

The Torretta Flyer

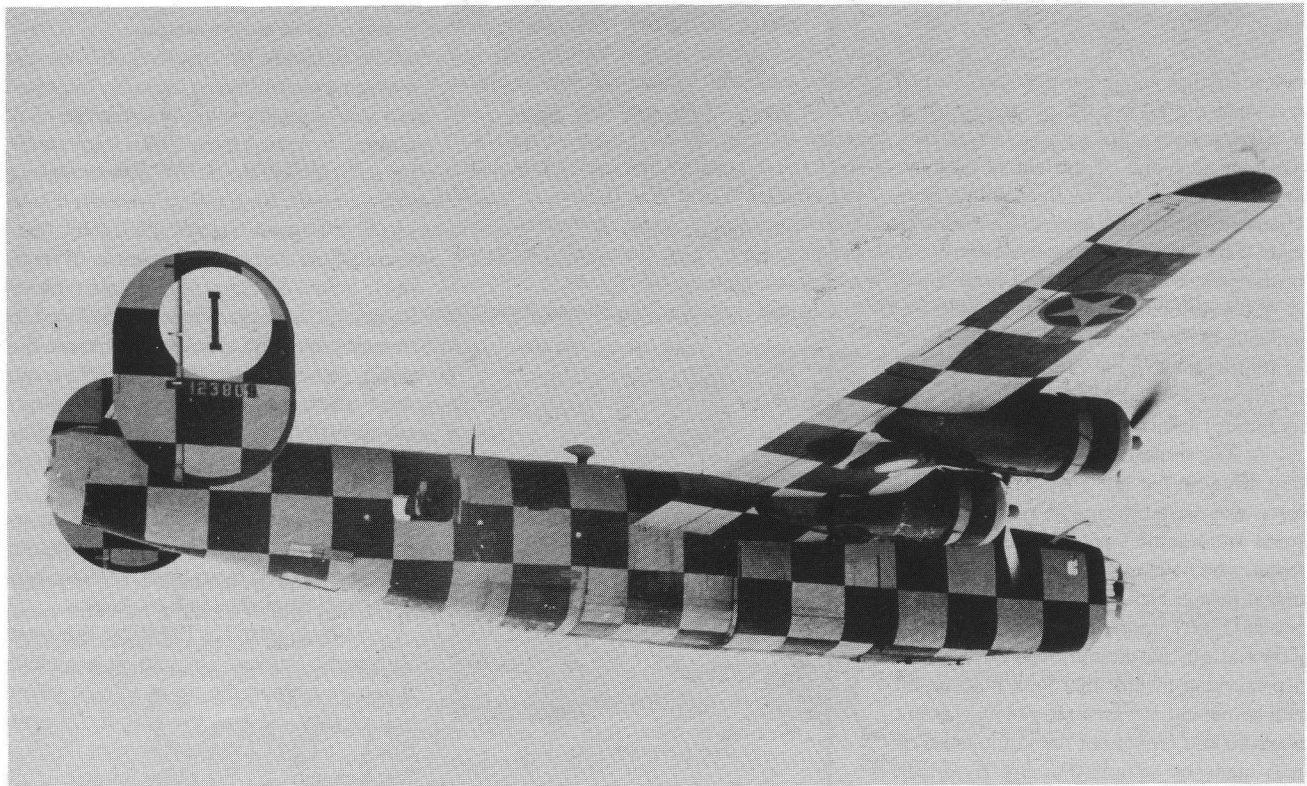
Friendly Rivals

Was the **8th AF** better than the **15th**? Was the **B-17** better than the **B-24**? You may not agree with the report starting on page 7. This story adds more fuel to the 50 year old questions. Which was better? We have added support to the B-17 vs the B-24 controversy by reprinting the letters to the editor from the Wall Street Journal April 18, 1989, that are mostly favorable to the B-24. Readers are urged to add their comments pro or con to these two questions. See the story starting on page 7.

Torretta Flyer No 21

Winter 1991-1992

Redondo Beach, California



Assembly Ship used by the 448th Bomb Group ,8th Air Force . Tony North photo. See page 2 for details.

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View From The Editor's Desk

"It's the same old story, the 8th gets all of the glory," Well so it seems, But . . . ?"

After the 1991 reunion in Kansas City, Bea and I travelled to England for a short vacation before resuming association work. We had been to the UK before, but even with our previous experience, we were overwhelmed by the English hospitality and friendliness everywhere we went.

