small and three large oil storage tanks were burned out, and near hits or fire have caused considerable damage to two others nearby. The distillation plant was severely damaged by direct hits, and two large storage sheds in the lubricating plants were gutted. Many bombs fell on the south portion of the refinery loading sidings, and numerous cars were derailed or damaged. Several small sheds, including a group of barracks type buildings were damaged, and a shed in the adjacent aluminum plant was partially destroyed.

Details are annoted in the photo on this page as follows :

1. Oil storage tanks : three destroyed, another severely damaged.
2. Oil pumping house and sheds : destroyed.
3. Tank cars : damaged or derailed.
4. Lubricating Oil Plant : end of building damaged.
5. Boiler House and Power Station : partially destroyed.
6. Large storage shed : destroyed by fire.
7. Lubricating Oil Plant : large building gutted.
8. Storage tank : destroyed.
9. Large unidentified shed : partially wrecked.
10. Probable administration buildings : large sections destroyed.
11. Barracks type buildings : one completely destroyed, three partly wrecked, another severely damaged.

Osijek : Good quality photographs show a heavy concentration of hits on this refinery, attacked by



IFTEENTH AIR FORCE ATTACK HAS PRODUCED WIDESPREAD DAMAGE AT REFINERY AT ALMASFUZITO, HUNGARY

78 Liberators of the Fifteenth Air Force on 14 June. All parts of the refinery were heavily damaged or destroyed, including stabilization plants, distillation units, boiler house, tanks and administration buildings. There was also some damage to business and residential property in the town.

Petfurdo : Nearly every installation at this Hungarian refinery was severely damaged by 142 Liberators of the Fifteenth Air Force during the 14 June attack. Several of the smaller buildings were destroyed, and others partially wrecked by fire and direct hits, and the railroad sidings servicing the plant sustained many direct hits, derailing or damaging much rolling stock.

Szony : Crude storage tanks were burning furiously and the remainder of the storage tanks were obscured by smoke several hours after 85 B-24s of the Fifteenth Air Force attacked this Hungarian oil refinery on 14 June. PRU coverage shows hits in the area of the distillation plant, but incomplete coverage and smoke over the target prevent detailed assessment of damage to the distillation plant and other installations.

Brod : Fifteenth Air Force Wellingtons and Liberators carried out a night attack on the Standard-Vacuum oil refinery in this Yugoslavian oil and transportation center on 10/11 June. Direct hits and fire destroyed several buildings and severely damaged many others. At least six oil storage tanks were hit, and there was slight damage to the Riverside Marshalling Yards, heavily damaged in a previous attack (SUMMARY No. 24, *page* 16).

Emmerich : Another refinery on Eighth Air Force's target list was the Deutsche Gasolin A.G. and Olwerke Noury und Van der Lande, bombed with good results by 61 B-24s on 14 June. Reconnaissance following the attack shows severe damage, principally to the distillation unit, and to all of the lubrication process buildings. In addition, an unidentified industrial plant west of the target was also heavily damaged.

Gelsenkirchen : A report covering damage to the synthetic oil plant here up to 20 June, and including an attack by RAF Bomber Command on night of 12/13 June, states that the target was heavily damaged over its entire area. Nearly all the important elements were damaged in varying degrees ; most severely affected were the injection houses, gas generating plants, turbine house, hydrogenation stalls and paste preparation plant. Many oil tanks were destroyed, and all of 13 cooling towers damaged. Also hit were unidentified buildings, railway lines, cars and sidings within the plant.

Hamburg : An excellent attack on oil refineries was carried out by 468 B-17s of the Eighth Air Force on 20 June ; although reconnaissance photographs taken several hours after the attack are smoke-obscured, it is apparent that the more than 1,300 tons of bombs caused extremely severe damage to the Rhenania/Ossag, Europaische/Tanklager and Ebano/Asphalt Refineries. Furiously burning fires from storage tanks prevent assessment of damage to particular installations, but hits to boiler houses, distillation and cracking plants and other buildings appear to have been scored.

Warehouses, shipyards, quays, etc., in the Steinwarder district were damaged by fire and HE, and there was also very heavy damage at one end of the Wilhelmsburg marshalling yards, where locomotive sheds, rolling stock and tracks suffered direct hits. In this district, tanks of the Deutsche Petroleum A.G. and other unidentified oil storage tanks were fired, as were factory buildings of the Hamburger Wollkammerei A.G. Further damage was also done to the Hamburg Gas Works.

Misburg : Interpretation of reconnaissance photographs covering the Eighth Air Force attack on an oil refinery here is difficult, due to thick, black smoke issuing from pipes and tanks ; there is evidence, however, that bombloads of 169 B-24s who made the attack on 20 June fell on laboratories, storage areas, railway sidings and tracks, as well as tanks and pipes. There was also a small amount of damage to business and residential property near the target.

TRANSPORTATION

Angouleme : Primary target for 70 B-17s of the Eighth Air Force on 15 June were marshalling yards here ; subsequent reconnaissance shows that the yards were completely devastated, and all lines were cut in many places. Nearly all the railway facilities, including locomotive sheds, repair shops, roundhouses, freight depot and passenger station, were either destroyed or severely damaged, and at least 100 cars were derailed or damaged in the sorting sidings. Through lines blocked include Poitiers-Bordeaux, Angouleme - Cognac and Angouleme - Magnac - Louvre, which were cut at many points.

Arras : Marshalling yards were attacked by RAF Bomber Command aircraft on night of 12/13 June ; the engine turntable was destroyed, the reception sidings cratered and the lines in the passenger station area were cut. Bombs fell directly in the center of a bridge between the passenger station and the reception sidings ; through lines in this vicinity were cut, including lines to Douai, Lille, and Amiens. Business and residential property southeast of the yards sustained moderate damage.

Mezidon : A report assessing the results of AEAF attacks on this rail center states that the roun

house, passenger station, freight sheds and car repair shops were damaged. At least 20 tracks, including the line to Argentan, were cut, and many cars hit.

Ploermel : This high embankment, about one-half mile north of Ploermel, carrying the single track railway running north to St. Malo, was bombed with good effect by 26 B-24s of the Eighth Air Force on 13 June. A concentration of bursts on the embankment severed the track completely at one point and partially destroyed it at other points.

Schwerte : Photographic cover of this important marshalling yard on the main line from Dusseldorf to Central Germany two weeks after 54 B-17s of the Eighth Air Force attacked on 31 May shows extremely heavy damage to facilities and rolling stock.

The locomotive depot and car repair shop were hit, and many cars in this vicinity were derailed or damaged, and a medium size building in the freight depot was almost completely destroyed. Numerous tracks in the reception and holding sidings were cut, and a few tracks in the sorting sidings were blocked by damaged or derailed cars.

Heavy damage was inflicted on a large factory east of the yards, a branch line leading into another factory was cut, and there was a direct hit on the northeast abutment of a bridge carrying a road over this line to the west of the locomotive depot. Some business and residential damage was done to the northwest of the target area.

Alençon : Damage to rail sidings here in attacks between 7 and 14 June includes the destruction of a large warehouse-type building and partial destruction of another large building. The station was gutted and craters blocked all tracks and the road at the crossing. A large shed type building was partly wrecked and other sheds suffered roof damage.

