

This document was generated by me Colin Hinson from a document held at Henlow Signals Museum. It is presented here (for free) and this version of the document is my copyright (along with the Signals Museum) in much the same way as a photograph would be. Be aware that breach of copyright can result in a criminal record.

The document should have been downloaded from my website <https://blunham.com/Radar>, if you downloaded it from elsewhere, please let me know (particularly if you were charged for it). You can contact me via my Genuki email page:

<https://www.genuki.org.uk/big/eng/YKS/various?recipient=colin>

**You may not** copy the file for onward transmission of the data nor attempt to make monetary gain by the use of these files. If you want someone else to have a copy of the file, please point them at the website (<https://blunham.com/Radar>).

**Please do not** point them at the file itself as the file may move or be updated.

---

I put a lot of time into producing these files which is why you are met with this page when you open the file.

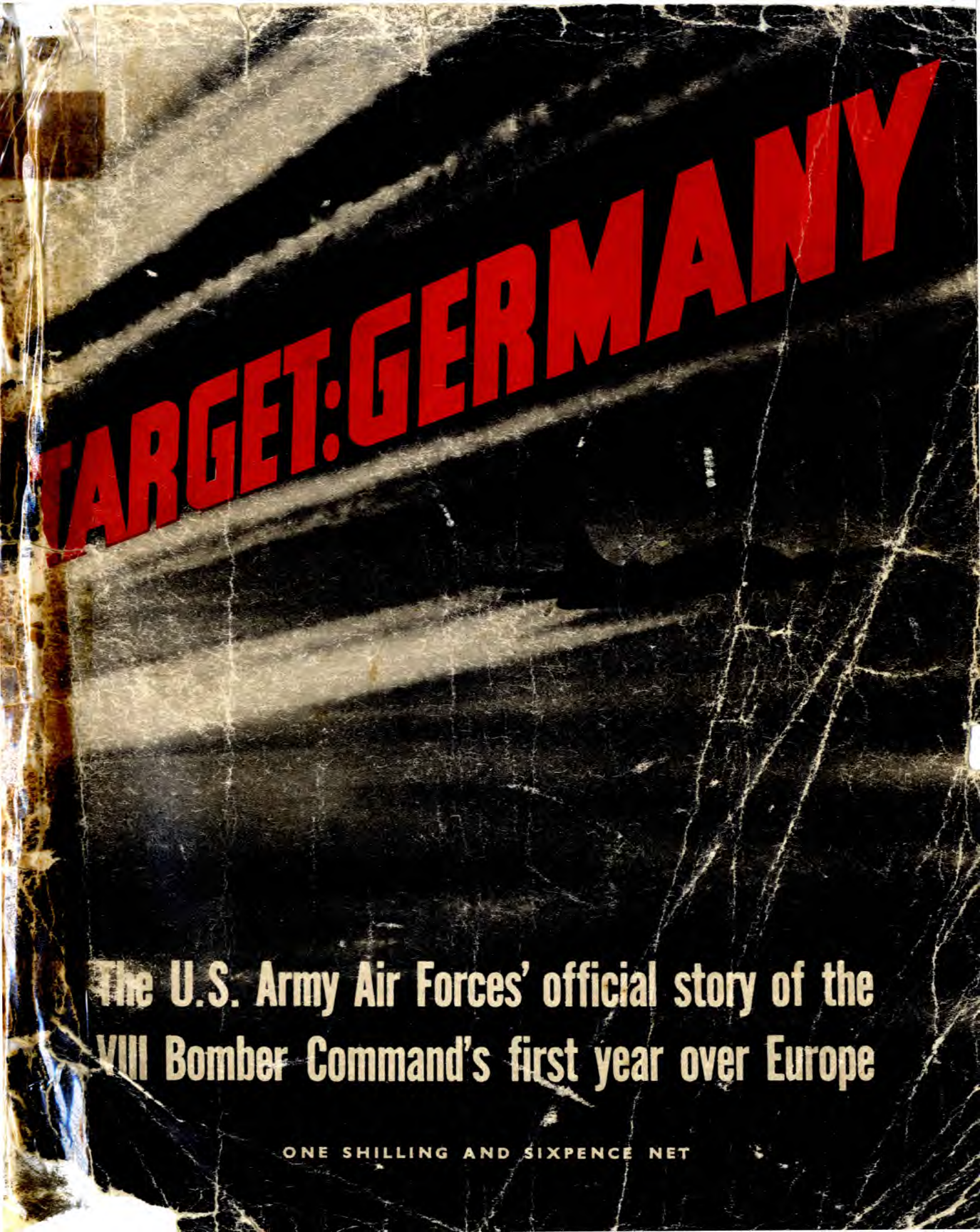
In order to generate this file, I need to scan the pages, split the double pages and remove any edge marks such as punch holes, clean up the pages, set the relevant pages to be all the same size and alignment. I then run Omnipage (OCR) to generate the searchable text and then generate the pdf file.

Hopefully after all that, I end up with a presentable file. If you find missing pages, pages in the wrong order, anything else wrong with the file or simply want to make a comment, please drop me a line (see above).

It is my hope that you find the file of use to you personally – I know that I would have liked to have found some of these files years ago – they would have saved me a lot of time !

Colin Hinson

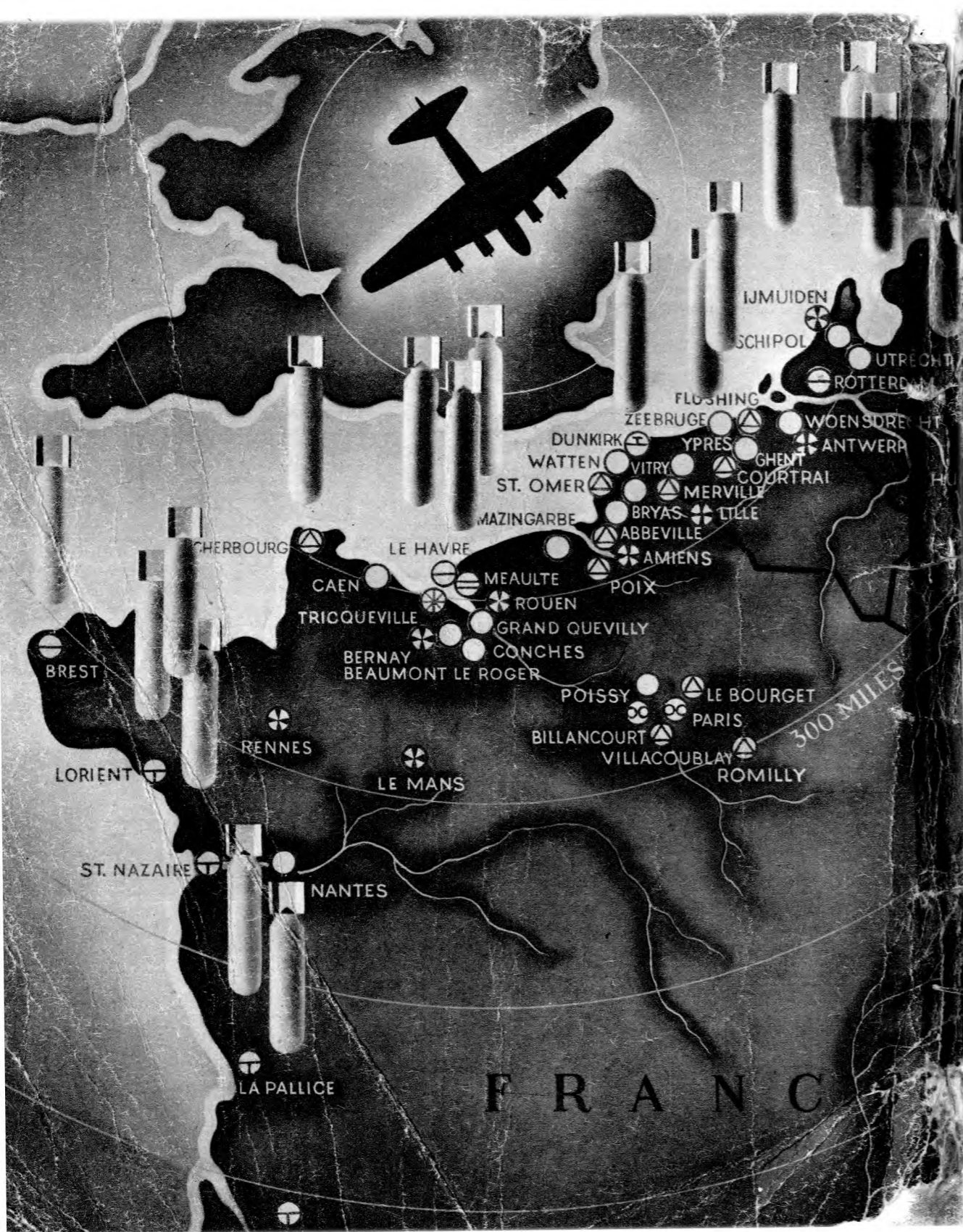
In the village of Blunham, Bedfordshire.



# TARGET: GERMANY

The U.S. Army Air Forces' official story of the  
VIII Bomber Command's first year over Europe

ONE SHILLING AND SIXPENCE NET





FLensburg

TRONDHEIM  
HEROYA

KIEL

HELIGOLAND  
CUXHAVEN

HEIDE

WARNEMUNDE

RERIK

WILHELMSHAVEN

HAMBURG

VEGESACK

BREMEN

GERMANY

HANNOVER

OSCHERSLEBEN

KASSEL

SCHWEINFURT

REGENSBURG

500 MILES

600 MILES



AIR MINISTRY,  
WHITEHALL, S.W.1.  
February, 1944

It gives me great pleasure to introduce to British readers the United States Government's official account of the first year's operations from this country of the United States Army Air Force VIII Bomber Command.

It is a brave story of brilliant organisation and massive achievement, of gallant endeavour and epic heroism.

It tells how in one year the VIII Bomber Command grew from small beginnings to the great and powerful force which, together with the Royal Air Force and the Air Forces of the Dominions and of our other Allies, is raining havoc and destruction on the Nazi war machine.

Interleaved with this story will be found something of the story of our own achievements and our own way of life as seen through the eyes of our American friends, and there will be found generous tribute to such help as we have been privileged to give them.

The stories of the United States VIII Bomber Command and of our own Bomber Command overlap at many points. The enemy must be attacked by day and by night so that he may have no respite from the Allied blows, so that his defensive resources may be taxed to the utmost limit. But day bombing and night bombing are separate though complementary tasks. Each requires a strategic plan, a tactical execution and a supporting organisation adapted to its special needs. So there has been a division of labour. To one force--the VIII Bomber Command--has been allotted the task of day bombing. To the other force--our Bomber Command--the task of night bombing. The methods are different, but the aim is the same: to paralyse the armed forces of Germany by disrupting the war economy by which they are sustained.

The objectives of both the American and British Bomber Commands are strictly military. We have rejected the policy of reprisals either for crimes like the sacking of Lidice or for outrages like the Baedeker raids on the Cathedral cities of Britain. Instead we strike at the enemy's industries and communications, at the nerve centres of his resistance, with such force as eventually to destroy his capacity and his will for bloodthirsty war and criminal oppression. Our aim, in a word, is to hasten the day of liberation of the enslaved and suffering millions of Europe.

May that day come soon.

*Archibald Sinclair*

# Target: Germany

THE U.S. ARMY AIR FORCES' OFFICIAL STORY OF THE  
VIII BOMBER COMMAND'S FIRST YEAR OVER EUROPE



[BRITISH EDITION]

LONDON: HIS MAJESTY'S STATIONERY OFFICE: 1944

*Copyright Reserved*

---

To be purchased from His Majesty's Stationery Office  
at : York House, Kingsway, London, W.C.2; 120  
George Street, Edinburgh 2; 39-41 King Street,  
Manchester 2; 1 St. Andrew's Crescent, Cardiff; 80  
Chichester Street, Belfast; or through any bookseller.

Price 1s. 6d. net.



THERE ARE MANY MEN AND WOMEN IN THE FORCES  
WHO WOULD WELCOME THE CHANCE OF READING THIS  
BOOK. IF YOU HAND IT TO THE NEAREST POST OFFICE IT  
WILL GO TO THEM

Printed by The Sun Engraving Co., Ltd., London and Watford.

# ***FOREWORD***

**THIS BOOK**, the official story of the VIII Bomber Command's first year of combat operations in Europe, is a testament to American men and machines and an American idea. In the past twelve months, the men and machines have proved themselves against the fiercest aerial opposition in the world. Thanks to their record, the American idea—high altitude daylight precision bombing—has come through a period of doubt and experimentation to triumphant vindication.

This book has been made possible by the skill and heroism of our combat crews in the air and the patience and devotion of the men of our Air Force on the ground. Some of the men whose exploits are recorded in the following pages have given their lives, some their liberty, to preserve the American way of life.

The rest fight on toward victory.

**H. H. ARNOLD**

**Commanding General**

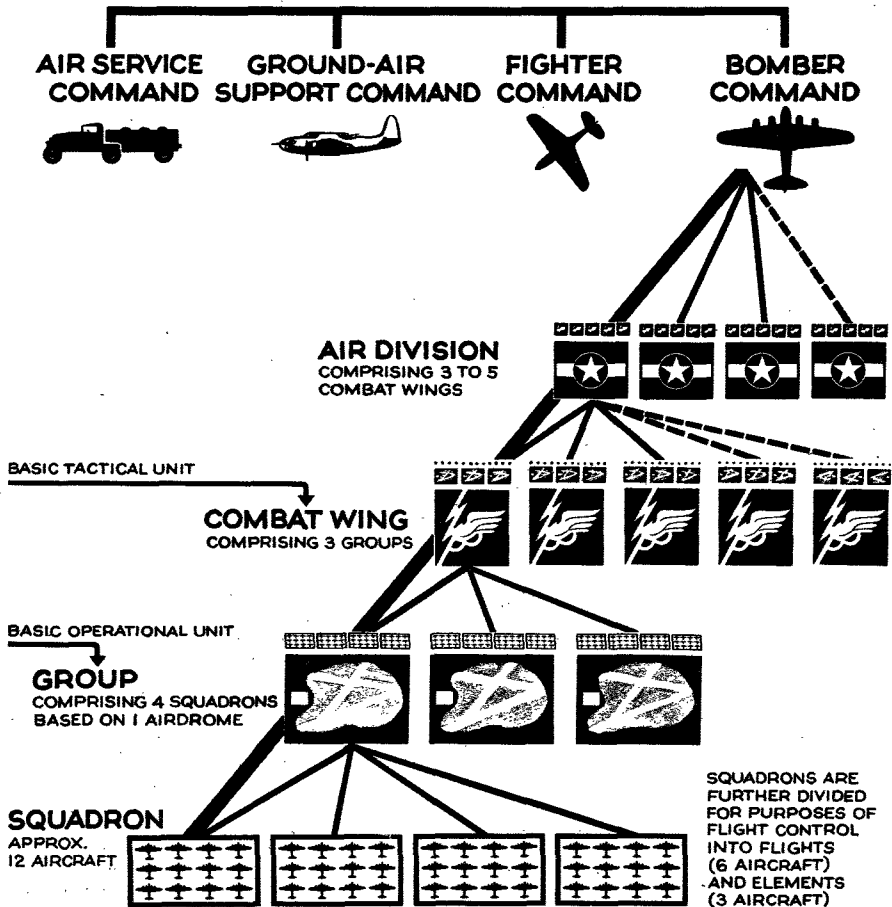
**Army Air Forces**



# ORGANIZATION CHART



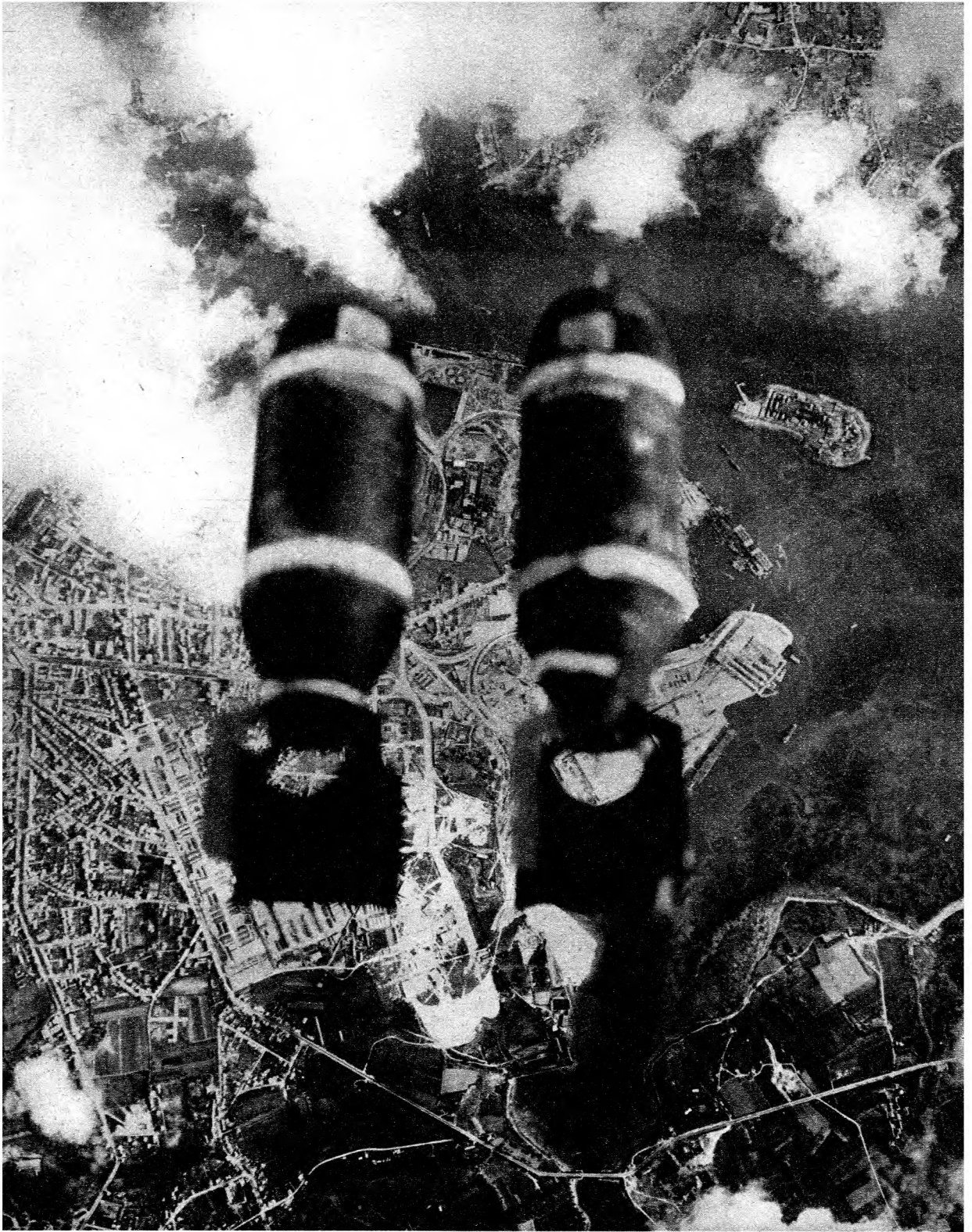
## 8TH AIR FORCE



# TABLE OF CONTENTS

MISSION 95 .. .. .	1
FROM FIVE MILES UP .. .. .	19
ACT I, SCENE I .. .. .	25
LUFTWAFFE OVER LILLE .. .. .	35
TWELVE FEET OF CONCRETE .. .. .	43
PARLOUS DAYS .. .. .	53
TARGET: GERMANY .. .. .	61
BATTLES IN THE SKY .. .. .	69
MEN, MUD AND MACHINES .. .. .	75
THE OLD ONE-TWO .. .. .	79
THE LOG OF THE LIBERATORS .. .. .	89
FULL STRIDE .. .. .	97
THE SUMMING-UP .. .. .	113
GLOSSARY .. .. .	119

*Note: All Mission and Group numbers used in this book are fictitious.*



LONDON, June 22. Strong formations of United States Eighth Air Force heavy bombers successfully attacked targets in the Ruhr and Belgium today.

One large formation of Flying Fortresses without escort penetrated strong enemy anti-aircraft and fighter defense for an attack on the synthetic-rubber factory at Hüls, near Recklinghausen. Another formation attacked the General Motors plant near Antwerp. Bombing results were good and fires were started at both targets. The bombers destroyed a considerable number of the enemy. Many squadrons of USAAF, RAF, Dominion and Allied fighters carried out escorting and supporting operations. Twenty of our bombers are missing.

—From an Official Communiqué.

IT IS 1658 hours, June 21, 1943.\* The daily Operations Conference at the headquarters of the VIII Bomber Command, somewhere in England, is about to end. In a square, high-ceilinged room buried beneath thirty feet of reinforced concrete, five men are seated at a table. This is the moment of decision.

The Commanding General stares at the wall map with its red-ribboned roads leading to and from the targets. He is weighing, judging, remembering his own trips across those cold seas and that unfriendly land. He turns to the Weather Officer.

"You say 6/10 cloud over target? Can you give me better conditions in other target areas?"

"No, sir, I'm afraid not."

"We'll go to the rubber plant at Hüls, then. Keep me posted on the weather."

The group breaks up. A vast and intricate machine of destruction, set in motion early that afternoon when the stations were alerted by the warning order and the laden bomb trailers began moving from the dumps to the waiting planes, now begins its inexorable cycle. Behind are weeks of planning, ahead five hours of climatic action.

The action has begun but, like that of any well-planned drama, is slow at first. Field Order 95 becomes a yard-long message on the teletype. Miles away, at the several Air Divisional headquarters, the operational staffs study its cryptic story. Targets and aiming points, fighter support, aircraft required, routes out and back, bombing altitudes, zero hour, radio procedure—each point is analyzed and discussed, translated from plan to practice. Here are the funnel and the

1

## MISSION 95

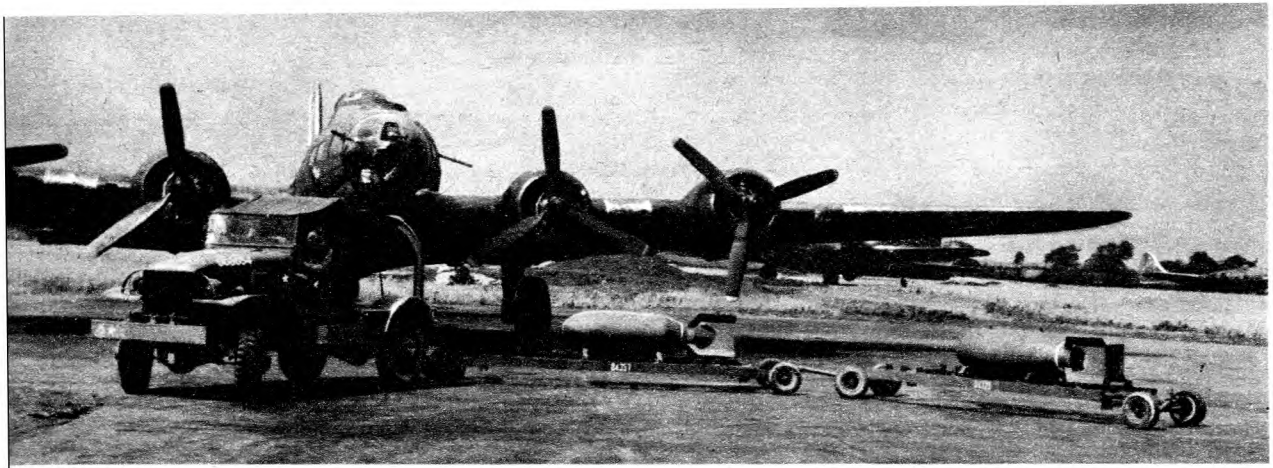
sieve, where the whole is divided into its component parts. Each part must be practicable—in terms of planes and men and bombs and fuel, in minutes and seconds and rounds to be fired. Throughout the early hours of the evening, while the larks sing and the farm wagons creak home along the twisting lanes, the strategic plan for Mission 95 becomes a blueprint for action.

At 2330 Command calls. The weather is holding. It is 0105 of June 22, when the last detail is completed and the last annex written. Once more the teletype begins to clatter, this time speeding the Combat Order from the Air Divisions to the Combat Wings and their satellite Groups scattered over the wind-swept heart of England.

Group 500 is a typical station. A flat, grassy plain some two miles on a side, it is crisscrossed by concrete runways, encircled by a perimeter track, and dotted, on its edges, with dispersal areas where the bombers are parked. On the edge of the field proper are several cavernous hangars, administration buildings, and workshops. Around the airdrome and blending with the plowed land and thickets of the countryside are the barracks and the mess halls for the 1600 officers and men who make up the complement of Group 500.

The station is dark and silent at 0105 on this June morning. A chill wind ruffles the grass, an old moon hangs low over a neighbouring wood, and high in the clouded sky a nightfighter drones by on patrol. The plane guards wait watchfully

\* Times in this book are based on the twenty-four-hour military clock running from midnight to midnight; e.g., 0312 hours is 3:12 A.M., 1517 hours is 3:17 P.M.



**Bombing up.** *The warning order starts the laden bomb-trailers moving from the dumps to the waiting planes.*

within the monolithic shadows of the bombers. A wandering jeep cruises the perimeter track behind two pale blue spots of light. In Hangar 1 a night crew is changing an engine on *Rain of Terror*. At the motor pool the truck crews, alerted doze fitfully. In the station headquarters building, behind the gasproof doors, the windowless offices which house the Message Center and the Operations Room are quiet, but bright with light. In the Message Center a sergeant and a pfc are talking shop, in Operations the Watch Officer is reading a book, and, down the hall, the Intelligence Duty Officer is writing a letter home.

The teletype at Group 500 begins its clatter at 0106 hours. At Group 501 it breaks the silence too, and at 653 and 187 and 404, at 203, 459, 366, and 724—at all the American airdromes spread abroad across this part of England. At each the scene is the same in its essentials; at each there is the same sequence of events. What Command has conceived, what Air Division has planned and scheduled, what Combat Wing has further detailed and directed, these Groups now transpose to action. The machine as a whole is now in motion. Command, its part in the drama completed for the moment, waits patiently; Division collects its papers and goes wearily to bed; on the dark fields where the bombers wait men begin to stir and prepare for their part in Mission 95.

S-2, the Intelligence chief of Group 500, is sleeping heavily when a jeep driver shakes his shoulder. It is 0112 hours.

“An order coming through, sir. I’ll be waiting outside.”

While S-2 fumbles in the dark for his clothes, the Operations Watch Officer is busy with his phones. The Group Commander and the Group

Navigator are awakened, a dozen cooks are tumbled out of bed, and the motor pool comes alive. S-2 finds the jeep in the shadows of the Nissen hut. The tarmac road leads him and the jeep driver between two newly sown fields, past a sleeping farmhouse, close by the hulking shadow of a Fortress at its dispersal point, and to the blacked-out administration building. Once past the double door and the curtain, S-2 stops for a moment, to accustom his eyes to the light.

In the Intelligence Room the Duty Officer has pinned a large piece of transparent talc over the wall map and is tracing the routes out and back with a red grease pencil. The white length of the Combat Order is on the table. S-2 studies it. *This is a tough one. Two attacks, one on the edge of the Ruhr. Happy Valley. The other one on our old friends at Antwerp. Group 500 to go along with the main thrust, which means a long ride and plenty of flak and fighters. Zero hour 0800 going out over the English coast. That means take-off at 0700, briefing three hours earlier at 0400, and breakfast at 0330. It’s now 0130. Better get set up for the Old Man.*

The Flak Officer comes in, rubbing a rough chin and regretting the last beer, three hours ago. He looks at the order, whistles, and goes to his files. S-2 has the target folder out now. A large-scale map of the area. A photograph, crystal-clear, taken from a reconnaissance plane seven miles up. A row of smoke-stacks, casting attenuated shadows . . . gas tanks . . . cooling towers . . . transformer station . . . hutments . . . acres of buildings, dispersed and camouflaged . . . a railroad siding. From off left enters a running gash—a pipe line, to the expert’s eye. Top, left to right, courses the Wesel-Datteln canal. Off right, across the tracks, a coal mine. Around the

whole lies the checkerboard of Prussian farmland. A war plant cunningly (but not cunningly enough) dropped into the innocent countryside.

In the target folder is a mimeographed brochure giving all the facts of this plant's secret life—when it was built, what it produces, the size and number of its buildings, how many men it employs, and what it does to maintain the German war effort. S-2 studies all this. On the pictures he marks the Mean Point of Impact, traces the course into, over, and out from the target. Then he sets about preparing his part of the briefing.

The Intelligence Room is filled with shifting movement now. The movement is intent and purposeful. It is resolute but glum—for this is the hour when men should sleep, not plan death and destruction. Outside, the station is still dark and quiet. The moon is down and the breeze has died and a thin sheet of haze lies over the runways. There is the faint and acrid smell of coal smoke in the air. In the Operations Room the Watch Officer is checking crew lists with a Squadron Commander. At another desk the Group Navigator marks a precise cross at a point on the North Sea and slides his parallel rulers down toward the German coast.

At 0148 the Old Man arrives at Intelligence. The Old Man is thirty-five. He likes to lead his boys on missions, and has, but a Group Commander's place is usually on the ground. Now, as he studies the routes on the map, he remembers his own trips—the boiling flak bursts, the attacks of the enemy fighters, the ice-like blue of the sky five miles aloft, and the unreality of the patterned earth below. Sucking a dry pipe, he stands for long minutes before the map. Then he sits down with the Combat Order and starts reading, slowly and with complete absorption. He might be memorizing the lines. And in a way, he is. For all through the long day to come phrases from this order will run slowly through his mind as, from his earth-bound post in England, he follows Group 500's course in the pattern of Mission 95.

0300 hours on a chill June morning is no time to get up. Group 500 does get up—with howls and curses, in deliberate silence, or with laughter. Each man faces the black morning in his own fashion, for each knows that Group 500 is going out. The weather has held. The combat crews—the pilots, the copilots, the navigators, the bombardiers, and the gunners—get into their flying outfits. First, the heavy underwear, then the

bright-blue, electrically heated "zoot suit" of flannel, O.D. trousers or fleece-lined leather pants, and a sheepskin jacket. No two dress alike, each man catering to his whims and the requirements of his post. Heated gloves and boots in one hand, and Mae West and helmet in the other, they're ready for the truck to the mess hall.

By 0330 the barracks housing the combat and the maintenance crews are emptied and the mess halls filled. The station is awakening now, as the intimation of action spreads like an ever-widening ripple. Across the rolling plain of central England this gradual stirring is duplicated at each Group assigned to Mission 95. The tempo quickens; a note of urgency is for the first time apparent in the movement. At Group 500 the Flying Control Officer is bending over a plan of the field, plotting the marshaling of his forces with the deliberateness of a choreographer—each plane in its place on the perimeter track, each off at thirty-second intervals, and each in its place at 5000 feet.

At 0405 the briefing room is ready, maps spread upon the wall and benches ranged along the concrete floor. The crews drift in, blinking at the light, and fill up the benches—officer pilots, navigators, and bombardiers to the fore, and sergeant gunners at the rear. The square of transparent talc with its red route lines is pinned to the map. Group 500's crews look first at that. Then they look away and make small sounds of disapproval. *FW's, here we come. . . . Johnny boy, you're touring Europe today. . . . Oh, oh, who thought this one up? . . . What is it, anybody know?*

They are nervous now, like a relay runner waiting to take over the baton. Later, when their time to carry the action comes, they will be calm. But now they are nervous. And they are sleepy and filled with breakfast. Mission 95 is an alien and distasteful prospect while it remains lines on a map, target pictures, and precise descriptive phrases. Later, when it moves into their realm of planes and sky and sun and their own special skills, they will make it something of their own. But now, in this bare room, there is no suggestion of adventure, no challenge. So they sit waiting—talking, yawning, watching the little group of officers clustered before the map. When the Old Man turns and faces them there is a sudden hush. Through the blackout curtains there drifts, in the moment of silence, a sound that reaches every ear in the room. It is far away

and muted. It is the sound of a Fortress engine at its dispersal point. The line crews are on the job. The combat men stiffen for a moment. Then they relax. They look up at the Old Man, who stands facing them gravely.

Back at Command, Weather is having a round-robin talk with the meteorological officers of the Air Divisions and the Combat Wings. The weather chart is developing as predicted. A front is moving eastward across the Irish Sea, but planes will beat it back to base. Weather's final judgment: the attack is feasible. Mission 95 has conquered its first great enemy—weather.

The Old Man is talking: *I don't need to tell any of you what we did at Kiel on the last mission. The bombing was good—some of the best we've done. I can't say as much for the formation we flew. We hashed all that over at the critique after the mission. I want you pilots and copilots to profit by that discussion today. Our target is the synthetic-rubber plant at Hüls, near Recklinghausen. A smaller force will be attacking the Ford and General Motors plants at Antwerp, approximately half an hour before your Time Over Target. There will be an RAF fighter sweep over this part of the*

*Dutch coast at 1035, an RAF diversion in here, and one of our own Groups will fly a diversion to this point in order to draw off enemy fighters from this area. I want all pilots . . .*

The pilot of *Tarbaby* is seated in the front row. A quiet young man of twenty-five in a leather jacket and O.D. trousers, with a white silk scarf draped about his neck. Two years ago he was an insurance adjuster, eight months (or was it eight years?) ago he said good-bye to his wife and small son in Savannah. The pilot is a conservative flier. He is also a worrier, in a mild way. Now, as he listens to the Old Man, he is fretting about *Tarbaby's* No. 3 engine, which has been giving them trouble. Hüls is the seventeenth mission for *Tarbaby* and its crew.

The Old Man: . . . *fighter support by twenty-three squadrons of RAF Spitfires and three of Typhoons will be furnished for your withdrawal. They will meet you here, which will be approximately thirty minutes after you leave the target. That means you will go in and bomb unescorted. Our P-47's are furnishing withdrawal cover for the Antwerp attack. Are there any questions?*

Ball Turret is the youngest, the smallest, and,



*"I don't need to tell any of you what we did at Kiel on the last mission. The bombing was good and . . .*

outwardly, the most intrepid member of *Tarbaby's* crew. Having been graduated from high school and worked a year with a well-drilling outfit, Ball Turret is *Tarbaby's* crack shot, with a claimed bag of five Nazi birds. He calls his twin fifties "Spit and Spat." Ball Turret had once operated on the principle that "anything without four engines oughta get it" and proudly claimed a string of near misses on a Spitfire and a chip off a P-47. Combat experience has chastened and reformed him. Seated in the rear row, sunk in oversize flying clothes, he is now trying his best to go to sleep.

S-2 takes the stand, pointer in hand. The lights are lowered. A picture of the plant at Hüls is flashed on the screen. *This is the plant at Hüls. It produces approximately twenty-nine per cent of Germany's synthetic rubber and eighteen per cent of its total rubber supply. With Germany at present so short of rubber that she's trying to bring it through in blockade runners from the Far East, I don't need to emphasize the importance of this target. The plant area is a square, approximately 3500 feet on a side. Your approach will be in here. Your aiming point is here, on the gas plant. This is the butadiene plant and this . . .*

The copilot of *Tarbaby* is twenty-one, big and blond, and was on his way to becoming a mining engineer when he started flying training fourteen months ago. He is boisterous, gregarious, and, privately, a little disappointed that there are no Dawn Patrols and champagne binges in this war he finds himself fighting. His one ambition is to be a first pilot—to sit on the left. He is wearing his flying boots, a sheepskin-lined jacket, and a Denver souvenir, a red scarf with Pinkie (last name forgotten) crocheted upon it. As S-2 starts, he is wondering where the hell his laundry is. But the problem of Hüls interests him and he begins to listen closely.

*. . . across these railway sidings, which will be on your right as you cross the target, you will see the Auguste Viktoria coal mine, which serves the plant. This Group will be bombing from 25,000 feet. After bombing you will continue to this point, where a turn to . . .*

*Tarbaby's* bombardier is called "Deadeye" because he is. Small and fair, he looks deceptively cherubic in repose. His capacity for watery English beer is a legend in Group 500. Sitting in the third row, he is wearing a disreputable coverall which he insists brings him good luck. His two loves are *Tarbaby* and the Dodgers, in that order. His eyes are closed now. He is memo-

rizing, with infinite anticipation, the exact pattern of the gas plant at Hüls, near Recklinghausen.

Weather has taken the stand. He has been up all night, and looks it. A vertical cross section of the weather en route to the target—a layer cake of clouds and meteorological symbols from ground level to 35,000 feet—is shown on the screen. Weather talks rapidly, as though he were telling an old, old story: *At base you'll have 6-8/10 thin cirro-stratus above 25,000. Visibility two miles in haze. Traces of strato-cumulus over the English coast going out. Thin patches of alto-stratus up here at 12,000 with tops at 14,000 and towering to 19,000 over the North Sea. Freezing level 11,000 . . .*

Radio is the one new man on *Tarbaby's* crew. The old Radio stopped a small piece of flak over Bremen and is now convalescing and writing jeering postcards back from an Air Force rest camp. This is the new Radio's first mission. He's twenty-three and has worked in the dispatching office of an airline on the West Coast back home. Right now he's frightened to death—and would admit it if anyone took the trouble to ask him. Weather finishes. Radio is wondering whether he ought to take his tin hat to the ship.

The Flak Officer stands before the map of enemy antiaircraft batteries, using a billiard cue as a pointer. He is apologetic, as flak officers usually are. *We've routed you today so that the flak you get will be, in general, just deterrent. He waits for a laugh—and gets it. Here, where you cross this island just off the German coast, there's a four-gun heavy battery. If you stick to your course you'll be out of range. There'll be moderate heavy flak here and . . .*

After Flak, the sergeant gunners leave the briefing. Ike and Mike, *Tarbaby's* waist gunners, trail along with them. Ike and Mike (christened George and Lester) both wear their lined trousers and jackets, for the subzero breezes blow at the open waist gates. As the recognized clowns of *Tarbaby*, they are concocting a story of misadventures to hand to the new Radio during the first dull hour of flight. Ike and Mike consider themselves hardened veterans—and are. They hate flak and respect enemy fighters.

It is 0450 as the gunners pile aboard the jeeps and trucks for the dispersal points. The eastern sky is pale with dawn now, though the field still lies in darkness. In the main briefing room Flying Control has concluded the preparation for Mission 95 with the time-tick, during which the crews set their watches. *Twenty seconds before*





**Time Tick.** *There is a moment of quiet. . . .*

0447 . . . fifteen seconds . . . ten seconds . . . five seconds . . . four . . . three . . . two. The navigators have adjourned to an office and are laying out the routes on their maps. The bombardiers are in session with the Group Bombardier, studying the target pictures. The radio operators have collected the flimsies giving the call signals of the day.

The planning is over now. It is twelve hours since the Commanding General made his decision. An intention to attack has been translated into a program of assault. The execution of that program has been committed to the hands of the combat crews. On every station the planners are going wearily to breakfast. At the dispersal points of each of the hundreds of bombers assigned to the mission, the maintenance crews are making their last checks of planes and equipment. Inside the Fortresses the gunners are disassembling their weapons, cleaning them, and reassembling the parts with infinite care. Copilots are at the planes, checking instruments, engines, and flying controls. Pilots are gathered with their squadron leaders, discussing the details of the formations they are to fly. Group 500's base is encircled with the ragged sound of engines being started, roaring at full throttle and dying away. At *Tarbaby's* dispersal site the gunners have finished their chores and are sprawling on the engine tarpaulins. It is 0527. Someone says: "An hour and a half to go." They sit quietly, smoking, talking in snatches, and watching the ground crew polish the plexiglass in the nose

and two turrets. At 0610 the low sun appears through the mist.

From the Control Tower the complete pattern of the runways and the perimeter tracks on Group 500's station can be seen. At 0630 the Operational Staff is gathered along the railed balcony outside the Control Room. The field lies quiet in the sun; an ambulance moves slowly across the turf which lines the runways. Flying Control, eying his watch, nods. A two-pronged red flare arches over the centre of the field. The stillness is broken. From each scattered dispersal point there wells a spring of sound. Ragged at first, it builds and blends into a concerted roar. Still no movement is seen. The ambulances wait at the far end of a long runway. And then the first plane appears on the perimeter track at a distant corner of the field. It is followed by another. And another. They form into an elephantine line, nose to tail, and trundle slowly along, starting and stopping with awkward precision. The squeal of brakes punctuates the roar of the engines. Two lines converge at the head of the runway, the gaps are closed, and then all movement ceases. In *Tarbaby*, which is to lead the Group, Pilot rests a forearm on the wheel and watches the second hand of his wrist watch. Two minutes and forty seconds to go.

A tense immobility settles over the field. Time has taken over Mission 95. On this field, at Groups 501 and 653 and 187, at 203, 459, 366, and 724—at Groups spread across fifty miles of England—the long lines of idling planes now wait. In each Control Tower the Operational Staffs wait. On the grass patches along the hangar lines, the ground crews wait. At the mess kitchens the cooks come to the door and look up expectantly at the empty sky. At Air Division the Operational Staff, eating breakfast, glance at their watches. At Command the Duty Officer sits watching the wall clock—waiting.

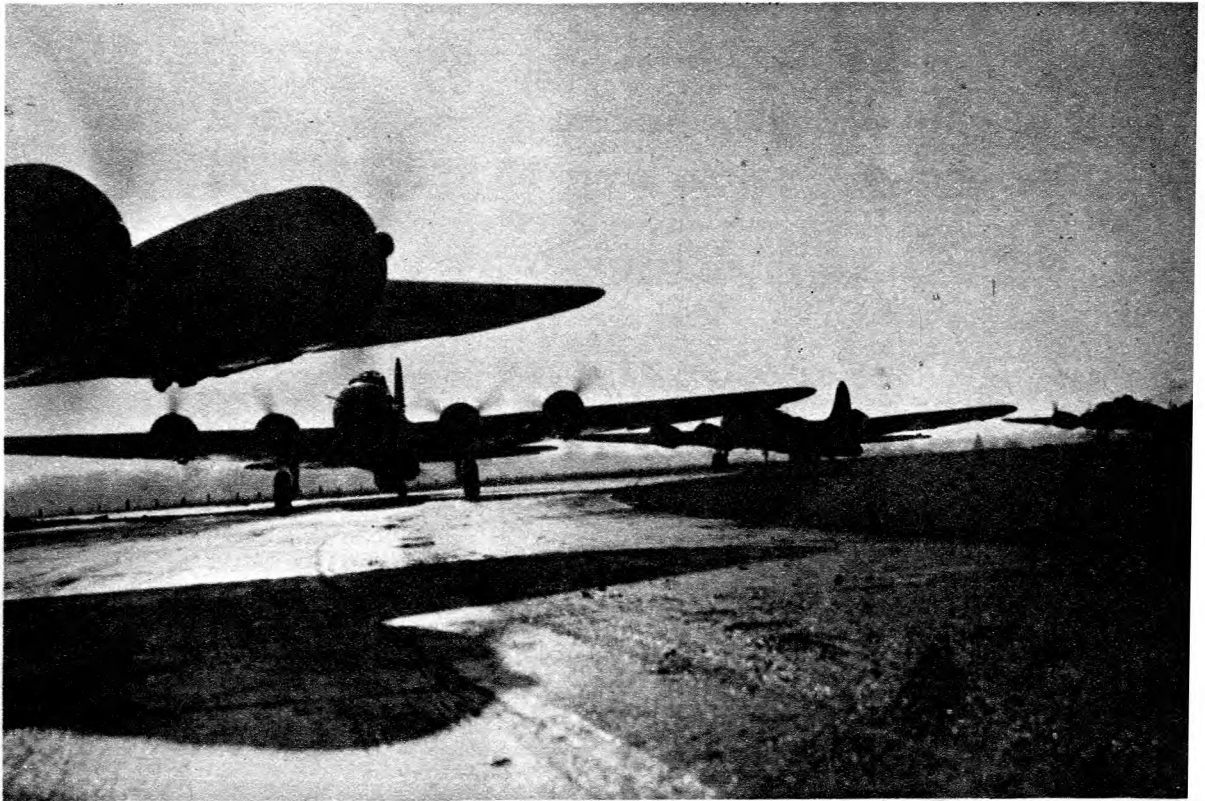
In *Tarbaby*, they are waiting, too. Ike and Mike are leaning on the right waist gate, taking the sun. Rear Gunner is squatting outside his tunnel-like post, taping together the cords from his earphones and throat mike. Ball Turret is visiting with Radio. In the nose, Bombardier and Navigator are arranging spare ammunition boxes. In the pilot's office a solemn group of three—Pilot, Copilot, and Engineer—is counting seconds.

At 0700 *Tarbaby* begins to move, leaving behind it a small cloud of blue smoke. Slowly, at first. Then with gathering speed. Tail up, it

passes the Control Tower. There is a motion at the waist window as Ike gives the V-sign to his ground crew. Almost imperceptibly the plane becomes air-borne. As it clears the field boundaries, the reverberating echoes of its engines rock the field. The second ship is under way. Then the third, and the fourth. Each thundering run is an epic of suspense—ended by the lifting of thirty tons of bombs, plane, and men from the earth. The first plane is sweeping a huge circle around the field. The second and third gradually edge into a position behind it, forming a triangular element of three. The element moves off, followed by another. Now the circle of the horizon is speckled with the patterns of the other Groups. The sky is filled with the sound and the stately, shifting movements of Fortresses as they find their places in formation and move off in ever-diminishing perspective. By 0732 they have gone. The Old Man remains staring at the sky where his planes had been. "I hope," he says finally, "all those boys come back."

At 0723, as the last of its formation fades from view, Group 500 starts its vigil. It is to last five hours, and during that time the station will lead a double life. The routine of the base will go on as usual. But today, as on every mission day, there will be a communal preoccupation among the 1400 men who have been left behind. Nothing on the stations will seem quite as important as it might on other days, no action will have much significance—for when the combat crews flew away they took the life and the meaning of Group 500 with them. When they return, and only then, this life and meaning will settle to the earthbound station once again. Now the Old Man walks moodily down the hangar line, forgetting the jeep he drove to the Control Tower. The cooks, vacant-eyed, go back to their stoves. The ground crews, bereft, turn toward their barracks, where household chores may make the hours seem shorter.

*Tarbaby*, leading the twenty-two planes of Group 500, is at 9000 feet. The pattern of the





**Rendezvous.** *The sky is filled with the sound and the stately movements of Fortresses swinging into formation.*

Group's formation has been formed. It is a huge, undulating pyramid sliding through space, apex first. The units of the formation are elements of three planes, each element flying higher or lower and to one side of the element before it. A strict radio silence is being maintained, but there is shop talk going on over *Tarbaby's* intercommunication system. *Roger's* (acknowledgment of instructions received) are being traded.

*Pilot to Navigator . . .*

*Go ahead, Pilot . . .*

*What's the rendezvous time? . . .*

*Navigator to Pilot: The rendezvous time is 0740 . . .*

*Roger, Navigator, and thanks . . .*

*Copilot to Rear Gunner: How is your oxygen mask? Does it fit now? . . .*

*Rear Gunner to Copilot: Yes, sir. I tried it on before we took off . . .*

*Roger . . .*

*What's he need oxygen for—he couldn't hit anything, anyway . . .*

*Is that you, Deadeye? . . .*

*Roger . . .*

*Well, let's see if you can drop your bombs inside Germany today . . .*

*Roger, sir . . .*

*Oh, if you have a daughter, bounce her on your knee; if you have a son, send the bastard off to sea . . .*

*Pilot to crew: Can that chatter: you monkeys. Ten thousand feet. Prepare to go on oxygen . . .*

*Rear Gunner: Roger . . .*

*Right Waist: Roger . . .*

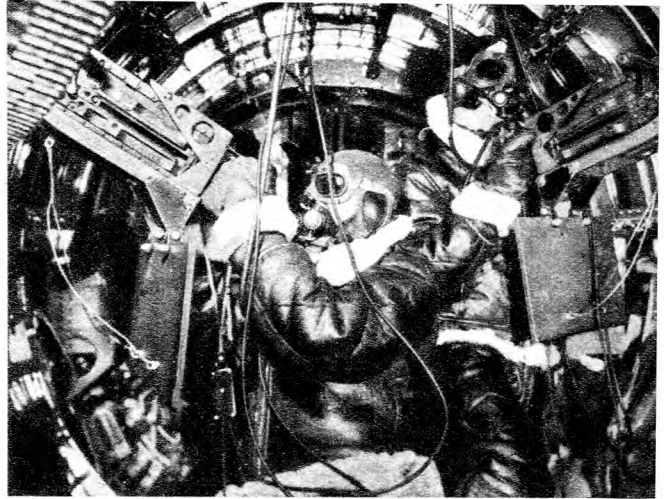
*Left Waist: Roger, sir. A Group closing in high from eight o'clock, sir . . .\**

*Roger, Left Waist . . .*

*Navigator to Pilot: See that bunch ahead at eleven o'clock . . .*

*Roger, I have it . . .*

The rendezvous point has been reached and now the groups are winging in and orbiting in circles as they team up into Combat Wings of three Groups each. The Combat Wings move slowly southwestward in procession. In *Tarbaby's* waist Ike and Mike have put on the masks and adjusted their oxygen regulators to 12,000 feet. Bundled in heavy flying clothes, yellow Mae Wests, parachutes, and wearing masks, helmets, and throat mikes, they look like two men from Mars. The bladders hanging from the masks dilate slowly as they breathe. Resting against their guns, they are watching the passing groups and waving when a friend comes close enough to



Ready for altitude, looking like two men from Mars.

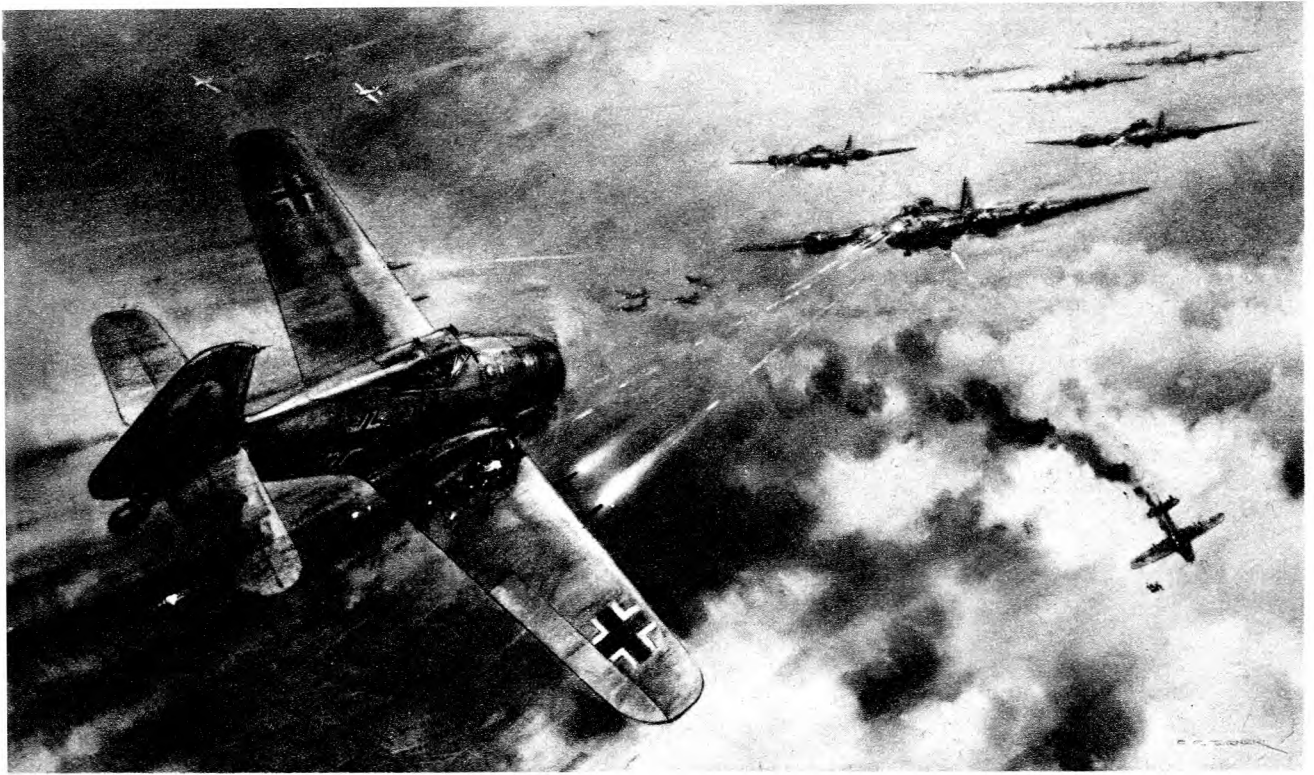
be identified. Ball Turret, curled in his plexiglas dome beneath the ship, is swinging himself slowly around and wagging his guns.