In London near Leicester Square I was in a bookstore that specialized in aeronautical books, when a chance encounter with an English gentleman occurred. He had overheard me asking the proprietor about WWII war books. He approached and advised me that one of the authors, whose books I had been seeking lived not far from where we had planned to visit. This set off a chain of events that was to lead to our meeting some famous writers whose books are in the Association's collection. The object of these meetings was to obtain material for future issues of the *Flyer*. In this regard the trip was very successful. You'll be seeing some of these stories in upcoming issues.

We drove into East Anglia (Yes, they drive on the left) where the 8th Air Force was based during WWII. What we found were some very dedicated English people who have established several museums at former airfield used by the 8th AF. Bea and I were impressed with the sincerity of the staffs in that their primary interest was in preserving history that took place upon their homeland. It was not to glorify war, but to record and remember the ultimate sacrifices made by so many young American airmen. From everyone we met, the story was the same, whether authors or collectors, the prime importance was the preserving of the events that took place so long ago, and not for any personal gain. At Thorpe Abbots and Framlingham, private citizens have restored the tower buildings and have reconstructed the curved metal buildings (quonset) that were familiar sights on many allied airfields during WWII. Inside the towers they have collected memorabilia, documents, photographs, artifacts and aircraft parts in

museum displays that are truly remarkable, considering that all labor is strictly voluntary.

In the city of Norwich, the all B-24, 2nd Air Division Association, 8th Air Force has established a memorial library that sits within the main central library. After entering the main entrance, the 2nd Air Division collection is off to the right where it occupies floor space paralleling a wide passageway. Above the top row of books, replicas of the group's tail insignias are placed. Just below each print a memorial book is placed with a listing of the crewmen who did not return. The library itself consists mainly of works dealing with American culture. There is a smaller World War II history section and current American magazines and newspapers as well. The collection is not specialized or complete enough for use by scholars, but instead is used as a reference library by



Joe Kennedy Jr.

writers and anyone interested in American subjects. When we visited the library on several occasions, we found it quite busy. All of the patrons were British. The library was established many years ago by the members of the 2nd Air Division Association, and they have supported the library ever since, paying all necessary costs, including the salary of an American librarian, Phyllis DuBois who alone services the collection. The 2nd Air Division, part of the 8th AF, was composed of 14 groups as

compared to the whole 15th AF of only 21 groups. As can be seen, it would take a large organization to support such an endeavor.

Through the efforts of the librarian, we were able to meet Tony North, formerly head of the library who is an avid collector of B-24 photographs. It was through him that the cover picture was obtained. We chose it because it is quite striking even though a bit outlandish, and because to the best of my knowledge this type of assembly was not seen in the 15th Air Force. It was the assembly ship of the 448th Bomb Group. The airfields of East Anglia were often covered with a thick blanket of clouds, necessitating a slow climb through the clouds. The brightly colored assembly ships would fly around shooting flares to attract the groups' planes now circling in an effort to locate the group leader. The assembly ship would assume group lead for a period, but would peel off and return to base before the group entered enemy airspace.

Probably, because the Italian weather was somewhat different, assembly ships were not used by either the 461st or the 484th Groups. Instead, several P-40s were used by group commanders at Torretta to assist in tightening the formations. Towards the end of the European war, as the fighter threat diminished, the formations began to spread out to lessen the danger of mid-air collision. Inversely, the larger formation reduced the mutual protection afforded by massed firepower. When fighters did appear, the results were often disastrous. You will note the assembly ship shown on the cover is an older "D" model that was retired from active combat with the 8th Air Force.

The museums at Thorpe Abbots and Framlingham display parts of crashed aircraft from WWII operations that have been excavated from sites in East Anglia.

On August 12, 1944, the skies near Blyburgh, England, lit up in a gigantic flame, mushrooming up in a huge yellow ball of fury. It was the end of "Zootsuit Black," a PB4Y Liberator bomber flown by Joe Kennedy Jr., the older brother of the future president, John Kennedy. The aircraft had been loaded nose to tail with Torpex, an explosive thought to be stable. The aircraft, a B-24J-125, serial 42-11007, transferred to the US Navy as Bur No 32271, was being flown in a secret operation known as Aphrodite, on a one way mission to bomb a secret weapons site across the channel in German held territory at Mimoyecques. The laden bomber was flown by live crew until the aircraft was in a position where it could be controlled from a mother ship by radio.