Nantes : Railway bridges here damaged in previous attacks (SUMMARY NO. 32, *page* 19) were bombed again by 117 B-17s of the Eighth Air Force on 15 June. The central span of the east bridge suffered further severe damage ; just south of the section crossing the island craters severed the tracks and tore away part of the structure on the western side. Hits on the island span itself wrecked tracks and breached the embankment. A cluster of craters at the northern approaches to this bridge blocked all tracks at the junction. At the west bridge, a hit on the approaches blocked all lines from the south, and other hits severed the tracks at the junction and damaged the structure itself.

Tours/La Riche : A direct hit on this bridge during an attack by 66 B-24s of the Eighth Air Force on 15 June has almost completely cut the span in two ; at the other end of the bridge, the approach was blocked by a hit which also tore up tracks.

Rennes : Fresh damage to marshalling yards as a result of Allied air attacks from 14 to 18 June includes numerous craters in the west end of the reception and forwarding sidings. Several freight cars were damaged, the west end of the freight depot received several direct hits, and all but one line was cut.

Argentan : Allied aircraft scored numerous new hits in the rail sidings, completely blocking the yard, during attacks from 7 to 16 June. Further damage was done to the engine sheds, and locomotives were hit in this area. The southern road bridge over the Orne River was hit four times, and the road leading to it was blocked.

Villedieu-les-Poeles : Up to 17 June, AEAF aircraft had scored nine direct hits on the rail line passing through the town, derailed several cars and blocked all tracks.

Blois St. Denis : PRU coverage following an attack 11 June on this bridge over the Loire River, shows that direct hits by 41 B-24s of the Eighth Air Force wrecked the third, fourth and fifth spans and largely destroyed two of the supporting stone piers in the river (*see cut*). There were very near misses to three other supporting stone piers, and one on the south bank has been damaged at its base.

Poitiers : Railway facilities and rolling stock throughout marshalling yards suffered heavily when RAF Bomber Command heavies bombed this important junction in West Central France on night of 12/13 June. The north locomotive depot was destroyed, and the freight depot and passenger

BLOIS ST. DENIS BRIDGE

station were damaged ; many cars at the marshalling sidings were destroyed, damaged or derailed.

All tracks were cut or blocked at the loop and station sidings, and the Paris-Bordeaux line was cut in five places.

Château/Sorrus : As a result of various Allied attacks on this enemy divisional headquarters near Montreul-sur-Mer up to 12 June, the target was half destroyed. Buildings which remained standing were blast-damaged.

AIRFIELDS AND FACTORIES

Brasov : According to a ground report received by the British Ministry of Economic Warfare, Rumania's principal aircraft factory, the state-owned Industria Aeronautica Romana, was very largely destroyed in the Fifteenth Air Force attack of 16 April. These reports, confirmed by air cover, show that the main assembly shops and the foundry had direct hits, while all other important buildings suffered damage of some kind, some being totally destroyed (SUMMARY No. 26, *page* 16). One report states that part of the plant is being evacuated elsewhere.

The factory was engaged in the manufacture of single-engine fighter aircraft of its own design and on the assembly and repair of Me-109s. Output of finished aircraft had been reported at 25 per month. A few Potez 63 bombers seem also to have been made, at least until recently, and there was an aero-engine works in addition, but output was small. The concern had received considerable assistance from Germany since Rumania entered the war, in the form of aircraft components and machine tools.

Alternative repair depots could be used, the MEW reports, but there are few modern industrial premises in Rumania that could quickly be made available to accommodate the plant if transfer is really contemplated.

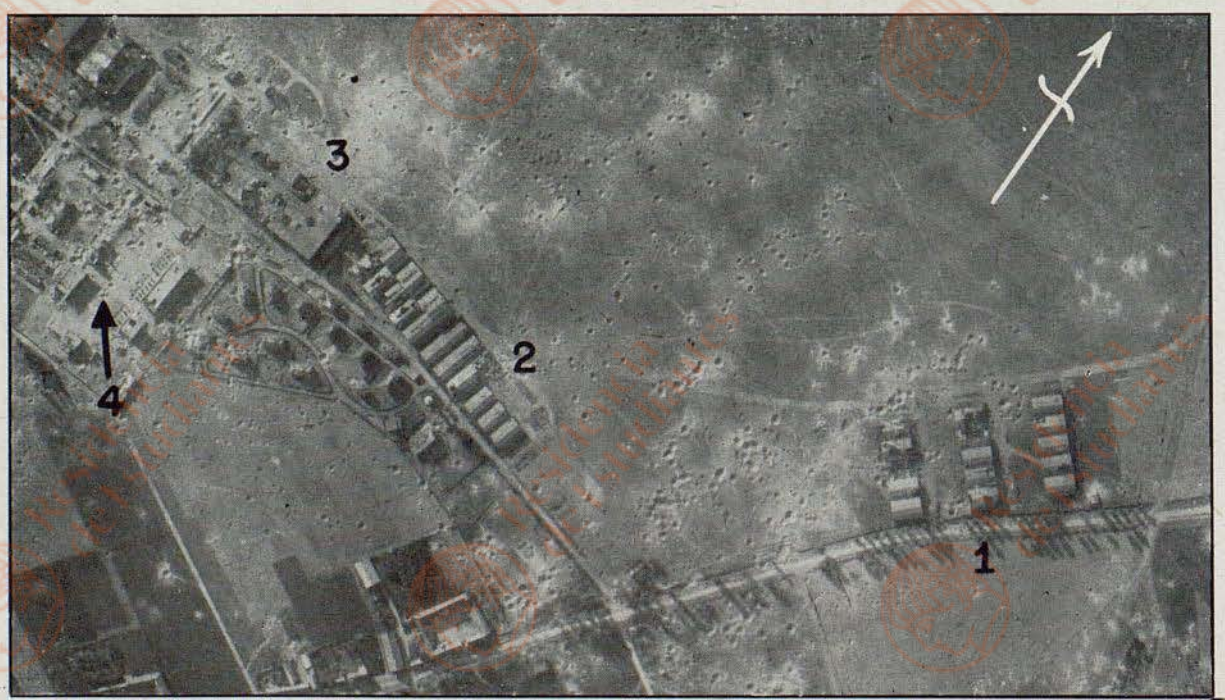
Bordeaux/Mérignac : An interpretation of reconnaissance photographs taken after 144 B-17s of the Eighth Air Force attacked this target in Southwestern France shows extensive damage to hangars and workshops. Of the four hangars near the southwest dispersal area, one was three-quarters destroyed and two were severely damaged. On the east side of the field, roofs of four hangars were partly stripped and two others sustained slight damage. Of the six smaller hangars, one was almost completely destroyed, another roof-damaged and the other holed in its roof. One large workshop was destroyed and two others probably damaged.

Etampes/Mondesir : The photograph on this page shows hangars and workshops, previously hit during an Eighth Air Force attack on 23 May, heavily damaged again after 45 B-24s bombed this field on 15 June.

Annotations show points of damage as follows :

1. Three five-bay workshops at the southeast end of the field : of 15 bays comprising the group, five were destroyed or seriously damaged, others roof-damaged.
2. Three-bay workshop : roof damage.
3. Hangar groups : heavily damaged.
4. Accommodations : Three barracks buildings damaged.

Le Bourget : As a result of various Allied attacks on this field outside of Paris from 30 May to



ETAMPES/MONDESIR AIRFIELD WAS EFFECTIVELY BEATEN UP BY EIGHTH AIR FORCE BOMBERS IN TWO ATTACK

15 June, three hangars and one shelter have been destroyed. Two further hangars were damaged and landing facilities were fairly well cratered.