This section of Mission 95 is now a line of shifting islands in the sky. From his post in the upper turret of *Tarbaby*, the Engineer can see them spaced out behind to the point where they vanish into the haze line on the horizon. Amidships, Radio is swinging his dorsal gun into position. He is feeling better now. Ball Turret's nonchalance has stiffened him and the heady trickle of oxygen is singing in his blood. In the nose, Navigator is computing the drift. Bombardier, leaning over his sight, is watching the English coastline approaching far below.

By 0830 Group 500's station has adjusted itself to a morning of waiting. The Old Man has retrieved his jeep and is inspecting the bomb-storage areas. In the Briefing Room an Intelligence Officer reads *Yank* while he waits for abortives—any early returns to be interrogated. Down the hall a sergeant and a pfc are preparing coffee and sandwiches for the returning crews. Maintenance units are cleaning their barracks. Outside Hangar 1, *Rain of Terror*, its new engine installed, now waits for a run-up test. At scattered dispersal points, line crews are working on the bombers left behind.

At Air Division, the Intelligence Staff is gathering to weigh and judge the validity of the claims of enemy fighters destroyed on the previous mission. The Air Division C.O. is having a tactical conference with his Operations Staff. At Command, the General is studying the day's

\* Fields of fire, and approach, are expressed by the clock system—twelve o'clock being the plane's nose, six o'clock its tail.



first weather forecast, a file of priority targets beside him. Outside, his car is waiting to take him to British Bomber Command, where he will sit in on the conference planning the British bombing operations for the coming night.

At 0847 Mission 95, far out over the North Sea, has reached 24,000 feet in its slow climb and turned in toward the enemy coast. The temperature is 35 below zero and going down. Frost smears the windshield and the plexiglas nose. Cockpit windows have been opened to equalize the temperatures. Below, the metallic sea appears between patches of haze and fog. Through the high layer of drifting cirro-stratus the troposphere is a dark and sinister blue. Guns are being tested with short bursts that crackle startlingly through the engine's drone. Every man in the armada is at his post, scanning the bowl of space for enemy fighters. In the noses the navigators are watching for the first sign of the surf line on the Frisians, somewhere ahead. The formation has been spotted now on the German Radio Directional Finder screen. The unseen tentacles of the enemy's locator system, groping beyond the curve of the horizon, have touched them and pinpointed this part of Mission 95 in space. Their course and height and speed are being plotted. From half a dozen fields the German fighters are

taking off to meet the threat. Miles away to the southeast, the other section of Mission 95 has now left its target at Antwerp. A drifting pall of smoke covers the Ford and General Motors factories, while the Thunderbolts shepherd their charges across the Channel.

Back at Group 500's station, an abortive checks in at 0855. It makes a wide swing around the station, disappears, and then comes gliding down to the runway. In a distant corner of the field, the Old Man watches it. The Intelligence Officer on duty at the Briefing Room watches it. In five minutes the whole station knows that *Mollycuddle* has aborted. At *Mollycuddle*'s dispersal point the line crew dourly watches its plane wheel into parking position. The engines cough and stop. From his high window the pilot looks down upon the group of unhappy faces below him. He makes a thumbs-down gesture. "That damn supercharger on No. 4 engine. She wouldn't give. Loused again. You boys have got a job ahead of you."

Five minutes later, in the Briefing Room, he is more specific: "We got almost to the coast on the way out. Thirteen thousand and on oxygen. Turned back at zero minus four. I would have gone on a little farther, in hopes that we could have got her working, but there was a spare to

take our place. Just our luck, damn it. Yeah, the rest looked fine when we left them.”

Mission 95 crosses the islands which line Germany's North Sea coast at 0900. They are at bombing altitude now. The Combat Wings, each one a rough arrowhead of three Groups, are spaced down from front to rear like a flight of steps. Though from the ground the muttering thunder of the formation can be heard over miles of the island chain, the planes themselves are barely visible—a procession of tiny specks moving inexorably across the sky. To the left of the formation dark smudges of flak appear. From his gate in *Tarbaby*, Left Waist notes this with satisfaction. Mission 95 is out of range of that particular battery. The navigators are on the beam.

The islands lie behind and the Zuider Zee lies beneath when, at 0903, the first enemy fighters hit Mission 95. They come in high from the south, like a pack of gnats, cross over the procession at 3000-yard range, and disappear in the glare of the sun. The guns on the Forts silently swing around, following their course. There is a moment of waiting. The fighters pick their objective—a group near the tail of the procession. They swing around, peel off, and come hurtling down in line astern.

Warnings flood the intercommunication systems of twoscore planes. *Here they come, high at nine o'clock . . . Roger . . . 190's at eleven o'clock. They're after that Group ahead . . . Focke-Wulfs—ten o'clock . . . Roger . . . Three thousand yards. Two thousand yards. One thousand yards. The guns of the Group attacked open up with a few short bursts. Smoking tracers fill the air around the leading fighter. The Focke-Wulf is firing now—the four 20-mm. cannon flashing orange from the wings, the two machine guns projecting bright tongues of flame from the fuselage. Six hundred yards. More of the Forts' fifties are finding the range. The sky is criss-crossed with tracers. The fighter bores in. The puffs of his explosive 20-mm. ammunition are creeping up on the wing ship. A burst of machine-gun fire rakes the plane amidship, making crackling noises like a stick against a picket fence. Four hundred yards. The Focke-Wulf does a half-roll, exposing his armored underbelly to the defensive fire. He drives in for another two hundred yards, guns blazing. He dives, followed by the fire of the ball turrets, until he is lost to sight against the shimmering water below. The action of the attack, from the first*

to the last shot fired, has taken place in just four seconds. Another Focke-Wulf is coming in now. A third and fourth and fifth, a dozen, follow it. Meanwhile, the first is climbing, to re-form for a second attack.

At the conclusion of this first contact, Mission 95 is still driving on, outwardly unchanged. But in the Group attacked one plane has an engine out, with its propeller feathered, in another the engineer is working frantically to stop a leak in the oxygen system, and in a third a tail gunner lies dead at his post. A Focke-Wulf has gone down like a flaming arrow into the waters of the Zuider Zee and another, crippled, is fighting for altitude as it makes for land.

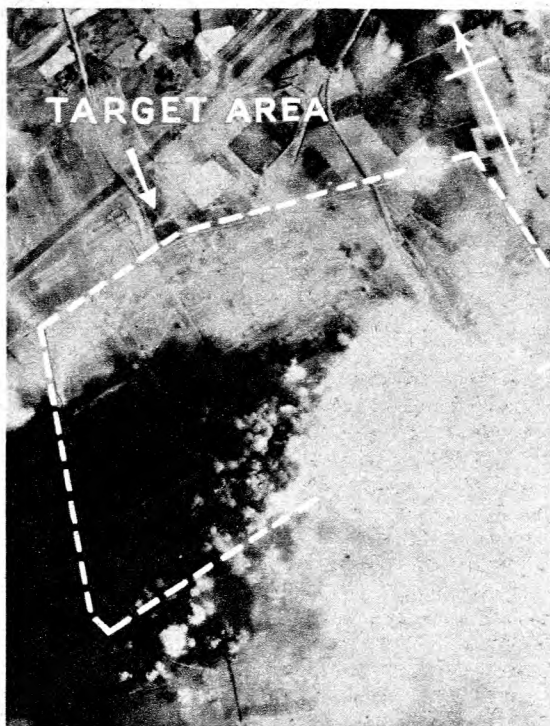
From his place at *Tarbaby's* dorsal gun, the new Radio watches the beginning of this distant action and follows it until the fighters dive below his line of view. He is sweating, despite the cold. And he is anxious. He swings his gun around, searching the oblong of visible sky. Rear Gunner is describing to the crew what he can see of the action in the rear. *They're coming down again. At the same Group, I think. Looks like they're bunching up and hitting them from six o'clock. There goes a Fort out of formation. They're ganging up on him. He breaks off suddenly as Copilot comes in on the line. Copilot to crew: Fighters at two o'clock, level. Repeat. Fighters at two o'clock, level.*

It is 0912 as the second group of attackers appears. The head of the bomber column is striking a tongue of land on the Zee's east shore. More flak appears. Puffs of oily black and brown smoke spread across the sky just ahead of the lead ship. The Forts drive through it. One ship wobbles, drops out of position, and then slowly regains its place. *Tarbaby* cuts through a spent flak burst drifting past like a dirty veil. The lead Wing swings down and to the right—every plane in place—in a sweeping evasive movement. *Tarbaby* leads Group 500 in a climbing turn to the left. The gunners are firing steadily as the fighter attacks develop. Five thousand feet above the twisting, turning units of Mission 95 three twin-engined enemy fighter-bombers are jockeying for position as they prepare to bomb the formation. Another Fortress has gone down, its right wing trailing a bright sheet of flame. A burning fighter leaves a line of smoke across the sky. The pattern of the German countryside is now beneath the action. The battle of Mission 95 is on.

At 0940 the Old Man once again climbs the

stairs of the Control Tower at Group 500's station. The second of the three crises of the day's vigil is at hand. The first was the take-off. Now comes the T.O.T.—the Time Over Target. The third will be the Group's return to base. The Old Man is nervous. Instinctively he seeks the company of his Operations Staff, the comforting familiarity of the Control Room. He glances at the wall clock, drums on a desk, wanders out to the balcony and studies the blank sky, leans on the rail and stares at the cabbage patch around the flagpole. Four hundred miles away, blanketed by a self-imposed radio silence, his boys are over the target at Hüls, near Recklinghausen.

The plant at Hüls is visible through *Tarbaby's* nose. It is 0940. Mission 95 has run the gauntlet of half a dozen flak barrages and fought off constant fighter attacks for forty minutes. Deadeye is flying *Tarbaby* with his automatic-flight-control equipment. 0942. He scrubs at the frosted plexiglas with a piece of waste. White cumulus cloud towers over the plant. One corner of the target is blanketed. More flak is coming up. The



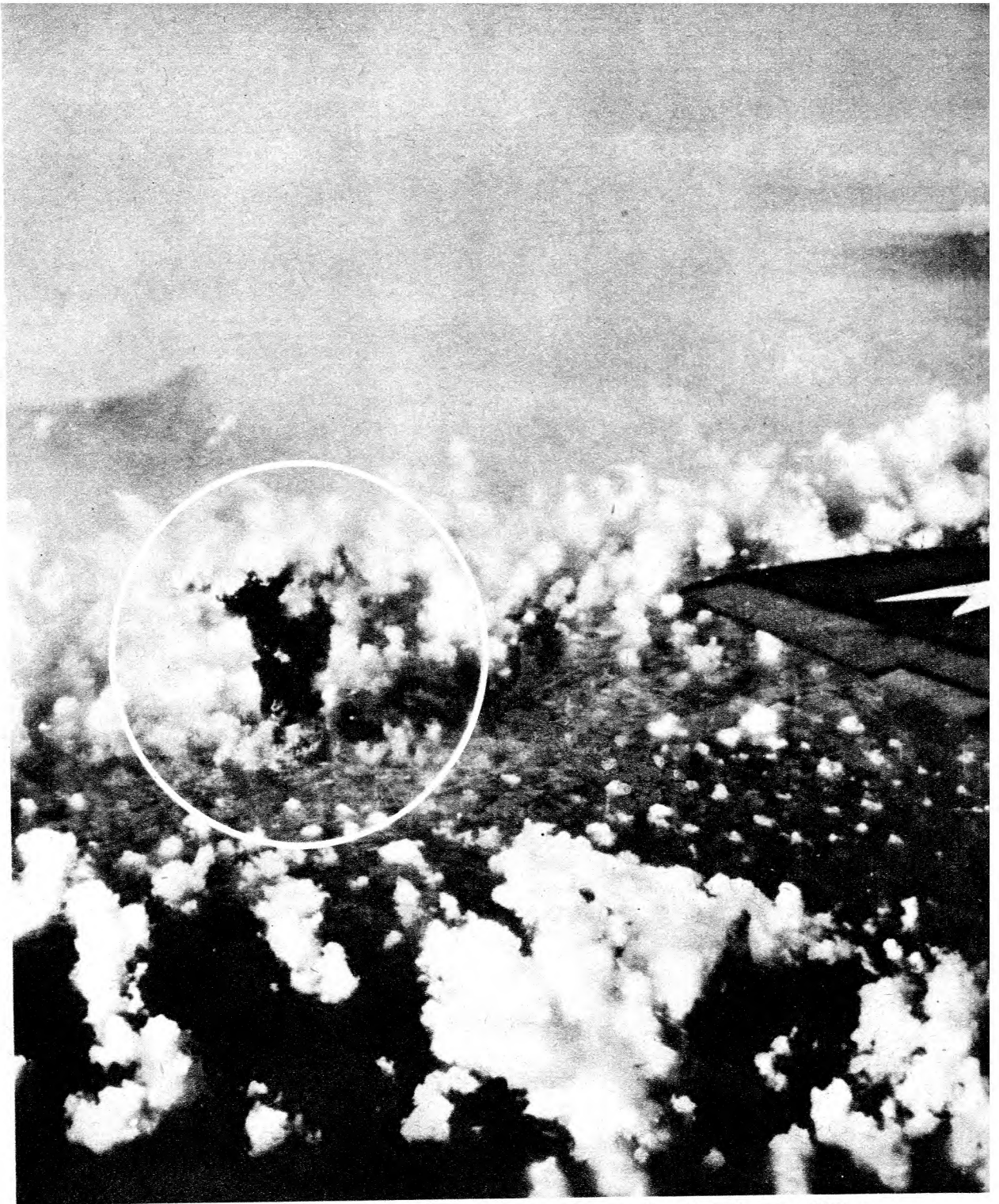
**Strike!** Cloud towers over one corner of the plant. The smoky splashes of the first bombs are visible.

target is in the bomb-sight's field of vision. Deadeye finds the aiming point and pushes a switch. The bomb-bay doors grind open. The indices are moving together. Deadeye checks the rows of red lights above the rack switches on the bomb indicator. He moves a knob. *Tarbaby* swings a little to the right. *Bombardier to Radio: Start camera . . . Radio to Bombardier . . . Roger . . . Camera started.*

The smoky splashes of the first Group's bombs are visible through the bomb sight. They spatter the area. Deadeye grins. His hand is on the trigger of the sight. He makes a small adjustment. Then another. The cross-hairs are on the gas plant. The sight is at work, computing speed and drift and bomb fall. The indices are together. The red lights on the indicator panel fade. *Tarbaby*, freed suddenly of the bombs' weight, rises buoyantly. Deadeye says: *Bombs away. Let's get ourselves out of here.*

Behind *Tarbaby* the other bombardiers of the group, seeing the leader's bombs away, snap their switches. The loads fall, the clusters of 500- and 1000-pounders arching toward the earth in a slow curve. Navigator makes an entry on his log: "Bombed 0943. 25,000 feet." Throughout *Tarbaby* there runs a current of elation. Pilot smacks the control wheel with his fist. Copilot raps the instrument panel for luck. Ike and Mike turn, thumbs up, and grin at each other behind their masks. Top Turret-Engineer says to himself: *Now, No. 3, get us home.* Lower Turret and Rear Gunner are silent as they try to follow the fall of the bombs. The camera motor whirls unheard, taking a picture every six seconds. Radio, a veteran now, announces: *Enemy aircraft at four o'clock, high. Look like Me-109G's.* It is 0944. The last of the Groups has cleared the target area. In just under four minutes more than 400 tons of high explosive have been dropped on the synthetic-rubber plant at Hüls near Recklinghausen. As the last Combat Wing in line leaves the area a tower of smoke 7000 feet high mushrooms over target.

At 0944 the Antwerp section of Mission 95 is near the English coast on its return trip. One hundred tons of bombs have been dropped on the two plants producing motor transport for the German army. Hits have been scored on both the Ford and General Motors factories. Thunderbolt fighters, picking up the harassed Groups shortly after the bombing and driving off the fighter attacks, have now formed flying shields above and below the formation. One enemy



**Nazi rubber burning.** *A column of smoke 7000 feet high mushrooms from the camouflaged buna factory at Huls.*



fighter has fallen to the bombers' guns; the Thunderbolts have brought down six without loss to themselves. Now within sight of friendly shores, the escort and the escorted are about to part company.

By 1012 the main section of Mission 95 has left Hülfs far behind and is over Dutch territory on the long trip home. An hour's persistent attack by flak and fighter has dealt severely with the formation. Fifteen bombers have fallen along the route, the holes they left being immediately plugged by the next plane in line. As they approach the rendezvous with the friendly fighters, the defensive fire power of Mission 95 has not noticeably weakened. But the strain imposed by altitude and the enemy is beginning to tell. In the lead Group all eyes are turned to the west for the first sign of the Spitfires. The formation is at 18,000 feet and dropping steadily as it heads for the Dutch coast.

In *Tarbaby* the mission, so far, has gone well. Copilot, taking advantage of a lull in the fighter attacks, has just completed a check of the plane. A piece of flak has torn a hole in the vertical stabilizer, a 20-mm. ricochet has holed the plexiglas in the nose and there is a line of machine-

gun bullet holes in the fuselage amidships. No. 3 engine is running rough, but not dangerously so. The only personnel casualties are Rear Gunner, who reports a frostbitten left hand suffered when clearing a gun stoppage, and Ball Turret, who claims he is dying of hunger and where are the sandwiches. As Copilot regains his seat, Pilot points upward through the windshield. A banner of vapor trails is sweeping in from the west. *Pilot to crew: Looks like friendly fighters coming in high at eleven o'clock. Repeat. Possible friendly fighters coming in at eleven. Watch your firing. Spits will be giving us close support. Typhoons in the lower box . . . Top Turret to Pilot: Enemy fighters coming in high at seven o'clock. Focke-Wulfs at seven. Watch it, Left Waist. They're after us.* As Pilot swings *Tarbaby's* nose sharply to the left there is a rending explosion and the ship quivers. The intercom sputters and then goes dead.

At Group 500's base—at Groups 501 and 653 and 187, at 203, 459, 366, and 724, and at all the other fields which have dispatched planes on Mission 95—the long wait is almost over. The time is 1150. Ground personnel has gathered in bunches along the hangar line. The Operations



**Wounded aboard.** A red warning flare, shot from a returning *Fortress*, burns a bright arc through the air.

Staff lines the balcony of the Control Tower. On the roof, Flying Control is ready, with a short-range radio, to "talk" the planes in. At the end of the runway the ambulances wait, their engines turning over quietly. Near the tower the squat cleat tracks, waiting for accidents, chug noisily. Minutes pass. The sky remains empty. All eyes are turned to the east. Suddenly someone calls: "There's one. A single."

The bomber comes in low and fast. It circles and disappears below the tree line. Then its engines are heard coughing and it appears above the edge of the field, gliding for the runway. A red flare burns a bright arc through the air. The plane touches, bounces, and settles to earth. An ambulance is racing across the grass, for this flare is the sign of wounded aboard. Halfway down the runway the big ship slows abruptly, with a squeal of brakes. Wheeling slowly, it turns off the concrete and trundles across the turf. Before it comes to a stop the ambulance has circled to its position beside the door.

They come, then. First gnats on the horizon. Then geese in the sky. Finally, Forts overhead. One Group. Two Groups. Then half a dozen, each one sliding up from the eastward line of the earth. The first to pass overhead is counted and recounted. *One abortive. If that's us, we've lost three . . . That's not us . . . There's 653—just over those trees . . . Where the hell are our boys?* The ambulance leaves the stricken ship in the middle of the field and comes racing toward the hangar line. On the tower roof, Flying Control is silent at his mike. His head is cocked as he listens to the air-to-ground conversations in his headphones. He lifts his binoculars and stares hard at the eastern horizon.

Group 500 comes up the sky slowly. Then it is overhead with a roar. The counting is repeated. *Three missing . . . No, one came back early. Well, that makes two . . . You counting this one out here? . . . Sure, that still makes two short . . . Maybe they landed someplace else . . .*

Group 500 circles the station, its formation precise and proud. The elements break off. Flying Control is talking now. *Are you receiving me, T for Tommie, are you receiving me? Over to you. Over . . . You may come in now, T for Tommie, you may come in. Use runway 2. Use runway 2. Over. Over.*

Twenty minutes later the last plane to return is down. Refueling crews are already at work, maintenance men are clambering over their ships, measuring battle damage for patches, and the

Engineering Officer has finished counting noses of the Forts out of action and those that can be readied to fight the following day. Group 500's dispersal areas are tenanted once again. All but two. The count is final. Two lost. At these two dispersal points the line crews of the missing ships wander aimlessly over the splotched concrete and scuffed turf where they have worked for so many weeks. There is little said. *Yeah, he was a good guy . . . Well, she made eighteen, anyway . . . A good ship. Bet she gave them bastards a run for their money.* Finally, like men lost in thought, they gather their toolboxes and pile them into a waiting jeep.

At the Briefing Room the combat crews are gathering. Coffee mugs and sandwiches in hand, they mill around. Little groups form, dissolve, and re-form. There is some talk and laughter, but not much. These are tired men. Their faces are drawn, their hair is matted and tangled, and in their eyes is a deep weariness. They scuff about awkwardly in the heavy flying boots or sit with hunched shoulders, staring at the floor. Later they will come alive, but now they show only patient acquiescence as they await their turn for interrogation.

At the Hot News desk a pilot is giving his report. *We pin-pointed her at 3 East, 51 30 North. She must have been hit in the last attack, just as the Spits met us. Stayed in formation awhile and then dropped out about the time we left the coast on the way back. My navigator says the two out-board engines were out at the time. Didn't see her ditch. The Spits covered her on the way down, so I guess they got Air-Sea Rescue on the job by this time. Yeah, Tarbaby, that's her.*

The interrogation of the crews is under way—each crew at one of the big tables scattered around the room. Bombing altitude? Position in formation? Number of enemy fighters seen? Where did you hit flak—altitude, position, time? How was the bombing? Encounters: How did he come in? When did you start firing? Do you claim him as destroyed? Any flame? Did the pilot bail out? Did you see the ship crash? Any suggestion or comments on the operations?



*Standing by for crackups.*



*Before Questioning . . . Combat makes men hungry.*



*"I gave him a burst at 400 yards and he blew up."*

The questions are brief and pointed. The answers, at first, are terse. Then the crews loosen up and become more voluble as they relive their part of Mission 95. The Interrogation Officer waits, looking from one to another, jotting down the pertinent facts on his form. Two stories conflict. They are contrasted. A compromise is reached. Finally it is over and the crew straggles away from the table. Another group takes its place.

By 1230 the interrogation of all the crews is completed. Hot News, with reports of plane crashes and convoys sighted, has been phoned to Air Division for immediate action. Intelligence has completed the Flash Report giving the story of the Group's part in Mission 95 in tabulated form. The combat crews, having washed off the grime of flight, are spreading to the messes. The loudspeaker system has announced a pilots' meeting at 1430 hours. In the station darkroom the photographic sergeant pulls the first dripping negative of the day's strike photographs out of its acid bath. He holds it to the light, studies the chiaroscuro of clouds and smoke and earth, whistles, and goes back to work.

As the afternoon wears on, Group 500 settles down to its accustomed ways. At the dispersal points battle damage is being repaired, empty shell cases are swept out, tanks filled, guns cleaned, and engines tested as the bombers are readied for the next mission. The Intelligence Staff is checking the encounter reports before forwarding them to the Air Division. The Old Man is preparing a tactical report for the Combat Wing Commander. The men of the combat crews, with an afternoon off, are prowling the station in search of news and amusement. Sooner or later the path of each brings him to the door of Intelligence, where he asks about the strike photos. The pictures, still damp, arrive at 1500.

The strike photos are delivered to Command by parachute at 1602. The daily operations conference is about to begin. Weather has just submitted his forecast. The front is moving over central England. Bases will be closed in. The Groups will have a day of rest. Meanwhile, the planning for the next attack will go on.

The Commanding General places the strike photos on the table before him. On the table, too, is the Flash Report from the Air Divisions.

"Here you are, gentlemen. The accomplishment—Hüls well hit, with bombing concentrated in the target area. We'll have to wait for reconnaissance photographs and a complete damage

assessment, but it looks to me as if we had dealt the plant a crippling blow. The cost—20 bombers lost, three men killed, 19 wounded, and 191 missing. Our claims total 46 enemy fighters destroyed, 23 probably destroyed, and 44 damaged. The British Air-Sea Rescue has just reported picking up eight men of a Fortress crew off the coast. Now, on this next attack . . .”

Mission 95 is completed.

*Hüls: Indications are that this plant is at present inoperative. A high proportion of the*

*bombs dropped fell within the target and considerable damage is seen throughout the plant. The full extent of the damage to several buildings cannot be completely assessed from photographs. Many of the most important plants and buildings have been damaged, including the Arc, Converters Plant, the Butylene Glycol Plant, the Aldol Plant, the Acrylonitrile Plant, the Butadiene Plant, the Acetaldehyde Plant, the Polymerisation Building, and the Gas Compression and Fractionation Building . . .*

FROM AN OFFICIAL REPORT.



**Mission's end:** A member of the ground crew collects expended cartridge cases from the waist of a Fort.



**Target: Germany** is the story of an experiment. That the experiment is concerned with destroying the economic fabric of another nation is to be regretted. That it may be a large factor in saving our own way of life should not be forgotten. For aerial bombing is now beginning to return dividends which surpass the expectations of its staunchest adherents. Bombs alone do not win battles—but bombs behind the fighting fronts may rob armies of their vital supplies and make war so terrible that civilian populations will refuse to support the armed forces in the field.

During the past eight months scientific bombing has changed the face of war. For the physical attrition of warfare is no longer limited to the fighting forces. Heretofore the home front has remained relatively secure; armies fought, civil populations worked and waited. This conflict's early air attacks were the first portents of a changing order. In its slashes at Warsaw, Rotterdam, Plymouth, Coventry, and London, large-scale bombing showed its claws. The Germans had conceived a terrifying weapon. Fortunately, they had neither the imagination nor the physical resources to capitalize on their revolutionary conception.


On the night of March 5-6, 1943, bombing came of age. On that date the RAF began the systematic, patterned devastation of the twelve cities of the German Ruhr. The ruins of the Ruhr, Cologne, and Hamburg, and the American-inflicted damage at the Hüls rubber plant, at the Heroya aluminum unit in Norway, and the Blohm & Voss shipyard at Kiel, have now clothed a German vision with reality. To borrow from Macbeth, it is the Nazis' own "Bloody instructions which, being taught, return to

plague the inventor." The Ruhr, heart of Germany's heavy industry, has been crippled. In the first climactic four day-and-night Hamburg *Blitz* (the Germans even had a word for it), well over 2000 British and American aircraft dropped more than 7000 tons of high explosive and incendiaries on a city the size of Detroit. To quote an official report: "There is nothing in the world to which this concentrated devastation of Hamburg can be compared, for an inferno of this scale in a town of this size has never been experienced, hardly even imagined, before."

Here, then, we have terror and devastation carried to the core of a warring nation. The implications of such destruction of public morale and economy are not yet clear. They soon will be—perhaps before this book is published. It may be that, in forging so terrible a weapon, the United Nations have found the way to break any nation's will to fight. That would mean not only victory in this conflict but also the answer to any threats of war in the foreseeable future.

There are two kinds of bombing—strategic and tactical. Strategic bombing strikes at the economy of the enemy; it attempts to cripple its war potential by blows at industrial production, civilian morale, and communications. Tactical bombardment is immediate air support of movements of air, land, or sea forces. This record concerns itself only with strategic bombing.

There are, in turn, two kinds of strategic bombardment. *Area bombing* is directed at the industrial district or the city as a whole. This is the method perfected by the British Bomber Command in its night attacks. *Precision bombing* is directed at the specific industrial unit—the plant, the factory, or the railroad yards. This is day bombing on the American Plan. Neither force allows itself to be restricted by definition. The British Bomber Command occasionally employs precision bombing, though mostly at low altitudes; the daylight raids of its fast Lancasters on the M.A.N. Diesel-engine plant at Augsburg in central Germany, on the Ruhr dams, and on

 **Hamburg Blitz.** High over the smoke of fires started by the RAF the night before, Fortresses strike at key targets from five miles up. Black flak bursts hang in the air. At lower right, Nazi fighters rise to challenge the American invaders.



*Area bombing. This section of shattered Hamburg typifies the devastation wrought by the British Bomber Command in its great night Blitz. The waffle-iron shadows are cast by gutted buildings.*

the Le Creusot steel plant in central France were classics of planning and daring execution. The American VIII Bomber Command edges into its neighbor's field of area bombing when unforeseen weather conditions close in on specific primary targets and general industrial areas are attacked as targets of opportunity.

These two types of bombing have so often been contrasted, usually to the disadvantage of one or the other, that it is not generally understood, outside of military circles, how the two complement each other. Day-precision and night-area bombing carried on simultaneously from the same bases, in this case the British Isles, results in a number of tactical advantages:

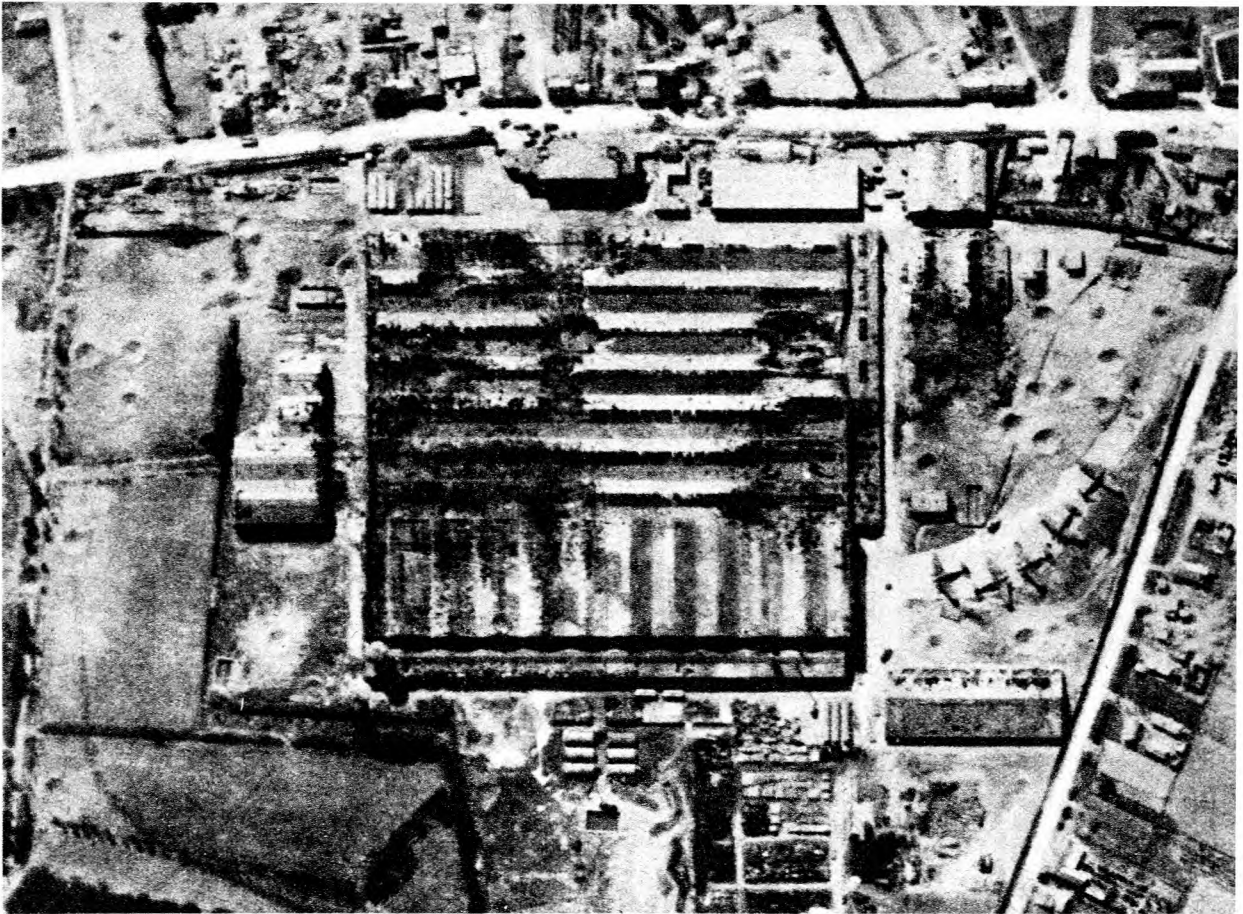
1. Our combined air attack against Germany can be spread over twenty-four hours a day. This means that their defenses must be alerted continuously and that their industrial work schedules are constantly being upset.

2. Both day and night fighter defenses must be maintained by the enemy. As these are independent commands using different types of planes, this results in a heavy drain on the German fighter strength on the active fronts.

3. Using part of our tremendous combined British-American bomber force by day and part by night simplifies the traffic problem over bases and the checking system in the coastal areas over which the planes pass on their way to and from enemy territory.

4. Area- and precision-bombing forces give the joint planning staff two specialized weapons. With the British force a city may be devastated but a specific plant may be missed. The American force, not yet carrying the weight of explosive necessary to wipe out the city, can go in and get the plant.

Day-precision and night-area bombing thus work ideally together. The two concepts, how-



**Precision bombing.** *This aircraft factory at Nantes, repairing German planes, was the target of American heavy bombers. The plant was wrecked. Note salvaged planes and bomb craters.*

ever, demand different equipment, different operational technique, and crew training systems that vary in many particulars. Area bombing at night is a highly complex art, demanding as much co-ordination, skill, and planning as precision bombing by day. As practised by the British Bomber Command, it requires a large force to saturate the enemy radio-location stations and night fighter defenses, and spread the damage over the largest area in the shortest possible time.

British bombers carry a large proportion of incendiaries; the value of starting hundreds of simultaneous fires in a city is obvious. A concentration of planes over the target also makes the job more difficult for the defending searchlights and anti-aircraft batteries. The aircraft used—the Lancasters, Halifaxes, and Stirlings—are designed with load and range as primary considerations. The crews are trained for night

operations, with special emphasis on accurate navigation by radio devices. The whole plan of operation is based on single-plane flights, each bomber navigating its own way to the target and arriving there at a given height, on a certain course, and at a scheduled time. “Pathfinders,” especially trained in target identification, precede the main force and find and mark the target with flares.

High-level precision bombing demands, first, bomb-aiming equipment that insures accurate placing of the loads from high altitudes. It requires, also, planes with enough ceiling to avoid the most accurate heavy flak levels. German heavy flak (anti-aircraft artillery fire) can reach above 40,000 feet, but its accuracy drops off fifty per cent every 5,000 feet above 15,000 feet, so the value of high-altitude operations is readily apparent. High-level precision bombing also calls for planes with the fire power



to ward off enemy fighters and for crews which work perfectly as a team in meeting and repulsing these attacks. Pilots and copilots must be extraordinarily skillful in flying heavily loaded planes in close formations at high altitudes, and the handling of the bomb sight must be of the highest order.

These are the basic differences, then, in the two strategic bombing techniques practised in the European Theater of Operations. The British turned to night-area bombing, after considerable early-war experience with both types of operations, because they felt the area technique better suited to their strategic capabilities. The Americans worked for years on the technique and the equipment for daylight precision bombing and then took the idea to war to try it out in actual combat. The difference in the way the two Bomber Commands were forced to approach the same problem should not be overlooked, as it accounts for many of the developments in the experiment described in the chapters to follow.

This American faith in the practicability of high-level, precision bombing in daylight began with a tactical problem, an airplane, and a bomb sight. The problem was that of defending American shores against attacking fleets. What was needed was a battleship of the air, and in 1935 the Boeing Aircraft Company designed and

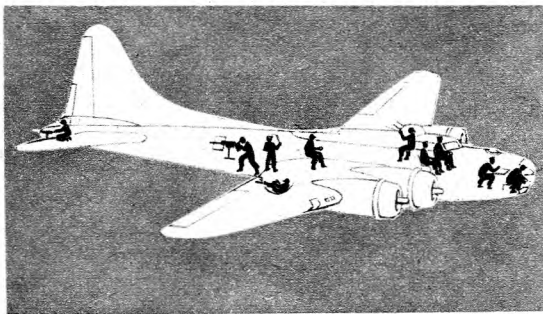
built one. This first Fortress cracked up and burned on a take-off during its trials, but the Army Air Corps had seen enough and thirteen were ordered. It took Boeing two years to produce these thirteen planes—at our present rate of production the thirteen could probably be turned out in a few hours at our heavy-bomber factories.

These original experimental models, known as YB-17's, had 4,000 horsepower, a speed of 250 miles per hour, and carried five .30-caliber machine guns. The first production model, known as the B-17, came in 1937, and in 1938 the B-17A appeared. This plane, equipped with exhaust-driven turbosuperchargers, set a record of 259 miles per hour for 620 miles with a bomb load of 11,000 pounds. Several planes of this model were flown to South America and back.

The Army Air Force bombardment experts, meanwhile, had combined this new plane with a bomb sight developed during the early thirties. This sight (a piece of precision optical equipment with a computing device but without any of the magic qualities with which the Sunday-supplement writers invested it) was already in use in the Army's smaller bombers. Experiments were carried out at successively higher altitude levels. Each thousand-foot step, from 10,000 to 20,000 and then to 25,000 feet, introduced new problems.

Oxygen lack affected some men below 18,000 feet, all men above that. At 25,000 feet and above, this oxygen starvation can be fatal within a very few minutes. So oxygen masks were devised and a system gradually was developed for feeding the oxygen automatically. High altitudes and the consequent decrease in atmospheric pressure also accentuated many physical ailments and deficiencies unnoticed at lower altitudes—sinus trouble became unbearable, weak eardrums burst, and stomach disorders were aggravated. The intense cold at high altitudes resulted in many cases of frostbite, so electrically heated suits and gloves and boots were developed. The problem of what diet would best meet the discomfort of gas distension in the digestive tract was studied, as were the psychological effects of high-altitude fatigue. A whole new school of aviation medicine grew up to meet the demands of this new type of flying.

Meanwhile, the experimentation went on. The results were startling. From 20,000 feet above the dry bed of California's Muroc Lake, bombardiers found they could hit a 100-foot circle time and again. The Army's experts



THE FORTRESS (B-17F)

Length . . . . .	74 ft. 9 in.
Wing Span . . . . .	103 ft. 10 in.
Height (Vertical Fin) . . . . .	19 ft.
Weight (Gross) . . . . .	(approx.) 60,000 lbs.
Bomb Load (Average) . . . . .	5000 lbs.
Speed (Cruising) . . . . .	211 m.p.h.
Horsepower . . . . .	4800
Armament (.50-cal. Machine Guns) . . . . .	12

weren't deceived by these early successes; they realized that the trials were being carried on with the scales heavily weighted in the bombardier's favor—that bombing readily identifiable targets in perfect weather conditions with no enemy fighter or flak opposition was the ultimate simplification of the problem involved. Bombing enemy installations under combat conditions would be a different proposition.

Unfortunately, some air-power enthusiasts lacked the professionals' caution. The result was a general public misapprehension concerning the accuracy of high-altitude bombing. This came to be known as "pickle-barrel accuracy" and spread the completely false impression that American bombers could drop their loads in a barrel from 20,000 feet. Nothing could be more unrealistic. Under combat conditions in the western European Theater—admittedly the most heavily defended area on the war map—our bombers have a good day when, operating from 25,000 feet, they manage to concentrate their destructive load in a factory area the size of a city block. And when they do, it's a bad day for the enemy.

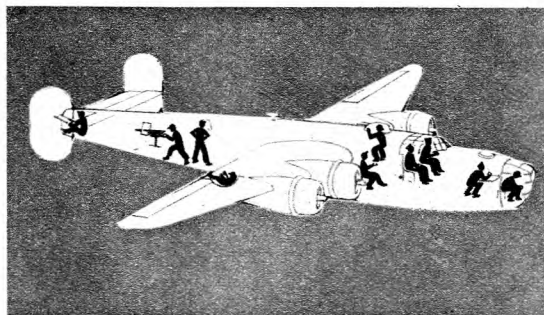
By midsummer of 1939 delivery had begun on the B series of the Forts. In December of this same year a second type of four-engined bomber was made available when the Consolidated Aircraft Company produced the first of a long series of B-24's—later to be known as Liberators. The B-24's had greater medium-altitude speed, greater range, and greater load-carrying capacity than the B-17's but sacrificed some of the Forts' defensive fire power and high-altitude speed. When war broke out in Europe in September, British orders for improved versions of both ships were placed and the tempo of production and modification was immeasurably increased.

While the evolution of our weapons was progressing, the Air Force was painstakingly developing the method by which the weapons could be used. This involved an entirely new concept of crew training. It was found that the ten-man crew of a heavy bomber had to work as a completely integrated unit during all the crucial phases of an operation. With a maximum allowable straight-and-level bombing run of forty seconds over the target in combat conditions, split-second teamwork was necessary. Bombardiers, navigators, and gunners assumed roles of equal importance with the pilots, for unless each did his job faultlessly the mission was liable to end in failure or disaster.

At the same time, the problem of the actual piloting had to be considered in the light of large-scale operations. Flying the heavily loaded planes at extreme altitudes had presented problems even to the veteran fliers who were then permitted to handle the controls. Now the Air Force had to anticipate the employment of thousands of young and comparatively inexperienced pilots who would be flying these same airplanes under combat conditions. The answers to these perplexities were the main concern of our bombardment experts during the several years preceding our entry into the war.

The rough blueprint of American heavy bombardment was at hand and the implementation of the plan was in progress. The next question was : where and how would it be used ?

The weapon was the first to receive its trial. The first of the B-17C's, faster and more heavily armed than their predecessors but without tail guns, armor, or leakproof tanks, arrived in England early in 1941. British unofficial opinion was skeptical. The Forts' first mission under the aegis of the RAF was an attack on the German cruiser *Gneisenau* at Brest. Hits were claimed and the planes returned undamaged. On July 26 a Fortress attacked Emden and on August 2 Kiel was bombed. Both raids were without loss. On an August 16 raid a Fortress was attacked by seven German fighters and beat them off.



THE LIBERATOR (B-24D)

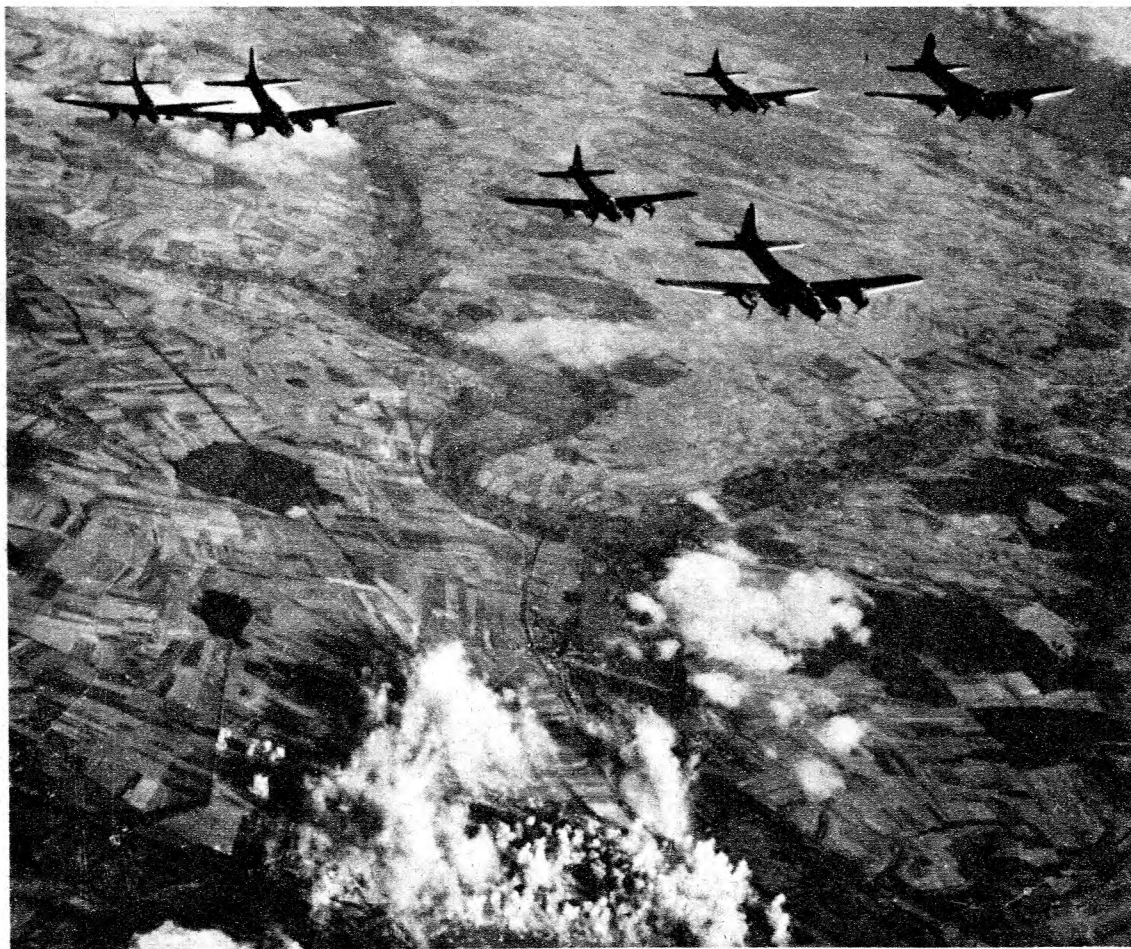
Length.....	66 ft.
Wing Span.....	110 ft.
Height (Vertical Fin).....	18 ft.
Weight (Gross).....	60,000 lbs.
Bomb Load (Average).....	8000 lbs.
Speed (Cruising).....	225 m.p.h.
Horsepower.....	4800
Armament (.50-cal. Machine Guns).....	10

And then, during a strike against Oslo on September 8, two of the four Forts dispatched fell victim to enemy fighters. Shortly after, daylight raids with this early version of the B-17 were discontinued. British opinion remained unconvinced. The designers of the American Plan, watching these experiments from across the Atlantic, were content to wait for a trial of the improved bombers then being constructed and the operational technique they had conceived.

The new planes continued to accumulate defensive armor and armament, speed and bomb capacity. The B-17E, with which the VIII Bomber Command operations were started in England, carried thirteen machine guns, two power-driven turrets and a tail-gun position. These planes also incorporated the second great

development of the bomb-aiming process. This was the Automatic Flight Control Equipment—an American invention which permitted the bombardier, through his manipulation of the bomb sight, automatically to control the flight of the plane during the bomb run.

With its airplanes, its bomb sight, its AFCE, its tactical theories, and a nucleus of trained combat crews, the VIII Bomber Command traveled to England in the middle of 1942 and set about a job which had never been done before. High-altitude precision bombing of key enemy targets by day might or might not be possible. The VIII Bomber Command, standard-bearers of a brave new idea, meant to prove it could be done. The following chapters tell the story of the first year of this effort.



## ACT 1, SCENE 1

AT MIDAFTERNOON on a gray day in February, 1942, a Douglas airliner from Lisbon landed at a west-of-England town. The trip had been routine, but not uneventful. Two hours before, far out in the Bay of Biscay, a plane believed to be a German fighter had flashed past the transport not far ahead and slightly above. Failing to spot the DC-3, the unidentified aircraft had continued on its course toward the coast of France.

If the long-range marauder was German, the chances are it had been dispatched specifically to intercept and destroy the plane carrying a party of seven American officers, led by a brigadier general, who were en route to England as the advance guard of an American bomber command. Lisbon, swarming with spies, had seen the Americans arrive from Bermuda on the previous day. The natural reaction of the Germans would have been to plot the course of the unarmed transport and intercept it at a point far from any possible Allied interference. If such was the case, they failed only by the thickness of a wing—their own wing—which screened the DC-3 from the view of the German pilot.

The seven officers who stepped out of the plane that day carried with them a directive signed by Lieutenant General H. H. Arnold, Chief of the Army Air Forces, and dated January 31, fifty-five days after Pearl Harbor. The directive named Brigadier General Ira C. Eaker Bomber Commander in England and ordered him, among other things, to “make the necessary preparation to insure competent and aggressive command and direction of our bomber units in England.”

It was a battered but still defiant Britain that greeted the Americans. The great German aerial *Blitz* was over; the danger of invasion seemed remote. But on the far fronts of the war things were not going well. The Libyan advance had turned into a retreat. In the Donets basin von Bock’s steam roller was grinding its way forward slowly, but apparently irresistibly, toward

Stalingrad. In the Pacific the Americans were making a last desperate stand on Bataan. The *Repulse* and the *Prince of Wales* had been sunk. Singapore, chief bastion of Occidental power in the Far East, was tottering.

More significant still for these apostles of unborn air power from across the sea, shortly before their arrival the *Gneisenau*, *Scharnhorst*, and *Prinz Eugen*, supposedly immobilized at Brest, took advantage of the vile February weather to make a dash through the Channel for their home bases. The RAF and the Fleet Air Arm took suicidal chances in a gallant and vain attempt to stop them. Critics of air power—ignoring the fact that the German warships had also eluded surface vessels—made the most of the occasion. There were recriminations in Parliament. It was a black week.

The Americans went to London. They had no time for sight-seeing, but they were impressed by many things—by the bomb damage, neatly tidied but still an object lesson in the destructiveness of aerial bombardment; by the black-out; by the stringency of wartime diet; by the calm fortitude of the British people, who wore the war like an old coat—frayed around the edges, but still nothing of which to be ashamed.

The task facing the seven officers would have appalled anyone—as one RAF officer dryly put it—except Americans. Starting from scratch, they had to build an organization which would—if their theories were sound, if their convictions were correct—eventually become a hammer that, used in conjunction with the RAF, would crack the iron skull of Nazi Germany.

It was a big job that they faced, but fortunately they had a big brother to help them—the Royal Air Force. The RAF was long past the immortal days of “the few” to whom so much was owed. With two and a half war years of trial and error and successful experiment behind it, with its Fighter Command guarding the skies by day, the Bomber Command striking the enemy by night, and the Coastal Command



*"Where there's war, there's mud. . ."*



*"Where there's construction, there's mud. . ."*



*"Where there's both, there's just plain hell!"*

sweeping the sea lanes, the RAF might easily have been excused had it taken a condescending attitude toward the advance guard of Americans whose plans were so large and whose means were apparently so small.