Just before command was turned over to the mother ship, the live crew were to parachute out of the flying bomb. It is believed that when Kennedy turned on the autopilot to stabilize the plane before jumping the ship blew up. Joe Kennedy's remains were never found but pieces of his aircraft were found years later and are now on display at Framlingham, including a 3 by 4 foot section of the bomb bay door. The rollers are rusted solid, but the aluminum is in remarkable condition. It isn't often one gets a chance to touch a bit of history, but your editor did.

The excavation of aircraft crash sites is called Aviation Archeology. In England, most of the crash sites are known. As a result excavation activity is slowing down. Association members visiting England should plan a visit to Thorpe Abbots and Framlingham, as well as the Imperial War Museums in London and Duxford (Memphis Belle was shot here). The RAF Museum in Hendon on the outskirts of London shouldn't be missed either.

It is not known if any excavation of crash sites in Italy has taken place to date. We all know that many B-24s and other aircraft lay at the bottom of the Adriatic Sea, with a goodly number of aircraft from our groups laying side by side with the others.

It is not unusual to say that the victors write most of the history of war. In the case of the 8th Air Force, some of the best and most detailed books are written by English authors who did not experience the war themselves, but have researched and spent many painstaking hours to produce excellent works. Some of these books are in the Association's collection

Acknowledgments

The front cover photo comes from Tony North of Norwich, England. "Friendly Rivals" comes from the magazine, Air Power History and is reprinted by permission of The Air Force Historical Foundation, published for the Virginia Military Institute, George C Marshall Foundation.

"Friendly Rivals" is sure to stir up, among other things, more controversy over which aircraft was better, the B-17, or the B-24 and, of course, the 8th Air Force vs the 15th.

The author of the article, Kenneth P Werrell bases his conclusion on the loss records of each air force. If the records are correct it would be hard to argue his case,

We do know that in the case of aircrews, those with more experience had a better survival rate. In the case of the B-24, the survival rates also depended on how well they worked together. Skills like good pilotage, overlapping skills, such as pilots who were also good navigators, team work between pilot, co-pilot, and engineer, good fuel management, pre-knowledge of safe ditching procedures, how to rid the aircraft of hung bombs safely, and so on. It may have been that different aircraft required more pilot experience than others. Bomber pilots entering combat with about 250 hours of experience may have been sufficient for the B-17, but we know the B-24's "Davis Wing" had different flight characteristics and may have required additional flying time for pilots to reach an equal level of perfection.

It must be remembered also that the first B-24 flew just nine months after the first drawings were made. The B-17 had a much longer gestation period. The B-17 flight manual reflected a multitude of changes during the time between the first flight and the time when the plane was first issued to WW II combat crews. On the other hand, the B-24 was built in such haste that the fuel quantity gages for the outboard Tokyo tanks were forgotten and were not installed until the "L" model was introduced late in the war.

"The Letters to the Editor" column of the Wall Street Journal, "Remembering an Old Warrior" printed April 18, 1989, are reprinted by permission, "Reprinted with permission of the Wall Street Journal © 1989, Dow Jones & Company, Inc. All rights reserved."

"Col. Gunn is Back", was submitted by our own Stan Hutchins, 824 Squadron.

"The United States Strategic Bombing Survey, A Summary", was printed out from the Association's microfilms. The survey is based on the complete work that runs into many volumes.

The Torretta Flyer

Issue Number 21 Winter 1991-1992

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The Torretta Flyer is the official publication of the 461st & 484th Bomb Groups Association. Normal distribution is limited to members only. Requests for copies from non members should be directed to the editor.

Contributions of stories, articles, memorabilia, and graphic materials to the Torretta Flyer are always welcome. Clean typewritten manuscripts and Microsoft Word disks are preferable. Other forms are acceptable also. Please contact the editor for further information.

The Torretta Flyer reports primarily on the history of air warfare during WWII and the accomplishments of members of the 461st & 484th bomb Groups during WWII. From time to time the magazine will cover other subject matter related to aeronautical events as material becomes available. Readers are encouraged to submit their own stories or material from other sources.