Lille/Nord : Seven aircraft shelters were damaged by 83 B-17s of the Eighth Air Force during the 12 June attack here. In addition, a large hangar and two other buildings were hit, and there was a concentration of fresh craters in the middle of the landing ground.

Dreux : Photographic reconnaissance following the Eighth Air Force attacks of 10 June by 26 B-24s and 12 June by 71 B-24s, shows damage was heaviest in the south dispersal area, where six out of 15 shelters and many other small buildings were destroyed or damaged. There were large concentrations of craters on the eastern half of the field, nearly 50 craters on the runways and several on the taxi-tracks and fuel loop.

Conches : This field in Northwestern France was a target for heavy bombers of the Eighth Air Force on two successive days (33 B-17s on 11 June, 73 B-24s on 12 June). Both attacks fell heavily on the landing grounds, runways and perimeter tracks ; one aircraft shelter was partially destroyed and five others damaged.

Cormeilles-en-Vexin : Both aircraft and railway transportation facilities were hit when 34 B-24s of the Eighth Air Force bombed this field in Normandy on 11 June. Bursts extended from the center of the landing ground across the runway into the south dispersal area, where the largest covered shelter and three smaller shelters were damaged. The light railway track to the ammunition storage area was cut in several places, as was the main railway line south of the field, where several cars were derailed.

Oberpfaffenhofen : This factory and airfield near Munich were bombed by 157 B-17s of the Fifteenth Air Force on 13 June ; the airfield buildings were well covered and a large amount of new damage was caused. Nine aircraft were destroyed or damaged on the ground, and an additional two sustained probable damage. Among the installations hit were flight hangars, assembly shops, sub-assembly shops, aircraft shelters and administration buildings, all damaged or destroyed to some extent.

NAVAL AND MILITARY

Boulogne : RAF Bomber Command heavies carried out a well-concentrated attack over the whole of the dock area on night of 15/16 June, causing severe damage to shipping and port facilities. The E-boat pens were hit many times, and a section of the lower decking measuring 100 feet by 40 feet along the south side of the Bassin Loubet was destroyed. To the northwest of the pens all three oil storage tanks were destroyed, and a gantry crane severely damaged. Port facilities affected include the Maritime Station, the Customs Offices, the lock gates between Port de Marée and Arrière Port and almost every quay.

In addition, 13 vessels, 100- to 200-foot types, were wrecked or damaged, and the floating dock in the Bassin à Flotte was severely damaged and almost completely submerged.

Railway facilities were heavily damaged and almost all buildings completely or partially destroyed to the southwest of the Bassin Loubet ; further damage was caused in the town marshalling yard, and the railway bridge across the River Lione was hit twice.

The arsenal to the south of the Bassin Loubet, damaged in previous attacks, was almost completely destroyed, and the adjacent barracks were hit again.

Le Havre : Docking facilities were hit with good effect when a large force of RAF Lancasters pounded this Channel port in a two-phase attack on 14/15 June. Several jetties were severely damaged and warehouses, dockside installations and quays suffered heavily, particularly around the Bassin de l'Eure and the Bassin Bellot. Numerous small craft and barges were hit, and the large floating dock near the boat pens was partly submerged. There was some damage to boat pens in the Bassin de Marré, where a gun position was also destroyed ; damage outside the dock area was limited to a few industrial, business and residential items in the area close to the docks.

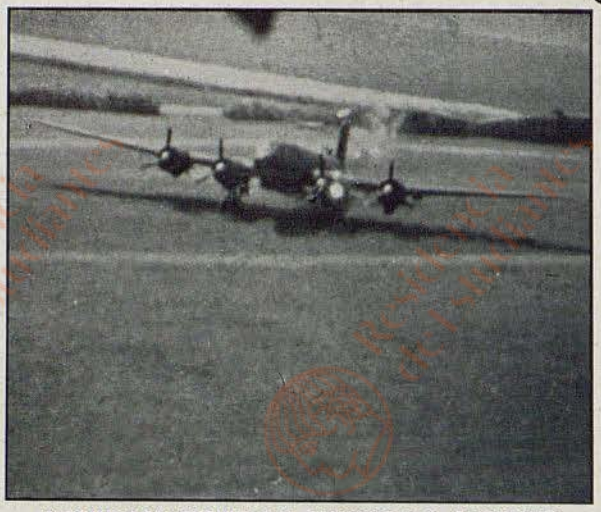
Aunay-sur-Odon : This target, believed to have contained concentrations of troops and vehicles, was almost completely obliterated by an RAF Bomber Command attack on night of 14/15 June. In addition to destruction inflicted on the town itself, all road communications were blocked in every direction.

St. Lo : Further damage to this already hard-hit tactical target (SUMMARY NO. 32, *page* 16) has been done by Allied attacks from 12 to 16 June. The southern approach of the bridge over the Vire River was severely damaged by a direct hit, and several buildings in the vicinity were destroyed. Strikes cut the rail line in five places between the station and the rail bridge, and in five more places west of the bridge.

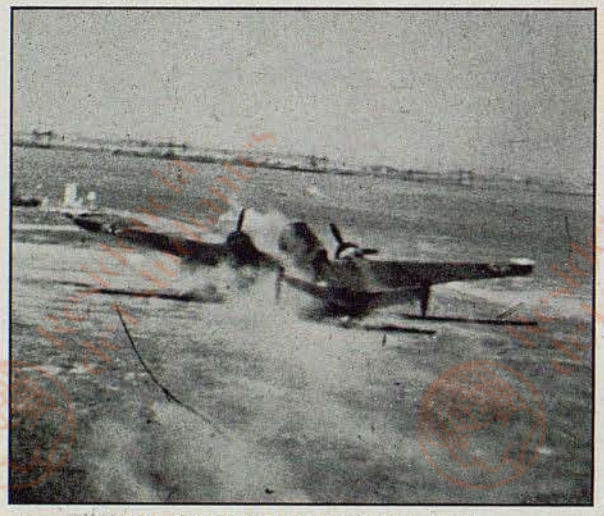
Bremerhaven : This port on the North Sea was an opportunity target for 106 Eighth Air Force B-24s on 18 June. Damage was caused in the district of Kaiser Hafen I, where warehouse type buildings were destroyed and damaged, and in Neuer Hafen, where other warehouse buildings suffered similarly. There was also a concentration of damage in the central area of Wesermunde, among business and residential property.

AIRCRAFT RECOGNITION VIA COMBAT FILMS

In their strafing attacks on enemy airfields throughout France, Germany and the Low Countries, VIII Fighter Command aircraft have flushed out a wide variety of enemy planes and left them in considerably worse condition than before their arrival. The still prints on this page, enlarged from their motion-picture combat films, show a few of the types beaten up in recent weeks. Many of these are used today only for transport and training, but two—the FW-200 at right and the He-177 below—are among latest operational types.