The RAF took no such attitude. From the start, their generosity and sympathetic interest were the keys that unlocked many problems. "Tell us what you want," they said. "If we have it, it is yours." They might have added, "Whether or not we need it ourselves."

There were some in the RAF—many, in fact—who took a dim view (to use their own expressive phrase) of the feasibility of daylight bombing over the fortress of Europe. They remembered, with acute and vivid pleasure, what had happened to the Luftwaffe's bombers over Britain on those autumn afternoons in 1940. They had tested the Germans' daylight defenses themselves, and found them uncomfortably strong. But if the Americans thought it could be done, they were all for helping them. The sooner the Americans could attain full partnership with the RAF in size and striking power, the better. That seemed to be the unspoken motto of the RAF in those early days. It has continued to be ever since.

Conferences with RAF and American Army officers began immediately. One of the first problems was to find a place where the Americans could hang their tin hats. This was solved eventually by the acquisition of an old abbey. The story has been told how the duty officer, on the first night of occupancy, was startled to hear bells beginning to ring all over the building. Investigation proved that each bedroom had a prim little card, relic of schoolgirl days, that read: *Ring twice for mistress.*

The first combat units were preceded by Intelligence officers who were sent to RAF operational stations where they were given every opportunity to study British methods. The first crew to return from the historic 1000-plane raid on Cologne was interrogated by visiting U.S. Army officers.

Work went on throughout the reluctant English spring. More personnel arrived, but barely enough to keep up with the demands. Airdromes had to be taken over from the British and American modifications had to be planned; reports had to be sent back to Washington; everyone seemed to have colds in the head; at times the spadework looked endless.

And there was always the uncertainty as to

how the great machine they were building would function in actual combat. In April some of the staff officers went to inspect a B-17E that had been turned over to the British. They returned with the following gloomy conclusions : "British experts who made a joint study with the above officers condemned the B-17E so far as operations against western Europe are concerned on the following points : (a) defensive fire power is too weak to afford reasonable protection, the tail-gun position being cramped and the belly turret so awkward as to be useless. They plan to remove it and use the airplane on Coastal Command work ; and (b) 4000-lb bombs cannot be installed and bomb loads in any case are small unless the bomb-bay fuel tanks are removed at the expense of range."

Such criticisms were not ignored, but neither were they allowed to shake the ultimate confidence of the planners in the planes that were going to have to do the job.

At the weekly Monday-night staff meetings hundreds of other problems were discussed : the shortage of labor for airdrome construction, the problems of airdrome defense, of flying control, of transatlantic movement of aircraft, of security of information, of mud control on the sodden stations, of shortages of everything from vitamin pills to bulldozers. These meetings lasted far into the night, but in public little talking was done. The C.G. set the precedent at a gathering after a dinner given in his honor by the British. Called upon to speak, he rose and uttered twenty-three words : "We won't do much talking until we've

done more fighting. We hope that when we leave, you'll be glad we came. Thank you."

Out in the field, early arrivals wrestled with as many problems as the staff officers at the VIII Bomber Command—and under far more trying physical conditions. Many of them were living under canvas. The English summer that year was not noted for its sweetness and light. These pioneers had to live on British rations—which were not to their liking. They soon made the acquaintance of those twin nightmares of station life—dispersal (the vast distances between key buildings dictated by the ever-present threat of aerial attack) and mud. As one engineer remarked : "Where there's construction, there's mud; and where there's war, there's mud; and where there's construction *and* war, there's just plain hell."

In May a light-bombardment squadron arrived. With it was Captain Charles C. Kegelman, destined within two months to become the first American aerial hero in the European Theater of Operations. In other parts of the world the British were mopping up in Madagascar and American air and naval power was winning the Battle of the Coral Sea. But the Japs were pushing ahead in Burma, a German drive on the Kerch peninsula was gathering momentum, and the fall of Tobruk was only a month away. The war was still balanced on a knife edge.

At the end of June the first American heavy-bombardment Group was on its way—by air. Not without loss. Three B-17's were forced down



**One B-17 that never reached England.** *The crew was rescued from a Greenland icecap by a Navy plane.*



Control tower. . . Counting the final seconds.

on a Greenland icecap. One of the crews managed to survive by cutting off the blades of one twisted propeller with a hacksaw, then using that engine to furnish heat for the plane and power for the radio generator until a Navy flying boat, landing under extraordinarily hazardous conditions, rescued them. The other crews were also saved—one from a small island and the other from the sea. Two other Fortresses, caught by bad weather off Greenland, were forced down. Again, both crews were rescued.

The excitement that would normally have attended the arrival of this first Group was somewhat overshadowed by the decision, taken on July 2, to have six crews of Captain Kegelman's light-bombardment squadron join six RAF crews in a daylight minimum-altitude sweep against airdromes in Holland. The planes to be used were RAF Bostons, but for the first time in World War II American airmen were to fly American-built bombers against the Germans. The fact that Americans and Britons should thus jointly celebrate America's Independence Day seemed a particularly happy omen.

At 0730 on the Fourth of July, the twelve Bostons took off across the Channel, flying in four three-plane elements, each element briefed to attack a separate airdrome in Holland. En route they were spotted by German "squealer" ships that radioed a warning to the ground defenses on the enemy-held coast. As a result the formation whose objective was the De Kooy airdrome was forced to fly through three miles of flak which the RAF element leader said later was the worst he had encountered in over sixty operational missions.

As the Bostons swept over the airdrome one

of the American-flown ships was shot down and crashed in flames. Apparently the pilot made the fatal mistake of making a normal turn, allowing the flak gunners to anticipate his course.

The other wing ship, with Kegelman at the controls, was also badly hit. The right propeller and engine nose section were shot away. The engine burst into flames. The right wing tip struck the ground, and the fuselage actually bounced on the surface of the airdrome, tearing a hole in the belly of the bomber. Lifting the Boston back into the air on one engine, Kegelman headed for the Channel. He admitted afterward that he was debating whether or not to set his crippled ship down on the sand dunes in a belly landing when over the interphone he heard the voice of his rear gunner exhorting him enthusiastically to "Give 'em hell, Captain."

This defiant attitude stiffened Kegelman's determination to keep going. When a flak tower fired on them, the pilot swung his ship toward it, silencing the flak gunners with his nose guns. He lifted his battered wing over the tower and continued home at water level.

That first combined mission could hardly be called a success. Kegelman had been forced to jettison his bombs. Of the other American-manned planes, two returned with their bombs, having failed to recognize the camouflaged target until too late. The other two bombed their objective but one was shot down by flak. The Theater Commander was so impressed by the report of Kegelman's feat that he wrote in pencil across it, "This officer is hereby awarded the Distinguished Service Cross." Three other crew members who flew that day received the Distinguished Flying Cross.

The press enthusiastically hailed this debut of American airmen as the beginning of a new and gigantic air offensive. On the same day, at the headquarters of the VIII Bomber Command, the following notation was made: *Arrival of aircraft: 1 B-17E. Total: 1.*

By the first of August two heavy-bombardment Groups had arrived and were in a state of intensive training. By that date, furthermore, certain target priorities had been established. The C.G. quoted from the directive as follows: "First the factories, sheds, docks, and ports in which the enemy builds his *submarines* and from which he launches his submarine efforts. Next, his *aircraft factories* and other key munitions-manufacturing establishments. Third, his *lines of communication*. A subsidiary purpose of our

early bombing operations will be to determine our capacity to destroy pin-point targets by daylight precision bombing and our ability to beat off fighter opposition and to evade antiaircraft opposition."

The first test came on August 17. It was a critical day for the VIII Bomber Command, not because of the size of the effort—only twelve Fortresses were involved—but because so much was at stake. Pressure in the U.S.A. for action in the European Theater had been mounting steadily. The British press had been hinting for some time that the American bombers were ready. Morale in the squadrons was wearing thin from repeated "dry runs," bad weather, and general impatience to get at the Hun. There were still plenty of skeptics who predicted dismal results from the first attempt at a daylight mission.

At 1526 the first Fortress took off. Eleven others followed, the C.G. of the VIII Bomber Command riding in *Yankee Doodle*, lead ship of the second flight of six. The twelve Fortresses were carrying about eighteen tons of bombs destined for the railway marshaling yards at Rouen—the city, somebody pointed out, where Joan of Arc had died for the liberation of France half a millennium before. The formation assembled over the field and climbed steadily to their attack level of 22,500 feet before disappearing in the bright clear sky in the direction of France.

For the next three hours anxious ground crews, fellow airmen bitterly disappointed at being left behind, and high-ranking Air Force officers—plus some thirty members of the British and American press—waited about as calmly as expectant fathers in the anteroom of a maternity ward. Shortly before 1900 hours watchers on the control tower spotted a cluster of specks to the west of the airdrome. Eagerly they counted—for a tense moment there seemed to be only eleven. There was a sigh of relief as the twelfth appeared. Minutes later the big ships swept in to the runway, their names high-lighted by the level rays of the sun: *Baby Doll*, *Peggy D*, *Big Stuff*, *Butcher Shop*, *Yankee Doodle*, *Berlin Sleeper*, *Johnny Reb*, *Birmingham Blitzkrieg*, and the rest. Pilots and mechanics swarmed out to meet the crews. Quickly the word was passed around: All bombs dropped on or near the target, no casualties; good protection from escorting Spitfires; slight flak damage to one B-17; a few brief exchanges of fire with enemy fighters; mission successful.



Take-off. . . One plane air-borne every half minute.

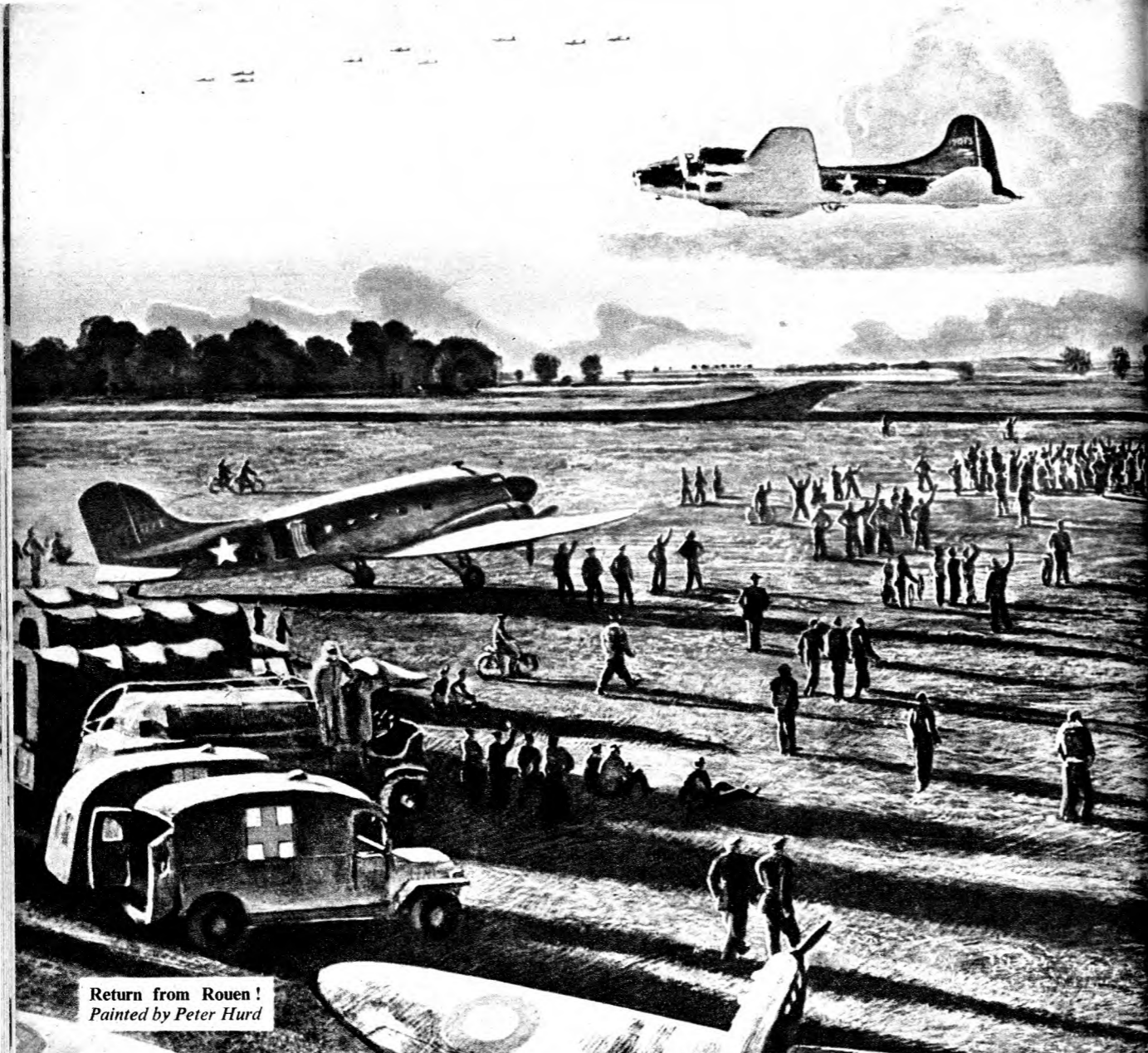
Interrogation brought out additional information. Fighter cover by Spitfire squadrons had resulted in the loss of two RAF aircraft. The Germans lost two fighters for certain, five probables, and four damaged. Two Spitfires chased an enemy fighter into the range of one Fortress and there was a short exchange of fire but no claims were allowed. One other gunner got a shot at an FW, but fighter opposition was generally light. Diversionary missions flown by six other Fortresses had apparently confused the German radio direction finders to such a degree that they concentrated most of their fighters in the wrong area. The attacking Forts were not even reported by Jerry over his radio until they had crossed the French coast and were well on their way to the target—at which point the enemy excitedly announced that "twelve Lancasters" were heading inland.

The only American casualties were suffered when one of the Forts on the diversionary sweep ran into a flock of pigeons. The bombardier and navigator were "slightly damaged."

The combat crews were surprised that the mission had proved so easy. One of the pilots, describing his sensations, spoke for the rest of the airmen: *When I was a little kid, I had a cousin and I used to hear him tell about the last war and how, when a bunch of men were asked to volunteer for a dangerous job, the whole damn line stepped forward, just like one person. I used to think that sure was fine, but I thought that if it was me I'd have been scared. And so on this show I expected to be scared, too.*

*Well, sir, it was a funny thing. When we got over the Channel and sighted the French coast I kept thinking, "Well, here it starts." But nothing*



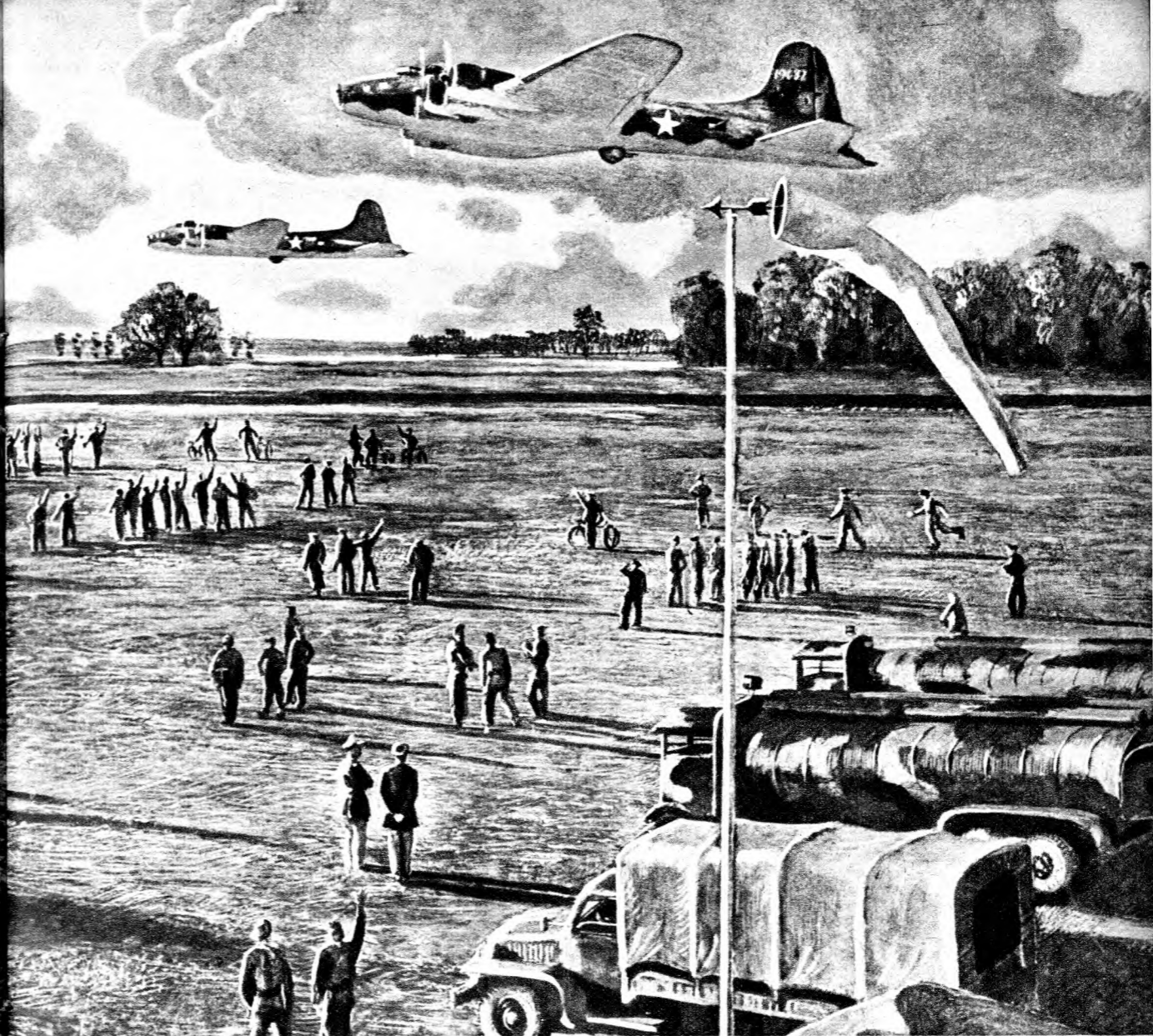


Return from Rouen!  
Painted by Peter Hurd

*happened—just a little flak that never even touched us. Then, as we got to the target and went into the bombing run, I thought, "All right, there is where it starts." But it didn't start there either, because we just dropped our load and turned around and headed back without being bothered by a single fighter. Some of the ships were, but ours wasn't.*

In any case, the first mission was far more successful than many had dared hope. Air Chief Marshal Harris, chief of British Bomber Com-

mand, sent an enthusiastic message to his American counterpart: "Yankee Doodle certainly went to town, and can stick yet another well-deserved feather in his cap." The American leader merely commented cautiously that "the raid went exactly according to plan, and we are well satisfied with the day's work." He pointed out that one swallow did not make a summer, so far as daylight attacks on Europe were concerned. But this warning was almost lost in the surge of enthusiasm and confidence that resulted



from the first all-American attack on Nazi-held Europe. An official squawk from the Vichy Government was hailed as further proof of the effectiveness of the raid.

In the next four days the handful of Fortresses made three more attacks. The first was on August 19, when they bombed the German fighter airdrome at Abbeville as part of the great combined operations that made up the Dieppe raid. Again the RAF sent congratulations. Of the thirty Focke-Wulf 190's based on that field,

twenty were withdrawn to a base farther inland after the Forts paid a second visit to Abbeville some time later. On August 20 the railroad marshaling yards at Amiens were attacked, still without loss to our forces. The Germans were obviously puzzled as to how to handle the heavily armed bombers. Besides, the fighter escort continued to prove very effective.

But the next day when twelve B-17's set out to attack a target in the Low Countries, they were sixteen minutes late for their rendezvous



"He came in like this . . ." After each sky battle, claims of enemy fighters destroyed are evaluated.

with their fighter escort. As a result, the Spits were able to accompany them only halfway across the Channel. The Fortress formation, reduced to nine planes when three developed mechanical trouble, was recalled as it reached the Dutch coast. But for twenty minutes Jerry had his first chance to match his fighters against an unescorted Fortress formation.

The fight that followed was prophetic in several ways. The massed fire power of the Fortresses shot down two enemy fighters for certain and damaged several others (the newspapers enthusiastically credited the Forts with six destroyed). But one Fortress that lagged behind and never succeeded in getting back into tight formation was pounced upon by five FW 190's. A 20-mm. cannon shell exploded on the starboard side of the cockpit windscreen, wounding the pilot and injuring the copilot so seriously that he died later. The tail gunner shot down one Focke-Wulf and the ball-turret gunner claimed two others. The top turret became unserviceable after one burst. No. 3 and No. 4 engines were hit, but continued to function, and the Fort limped home to an English base.

The moral was simply that tight formation flying was the best protection against enemy fighters, that a crippled or laggard Fort would invariably be singled out for concentrated attack, that such a Fort might be able to destroy two or three or even more of the attackers, but it would be lucky to get back to the friendly fields of Britain.

The engagement was prophetic in yet another way. Even the modest claims of enemy fighters

destroyed in this first real test of strength caused raised eyebrows in certain quarters where a heavy bomber was still considered to be relatively helpless against multiple fighter attack. The report that nine unescorted B-17's had fought off from twenty to twenty-five crack German pursuit pilots, downing two certainly and damaging the planes of several others, seemed too good to be true. No one openly challenged the claims, but the first seeds of doubt were planted. Before many weeks were past, they were to grow into some pretty troublesome weeds.

The kindergarten missions continued with what now seems a pathetically small token force of aircraft. The shipyards at Le Trait were attacked by twelve Fortresses. Eleven reached the target at Meaulte—the Avions Potez aircraft factory and repair depot where the Luftwaffe was presumably licking the wounds it had received during furious air battle that had accompanied the Allied landing at Dieppe. Thirteen were dispatched to bomb the German fighter airdrome at Courtrai-Wevelghem, in Belgium. From every mission new lessons were learned.

All these missions were carried out in weather which was so good that later it seemed like a happy dream. And as mission after mission ended with no aircraft lost, the British press, cautious at first, became more and more enthusiastic. They speculated with amazement on the stamina of the American crews who failed to be affected by altitude. The *Evening Standard* surmised wisely that it was probably because the American airmen were such husky specimens—baseball players, no less. A British doctor went aloft with a crew to study the effects of high-altitude flying and promptly passed out himself—an incident which merely enhanced the legend. A few sober experts pointed out that the weather would not always be so good and that shallow penetrations into France or the Low Countries could not cripple Germany. But despite stiffening enemy fighter opposition the prevailing mood was one of high confidence.

In September operations continued, with more aircraft available. A Liberator group had arrived, the first two squadrons flying the Atlantic in formation with the loss of only one ship—defiantly but unwisely named *Friday the 13th*. These were not to be ready for combat until October, but more Forts were coming into action. On September 6 they went back to Meaulte—thirty of them over the target this

time—and two were lost. They claimed four enemy fighters destroyed, nineteen probables, twenty damaged. The first VIII Bomber Command Fort lost in combat in the European Theater of Operations went down over Flasselles, apparently under control but also under heavy attack from three FW 190's. Four men bailed out and their chutes were seen to open. The other B-17 was last seen near Beachy Head, struggling toward Dover. British Air-Sea Rescue launches went out to look for it, without success.

So the Forts were not invincible, after all. There must have been rejoicing in the Luftwaffe mess that night. Actually, the enemy fighters that day were observed to have yellow noses and bellies, reputedly the markings of Göring's crack fighter squadrons. Evidently the Germans were beginning to take the Fortresses seriously. Still, they tried to hide from their people the fact that the Americans were invading the skies over Europe. There was no mention in the German press of American heavy bombers in action; the planes were always "British," and since they flew so high that identification was almost impossible it was not hard to maintain the fiction—for the time being.

Twice during this period our light bombers went out to attack shipping and harbor installations on the French coast. Each time they returned without loss, but for the heavies the going was getting progressively tougher. The following extract from the report of a pilot who took part in the third attack on Meaulte on October 2 gives an idea of what aerial combat over Europe was beginning to be like :

*At 5.00 A.M. on the morning of October 2, 1942, I was waked up in a Nissen hut at one of our bomber stations in England. It was dark, and for a moment I didn't know quite where I was. I dressed quickly and gulped down the tea that was brought me. After that I went to the Intelligence office, where they gave me the exact location of the objective. It was the Potez aviation plant at Meaulte, in occupied France.*

*When the signal for the take-off came, I was so scared that I could hardly talk. Somehow, though, I managed to make it.*

*We were in Vee of Vees all the way into the target. Our ship was "Tail-end Charlie," the rear-most left-hand ship in the formation, and hence the last to bomb. We hit scattered heavy "flak" on our way in, but it was slight and did no harm. We got well over our targets, in formation and*

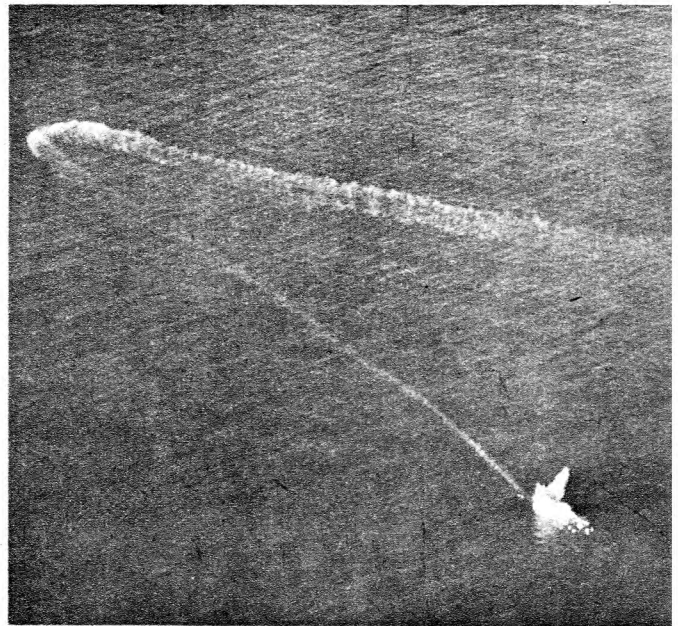
*unmolested, and the bombing part was easy.*

*But that's when the enemy fighters started to pour it on. The German's strategy was obviously to pick on the last ship and shoot it down. All the gunners in the crew started calling through the interphones: "Enemy aircraft at three o'clock, Lieutenant! . . . At five o'clock! . . . At nine o'clock! . . ." They were all around us.*

*The fighters were employing two tactics that were new to me. When they peeled out of their formation to attack, they came in so close together that by the time one ship had shot up and banked away, the next in line had his sights on us.*

*The other dodge they used was to pretend to come in on one of the other ships, and then do a twenty-degree turn and shoot hell out of us. Mostly they came from the rear, but at least one of them came up under us from in front, stalled, and as it fell off, raked us the length of the Fortress' belly. I could feel his hits banging into us. As a matter of fact, I could feel the effect of all their fire. It was rather like sitting in the boiler of a hot-water heater and being rolled down a steep hill.*

*There was an explosion behind me as a 20-mm. cannon shell banged into us just behind the upper turret, and exploded; and I kept thinking, "What*



**Into the Drink.** Leaving a trail of smoke, a stricken Fortress crashes into the English Channel.

if it hit the flares?" If it hit the flares and ignited them, I knew we'd go up like a rocket.

Then I looked out at the right wing and saw it was shot to hell. There were holes everywhere. A lot of them were 20-mm. cannon holes, and they tear a hole in the skin you could shove a sheep through. The entire wing was just a Goddam bunch of holes.

About that time, several other unpleasant things happened all at once. First, one of the waist gunners yelled through the interphone: "Lieutenant, there's a bunch of control wires slapping me in the face," which meant that the tail surface controls were being shot up. Second, the right-hand outboard engine "ran away" and the engine controls were messed up so we couldn't shut it off. Third, the left-hand inboard engine quit. And fourth, the ship went into a steep climb, which I couldn't control.

I forgot to say that the whole left-oxygen system had gone out, and that I was trying to get the ship down to 20,000 feet to keep half my crew from passing out. One gunner passed out from lack of oxygen, and the radio operator, seeing him lying by his gun, abandoned his own oxygen supply and put the emergency mask of the walk-around bottle over the gunner's face. The gunner revived just in time to see the radio operator pass out. He, in turn, took the emergency mask off his own face and revived the radio operator with it.

To return to the fourth unpleasant thing that happened—when our ship went into a steep climb, I simply couldn't hold her level. There was some-

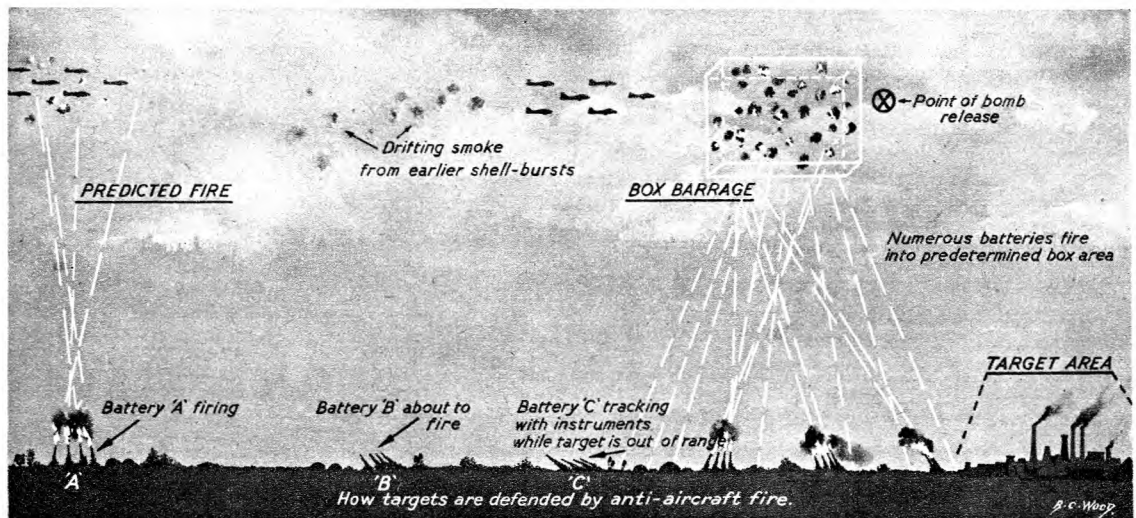
thing wrong with the controls. I motioned to the copilot to help me, and between the two of us, we managed to get it forward and assume normal level flight.

Then I started to think. The enemy fighters were still shooting us up, we had a long way to go to reach England and safety, we were minus two engines and it took almost full left aileron to hold that damaged right wing up. It was time, I decided, to bail out of the aircraft. So I yelled into the interphone: "Prepare to abandon ship."

But just about that time the top gunner slid out of the top turret and fell between me and the copilot. His face was a mess. He was coughing blood; I thought he'd been wounded in the chest. It later proved that he wasn't, but he was clearly in no condition to bail out of an airplane.

I called for the bombardier and navigator to come up and help us with the top turret gunner, and they did. Back in the waist one of our gunners was manning two guns despite a bad bullet wound in his leg. I don't know how many fighters we damaged or destroyed; there wasn't time to worry about that. We got out over the Channel, finally, and a flight of Spits came racing out to meet us. Brother, they looked mighty good. We nursed the Fort across and made a belly landing on the first airdrome we could find. We nicked a hangar on the way in, but somehow we made it. . .

Afterward they counted sixteen cannon holes and 300 bullet holes in the Fortress. The pace was beginning to grow hot in what bomber pilots were soon to be calling "the Big League."



## 4

**LUFTWAFFE OVER LILLE**

THE FIRST CLIMAX of the VIII Bomber Command's offensive against Nazi-dominated Europe came on October 9 when 108 heavy bombers—including, for the first time, the slab-sided Liberators—were dispatched against the steelworks and locomotive factories in the great French industrial city of Lille.

The choice of Lille as a target was dictated by several considerations: weather, accessibility (which made fighter cover relatively easy), the enemy's acute shortage of rail transport, and the fact that the great Fives-Lille steel company was a made-to-order target for high-altitude precision bombing.

For an aerial force that had begun operations barely seven weeks before with twelve planes, it was an amazing effort. The combat crews themselves were impressed and excited by the size of the show. Pilots in wing ships, squinting up at the convoys of protecting Spitfires, shoved their propellers close behind the wing of their flight leader. Waist gunners, peering through their sunglasses, nudged each other at the sight of more planes than they had ever seen in the skies before. There was an electric atmosphere about that mission. Even the ground crews felt it as they sprawled beside their bicycles on the empty airdromes, chewing blades of grass, "sweating out" the mission. It was a sense of growing strength, of greater strength to come. Air crews and ground crews alike would have stared in disbelief had anyone told them the truth—which was that for the next six mortal months the Lille mission was to remain the high-water mark, in terms of numbers, of the daylight bombing offensive.

For that reason—and many others—Lille was a landmark. It was more than just Operation 54, more than just another raid. At Lille, in fact, the word "raid" for the first time became inadequate. Lille was an air battle, the first head-on collision between the American spearhead and the massed strength of the Luftwaffe.

Judged by ground force or even naval stan-

dards, the actual numbers engaged in combat were small—a thousand American airmen, perhaps, plus a few score British fighter pilots against an undetermined number of Germans in the air and on the ground. But the combat personnel on both sides represented the apex of a vast pyramid of national strength. Behind the planes and the fighting airmen were ranged the opposing ground organizations, behind that the industrial capacity of the warring nations and even the peoples' will to win. In a very literal sense, the fighting strength of Germany and the United States first clashed in the cold thin air four miles above Lille. And the sparks flew. As one navigator succinctly put it, "Lille was our first real brawl."

As was to be expected in an initial operation of this size, mistakes were made. Abortives ran high. Traffic control over the target was bad; some of the planes never got the target in their sights. The unfortunate bombardiers who had to jettison their loads in the Channel on the way back were derisively christened "chandeliers" at one Fortress station.

Sixty-nine aircraft bombed the primary targets, inflicting considerable damage. Flak was not severe, although one excited crew member, on his maiden mission, described it as "the worst flak I've ever seen!" But attacks by enemy fighters were unprecedented in ferocity and duration. Four bombers went down—one Liberator with its No. 4 engine blazing and three Fortresses, two of which fell into the Channel.

At the subsequent interrogation no less than two hundred and forty-two encounters with enemy fighters were reported. The early claims were forty-eight destroyed, thirty-eight probably destroyed, and nineteen damaged. Later on, Intelligence Officers, striving to eliminate all possible duplication, reduced the official total first to twenty-five certain, thirty-eight probables, and forty-four damaged, finally to twenty-one, twenty-one, and fifteen.

Even reduced, these claims indicated such a



dramatic victory over the Luftwaffe, such a complete reversal of the traditional bomber vulnerability to fighter attack, that the figures were viewed with more skepticism than enthusiasm by those unfamiliar with Fortress and Liberator fire power.

What the skeptics failed to realize was that with about a dozen .50-caliber machine guns in every plane, each capable of firing armor-piercing and incendiary projectiles at the rate of several hundred shots per minute, the big bombers could lay down a screen of fire that was murderous for fighter aircraft that pressed their attack to close range.

The men behind the guns were able to cover every angle of approach so long as the bombers flew a tight defensive formation. The result was a porcupine defense that left the Germans more or less baffled. A Nazi fighter pilot, captured soon afterward, said that he had heard that during the Lille attack the Forts had been found to have a very effective defense. No instructions had been issued to his unit, but the general belief was that a beam attack by fighters was safest and best.

Over Lille, the majority of fighter attacks came from the "six o'clock" position, and the tail gunners in the bombers had a field day. In one Fortress a 20-mm. cannon shell burst about eight inches from the tail gunner. One of the twin .50 calibers was knocked out, and the gunner's left side was riddled with shell fragments. He stuck to his remaining serviceable gun and shot down an FW before he was relieved by the navigator. The Fortress staggered home with one wing tip shot off, one engine crippled, and the stabilizer controls jammed. The crew claimed four enemy fighters destroyed, four more damaged.

There never was—then or now—any question about the reckless, almost suicidal courage of the German fighter pilots. It was evident from the start that they had a healthy respect for Forts' machine guns, but this did not prevent them from pressing home their attacks with ferocity and skill.

The claims problem, once it had reared its ugly head, continued to plague Intelligence Officers. There was no doubt in anyone's mind that some overlapping of claims existed, and that unless very careful analyses were made, this duplication tended to increase in almost geometrical progression with the number of bombers engaged. With gunners from many planes shoot-

ing at the same target, this was inevitable. Another problem was establishing criteria for enemy planes definitely destroyed. German fighters had a trick, after firing a burst at a bomber, of flipping over on their backs and plunging straight down with smoke pouring from their exhausts. Some were even believed to carry smoke pots under their engine cowlings to complete the illusion. An inexperienced Fortress gunner, furthermore, might conceivably mistake the flame and smoke from the fighter's cannon for battle damage inflicted by his own .50 calibers.

After considerable study, the following system was adopted. An enemy aircraft was considered to be destroyed when: (1) it exploded in the air; broke up in the air; shed a wing or a tail section; the motor was shot out of a single-engined plane; (2) it was seen to be enveloped in flames, or the flames were very intense; (3) it was seen to crash on the ground or fall into the water; (4) the pilot of a single-engined fighter was seen to bail out.

In addition an elaborate method of checking and cross-checking to prevent duplication was worked out. The time of the encounter, the type of enemy aircraft claimed destroyed, the method of destruction, the geographical location of the engagement, the altitude at which the combat took place—all these factors were entered on diagrams in such a way that a virtual three-dimensional reconstruction of the action was achieved.

And gradually, although the claims remained high and even went higher, most of the doubters were convinced. Writing in midsummer of 1943—almost a year after the Lille air battle—the military analyst of the *The New York Times* summarized the situation as follows: ". . . the job of evaluating air losses is far from being an exact science. It is one subject to many errors, chiefly of observation, and the fliers themselves agree that precise calculations are probably impossible. The claims we have made, however, probably represent as close an approximation to the truth as can be made, given the visual reports of the fliers themselves as the only basis for the claims. If allowance is made for some error, perhaps considerable error, in the fliers' reports, it seems probable that our published claims of German fighter losses over western Europe are somewhat, though not much, too high. Certainly the figures cannot be out of line by more than 10 to 20 per cent, if that much; and even if we

pare this margin from our ratio of superiority, the Forts and the Liberators are still turning in a handsome score.”

If the reported totals were sometimes too sanguine, there was a final factor which undoubtedly cut down the rate of error. In all analyses of claims no provision was made for enemy fighters destroyed by bombers which themselves did not return. Observation suggests that each Fortress destroyed usually took at least one of its attackers down with it. This alone would have accounted for several hundred German fighters destroyed but not claimed during the first year of operations.

One effect of Lille was to focus public attention, perhaps too sharply, upon the Liberators and Fortresses as destroyers of enemy fighters rather than as precision bombers whose primary mission was to destroy targets on the ground. Decimation of the Luftwaffe was—and still is—a valuable by-product, but from the start the destruction of pin-point ground targets was the prime strategic purpose of the VIII Bomber Command. The C.G. had said, “There is no target that can be destroyed by gunfire that cannot be destroyed by bombs.” The mission of the Command was to substantiate that statement.

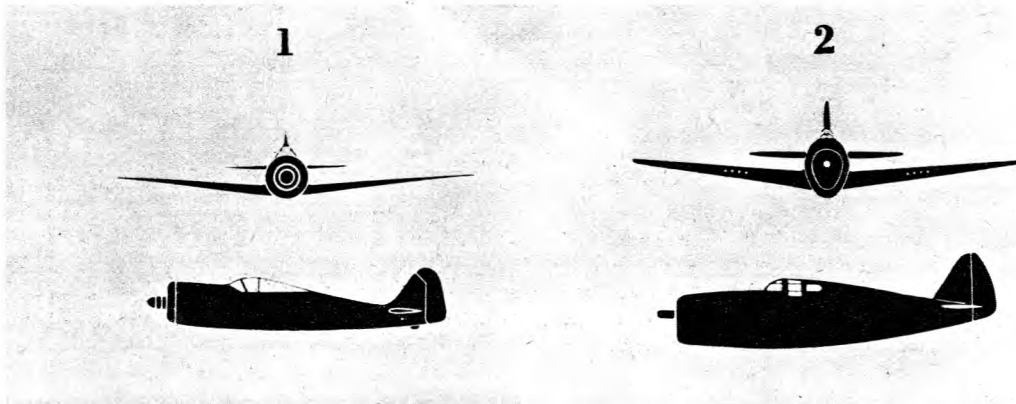
The early attacks on Occupied France did prove beyond reasonable doubt that it was possible to hit a specific target from an altitude of four or five miles with enough bombs to do considerable damage. But compared to the accuracy achieved later, the bombing was not good enough to justify any complacency. Too many missiles fell outside the target area, even when a certain proportion was on or near the aiming point.

And since they were falling on French soil, nobody was happy about it.

The reason was plain—inexperience under combat conditions. The bombardiers were well trained according to peacetime standards. The bomb sight was a precision instrument. But it was one thing to make a steady bombing run at 15,000 feet in the tranquil air of Texas or Colorado—quite another to attempt the same thing at 23,000 feet over enemy-held territory where the formation had to take violent evasive action to dodge flak and fighters up to the last few seconds that called for rock-steady flying.

On these early missions, furthermore, each plane carried its own bomb sight and bombed individually, thereby increasing the possible margin for error. Judged by European standards, the bombing in those early days was extraordinarily accurate. Judged by American standards, it was not good enough.

Another problem arising from inexperience was the failure of some gunners on the big planes to distinguish between friendly and enemy fighters. Spitfires that came too close or made the mistake of pointing inquisitive noses at the bombers were likely to get a hot reception. The Spits took to flipping one wing up to let the gunners see their characteristic elliptical shape. The Germans soon began to imitate the maneuver. With fighter planes driving in upon them, often out of the sun at 400 miles per hour; with only split seconds in which to make up their minds, the gunners could hardly be blamed for developing nervous trigger fingers. The Allied fighter pilots, by and large, displayed remarkable patience with their jittery big brothers. This



*Bomber gunners in combat have from two to five seconds to identify these as hostile or friendly fighter planes.*



patience was gradually rewarded as increased combat experience and more intensive aircraft identification lectures had their effect.

Considering the speed with which most of these aerial encounters took place, the volume of cross-fire hurled in every direction, the tension and strain of high-altitude flying—it was remarkable that more self-inflicted damage did not occur. Members of one Fortress Group (those who are left) still grin when they recall a critique that was held after a certain mission. At the end of the meeting, when the Group C.O. asked if anyone had anything more to say, a tall, gangling pilot who had led an element in combat that day arose and stalked to the front of the room.

Fixing a piercing gaze upon the pilots of the two wing ships that had flanked his own bomber, he drew from his pocket a battered metal object and held it up for all the room to see. It was an American .50-caliber slug that the pilot had found in his own plane. One of the wing-ship pilots got up, red-faced, and whispered in the ear of the Group C.O. Whereupon the C.O. hastily remarked that it would probably be better if nobody had anything more to say. The meeting was adjourned, with laughter.

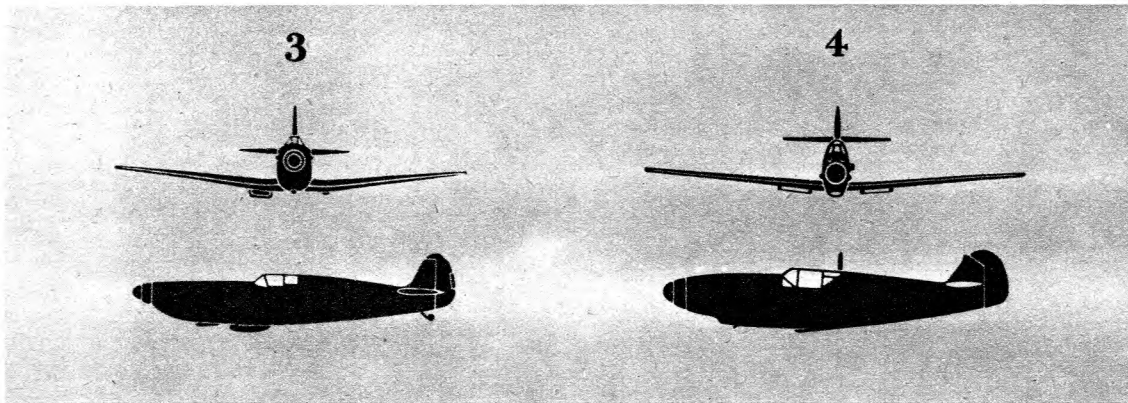
One thing apparent from the start was the amazing durability of the American bombers. This was demonstrated more than once before they were battle tested at all. A few days before the first combat mission on August 17, a Fortress was making a high-altitude training flight :

*We were in formation at 32,000 when my No. 4 engine ran away. I feathered the prop and when it came into full-feather position we saw that one of the blades had broken off.*

*I rang the alarm bell as a safety precaution and put the plane into a glide. At 30,000 feet the No. 3 engine blew up and caught fire. I rang the alarm bell again and ordered the men to bail out. I started the plane down in a circle to the left, keeping the two good engines down. By the time I reached 14,000 feet, fire had spread all the way back to the ailerons, over to the No. 4 engine and all along the side of the fuselage. At 12,000 feet the No. 2 engine sputtered, backfired, and then quit. This made me sort of mad. Up till then I'd been too scared to do anything. I looked over at the No. 3 engine. It was hanging over the side of the wing, held by a few cables. The oil tank was visible and on fire. I started to get out of my seat to bail out, but the wings were still on and I thought I'd try to get it down.*

*Control was nearly impossible, since the bottom of the right wing had been blown off, and a piece of cowling had knocked off the vertical fin. I broke through the cloud layer at 9000 feet and looked for a field. It was a heavily wooded area, but I spotted a pasture about 800 feet long. I circled the end of it, losing altitude, and as the tires had been destroyed by fire I came in with a wheel-up landing. The entire right side of the airplane was in flames by this time. I started to leave the ship. The place where I had landed was the rifle range of a British Rifle Brigade. About five hundred of them were there, and as I came out they came running up, about a dozen of them with fire extinguishers. Though the gas tanks were leaking we managed to get the fire out.*

The will to keep flying, the determination implicit in that phrase "the wings were still on and I thought I'd try to get it down"—these



*If you know planes, test yourself: (1) Focke-Wulf 190, (2) Thunderbolt (P-47), (3) Spitfire, (4) Messerschmitt 109.*



**Battle damage:** a German 20-mm. shell peeled the metal covering off this bomber like skin off an onion.

characteristics became even more evident when the going began to get tough across the Channel. The 20-mm. cannon shells of the German fighters peeled the metal covering off the wings and fuselages of the Forts and Libs like skin off an onion. Flak knocked whole cylinders out of engines that still kept turning. Tail assemblies were shot to ribbons, hydraulic systems were knocked out, control and oxygen lines were blown away—still the big ships came home, flying on the stamina that had been built into them.

Pilots found that on three engines they could maintain formation, although a feathered propeller soon became to German fighters what the proverbial red rag is to a bull. Even on two engines a bomber had a fair chance of struggling back across the Channel—if it had enough initial altitude and (an even bigger “if”) the enemy fighters left it alone. Planes were landed with only one engine functioning, once or twice with no power at all.

Crews who managed to nurse their crippled planes across the Channel were as good as safe, and even some of those who failed to make it across the “Ditch” (“The shortest stretch of water in the world when you’re going out—the longest when you’re coming back!”) lived to fly

again, thanks to the efforts of the British Air-Sea Rescue Service—a joint RAF-Royal Navy organization whose fast, yellow-decked launches maintain a vigil round the coasts of the United Kingdom.

The first rescue of Americans by their Allies took place on the day of the Lille mission. The pilot of the Fortress that fell in the drink told the story :

*The fun began as we started home. We were getting plenty of heavy flak and were under constant attack by enemy fighters. We seemed to be getting away with things very nicely until a Focke-Wulf 190 winged us with an explosive cannon shell, slightly wounding the bombardier. Then we started to get other hits. One went into our out-board engine, which started smoking badly. The generators were knocked out and the intercom system went dead.*

*The copilot and I found that we couldn’t hold our altitude. We were losing about fifteen hundred feet a minute, and the English coast was a long way off.*

*After discovering I couldn’t talk to the crew on the interphone I turned the controls over to the copilot and went aft. We had only about five thousand feet at this point, and there wasn’t any time*



**Dinghy drill:** when the order comes, "Prepare to ditch," every crew member must know exactly what to do.

to waste. I got hold of the top turret gunner and told him to get the rest of the gunners together in the radio compartment. Then I climbed down the nose to call the bombardier and the navigator. Then I went back to the controls and got ready to "ditch" the ship. We had had ditching practice just the day before, so everyone knew what he had to do. We jettisoned the waist guns and adjusted our parachutes and Mae Wests. The water looked cold, and I remember thinking it also looked hard. There were waves, and I had heard that when you land on water and hit a wave the effect is very much like flying into a stone wall.

It was. We laid her in a belly landing, as slowly as we could, with the tail well down. But even at that we hit so hard that it threw the crew all over the ship. A couple of them were stunned for a moment. The navigator was flung from the radio compartment into the bomb bay and knocked unconscious. The top turret gunner had a Very pistol in his lap. It flew up and cut his head. I think all of us were more or less dazed momentarily.

The men tried to launch the rubber rafts; but they had been so damaged that, with the exception of one which could be only partially inflated, they were entirely useless to us. Then came another problem. When the men started dropping into the

cold water, they realized that the heavy winter equipment some of them were wearing was too heavy for their Mae Wests to support. Splashing around in the icy water, the ones in lighter clothing managed somehow to hold the others up while they got out of their leather jackets, trousers, and flying boots and struggled into their life preservers again.

The copilot had been hurt in the landing, and I saw him float out of a window and drift under the wing of the ship. I swam after him and managed to grab him and drag him over to the partially inflated dinghy. Then the navigator's log floated past, so I retrieved that. About then everything began to seem perfectly logical. It's funny, but I was doing some very careful reasoning. The trouble was I didn't always get the right answer.

The ship went down in about a minute and a half, I imagine. Landplanes always sink fast when you "ditch" them. I ordered some of the men into the partially inflated boat. The rest held on to the edges of it. One of the gunners was bent, bound and determined that we were going to let him sink. He'd go down and then come up and spit sea water, and then go down again; but he kept trying to make us let him go. It took a direct order

to make him behave. He thought he was hurting our chances of survival.

Then came the worst part—waiting for help to get there and wondering if any help was going to come. What we didn't know was that we were as good as rescued already. Some time before our ship hit the water the machinery of H.M. Air-Sea Rescue Service started to roll. The lead plane in our Spitfire escort had told them that we were going down over the Channel and gave them our approximate location. We were in the water only thirty-five minutes. During that time one of the RAF Spitfires was circling to indicate our position. Soon a small boat with a rescue crew already on deck came foaming up to us.

Right here a strange thing happened. The men on the boat made no sound and scowled at us with cold and gloomy faces. I didn't get it, until one of my men in the water called out something to them. Then one of the rescue crew yelled, "Hell, they're Yanks!" and after that everybody grinned at us and started calling, "Hold on, Maties! We'll have you out of there in half a mo'!"