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Associate Editor, Bea Markel

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News of the Association

The 1991 Reunion Kansas City

The Kansas City Reunion was another grand get-together that drew 350 members and guests to the Holiday Inn Crowne Plaza Hotel. The warm fall weather made for pleasant walks to the Plaza shopping center and the Nelson-Atkins Museum. Visits to the Crown Center and the Truman Library were enjoyed by many reunion attendees.

The highlight of the reunion was the visit of the "All American," the restored B-24 J. Upon departure the "All American" did a nostalgic fly by around the hotel.

For many members and guests the sight of this old warrior brought an emotional lump to collective throats. Sue and Tony Nahkunst, along with their son, rode the airplane into Kansas City. They had this to say:

Sue Nahkunst: "Wednesday was a day to remember. It was special and totally unforgettable. Thanks to our son Mike who gave us a chance of a lifetime opportunity to ride in a B-24, the All American.

We started our flight from Sedalia, Missouri where a large crowd had gathered to look at the big plane. We climbed up through the forward bomb bay and made our way down the narrow catwalk to our seats, a narrow shelf with 4 flat cushions.

My heart beat faster as the engines started roaring. Once airborne our pilot did a fly by. The noise, excitement, and emotion overwhelmed me. I was flying with my husband and son. We couldn't speak over the noise of the engines. We didn't have to, I was not the only one who cried.

The crew opened up the waist gunner window for pictures and an opportunity to view the beautiful landscape below. All too soon we were over Kansas City, the pilot was doing a fly by over the Municipal airport. Suddenly it was all over, the most incredible experience of my life. It ranks with getting married and having our chil-

dren, Mike and Carol.

It was exciting, emotional, and mostly fun. I felt grateful to my husband and all the other men who flew B-24s, who daily risked their lives so they could return to their waiting families and America would be free. In WWII our husbands left as kids and came home as men and heroes."

From Tony: "Being on a B-24 with Sue and Mike after 46 years was a great experience and watching their expressions when we were taking off, and the flyby was an emotional high for me, and for all of us."

Your editor visited the B-24 that was part of the 1981 reunion in Torrance. I remember approaching the aircraft as if it were a long lost friend and patted the fuselage affectionately below the pilot's sliding window. I too had an emotional moment that was quite unexpected. Several engines were uncowed and I listened to myself describe all of the engine components and what their function was as if reading straight from a manual. It all came back in a flash as if the intervening years melted away. The relationship of men with their machines is real and is similar to man's relationship to living things that is hard to explain..

Annual Meeting Report

The annual business meeting took place on Saturday morning, September 28, 1991 at 10 AM. After the minutes of the last meeting and financial report were approved and the Scholarship Committee's report was given, the election of directors for the coming year took place. The directors are: Bud Markel, Bea Markel, Frank Valdez, George Christie and Tom Javaruski.

Other matters were discussed at the annual meeting, including current membership status of the Association, a report on the status of the microfilm printing, and a request for an updated membership roster. The chairman announced that negotiations were pending with hotel properties in Dearborn Michigan, as well as Harrisburg Pennsylvania for the site of the 1992 reunion.

The registration gift this year was airmen wings using the Association B-24 logo. Members wishing additional wings can order them from the Association office. Price is \$6.00 including postage.

We are most thankful for the services of Charles Geiss, 824 Squadron and Dick Yungans, 826 Squadron, who were our local hosts. They worked many hours making the contacts necessary for a successful reunion. We also want to thank Clark and Doris Ecton, Harold and Audrey Toomy and

Charles and Agnes Lowell for their work at the registration desk.

Area Code Changed

The Los Angeles phone listings have grown so large that the area code had to be split once again. The Association's new area code is 310. The new phone number is (310) 316-3330. General Telephone will process calls using the old area code (213) for a short period.

Our Library

Members who have visited past reunions have seen some of the Association's books that were on display a few years ago. The collection is small but continues to grow as funds become available. New books on the European air war have been added to the Association's library recently. We are not set up to loan out books on a large scale as they are not yet classified. You will be seeing excerpts from some of these books from time to time in the Torretta Flyer where reprint permission has been granted. We do not intend to match the 2nd Air Division Library in Norwich, England in size, but instead have concentrated on aeronautical publications. The gift of aviation books to the library are always in order.