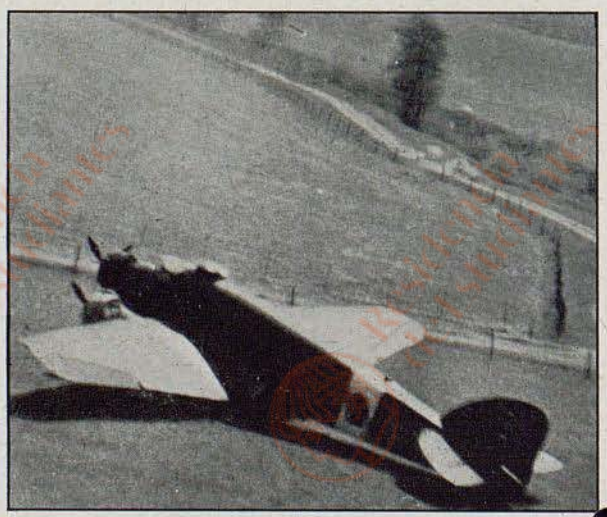
INCENDIARY STRIKE ON FW-200'S NO. 2 ENGINE



50-CALIBERS SPRAY ACROSS A SI-204

JU-86, AN OBSOLESCENT GERMAN BOMBER

HE-177, THE ENEMY'S NEWEST BOMBER



SM-81, ITALIAN-BUILT THREE-ENGINE BOMBER

ENEMY OPPOSITION

Eighth Air Force

15 June : With 1,361 heavies dispatched, enemy air opposition to widespread attacks from Misburg, near Hanover, to Bordeaux/Mérignac Airfield was limited to a brief attack against six squadrons of Liberators bombing a railroad bridge near Tors. This formation encountered about 25 Me-109s and FW-190s near Le Mans ; they made three attacks from the tail and nose, downing one B-24. It is of interest that some of these German fighters were reported to have white stripes on their wings, in imitation of Allied markings first used on D-Day.

Flak was generally meager and inaccurate in France, but a moderate and fairly accurate barrage was encountered at Hanover, and intense flak greeted the Forts at Bordeaux/Mérignac.

16 June : There was no air reaction to attacks by 313 bombers on four airfields and four supply sites in France. Flak was meager but accurate at the airfields. A few inaccurate ground rockets were reported fired in the Pas de Calais area.

17-19 June : Eighth Air Force heavy bombers had virtually no air opposition during these three days. Escorting fighters had a few isolated encounters, but for the most part the few enemy aircraft that were sighted were noticeably averse to engaging.

20 June : 3,134 aircraft were dispatched during the day, with a record 1,965 heavy bombers sent against synthetic oil plants and military targets in Germany, and against pilotless aircraft installations in the Pas de Calais area. Considerable flak was encountered, with medium to strong enemy resistance in the air.

A total of 61 of our planes were lost, both bombers and fighters, 20 to enemy aircraft, 26 to flak and 15 for other reasons. The GAF put up a strong defensive effort against our heavy bomber operations in Germany, marshalling the strongest resistance against those which made the deepest penetration. Our total claims were 48-23-32.

Severest opposition was met by B-24s attacking targets in Politz. From 50 to 70 Me-110s and 410s and 15 to 20 FW-190s and Me-109s made intense attacks in the Greifswald Bay area. All attacks were made during the penetration phase as bombers approached the German coast from the Baltic. Both twin-engine and single-engine aircraft were reported firing rockets, and attacks were executed from the rear and broadside. Seventeen B-24s were lost in this particular area.

The low group of one of the two combat wings attacking Magdeburg encountered 20 to 25 FW-190s and Me-109s in the target area, and the enemy attacked from the tail, level and three abreast, synchronizing their attacks with ground defenses by emerging from behind a screen of flak. Attacks lasted approximately 10 minutes, and three bombers were lost. Bombers hitting targets in the Hamburg area experienced no enemy opposition.

Strong AA opposition was met by forces attacking in Germany, with a total of 22 bombers and three fighters lost to flak. Enemy opposition in the Pas de Calais area was comparatively light. Smoke screens were observed at Hamburg, Wilhemshaven, Bremen, Emden and Magdeburg. Some dummy targets were observed under the smoke screens.

21 June : Severe enemy opposition was again experienced as 2,232 aircraft, of which 1,311 were heavy bombers, hammered aero-engine works and military targets in the Berlin area, as well as pilotless aircraft objectives in the Pas de Calais area. A total of 62 planes were lost, 13 to enemy aircraft, 18 to flak and the balance for other reasons. Total claims were 48-23-32.

Two of the heavy bomber forces found severest opposition concentrated primarily in the target area. Approximately 250 enemy planes were observed, with attacks pressed by 120 to 140 aircraft. The first bomber force which proceeded to bases in Russia experienced little opposition. The second bomber force dispatched against the city of Berlin encountered no enemy opposition en route.

Near the target area in Berlin, one combat wing of the second bomber force was attacked by from 70 to 80 Me-410s. Attacks were pressed mostly from 6 o'clock level. The third bomber force experienced the most extensive attacks of the day, with enemy aircraft, mostly FW-190s, Me-410s and Me-109s, showing extreme aggressiveness and pressing attacks viciously from 2 to 3 o'clock level to low and from 11 to 12 o'clock high. Most attacks came from the nose and rear.

One fighter reported a B-24 decoy encountered over Berlin with " HP " painted on the side and " E " on the tail. The B-24 made a right turn, and the fighters were immediately bracketed by heavy flak and bounced by two Me-109s from rear and above. Intense, accurate flak of both barrage and predicted type was observed at Berlin and from Hamburg to Stendahl. Elsewhere, flak was generally moderate and accurate.

Fifteenth Air Force

11 June : Dispatching 615 Forts and Liberators on four Balkan oil refineries and storage areas, Fifteenth Air Force met with fairly small reaction

except for the force that went to Giurgiu and Constanta, Rumania. Immediately after bombing at Giurgiu, the 246 B-24s involved were attacked by about 70 aggressive enemy aircraft, which downed seven of the bombers. P-38s on withdrawal escort soon engaged the enemy formations and dispersed them.

The 145 B-24s on Constanta, Rumanian Black Sea oil center and harbor city, were escorted by P-51s and P-38s. At target, 28 enemy fighters were encountered, of which the fighters claim 14-0-0. Three bombers were lost, and two each of the P-51s and P-38s are missing.

Other targets were oil refineries and marshalling yards at Smederovo, Yugoslavia, and at Focsani, Rumania. The 126 B-17s on Focsani took off from USSTAF Eastern Command bases in Russia. Encountering only some 15 enemy aircraft at target, these bombers claim 2-0-0, and escorting fighters 3-0-1, for the loss of one B-17 and one P-51. The force flew on to land in Italy.

Flak on penetration to Smederovo was intense and accurate at Mostar. Moderate but inaccurate flak was reported from Constanta and at Karlove.

13 June : The seven groups of heavy bombers attacking Oberpfaffenhofen Airfield were bounced in target area by about 25 enemy aircraft, which concentrated on rear elements. Some aggressive attacks from above, and level at 12, 3, and 7 o'clock were made by Me-109s coming in six abreast, then splitting into threes and re-attacking at 3 and 9 o'clock. Bombers claimed 1-3-0, and a group of P-15s that came in to scatter the enemy scored 6-0-3. Flak at target was intense and accurate.

Four groups, totalling 159 B-24s, bombed the B.M.W. plant in the Munich area, and met 60 to 70 enemy fighters. Several encounters took place near Udine, where Me-109s and Ju-88s hit one group very fiercely from 5 and 7 o'clock, level ; most encounters were in the target area, where varied tactics were used before the P-51 escort group could chase the German fighters. Bomber claims were 8-1-0, with two lost and four missing. Flak at the factory area was intense and accurate.