We found out later why they had been scowling at us. They thought we were Germans because of the powder-blue color of the electrically heated

jumpers that a couple of the gunners wore. It seems they pick up Germans too, but somehow they can't develop any wild enthusiasm about the job. Our rescue constituted a special occasion for this crew because, they told us, the crews of various Air-Sea Rescue boats had organized a pool to be won by the first crew to pick up some Americans.

So the curtain came down on Lille. It was not an ideal demonstration of high-altitude precision bombing, but it proved certain things that up to then had remained in the realm of theory: that American bombers, even under intense attack, could hit any target they could see; that the big ships could fight their way through the heaviest opposition without undue loss, inflicting serious damage on enemy fighter strength; that the crews could face severe attacks and remain full of fight; that the planes themselves were admirably suited to complement the RAF's night saturation raids by attacking small, heavily defended European targets.

At Lille, for the first time, the pattern of the rapier thrust by day and the bludgeon smash by night began to emerge clearly. It began to look as if Germany, having sown the wind, was about to reap the whirlwind.



**Hi-yah.** An American bomber crew down in the Channel is picked up by His Majesty's Air-Sea Rescue Service.

## 5

# TWELVE FEET OF CONCRETE

TWELVE DAYS after the air battle at Lille the bombers attacked Keroman, a small fishing port on the French coast not far from Lorient. The quiet little harbor, sheltered by the long arm of the Brest peninsula, was peaceful no longer. The Germans had turned it into one of the most important U-boat bases in Europe.

These Atlantic bases—at Brest, at Lorient, at Saint-Nazaire, at La Pallice, at Bordeaux—were considered by the Germans one of the chief prizes of their conquest of France. Their experts had always maintained that possession of them in 1917 would have tipped the balance in favor of the U-boat campaign that came so close to strangling Britain. If those comparatively crude submarines operating from distant bases in the mine-infested North Sea had nearly won the war for the Kaiser, it seemed reasonable to suppose that Hitler's wolf packs would prove irresistible once the Biscay ports were in Nazi hands. German propagandists crowed—and the German people were only too eager to believe—that "Britain's RAF holds Germany by the wrist, but Germany's U-boats hold Britain by the throat!"

In the autumn of 1942 it looked for an ugly moment as if that boast might be justified. Sinkings, which had dropped off from a peak in March, rose sharply in October. In November they jumped to a terrifying level. From a shipping standpoint, November was the blackest month of World War II.

There was a variety of reasons for this: winter weather, with stormy days and long nights, made air patrol less effective; submarines with remarkable speed and range were roving the seas in unprecedented numbers; thanks to the African expedition they were finding more targets for their torpedoes. But undoubtedly one of the main factors was the possession of the Atlantic bases. It was estimated that at any given moment one hundred U-boats operating from the Biscay bases were at sea, with another seventy-five in port. At Lorient alone twenty U-boats were believed to be in the harbor on any given day,

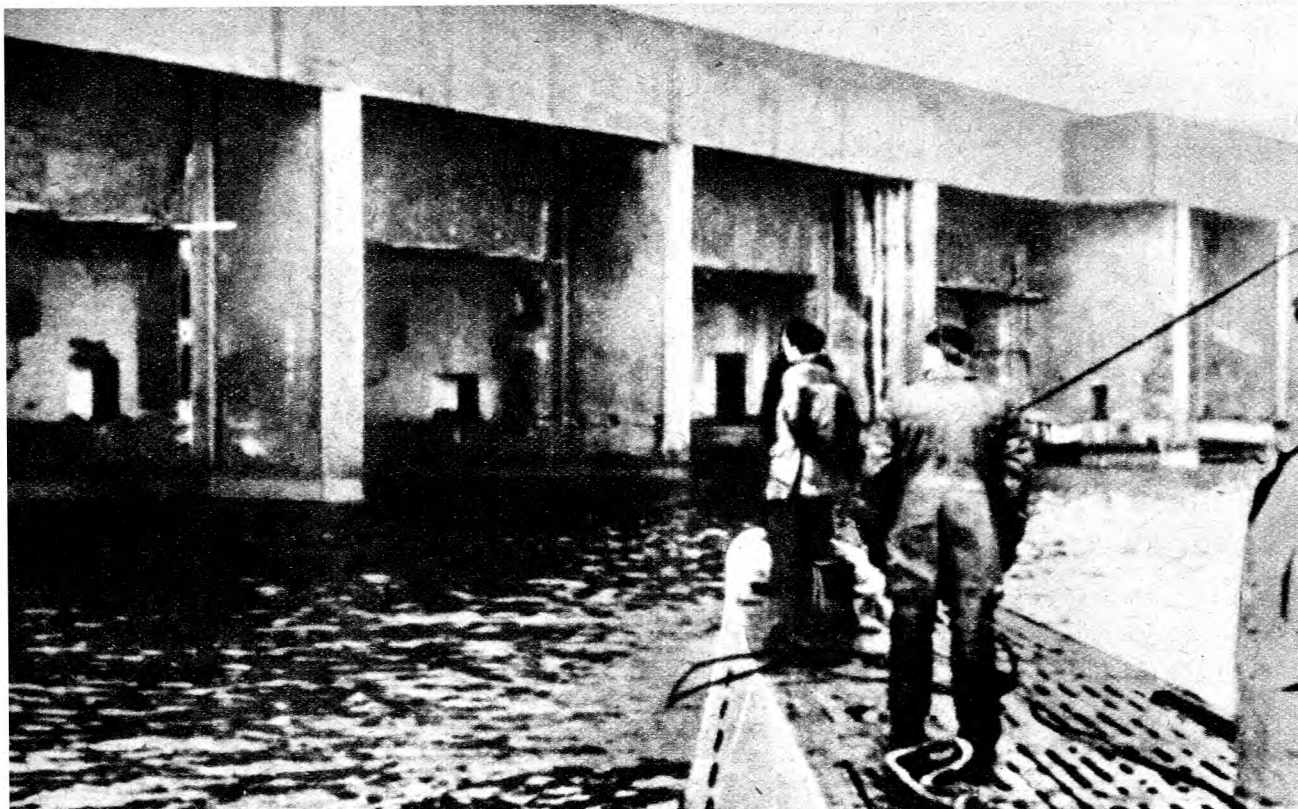
most of them the large 750-ton type capable of operating in the Caribbean.

The idea of stamping out these hornet nests from the air was not new. In 1941 the RAF had dropped almost 400 tons of bombs on Lorient, causing great damage to the port area and the town itself. But the Germans had not been idle. With typical Teutonic fondness for massive construction they had built a series of U-boat shelters that were—according to the proud announcements of German propaganda agencies—completely bombproof.

From four miles up, these shelters resembled cardboard shoeboxes. From the ground they looked like enormous square-jawed railroad tunnels. They squatted on dry land with ramps leading down to the water. Entering U-boats were hauled up in cradles and shunted into any one of twelve individual pens. There, protected from direct bomb hits by an eleven-and-a-half foot overhead layer of reinforced concrete, sheltered from blast by side walls more than eight feet thick, the raider was made ready for its next foray against the shipping lanes.

All around the shelters themselves were smaller buildings containing workshops, transformers, power stations, offices, living quarters, torpedo sheds, and other installations directly connected with the servicing of U-boats. At Lorient, when the Americans made their first attack, there were two blocks of shelters in operation. A third was being built almost on the water's edge; construction of the roof was proceeding rapidly. Close by were floating docks, camouflaged moorings, merchant vessels, supply ships, and submarines awaiting servicing. It looked like an ideal target for daylight precision bombing.

Eventually the aerial assault of the VIII Bomber Command against the U-boats was to combine three distinct phases of attack: smashing the U-boats still in the construction yards, harassing them in their turn-around ports, and killing them at sea. But in October the Command had neither the numbers of planes nor the com-



**Home again.** *This is how the concrete submarine pens at Saint-Nazaire look to the crew of a returning U-boat.*

bat experience required for penetration to the shipyards of Germany. Nor could it well afford the expenditure of flying hours that patrolling the convoy lanes demanded. The logical place to strike the U-boats at that stage of the game was, as the C.G. put it, "in the nest."

Actually, it was a good place to begin. Despite fourteen missions, the Americans were still in the freshman class. They had many things to learn: what combat formation offered best defense against fighters, what evasive action was best against anti-aircraft fire, what bombing techniques were most effective, what modifications had to be made in the planes. Still unproved was the ability of the Forts and Libs to bomb targets and to defend themselves if unescorted by fighters—and the submarine bases lay, for the most part, just beyond fighter range.

Then there was the question of time. It was obvious that the appearance of American bombers over Germany could not be long delayed. The schooling necessary to hasten the day had to be done quickly. The speediest solution was to make the Germans provide the school—and the instructors—whether they liked it or not. Classes would be held four miles up over Brest,

Lorient, Saint-Nazaire, La Pallice, and Bordeaux.

All through the latter half of October the weather was bad. During the month eleven missions were canceled. Only three were carried out, the Lorient attack on October 21 being the third. And bad weather almost nullified that. At 22,000 feet, the altitude specified in the combat order for bombing, there was solid overcast over the target. Three of the four attacking Groups turned back. The fourth—experienced cocky veterans of the first raid on Rouen—pushed on without fighter escort, hunted for a hole in the clouds, found one, swooped down to 17,500 feet, and bombed the target—a feat which earned them a commendation from the C.G. and cost them three Fortresses shot down.

Enemy fighter opposition was ferocious and skillful. Yellow-nosed FW 190's attacked from the rear in such a way that the high sweeping tail fin of the Forts screened them from the fire of the radio hatch and top turret. Two wings were shot out of the rear Fortress element which lagged behind, and the No. 3 plane of the second element dropped out of formation with its wing enveloped in flames. The remaining

Americans recorded several bomb hits directly on the submarine installations, claimed ten enemy fighters destroyed, four probably destroyed, and three damaged. They came home exhausted and depressed by the most serious losses suffered by any Group at that time, but pleased with the way in which they had outwitted the weather and proud of the initiative and daring displayed by their Group Leader.

It was just as well that they took a crack at the sub pens while they had a chance. Three weeks later that Group was fighting over another continent. The African invasion had claimed them.

To trace the profound effect of the formation of the Twelfth Air Force upon the Eighth it is necessary to go back to July, when at a meeting of the Combined Chiefs of Staff it was decided to open the second front in Africa and give it every priority. It was a momentous decision, and subsequent events more than proved the wisdom of it. In early September the Twelfth Air Force was activated and given first call on men, supplies, aircraft, and transportation. Eighth Air Force personnel, well aware that the Twelfth was being formed, but completely in the dark as to its eventual use or destination, nicknamed it "Junior," and the phrase "You can't have that; it's for Junior" became a standing joke.

Movement of all Twelfth Air Force units and personnel from England by air was handled by the Eighth. The amount of work and organization involved was staggering. Medium bombers, destined from the start for the Twelfth, arrived in England to be trained in the British system of Flying Control before being moved down to Africa. Fighter groups, just becoming battle-tested, joined the tide of air strength flowing south.

From the VIII Bomber Command two Fortress Groups were sent—the oldest and hence the most experienced in the theater. Later on, part of a Liberator Group was to join them. The Liberators came back, after three months in the desert, for another whirl in "the Big League." The Fortress Groups became a permanent part of the Twelfth Air Force.

The climax of these preparations came on the night of November 4, when a special train carrying General Eisenhower, General Mark Clark, General Doolittle, and various high-ranking British officers left London under conditions of strictest secrecy, arriving at a south coast town at 0200 hours the next morning. There the party,



*This is how they look to an American bomber crew.*

or "bodies" as they were referred to in official orders was transferred to a motor convoy and driven through guarded roads to an airdrome where several aircraft of one of the Fortress Groups were waiting. Pilots identified their passengers, signed the manifests, and took off at dawn for Gibraltar. The plan was to arrive just at dark and all planes made the run on schedule except the Fort carrying General Doolittle, which developed faulty brakes at take-off and was delayed until the next day.

That night, November 5, a careless enlisted man talked too much in a local pub about the events of the day. He was immediately arrested, charged with a most serious violation of security. The need for such security was graphically illustrated next day when General Doolittle's plane was attacked in the Bay of Biscay by four Ju-88's. It succeeded in escaping only after a sharp running fight. Three days later the Allies landed in North Africa.

The loss of two Groups of heavy bombers was bound to make itself felt in subsequent operations of the VIII Bomber Command unless replacements were prompt in arriving. The demands of global warfare were such that replacements could not be sent. For the next



**Emergency landing.** *This extinguisher foam saved Stormy Weather when it came down with one engine afire.*

few months the American combat strength, instead of moving sharply upward, barely held its own. Missions were curtailed not only by weather but also by the replacement rate, since the C.G. was determined not to allow his small force to become still further reduced. More than once he referred to it as a "token" air force. But the press, quick to sense the drama in the stories of extraordinary individual heroism that accompanied almost every mission, painted such vivid pictures of the American attacks on the submarine bases and the factories and harbors of Occupied Europe that the casual reader was almost certain to exaggerate the size and effectiveness of the effort.

The first attack on the sub pens at Lorient was followed by another against similar installations at Brest. Bombing results were so uncertain that two days later, when the bombers went to Saint-Nazaire, a radical experiment was tried. Instead of going in at the customary 20,000 plus feet, the lead Group went over at 10,000 and the last Group flew at 8000 feet. One

squadron was as low as 7000. The result was that practically every ship in both Groups was hit by anti-aircraft fire.

The Germans had always prided themselves on their "flak" (Flieger Abwehr Kanonen), and that day they threw everything they had at the Americans. Light flak—20- and 37-mm.—came streaming up in the form of tracers, more spectacular than harmful at that altitude. But the heavy flak, mostly from the famed German dual-purpose 88-mm. guns, was deadly. Every Fortress but one in the lead Group was damaged, but all got back to base. Twelve Liberators, bombing from around 18,000 feet, were not seriously inconvenienced. But three Fortresses in the last Group over the target were hit hard by heavy flak and went down. One shell was seen to make a direct hit and explode against the nose of a Fortress, evidence of extraordinarily accurate fusing. Bombing results were better, but hardly justified the battle damage sustained. If it proved nothing else, the mission demonstrated conclusively that so far as casualties or



losses from flak were concerned, it was strictly a matter of "the higher the fewer."

From then on Saint-Nazaire was known as "Flak City." As the missions went on, and the "milk run" down to the sub pens became almost an established routine, the Germans moved in great numbers of heavy flak batteries. By November they had about seventy-five guns available at Saint-Nazaire alone; later the number passed one hundred. And, as in any other form of warfare, practice tended to make perfect. Flak began to be dangerous well above 20,000 feet. As one American waist gunner put it feelingly, *You always get good trouble over Saint-Nazaire; they got postgraduates at them flak guns!*

For some airmen flak proved more of a mental hazard than enemy fighters. *The trouble is, you never know it's there till it's there.* The ugly puffs of brown smoke mushrooming across the sky, the metallic coughs of the bursts, the knowledge that although you were traveling some 300 feet per second a sliver of steel that had risen four miles above the ground might find you, that a tenth of a second might make the difference between a hit and a miss, that the position you were sitting in might determine whether you lived or died—all these things crossed the minds of the combat crews when Intelligence Officers announced at briefings that "flak is mainly a deterrent."

Actually, flak unaided was not likely to knock down a plane if proper evasive action were taken and sufficient altitude maintained. But it did cripple many, and once a Fort or Lib was knocked out of formation there were always enemy fighters waiting to pounce like crows on an owl rendered helpless by daylight. Flying with reckless courage, the "Abbeville Kids," as the RAF called them, came in so close that often it was possible to see their faces. There was more truth than humor in the threadbare bomber-station joke, "Well, I had a good look at that Jerry pilot with the red mustache again today."

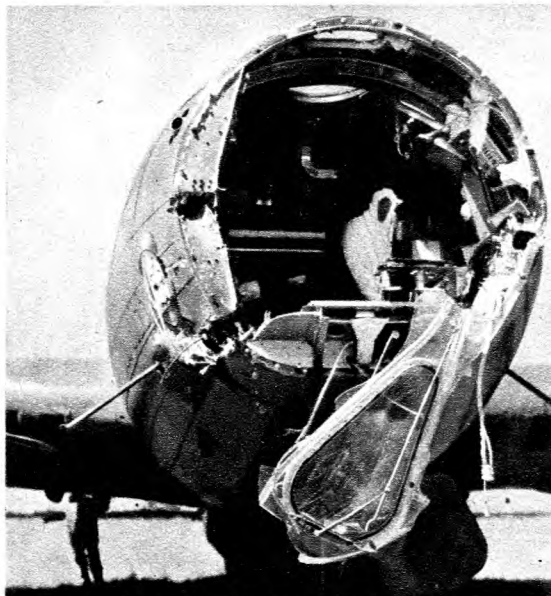
In the stress of combat, crew members were likely to be called upon to display remarkable versatility. High-ranking officers, riding as observers, sometimes found themselves manning machine guns. A cameraman, one of several who went with the bombers and struggled with endless technical difficulties in an effort to record aerial combat on film, had the radio hatch gunner mortally wounded beside him and spent the

afternoon spraying .50-caliber bullets down the spine of the Fortress. Bombardiers and navigators who had never flown four-engined ships took over controls from wounded pilots and copilots and brought their ships home, sometimes being "talked in" to a landing. Typical was the laconic story of a radio operator who before the war had been a store manager in Salt Lake City :

*I was radio gunner in a Fort called the Jersey Bounce. We were getting along all right until the flak caught up with us and a fragment sliced through the fuselage into the ankle of our navigator. The pilot called me on the interphone to come and administer first aid to the navigator, but I was too busy fighting off enemy planes that were attacking from the rear. As soon as I had a chance, I crawled forward to the nose and found the navigator sitting on an ammunition box cheerfully spotting fighters for the bombardier, who was leaping from one side of the nose to the other, manning both guns.*

*I applied a tourniquet to the navigator's leg, gave him some sulfa pills, and sprinkled the wound with sulfa powder. Three times I had to stop to take a gun and help the bombardier ward off attacks from dead ahead.*

*Then the lead ship of our element was hit in the*



**Cripple.** *This Fortress had its nose blown off, but flew back to base. The bombardier was killed.*

*No. 1 engine and began to fall back. We dropped back too, holding our position on our leader's wing. Just then an FW flashed in like a barracuda, came right between the two Fortresses, and raked our ship with cannon fire. I could feel the hits slamming into us. Word came through that the tail gunner was hit, and then just afterward the interphone went dead.*

*The wounded navigator seemed all right, so I crawled back to the tail gunner. He was intact, but he told me that the ball turret had received a direct hit. I went back to take a look and found it completely wrecked. The gunner was crumpled in the wreckage. I tried to do what I could for him, but it was no use. I don't think he ever knew what hit him. I reached into the turret and fixed the broken connection of the interphone, then I went back to the nose and gave the navigator a shot of morphine to ease his pain. Then I went back to the radio compartment to man my own gun again.*

*That's all there was to it.*

Gunner, radio operator, physician, electrician, mortician—that's all there was to it.

Hardly a mission passed without some new report of flak phenomena, or revised enemy fighter tactics. FW 190's were evidently being more heavily armored: Fortress gunners reported seeing .50-caliber tracers glance off the cowling of their radial engines. More and more the enemy was going in for head-on attacks. Bursts of anti-aircraft fire that showered the formations with green and red stars were reported. Pretty pink bursts—promptly dubbed "lace-panty flak"—were seen. Huge arrows of smoke were reported that may have had significance only in the minds of the excited observers. Flak City rarely failed to put on a good show with at least one new act.

The milk runs went on with an occasional slap at Lille or Abbeville, at Romilly-sur-Seine or Rouen. There were eight missions in November—more than the weather forecasters had considered possible. In December the weather lived up to its black reputation; time and again missions were scrubbed; four were completed.

Actually, this was all that the timetable called for, but a certain impatience began to be manifested by those who somehow had acquired the notion that an air force, to be effective, could or should fight a major engagement every other day. This illusion, fostered perhaps (like the pickle-barrel-bombing-accuracy-myth) by overzealous advocates of air power, was based on a

curious blindness to the realities of aerial warfare. People who would not have dreamed of expecting a naval squadron—or even a ground army—to fight a dozen big battles in one month, repairing combat damage and replacing casualties overnight, wondered audibly why the American bombers did not go out more often.

The problem of turning an untried theory of air warfare into efficient and deadly practice seemed to have—did have—a thousand different facets. In their trial by combat the big bombers were showing more endurance than even the experts had hoped for, but certain modifications were needed: more fire power forward, better oxygen supply for the turrets, bigger ammunition boxes, better disposal of expended cartridge cases that had an unpleasant way of falling upon friendly aircraft flying below and causing considerable damage.

There was need for better organization of the combat crew—bombardier and navigator, cramped in the plexiglass nose, were likely to get in each other's way during the heat of combat. So were the waist gunners: the windows through which they fired, designed originally so that one man could handle both guns, were too close together. A method had to be devised of making it easier for the ball-turret gunner to bail out in case the abandon-ship order was given. Better rescue, emergency, and life-raft equipment was found to be needed. By the time the first year of operations was over, bombers arriving from the States were requiring over a hundred modifications before going on combat status.

Every aspect of combat flying presented problems that demanded solution. Radio operators had to master the British system of communications and learn to recognize false German messages designed to confuse, or even recall, the American formations. Navigators had to familiarize themselves with Continental landmarks to avoid errors that might prove fatal. Late in the year, coming back from Lorient, a Fortress—probably with wounded aboard—evidently mistook the tip of the Brest peninsula for the south coast of England. It peeled out of formation, obviously intending to land, and ran into enemy fighters that shot it down before it could rectify its mistake.

But the problem that overshadowed all others was bombing accuracy. The bombers were hitting the sub-pen installations, there was no doubt of that. Letters of praise from the RAF and from the British Admiralty attested to the

destruction at the bases, with the consequent lengthening of the U-boat's turn-around time. Morale of the U-boat crews was shaken. But the Americans weren't satisfied.

For one thing, experience was proving that the destructive power of a single bomb, or even a few bombs, was not so devastating as had been expected. What was needed within the target area was a *concentration* of bombs whose cumulative effect would be so great that repairing the damage would hardly be worth the Germans' time or effort. During the early months of 1943 this sort of concentration was to be realized, not once but many times. In the last half of 1942 the American bombardiers were still wrestling with the problem.

On virtually every mission they were hitting the sub bases with at least a few sticks of bombs. Direct hits on the shelters tore craters several feet deep in the concrete roofs. But the bases were

not being knocked out. The desired concentration was not being achieved.

The first indication that a solution might be reached came on January 3 when sixty-eight Fortresses and Liberators attacked Saint-Nazaire for the sixth time. It was a diamond-clear winter day with visibility unlimited over the target. In a further effort to insure precision bombing an unusually long bombing run was ordered. The run was made into the wind, and since the wind above 20,000 feet was a 115-mile-per-hour gale, the bombers' speed was reduced by more than half. For almost ten minutes they flew practically straight and level, sitting up there, as one pilot put it, "like fish in a barrel."

As a result, the flak was particularly deadly. The Germans put up what amounted to a box barrage at the point of bomb release, and the formations had to plow through it. At least two bombers—probably three—were shot down by

*The smoke was late. Smoke screen over the submarine pens at Saint-Nazaire, a common Nazi defense measure.*

destruction at the bases, with the consequent lengthening of the U-boat's turn-around time. Morale of the U-boat crews was shaken. But the Americans weren't satisfied.

For one thing, experience was proving that the destructive power of a single bomb, or even a few bombs, was not so devastating as had been expected. What was needed within the target area was a *concentration* of bombs whose cumulative effect would be so great that repairing the damage would hardly be worth the Germans' time or effort. During the early months of 1943 this sort of concentration was to be realized, not once but many times. In the last half of 1942 the American bombardiers were still wrestling with the problem.

On virtually every mission they were hitting the sub bases with at least a few sticks of bombs. Direct hits on the shelters tore craters several feet deep in the concrete roofs. But the bases were

not being knocked out. The desired concentration was not being achieved.

The first indication that a solution might be reached came on January 3 when sixty-eight Fortresses and Liberators attacked Saint-Nazaire for the sixth time. It was a diamond-clear winter day with visibility unlimited over the target. In a further effort to insure precision bombing an unusually long bombing run was ordered. The run was made into the wind, and since the wind above 20,000 feet was a 115-mile-per-hour gale, the bombers' speed was reduced by more than half. For almost ten minutes they flew practically straight and level, sitting up there, as one pilot put it, "like fish in a barrel."

As a result, the flak was particularly deadly. The Germans put up what amounted to a box barrage at the point of bomb release, and the formations had to plow through it. At least two bombers—probably three—were shot down by



The smoke was late. Smoke screen over the submarine pens at Saint-Nazaire, a common Nazi defense measure.

flak. Enemy fighters, fourteen of which were destroyed, accounted for four more bombers. It was a tough day: the loss of seven bombers was the worst suffered to date.

On that day, for the first time, the formations abandoned individual bombing and adopted the practice of dropping their bombs at the instant the squadron leader released his load. The full implications were not realized at the time, although bombing results were good. But the first long step had been taken toward a new technique of bombing that within a few weeks was to produce a concentration of bombs on a target the like of which had never been seen—at Rotterdam, or Coventry, or anywhere else.

Incredible stories of individual heroism were recorded that day. In one Fortress a 20-mm. shell entered the cockpit, killing the pilot outright and stunning the copilot. The plane fell out of formation in a terrific power dive. Two thousand feet below, the copilot recovered consciousness, pulled the body of the pilot off the control column, and, despite his wounds, regained control and zoomed back up into formation in what the officer leading the mission described as the most remarkable feat of piloting he had ever seen.

Down on "the deck," struggling like a crippled gull over the Bay of Biscay, another Fortress participated in a wild dogfight with at least four FW 190's. Turning always into the attack to give the FW's less time to aim and fire, maintaining violent evasive action with one engine dead and another damaged, the Fortress shot down at least two of its attackers. The pilot, a bullet through his legs, brought his riddled ship back to base.

That was the day Sergeant Arizona Harris, top turret gunner, won the Distinguished Service Cross. An officer in his squadron told the story:

*His name was really Arizona—they christened him that way—and he came from Tempe, which is a little desert town not far from Phoenix. He had a big leonine head and tawny hair and steady eyes and thick strong wrists, and he was one of the best top turret gunners you ever did see. He usually fired in short, quick bursts, to keep his guns from overheating, and he didn't miss—not often. He already had two FW 190's to his credit, and he had an Air Medal, too, that he was going to show to his father and his two brothers and his married sister when he got home.*

*He went out that day with Charlie Cramner, one of the most popular pilots in the whole group,*

*and I think Arizona was proud to ride with him because he knew that if anybody could bring the ship back, Charlie would. Even when two engines were knocked out and the whole bottom was blown clean out of the nose, so that the bombardier and navigator simply disappeared and nobody knew what became of them—even then it looked as if Charlie would bring her back, because when the formation finally pulled away from the enemy fighters, there was his ship staggering along with us.*

*Not quite with us, though. The formation came down to zero feet for protection against possible attacks from below. But Cramner didn't dare lose altitude that he couldn't regain, so he kept his ship as high as he could—fifteen hundred feet, maybe—and the rest of us thought he was safe up there. As safe as you can be in a riddled ship with two engines out and most of the nose shot away. So we didn't join him.*

*But all of a sudden, about forty miles northwest of Brest, six Focke-Wulf 190's and a Messerschmitt 109 came hurtling out of nowhere. They spotted the limping Fortress, and one after another they made a pass at it from behind.*

*The other bombers were too far away to help. We saw two parachutes from the Fort flare open after the first attack, and two more after the second attack—although there was barely time for the chutes to open before the men hit the water.*

*We saw the Germans circle the drifting chutes, and whether or not they machine-gunned the fliers is something that can't be proved, so why think too much about it? But when the Fortress settled into the sea—and Charlie Cramner, who had stayed with his ship as a captain should, set her down as gracefully and gently as if he had four engines and a six-thousand-foot concrete runway under him—then the Germans did strafe her, and you could see the steel-gray sea boiling under the rain of bullets.*

*But there was something else you could see, and that was the guns in the upper turret still blazing, even as she settled. She settled fast; she lasted only about half a minute. But the top turret was still spitting as the waves closed over it. And that was the end of Arizona T. Harris, American fighting man.*

The date was January 3, 1943. A few days later announcement was made that Allied shipping losses for December were less than half those suffered in November. The U-boat offensive was not dead, but its back was broken: Arizona Harris had helped break it.





*Those short bleak days. . .*

WHILE THE planes and combat crews of the VIII Bomber Command were testing their strength and weakness over the submarine pens, the drab English winter was settling down on the bomber stations from which the big ships flew. In those short bleak days a pattern of life evolved for the men in the air and the men on the ground that was unique in many ways.

It was not merely the contrasts inevitable when half a dozen masculine American communities were suddenly set down in the midst of a countryside whose traditions go back a thousand years. Nor was it the strangeness of waging aerial warfare under conditions where you could lunch at a Mayfair hotel one day and be a human clay pigeon five miles up over France the next morning. Those conditions still exist, but that first winter had an atmosphere all its own, a state of mind almost, that those who participated in it will never forget.

One factor in creating this state of mind was undoubtedly the sense of newness that pervaded the whole effort. Everything was new—living conditions, supply problems, weather, British customs, and combat flying where nobody knew what would happen next. New, too, was the realization for the combat crews that when a mission went out against *Festung Europa*, somebody was not coming back. That it was not a question—as it was in some theaters—of wondering whether any opposition would be met, but rather a grim speculation on which would be tougher, the fighters or the flak.

Another thing: in those days the whole VIII Bomber Command effort was incredibly small. Barely a hundred combat crews were available—and usually considerably less than that number of aircraft were ready to fly. The result was that personalities stood out with remarkable clarity, not only among the men but among the bombers themselves. Fortresses like *Rose O' Day*, *Boom Town*, *Southern Comfort*, *Hell's Angels*, *Dry Martini*, *Wahoo*; Liberators like *Shoot Luke*, *Ball of Fire*, *Teggie Ann*—the exploits of these

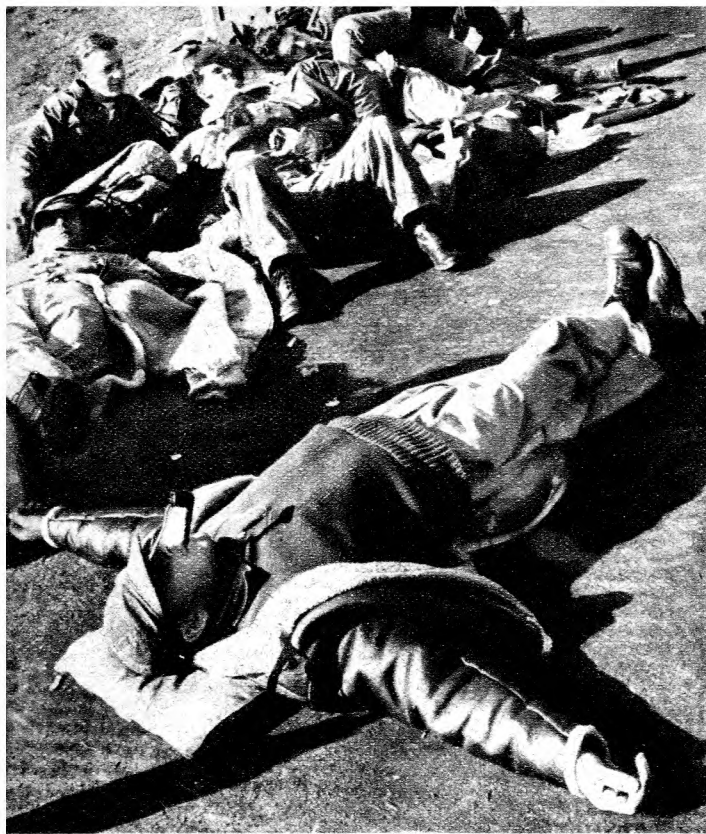
aircraft and the men that flew them were as familiar in the First Wing—the old guinea-pig Wing—as the exploits of the Dodgers are in Brooklyn.

Later on, as the flood tide of replacements and new ships came sweeping in, individual identities began to be lost. The outlines blurred. This was inevitable and perhaps desirable as the VIII Bomber Command changed from a handful of pioneers to a tremendous and efficient machine of destruction. But during those dark winter months when there was no expansion, when at times there seemed to be no progress, the individual himself, whether Group Leader or tail gunner, assumed tremendous importance. It is not fair to name one without naming them all. Many are now dead, many missing. But living or dying, they did a remarkable job. Daylight precision bombing—and, more important, the free peoples of the world—owe them a great debt.

By rights there should have been a constant morale problem that winter. There was not. The reasons why there should have been—and the reasons why there was not—add up to a fairly complete picture of bomber-station life at that stage of the game.

The two worst intangibles that the fliers had to contend with were lack of replacements for casualties, and the psychological repercussion of missions that were “scrubbed” (canceled) at the last minute. In addition there were the comparatively minor discomforts of primitive living conditions, of colds and winter weather, of dispersal and mud, of lack of all sorts of supplies. Finally, there was the uneasy feeling, fostered occasionally by sharpshooting civilian critics, that perhaps through some fault of theirs the case for high-altitude daylight precision bombing was not being proved quickly or dramatically enough? How else account for the scarcity of replacements? How else explain the failure to grow? The African invasion, obviously, called for planes and more planes. The Pacific needed





*Sweating it out. Will the mission be scrubbed?*

planes. The Russians had to have planes. But in Africa and Russia things were going well. In the Pacific the Japs were being held. Production figures from the home front indicated that planes were being poured out in an ever-increasing flood. Where were they?

As the milk-run missions went on and enemy opposition became stiffer, American losses began to mount. They remained low in comparison to what they were to become later, but the total force engaged was so small that any loss was felt. In addition, the Germans adopted new tactics of hammering at a single Group, so that the casualties were likely to be concentrated at one bomber station.

When this happened, morale at that station did sag temporarily. The reason was not so much the casualties as the failure to replace them promptly. The fliers expected losses; it was part of fighting a war. But they did not like empty beds in the barracks to remind them of the men who were missing. As long ago as World War I it had been recognized that a unit could endure severe punishment if the vacant seats in the mess were occupied by the following

morning. This "full breakfast table" policy was axiomatic with the RAF. But on the American stations the breakfast tables did not fill up very quickly. That was the grimmest part of those parlous days.

The other great source of nerve strain was the missions that were called off at the last minute, usually because of weather. Combat crews declared, almost unanimously, that the feeling of let-down, the sense of anticlimax, that followed these cancellations was far worse than actual participation in a combat flight. The strain of sitting through a briefing, of enduring those stomach-tightening minutes of tension before take-off, the uncertainty of being told to stand by for an indefinite period of time, the final "scrubbing"—these things left the crews so limp that one Group Commander sent in a formal request to have diversionary sweeps credited to fliers as combat missions. The request was refused, but it indicated the seriousness of the problem. In the month of December alone such "scrubbings" occurred seven different times. And when they happened the ground crews which had loaded the bombs and groomed the bombers felt almost as deflated as the fighting men.

As for living conditions, they were "rugged," to use the favorite airdrome adjective, but the effect on morale was negligible. Nobody liked the mud—wet, sticky, the color of fresh cement. The blackout, no matter how you sliced it—and sometimes you almost could slice it—was a nuisance and a bore. The interminable distances on a bomber station that had to be traversed on foot with passing vehicles plastering you with freezing mud, the coal stoves in the Nissen huts that defied all attempts to keep them going overnight, the lack of hot water, the apparently permanent absence of sunlight—these things were subjects of universal lamentation and complaint, but nobody cared seriously about them. Again, it was part of fighting a war. Men actually came to take a melancholy pride in the duration of their particular cold in the head and boasted hoarsely about it to the boredom of their fellows. Those who lived on the more primitive stations made no effort to conceal their contempt for the "country-club set" who had been fortunate enough to draw RAF quarters with permanent buildings and (in one case) a real live butler.

More serious, because it actually affected operations, was the shortage of essential supplies and maintenance. At this time servicing

planes for the embryonic Twelfth Air Force was a top priority with the Eighth Air Force in England, and often planes damaged in battle over the sub pens could not be made ready to fly again simply because there were not enough maintenance men to do both jobs. At one point the lack of equipment for cleaning machine guns became so acute that the gunners, having cleaned parts of their weapons with soap and water, took them tenderly into bed the night before a mission to prevent them from rusting. British generosity kept general supply from being a problem, but the British could not provide spare parts for American planes or specialized equipment such as oxygen masks.

One other potential morale-destroying prob-

lem was the matter of promotions. As was almost inevitable, the Tables of Organization set up in Washington on a theoretical basis proved inadequate in some cases. Bomber crews commanded by second lieutenants were not uncommon; some of them completed fifteen or twenty missions before promotions were forthcoming. The same bottleneck plagued the enlisted men. But in general, despite some plain and fancy grumbling, they didn't let it throw them. They went around chanting the lugubrious ditty :

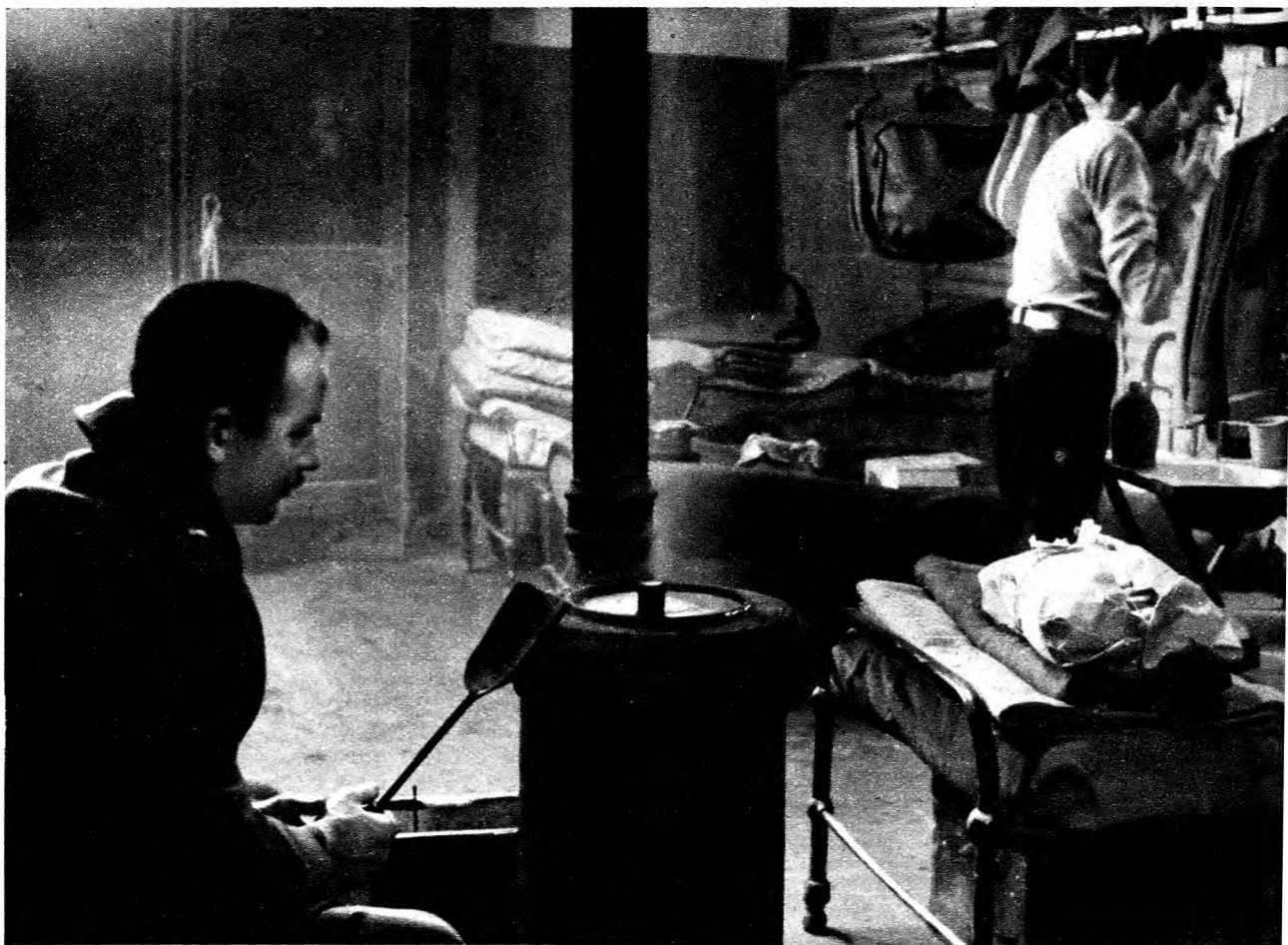
*Bless 'em all, bless 'em all,*

*The long and the short and the tall.*

*There'll be no promotion this side of the ocean,*

*So cheer up my lads, bless 'em all!*

and let it go at that.



**"Rugged"** was the word. *The coal stoves in the Nissen huts defied all attempts to keep them going overnight.*



Tea, soldier? The British NAAFI helped out until...



Red Cross clubs and clubmobiles took over the task.

There were various reasons why these trials and tribulations did not affect morale more seriously than they did. One was the efforts of such organizations as the British NAAFI (Navy, Army, Air Force Institute) which maintained canteens on the bleak, wind-swept bomber stations until the American Red Cross was able to take over and do a magnificent job. Another was the unglamorous task of the Special Services officer who arranged for movies, organized shows and dances, provided athletic equipment, and in general made it his business to keep station life from becoming unbearably drab or monotonous.

The chaplain was another factor. No one who watched the combat crews kneel to receive a final benediction before entering their planes ever doubted the value of these sincere, quiet men whose job included everything from running errands for pipe tobacco to sitting beside a dying airman in a hospital plane.

The work of the station doctors—the flight surgeons—was also a strong influence in keeping up morale. Psychiatrists as well as physicians, they knew their combat crews well, were quick to spot signs of flying fatigue. Often this was cured by the simple process of sending the flier to a rest home for a few days. In these rest homes the men loafed, read, slept late, fished, hunted—did whatever they pleased and usually came back to their units refreshed and ready to go again.

At one station fairly remote from a hospital a veteran bomber named *Ball of Fire*—too weakened by battle damage for combat flying—was

kept standing by as a hospital plane. If one of the returning aircraft fired the red flare that signified wounded aboard, *Ball of Fire* was ready to take off at an instant's notice. As a result the casualty was at the hospital within minutes instead of jolting over the English roads in an ambulance for the better part of three hours.

Another factor of incalculable value in maintaining morale was the attitude of the British. Their kindness and hospitality during those gray winter months were amazing, especially since they themselves were subject to the strictest sort of food rationing. This did not prevent them from taking in stray Americans, entertaining them, even feeding them to the extent of presenting them with a real egg—the kind you break.

But the basic reason why there was no serious morale problem during those cold, static months was to be found in the character of the men themselves, the men on the ground as well as the men in the air.

In some ways the men on the ground had the short end of the stick, especially the enlisted men. There was no glory in the anonymous but necessary job of packing a parachute or driving a truck or guarding a Fortress in the rain-swept hours between midnight and dawn. Nobody handed out medals to the man who picked the sullen, slippery bombs out of the mud and washed them off so that no blemish should keep them from falling true and hoisted them into the yawning bomb bays with apparatus that had been known to slip and let a thousand-pound bomb fall and crush the bomb loader's feet.



**Bomber mascot carries his master's oxygen mask.**



**Bomb washer: mud may keep bombs from falling true.**

Nobody complimented the weary-eyed assistants in the photo labs, working frantically to get the bomb-strike photos of the day's mission processed in a minimum of time. Nobody wrote glamorous newspapers stories about the cooks.

But the American G.I., the American Sad Sack, the American soldier by whatever name he might be known, went on doing his job with a particular brand of American know-how, with a maximum of adaptability, with a minimum of fuss. He took part in intersquadron sports. He grumbled about the lack of mail, and the mud, and the alleged monotony of the chow. He moaned about the promotion situation. He acquired a dog of dubious ancestry and promoted it from time to time until it got to be a second lieutenant, at which point it usually ran away. He went to the station movies and sat on backless benches, lost in rapt contemplation of some part of the American scene. Sometimes he "pulled a short mission," going in to town on foot or in a liberty bus to do a little pub-crawling or have a date with a girl. Once in a while he married the girl. Now and then he would stare at the mud outside his Nissen hut and think about planting some grass or flowers there in the spring. Sometimes he thought about the war and wondered how long it would last. There were times when it seemed perfectly capable of lasting forever.

If he was the adventurous type he might apply for combat duty as an aerial gunner. He might get it. If so, he never forgot his allegiance to his old unit. He might become a tail gunner and live apart with the noncommissioned combat

personnel, but if he had been a clerk he never failed to keep his old friends—and they never ceased to feel a possessive pride in him.

The flying officers—the pilots, copilots, bombardiers, and navigators who manned the bombers—looked, for the most part, as if they might have stepped out of any American law school. On the whole they were quieter, less individualistic than fighter pilots; one reason, no doubt, was the absolute necessity for teamwork in their grim and temporary profession. There was not much of the swashbuckler about them. They were scientists, skilled and versatile; their training was reflected in their faces.

On the station between missions they were relaxed and friendly. The peacetime condescension of the flier to the nonflying man had disappeared. In wartime, fliers soon learned how important the ground men really were. Combat aged them quickly. They lost some of the puppy playfulness with which they arrived. Not all, though. Their sense of humor never deserted them. The names they gave their planes bordered on the classic: *Wabbit Twacks*, *Quitchurchitchin'*, *Fearless Fosdick*, *Impatient Virgin*, *Lady Halitosis*—the German fighter pilots must have been sorely puzzled. They wrote pointed and sometimes unprintable comments on the bombs they dropped. Frequently they dropped brickbats, American flags, and other mementos along with the bombs.

They teased each other constantly. In the mess one day a pilot got up disgustedly, complaining that the navigators talked too much shop. The navigators, in a huff, said they would organize

a table and eat by themselves. "Well," said the pilot with a wicked grin, "see that you have it near the door. Otherwise, you guys'll never find it."

Actually they all talked a lot of shop. After a mission, they huddled around the narrow circle of warmth cast by the iron stove in the officers' mess, and the talk flowed like a river :

*Don't give me that stuff about flak being just a deterrent; boy, I'd rather face the fighters any day. . .*

*And this sergeant gunner of mine didn't know it was the General, see? And there they stood, raising their earphones to holler in each other's ear. Man, it was a wonderful sight. . .*

*If we had one more gun mounted right here; look, lend me a pencil. . .*

*The President says we built 49,000 military planes last year. Wish the Old Man would. . .*

*Next time we oughta bomb downwind; bet we'd be in and out before they knew it. . .*

*I'll mount the gun myself; hell, I'll even buy it. . .*

*I tell you, it's just like shooting grouse, only these babies shoot back. . .*

*I'm gonna change the name of my ship from the Green Hornet to the Homing Pigeon. . .*

*Why couldn't some of those Mosquitoes go in low and polish off the flak while we. . .*



*Mud. . . Mud. . . Mud. . . Mud. . . Mud. . . Mud. . .*

*You know those bombs that fell on the railroad tracks? Well, I heard a freight train had to stop and an express came along and ran into it. Neat, huh?*

*And what's more, she gave me a real egg for breakfast, with a shell on it. . .*

*Every time I'd bank the flak would follow me like Mary's little lamb. . .*

*You gotta hand it to Jerry; he's a beautiful flier, and boy, has he got guts. . .*

There was never any attempt to belittle the adversary, to pretend that the Germans were not good. Later on, when some misguided company at home put out an advertisement showing an inane-looking bomber pilot grinning cheerfully and demanding, "Who's afraid of the new Focke-Wulf?" somebody pinned it on the bulletin board with a laconic note underneath. "Sign here," the note said. Every combat officer in the Group signed; the Group Commander's name led all the rest.

This was a great joke, of course, but underneath it lay the seriousness with which the fliers took their jobs. There was a little if any of the hysterical gaiety that traditionally clothed the death-and-glory boys who flew the crates of World War I. The attitude seemed to be: "We have a tough job to do here, and we're doing it, but we find no glory in it." Now and then, for a few hours, the atmosphere at a station might become tense and dramatic. There was one cold winter night when the boys came back from a mission that had cost them some of their best crews, and they took candles and climbed on one another's shoulders, and smoked the record on the ceiling in great wavering capitals, proudly, and in some cases not far from tears. . .

But now at that same station the missions are recorded in precise painted letters on the mess-hall wall. Neat and small and somehow different.

It is dangerous to generalize about these men because no two were alike, even though they all had something in common. There were vivid characters like the big Irishman who always showered and shaved carefully before a mission because, he said, there was a telephone number in Paris that he intended to investigate in case he was shot down. He even made up a small toilet kit which he attached to his parachute—presumably in case his hair was mussed during the descent. Well, his plane did go down, and it is said that when last seen he was happily walking in the general direction of Paris.

There was the case of the pilot who was woun-

ded in the ankle and flew on several missions with his foot in a cast. There was another who, coming from a long line of teetotalers, went around for days in a state of high agitation because a whisky company, having read of his exploits, wrote and told him they were sending a case of their finest to his home in North Carolina. There was a navigator who wrote 2500 letters in nine months. There was a full-blooded Japanese-American who was a tail gunner—and a good one. There was a Filipino gunner, and later on an American Indian or two, and at least one Chinese. The New World melting pot was well represented.

There was never any doubt in the minds of those airmen as to the ability of the Forts and Libs, given sufficient numbers, to penetrate to the heart of Germany unescorted and in daylight. It was that conviction, plus their sense of humor, that kept them going.

But there was still skepticism in high places. Even those who were now ready to concede the value of daylight missions were also swayed by arguments in favor of night bombing. Thundering across the Channel, the RAF was spreading ruin and terror throughout Germany. Influential voices were raised, suggesting that the best way to use the comparatively small American force would be to incorporate it in the RAF's night efforts.

The climax of the controversy resulting from this proposal came in mid-January when General Eaker, who since November had been acting as Deputy Commander of the Eighth Air Force in the absence of General Spaatz, flew to Casablanca to attend the now-famous conference. Within a few hours of arrival he was handed a set of questions by General Arnold. On the answers to those questions depended the future of the VIII Bomber Command.

The conference of the Combined Chiefs of Staff was taking place in the Anfa Hotel on a hilltop overlooking the ocean a mile or two south of the city. Around it were little villas of Moorish design, shaded by palm trees, and many of these had been taken over for visiting officers. The C.G. of the Eighth Air Force found himself in one named "Le Paradou"—The Paradox! An additional touch of irony was added by the fact that two months before the Anfa had housed the German Armistice Commission—the black-out curtains still bore the bold imprint of their German origin.

Surrounding the whole establishment was a

barbed-wire fence with tin cans full of pebbles strung every two feet and armed sentries not much farther apart. Inside were the heads of the British and American governments, the Combined Chiefs of Staff, statesmen, expert consultants.

The key questions that had to be answered regarding the VIII Bomber Command's showing to date were concerned mainly with the relatively few missions, the fairly high rate of abortives, and the choice of French rather than German targets.