1992 Reunion

Negotiations were completed shortly after the Kansas City reunion, and the Marriott Dearborn Inn, Dearborn, Michigan will host the 1992 reunion, Dates are September 24-27, 1992. The bricked main building that comprises the lobby and public rooms is decorated and furnished in exquisite Early American style. Room rate will be \$69.00. The hotel was built by Ford to house air travellers who used the Ford Airline in the late twenties and early thirties, later to become part of United Airlines. The Henry Ford Museum and Greenfield Village is within walking distance of the hotel. The Fairlane Shopping Mall is minutes away, It is a short drive to the Yankee Air Force Museum, as is Windsor, Canada.

1993 Reunion

The Harrisburg Marriott, Harrisburg Pennsylvania, has been selected for the 1993 reunion to be held in the fall of that year. It is a short drive to Hershey, PA and to Amish Country. The Civil War battlefield at Gettysburg makes a nice side trip.

SCHOLARSHIP PROGRESS REPORT

"Borsa Di Studio"

Is the Italian way of saying Scholarship

The following report is compiled from the Scholarship Committee report given by Chris Donaldson at the 1991 annual meeting, and correspondence from Professor Umberto Albanese

The scholarship grants for the year 1990 took place April 19, 1991, in Cerignola, Italy.

The ceremony took place at 6:30 PM in the auditorium of the Commercial Technical Institute. No association members were present at the ceremony. Although an Italian tour of Association members had been in the works, it was cancelled due to the Gulf war. Scholarship grants of \$500 each were given to four students. They are: (1) Maria Fondsdituri, (2) Costanza Masciaveo, (3) Giuseppe Acella, and (4) Marco Degemmis. This brings to a total of 17 scholarships awarded by the Association since the program began in 1986.

In anticipation of the scheduled Italian tour that was to have taken place to coincide with the awards ceremony, Professor Umberto Albanese prepared at his own initiative, a photographic exhibit consisting of 150 photographs of the American Army Air Force's activities during WWII at airfields in the vicinity of Cerignola.

The exhibit was installed in 25 standing glass display panels in the large hall of the Institute. A welcome sign in English and the American Flag flanked the presentation. The photographic presentation served as a visual history honoring the work and sacrifice of the American airmen. The exhibit was well received especially by the participants who had a first hand look at the war effort of the American Army Air Forces that was under the command of the United States 15th Air Force.

Because of the growing importance of the scholarship program, the ceremony

was attended by: (1) the Under Secretary of State for Education the Honorable Savino Melillo, (2) the Director of Education, Foggia district, (3) the Administrator of Education Cerignola, (4) the Headmaster of the Commercial Technical Institute, (5) Professor Umberto Albanese, the Administrator of the scholarship program and honorary member of the Association, (6) the press, and (7) families and guests of the honorees.

We continue to be grateful for the assistance of Professor Albanese of the Cerignola Technical Institute who, with his Associates, selects and recommends the Scholarship winners, and arranges for the media continued prominent mention of the event and of the 461st and 484th Bomb Group Association.

The Scholarship Fund, from its outset, has been a "No-Load Fund" and all contributions are dedicated to the scholarships themselves. Administrative expenses of the committee are borne by the members.

The Letters from the four honorees

Members & Friends
461st & 484th Bomb Groups
Association
Dear Sirs:

I'm very glad you have formed an association to keep up the memory of so many friends and soldiers that were killed during World War Two.

You've grown fond of the country and our fellow-townsmen, in which, I think during that time you found affection and solidarity (while your dear ones and your homeland were far away). I appreciate very much this year to be part of the prize-winners.

I'll bear the "reason" in mind binded to this prize-giving that shall give me the possibility to pursue my studies.

Many thanks,
Costanza Masciaveo



Costanza Masciaveo

Cerignola
Dear Sirs,

I am a student of the 4th class in the High School of Commerce of Cerignola.

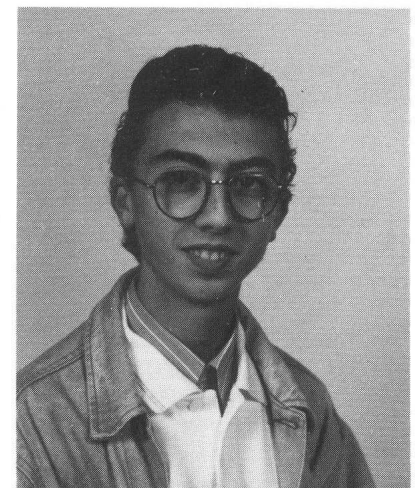
I want to express my deepest thanks to this Association that out of a remarkable generosity has decided to grant me a scholarship for the year 1990.