The Udine area again was the enemy's focus of concentration against the bombers that went to Allach and Innsbruck. The group that bombed the latter secondary target was also engaged before target by about 50 twin-engine aircraft, and for 10 to 15 minutes had Me-110s flying parallel on one side and Me-410s on the other. Attacks were made from 12 and 6 o'clock, and several aerial bombs were dropped, none causing damage. This group claims 5-8-5, and six B-24s are missing.

14 June : Of 66 Wellingtons, 13 B-24s and nine Halifaxes attacking Munich by night, only one B-24 and three Wellingtons failed to return. The balance reported encountering " several " enemy planes in the target area, and one Me-109 was damaged. Flak at the target was intense, heavy and mainly accurate.

Six missions were flown in Hungary and Yugoslavia by day, with enemy opposition offered on two occasions. Shell Koolaj and Fanto Oil refineries were hit in Budapest by 168 B-17s escorted by 89 P-51s ; they encountered about 25 enemy planes, with the bombers claiming 1-0-0, the fighters 3-0-2. Four B-17s and one P-51 were lost. Flak was moderate to intense accurate heavy at the target.

Individual groups of 85 B-24s, 73 B-24s and 78 B-24s, with P-51 escort, hit targets in Szony and Kecskemet, Hungary, and Caprag and Osijek, Yugoslavia, without enemy opposition. Only slight enemy opposition was encountered by 152 B-24s attacking oil refineries in Petfurdo, Hungary, but the escort of 51 P-38s engaged about 50 enemy planes, with claims of 13-1-5. Two P-38s were lost and two are missing.

15 June : Concentrated fighter sweeps over Southern France encountered only minor enemy opposition and light flak. Approximately 169 P-51s and 220 P-38s strafed ground targets and airdromes at La Jasse, Orange/Plan Didier, Orange/Caritat, Château Blanc and Avignon. Total claims : in the air, 5-1-1 ; on the ground, 9-0-10. Five P-51s and two P-38s were lost t[o] enemy aircraft and one P-51 and one P-38 to intense, accurate, light flak.

Railroad yards and locomotive sheds at Nis were attacked at night by 30 Wellingtons, three B-24s and eight Halifaxes, with scant heavy and light flak experienced at the target. No enemy air opposition was encountered.

16 June : Oil refineries in the Vienna area were hit in combined operations by 169 B-17s and 314 B-24s, escorted by 92 P-51s, 40 P-47s and 103 P-38s, who encountered only about 20 enemy aircraft. Out of the combined attacks on Floridsdorf, Kagran, Lobau and Nova Schwechat oil refineries, seven B-24s, one B-17 and four P-38s were definitely reported lost. Claims for the bombers were 10-9-14 ; for the fighters, 29-5-8. All missions over the Vienna area reported intense, accurate flak over railroads north of Lake Balaton. Moderate, accurate, heavy flak was encountered at Mostar, Zagreb and Gyor.

Unusually strong enemy opposition was experienced at Bratislava, Czechoslovakia, when 168 B-24s attacked the Apollo Oil Refinery. An escort of 44 P-51s encountered 80 enemy aircraft from Lake Balaton to the target. Bombers claim 21-3-1 and the fighters 10-0-1, for loss of three B-24s and one P-51.

17 June : Scant, inaccurate light and heavy flak, accompanied by meager air opposition, was met by 32 Wellingtons and nine Halifaxes attackin[g]

the marshalling yards at Timiscara, Rumania. Four unidentified enemy planes attacked one Wellington, which took successful evasive action. One other Wellington was reported missing.

By night, 13 Wellingtons and six B-24s attacking Porto Ferraio, and 12 Wellingtons bombing Porto Longone, both on Elba, reported no air opposition, and scant, inaccurate, light flak at both targets.

Heavier Armament on the Me-410

MORE complete information is now available to confirm the suspected heavier armament of the Me-410.

On certain sub-types of the aircraft the forward-firing guns now comprise one 50-mm. gun and two MG 151 20-mm. guns. The two usual rearward-firing MG 131s (13 mm.) are also carried, mounted in the barbettes on the sides of the fuselage.

So far as can be ascertained at present, the 50-mm. gun is the German PAK 38 anti-tank gun, suitably modified for aircraft installation. The PAK 38 was introduced in large quantities into the German Army in 1941 to replace the 37-mm. anti-tank gun. It was an effective weapon, but is now becoming obsolescent.

The flash eliminator fitted has been altered as compared with the usual ground-service slotted cylindrical type, to a tubular extension 19 inches long and five inches in diameter, copiously drilled with large and small holes, about one inch in diameter and a quarter-inch in diameter, respectively.

Adapted for aircraft use, the gun has two recoil recuperators, mounted on each side of the mounting. These recuperators are 20 inches long. On the ground-service versions only one recuperator is used, the mounting being 15 inches in diameter and $5\frac{3}{4}$ inches thick.

When used as originally designed, the breech-block slides sideways and the round is fed in from a side opening. It would appear, however, that when used in an aircraft, the gun is mounted on its side and hence loaded from the top.

The overall length of the gun is 137 inches and the rate of fire probably about 10 to 15 r.p.m.

It is known that HE/T projectiles are used in air-to-air combat, one variety being of the drawn-steel thin-cased type, using a sensitive nose fuze.

The type of sight used with this gun when fitted to the Me-410 has not yet been established, but so far no sight other than the Revi 12 has been encountered on enemy aircraft using fixed forward-firing guns.

This type of armament has been used for attacking bombers and it can also be used for anti-tank and ground-strafing operations.

At this juncture it is not possible to give performance figures of the gun when carried in an aircraft, but the following table gives certain data on the PAK 38 when used in its original form as an anti-tank weapon :

Ammo.	*Muzzle Velocity*	*Max. Range*	*Effective Range*
AP/T	2,700 ft./sec.	1,540 yards	880 yards and under
AP 40	3,940 ft./sec.	770 yards	500 yards and under
HE/T	1,800 ft./sec.	2,640 yards	2,000 yards and under

SUMMARY OF OPERATIONS

19-25 June, 1944

P = Primary target. S = Secondary target. L = Last resort target. O = Target of opportunity. G = Claims against grounded aircraft.

EIGHTH AIR FORCE

DATE	DISPATCHED	ATTACKING	TARGET	TONNAGE	SUPPORT	CLAIMS	LOSSES
19 June	464 B-17s	84 B-17s	Bordeaux/Mérignac A/F (P)	152.5	261 P-51s 88 P-38s	Nil	23
		34 B-17s	Landes-de-Bussac A/F (P)	64.5			
		39 B-17s	Cazaux A/F (P)	71.0			
		92 B-17s	Cormes Ecluse A/F (P) ...	235.0			
		12 B-17s	Cabanac A/F (O)	22.5			
		3 B-17s	T/O	7.5			
19 June	267 B-17s 156 B-24s	96 B-17s 144 B-24s	Pas de Calais (P)	540.0	191 P-38s 86 P-47s	Nil	Nil
19 June	124 B-17s 156 B-24s	120 B-17s 150 B-24s	Pas de Calais (P)	582.0	36 P-47s 95 P-38s 48 P-51s	Nil	3
20 June	146 B-24s	126 B-24s	Pas de Calais (P)	312.0	44 P-47s	3- 0- 0	3
20 June	341 B-17s 191 B-24s	95 B-17s	Magdeburg/Rothensee (P)	215.2	86 P-47s 98 P-38s 119 P-51s	12- 3-16 8- 0- 3 (G)	10
		137 B-17s	Fallersleben (P)	305.0			
		52 B-17s	Konigsborn (P)	115.3			
		169 B-24s	Hanover/Misburg (P) ...	498.0			
		3 B-24s	T/O	7.9			