The answers to these questions were plain, and the C.G. gave them. He pointed out that both weather and the low replacement rate were factors in holding down operations. The rate of abortives, largely attributable to the maintenance hours spent on Twelfth Air Force aircraft, was going down steadily as operational lessons learned were put into practice and mechanical kinks were ironed out. As for choice of targets, that had been dictated partly by the priority given to attacks on the sub pens, partly by lack of long-range fighter support to cover the small bomber force available. The C.G. added that as a result of the experience gained over the U-boat pens, his combat crews were now sufficiently experienced to undertake the daylight invasion of Germany.



**Cold hands.** A mechanic warms up between jobs.

To those who favored switching the American bombers completely to night operations he presented seven carefully reasoned arguments :

1. Day bombing permitted destruction of relatively small targets like individual plants and factories that could not be found, seen, or hit at night.

2. Day bombing, being much more accurate than night bombing, meant that a smaller force could destroy a given target. This economy, in turn, would mean that eventually simultaneous attacks could be made on several targets, splitting enemy defenses and reducing losses.

3. Day bombing, or the threat of it, kept enemy defenses alerted twenty-four hours a day, with the consequent loss of man-hours in production.

4. Day bombing would reduce airdrome, airspace, and communications congestion in the United Kingdom. As the aerial strength of both the RAF and the USAAF continued to grow, problems arising from such congestion would become more and more acute.

5. The combat crews of the VIII Bomber Command were not equipped or trained for the totally different technique of night bombing. Switching them over would involve a long training period at a time when delay was unthinkable. The losses from crashes during the transition period would probably exceed losses from enemy action.

6. Day bombing imposed a serious strain on

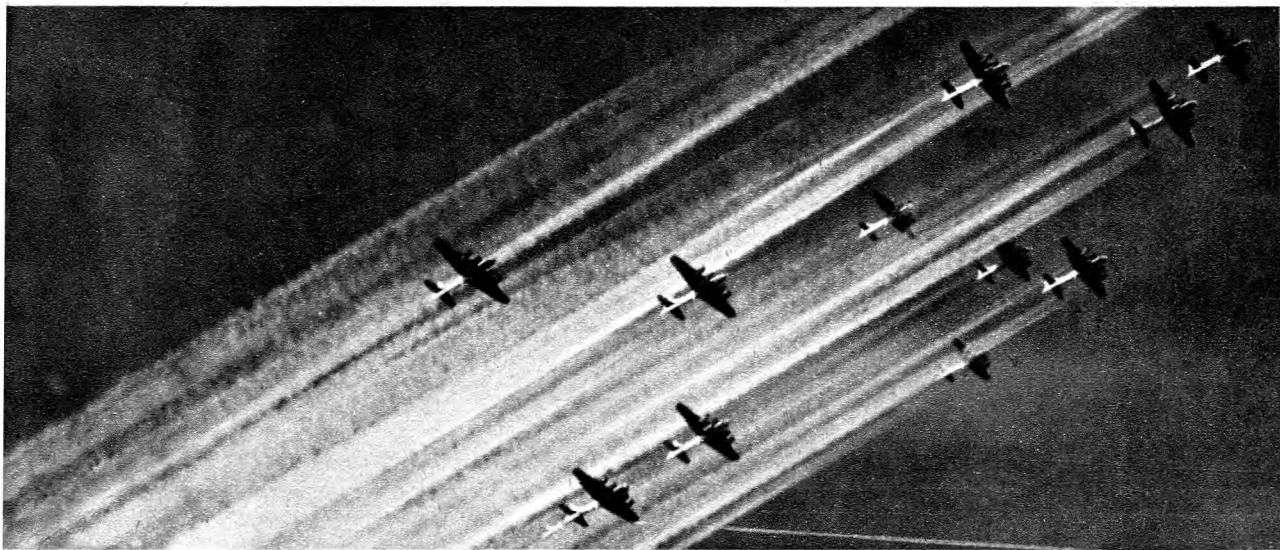
the fighter strength of the Luftwaffe. The number of enemy fighters destroyed could hardly fail to have a cumulative effect on the morale of Nazi fighter pilots. At night the heavy defensive armament of the Fortresses and Liberators would be so much dead weight.

7. Finally, day bombing offered unique opportunities for co-operation with the RAF. The two types of bombing were complementary. Abandoning one would weaken rather than strengthen the other. Already joint operations had been planned that would demonstrate the value of this sort of combined operation.

Day bombing, the C.G. insisted, was the bold, the aggressive, the offensive thing to do. American bombers could, and doubtless would, operate at night, but day bombing was their specialty.

In the end he convinced his listeners. So far as the VIII Bomber Command was concerned, the Casablanca Conference settled two things—for the time being, at least. The necessary planes were going to be sent, and they were to be used for day bombing.

The planes, naturally, did not appear overnight. It was weeks before the promised flow of heavy bombers began to arrive. Meanwhile, for the airmen and the ground crews on the muddy stations, unaware of the Casablanca decision, the parlous days continued. But one day late in January the word came that they had been waiting for : "The target for today is Germany."



ON JANUARY 27 U-boat production in the yards at Wilhelmshaven was reported as proceeding normally. An inquisitive reconnaissance plane had spied a camouflaged pocket battleship, the *Admiral Scheer*, in drydock on the north side of the Bauhafen. The naval dockyards were busy with new construction. On this day the VIII Bomber Command for the first time joined the RAF in its attacks on the German homeland. The target chosen was Wilhelmshaven; the aiming point was the ways where U-boats were built.

The RAF night raiders, dropping well over a thousand tons of bombs during their 1942 attacks on this North Sea port, had inflicted considerable damage on the town itself and had blasted a naval munitions depot out of existence with one of the biggest bangs of the whole war. Some of the U-boats ways, the shipyards, and the drydocks, however, had escaped. Here was an ideal opportunity to demonstrate the effective collaboration possible between area and precision bombing.

The dawn briefing for the attack had been prefaced by a day of momentous war news. The official announcements of the Casablanca meetings had established the "unconditional surrender" policy of the United Nations, the Russian communiqué had reported the imminent liquidation of the German forces trapped at Stalingrad and the British Eighth Army, after a pause at Tripoli, was once more moving in force toward the Tunisian border. There was a general "let's get on with the war" feeling in the air as the Group Commanders took their places before the combat crews in the briefing rooms and swung their pointers for the first time to a target on German soil.

To ground crews and flying men alike, this was a long-awaited day. Five and a half months of daylight operations over occupied territory had, to be sure, inflicted grievous wounds on the tentacles of the German war machine—but the body of the monster had yet to feel the

weight of American attacks. Now the time for the assault was at hand. The constant concern of the crews attacking targets in France and the Low Countries for the lives and the property of our conquered allies would no longer be a worrisome factor.

The weather that day was far from ideal for high-level bombing. At altitude, the cold was intense. On this trip the crews for the first time tried rubbing the oxygen masks with salt to keep them from freezing. The trick worked. Despite all precautions, however, the knifelike temperatures took a heavy toll of men and machines—freezing gun and turret mechanisms, clogging camera shutters, fogging windshields and bomb sights, and stabbing through the heaviest clothing the combat crews could wear.

One of the navigators on the mission has recorded a memorable few minutes of that day's trip: *At about 1030 the altimeter indicated 25,000 feet. The cloud cover had ended, far below us, and we could see the surface of the sea—like a sheet of glass. At 1045 the Captain warned the crew to be extra-alert. I looked out to the right and could see the outline of the coast of Germany and the row of islands that lay just off it. It was our first glimpse of Das Vaterland. At 1057 we were just over the islands and at 1100 the tail gunner reported flak at six o'clock, below. It was from the coastal islands and was the first time we were fired upon from German soil. At this time we were beginning to turn and we crossed the island of Baltrum and went into German territory. As we turned, the bombardier elevated the muzzle of his gun and fired a burst so that the tracers arched over into Germany. The first shots from our ship, Hell's Angels, but not the last!*

Fifty-three planes attacked the installations at Wilhelmshaven, dropping their bombs through a film of cloud that lay like thin gauze over the target area. Two more attacked Emden. The Germans were ready. A smoke screen drifted lazily across the target, below the cloud layer,





*Wilhelmshaven under cover. Forts find their target through Nazi smoke screen. Note smoke floats in harbor.*

at both Emden and Wilhelmshaven. Flak was attentive, if not too accurate. More than fifty enemy fighters—including twin-engined types usually employed in defense against night bombers—rose to meet the formations. Returning gunners claimed twenty-two enemy aircraft shot down. Curiously, they also reported that the enemy pilots seemed inexperienced in contrast to those met over French targets. The Luftwaffe's first team, obviously, hadn't been at home to meet their first American guests.

The bombing on this first mission over Germany was only fair. Clouds hid much of the story the strike photographs, taken during the bombing, might have told, but they did show that while the pattern of the hits looked better, the placing of the patterns still left much to be desired. The American Plan was developing, but slowly.

Three bombers were lost at Wilhelmshaven. One, a Liberator, was destroyed as a result of a collision with a Focke-Wulf which had been shot down by another bomber, the first reported incident of its kind. These losses and the question of which plane had been first over German territory were the main topics in the messes that night. Pilots of several of the wing ships which had skirted the islands as the formation swung along the coast argued mightily, but the honor of being the first American bomber over Nazi soil finally went to the lead ship, piloted by Colonel Frank Armstrong and manned by an all-American crew representing eight states and the District of Columbia. As Colonel Armstrong had led the maiden raid over occupied territory this gave him a double first.

The gray core of winter now settled upon the area of operations. Rain, sleet, biting winds, and freezing banks of dun cloud spun out from the North Sea to cover both the bases and the targets. The weather men and Operations Staff at Command spent their days and nights watching the birth and life and death of a succession of storms which ranged from the arctic to the equator. In seventeen days but one operation was carried out. Emden was attacked despite icing conditions and temperatures that went below the recording capacities of the thermometers, 45 degrees below zero. Vapor trails formed by the bombers helped guide the enemy fighters in their attack.

The Command's bombing experts, with few results by which to judge the progress of their campaign for accuracy, shook their heads and

ordered more practice missions, more runs over the target ranges. On occasion excellent results had been achieved during the earlier missions—on one Lorient attack six of thirty-six bombs dropped from 22,000 feet had hit a block of sub pens measuring 200 by 400 feet. Those exceptions had now to be made the standard of accuracy.

On February 16 the locks leading to the protective basin at the Saint-Nazaire U-boat base were the target. Weather was good and the bombing accurate, though the locks themselves escaped damage by one of the mathematical improbabilities which plague all bombardment tacticians. The enemy fighter pilots indulged in a little experimentation of their own during this operation, attacking the bombers in pairs and pouncing viciously upon any stragglers lamed by the flak barrage. Returning crews brought back the first word of German fighters attempting to drop bombs into the Fortress formations—air-to-air bombing. Eight bombers were lost.

Ten days later, over Wilhelmshaven, air mines made their appearance. Slightly larger than shoe-boxes, these mines were fired into the air above the formations by anti-aircraft guns. After the burst the mines swung slowly earthward, each suspended from a small parachute.

This second Wilhelmshaven attack added a chapter to the saga of a now-lamented lady known as *Southern Comfort*. Having earned the reputation of being a "good steady ship," *Southern Comfort* had suddenly interrupted a decorous and conventional career by catching fire over a French target. Her crew brought her back safely. Over Wilhelmshaven, *Southern Comfort* showed that her spirit of adventure was not yet dead. Here is the story, as it was pieced together by the Intelligence Officers who interrogated the crew :

*We had disposed of six of our bombs when the ship shivered and we knew we had been heavily hit. The bombardier sent away his four remaining bombs on the docks of Wilhelmshaven before turning to see if the navigator had been killed by the explosion of a 20-mm. shell in the nose.*

*The navigator was alive and uninjured, although the shell had exploded only three inches away from his head and dented the steel helmet he was wearing. The explosion drove his head down on the navigator's table, which broke under the impact of the helmet. The only ill effect he suffered was that he could not calculate the course of the plane for about twenty minutes. During this time the*



**Fighter attack.** *A Messerschmitt 110 closes in on a Fortress formation. Primarily night fighters, these twin-engine planes have been modified to act as rocket carriers defending Germany against American daylight raids.*

bombardier handled the navigator's gun as well as his own.

A moment later the right waist gunner phoned: "Sir, No. 3 engine has been hit and is throwing quite a bit of oil." The oil had spread over the wing. A tongue of flame appeared. The copilot closed the cowl flaps and pulled the fire extinguishers. The fire went out. The propeller of the crippled engine was now windmilling and chewing away at bits of cowling. Sparks were bouncing off the oil-covered wing.

At this point the pilot noticed that the rudder did not respond. Presently we found that four square feet of it had been shot away. When the tail gunner reported the condition of the tail, or rather the lack of it, he also reported that still another shell had burst just in back of him inside the fuselage.

There was no time to appraise the damage. Southern Comfort had lost air speed caused by the drag of the windmilling propeller, and an attempt to rejoin several of the formations proved futile.

It was then that the pilot realized that if we were to return to England we were going to have to do it alone, crippled and out of formation. The loss of the supporting guns of other aircraft in the formation was serious, but more serious was the choice of course. We flew due north, to put as

much sea between us and the enemy fighters as possible. Meanwhile the No. 3 engine was vibrating and the wild prop kept taking bites out of the cowling.

We were out over the North Sea when the pilot announced over the intercom: "Those who want to, please pray!" Not long after that we sighted land. We weren't sure, but we thought it was England.

As we neared our home base an inquisitive Mosquito spotted us and finally came so close that we could see the pilot shake his head at our battle-scarred condition. He waved his hand and left. Shortly afterward, we picked up our field.

Southern Comfort landed with a gaping hole where the rudder should have been, a shattered nose section, a wing spotted with ragged shrapnel wounds, and its fuselage riddled from nose to tail with flak and cannon-shell holes. One shell had crashed through the fuselage directly behind the tail gunner's position, leaving a gash the size of a grapefruit. One by one, the crew climbed out—uninjured. They reported they'd made a pretty good bombing run.

This mission was the first occasion when accredited news correspondents were permitted to observe an American attack in action. Seven journalists of the little group who wryly called themselves "The Writing 69th" went to Wil-

helmshaven. One, Robert B. Post of *The New York Times*, did not return and is listed as a victim of the enemy action he had gone forth to report.

March, destined to be a climactic month in the history of high-level precision bombing, started auspiciously. In southern Tunisia patrols from the American and British Eighth armies met on the Gafsa-Gabès road, and on the eastern front the Nazis scuttled westward out of the Rzhev salient. On the western front the RAF was preparing to launch, on the night of the 5th-6th, its pulverizing campaign against the Ruhr. On the 4th of the month the VIII Bomber Command set out on its first "D.P. job"—deep penetration attack.

The Hamm marshaling yards, which funnel the production of the Ruhr industries to the east and north of Germany, lie just outside the valley and 160 miles inside the outer ring of Nazi defenses. The network of tracks, the railroad shops, and the storage sheds constituted a difficult target to find and an even harder one to hit. Seventy-one planes left on the attack; one Group of sixteen finally reached the target. Two other Groups, discouraged by soupy weather near the German coast, bombed the shipyards at Rotterdam, and one Group returned to base with its loads.

The twenty-two-year old leader of the little band which went on alone to pierce the Nazi defenses brought back a record of almost perfect bombing and the story of a decision which many older and more experienced pilots would not have cared to make. Losing contact with the accompanying Groups in the thick cloud over the North Sea, this young Squadron Commander found himself nearing the German coast.

*The soup was getting thinner. We strained our eyes for a glimpse of the other Groups. Not a sign of them. We were approaching the coast now. We could barely see it through the haze. We crossed the coast. The navigator checked our position.*

*Where in the hell were the other Groups? Should we go on? The weather was getting better now. I asked the tail gunner how many ships we had. "Sixteen, sir." Sixteen Forts—against the best defenses Germany had to offer. Should I risk those 160 boys' lives to bomb Hamm? It was an important target, but the other Groups had apparently gone to attack an alternate. Nothing would be said if I turned back. We went on.*

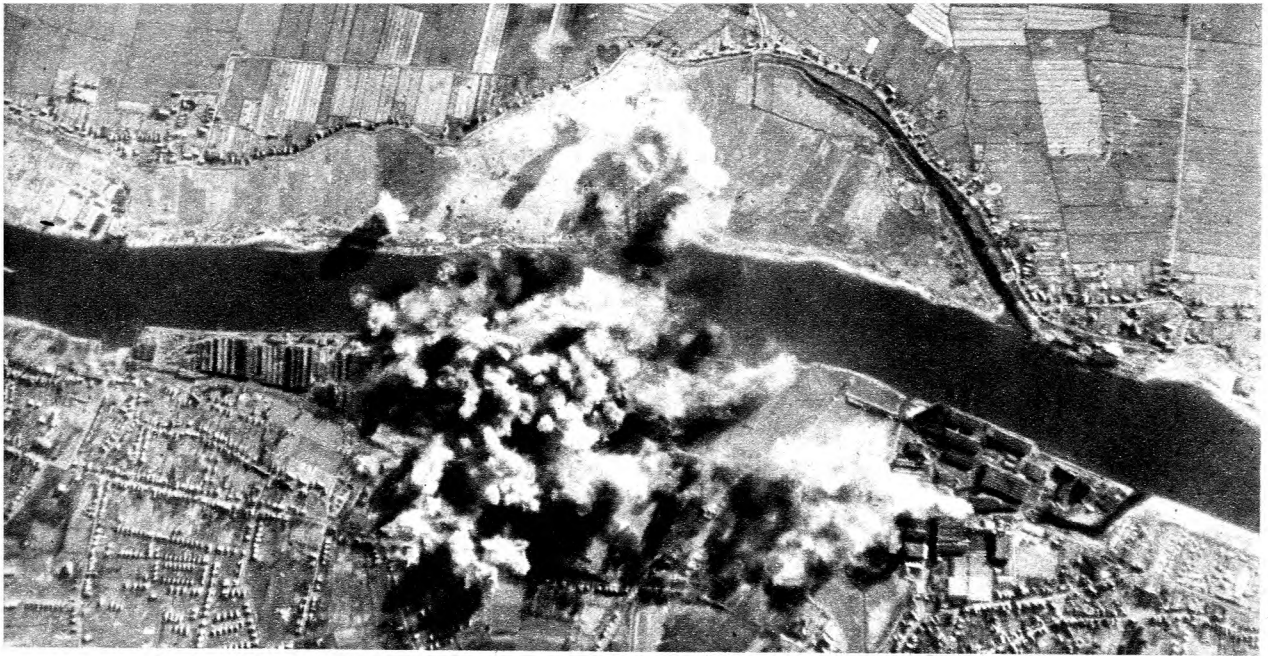
That decision and his leadership of the attack

resulted in the D.F.C. for the Squadron Commander and brought precision bombing one step nearer its goal. For the returning crews reported "bombs on the button" and subsequent reconnaissance photographs showed an excellent concentration among the railway shops and marshaling trackage. This profit was not achieved without loss, intense fighter opposition and flak barrages along the route in and out accounting for four of the attacking planes. As one gunner put it: *Those fighters came closer than I've ever seen them in the movies. I could almost have shook hands with one of those fellows.* Claims of sixteen enemy fighters destroyed helped even the score.

One of the new armor vests then being tested by the Fortress crews saved a radio operator from serious injury that day. Developed by Colonel Malcolm C. Grow, a vest of heavy canvas is covered with plates of manganese steel which overlap, protecting the chest and back from low-velocity shrapnel and ricocheting missiles. In this case a fragment of an exploding 20-mm. cannon shell struck the vest just above the radio operator's right hip. The armor was dented, but the wearer escaped without injury. On another raid a 20-mm. exploded two feet from the chest of a bombardier wearing both the vest and a steel helmet. The vest "looked like



Flak vests. Two crew members inspect their armor.



**Strike photo.** Two hundred and sixty-eight tons of high explosive blast the submarine building yards at Vegesack.

a shotgun had been fired at it from close range” —but the bombardier was unhurt.

Hamm showed what could be done, by even a small force. On March 8, at Rennes, an important marshaling yard through which the Germans rout supplies for their Brittany bases was plastered from end to end by 500-pound bombs from half a hundred Fortresses. Returning from Rennes, one bomber pilot had the unique experience of thumbing a ride from an RAF Typhoon. With one engine shot out, the Fortress was barely skimming the Channel waves when the friendly fighter was sighted, some fifteen minutes off the English coast. A flare was fired, but it failed to attract the Typhoon pilot’s attention. When the fighter came around again the Fortress pilot frantically waved his handkerchief at the cockpit window. This had the desired effect. *He came up beside us and rocked his wings. Then he went ahead as if to say “Follow me,” and led us to a base in southern England.*

Hamm and Rennes were the promises. Vegesack, ten days and three attacks later, was the fulfillment. A total of ninety-seven bombers—seventy-three Forts and twenty-four Liberators—attacked the Bremen Vulcan shipbuilding yards which line the Weser some few miles north of Bremen. This works, fourth-ranking producer of U-boats, was thus the object of the largest force the VIII Bomber Command had at that time managed to put over a single target. Two

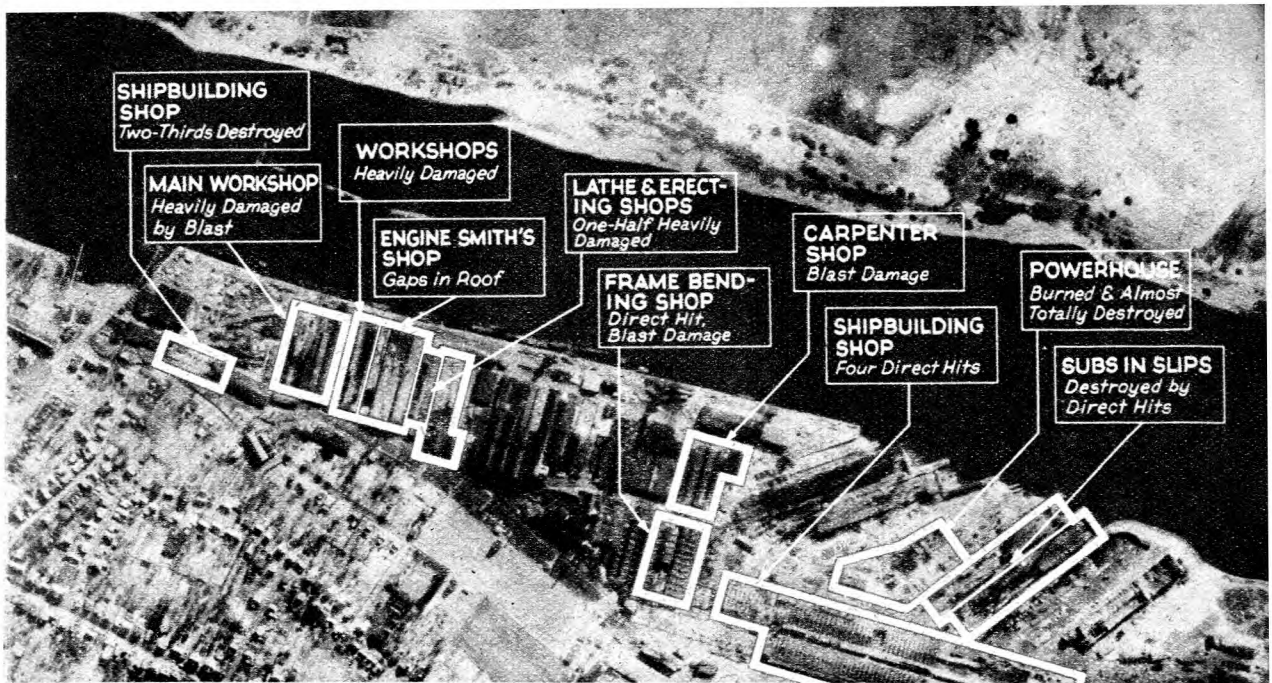
hundred and sixty-eight tons of high explosives were dropped, inflicting what assessment reports later called “extremely heavy damage.” This included the complete destruction of the works powerhouse, two-thirds destruction of the ship-building shops, and damage to a number of submarines building on the ways. Two bombers were lost on this most successful of all attacks to date, while American gunners claimed fifty-two of the opposing fighters shot down.

As was the case on most missions, the returning bombers brought their inevitable quota of wounded back from Vegesack. One Fort also brought Jack Mathis home.

Jack Mathis was one of two tall brothers from Texas who came to England to fly as Fortress bombardiers from the same station. Jack is gone now and Mark is missing from a later raid. Here is the story of Jack’s last flight as told by the navigator who flew beside him :

*We ran into very little trouble on our raid on Vegesack until we started on the bombing run. A very heavy barrage of flak was thrown up at us just as we reached the target. Flak hit our ship and sounded like hail on the roof. I glanced at Lieutenant Mathis, who was crouched over his bomb sight, lining up the target. Jack was an easygoing guy and the flak didn’t bother him. He wasn’t saying a word—just sticking there over his bomb sight, doing his job.*

*“Bomb-bay doors are open,” I heard Jack call*



**Damage assessment.** Flying unarmed reconnaissance planes, daring pilots return with proof of a wrecked target.

up to the pilot, and then he gave instructions to climb a little more to reach bombing altitude.

On the bomb run, that flak hit us. We were seconds short of the bomb-release point when a whole barrage of flak hit our squadron, which we were leading.

One of the shells burst out to the right and a little below the nose. It couldn't have been over thirty feet away when it burst. If it had been much closer it would have knocked the whole plane over.

A hunk of flak came tearing through the side of the nose. It shattered the glass on the right side and broke through with a loud crash.

I saw Jack falling back toward me and threw up my arm to ward off the fall. By that time both of us were way back in the rear of the nose—blown back there, I guess, by the flak blast.

I was sort of half standing, half lying against the back wall and Jack was leaning up against me. I didn't know he was injured at the time.

Without any assistance from me he pulled himself back to his bomb sight. His little seat had been knocked out from under him by the flak, and he sort of knelt over the bombsight. He knew that as bombardier of the lead ship the results of the whole squadron might depend on his accuracy. And he didn't let anything stop him. Part of my job as navigator is to keep the log of the flights, so I looked at my watch to start timing the fall of the bombs.

I heard Jack call out on the intercom, "Bombs

—" He usually called it out in a sort of singsong. But he never finished the phrase this time. The words just sort of trickled off, and I thought his throat mike had slipped out of place, so I finished out the phrase, "Bombs away!" for him. We don't start our evasive action to avoid the flak until those words go up to the pilot—and we all love that evasive action.

I looked up and saw Jack reaching over to grab the bomb-bay door handle to close the doors. Just as he pushed the handle he slumped over backwards. I caught him. That was the first indication that anything was wrong. I saw then that his arm was pretty badly shot.

"I guess they got you that time, old boy," I remember saying, but then his head slumped over and I saw that the injuries were more serious than just some flak in the arm. I knew then that he was dead. I closed the bomb bay and returned to my post.

When the damage assessment had been made from the reconnaissance photographs and the results of the Vegesack attack were known, the Commanding General of the Eighth Air Force, parent of the Bomber Command, made one of his few categorical statements to the press. "The men and the machines," he said, "have proven themselves." This operation was "a successful conclusion to long months of experimentation in daytime, high-level precision bombing. After Vegesack comes a new chapter."



VEGESACK STRENGTHENED the faith of the believers in the American Plan for high-level, precision bombing. Winston Churchill sent a message to the Commanding Generals of the European Theater of Operations and the Eighth Air Force: "All my compliments to you and your officers and men on your brilliant exploit, the effectiveness of which the photographs already reveal." Britain's Portal, Chief of the Air Staff, also sent his congratulations.

Answering these messages of encouragement, American air chiefs promised that: "We will repeat these efforts many times and on an ever-increasing scale."

These promises bore fruit during the last nine days of March. Wilhelmshaven was attacked a third time, with a good concentration of bombs around the shipyards on the Bauhafen. The marshaling yards and locomotive shops at Rouen were hit hard by a force of seventy Fortresses protected by a small armada of Spitfires. The shipyards at Rotterdam were bombed, with only fair results, in cloud conditions which all but blotted out the target. From all these attacks, eight bombers did not return. One of these losses was *Southern Comfort*, the lady whose first two misadventures were related in the preceding chapter. *Southern Comfort's* last flight was an epic of misfortune which deserves retelling.

On her way to Rotterdam, *Southern Comfort* was attacked over the North Sea by a number of enemy fighters. During the latter stages of the fight the radio operator discovered the ship was on fire. *I was shooting my gun. I saw our rudder hit and then I looked down and saw fire between No. 1 and No. 2 engines. At first it was behind the vents, inside the wing, and then it started coming out.*

As the enemy attack slackened, the pilot turned out of formation and swung back toward the English coast. Solid overcast swallowed the plane. The fire, apparently feeding on oil and not gasoline, was now "very persistent in character." The rear gunner, who had been with

*Southern Comfort* through all her troubles, recalls: *It didn't bother me so much this time, because I knew what it was. We had plenty of time to arrange everything and I just sat there waiting for the signal to leave. Most of the rest of the crew gathered into two groups, one around the navigator's escape hatch in the forward end of the ship and the other about the door at the rear of the fuselage.*

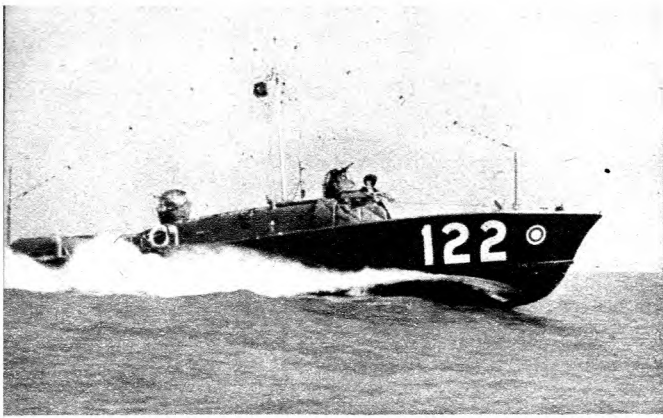
*We were in the clouds at about 15,000 feet,* reports the pilot, *dropping fast and on instruments. We couldn't see a thing, but the navigator said it was about time we were over the coast. He gave me a heading to fly, but the tail was a little shot up and I couldn't do much. I looked at the wing and could see the metal buckling and the flames getting around, so I decided all God's children ought to have wings.*

As the alarm bell rang, the radio operator, who had been sending SOS signals, was waiting for an answer. He screwed his key down and prepared to jump with the rest. They were all out in less than a minute, each man instantly disappearing into the thick bank of clouds. The pilot waited until the last man had jumped—or until he thought the last man had jumped. Then he trimmed the ship so that it was flying level and followed the others overboard through the forward escape hatch. Later it was discovered that the left waist gunner, last man to leave by the door at the rear of the ship, had delayed to change his parachute. When he looked around he found himself in a pilotless and deserted airplane. He left immediately.

The pilot remembers the long trip earthward: *It was like flying in a void. Just gray mist. You couldn't see anything. We weren't sure whether we were still out over the water or not. Somebody said there are no atheists in foxholes. Well, there aren't any in parachutes, either. I guess it's the same whether you're down looking up, or up looking down.*

The bombardier's main thought was to get back home before his roommates started divid-





**Air-Sea Rescue.** *British launches save ditched crews.*

ing up his clothes. *I could see one of them wearing my bathrobe. I finally hit a tree in an orchard. I looked down and there were a lot of firm-looking people waiting for me. They were all right, though, once they found out what side I was on.*

Three of the gunners came down together, one of them with a five-foot rip in his parachute. The waist gunner reports: *We had quite a trip down. Ball turret was a man who was always griping about something. Well, there he was, griping again about the holes in his chute. So I yelled to him: "Listen, can you swim? Because if you can, you'd better get ready."*

The three gunners came down just off the perimeter track of a British airdrome near the coast. The waist gunner, whose face was frozen and whose flying boots had been ripped off when he jumped, was dragged over some bushes and into a muddy creek. A group of workmen pulled him out. *It was just like a New York subway—I didn't know what I was getting into.*

The bombardier and the other waist gunner landed in a swamp, the bombardier's chute pulling him along for 200 yards before it collapsed. *I don't know why I should have landed with my mouth open, but I did, and it filled up with sewer water.*

The navigator and the radio operator came out of the clouds over a broad estuary and dropped into the water. At that moment a new Air-Sea Rescue launch happened to be cruising the inlet on a test run. As the two men hit the water the launch came alongside the gunner and picked him up. A minute later they also had the navigator in the boat. *They got a couple of cash customers on their first day out. I didn't exactly cut a path when I hit, but I feel sorry for those poor surfboards and aquaplanes.*

The only fatality among the crew was *Southern Comfort's* top turret gunner, who apparently slipped out of his parachute harness as he neared

the ground. The burning plane gracefully circled a small village three times and then crashed in an open field—the last considerate act of a gally lady.

Before the war the Renault works, in the Billancourt section of the Paris suburbs, was the largest producer of automobiles and trucks in France. After the German conquest the works were turned over to the production of tanks and army lorries for the Nazi forces. Their output was estimated at 1000 trucks, tanks, and armored cars a month. On the night of March 3-4, 1942, the RAF bombed the plant, causing great damage. The Germans, with French labor and French money, rebuilt the works in nine months. With typical Teutonic efficiency, they even managed to increase its production rate to an estimated 1500 trucks and tanks a month. This represented ten per cent of the Nazi production.

At 1350 hours on the 4th of April, eighty-five Fortresses droned over Dieppe, on the Channel coast of France. From their altitude at 25,000 feet they could see the black patch of Paris in the coils of the Seine ninety-five miles to the south. The sky was a cold, cloudless blue. Spitfire fighter squadrons surrounded the formation, some of them visible and others simply vapor trails in the upper sky. It was a pleasant, uneventful flight. Three diversions flown over the North Sea had apparently flushed some of the usual Nazi fighter opposition. The rest must have been caught flat-footed, for the Forts arrived over the edge of Paris at 1412 without having seen an enemy plane. By this time their fighter support had reached its operational limits and withdrawn, and the bombers were unescorted.

Flak was moderate and not too accurate. Everyone enjoyed the view. The untraveled gaped at the Eiffel Tower, Sacre-Coeur, Notre Dame, and the Bois from their perches five miles above the city; the cosmopolites among the crews spotted the Left Bank, the Montmartre, and the Champs-Élysées and reminisced over these scenes of happier days. One excited pilot who had worked in Paris before the war even managed to identify the street on which he had lived for two years.

At 1414 the Forts were over their target—the wedged-shaped concentration of Renault factories which all but fill a loop of the Seine at the city's edge. Before the last Group left the target, several minutes and 251 tons of high explosive later, the entire area was blotted out by a pall of black smoke. On the run north-

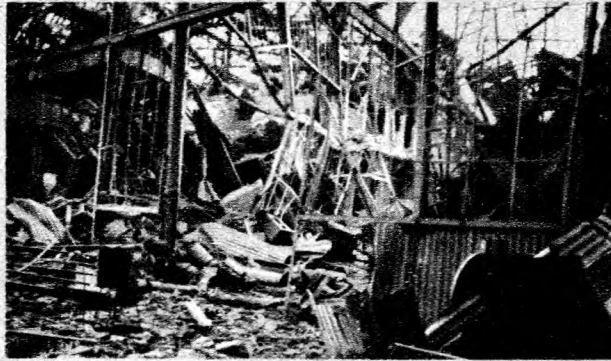
~~**MOST SECRET**~~

RENAULT FACTORY, BILLANCOURT, PARIS

U.S.B.C. ATTACK 4th. APRIL, 1943

To be kept under lock and key. These photographs are not to be shown to the public or reproduced in any form. Those to whom they are shown are to be instructed in the necessity for security.

*See Memo to L. 1313 Bull  
to Capt. Patton Col. G. S. F.  
28 July 43*



Chemical Products Section (right) and Casting Foundry (left and background).

Cylinder Foundries.



Probable Foundry.



Probable Machine Shop.

5

Precision bombing. These pictures, smuggled out of France, show results of Fortress attack on Renault factory.

west to the French coast the German fighters made up for their earlier inattentiveness: continuous attacks were hurled at the Forts all the way to Rouen, where the withdrawal support of friendly fighters was picked up. Four bombers were lost. American gunners claimed forty-seven enemy fighters destroyed. Strike photos and later assessment pictures showed heavy destruction at the works, with scarcely a major building escaping severe damage.

As an example of precision bombing Renault met the standard set at Vegesack, Rennes, and Hamm. But four or a dozen or two dozen successful attacks do not make a bombing program. Nor could a bomber force which had to stretch to put a hundred planes over a target expect to make much of an impact on so large an enemy. By April the men and the bombers promised at Casablanca were beginning to arrive in the United Kingdom—in a trickle at first, at flood tide later. They had to be established, indoctrinated, and taught the rules for fighting the Nazi. While it waited for these new recruits, the VIII Bomber Command went about its work.

An aircraft and aero-engine repair works near Antwerp was the next target. The bombing, once again, was good; the plant was severely damaged. A Wing Leader, veteran of many raids, accompanied this mission as an observer and kept an informal, running record of one sortie:

*Stood behind pilot while he took off.*

*Made sign language to pilot to be on the alert for enemy attacks through thin overcast as we made the diversion run.*

*Pointed out two "smoke trails" coming out of France high to our left.*

*Looked at Belgium as we crossed the coastline—wondering how those people were doing down there.*

*Threw kisses at Spitfires as they circled above.*

*... Cursed an FW 190 as it came in to our right and released an aerial bomb. ... Watched the first enemy attack develop ahead of the formation. ... Pointed out attackers to the pilot.*

*Watched fire from cannons as Germans increased their attack. ... Flinched as a 20-mm. shell damaged the oxygen and hydraulic system. ... Looked at pilot and copilot to see how badly they were wounded.*

*Began to feel "queer." ... Checked oxygen supply—pressure was down to 100. ... Tried to attach oxygen lead to emergency supply bottle. Could not get it to fasten.*

*Copilot reached for emergency oxygen bottle. ... Gave it to him. ... Asked for a "whiff" and he gave it to me. It seemed to do some good.*

*Pilot told me that navigator had been hit and wanted some assistance.*

*Got another "whiff" of oxygen from copilot and started to forward compartment.*

*Crawled through hydraulic fluid on hands and knees to navigator. ... Used oxygen-mask connecting hose as tourniquet on navigator's leg. ... Helped to take navigator's parachute off and stretched him out. ... Rearranged tourniquet and gave it to bombardier to hold. Had my own thumb caught in it.*

*Took navigation data out of navigator's pocket and tried to locate our position on the map.*

*Crawled back to pilot's compartment to give him compass course on the paper.*

*Lost information on the floor and crawled back for it.*

*Rearranged tourniquet and continued to nose of aircraft.*

*Called pilot and informed him that we would be forced to land at the first RAF station because navigator was seriously wounded. ... Gave pilot course to fly.*

*Crawled over to navigator and slapped his face. ... Looked at his eyes. ... Requested pilot to "let down" as rapidly as possible as all oxygen for navigator had been used.*

*Held navigator's arm while bombardier tried to give him a "hypo." ... Fluid ran out before the needle got in.*

*Pilot called to report a fire had started in the cockpit. ... Just sat until medium altitude was reached.*

*Crawled back to pilot's compartment and notified him that I would stand by rear door with fire extinguisher ready.*

*Sat behind ammunition box for crash landing. Opened door and ran around to front of airplane after it had stopped—no fire.*

*Placed \$400 in the back seat of an automobile and walked away and left it. Forgot what my driver's name was.*

*Money was handed to me later.*

*Drank coffee and ate doughnuts.*

*Began to function normally.*

If the success of the March series of attacks had proved the potentialities of precision bombing, it also put the enemy thoroughly on guard. The Nazi Command now realized that every target—no matter how small—within range of the Forts was endangered. Flak and fighters

were the obvious defensive answers, so they began building up their defense concentrations around the vulnerable areas. Bremen, with its shipbuilding plants, Diesel-engine factories, and its storage installations, was one of the centers of this defense network.

Bremen had one other attraction as a target. On the outskirts of the city were an airfield and a large factory. The plant was a Focke-Wulf unit—one of the most important of the assembly plants producing FW 190 fighters. At mid-morning on the 17th of April, 115 Fortresses set out from their English bases to bomb this factory. Eight planes returned early, 107 reaching the target.

Shortly after leaving the English coast, on their way out over the North Sea, the formations were sighted by a Nazi reconnaissance plane which alerted the German defenses along the entire North Sea coastal area. With the approaching bombers spotted so far at sea, the Germans were now faced with the problem of guessing just which way the cat would jump. If the attackers' goal could be correctly surmised, they could then draw in fighters from outlying areas and effect a concentration of their defense.

Apparently the Nazis guessed right on this occasion. The bombers met the most vicious and concentrated series of fighter attacks they had as yet encountered. Here is a navigator's story of the action that day :

*Up ahead, finally, I made out through the haze and cloud something that had possibilities of being a city. We spotted the target. Just about then somebody on the ship called out that there was a group of B-17's on our left and another on our right. But they were moving just a bit too fast for Fortresses, and somebody from the cockpit called out the disconcerting news that they were enemy fighters flying up ahead in formation, evidently getting in position to attack us head-on.*

*By this time the bombardier was on the bomb sight and we were settling down on our bomb run. And then the flak began to come up at us. It came up so thick and fast that it looked as though we had run into a thunderhead. . . . At the same time we were hit by fighters coming head-on into us. Just before our bombs went away our No. 4 engine was hit, and oil started pouring all over the place. Vibration caused by the windmilling propeller seemed to be about to shake the ship to pieces. When the bombs finally went, none of us felt them give the ship the jar they usually give*

*it, as we were already bouncing around like a stovepipe hat in a March gale.*

*The sky was literally swarming with fighters. The pilots made old Queenie hurl herself around the sky in evasive action dodging the oncoming pursuits until we must have looked like a small plane doing acrobatics. The pursuits came in so fast that at times the navigator and I had to be content with taking shots at every second or third plane making a pass at us. And the way we were thrown around in that nose from the evasive action made us feel like a pair of dice.*

*All this time I was trying to navigate us out of that place by the fastest route possible. I'd get a check point and then grab my gun and start spraying lead out like a hose. They had every kind of plane in the Luftwaffe up there trying to knock us down. Bombing was excellent. As the English say, we really pranged the target. Not one of our bombs was off the target area.*

The factory was pranged, as later reconnaissance proved. Damage was so extensive that most of the buildings hit were left unrepaired for some months, indicating that production had ceased. Coming as it did, when the German aircraft industry was turning more and more to fighter production, this loss of productive capacity must have been sorely felt.

The price paid for this damaging stroke was a high one. Sixteen Forts were lost—making it



Practice makes perfect. Gunners at combat school.



**Fighter Cover.** *Distant Thunderbolts, leaving vapor trails, guard the flank of a Flying Fortress formation.*

the most expensive American attack of the war at that time. Returning crews brought back heartening reports of many parachutes being sighted during the action. Interrogators, comparing notes, calculated that a total of seventy-five chutes were seen during the two hours the fighters were in contact with the Fortresses. Some of these, undoubtedly, were Nazi pilots jumping to safety from the sixty-three fighters the Fort crews claimed as destroyed that day, but the majority were probably American airmen. Though the exact number of crew members who survive battle crashes will not be known until the end of the war, it is thought at present that they will probably total more than fifty per cent. of those now listed as missing in action.

If this blow at the Focke-Wulf plant demonstrated, once again, the capabilities of high-level daylight bombing, it also threw into bold relief the dangers peculiar to the American Plan. Here, in a well-designed and ably executed attack, the

problem of profit versus loss became a prime consideration. No air force can afford to pay too dearly for any gain. The Germans had discovered that during their daylight attacks in the Battle of Britain. The designers of the American bombing campaign had anticipated the development of the situation which now confronted them and realized that attrition due to the massing of the Nazi defenses would call for tactical changes in their plan of action.

These tactical modifications had been prepared, but men and machines were needed to put them into effect. On half a dozen stations newly arrived Groups were flying practice missions and familiarizing themselves with the navigational problems and the operational technique of the European Theater; at the Combat Crew Replacement Center additional Fortress teams were learning the fine points of bombing and defense from the veterans of the early raids over the Continent.

Early in May three attacks were made on targets in occupied territory. On the first of these, an assault on the sub-base installations at Saint-Nazaire, one of the Forts carried a new crew member on his maiden trip over occupied territory. Little Sergeant Maynard Smith, curled up in his ball turret, wasn't sure whether he liked the whole business or not. When his Fort was hit by flak shortly after making its bomb run, Smith had to hand-crank his turret to get it back into the ship. Once there, he found that the flak burst had injured the rear gunner and a 20-mm. shell had started a fire in the radio compartment. The intense heat soon forced both waist gunners and the radio operator to bail out.

Smith gave the rear gunner first aid, jettisoned the oxygen bottles and ammunition in the radio compartment, fought the fire, and manned the waist guns against an attack by a formation of FW 190's. When the pilot finally brought the plane down on an English airdrome, Sergeant Smith had everything under control. He had earned the Congressional Medal of Honor, the nation's highest honor.

On the second May attack, another raid on the Ford and General Motors plants at Antwerp, the new American Thunderbolt fighters accompanied the Forts for the first time. On the third May attack, four new Fortress Groups made their first mission and helped hammer French airfields. The plans, the men, and the machines were now ready—something new was about to be added to the attack upon Germany.

"We will simply move into China," said the armchair strategist, "base our British and American bomber forces there and . . ."

BEHIND EVERY BOMBER is an airdrome from which it sets out and to which it must return. Behind every airdrome is a base that houses the men who work on the airdrome from which the bomber flies. Behind every base lie months of planning, thousands of man-hours of labor, and millions of dollars of material and equipment—all of which must be expended before the men can move into the base and the base can run the airdrome and the airdrome can put the bomber into the air.

And so to be able to bomb you first have to build. In the European Theater the heavy-bomber base covers several hundred acres of farmland. The core of each base is the airdrome, crisscrossed by 150-foot-wide concrete runways. A perimeter track, for moving planes around the field, skirts the inner border, and concrete dispersal points on which the bombers are parked between missions dot the fringes of the area. Scattered around the airdrome are the "sites" on which the personnel is housed. On the edge of the field proper are placed the administration buildings, the shops, and one or two large hangars for heavy repair work. Dovetailing into the irregular outline of the area are the neighboring farms.

Such a station may serve as a base for approximately fifty heavy bombers. Twenty-five hundred officers and men fly, service, and repair the planes and carry on the administrative tasks of the station. The sum of the materials and labor which go into the construction of this combination town, factory, and transport terminus is a factor which looms large in the development of any bombing program.

To Bomber Command's engineers this problem presents itself in terms of war schedules, material priorities, and weather. It is also a problem of multiplication: of the fifty airplanes

on each station, twenty may be dispatched on each mission, the others being held in reserve. Thus it takes fifteen bases to supply the bombers for a 300-plane raid and fifty bases to implement a 1000-plane attack. It takes 1,500,000 man-hours and \$5,000,000 worth of construction to prepare each bomber base for combat operations. It takes 640,000 square yards of concrete slab to construct the runways, the perimeter tracks, and the foundations for some 400 buildings which must be erected on one station—this concrete would form a road eighteen feet wide and sixty miles long. It takes bulldozers and trucks and concrete mixers and wheelbarrows and shovels and picks and sand and gravel and tar and tractors; it takes transits and tarvia, levels and steam shovels, brick and glass and mortar and wire and pipe; it means telephones and drainage tile, paint and roofing paper, Nissen huts and bathtubs, flood lights and telephone poles; it demands laborers—who must be too young or too old for military service—and electricians and shovel operators and plumbers and carpenters and draftsmen and strong young girls to drive the laden trucks. Hundreds of tons of rubble are required for subgrade foundations—rubble formed when Germans bombed British cities. Warehouses, theaters, churches, barracks, offices, and machine shops have to be built. Water, electrical, and sewage systems must be laid down, and all this must be multiplied by ten or twenty or fifty, depending upon the size of the bomber fleet.

This vast construction program must be carried on despite the ceaseless attacks by the wartime engineer's two main enemies—priorities and mud. Air bases rank high on the list of England's military "musts." In three and a half years of war, the island has become a checkerboard of landing fields. But with the steady growth of the RAF and the U. S. Air Force the demand for space has exceeded the supply, and the problem of apportioning the materials, the transportation space, and the construction



**Repair:** *U. S. Engineers patch worn-out runways.*



**Storage:** *An English thicket conceals American bombs.*

equipment has been a major factor in meeting the schedules.

The American bomber force in England started life with one great advantage. The British, though pressed for space themselves, moved out and turned over dozens of airdromes to Fortress groups during the first year of American operations. Certain modifications, in each case, had to be made, but the essential installations were there and ready for use. In the construction of new fields, British plans, British materials, and British labor—all a product of Reverse Lend-Lease—were largely used. Without this help, the American share of the combined air attack on Germany would have been delayed at least a year.

The first airdrome built by U. S. Army Engineers in England was completed in ten months. The field covers two square miles of farmland. The engineer aviation battalions and signal-construction company on the job worked with their guns at their sides.

One enemy the engineers cannot arm themselves against is weather. And weather—particularly the rain of the English winter—plus farmland plus construction all adds up to *mud*. Roads of mud, rivers of mud, and lakes of mud plague construction crews and operating personnel alike. Fortresses, if they stray from the runways, bog down in it hub-deep; trucks sink to their axles, small pfc's go down to their hip pockets. English mud is infinite in its variety and ranges from watery slop to a gelatinous mass with all the properties of quick-setting cement. Grizzled veterans swear they have never seen anything like it—since the last war. One infamous station had a living site known as Mudville—its Nissen huts rose like lonely islands from a two-acre lake of watery mud which was eight inches deep.

Fortunately, the lake had a hard bottom. For one entire winter the site's citizens lived in mud-caked galoshes.

And so it was that the end of a year of operations found the VIII Bomber Command with the bases from which to fly the constantly growing fleet of its planes. Infinite labor, careful planning, British co-operation, and the generosity of the RAF in handing over completed installations all helped to conquer the labor problem, material shortages, and that greatest enemy, weather.

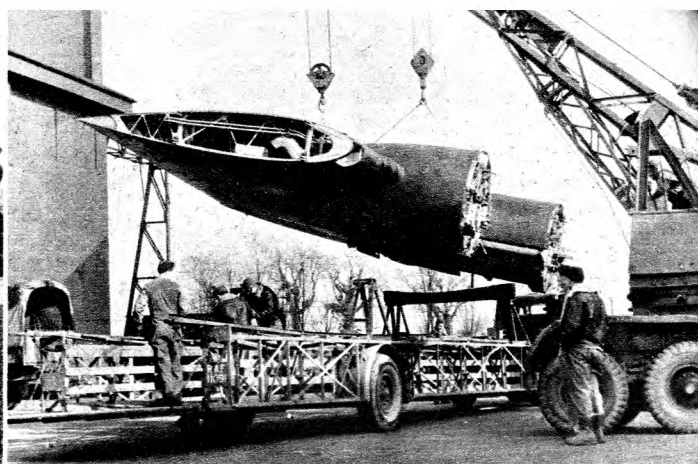
“. . . with the bases established, we set up supply lines,” continued the armchair strategist, “and then we . . .”

If 500 American heavy bombers attack a group of enemy targets, they will ordinarily represent less than half the total operational force at the Command's disposal—approximately 750 bombers being held either in reserve or under repair. Each of these 1250 bombers has its combat crew of ten men and its ground crew of five mechanics. Each station participating in the attack also has its corps of specialists—radio experts, armorers, refueling teams, ordnance and armament men and engineering officers—who work directly on the flying equipment. This specialist group, for a force of 1250 planes, might represent another 24,000 officers and men. Thus the 500 bombers over the target are immediately dependent on an army of more than 30,000 highly trained specialists.