I very much appreciate such a meaningful award, which will give me the possibility of going on with my studies in great confidence.

I want to give voice to the feelings of all the Cerignola community, by my addressing to you the expression of wide esteem, hoping that our friendly relations will continue.

Thanks again.

MARCO DEGEMMIS
Via G, DABORMIDA # 28
71042 CERIGNOLA, (FG)
ITALY



Marco Degemmis



Dear Friends,

I thank you for choosing me for the assignment of this scholarship. I am sure that this gift of yours will

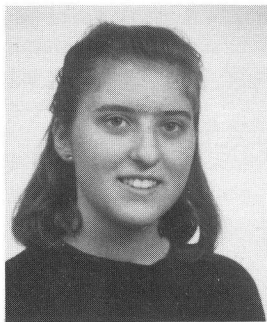
permit me to carry out my education in the best possible way. I hope to have further friendly relations with your association.

With Love,
Giuseppe Acella

Dear friends:

First of all, I want to thank you for the honor received from the awarding of this recognition. I never have believed, but only dreamed and hoped, to take this scholarship. I don't know how to express my happiness, because I feel very happy and enthusiastic to receive finally, after much years of continuous school diligence, some gratifications which helps and inspires me to continue on this road.

Of my future, I often think, I have a vague idea of what I'll do, in fact I'd like very much, after taking the diploma of surveyor, to go to the university to obtain a degree in architecture, but the road that I have to do is very long, therefore I believe it is better to think



Maria Fonsdituri

most of all in the present. At the moment I'm very satisfied and this is all right. I still thank all of you who have contributed at this time to my happiness.

Thanks.
MARIA FONSDITURI
VIA DEI TIGLI N°3
71042 CERIGNOLA (FG)

P.S. I'm sorry for my very bad English..



The photographic display commemorating the 461st & 484th Bomb Groups Association.

CONTRIBUTIONS TO THE SCHOLARSHIP FUND SINCE
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Friendly Rivals: The Eighth and FIFTEENTH AIR FORCES in World War II

By Kenneth P. Werrell

Kenneth P. Werrell is professor of history at Radford University. He has held positions at the Command and General Staff College and the Airpower Research Institute. He holds a Ph.D. from Duke University and is well known for his articles and books on the air force in World War II and for his research and publications on cruise missiles.

The bulk of the general literature that mentions the strategic bombing of Germany tends to lump the American and British bombing together. Even among those who separate out AAF (Army Air Forces) and RAF (Royal Air Force) strategic bombing, few realize that two U.S. strategic bombing forces, the Eighth in England and the Fifteenth in Italy, carried out the American side of the bombing offensive. Perhaps none but the participants realize that these forces, while sharing many characteristics, were also different. What follows is the use of comparative history techniques to investigate the common and uncommon elements of these two American air forces and their war effort.

The purpose of this paper is to highlight their differences and similarities in the hope that they will illuminate previously unknown or neglected aspects. I do not intend to "prove" the superiority of either air force, that bombing failed, or that bombing could have won the war. Rather, I am employing a different technique and attempting to gain a different perspective on that campaign to indicate some of the things we know, and some of the things we do not know about it. I believe that in so doing, aspects of the bombing offensive that may be fruitful for further study can be spotlighted.