DATE	DISPATCHED	ATTACKING	TARGET	TONNAGE	SUPPORT	CLAIMS	LOSSES
20 June	512 B-17s	60 B-17s	Harburg/Ebano (P) ...	178.5	48 P-47s 96 P-38s	Nil	7
		53 B-17s	Harburg/Rhenania (P) ...	155.2			
		107 B-17s	Hamburg/Euo-Tank (P) ...	315.2			
		26 B-17s	Hamburg/Schindler (P) ...	72.5			
		53 B-17s	Hamburg/Deutsche (P) ...	155.5			
		51 B-17s	Hamburg/Albrecht ...	147.6			
		54 B-17s	Hamburg/Schliemanns (P)	160.7			
		50 B-17s	Hamburg/Rhenania-Ossag (P)	144.5			
		12 B-17s	Brunsbuttel Canal Lock (O)	34.7			
		2 B-17s	T/O	6.0			
20 June	358 B-24s	245 B-24s	Politz (P)	578.4	50 P-38s 221 P-51s	38- 4-11 5- 0- 9 (G)	41
		71 B-24s	Ostermoor (P)	214.0			
		12 B-24s	T/O	24.6			
20 June	380 B-24s 37 B-17s	196 B-24s 33 B-17s	Pas de Calais (P)	575.4	72 P-47s 40 P-51s	Nil	2
20 June	78 P-47s	8 P-47s	Marle M/Y (P)	4.0	Nil	5- 0- 6 (G)	Nil
		6 P-47s	Thionville M/Y (P) ...	3.0			
		2 P-47s	Tergnier M/Y (P)	1.0			
		4 P-47s	Versigny M/Y	2.0			
		12 P-47s	Plantlunne A/F (P) ...	11.0			
		12 P-47s	Enschede A/F (P)	13.0			
20 June	162 P-51s	162 P-51s	Paris Area	Strafing	Nil	Nil	2
20/21 June	5 B-17s	5 B-17s	France	Leaflets	Nil	Nil	Nil
21 June	163 B-17s	145 B-17s	Ruhland/Schwarzheide (P)		72 P-38s 122 P-51s 38 P-47s	3- 0- 1 0- 0- 2 (G)	7
21 June	496 B-17s	456 B-17s	Berlin (P)	1081.0	95 P-47s 99 P-38s 73 P-51s	20-20-22	19
		12 B-17s	T/O	30.0			
21 June	368 B-24s	69 B-24s	Genshagen (P)	171.0	147 P-47s 148 P-38s 116 P-51s	26- 3- 9	25
		40 B-24s	Potsdam (O)	103.0			
		8 B-24s	Stendal (O)	20.0			
		47 B-24s	Berlin (S)	115.0			
		52 B-24s	Marienfelde (P)	118.0			
		23 B-24s	Genshagen (O)	56.0			
		16 B-24s	Rangsdorf (O)	40.0			
		10 B-24s	Trebbin (O)	25.0			
		8 B-24s	Selvig (O)	20.0			
		28 B-24s	Niederschonweide (P) ...	71.0			
		1 B-24	Bederkassa (O)	3.0			
		7 B-24s	T/O	17.0			
21 June	207 B-17s	80 B-17s	Basdorf (P)...	181.0	108 P-38s 91 P-51s 81 P-47s	Nil	13
		103 B-17s	Berlin (P)	254.0			
		5 B-17s	T/O	10.0			
21 June	75 B-24s	70 B-24s	Pas de Calais (P)	200.0	99 P-47s	Nil	Nil
21/22 June	5 B-17s	5 B-17s	France	Leaflets	Nil	Nil	Nil
22 June	108 B-17s 194 B-24s	85 B-17s 132 B-24s	Pas de Calais (P)	594.0	165 P-47s 97 P-51s	Nil	3
22 June	535 B-17s 263 B-24s	13 B-17s	Tingry (P)	36.5	306 P-47s 214 P-51s	4- 1- 0	20
		12 B-17s	Abbeville (P)	35.5			
		11 B-17s	Mazingarbe (P)	17.3			
		13 B-17s	Furnes A/F (O)	37.0			
		10 B-17s	Pont en Verdin (P) ...	10.8			
		1 B-17	Douai RR Yards (O) ...	3.0			
		13 B-17s	La Vaubaliers (P)	36.0			
		35 B-17s	Rouen Oil Depot (P) ...	68.7			
		12 B-17s	Tank area north of Rouen (O)	24.5			
		69 B-17s	Ghent/Maritime M/Y (P)...	205.7			
		76 B-17s	Lille/Fimes M/Y (P) ...	226.5			
		12 B-17s	Douai, RR near (O) ...	12.0			
		43 B-24s	St. Cyr A/F (P)	126.0			
		36 B-24s	Buc A/F (P)	107.8			
		46 B-24s	Guyancourt/Caudron A/F (P)	135.0			
		1 B-24	Dreux A/F	3.0			
		101 B-24s	Oil Depots in Paris (P) ...	240.0			
		11 B-17s	Melun Bridge (O) ...	27.5			
		11 B-17s	Melun M/Y (O)	26.5			
		70 B-17s	Nucourt P/A/C Site (P) ...	207.5			
		38 B-17s	Brie-Compte-Robert Siding (P)	99.3			
		11 B-17s	Lieusant RR (O)	21.9			
		33 B-17s	Etampes A/F (O)	62.9			
		5 B-24s	Tours/La Riche Bridge (P)	5.5			
		9 B-24s	Samur Bridge (P)	5.0			
		13 B-24s	T/O	38.7			