But this attack must be planned, co-ordinated, and controlled, the combat crews must be briefed, the resultant damage assessed, and the bases from which the planes fly must be administered, defended and supplied. Weather officers



**Construction:** *British labor works on a field for Forts.*



**Supply:** *Spare parts for bombers are big and small.*

and truck drivers, cooks and clerks, parachute packers and turret experts, flight controllers and photographic technicians, chaplains and dentists and doctors, signals officers and interrogators, security officers and bomb-sight repairmen, welders and transportation experts, trial judges and public-relations representatives, military police—all these workers perform services essential to the success of the ultimate task, the bombing of the Nazi target. This secondary army numbers around 32,500. The labor and the skills of some 75,000 officers and men are thus joined in the effort necessary to put 500 heavy bombers over an enemy target.

Feeding and clothing this army and providing it with the materials and equipment necessary for its work—paper clips, wrenches, chewing gum, shoes, typewriters, dishes, bomb trolleys, cigarettes, hymn-books, shovels, microphones, sealing wax, soap, blankets, and axes are all on the endless list—are the function of Supply. So is procuring the gas and the oil, the tires, the bombs, the ammunition, and the spare parts to keep the bombers running. An extractor spring for a machine gun or a fuse for a bomb may be as important to the success of a particular mission as the engine of one of the planes. Nothing can be left to chance. The procurement of each one of these items, in many cases thousands of miles from the source of supply, is a minor triumph of organization and planning—the stocking of hundreds or thousands of each is a gigantic and complex task.

If one man eats six pounds of food a day (and he does on a bomber station), 75,000 men eat 225 tons of food a day. If one man consumes one-half pound of cigarettes and candy a day (and he does on a bomber station), 75,000 men will require more than eighteen tons a day. If

one man needs three ounces of soap a day to keep himself, his socks, and his dishes clean (and he does on a bomber station), 75,000 men will need more than eight tons of soap a day. This nightmare of multiplication can be extended almost indefinitely, as each of the agencies involved in running a bomber force has its own list of necessities.

The Army's housekeeper, the Service Forces, is responsible for the procurement of most of this material and its transportation to the theater of war. Air Corps Supply does the same job for planes, engines, aviation gasoline, and specialized flying equipment. Air Service Command distributes the commodities and equipment, takes care of major repairs and replacements, and services the combat units. Like the line on a football team, Air Service Command does much of the unspectacular work while Fighter and Bomber Commands run with the ball.

One of the most satisfying discoveries made by the American Air Force in England was that there is some truth in the old fabrication that two can live as cheaply as one. Reverse Lend-Lease and Anglo-American ingenuity saved more than 500,000 tons of shipping space during the first year of the VIII Bomber Command's operations. Sixty-eight per cent of the food consumed by the American forces in England now comes from British sources—meat and canned goods being the principal items imported from the U. S. Typewriters, blankets, telephone equipment, furniture, bicycles, oxygen, flying suits, radio apparatus, and pyrotechnics are among the hundreds of other British-made products that find their way into the American organization.

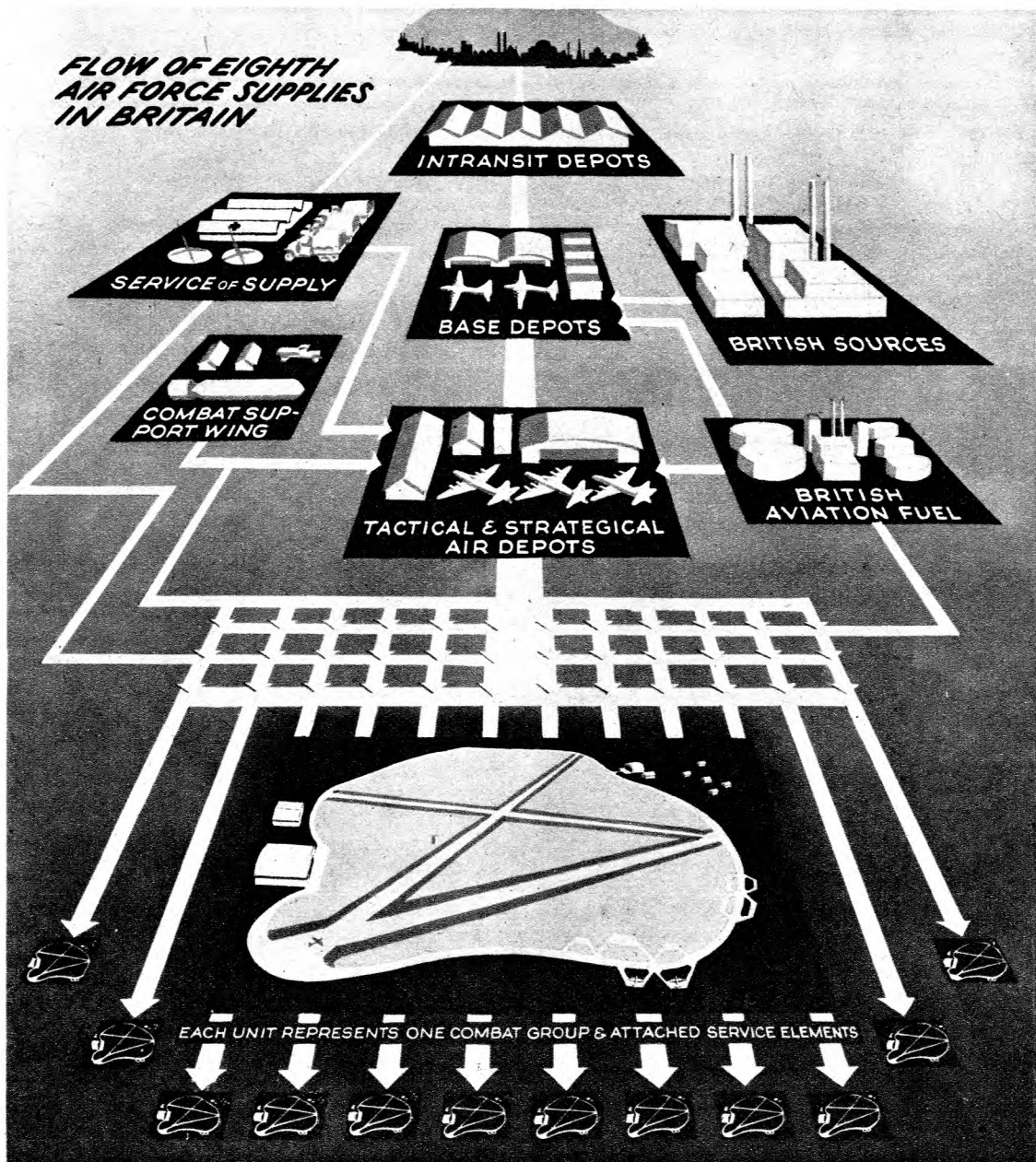
A force of 500 heavy bombers consumes 80 tank cars of aviation gasoline on an average



mission, requires 300 tons of equipment to maintain and overhaul its engines, and drags an invisible anchor of 7500 tons of parts and matériel for general plane repair. The bulk of this matériel must cross great arcs of earth and

water to reach the bombers' bases.

"... we pour in men and matériel, and blast Japan to bits," concludes the armchair strategist. "It's just as simple as that."



# THE OLD ONE-TWO

*Achtung, feindliche Flugzeuge!* It is probably about 1030 hours on May 14 when the Nazi Jagdführer, or Fighter Controller, of the Holland fighter defense area is given this warning of enemy aircraft approaching.

With half a dozen other Jagdführers, each allotted a coastal sector of *Festung Europa*, Jagdführer Holland is responsible for the day-fighter defense of Germany and its conquered territory. It is his job, using an intricate communications and radio-locator system, to deploy the fighters grouped at strategic points throughout his defense sector so that air attacks from England can best be met. Jagdführer Holland must have sworn a round Teutonic oath on this particular morning, for the approaching hostiles had crossed the North Sea so low they had eluded his radio-locator screen. Ground observers had picked them up as they neared the coast.

The Jagdführer alerts the Low Countries. Neighboring defense sectors are notified that hostiles are abroad. For a while the defense network's flashes are sporadic. At 1035 the hostiles are reported over the Dutch coast near Scheveningen. Twelve twin-engine aircraft, very low, traveling east. They are spotted at Leyden, then over the outskirts of Amsterdam, at roof-top level. The quarry is flying too low and too fast to permit a planned interception by the fighters in the air. The Jagdführer, following the traced course of the intruders on his map, probably realizes what their target is by this time; it is his business to know what points in his domain may attract the attention of enemy bombers. He knows, too, by now, that the intruders are American, that they are medium bombers, what bomb load they will be carrying, and how fast they are traveling. That, too, is his business. The Jagdführer knows a lot, but he does not know how he can interrupt this operation with the few short minutes at his disposal. Minutes pass. The Jagdführer waits for the blow.

At 1100 hours Jagdführer Holland learns that

the generating station at Ijmuiden, a town on the coast, has been attacked with delayed-action bombs. By 1103 the hit-and-run raiders are reported across the coast once more. A minute later they have passed out to sea and are away. Then the bombs, having delayed fuses, start to explode.

It is an inauspicious start for May 14. The efficient Nazi warning network is taken by surprise. This can happen in the best regulated of defense systems, as the Jagdführer well knows; his own fighter-bombers sometimes slip in unannounced at wave-top level to bomb the English Channel coast towns. But on this occasion the Ijmuiden raid may be portentous. The day is fine and there are other targets in that area. Jagdführer Holland wonders whether it would not be a good idea to pull in a few of his fighter squadrons from the Belgian sector.

It is 1130 hours when Jagdführer Northwest Germany receives a message from his radio-locator headquarters. The screen has picked up *large hostiles, flying east* over the North Sea. A minute later the locator stations have pin-pointed the approaching planes on the map. Jagdführer Northwest Germany, on the balcony of his plotting room, watches the enemy-bomber symbol being placed deep in the angle of the North Sea formed by the Danish peninsula and the Frisian Islands. Another flash—the symbol is moved. The general course is southeast. The enemy, moving fast, is still miles at sea. Jagdführer Northwest Germany ponders his plan of battle.

Over his defense sector, comprising Denmark and the northwest corner of the Fatherland, are scattered scores of fighter bases. At each base Focke-Wulfs or Messerschmitts are stationed—in groups of five, ten, or twenty. These are the Jagdführer's pawns in the grim game to be played. With its four cannon firing explosive shells and its two machine guns, each one of these fighters is a potent weapon. But each one, too, has its limitations—a fighter's gas capacity limits its flying time under combat conditions



**Festung Europa.** The Nazi coastal defenses bristle with antiaircraft guns, fighter fields, and radio-locator stations.

to approximately an hour. The Jagdführer must remember this as he disposes his forces to meet the threat.

By 1135 the airfields in the sector are alerted and the first fighters are air-borne. At 1145 the enemy formation has turned southward and is nearing the coast at the base of the Danish peninsula. What is their target? The Jagdführer studies the likely objectives—Flensburg, Kiel, Hamburg, Hanover. Perhaps a swing to the west, which would threaten Wilhelmshaven and Emden—or a turn to the east toward Lubeck and Wismar. This is the decision that must not be wrong.

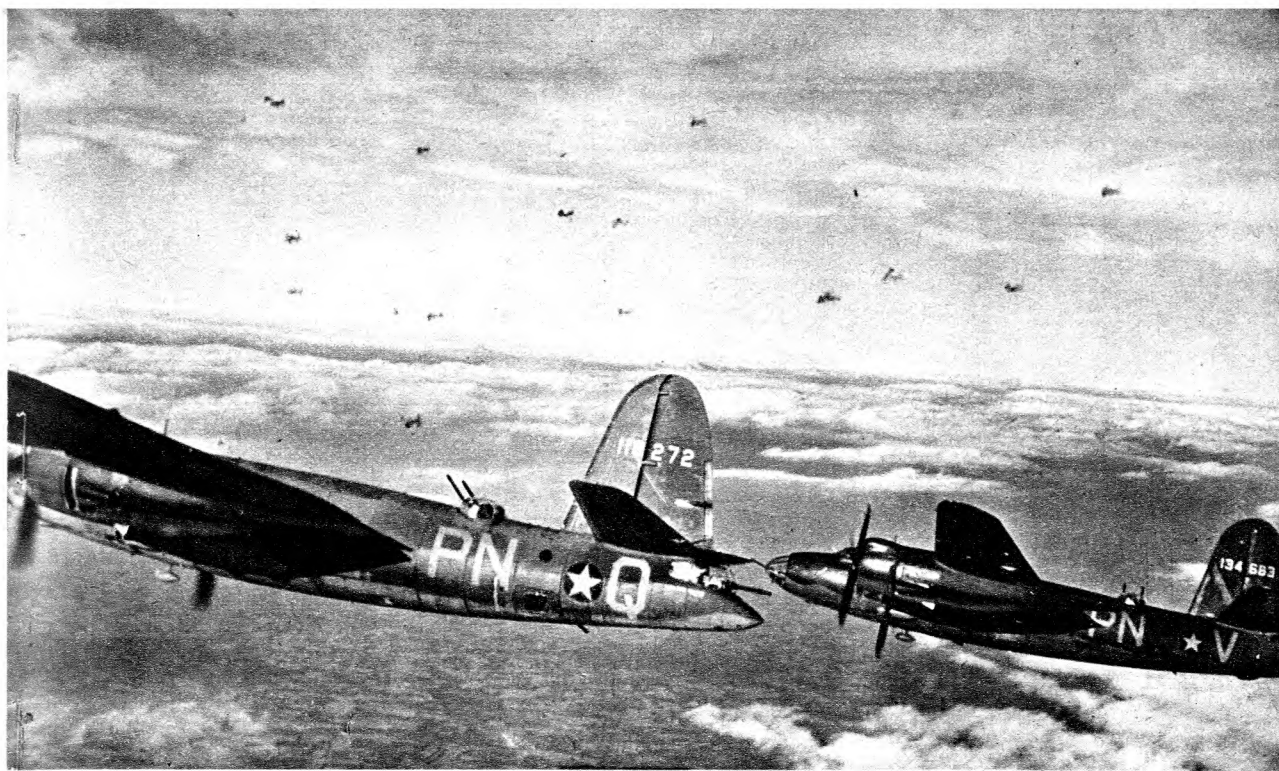
The moments tick away. The plotters move about silently as they chart the course of the invading force. At 1150 the first of the air-borne fighter groups makes contact with the enemy. *Achtung, Dickeautos. Amerikanische. Warning, American heavy bombers.* The Jagdführer reaches a decision. The target will be Kiel. The important Germania and Deutsche Werke shipyards, not yet attacked by the Fortresses, are ideal objectives for the Americans and their precision bombing. Orders start pouring out over the telephone. Fighters roar into the air from stations 50 and 100 and 200 miles away. Kiel is their common goal. Five miles above that port they will inter-

cept the bombers—if the Jagdführer has guessed right.

To the southwest, Jagdführer Holland alerts his stations once again and makes ready, should the need arise, to defend the area left unprotected by his neighbor's moves. He will not have to wait long.

At 1200 the hostiles, in "great force," are reported ten miles southwest of Kiel. Jagdführer Northwest Germany has a bad few moments. Are they going to bypass the target he has chosen and leave the bulk of his fighters waiting over Kiel? That will mean a chase and waste of precious flying time. At 1201 the hostiles have made a turn and are reported on a northeasterly course, almost over Kiel. The Jagdführer has guessed right. The main body of the fighters is in contact with their quarry now. The battle over Kiel is on.

At 1206 comes word that the Germania yard and the Deutsche Werke have been bombed with "great destruction." The bombers have swung northwest. Now they have turned back across the peninsula, heading for the safety of the open sea. The fighters are hanging on attacking the flanks of the retreating formation. Some of them, from the more distant station are beginning to run low on gas. Requests to



**Marauders and flak.** *B-26's carry out a medium-altitude attack on Nazi airdromes despite heavy antiaircraft fire.*

land fill the air. Jagdführer Northwest Germany now faces an uncomfortable period of waiting; the bulk of his forces will be immobilized as they are refueled and rearmed on the ground. If there is another attack during that period—his thoughts turn to Jagdführer Holland and the idle squadrons in that sector. . . .

Jagdführer Holland is having his own troubles. At 1205, while Kiel is being bombed, his radio-locator stations report hostiles high off the English coast, flying southeast. This is a spear pointed at the heart of his defense sector. Jagdführer Holland orders several squadrons into the air. Jagdführer France, covering the sector to the west, does likewise. They wait. At 1214 Jagdführer Northwest Germany inquires about possible assistance while his squadrons are refueling. The answer he receives is short and to the point. At 1218 the hostiles are reported over the coast east of Dunkirk, heading southeast. Multiengine bombers, escorted by fighters, flying very high. Jagdführers Holland and France both vector their airborne squadrons to intercept the interlopers and then try to figure which way the Forts are headed. At 1230 the hostiles are over Ypres. Here they turn east. At 1230 several of Jagdführer's squadrons finally make contact with the intruders. Two minutes later

Jagdführer Holland learns that approximately fifty Fortresses have bombed one of his most important stations—his fighter field at Courtrai. Hangars, shops, dispersal areas, and runways have been hit. The raiders have turned north and headed for the coast.

At 1240 the hostiles have left Jagdführer Holland's sector, crossing the coast between Ostend and Dunkirk. At 1242 Jagdführer Northwest Germany reports the large body of hostiles which attacked Kiel have now passed out to sea on a westbound course and that his fighters are gradually losing contact. By 1255 most of the squadrons air-borne to meet the Courtrai attack have been landed and are being refueled.

At 1300 Jagdführer Holland's network reports large hostiles approaching the coast near Ostend. He calls on Jagdführer France for help. At 1308 the hostiles cross the coast. It is another force of four-engine bombers with fighter support. The hostiles fly southeastward toward Brussels. Jagdführer Holland vectors his squadrons toward Ghent. Some make contact and follow the hostiles as they turn abruptly northeastward at Brussels. The Jagdführer knows now what is coming. He throws his entire available force into combat around the target at Antwerp. The Fortresses bomb the Ford and General Motors

plants at 1320. By 1340 they are out across the coast once more and ten minutes later the last fighter relinquishes contact and returns to base.

Jagdführers Northwest Germany, Holland, and France, having been forced to meet four attacks in a morning, now sit down to add up their losses in men and machines. On the ground, other Nazis are totaling the death and destruction at the targets.

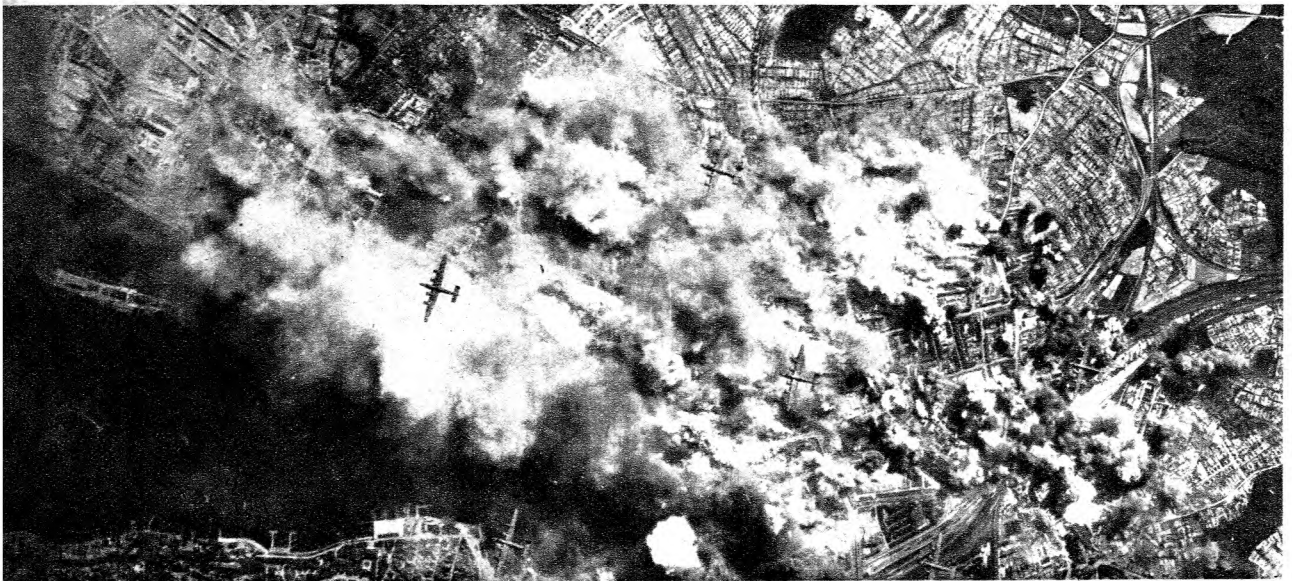
The foregoing is a generalized picture of what probably happened among the directors of the Nazi day-fighter defense system on May 14. On that day the VIII Bomber Command dispatched well over 200 planes in four hours, attacking four targets, losing eleven bombers, and claiming sixty-seven Nazi fighters as destroyed. It was the first American multiple attack. It is not an ideal example—early experiments seldom are—but as the first, it deserves commemoration. Later multiple operations perfected the technique of delivering a rapid succession of attacks, confusing the enemy and dispersing his fighter strength.

May 14 was not only the first day on which the American Bomber Command found itself with enough planes to initiate its multiple-attack technique; it was also a day of generally effective bombing. Ijmuiden was fair, Antwerp good, Courtrai good, and Kiel, by far the largest raid,

excellent. The 100-plus bombers which hit this latter target achieved a concentration which reminded the bombardment chiefs pleasantly of the assaults on Hamm, Vegesack, and the Renault works. Destruction in the Germania shipyards was so widespread that the German radio stepped out of character long enough to admit the American daylight raid had caused "great damage" to the port. Liberators, accompanying the formations, dropped more than twenty-five tons of incendiaries—the first time this form of bomb had been dropped by American crews.

It was over Kiel that a twenty-three-year-old Cherokee Indian known as "Chief" by his crewmates proved that the early Americans can still take it. It was after the bomber had left Germany on the return trip that Chief finally broke in on the interphone from his place in the ball turret and confessed that his electric suit had stopped working and that, perhaps, his feet were frost-bitten. Having been busy with enemy fighters, Chief hadn't wanted to bother the crew with his trouble until he thought the plane was out of danger.

Chief was removed from the ball turret and carried to the ship's radio compartment for first aid. The bombardier and the radio operator had removed his shoes and were rubbing his



*Liberators over Kiel drop incendiaries while Forts blast shipyards with high explosive from higher altitude.*

feet to restore the circulation when the warning, *Fighters approaching*, came over the interphone. Cautioning Chief to remain where he was, the two left to man their guns.

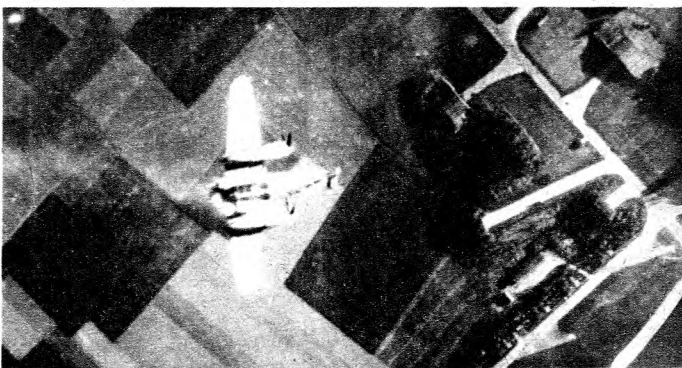
When they returned some minutes later the only sign of the Chief was his leather jacket. Chief, with his feet so painful he couldn't walk had crawled barefooted back into his turret and resumed fighting. Beside his leather jacket Chief had left his earphones—so that he would not be able to hear orders to leave his post. During the ensuing action, Chief fired so many bursts at attacking German fighters that he burned out one of his .50-caliber guns. When the fight was over Chief crawled back to the radio compartment for further treatment.

Later, Chief waved aside tributes to his heroism. *I just crawled back there because I got lonesome. My feet feel warmer without shoes, anyway. Shoes, they stop the circulation.*

Another "first" was scored on May 14 when the Command's fast, twin-engined medium bombers executed their first mission in the attack on the generating plant at Ijmuiden. Flying over enemy territory at fifty feet and climbing to 200 for their bombing, eleven of these B-26's reported their bombs had fallen fairly within the target area. The bombs were all fused for a delay to allow Dutch workers to escape from the bombed plant.

Later reconnaissance photos showed a disappointing amount of damage—suggesting that either the bombs had bounced out of the target area or that there had been a number of heroes on call to pull them outside the installations before they exploded. But this first roof-top raid could still be accounted an operational success, for the attack had been carried out according to plan. Another notable achievement of that day's activity was the brilliant support given the Antwerp and Courtrai attackers by the RAF Spitfire and the American Thunderbolt fighters. As a result, the enemy fighters "seemed reluctant to attack" though Focke-Wulfs did attempt to bomb the formation attacking Antwerp.

Successes such as those of May 14 do not come by chance. Each step of this four-pronged attack had been planned weeks before. All bombing starts with the selection of targets. In the Anglo-American bombing offensive against Germany the first selection is made by the Combined Chiefs of Staff. This body, knowing what forces will be available in each theater of war, selects the *categories* of targets to be hit; i.e.,



**Death of a Marauder.** Shot down over a French airdrome, a B-26 falls in two parts. The fuselage has its bomb-bay doors open. The propellers have stopped.



**The war comes to Flensburg.** *Shipyards, power plant, and harbor installations are blanketed with bursts.*

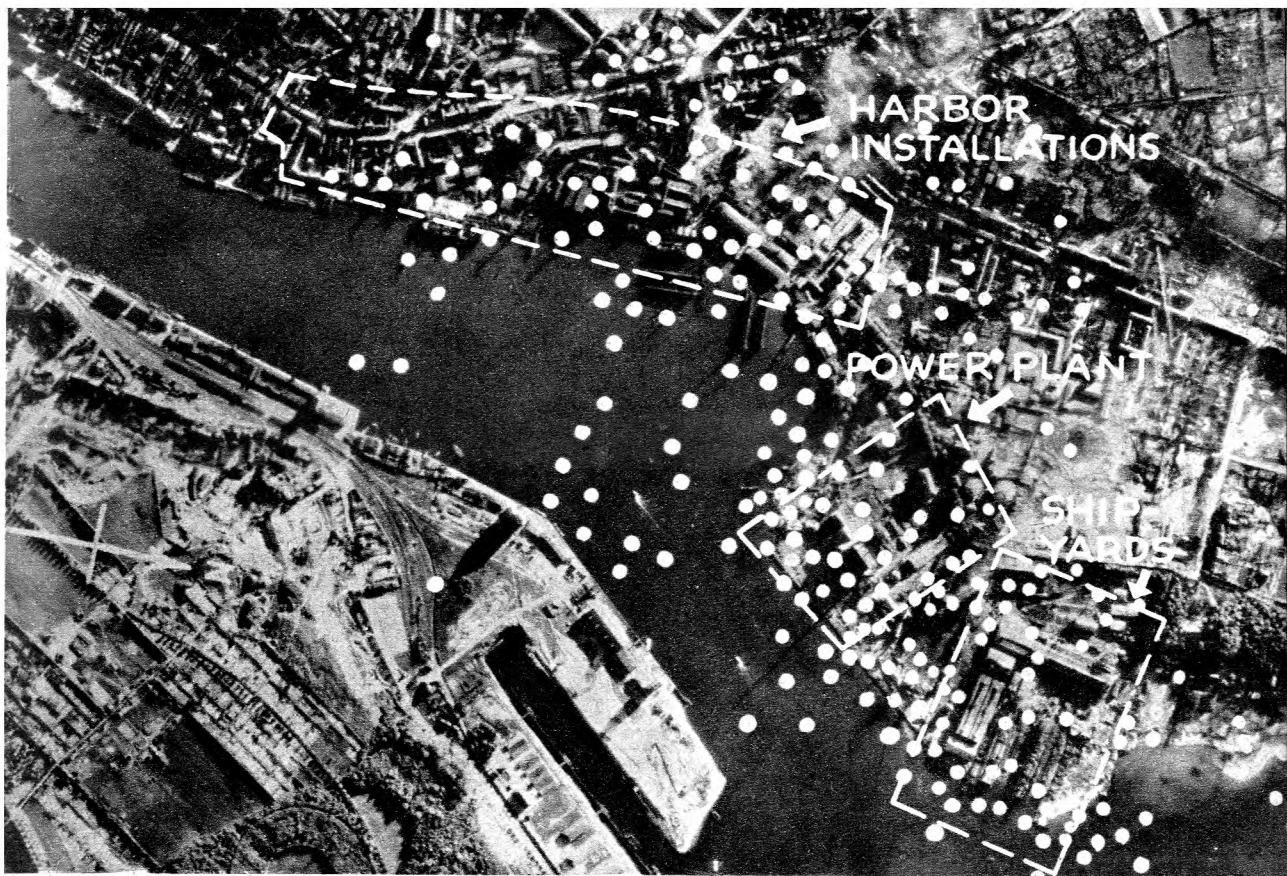
submarine production may be given first priority, synthetic oil second, and perhaps the enemy aircraft industry third place. The Chiefs of Staff also select the industrial areas most worthy of attention from the RAF's night bombers—thus it was decided that heavy industry in the Ruhr should be hit before the transportation and storage facilities of the port of Hamburg.

Then the Target Selection Committee, a group of military and economic experts which meets in London, with a blueprint of the enemy's industrial organization before it, selects the objectives needed to cripple the enemy's war potential in each category and gives each target, in turn, a priority rating.

With this information before him the Bomber Command chief decides what particular targets best suit the capabilities of his force. A Combined Operational Planning Committee—made up of representatives from the Fighter, Air Support, and Bomber Commands and the Intelligence divisions of both the RAF and the American Air Force—after conferring with the C.G. and his staff, translates these decisions into

a general plan of action. Given Kiel and Antwerp as the main targets, for example, and knowing the approximate force available, the Planning Committee laid out the routes, times, diversions and decided on the details of the fighter cover to be supplied. Any necessary collaboration between the RAF and the AAF is also worked out at this time.

On a comparatively simple operation such as that of the May 14 attacks, these plans may comprise five or six pages of instructions and charts. Each plan, once it is completed and has been studied, amended, and approved by the various commands involved, is given a code name and put on file—ready for instant use. When the weather is right and his force ready for a particular operation, the Chief of the Bomber Command takes the plan from his file. With the current disposition of the enemy defenses, the weather report, and certain other variables before him, the Bomber Commander adapts the basic plan to that day's operations. The command's Operations Officers then turn the plan into a detailed Combat Order, which is submitted to



**Bomb plot**, reconstructed from the photograph on the facing page, showing approximate position of each bomb.

the Air Divisions for their corrections and suggestions. The amended version is dispatched to the flying units.

With a force of more than 200 operational Forts available for the first time during the early days of May, the multiple attacks already planned and on file could now be launched. Another four-pronged assault, this time on French and Low Country targets, followed the Kiel-Courtrai-Antwerp-Ijmuiden operation. On May 17 well over 100 Fortresses attacked two objectives—the sub-pen installations and the power station serving them—at the Lorient base, while two Groups of Liberators, operating as a separate operational unit for the first time, made a wide sea sweep to attack the submarine facilities at Bordeaux and eleven medium bombers set out for objectives in Holland.

The operation was notable for an outstanding success and an equally outstanding failure: the Liberator flight (the story of which is told in the next chapter) produced some of the most spectacular navigation and bombing of the air war, and the B-26 attack on the Dutch targets

resulted in the loss of all the ten planes attacking. Two lessons were learned that day: that (1) the Liberators operated more effectively when they flew by themselves and that (2) the fast medium bombers, flying at low altitudes, could not always depend on the element of surprise in heavily defended areas, but needed fighter support. The two Lorient strikes, one following the other along the same route at a fifteen-minute interval, apparently split the enemy fighter opposition. Losses were moderate—six Forts—the bombing was excellent, and claims of enemy fighters shot down were substantial. The Liberators, attacking a target 250 miles to the south twenty-four minutes later, met little fighter opposition. The multiple attacks were beginning to stretch the Nazi defenses.

The months of May and June settled down to a grim exchange of blow for blow. Flensburg, Kiel, Wilhelmshaven, Emden, Bremen, the synthetic-rubber plant at Huls, the submarine bases in Occupied France—these were hit and hit hard. The Nazi defense command sought desperately for ways to stop the Fortress formations from



reaching their targets. Air-to-air bombing increased; fighters armed with rocket guns were reported by returning crews. The Forts were not stopped.

Here is a sergeant gunner's diary, covering the late June and early July attacks :

*June 22—This was the date of our first engagement. Antwerp, where the Germans were building trucks and tanks, was our target. Our part was a minor one, more or less intended to keep their attention divided, while the main force went to Huls. It was considered successful. We were hit hard by FW 190's and had our share of flak. The two other ships in my flight never returned, taking three of the men in my barracks down with them. Our tail gunner was killed by the only shot to enter our ship. He was a fine fellow.*

*June 25—Today, Hamburg! Rather a wasted trip. A large formation dropping bombs through a thick layer of clouds which obscured the target. The flak and the 190's were with us. One B-17 went down, taking more of my friends and our operations officer.*

*June 26—Target, an airport in Paris, France. No. 1 engine cut out over Channel, so we turned back. Others went on in, but weather bad and only few bombed target.*

*June 28—Big game, big formation this time. We made the Germans very well aware of our presence in Saint-Nazaire. Our bombs raised the submarine docks to heaven. We encountered clouds of flak and fighters. We left the fighter opposition shortly after bombing. Some time out from the target we picked up two German fighters that made repeated attacks on the tail of our ship. Had the rather unpleasant experience of seeing 20-mm. cannon shells exploding close to our tail. No one was killed or badly injured. We stopped at an RAF base for the night. They treated us wonderfully.*

*June 29—Flying today with Lt. L. All enlisted men in his crew are in hospital, with the exception of one man who is dead. The trip is without event. We go well into France looking for our target (an airport) which is hidden by clouds.*

*July 4—Another Independence Day, quite unlike any other I can remember. A German aircraft factory deep within France got a look at some American fireworks in the form of several hundred 500-pound bombs. Our own crew went today as spares and had to return just short of France. Today we have been heavyhearted because Lt. B's crew did not return.*

*July 8—No mission today. I received the award*

*of the Air Medal for having successfully completed five combat missions.*

The author of this diary did not return from a mission six days later and is listed as Missing in Action.

The VIII Bomber Command celebrated its second July 4 in England by giving the Germans a demonstration of just how a moderate-sized force of heavy day bombers could be used. Weather dictated the choice of three targets in Occupied France—the Gnome and Rhone Aero Engine Factory at Le Mans, an aircraft factory at Nantes, and the U-boat installations at La Pallice. Both factories, of course, were working hard for the Nazis.

Shortly after noon two strong forces of Forts flying parallel courses crossed the French coast, just east of the Cherbourg peninsula. As the German fighter force made hurried preparations to defend this area, a third force of some seventy Fortresses, having made a wide swing out to sea, appeared over the installations at La Pallice 200 miles to the south. This part of the operation bombed effectively and returned, without meeting any effective enemy opposition.

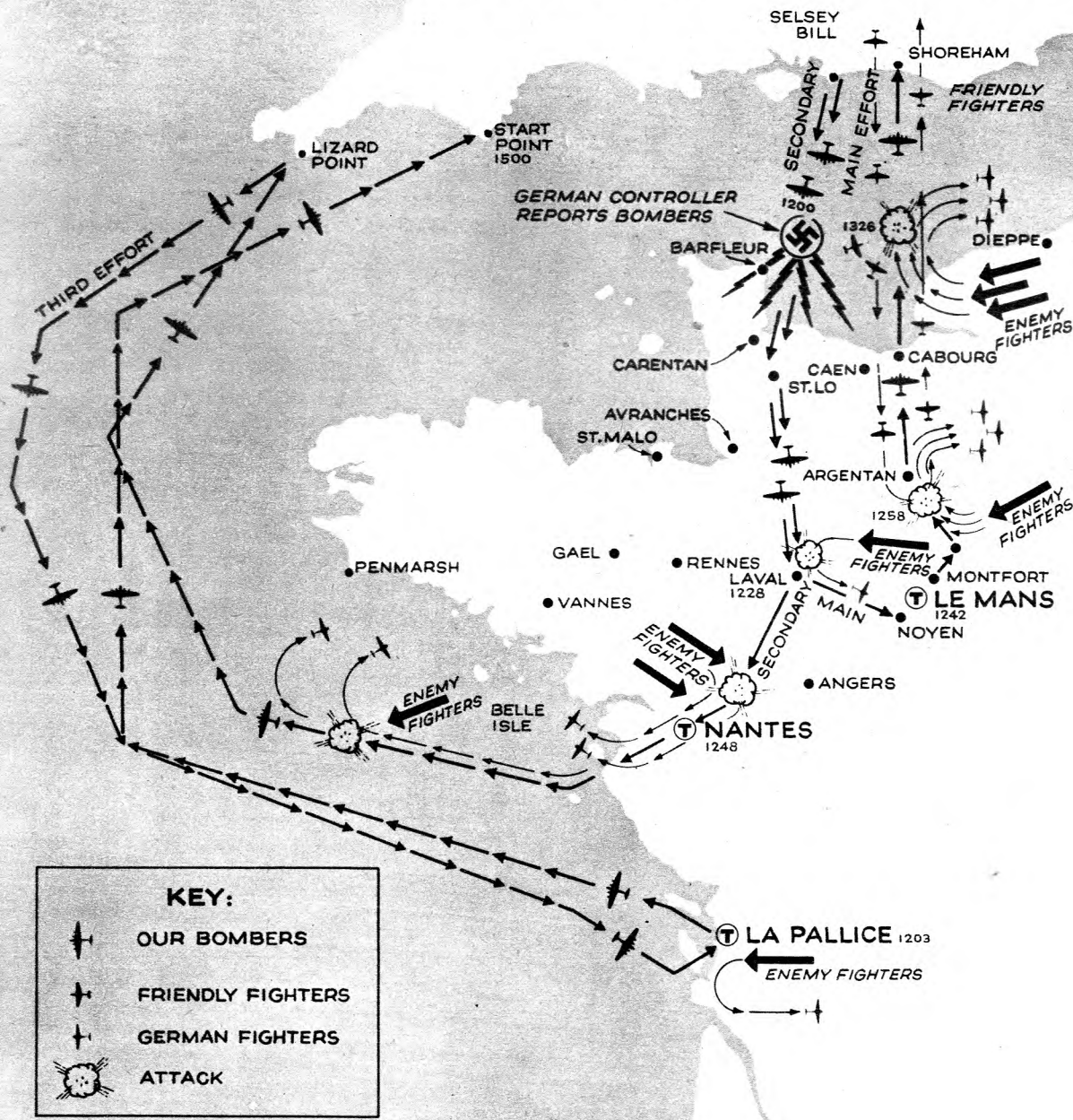
Meanwhile, the two main forces had reached Laval, eighty miles south of the Channel, at 1230. Here the full force of the Nazi fighters converged upon them. At Laval, following the flight plan, one of the bomber forces swung left and hit Le Mans. The other force turned right and attacked Nantes to the southeast. This effectively split the Nazi fighter concentration. The Le Mans force withdrew north, picking up friendly fighter support at Argentan. The Nantes force continued from their target in a south-westerly direction, withdrawing out to sea and flying a great semicircle back to England.

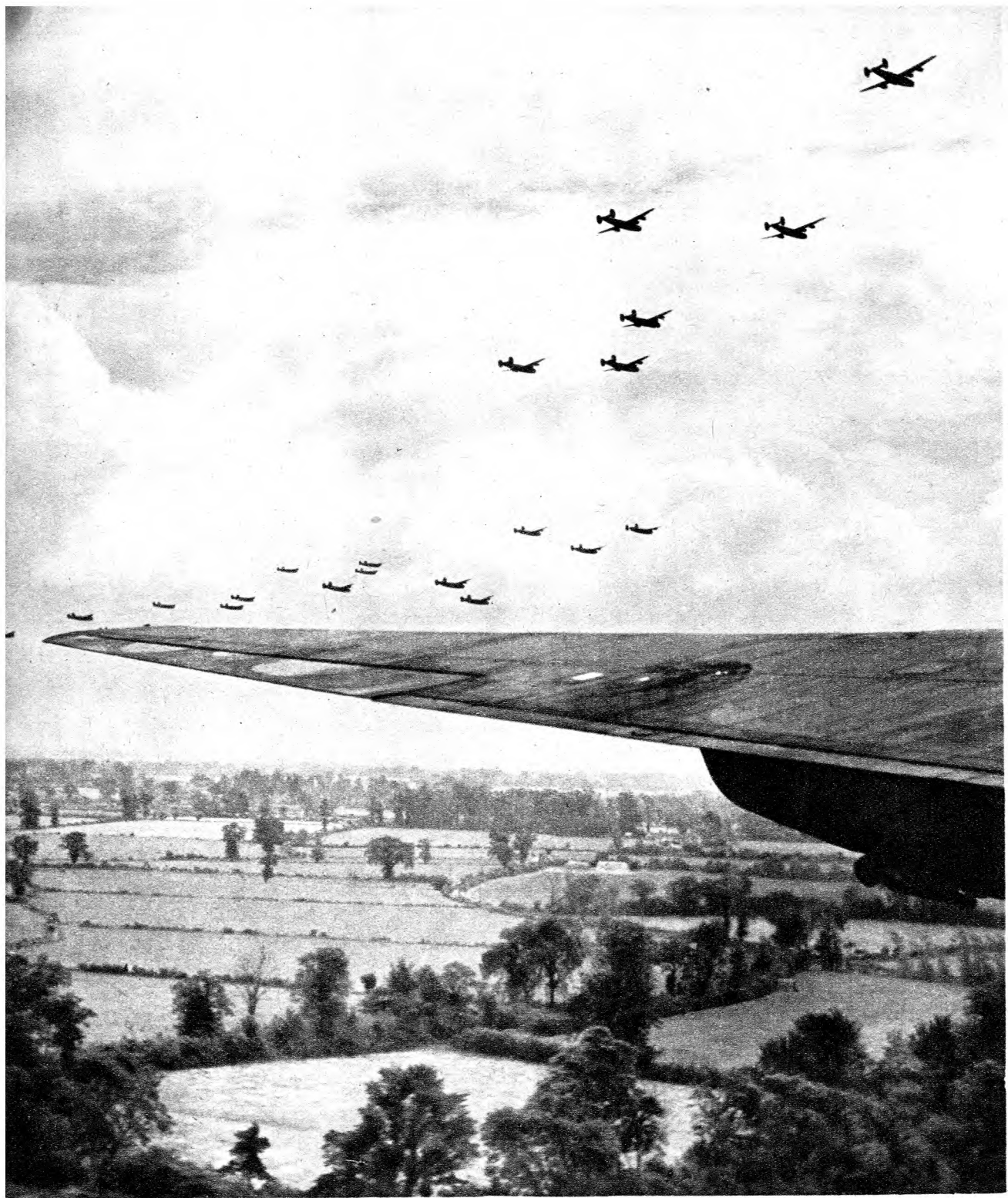
The German fighter force, dispersed to face the several prongs of this operation and held at bay by friendly fighters during the last part of the Le Mans withdrawal, was able to account for less than three per cent of the bombing force despite its persistent and ferocious attacks. Returning crews claimed fifty-two Nazi fighters. The bombing against all three targets—a total of 542 tons being dropped—was exemplary.

On July 4 high-level precision bombing added a third development, tactical deception, to its already-established reputation for accuracy and effective self-defense—it proved that, given sufficient force, the hand that guided the high-level daylight bomber could be quicker than the Nazi eye.

# TARGET JULY 4, 1943

## LE MANS-NANTES-LA PALLICE





*Liberators, easily identified by their twin rudders, fly low over the checkerboard landscape of Britain.*

# 11

## THE LOG OF THE LIBERATORS

AT NOON on the 17th day of May the great sprawling French seaport of Bordeaux was relatively quiet. Far to the north, medium American bombers were slashing at the coast of Holland. Two hundred and fifty miles up the French coast a furious air battle was raging between German fighters and strong formations of Fortresses attacking their old objectives—submarine pens and installations—at Lorient. But nothing was happening at Bordeaux.

The Germans were not particularly vigilant. There were U-boats moored in the tideless basins and massive concrete shelters designed to protect them from air attack. Thirty or forty barrage balloons floated placidly in the air, a hazard for low-flying raiders. But Bordeaux was a long way from England. American bombers had never attacked it. The fact that even at that moment they were hammering at Lorient made the German garrison at Bordeaux feel doubly secure. They had not even bothered to silence the German-controlled radio. . . .

At 1228 thirty-four Liberators—not a large force, but still the strongest Liberator formation yet seen in western Europe—soared out of nowhere and dealt military targets in the harbor area of Bordeaux one of the most precise and devastating aerial blows of the war.

Actually, the Libs appeared out of the Bay of Biscay, where for hours they had been sweeping in a great 700-mile semicircle that had carried them far out into the Atlantic. Their landfall, timed to a matter of seconds, was a masterpiece of navigation. As the lead navigator, reserving most of his enthusiasm for the work of a fellow crew member, later described it :

*Suddenly through haze and mist we saw a break in the coastline. Although it wasn't very plain, it stood out well enough to be recognized as the estuary that curves crazily from the Bay of Biscay to Bordeaux, some thirty miles inland. When we reached our I.P. (initial point) on the bombing run a few minutes later, it was the bombardier's baby. He took over. It was the finest piece of*

*precision bombing I ever hope to see. The locks collapsed, water gushed out of the basin into the river; there were hits on the bottleneck of the railroad yards, strikes on the aero-engine factory. It was beautiful!*

The crews of the Libs had a right to be pleased. For the first time in seven months of sporadic operations in the E.T.O. they had been given an assignment that called upon all their speed, range, and bomb-carrying capacity. They had carried it out successfully—and alone.

At 0900 hours that morning two Groups of B-24's had assembled at 2500 feet near Land's End. Four aircraft turned back with mechanical failures during the long overwater flight, and just before reaching the target one Liberator left formation with engine trouble and struggled to a crash landing in Spain. This was the only bomber lost in the attack. Its crew was unhurt.

During the climb to altitude that began while the formations were still far out to sea, one Group began to lag behind because of lack of power in the lead ship. By deviating slightly from the prescribed course, the navigator managed to bring the Group to a landfall almost exactly at the E.T.A. (estimated time of arrival).

A few flak bursts appeared over the target, but not enough to distract the bombardiers. Only one enemy fighter made a determined attack, and at 300 yards, under direct fire from three .50-caliber machine guns, he broke off and went down in a tight spin with smoke pouring from his engine. He was claimed as a probable.

Two Americans were slightly wounded and one was lost in an accident so freakish that it was hard to believe. A waist gunner standing beside his open window somehow pulled the rip cord of his parachute. The billowing silk, caught in the rush of wind, snatched him out like a gigantic hand. Man and chute hit the tail assembly and disappeared over the Bay of Biscay. The parachute was observed to be badly torn. . . .

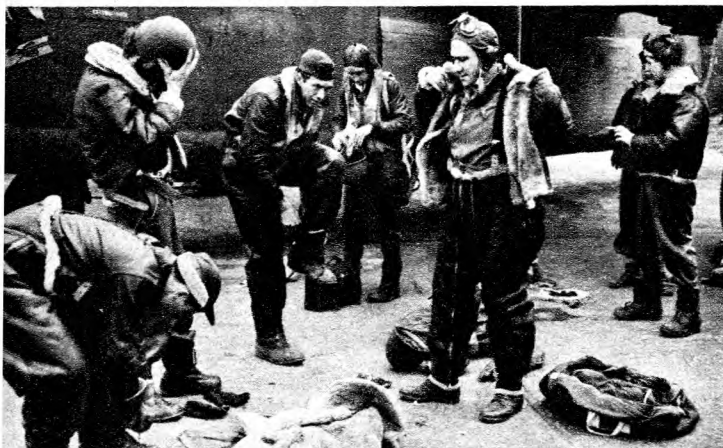
Twenty-two thousand feet below, the harbor



Engine check. . .



Bombing up. . .



Ready to go. . .

of Bordeaux was in confusion. Direct hits burst the great lock gates that kept the water-level in Basin No. 1 from being affected by the rise and fall of tides in the river. Water gushed out in a colossal stream. A 480-yard pier, used exclusively by submarines, collapsed completely. Two U-boats, spotted there at the start of the attack, had vanished six hours later when the photo-reconnaissance plane flew over and took pictures. At least eight direct hits blasted the Matford aero-engine factory. Chemical works and railroad yards were hit. Damage to residential areas was negligible.

It was a sweet job, and the crews of the Liberators were jubilant. They attributed much of the success of the mission to the use of only one type of bomber instead of the mixed formations in which the B-24's had usually flown up at that time.

The fact that the two basic American heavy bombers performed better separately than together reflected discredit on neither ship. It was simply a matter of different speeds at different altitudes, causing certain obvious tactical difficulties. Most reasonable airmen were prepared to admit that there was not much that a Lib could do that a Fort was not capable of doing, and vice versa. The main difference was one of appearance. Discrepancies in bomb load, range and armament were growing smaller as new bombers of both types incorporated various improvements that brought their performances closer together.

But there still was, and always would be, an undeniable *esprit de corps* that set Fortress and Liberator men apart. Up to May 17, the sleek Fortresses had tended to overshadow their less photogenic sisters. This was inevitable in view of the disparity in numbers, and the Liberator crews wasted no time brooding about it. Still, they found a particular satisfaction that day in doing a Liberator version of the American Plan of high-altitude precision bombing and doing it in so spectacular a fashion.

For seven months the Liberators of the VIII Bomber Command had been doing a variety of jobs, both odd and ordinary. Their debut over Lille on October 9 was not particularly brilliant. The abortive rate was high. But they stood their baptism of fire well, and to the people of Occupied France the name of the newcomer—an RAF idea—must have had a special significance.