DATE	DISPATCHED	ATTACKING	TARGET	TONNAGE	SUPPORT	CLAIMS	LOSSES
22 June	187 P-38s 94 P-51s 201 P-47s	Unreported	Amiens/St. Quentin Areas	187.0	Nil	1- 0- 0	8
22/23 June	9 B-17s	9 B-17s	France/Belgium	Leaflets	Nil	Nil	Nil
23 June	134 B-17s 106 B-24s	110 B-17s 102 B-24s	Pas de Calais (P)	532.7	165 P-51s	Nil	1
23 June	109 B-17s 219 B-24s	13 B-17s	Nanteuil (P)	25.0	155 P-47s 83 P-51s	Nil	7
		2 B-17s	T/O...	5.0			
		113 B-24s	Juvincourt A/F (P) ...	261.2			
		46 B-24s	Laon/Athies A/F (P) ...	125.0			
		23 B-24s	Coulommiers A/F (P) ...	61.1			
		1 B-24	Soissons A/F (P)	2.6			
23 June	195 P-38s	169 P-38s	Paris Area—Bridges (P) ...	90.8	Nil	Nil	2
23/24 June	5 B-17s	5 B-17s	France	Leaflets	Nil	Nil	Nil
24 June	74 B-17s	38 B-17s	Saumur Bridge (P) ...	197.5	135 P-51s	4- 0- 2 (G)	1
		36 B-17s	Tours/La Riche Bridge (P)				
24 June	407 B-24s	34 B-24s	Toussus/Le Noble A/F (P)	84.4	82 P-51s 36 P-47s 45 P-38s	Nil	3
		45 B-24s	Chateaudun A/F (P) ...	111.8			
		45 B-24s	Orleans/Bricy A/F (P) ...	89.6			
		12 B-24s	Pont Audmer (O)... ...	31.1			
		78 B-24s	Conches A/F (O)	188.6			
		9 B-24s	Dreux A/F (O)	19.2			
		11 B-24s	Toussus/Paris (O)... ...	27.9			
		31 B-24s	Fighter strip 4836N-0016E (O)	77.5			
24 June	86 B-17s 60 B-24s	11 B-17s	Rouen (O)	27.5	36 P-47s	Nil	1
24 June	340 B-17s	213 B-17s	Bremen Oil Refinery (P)...	526.3	85 P-47s 185 P-38s	2- 0- 0 (G)	1
		40 B-17s	City of Bremen (O) ...	114.0			
		53 B-17s	Wesermunde (O)... ...	127.0			
24 June	62 B-17s 167 B-24s	13 B-17s	Holque Switching Station (P)	39.0	71 P-47s 50 P-51s	Nil	3
		14 B-24s	Abbeville Power Station (P)	36.4			
		12 B-24s	Pont à Vendin Transformer (P)	36.0			
		12 B-24s	Tingry Switching Station (P)	31.1			
		12 B-17s	St. Pol M/Y (S)	17.0			
		32 B-17s 67 B-24s	Pas de Calais Launching Sites	241.0			
24 June	25 P-51s	25 P-51s	Anger/Le Mans Area ...	Sweep	Nil	25- 0- 6 (G)	Nil
24/25 June	5 B-17s	5 B-17s	France	Leaflets	Nil	Nil	Nil
25 June	258 B-24s	18 B-24s	Mazingarbe (P)	47.8	68 P-47s 34 P-51s	Nil	1
		23 B-24s	Beuvry (P)	63.5			
		7 B-24s	Nunque A/F (P)	13.4			
		8 B-24s	Holque (P)	18.6			
		10 B-24s	St. Omer/Longuenesse (P)	26.5			
		7 B-24s	Pont-à-Vendin (P)... ...	13.5			
		2 B-24s	Chocques (P)	3.8			
		12 B-24s	Douellens (P)	36.0			
		10 B-24s	Abbeville (P)	26.4			
		11 B-24s	Amiens/St. Maurice (P) ...	24.0			
		8 B-24s	Boulogne (P)	15.0			
		11 B-24s	Calais (P)	20.7			
		11 B-24s	Tingry (P)	21.0			
		12 B-24s	Aube-sur-Risle (P) ...	29.6			
		12 B-24s	La Vaupalier (P)	14.5			
		12 B-24s	Peronne A/F (P)	25.8			
		43 B-24s	T/O	105.7			
25 June	137 B-24s	59 B-24s	Avord A/F (P)	132.8	44 P-47s 102 P-38s	8- 0- 4	Nil
		48 B-24s	Bourges A/F (P)	118.6			
25 June	189 B-17s 274 B-24s	70 B-17s	Soigny Bridge (P)	140.0	35 P-47s 127 P-38s 181 P-51s	5- 0- 1	7
		21 B-17s	Auxere Bridge (P) ...	52.0			
		38 B-17s	Sens Bridge (P)	77.0			
		28 B-17s	Clamecy (P)	65.0			
		20 B-17s	Nogent	34.2			
		21 B-17s	Nanteuil (P)	63.0			
		12 B-17s	Foulous (P)...	36.0			
		35 B-24s	Bretigny A/F (P)	82.0			
		11 B-24s	Buc A/F (P)	33.0			
		63 B-24s	Villacoublay A/F(P) ...	168.9			
		13 B-17s	Romilly-sur-Seine (O) ...	27.9			
		18 B-17s	Orly A/F (O)	40.1			
		3 B-17s	Orly M/Y (O)	6.0			
		12 B-17s	Etampes/Mondesir A/F (O)	30.6			

DATE	DISPATCHED	ATTACKING	TARGET	TONNAGE	SUPPORT	CLAIMS	LOSSES
25 June	263 B-17s	64 B-17s 104 B-17s 72 B-17s	Montbartiers (P) ... ... Toulouse/Francazal AF (P) Toulouse/Blagnac A/F (P)	147.0 230.5 143.5	36 P-47s 46 P-38s 146 P-51s	10- 0- 1	8
25 June	43 P-47s	35 P-47s	Evreux/Fauville L/G ...	12.5	Nil	Nil	Nil
			Total for Week	**16,100.0**		**130-31-65** **24- 0-22 (G)**	**218**
			Total to Date	**205,297.1**		**7,934-1,799-3,626** **837- *- * (G)**	**3,937**

(Cumulative totals are evaluated from August, 1942, to 31 May, 1944.)