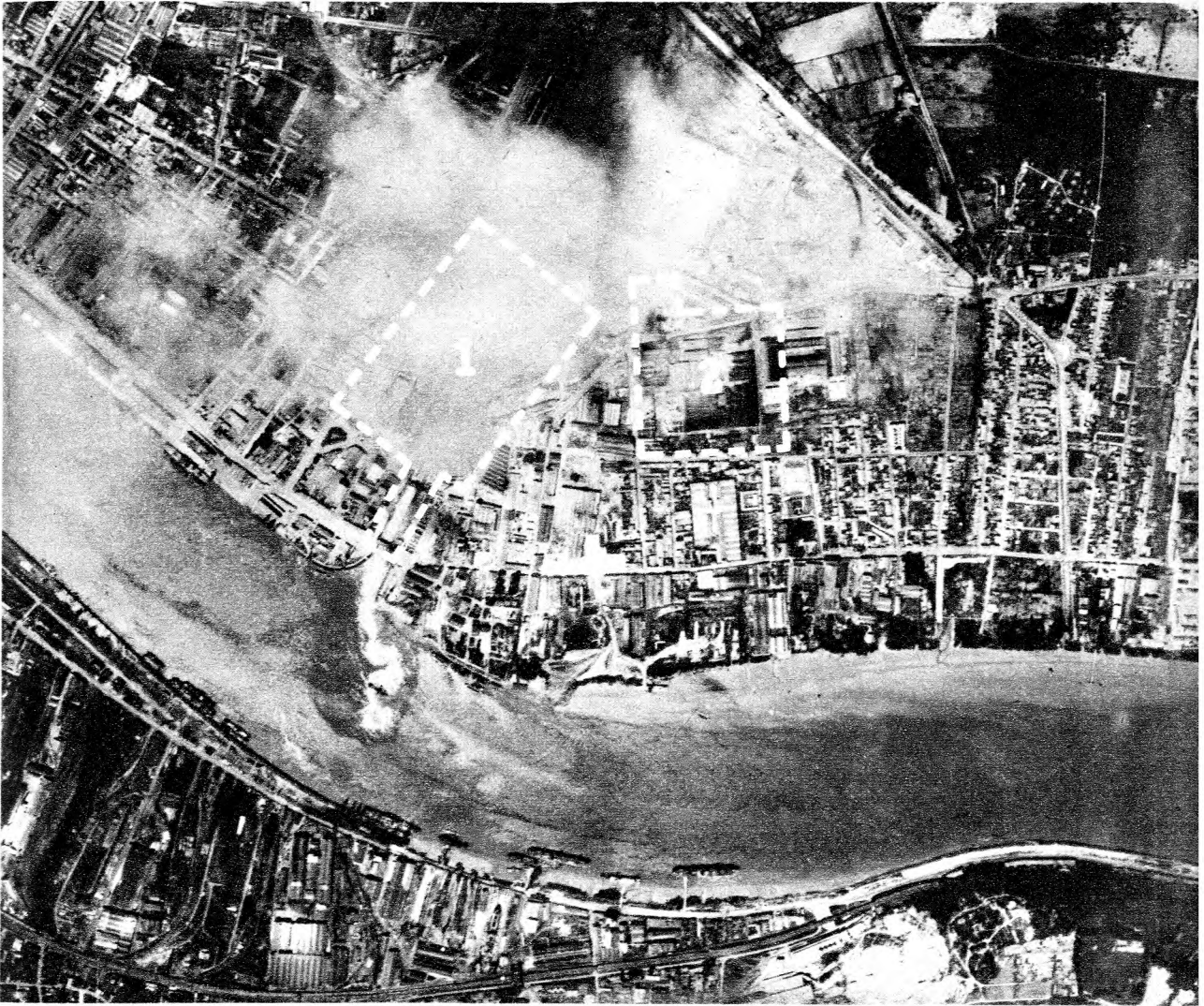
For the next two months the Libs joined in

the milk run down to the U-boat pens. There weren't many of them and, like their Fortress sisters, they were sorely pressed for replacements. They came back with the same battle damage from flak and fighters; their crews had equally harrowing combat stories to tell.

On November 18 over Lorient a bullet from a Ju-88 entered the cockpit of a Liberator, smashing the pilot's arm and ricocheting off the control column into the copilot's leg. At the

same time the tunnel gunner was twice hit in the stomach; one bullet that had passed entirely through his body was found protruding from his hip by the navigator, who administered first aid. The gunner took the bloodstained bit of metal that was handed him and put it into his pocket, remarking that it would make a good souvenir.

The pilot, clinging to the controls with one hand despite the pain of his shattered arm, was



*Bordeaux bull's-eye: "... the finest piece of precision bombing I ever hope to see. The locks collapsed, water gushed out of the basin into the river. ..."* The Liberators damaged basin (1) and aero-engine factory (2).



They lived in the desert on Spam and cabbage, harassed Rommel's rear-guards, struck at Naples and Sicily.

lifted out of the cockpit and placed on the flight deck. The bombardier, who had had some flight training but had never been at the controls of a four-engined ship, took his place. He and the wounded copilot took turns flying the ship.

Near the English coast visibility began to grow bad. The navigator took an Aldis lamp and flashed word to the other ships that they intended to land their wounded at the first available airdrome. Shortly afterward they left formation, climbed above the overcast, and started hunting for a break in the clouds. The bombardier's flat, unemotional report told the rest of the story :

*At about 6000 feet we came into the clear over the overcast. I asked the engineer how much gasoline we had. He checked and said we had about an hour's supply. We decided to fly along for about forty-five minutes and look for an opening. We flew on a 65-degree heading that the navigator gave us. Just about the time this period was up we found an opening, came through, and sighted the runways of an airdrome.*

*We had discussed the matter of landing while flying along. The copilot could not use the rudders, and on the landing we were both on the wheel. I was using the rudders and working the brakes. We made a fast landing. I turned off the runway to the right as we came to the end of it. After land-*

*ing we immediately called for an ambulance and rushed the three wounded to the hospital. The plane was not damaged on landing. . . .*

In October two squadrons of Liberators were sent to the south of England to work with British Coastal Command on antisubmarine patrol. By November, huge convoys were streaming south to supply the African armies. The VIII Bomber Command was already harassing the U-boats "in the nest." The Liberator squadrons were charged with responsibility for the second phase of the anti-U-boat campaign—killing them at sea.

In the harsh winter weather the Libs went out on patrols that sometimes lasted nine or ten hours and covered hundreds of miles of steel-gray sea. Eyes grew weary searching for the telltale feather of a periscope or the shadowy outline of a U-boat hull. It was like looking for a pin in an acre of iron filings. The Liberator crews, stiff and cold, found consolation in the knowledge that they were a vital part of an immense net flung across the Bay of Biscay and half of the Atlantic, a net that was making efficient U-boat operations a mathematical impossibility.

Patrols were not always dull. One B-24 tangled with five Ju-88's far out in the bay, shot down two of them for certain, damaged one other,

and sailed home intact. Said the pilot happily, "The Jerries must've thought we were one of those old British Liberators armed with .30-caliber machine guns. Brother, they were a surprised lot of Heinies!"

This was only the first odd job that the Liberators were called upon to do. In December three squadrons of them were ordered to Africa, for a "ten-day" period. Actually the ten days stretched out to three months, during which they lived in the desert on Spam and dehydrated cabbage, harassed Rommels' retreating rear guards, struck across the Mediterranean at Naples and the Sicilian airdromes, and made some good friends in the Ninth and Twelfth Air Forces.

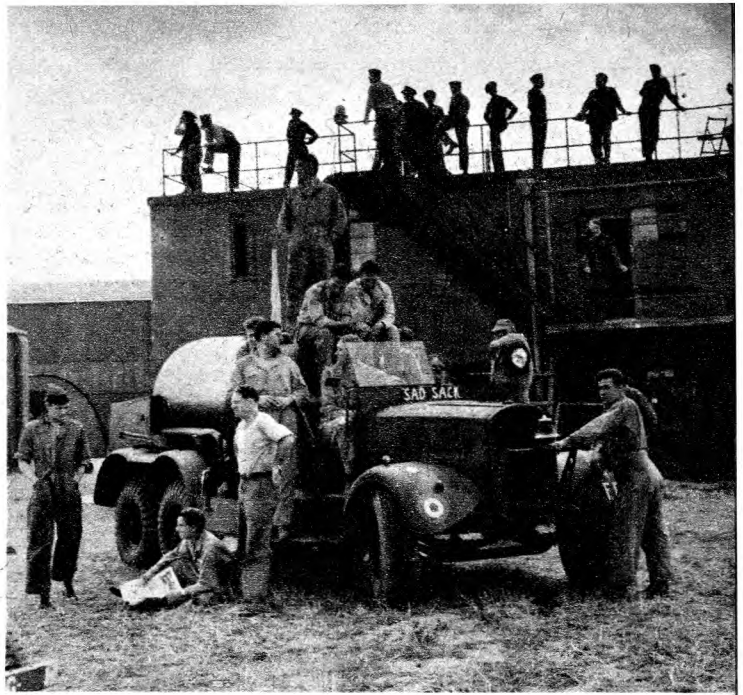
The Liberators left behind in England struggled along with a force so attenuated that it was hardly visible to the naked eye. There were times when barely a dozen could be put into the air. At one point they had to commandeer replacement crews intended for Fortresses. A fine large Briefing Room at one station—once the Group Intelligence Officer's pride and joy because it was so roomy—became a positive menace as the circle of chairs grew smaller and the unoccupied area increased.

When the wanderers returned from Africa in March, full of tall tales and with the Libyan sand still gritty on the floors of their ships, the confidence of the Liberator Wing soared again. They went out with the Fortresses in what was—for them—considerable strength: eighteen, twenty, twenty-two planes. At Vegesack, on March 18, they shared with the Forts credit for smashing the submarine-building yards. Only one Liberator was lost.

The Libs did not always get off so lightly. At Kiel on May 14, flying lower than the Fortress formations and carrying incendiaries for the first time, they were singled out by enemy fighters for concentrated attack. Five B-24's out of seventeen were lost, the survivors destroying twenty-one German aircraft. The ferocity of the fighter attack and the violence of the evasive action taken by the big bombers are reflected in one pilot's account of the engagement:

*Then things began to happen. Three of them started at us. Our top turret gunner picked out the leader and let him have about fifty rounds from each gun. The copilot saw black smoke pour from the nacelle and the plane go into a spin.*

*Despite the temperature of 20 degrees below zero Centigrade I was sweating like mad. I had on a pair of winter flying boots and nothing else*



The longest hours. . . waiting for bombers to return.

*except regular dress, which was wringing wet.*

*Two more fighters came in from the nose. I could see them firing their cannons, so I pushed forward on the stick with all my might. We went down like a streamlined brick, and they whizzed past us, barely missing the top of our wing. One of them took along several of our slugs with him, because our tracers were seen to go through his fuselage. When I pulled out of that dive, our top turret gunner was thrown from his turret, as was the tail gunner. All the other members of the crew were thrown about a bit. But the Jerries had missed us, and that was the important thing.*

*Just as we were approaching the target, four more fighters attacked us from dead ahead. One of their cannon shells hit our left wing. A moment later the copilot announced that the No. 3 engine was out.*

*"Want to feather it?" he asked.*

*"Hell, no!" I yelled.*

*Feathering a propeller over enemy territory is like writing the boys at the mortuary for space on their slab. All of the fighters see that you are crippled and immediately set upon you for the kill.*

*We had only three halfhearted attacks from then on to the coast, and those pilots must have been very green, or else I had become hardened to it all by that time. Off to our left, I saw one Me-109 do a slow roll and then head for home. His maneuver meant, "Well, boys, it's all over for*





*Nazi oil blazes. Some of the Liberators left the Ploesti target area with corn stalks stuck in their bomb bays*

*this time. See you soon."*

During the spring the Liberators began training for night operations. Personnel was sent to the RAF Operational Training Units to study the methods and technique of night flying. The American crews were not unfamiliar with night flying, but much had to be learned about differences in signal procedure, the tactics of night bombing, and so forth. Again, the Liberators were being used experimentally. Whether those experiments would prove much or little, time and the course of the war would tell.

In June the Wing became nonoperational; a new and very specialized training period set in. Combat crews had no idea what ultimate target they were pointing for, but it was obvious that it had nothing to do with high-altitude bombing. The big ships were sent roaring over the countryside in tight formation at treetop level. Low-altitude bomb sights were installed. Armament modifications, designed to increase fire power forward, were speeded up. The Liberator men, pleased with their new hair-raising tactics, speculated feverishly as to the nature of their next assignment. One month later, much to the relief of harassed livestock in English meadows, the Liberators were no longer to be seen in the skies of Britain.

They were to be seen in many places before they came back: over Rome in the first attack on the marshaling yards that tumbled Mussolini from his shaky pedestal, over Austria in the assault on the Messerschmitt factory at Wiener-

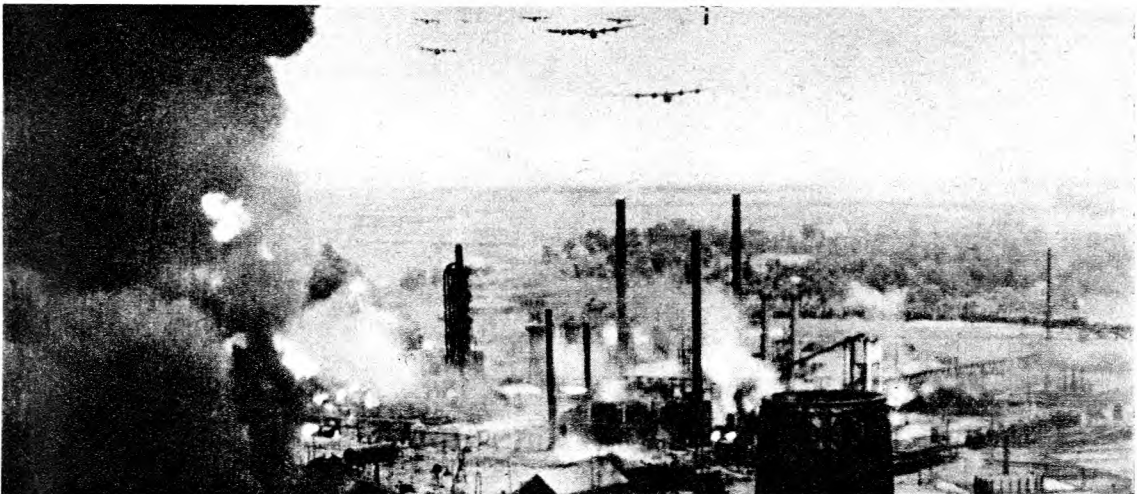
Neustadt, one of the longest bombing missions of the war.

But the climax of their mission came 1350 miles as the bomber flies from their home stations. To attack this target they flew from Africa, not from England. They were operating with the Ninth Air Force, not with the VIII Bomber Command. But to the ground echelons left on the Liberator stations of Britain, three fifths of the American force that struck the Rumanian oil refineries at Ploesti on August 1 were "our boys."

Ten days later at the station belonging to the oldest Liberator Group in the E.T.O. an eyewitness of the raid told how Lieutenant Colonel Addison E. Baker, commanding officer of that Group, led his last mission.

The Liberators took off across the Mediterranean after three weeks of rigorous and secret training in the desert where a rough replica of the target had been built. Practice runs had been made until the timing of the whole attack was polished to the last split second. Crews were briefed with movies and lectures down to the last oil derrick in the target area.

With each plane carrying 3100 gallons of gasoline and 5000 pounds of delayed-action bombs, the bombers swept north and thundered over the coast of the Balkan peninsula at 10,000 feet. It was a long trip, without the monotony of high-altitude approach. Once across the Danube, the formation came down to attack level. In the Rumanian wheatfields only 200 feet below, the



*Delayed-action bombs from a preceding Group explode in one of the Ploesti refineries as more Libs attack.*

thundering engines caused wild excitement. Combat crews could see details with startling clarity. One girl in bright peasant costume flung her apron over her head in panic. An old couple fell on their knees and prayed. Some farmers threw stones and pitchforks. A man leading two horses beside a stream took one look and plunged headlong into the water. Nor was all the excitement limited to persons on the ground. No less than ten crews reported that as they crossed a river a girl was swimming in it. Opinion was unanimous that she was without benefit of bathing suit.

The plan was to sweep down on the oil refineries from the north, but two of the Groups, including Baker's, passed south of the target on their first approach. The leading Group made a wide circle, but Baker, spotting a refinery, turned and made a direct run for it.

By this time the defenses were fully alert. Fighter planes were up. So low were the Liberators that more than once the fighters dove into the ground in frantic efforts to intercept them. As one crew member put it laconically, "Those fighters used non-habit-forming tactics!"

Flak was more of a menace than fighters. Everything from machine guns hidden in haystacks to 88-mm. cannon firing over open sights blasted at the Liberators. The guns in the big planes replied, waist gunners picking off riflemen, sending bursts of incendiaries into oil storage tanks which exploded in sheets of flame.

Before the mission, Baker had stressed the absolute necessity of flying a tight formation in order to hit the relatively small target with the maximum number of bombs. "If anything happens to the lead ship," he said, "pay no attention. Don't swerve. No matter what happens, keep straight. . . ."

On the way in to the target a shell struck the right side of the cockpit of Baker's ship. It probably killed the copilot and must have injured Baker, but he kept to his course. Fire broke out. Seconds later, just at the target, a heavier caliber shell made a direct hit. Enveloped in flames, the Liberator shot over the target, dropped its bombs, and crash landed near the refinery it had helped to destroy. Colonel Baker is listed as Missing in Action.

Thundering down from the north, another VIII Bomber Command Group led by Colonel Leon Johnson saw the delayed-action bombs of Baker's Group exploding in the target area. By going in at 500 feet or higher, Johnson could

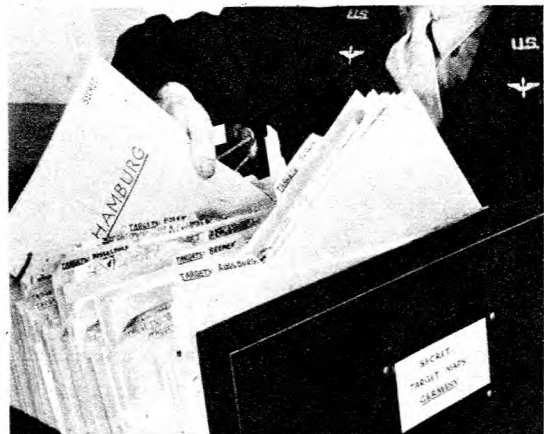
have lessened the danger from ground explosions, but mushrooming smoke would have made accurate bombing difficult. He took his Group in at 230 feet, the height of the tallest chimneys. Casualties were heavy, but the target was completely wrecked. For his courage and leadership, Colonel Johnson received the nation's highest award, the Congressional Medal of Honor. He returned safely.

Near one of the targets, airmen saw the crew of a Liberator that had been shot down standing near their crumpled plane, waving their arms and cheering like maniacs. The surviving bombers raced away across the fields so low that some of them came back with corn stalks stuck in their bomb bays. Behind them on the horizon huge columns of smoke bore witness to the effectiveness of their work. "I wouldn't give a million dollars for the experience of that raid," a gunner said afterwards, "and I wouldn't give ten cents for another like it!"

That was the story as told to members of Colonel Baker's Group at their deserted station somewhere in England. "You can be proud of your boys," the eyewitness said.

They were proud of them, and of the ships they flew, and of the job they did. The story would be remembered as long as there were Liberator men left to tell it. The Germans would remember it, too—five refineries hit, at least two of them completely smashed. The price paid in men and machines was high. It was no higher than expected. The crews that survived knew that the losses in planes would be made good with newer, better planes.

They knew they could never replace the men.



THE LAST WEEK of July, 1943, was not a good one for European dictators. To one it brought political annihilation, abrupt and ignominious. To the other it brought the greatest sustained aerial offensive yet mounted by the VIII Bomber Command.

The month had begun auspiciously for the Fortresses with the three-pronged attack on Le Mans, Nantes, and La Pallice. Three more missions followed, one strike on the aircraft repair and assembly shops at Villacoublay being particularly successful. But it was in the last seven days of July that the Fortresses showed what daylight bombing could accomplish—given the planes and given the weather.

Out in force five times, they hit sixteen major industrial targets. They made their longest flight—1900 miles—when they attacked the German U-boat base at the Norwegian port of Trondheim, not far from the Arctic Circle. They achieved their deepest penetration into Germany when they struck an aircraft factory at Oschersleben, only eighty miles from Berlin. In those seven climactic days they claimed 296 enemy fighters destroyed. Eighty-eight Fortresses were lost.

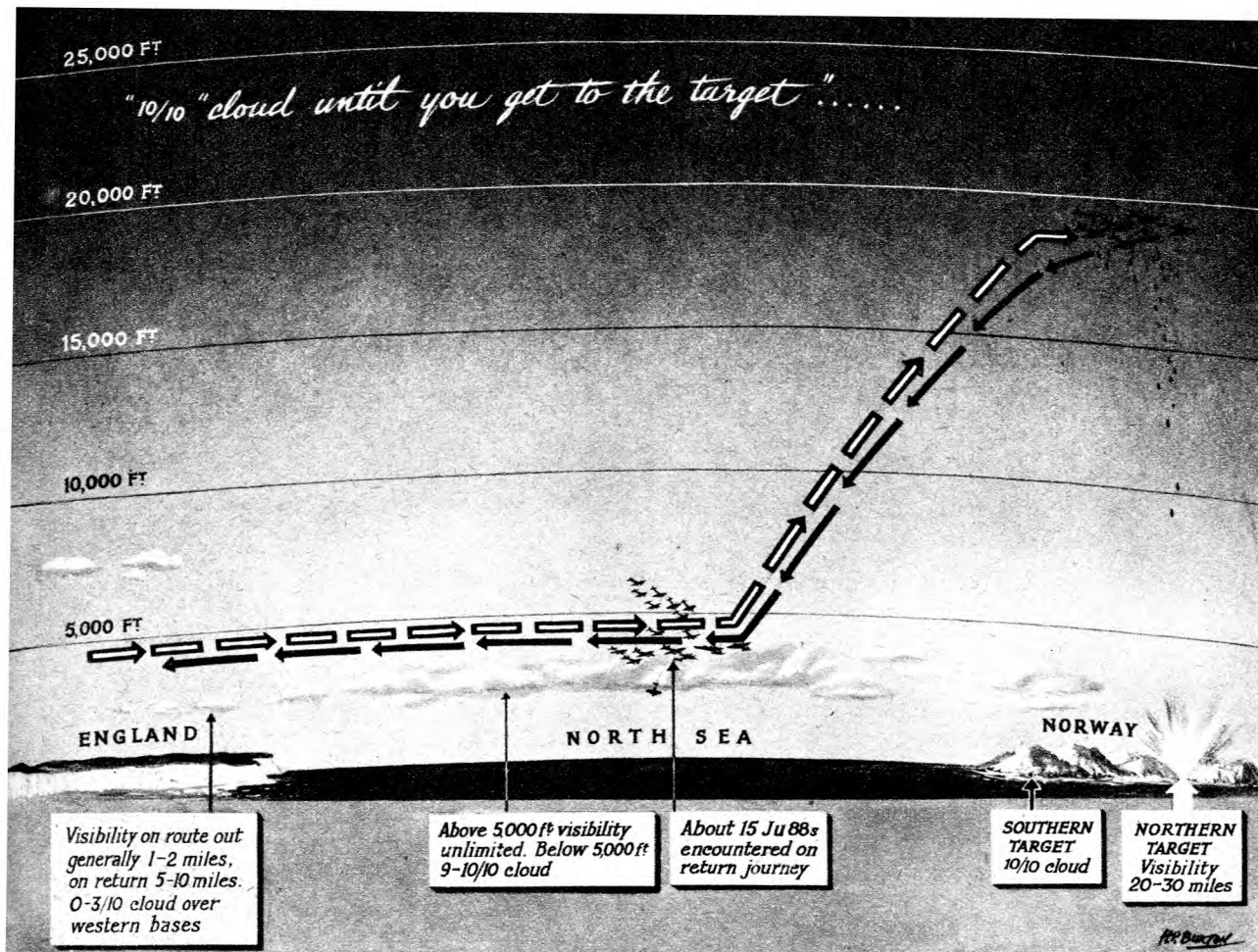
This was big business. To the earth-bound men on the individual bomber stations the change was not so apparent. Their planes went out and fought and bombed, and some came back and some did not. But the fliers could tell the difference, by the length of the flights and the frequency of them, by the increasingly desperate German resistance, by the losses on both sides. At headquarters the growing scope of operations was even more evident. Instead of dispatching four carefully husbanded Groups against a single target, the Bomber Commander was able to think in terms of striking forces of a hundred or more planes over two or three objectives at once.

Out of the cyclonic air battles that studded the month of July came stories of heroism on the part of the air crews and stamina on the part of the planes that bordered on the fantastic. A badly hit tail gunner crawled back into the waist of a Fortress, not for protection or first aid, but

merely to demand more ammunition. Shot down into the North Sea, a wounded navigator left the comparative safety of a dinghy to swim back to his sinking plane, fight his way into the radio room, and drag out an unconscious gunner pinned under heavy equipment.

Coming back from bombing an airdrome on July 14, a Fortress met a nose attack by three FW 190's with a blast of fire that destroyed two of the fighters and evidently killed the pilot of the third. It crashed head-on into the No. 3 engine of the Fortress with an impact that tore off the propeller and knocked the bomber completely out of formation. The German fighter did a cartwheel over the Fortress, cutting half-way through the wing and a third of the way through the horizontal stabilizer. Top and ball turrets on the bomber jammed; radio equipment was smashed; all the instruments, according to the copilot, "went crazy." Pieces of metal from the disintegrating Focke-Wulf hurtled through the fuselage. A gun barrel buried itself in the wall between the radio room and the bomb bay. Other crews in the formation later reported that the Fortress had blown up as a result of the collision. It had not. On the contrary, it pulled itself together, shot down one more fighter, limped back under a canopy of sympathetic P-47's, and made a belly landing at an English base. None of the crew was scratched.

"Blitz week," as it came to be known, began on July 24 when for the first time the Americans turned their attention to German installations in the conquered but still defiant land of Norway. The most important target was the big new magnesium and aluminium factory at Heroya, built by I. G. Farben-industrie, the German chemical trust, and completed barely three weeks before precision bombing destroyed it. Another target was the U-boat base at Trondheim. It too was savagely mauled; workshops were gutted, a submarine was sunk, and a destroyer damaged. A third target was cloud-covered; disappointed crews, unwilling to bomb indiscriminately over Norway, brought their missiles back to base.



**Weather to Norway:** Heavily loaded bombers took off through overcast, flew across the North Sea over solid cloud layer, bombed the targets, returned through same conditions. Round trip to Trondheim: 1900 miles.

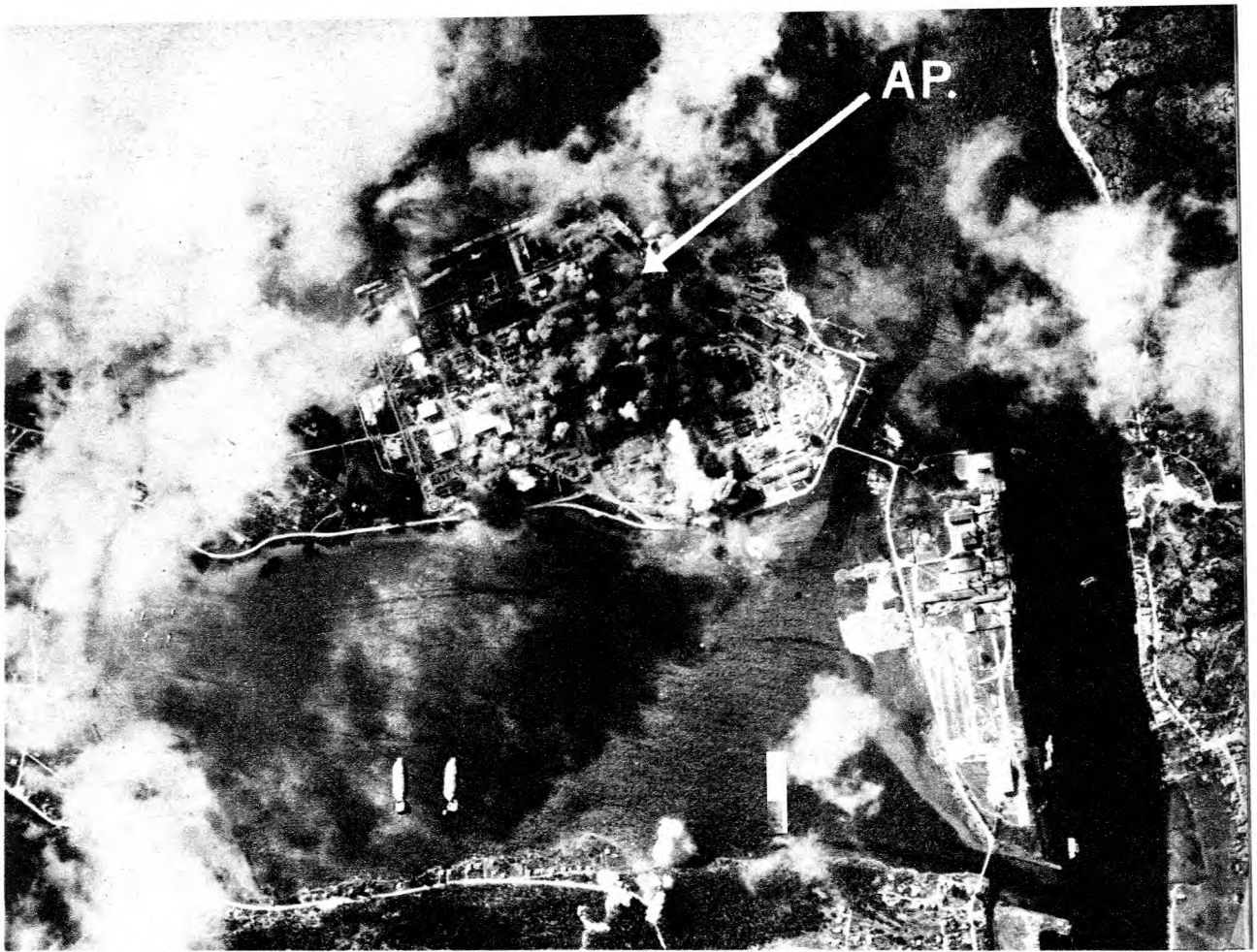
The Norwegian attacks apparently took the enemy completely by surprise. Air resistance was slight. The only Fortress lost, of more than three hundred dispatched, was hit by flak and made a forced landing in Sweden, where the crew was interned. One of the most interested observers of the raid was "Skipper," black cocker spaniel with more than three hundred flying hours to his credit. He spent most of his time in the radio room, with occasional visits to the cockpit or the bombardier's compartment. Since the long over-water approach to Norway was made at relatively low altitude, Skipper required no oxygen mask.

The effectiveness of the Trondheim attack was confirmed unofficially by a cheery telegram from the RAF's photo-reconnaissance fliers. "Please convey heartiest congrats to air crews and all concerned for wizard bombings July 24. We like to see and photograph

such work. Press on more of it soon, please."

The Americans wasted no time in pressing on wizard bombings. Next day, sighting through the smoke of the RAF's fires at Hamburg, they hit the enormous Blohm and Voss shipyards, representing eighteen per cent of Germany's entire shipbuilding production. At the same time other formations hammered shipyards at Kiel and the German Air Force training school and airdrome at Wustrow. At Hamburg, enemy aircraft were observed endeavoring to lay a smoke screen over the target. Enemy fighter opposition was intense. Forty-four were claimed as destroyed. Nineteen B-17's were lost.

One of the lost crews spent all that night and most of the next day in rubber dinghies, floating so close to the German coast that they could see the pall of smoke that covered Hamburg and the glow of their own fires at Kiel. The pilot of



**Two years to build, four minutes to destroy. Bombs fall on huge German magnesium plant at Heroya, Norway. Attack was timed to strike between shifts, reducing Norwegian casualties. Arrow marks aiming point.**

*Happy Daze told the story afterward: When the fighters hit us, the wing swelled up like a balloon and then burst into flames, and we went into a dive. I didn't give the order to bail out because I thought we might pull out of it. I got it under control only 150 feet above the water, just in time to ditch.*

The landing was not much worse than a normal runway landing, but the waves knocked the ball turret up through the plane, and as the ship settled it broke in half. Two men escaped through the radio hatch; the rest simply walked out where the fuselage was split. They had fifteen seconds to inflate the dinghies before *Happy Daze* went down.

*We tied our dinghies together and then started worrying. We were a long way from home, and closer to Germany than any other land. We were afraid the Germans might pick us up. We not only watched Kiel burn that night, but we actually sat*

*out there in the water and had a grandstand view of the RAF bombing the German coast. We could see the flak bursting and the fires started by the RAF blockbusters.*

*About noon the next day a British plane spotted us. He dropped three big dinghies and then hung around to protect us from possible attack by a Ju-88 that hovered in the distance. Soon another RAF plane joined him, then three more, then three Forts joined up. It looked like the combined Allied air force above us.*

*One of the RAF planes dropped a launch by parachute. It was a sight to see that boat come parachuting down, settling right beside us. It was all closed, with the hatches sealed. We opened it up and there were sleeping bags, food, water, gasoline, and directions for running the thing. I had an idea I might get the boys to head for New York. . . .*



**Tire Trouble.** *Smoke from the largest tire factory in Germany rises 20,000 feet during the attack on Hanover.*

Next morning, steering bravely westward, they were picked up by fishermen, who delivered them safely to an Air-Sea Rescue motor launch. The work done by Air-Sea Rescue during Blitz week was phenomenal. On one day, July 26, they picked up sixty-five American airmen.

This was the day the Fortresses chose to attack the great Continental Gummiwerke A.G. Vahrenwalderstrasse at Hanover, largest tire factory in Germany. Photographs taken during the last phase of the attack showed a tremendous explosion with a column of smoke towering 20,000 feet into the air, blanketing the whole city. Flak was heavy. Altogether, sixteen bombers were lost at Hanover. Eight more went down over Hamburg and secondary targets which were attacked by other Fortress formations. Sixty enemy fighters were destroyed.

One of the returning bombers brought back a story which, for grim fortitude, was without parallel in the records of the VIII Bomber Command. Going in over the German coast the Fortress was attacked by enemy fighters. As the navigator told the story: *On their first pass I felt sure they had got us, for there was a terrific explosion overhead and the ship rocked badly. A second later the top turret gunner fell through the hatch and slumped to the floor of my nose compartment. When I got to him, I saw that his left arm had been blown off at the shoulder and he was a mass of blood. I first tried to inject some morphine, but the needle was bent and I couldn't get it in. Then I tried to apply a tourniquet, but it was impossible as the arm was off too close to the shoulder. I knew he had to have the right kind of medical treatment as soon as possible and we had almost four hours of flying time ahead of us, so there was no alternative.*

*I opened the escape hatch and adjusted the chute for him and placed the rip-cord firmly in his right hand. But he must have become excited because he pulled the cord, opening the pilot chute in the updraft. I managed to gather it together and tuck it under his right arm and toppled him into space. I learned somewhat later from our ball-turret gunner that the chute opened O.K. We were at 24,500 feet about twenty-five miles west of Hanover. Our only hope was that he was found and given medical attention immediately.*

Bombardier and navigator turned back to their guns. Shortly afterward the Fortress went over the target, and the bombardier got his bombs away. The navigator tried several times to communicate over the interphone with other

members of the crew, but could get no answer. *The last I remembered hearing over it was shortly after the first attack when someone was complaining about not getting any oxygen. All this time, except for what I thought to be some violent action, we seemed to be flying O.K. It was two hours later, when we were fifteen minutes out from the enemy coast, that I decided to go up, check with the pilot, and have a look around. I found the pilot slumped in his seat, the back of his head blown off. This had happened during the first attack more than two hours before. The copilot was flying the plane with one hand and holding the half-dead pilot off the controls with the other. . . .*

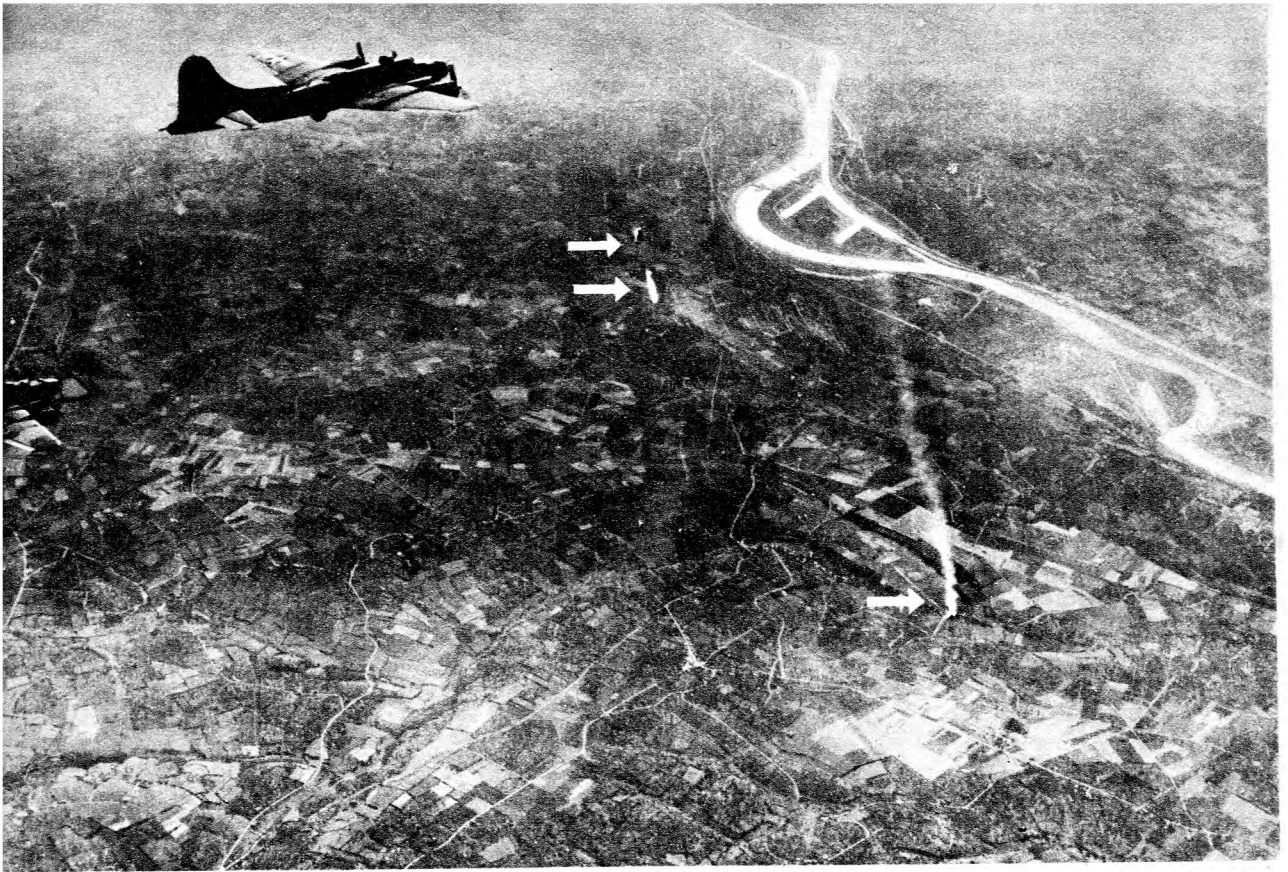
The pilot, fatally wounded, was a man of such tremendous vitality that even the impact of a 20-mm. cannon shell could not completely extinguish his will to fly the ship. Semi-conscious, he struggled wildly with the controls. He was a big man—over six feet, weighing 185 pounds. The copilot had to fight him constantly, dragging him off the control column while the Fortress plunged through the sky in what the navigator and bombardier took to be extreme evasive action. The same attack which wounded the pilot and cost the top turret gunner his arm had shattered the oxygen lines so that four of the five men in the rear of the plane passed out, leaving the Fortress undefended except for the nose and ball-turret guns. When they finally revived, these gunners were badly frostbitten. The radio equipment went dead at the same time, and the interphone was knocked out. No one would have questioned a decision to turn back. The copilot decided to go on.

The navigator's narrative continued: *The*



*Lifeboat drops by parachute to a ditched Fort's crew.*





**Blow for blow.** *Two enemy fighters, one broken in half, go down under the guns of a Fortress formation.*



**Blow for blow.** *A Fortress with its entire tail shot away staggers for a moment before the final plunge.*

*copilot told me we had to get the pilot out of his seat as the plane couldn't be landed from the copilot's seat. The glass on that side was shattered so badly you could barely see out. The copilot was operating the controls with one hand and helping me to handle the pilot with the other. We struggled for thirty minutes getting the fatally injured pilot out of his seat and down into the rear of the navigator's compartment, where the bombardier held him from slipping out the open hatch. The pilot died a few hours later.*

Shifting from his own seat to the pilot's, the copilot brought the ship down to an emergency landing in England. He was subsequently recommended for the Congressional Medal of Honor. His name, John C. Morgan; his rank, Flying Officer.

July 27 was a badly needed day of rest for the combat crews of the VIII Bomber Command. But on the 28th, 29th, and 30th they were out in force again. Aircraft factories were their chief targets, at Kassel, at Oschersleben, at Warnemunde. Shipyards at Kiel were hit again. Enemy fighter opposition remained strong and persistent. The three days' air battle cost the Americans forty-four Fortresses. Claims against enemy aircraft were 179 destroyed.

American losses would have been higher had it not been for the long-range support provided on July 28 and July 30 by squadrons of P-47's. On these two days Thunderbolts of the VIII Fighter Command, equipped at last with auxiliary gas tanks, made round trips of nearly 600 miles to meet the returning Fortress formations deep inside Germany and escort them to safety. In the ensuing dogfights the barrel-chested American fighters accounted for thirty-four enemy aircraft. Eight Thunderbolts were lost. The pilot of one was saved.

The benefits of such escort to the big bombers could hardly be overestimated. With friendly fighters holding off enemy attacks over such short-range targets as Antwerp or Paris, bombing accuracy was noticeably improved and losses were held to a minimum. Even when the fighters could not go all the way to the objective, their partial escort saved the bombers precious ammunition and human fighting energy. On the way out, cripples could be protected. This knowledge helped bomber morale enormously. To a weary Fortress crew, fighting its way back to the German coast after hours of exhausting combat at altitude, the appearance of squadrons of Thunderbolts or Spitfires was the most beautiful

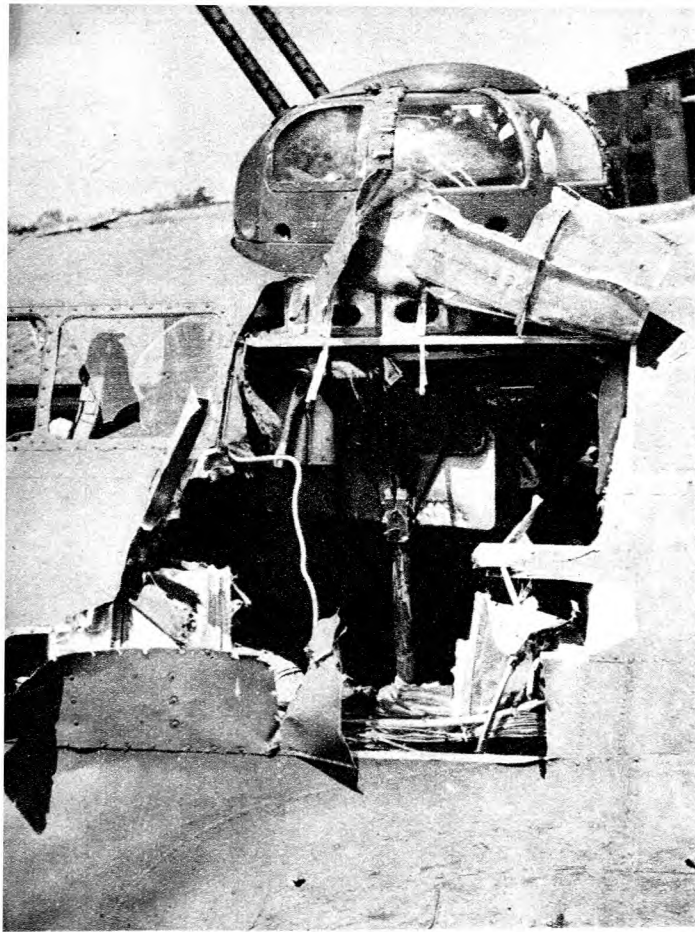


*"Something exploded at Kassel. . . ."*

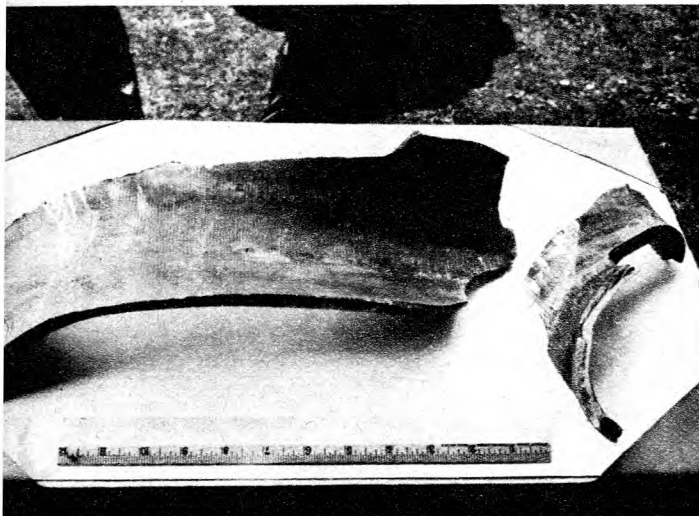
sight in the world. Handicapped at first by mechanical difficulties that had to be ironed out, by lack of drop tanks, above all by inadequate numbers, the VIII Fighter Command demonstrated conclusively during *Blitz* week that the Thunderbolt was more than a match at high altitude for any German fighter. Bomber men, convinced that long-range fighter escort would play an all-important part in the battle of Germany, hoped that the Fighter Command's growth would keep pace with their own.

The bombers needed all the support they could get. As the pressure against Germany increased, the Nazis redoubled their efforts to stop the daylight raiders. There were complacent rumors in the press that the German pilots were losing their nerve. This was not verified in combat. Almost without exception, enemy fliers displayed suicidal recklessness in attack. They will probably continue to do so as long as they have sufficient aircraft to make a fight of it—not necessarily through affection for the Nazi regime but rather because of a certain occupational loyalty to the job which all fliers feel, an unwillingness to let the unit down.

Every sort of defensive tactic was employed by the enemy during *Blitz* week. Air-to-air bombing was experienced on almost every mission during July. "Intruder" B-17's were reported, the Germans apparently sending up repaired Fortresses to fly along with the American squadrons, making observations on the behavior and pattern of the formations. In one or two cases these aircraft were seen to fire on the American formations, but as a rule they



*Close call. A rocket gun mounted on an enemy fighter inflicted this damage. Fragment is shown below.*



*Rocket fragment. This 14-inch piece of steel tore the pants off the turret gunner without hurting him.*

simply followed them back to the English coast and then disappeared. Rocket projectiles more than eight inches in diameter, fired from cannon under the fighters' wings, made their appearance—the enemy aircraft standing off at considerable distance and attempting to lob shells into the Fortress Groups. The rocket installations reduced the fighters' speed appreciably. A Thunderbolt pilot, close behind an FW 190, was astonished to see one of his bullets set off the rocket under the starboard wing. The rocket soared off in a cloud of white smoke as the German fighter disintegrated under the fire of the Thunderbolt's .50-caliber machine guns.

Freak accidents occurred on almost every mission. A Fortress named *Short Stride* was nearly lost when the life-raft hatch in its fuselage flew open. The raft popped out and caught on the tail surfaces, jamming them. The Fort nosed up 300 feet and then went into a 15,000-foot power dive. Crew members were pinned against the ceiling. The interior of the ship became a shambles of wrecked instruments, broken glass, and scattered ammunition. The copilot saw the navigator appear twice in the blister well of the bombardier's compartment, then just as suddenly disappear. *It was like a funny movie, first you saw him, then you didn't.*

At 10,000 feet the pilot and copilot managed to pull the Fortress out of the dive. The strain was too much for the bomb bay; bomb shackles tore loose, bombs and bomb-bay doors fell into the sea with a loud noise. Four members of the crew bailed out. The rest decided to stay with the ship and risk a crash landing in England. They made it, with the life raft still lodged in the stabilizer.

As the ship taxied up the runway the idling propeller of No. 2 engine flew off and slashed a four-foot rent in the bombardier's compartment, which the navigator had vacated just prior to landing. "Boy," said the navigator later, "I'd have just hated to come through all that only to be conked by a flying prop!"

In August the assault against the German Air Force continued. Airfields in France were bombed again. Twenty-nine enemy fighters were claimed destroyed when the Fortresses made a daylight attack on targets in the Ruhr. But the most grievous wounds suffered by the Luftwaffe came on August 17, one year to the day after the VIII Bomber Command had begun operations over Europe.

On that day, in perfect weather, the largest

armada of Fortresses ever assembled was dispatched against two high-priority industrial targets deep inside Germany. Two aerial task forces struck the factories at Schweinfurt which produced approximately half of Germany's total output of ball bearings. A third, fighting its way through fighter opposition of unparalleled ferocity, paralyzed the Nazis' second-largest Messerschmitt factory at Regensburg and flew straight on to Africa.

The claims and losses in this day's work—288 enemy fighters destroyed, sixty B-17's missing—were both an indication of the scope of the fiercest air combats since the Battle of Britain, and a warning of what lay ahead before the back of the Luftwaffe could be finally broken. As the Fortresses crossed the enemy-held coast, waves of fighters rose to oppose them. All the way in—and in the case of the Schweinfurt formations, all the way out from the target—fresh squadrons of fighters were thrown in. The Germans used everything, FW 190's, Me-109's, Me-110's, Ju-88's, Me-210's, Do-217's, He-113's, and FW 189's. They were shot down in droves. As one navigator reported, *I can't remember looking out without seeing a bunch of them falling out of the sky like big dirty drops of rain.*

The Fortress formations, especially the lower squadrons, did not escape lightly. Some bombers came home on two engines. Others returned with half their crews dead or missing. Some fell in the Channel, others in the Mediterranean.

The price was not too high because the bombing—particularly at Regensburg—was magnificent. At Schweinfurt results were good: considerable damage was inflicted on the ball-bearing works, an aircraft-components factory was hit, the main railroad station and communications system were blasted. At Regensburg the entire weight of bombs landed inside the Messerschmitt factory area or on the adjacent airfield. All work at the plant was stopped. Six main workshops were hit, five being severely damaged. Storerooms and administrative buildings were wrecked; a hangar presumably used for engine installation was more than half destroyed. Thirty-seven single-engined aircraft dispersed on the airdrome were probably damaged by blast.