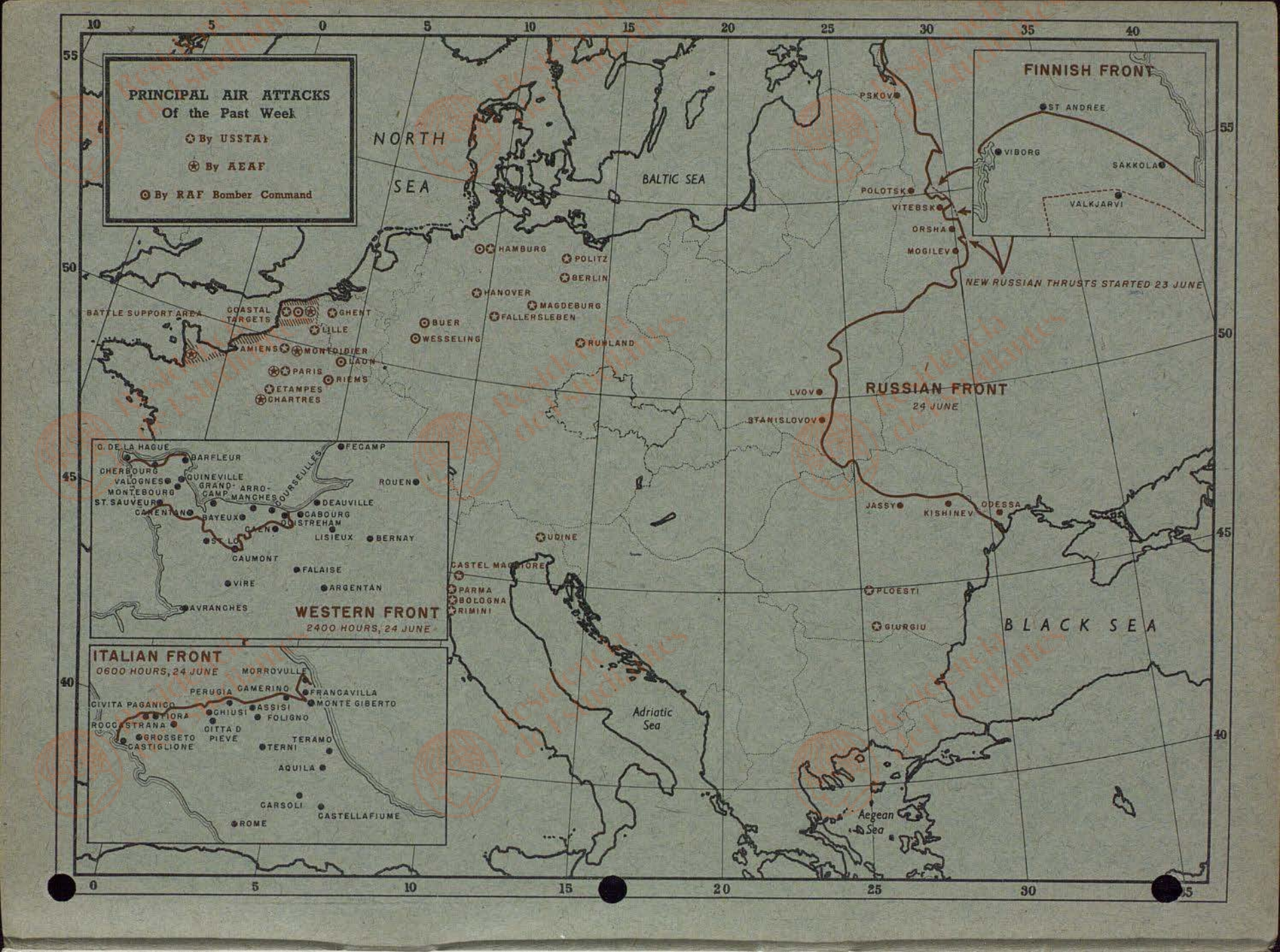
FIFTEENTH AIR FORCE

21/22 June	55 Wellingtons 8 Halifaxes 2 B-24s	53 Wellingtons 8 Halifaxes 2 B-24s	Ventimiglia M/Y	126.5	Nil	Nil	Nil
21/22 June	1 Wellington	1 Wellington	Ancona (P)	Leaflets	Nil	Nil	Nil
22 June	56 B-17s	54 B-17s	Parma (P)	158.8	88 P-38s	0- 1- 2	1
22 June	55 B-17s	51 B-17s	Moderna M/Y (P) ...	113.5	Nil	Nil	Nil
22 June	55 B-17s	52 B-17s	Fornova di Tamo (P) ...	134.6	Nil	Nil	Nil
22 June	78 B-24s	78 B-24s	Castel Maggiore (P) ...	152.0	43 P-38s	Nil	2
22 June	76 B-24s	71 B-24s	Bologna M/Y (P) ...	141.9	Nil	2- 0- 3	Nil
22 June	65 B-24s	63 B-24s	Turin (P)	153.3	41 P-51s	Nil	Nil
22 June	88 B-24s	88 B-24s	Chivasso (P)	182.3	Nil	Nil	Nil
22 June	83 B-24s	Unreported	Ferrara M/Y (S) ... ... Castel Maggiore (S) ... Poggio/Renatico A/F (S)...	103.8 20.0 57.0	47 P-51s	Nil	Nil
22 June	82 B-24s	Unreported	Piave Bridges (S)... ... Forli A/F (S)	42.0 80.0	Nil	Nil	Nil
22 June	120 B-24s	Unreported	Rimini Bridge (S) ... Pola M/Y (S)	88.8 77.8	48 P-51s	Nil	Nil
22/23 June	53 Wellingtons 8 Halifaxes 6 B-24s	51 Wellingtons 8 Halifaxes 6 B-24s	Vado/Ligure (P)	102.3	Nil	Nil	Nil
23 June	168 B-17s 42 B-24s	133 B-17s 41 B-24s 12 B-17s	Ploesti (P) ... ... Nis M/Y (S)	330.0 113.0	125 P-51s 117 P-38s 26 P-47s	21- 6-11	6
23 June	270 B-24s	233 B-24s	Giurgiu (P)	486.9	46 P-38s	0- 1- 2	4
24 June	162 B-24s	146 B-24s	Craiova (P)	358.0	35 P-38s	7- 0- 1	1
24 June	55 B-17s	55 B-17s	Piatra (P)	168.0	41 P-38s	Nil	Nil
24 June	160 B-24s	146 B-24s	Ploesti (P)	328.5	83 P-51s 42 P-38s 48 P-47s	17- 9- 3	14
24 June	48 P-51s	33 P-51s	Ploesti/Bucharest ...	Sweep	Nil	1- 0- 0	Nil
25 June	154 B-24s 39 B-24s 38 B-24s	126 B-24s 1 B-24 37 B-24s 25 B-24s	Avignon M/Y (P)... ... Arles Bridge (S) ... ... Arles Bridge (P) ... ... Le Pontet (P)	298.3 3.0 110.0 61.5	77 P-51s	Nil	4
25 June	72 B-24s 163 B-17s	67 B-24s 153 B-17s	Sete (P)	579.3	79 P-38s	Nil	2
25 June	77 B-24s	67 B-24s	Balaruc (P)	133.8			
25 June	12 B-17s	12 B-17s	Tarascon Bridge (P) ...	13.5	26 P-38s	Nil	1
25 June	24 P-47s	20 P-47s	Fiume (P)	Strafing	Nil	Nil	Nil
			Total for Week	**4,718.4**		**48-17-22**	**28**
			Total to Date	**176,240.6**		**3,969- *- *** **3,004- *- * (G)**	**1,956**

(Cumulative totals are for Strategic Air Force units since November, 1942)

* Not available.

Wt. 8135—1300—6/44 S.P. Gp. 26


PRINCIPAL AIR ATTACKS
Of the Past Week
By USSTAF
By AEAF
By RAF Bomber Command
NORTH SEA
BALTIC SEA
FINNISH FRONT
ST ANDREE
VIBORG
SAKKOLA
VALKJARVI
PSKOV
POLOTSK
VITEBSK
ORSHA
MOGILEV
NEW RUSSIAN THRUSTS STARTED 23 JUNE
HAMBURG
POLITZ
BERLIN
HANOVER
MAGDEBURG
FALLERSLEBEN
BUER
WESSELING
RUHLAND
BATTLE SUPPORT AREA
COASTAL TARGETS
GHENT
LILLE
AMIENS
MONTDIDIER
LAON
PARIS
RIEMS
ETAMPES
CHARTRES
LVOV
RUSSIAN FRONT
24 JUNE
STANISLOVOV
C. DE LA HAGUE
BARFLEUR
FECAMP
CHERBOURG
VALOGNES
MONTEBOURG
ST. SAUVEUR
CARENTAN
QUINEVILLE
GRAND-CAMP
ARROMANCHES
OURSEULLES
ROUEN
DEAUVILLE
BAYEUX
CABOURG
DISTREHAM
CAEN
LISIEUX
BERNAY
ST. LO
CAUMONT
FALAISE
VIRE
ARGENTAN
AVRANCHES
WESTERN FRONT
2400 HOURS, 24 JUNE
UDINE
CASTEL MAGGIORE
PARMA
BOLOGNA
RIMINI
JASSY
KISHINEV
ODESSA
PLOESTI
GIURGIU
BLACK SEA
ITALIAN FRONT
0600 HOURS, 24 JUNE
MORROVULLE
PERUGIA
CAMERINO
FRANCAVILLA
CIVITA PAGANICO
MONTE GIBERTO
ASSISI
CHIUSI
FOLIGNO
FIORA
ROCCASTRADA
GITTA D PIEVE
GROSSETO
CASTIGLIONE
TERAMO
TERNI
AQUILA
CARSOLI
CASTELLAFIUME
ROME
Adriatic Sea
Aegean Sea