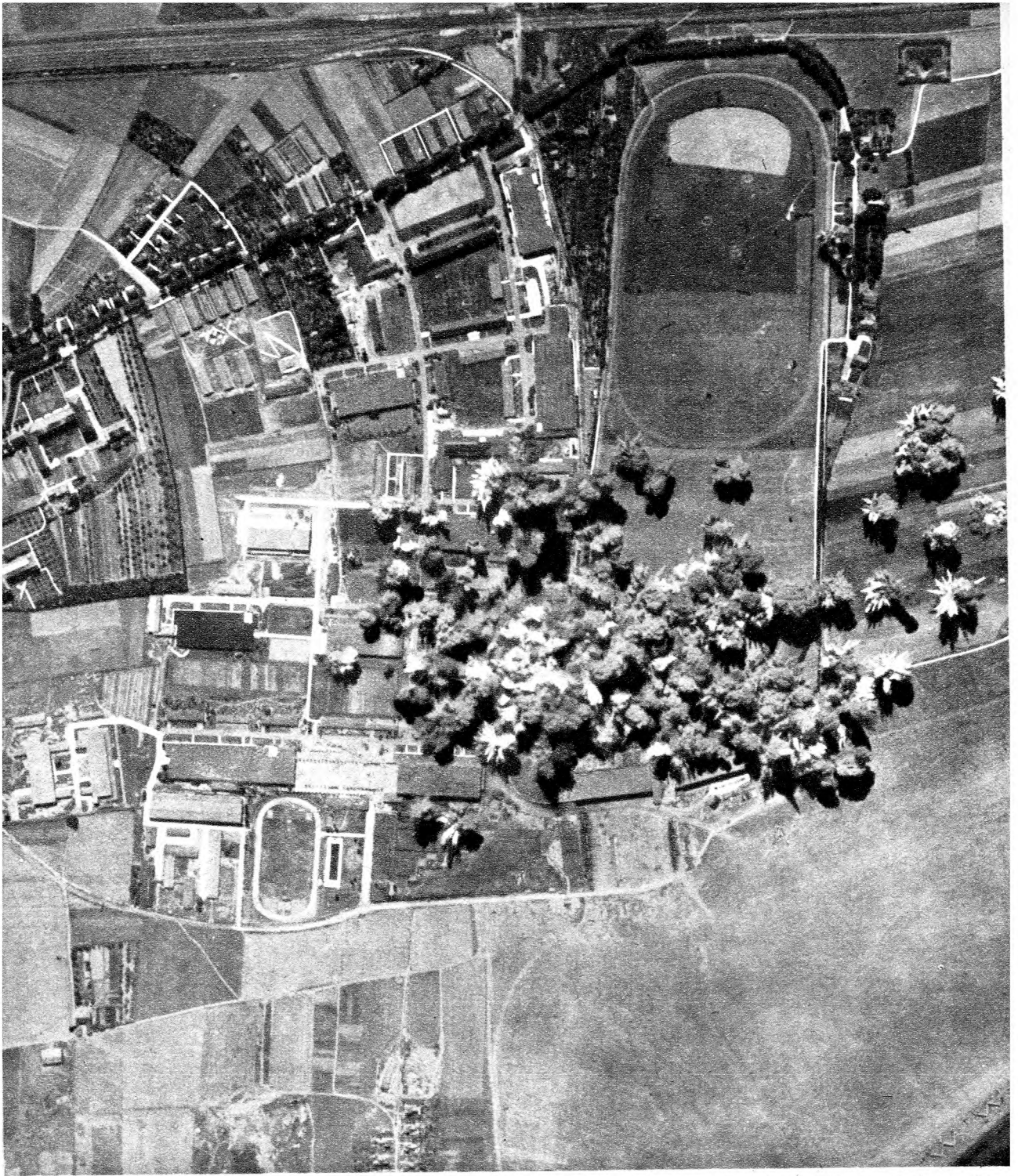
The accuracy of the bombing, coming as it did after hours of the most violent aerial combat, high-lighted the progress achieved by the bombardiers in one year of constant experiment. When he first Combat Wing hit the target so hard that

smoke obscured it from view, the second Combat Wing calmly swung around in a complete circle, made another bombing run after some of the smoke had blown away, and scored an equally effective concentration of hits. It was precision bombing at its best.

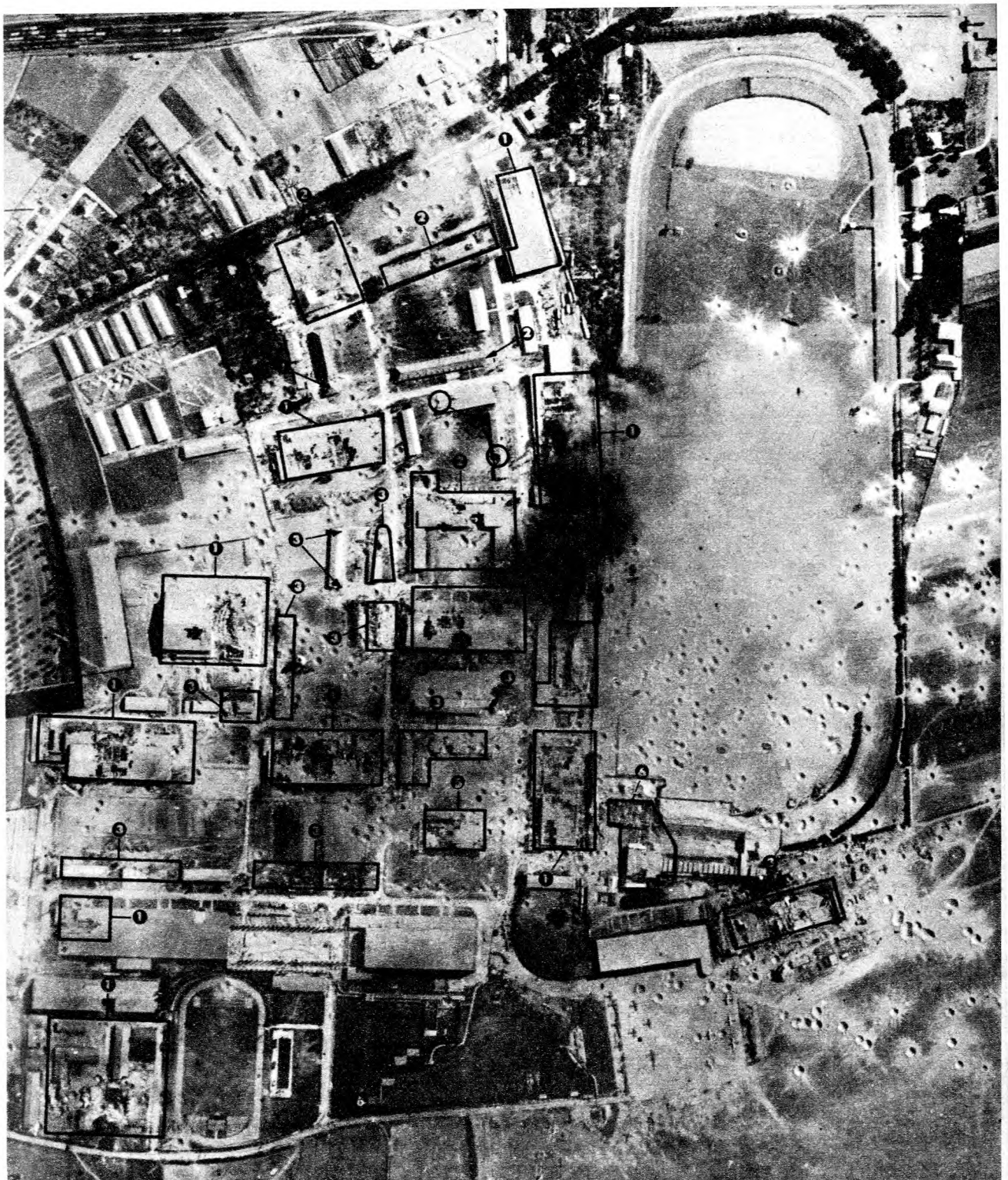
In a Fortress named *X Virgin*, a waist gunner was killed. Four men deliberately bailed out so that remaining crew members would have enough oxygen to take the ship over the target. When the bomb-release mechanism failed to work, a wounded gunner loosened the shackles with a screw driver, then jumped on the bombs until they fell free. In a Fortress named *My Prayer*, fire broke out and the ship went into a dive. All crew members bailed out except the pilot, copilot, and the top turret gunner, whose chute was so damaged by flames that he was unable to jump. The pilot finally brought the bomber out of its dive and the gunner, painfully wounded by a shell fragment in the leg, managed to smother the blaze with the help of the copilot. The gunner then took over the nose guns, the copilot the waist guns, and they held off enemy fighters until the Fortress was down to house-top altitude and the fighters gave up the chase. *We came home at 210 miles an hour, buzzing cities, factories, and airfields in Germany. It was the first legal buzzing I've ever done. We drew some fire, but I did evasive action and we escaped further damage. The people in Germany scattered and fell to the ground when they saw us coming, but in Belgium the people waved and saluted us. . . .*

Over Belgium, the copilot started jettisoning everything that could be spared. He came across a pair of shoes and, seeing a Belgian standing in a field cheering enthusiastically, tied the laces together and dropped the shoes to him. Running low on gas and without a navigator to guide them, the three men brought their plane across the Channel and landed it safely on an RAF airdrome.

Equally harrowing was the trip of *Pregnant Portia*, a Fortress in the task force that bombed Regensburg. Again a life raft became dislodged and tangled itself in the elevators. In vain, members of the crew tried to shoot it off; one gunner from Texas even tried to rope it. Enemy fighters, seeing that the Fortress was in trouble, gave it their best attention. *We could see the Alps in the distance by this time. Since we expected our tail to flop off any minute, we looked longingly at those mountains and prayed harder than we had ever prayed before. . . .*



**Regensburg Strike:** *Bombs from first Group over target land squarely on vital units of one of Germany's largest fight plane factories. Completed planes can be seen on apron in front of hangar, lower center*



**Regensburg Results :** *Two-thirds of this huge plant, making Me-109 fighter planes, severely damaged. (1) workshops, (2) offices or canteens, (3) unidentified buildings, (4) boiler house, (5) hangar, (6) gun-test range.*



Vapor trails at 25,000. Condensation in the upper altitudes often leaves a white trail behind each plane.

*Portia* made it over the Alps, but halfway across the Mediterranean it became evident that her gasoline would not be sufficient. Other Fortresses were having similar trouble. One pulled out of formation, on advice of the Group leader, and struggled to a crash landing in Spain. *Portia* flew until the fourth engine sputtered and went dead. The ditching was smoothly executed, but there was only one five-man dinghy for a crew of ten men. The other was still wrapped around *Portia's* tail; it was the last thing the crew saw as their ship sank. *She seemed to hate as much to leave us as we did to lose her. Honestly, the way she lunged and settled in the water, it looked as though she were a human thing, wanting to go along with us . . . I never want to spend another night like that. Five of us sat in the dinghy and five hung on outside. Don't let anyone tell you about the warm Mediterranean seas. It ain't so. The night got blacker and we got gloomier. When trails of daylight finally came up we were all half dead. With the sun, though, our spirits rose again and we took stock of ourselves. During the night everything we had—even the stuff in our pockets—had floated away. At eleven o'clock the little automatic radio transmitter we had went out and that is when we started praying in earnest. Incidentally, the following Sunday we attended church en masse!*

*Anyway, as the afternoon came on a B-26 sighted us and stayed right over us until one of those British Air-Sea Rescue launches came out and picked us up. We thought we were as hard as nails after all, we were a combat crew. But right then we felt like ninety-year-old men.*

The anniversary raids were studded with similar incidents. One pilot who had flown on the first mission one year before was forced down in the North Sea. A British seaplane landed beside him and picked up the entire crew. Unable to take off with such a load, it taxied all night toward the coast of England and was finally met by a rescue launch.

On the landing field from which the initial raid had been launched, a group of newspapermen held their collective breath as a crippled Fortress named *Rationed Passion* slanted in for a belly landing. It skidded safely along the runway and stopped a few feet from an old weather-beaten bomber used only for towing targets and other utility work. One of the newsmen, glancing at the faded name on the nose of the old Fort, recognized *Alabama Exterminator*, one of the twelve original Fortresses that flew against Rouen.

But the best picture of the terror and destruction attendant on a massed air battle such as the

one that took place over Regensburg was given by an officer who served as copilot of a Fortress in the last Group of the formation, a Group that consequently was hit harder than any other:

*At 1017 hours, near Woensdrecht, I saw the first flak blossom out in our vicinity, light and inaccurate. A few minutes later, two F.W 190's appeared at one o'clock level and whizzed through the formation ahead of us in a frontal attack, nicking two B-17's in the wings and breaking away beneath us in half rolls. Smoke immediately trailed from both B-17's, but they held their stations. As the fighters passed us at a high rate of closure, the guns of our group went into action. The pungent smell of burnt powder filled our cockpit, and the B-17 trembled to the recoil of nose and ball-turret guns. I saw pieces fly off the wing of one of the fighters before they passed from view.*

*Here was early action. The members of the crew sensed trouble. There was something desperate about the way those two fighters came in fast right out of their climb without any preliminaries. For a few seconds the interphone was busy with admonitions: "Lead 'em more" . . . "short bursts" . . . "don't throw rounds away" . . . "there'll be more along in a minute."*

*Three minutes later, the gunners reported fighters climbing up from all around the clock, singly and in pairs, both FW 190's and Me-109's. Every gun from every B-17 in our Group was firing, crisscrossing our patch of sky with tracers. Both sides got hurt in this clash, with two Fortresses from our low squadron and one from the Group ahead falling out of formation on fire with crews bailing out, and several fighters heading for the deck in flames or with their pilots lingering behind under dirty yellow parachutes. I noticed an Me-110 sitting out of range on our right. He was to stay with us all the way to the target, apparently reporting our position to fresh squadrons waiting for us down the road. At the sight of all these fighters, I had the distinct feeling of being trapped. The life expectancy of our Group suddenly seemed very short, since it appeared that the fighters were passing up the preceding Groups in order to take a cut at us.*

*Swinging their yellow noses around in a wide U-turn, a twelve-ship squadron of Me-109's came in from twelve to two o'clock in pairs and in fours, and the main event was on.*

*A shining silver object sailed over our right wing. I recognized it as a main exit door. Seconds later, a dark object came hurtling through the formation, barely missing several props. It was a man,*



**After Trondheim:** A flak hit left this engine smoking.



**After Battle.** Casualty being removed from bomber.





**Debit:** *A Fortress goes down in flames over Paris during a daylight attack on Nazi targets in France.*

*clasping his knees to his head, revolving like a diver in a triple somersault. I didn't see his chute open.*

*A B-17 turned gradually out of the formation to the right, maintaining altitude. In a split second, the B-17 completely disappeared in a brilliant explosion, from which the only remains were four small balls of fire, the fuel tanks, which were quickly consumed as they fell earthward.*

*Our airplane was endangered by falling debris. Emergency hatches, exit doors, prematurely opened parachutes, bodies, and assorted fragments of B-17's and Hun fighters breezed past us in the slip stream.*

*I watched two fighters explode not far beneath, disappearing in sheets of orange flame, B-17's dropping out in every state of distress, from engines on fire to control surfaces shot away, friendly and enemy parachutes floating down, and, on the green carpet far behind us, numerous funeral pyres of smoke from fallen fighters, marking our trail. The sight was fantastic: it surpassed fiction.*

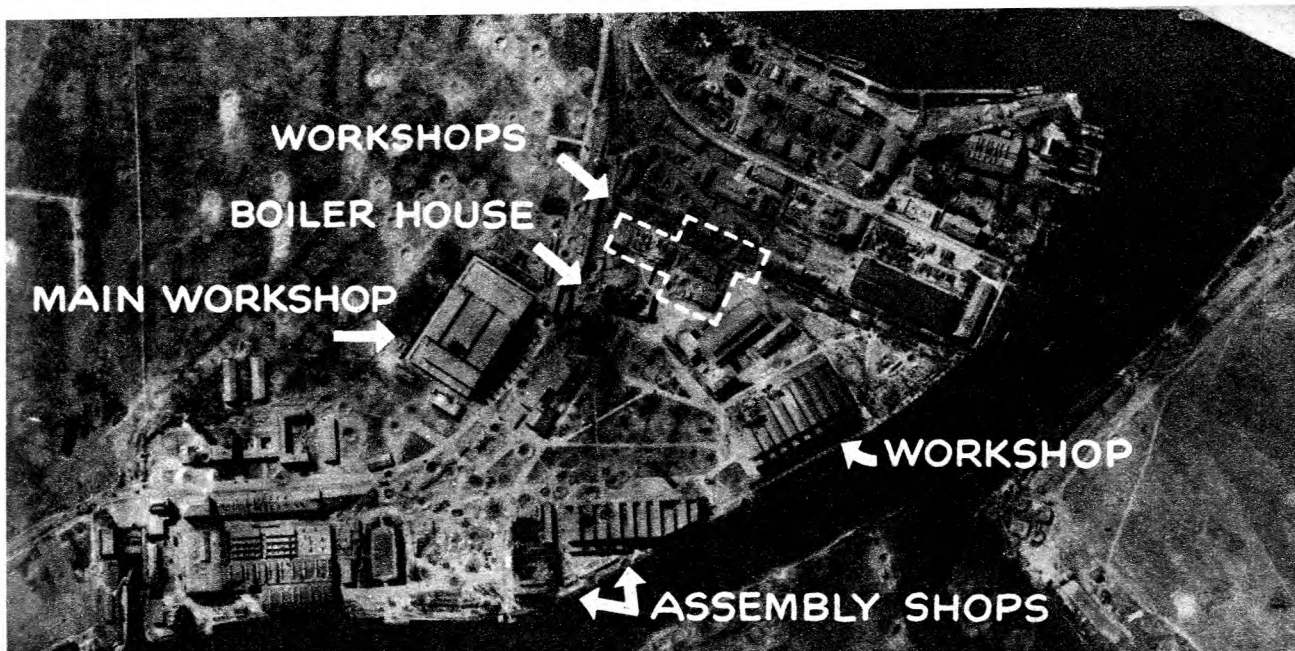
*On we flew through the strewn wake of a desperate air battle, where disintegrating aircraft were commonplace and sixty chutes in the air at one time were hardly worth a second look.*

*I watched a B-17 turn slowly out to the right with its cockpit a mass of flames. The copilot crawled out of his window, held on with one hand, reached back for his chute, buckled it on, let go, and was whisked back into the horizontal stabilizer. I believe the impact killed him. His chute didn't open.*

*Ten minutes, twenty minutes, thirty minutes, and still no letup in the attacks. The fighters queued up like a bread line and let us have it. Each second of time had a cannon shell in it.*

*Our B-17 shook steadily with the fire of its .50's, and the air inside was heavy with smoke. It was cold in the cockpit, but when I looked across at the pilot I saw that sweat was pouring off his forehead and over his oxygen mask. He turned the controls over to me for a while. It was a blessed relief to concentrate on holding station in formation instead of watching those everlasting fighters boring in. It was possible to forget the fighters. Then the top turret gunner's twin muzzles would pound away a foot above my head, giving a realistic imitation of cannon shells exploding in the cockpit, while I gave an even better imitation of a man jumping six inches out of his seat.*

*A B-17 of the Group ahead, with its right Tokyo tanks on fire, dropped back to about 200 feet above our right wing and stayed there while seven of the crew successively bailed out. Four went out the bomb bay and executed delayed jumps, one bailed from the nose, opened his chute prematurely, and nearly fouled the tail. Another went out the left-waist-gun opening, delaying his chute opening for a safe interval. The tail gunner dropped out of his hatch, apparently pulling the rip cord before he was clear of the ship. His chute opened instantaneously, barely missing the tail, and jerked him so hard that both his shoes came off. He hung limp in the harness, whereas the others*



**Credit:** Eighteen of 27 buildings are hit during attack on German aircraft factory at Warnemunde.

had shown immediate signs of life after their chutes opened, shifting around in the harness. The B-17 then dropped back in a medium spiral and I did not see the pilots leave. I saw it just before it passed from view, several thousand feet below us, with its right wing a sheet of yellow flame.

After we had been under constant attack for a solid hour, it appeared certain that our Group was faced with annihilation. Seven of us had been shot down, the sky was still mottled with rising fighters, and it was only 1120 hours, with target-time still thirty-five minutes away. I doubt if a man in the Group visualized the possibility of our getting much further without one hundred per cent loss. I know that I had long since mentally accepted the fact of death, and that it was simply a question of the next second or the next minute. I learned firsthand that a man can resign himself to the certainty of death without becoming panicky. Our Group fire power was reduced thirty-three per cent; ammunition was running low. Our tail guns had to be replenished from another gun station. Gunners were becoming exhausted.

One B-17 dropped out of formation and put its wheels down while the crew bailed out. Three Me-109's circled it closely, but held their fire, apparently ensuring that no one stayed in the ship to try for home.

Near the I.P., at 1150 hours, one hour and a half after the first of at least 200 individual fighter attacks, the pressure eased off, although hostiles were still in the vicinity. We turned at the I.P. at

1154 hours with fourteen B-17's left in the Group, two of which were badly crippled. They dropped out soon after bombing the target and headed for Switzerland.

Weather over the target, as on the entire trip, was ideal. Flak was negligible. The Group got its bombs away promptly on the leader. As we turned and headed for the Alps, I got a grim satisfaction out of seeing a rectangular column of smoke rising straight up from the Me-109 shops.

The rest of the trip was a marked anticlimax. A few more fighters pecked at us on the way to the Alps. A town in the Brenner Pass tossed up a lone burst of futile flak. We circled over Lake Garda long enough to give the cripples a chance to join the family, and we were on our way toward the Mediterranean in a gradual descent. The prospect of ditching as we approached North Africa, short of fuel, and the sight of other B-17's falling into the drink, seemed trivial matters after the vicious nightmare of the long trip across southern Germany. We felt the reaction of men who had not expected to see another sunset.

At 1815 hours, with red lights showing on all the fuel tanks in my ship, the seven B-17's of the Group which were still in formation circled over a North African airdrome and landed. Our crew was unscratched. Sole damage to the airplane: a bit of ventilation around the tail from flak and 20-mm. shells. We slept on the hard ground under the wings of our B-17, but the good earth felt softer than a silk pillow.



**Streaks in the sky.** *A squadron of fighters leaves vapor trails as it rides herd on a Fortress formation.*

*Germany heard a clashing of arms all over the sky;  
the Alps trembled with uncommon earthquakes. . . .  
Never did lightnings fall in greater quantities from a  
serene sky, or dire thunders blaze so often.*

Virgil—*Georgics*, Book 1 (circa 30 B.C.)

ON AUGUST 17, 1942, twelve Flying Fortresses stepped accurately but not heavily on the little finger of the Nazi war machine. They penetrated fifty miles into France, dropped eighteen tons of bombs on the marshaling yards at Rouen, and returned intact.

On August 17, 1943, three American aerial task forces, totaling more than 350 Fortresses, struck two hard blows at the industrial heart of Germany. Two of the forces, dropping 424 tons of bombs on Schweinfurt, fought their way back to Britain. The third force, hitting Regensburg with 298 tons, roared on across the Mediterranean. As the brakes squealed on African runways and the tired men climbed down, a cycle became complete. The VIII Bomber Command's first year over Europe was ended.

What the year proved, what it added up to, cannot be summarized in a phrase. The official figures: 16,977 tons of bombs dropped, 2050 enemy fighters destroyed, 472 bombers and 4481 men missing, do not give the complete picture—any more than Goebbels' mid-August understatement that the war in the air was Germany's most serious problem. No one hero story can convey all the heroism, no one example of bomb damage can indicate the tremendous cumulative strain on Nazi industrial resources. The scale is too large for easy simplification.

Fortunately, there is no need for such capsule conclusions. It is unnecessary, at this stage of the war, to convince anyone of the military importance of air power. The purpose of this book has been factually to record the testing of a new concept of vertical warfare. The final evaluation is yet to be made, but already a general trend of the results is apparent.

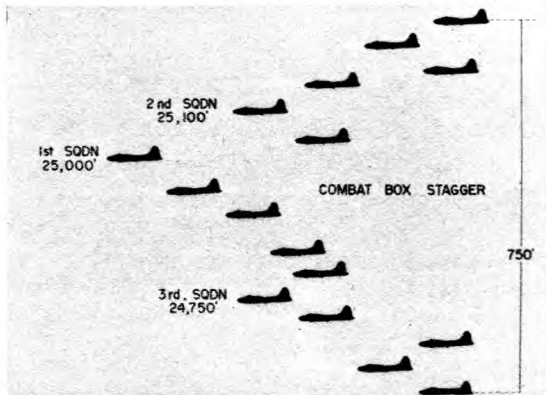
The aim of any bombing program is destruc-

tion of enemy objectives. Here is an inventory of the VIII Bomber Command's achievements for its first year of operation:

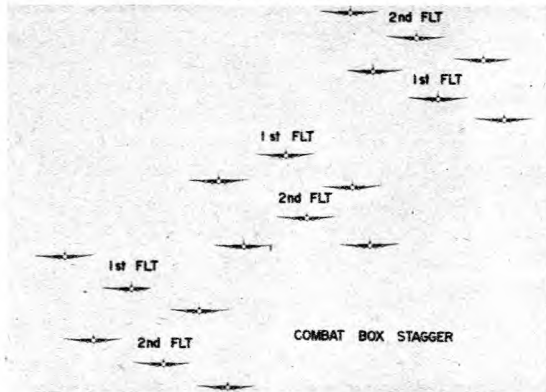
<i>Targets</i>	<i>Attacks</i>
U-Boat Operating Bases	22
U-Boat Building Yards	19
Ship-Repair Yards	4
Airfields	18
German Air Force Installations	11
Synthetic-Rubber Plant	1
Magnesium, Aluminium and Nitrate Works	1
Transport and Shipping Facilities	26
Industrial Plants (tire, automotive, steel, etc.)	6
Aircraft Factories	8
Industrial Targets of Opportunity	8
Total	<u>124</u>

The results of these 124 attacks, of course, varied. A few were relative failures, others moderate successes, and some prodigious triumphs. Fortunately, the improvement in the bombing which came about as the first year's campaign progressed placed most of the notable successes in the second six months of operations—when targets of more importance were attacked. Thus, the Hüls rubber plant was knocked out for an undetermined period, the Heroya aluminum plant blasted to pieces, the Renault plant crippled; and the Messerschmitt fighter factory almost totally destroyed—all these high-priority objectives were attacked after the American forces had perfected their bombing in the early raids.

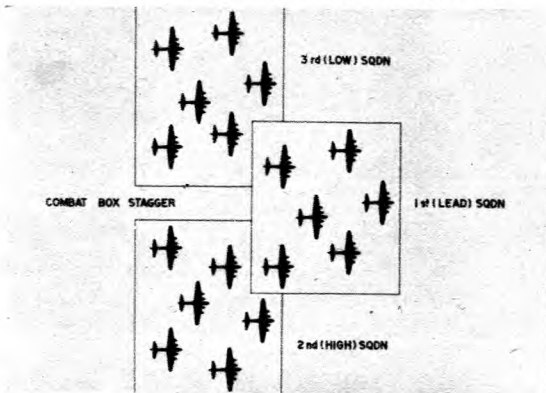
One factor hampering the appraisal of the returns from strategic bombing is the interval



**Side view of combat box.** *The symmetrical formation of many heavy bombers is not arranged for aesthetic reasons. There is an extremely practical purpose. . .*



**Tail view.** *That purpose is to utilize the great defensive power of our Forts and Libs by providing maximum mutual protective fire of the bomber's guns. . .*



**Plan view.** *The positions indicated in these diagrams represent the ideal battle formation. In combat it is seldom possible to attain this degree of perfection.*

between destruction and effect. A naval squadron sinks an enemy cruiser and there is one less enemy to face, an infantry division captures a town and the front lines move forward, an air support squadron wrecks a transport column and the tactical advantage is instantly obvious—but this immediacy is lacking in strategic bombing.

A heavy bomber force destroys a synthetic-rubber plant and plugs the source of one third of the enemy's supply, but the military effects of the blow may not become apparent for six months. A marshaling yard is blown to bits, forcing upon the enemy an expenditure of labor, rails, locomotives, and cars that he can ill afford; an aircraft factory is wrecked and its production of fighters ceases. Again, the results may not be immediately obvious. But sooner or later the inevitable cost of these losses makes itself felt—a thousand armored cars are withheld from combat for lack of tires; for lack of railroad rolling stock a reserve division reaches its position a day too late; half a hundred enemy fighters never reach the front to blast our troops in transport lines. In an accumulation of such economic shortages and the consequent military dislocations are the seeds of final disaster.

The first five months of the operational life of the VIII Bomber Command were kindergarten months. The exponents of high-altitude precision bombing had to walk before they could run. In the process of learning to walk they sometimes stumbled. But the case these pioneers proved was more important than the damage they inflicted. Their assaults on the submarine bases, their strikes on Nazi industrial targets in France, the attrition and division of strength they forced upon the Nazi fighter command—these achievements represented valuable contributions to the Allied war effort. Just as valuable was the evidence that such contributions were possible, in daylight and from five miles up.

The kernel of the proof was the inability of the Germans to prevent American daylight bombers from attacking their objectives. Time and again in the Battle of Britain, Spitfires and Hurricanes intercepted Nazi raiders and drove them away from their targets. The American bombers were never stopped. Weather sometimes made recall necessary, but unless that recall came through the Forts and Liberators went on to their target. The Germans are trying every defense they can think of, but neither flak nor fighters, nor aerial bombs nor rocket can-

nons, have ever deflected an American formation from its objective.

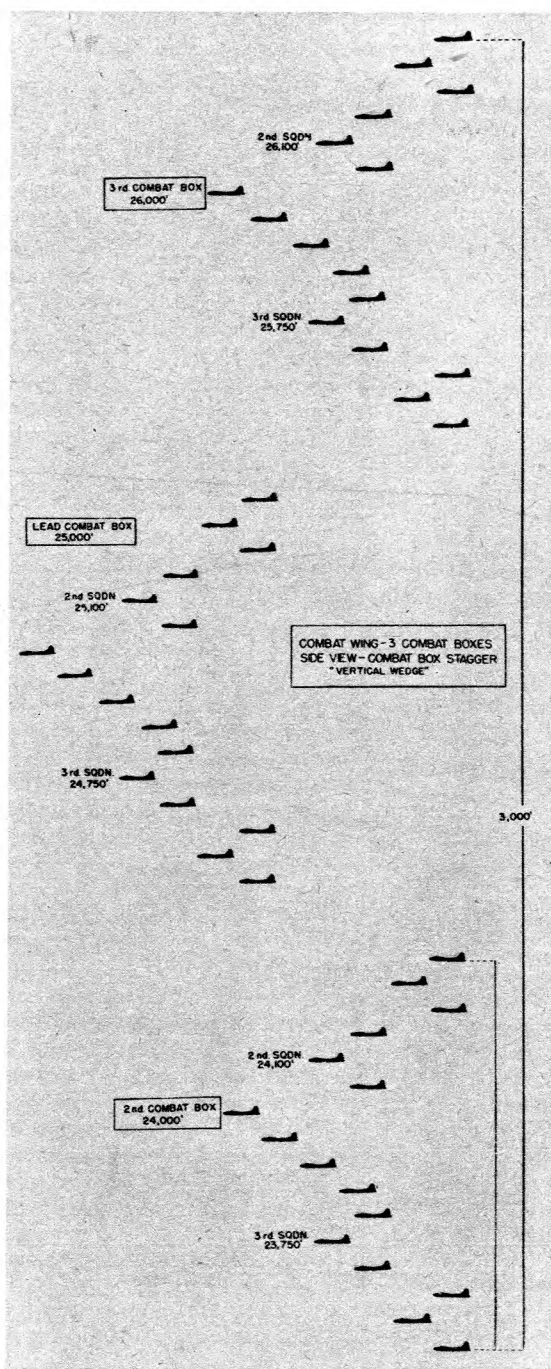
It was this fact, plus the parallel success of the RAF's night operations, that resulted in the Casablanca mandate to the British and U. S. bomber forces in the United Kingdom. At Casablanca the Combined Chiefs of Staff ordered a joint British-U. S. air offensive to accomplish "the progressive destruction and dislocation of the German military, industrial, and economic system and the undermining of the morale of the German people to the point where their capacity for armed resistance is fatally weakened." The term "fatally weakened" was interpreted as meaning so weakened as to permit initiation of final combined operations on the Continent. That order was given in January. The two bomber commands lost no time in setting about the job.

To the RAF fell the task of destroying Germany's great cities, of silencing the iron heartbeat of the Ruhr, of dispossessing the working population, of breaking the morale of the people. The mission of the VIII Bomber Command was the destruction of the key industries by which the German military machine is sustained.

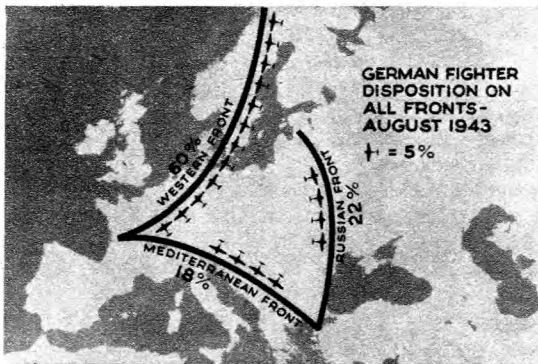
How well the RAF succeeded in the next eight months, sending six, seven, eight hundred heavy bombers over a target, dropping four or five times the weight of explosives that fell on Coventry, may be judged by the desperate outcries of the German press and the incontrovertible photographic evidence brought back by reconnaissance planes.

Meanwhile the American bomber command, with a striking force which in January, 1943, was about one seventh the size of the RAF, was hitting the key objectives of the Nazi war industry. As the American bomber force grew and the weight and variety of the blows increased, German defenses stiffened. Concentrations of anti-aircraft guns mounted and Nazi fighter strength on the Western Front rose sharply. Between January and July the number of enemy first-line single-engine fighters specifically charged with neutralizing the daylight raiders was almost doubled, largely at the expense of other fronts. Necessity to defend the homeland cost the Germans what little hope they had of maintaining air superiority in Russia or air equality in Africa.

For the Germans the only answer to the bomber offensive was the stepping up of fighter-plane production. This decision had become



A combat wing flies this formation except during the actual bombing. It provides maximum forward fire power. Larger formations are difficult to control.



apparent months before, when their aircraft industry began to shift from bomber to fighter production—that is, from offensive to defensive weapons.

The Allies, well aware of this strategy, took energetic steps to meet it. More and more the thrusts of precision bombing were aimed at German aircraft factories. In July the VIII Bomber Command attacked plants involving sixty-five per cent of Germany's Focke-Wulf production, seventy-one per cent of her airplane-tire capacity. The anniversary raid of August 17 robbed the Nazis of the use of their second largest Messerschmitt plant at Geggensburg. A few days earlier Liberators based on Africa had struck the sister factory at Wiener Neustadt, not far from Vienna. Meanwhile, over Russia, Italy, and Germany the attrition of the Luftwaffe went on.

As these words are written, the battle for air supremacy in Europe is in full swing. If the Luftwaffe can be pushed over the edge of the cliff as it was in Africa, as it was in Sicily, as it will be in Germany if the pressure is maintained, the collapse of Germany within a foreseeable time becomes certain.

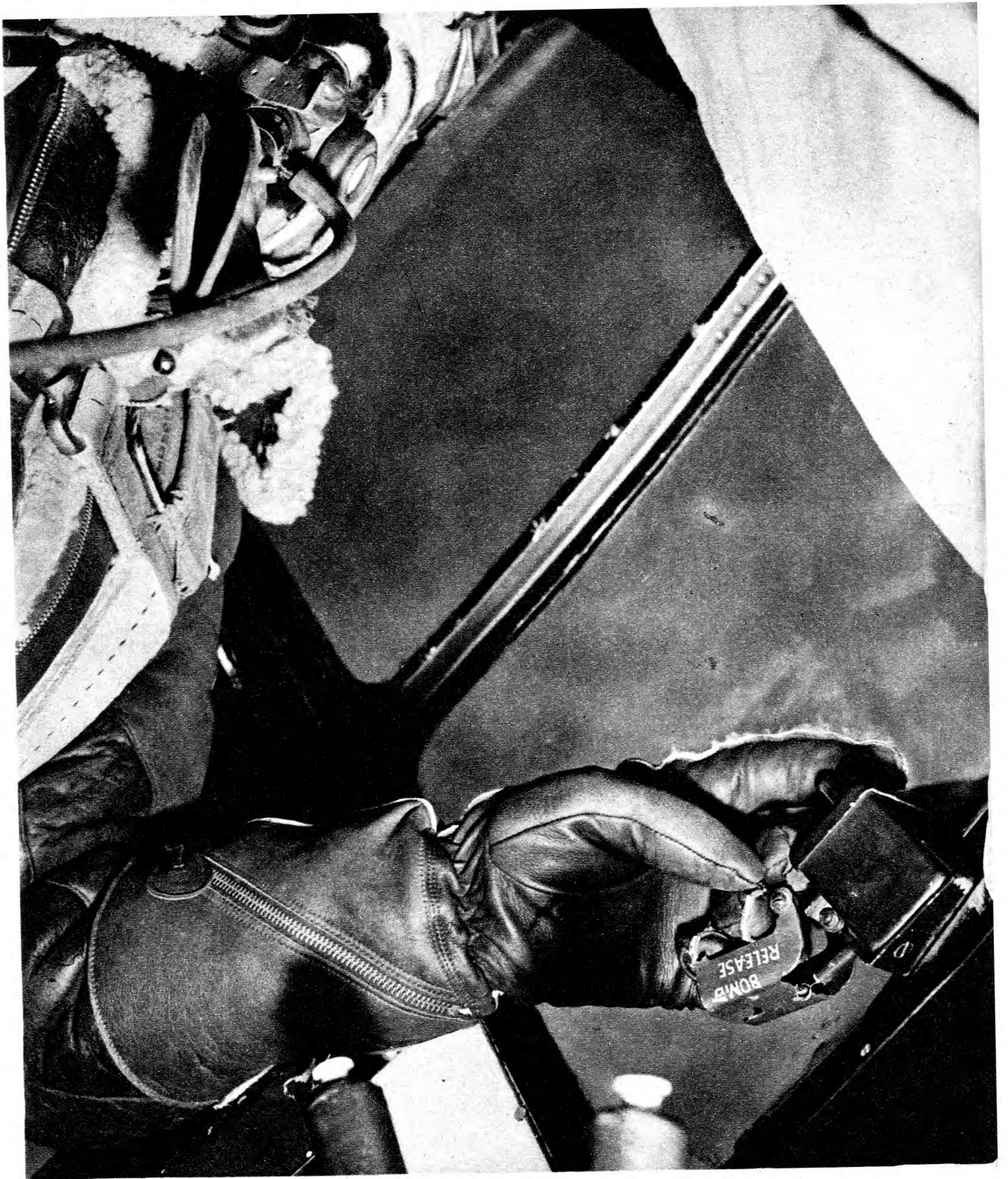
This is one answer to the question so often raised, "Will bombing win the war?" To the military logician, the question is beside the point. Aerial assault is directed both at the enemy's will to resist and his means to resist. One may collapse before the other; either eventuality is desirable. Bombing will be carried out to the fullest extent in any case. Whether or not German morale cracks, the work of destroying the enemy's fighting capacity must go on. Daylight precision bombing, in co-operation with RAF night area bombing, is the most economical and practicable means now at hand for achieving that destruction.

The word "economical" is used advisedly. All war is hideously expensive. But compared to damage inflicted, the cost of aerial attack in dollars and cents as well as human lives is moderate. In large-scale bombing, the balance sheet shows the attacker well in the black, the defender hopelessly in the red. To meet the challenge Germany maintains more than fifty-eight per cent of her fighter strength and 39,000 anti-aircraft guns on the Western Front. A million men serve the guns, searchlights, and barrage balloons and ten per cent of the total population give all or part of their time to the air-raid services. In devastating Hamburg, the RAF and the USAAF lost 103 planes out of some 2700 sent over the target. At a cost of some \$25,000,000 worth of equipment lost, therefore, and less than a thousand men missing, the two bomber commands paralyzed Germany's greatest port, and destroyed an incalculable amount of industrial property. At Vegesack, in an attack which cost the Germans at least four submarines, some fifty fighters destroyed, and vast damage to the shipyards, the Americans lost two bombers.

The picture is not always so rosy. In the anniversary battles of August 17, the VIII Bomber Command lost more aircraft in a single day than it had lost in the first six months of operations over Europe. The price paid was no higher than expected and was more than justified by the results achieved. But it indicated clearly that the battle for air supremacy is not yet won. German anti-aircraft defenses are still on the increase; their new fighters are more heavily armed. The air war in the European Theater of Operations is becoming a slugging match between offense and defense. The side with the most stamina will win by a knockout.

Whether the decision is reached sooner or later, the VIII Bomber Command will—if present plans are followed—emerge from the struggle as one of the most polished and powerful instruments of aerial destruction ever assembled. When the end comes in Europe, this force of men and planes, this accumulation of skill and experience, will join its strength with the strength of the American bomber commands now fighting on other combat theaters. As one force, this mighty armada will turn its attention elsewhere. . . .

Japan has been listening to the ominous sound of the thunder in the West. One day our lightning will strike in the East.

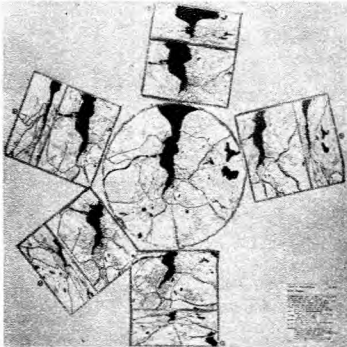






### Perspective Target Map

*These aerial maps are designed to give instant recognition of target areas to pilots, navigators, and bombardiers. The maps are printed in color on a sheet 32 inches square. In the center is a circular map of the target area covering a radius of seven miles. This center map is surrounded by perspective drawings of the target area as seen from the different selected approaches. Two drawings are devoted to each approach. The outer drawings, for the use of the navigators, shows the target approach as it appears from a distance of fifteen miles and an altitude of 26,000 feet. The inner drawing, for the bombardier, shows the target in larger scale as it appears from seven miles at the same altitude. The target area shown in this case is Kiel, Germany.*



# GLOSSARY

**abortive**—an aircraft is said to be abortive when, owing to mechanical or personnel failure, it returns from an operational mission without having dropped its bombs in the target area.

**Air Division**—see Organization Chart on page vi.

**air-to-air bombing**—the bombing of one plane by another—technique used by both Jap and Nazi air forces against American heavy bomber formations.

**A.P.**—aiming point for bombardiers.

**Aldis lamp**—hand light device used in signaling to and from aircraft.

**B-26**—American twin-engine, medium bomber.

**ball turret**—the gun turret that protects the underside of a bomber.

**briefing**—instructions given to combat crews before a mission.

**buzzing the field**—diving low over an airdrome.

**C.G.**—Commanding General.

**cleat tracks**—tractors used for moving planes on the ground.

**Combat Wing**—see Organization Chart on page vi.

**D.F.C.**—Distinguished Flying Cross.

**dispersal point or area**—sites where bombers are parked.

**Do**—Dornier (German aircraft).

**dry run**—practice mission.

**echelon**—a unit of command.

**feather the prop**—when an engine fails, the blades of the propeller can be “feathered,” i.e., turned into the wind so that there is a minimum of wind resistance.

**E.T.A.**—estimated time of arrival.

**flak**—antiaircraft fire (Flieger Abwehr Kanonen).

**Frisians**—islands off the German North Sea coast.

**Flak officer**—an officer who has made a special study of enemy antiaircraft installations.

**Flying Control Officer**—an officer in charge of air traffic over an airdrome.

**Front**—the line of division between two air masses (weather).

**FW**—Focke-Wulf (German aircraft).

**G.I.**—Government Issue.

**Group**—see Organization Chart on page vi.

**He**—Heinkel (German aircraft).

**intercom**—intercommunication system inside a bomber.

**I.P.**—initial point, the point where the bombing run begins.

**Jerry**—slang for German soldier.

**Ju**—Junkers (German aircraft).

**Mae West**—slang for inflatable life vest.

**Me**—Messerschmitt (German aircraft).

**Mean Point of Impact**—planned center of bomb concentration.

**milk run**—slang for an easy or frequently repeated mission.

**motor pool**—depot for motor vehicles.

**nacelle**—metal cowling around an engine.

**Nissen hut**—tunnel-shaped hut of corrugated iron with cement floor.

**O.D.**—olive drab.

**Operations room**—headquarters of staff controlling operation of aircraft.

**perimeter track**—a concrete runway that encircles an airdrome.

**pfc**—private first class.

**P-47**—American fighter plane (Thunderbolt).

**pranged**—RAF slang for “smashed” or “wrecked.”

**sweating it out**—Slang for waiting under painful or uncomfortable circumstances.

**slip stream**—the blast of air from a propeller.

**Table of Organization**—plan defining rank and number of personnel in a given unit.

**talc**—transparent plastic.

**Tokyo tank**—additional gasoline tanks carried in wings of Fortress.

**T.O.T.**—time over target.

**troposphere**—atmospheric layer below the stratosphere.

**twin fifties**—two .50-caliber machine guns mounted together.

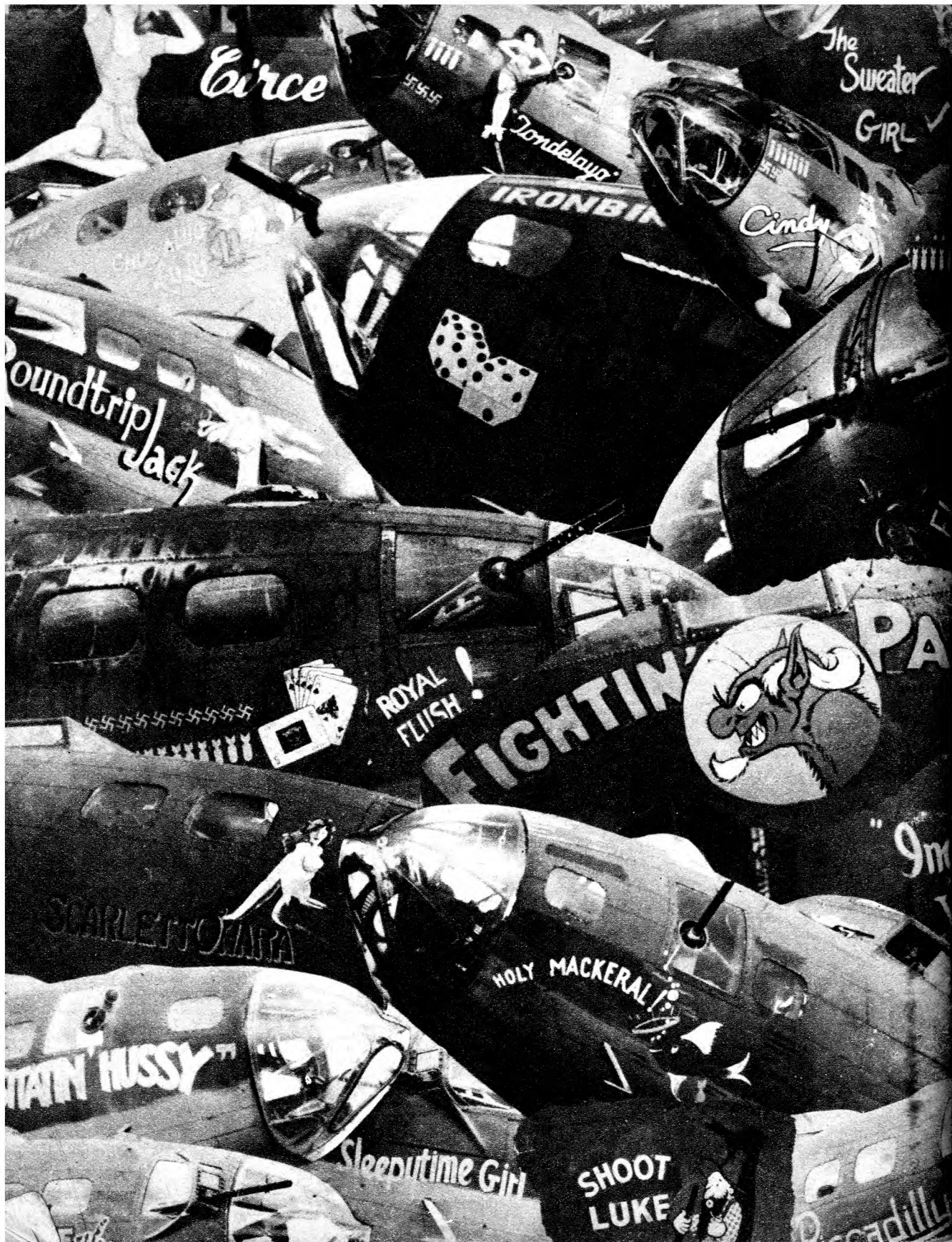
**vector**—to direct a plane in the air to specific point.

**waist gates**—windows in the sides of a bomber.

**Watch officer**—operations officer on duty.

**wing ships**—the bombers that fly on either side of an element leader.

**zero minus four**—four minutes before zero hour—zero hour being any arbitrary time point in the schedule of a bombing mission.



# CONTENTS

## The U.S. Army Air Forces' Official Story of the VIII Bomber Command's First Year over Europe.

**1. MISSION 95.** The complete story of a typical late-stage attack on Germany by the VIII Bomber Command, from the first decision to send out the mission until the last strike photo is pulled that night.

**2. FROM FIVE MILES UP.** The history, told in terms any layman can understand, of the conception and development of American high-altitude precision bombing. This chapter sets the scene for our entire operation in the European theater, telling *why* we tried to do *what* we tried to do.

**3. ACT 1, SCENE 1.** The story of the early days. The arrival of General Eaker as Bomber Commander in England. The "symbolic" raid of July 4th. "Arrival of aircraft: 1 B-17-E. Total: 1." The first kindergarten missions.

**4. LUFTWAFFE OVER LILLE.** The official and eye witness accounts of our first major air battle, as the American spearhead and the massed strength of the Luftwaffe collide over Lille. The claims problem and how it was worked out. The amazing durability of the Forts. An Air-Sea rescue.

**5. TWELVE FEET OF CONCRETE.** We hammer the submarine pens at La Pallice, Lorient, and St. Nazaire. Formation of "Junior"—the 12th Air Force. The medium-level raid. The Nazis move in their best fighters and best flak. How we kept changing our tactics, modifying our plans. "You always get good trouble over St. Nazaire." Operational anecdotes.

**6. PARLOUS DAYS.** Station life from November '42 to the Casablanca conference in January. Restricted operations and why. What it's like to lunch at London one day and be a human target five miles up over France next morning. The problem of "the full breakfast table." Casablanca and the questions on which the future of the VIII Bomber Command depended.

**7. TARGET: GERMANY.** We join the RAF in the Battle of Germany. First attacks against port installations and marshaling yards. Rennes, Vegesack, Bremen. Story of the *Southern Comfort*. The first deep penetration attack. Jack Mathis' last flight.

**8. BATTLES IN THE SKY.** The *Southern Comfort* again—"I could see one of them wearing my bathrobe." The attack on the Renault factories. A Wing Commander's informal notes on one sortie. Bremen—and the most vicious fighter concentration yet encountered. One navigator's story. How a ball-turret gunner won the Congressional Medal of Honor.

**9. MEN, MUD, AND MACHINES.** What it takes to build an air base. One enemy the engineers can't arm themselves against. Why it takes some 75,000 men to put 500 heavy bombers over an enemy target. The job of the Army Service Forces and the Air Service Command. Believe-it-or-not figures that are facts.

**10. THE OLD ONE-TWO.** The German defense network against our air attack. Air-to-air bombing and rocket guns fail to stop the Forts. The air battles from the destruction of the Focke-Wulf plant at Bremen on May 17, to the end of the "first phase" of the bombing offensive on July 1st. We triple our size and expand our tactics almost overnight. A Sergeant Gunner's diary. Tactical deception.

**11. THE LOG OF THE LIBERATORS.** The story of the Liberators in the European theater. A freak accident. A Lib pilot describes Kiel. The attack on Ploesti oil fields. "Those German fighters used non-habit-forming tactics!" Summing up of the attack.

**12. FULL STRIDE.** Operations from July 1 to the time this manuscript went to press. The cyclonic air battles of July. "Blitz week." The men of the *Happy Daze*. Story of grim fortitude. The Thunderbolts. The "intruder" Flying Fortress. Freak accidents. August 17th over Regensburg—one year to the day after the VIII Bomber Command had started operations over Europe—when the sky was cluttered with falling planes and bodies. Eyewitness stories. "Each second of time had a cannon shell in it."

**13. THE SUMMING UP.** What the year over Europe had proved. An inventory of achievements. What the immediate future holds; the continued destruction of Germany, her war potential, her will to fight. The future: forging a weapon here that will play its part in the shattering of Japan.

Target: Germany