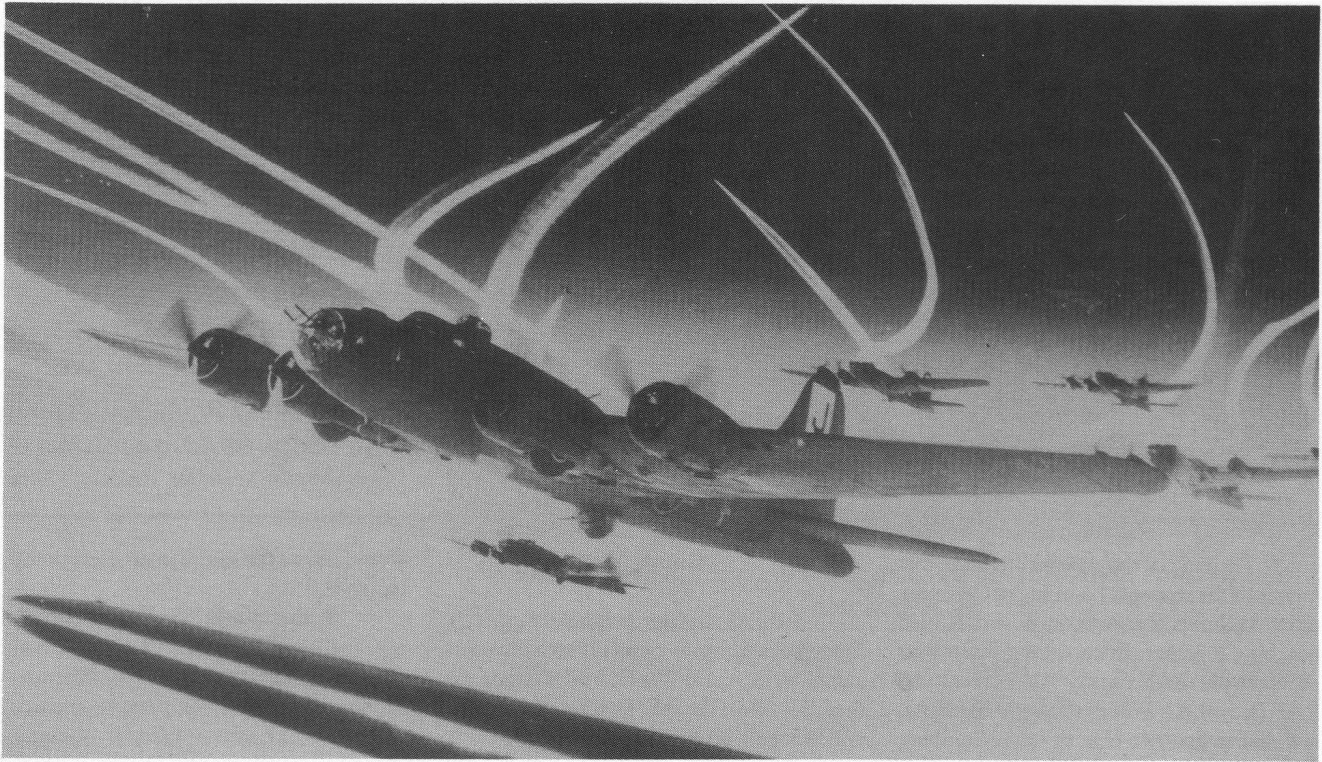
Background

In brief, strategic bombing was a technological attempt to avoid the stalemate and slaughter of World War I trench warfare. Air theorists, most notably Douhet, Trenchard, and Mitchell, prophesied that wars would be won by bombers attacking enemy cities and civilians. American airmen at first agreed with this concept (goals and tactics), but by the mid-1930s had come up with a distinctly American solution: daylight, unescorted, high-altitude, precision bombing formations that would destroy specific industrial targets. The U.S. airmen sought a target in the "industrial web," or what might be called a "bottleneck target," which if destroyed,

would cause the entire enemy economy to collapse.

During World War II, Germany, Britain, and the U.S. employed strategic bombers. The Germans dropped 70,000 tons of bombs on Britain, a puny total compared to the 1.4 million tons dropped by the Anglo-Americans on Germany. The Americans put perhaps 25 percent of their resources into air arms, of which the AAF expended approximately 40 percent on heavy and very heavy bombers. During the strategic air war against Germany, the AAF flew 400,000 heavy bomber sorties and dropped about one million tons of bombs. The cost in men and machines was high: the AAF lost 6,700 bombers and over 62,000 men (casualties,





390th Bomb Group B17s with P-47 escort during a mission to Emden Germany October 4, 1943. Nearest B-17 is called Skippy S/N 42-3329. USAF Photo via Ian Hawkins.

not killed). In comparison, the U.S. Army suffered 63,000 casualties in the Normandy campaign, the U.S. Navy took 69,000 casualties, and the U.S. Marine Corps sustained 75,000 casualties during the war. (2)

The Eighth Air Force flew its first heavy bomber mission from Britain on 17 August 1942, but did not bomb Germany until January 1943. The unit attempted to carry out the AAF doctrine of unescorted, daylight, precision bombing but was repulsed, most dramatically in actions against Regensburg-Schweinfurt (17 August 1943) and on missions flown in early October 1943. The terrible losses suffered by the Eighth (over 9 percent of credit sorties in October) forced the AAF to curtail strategic bombing. Meanwhile the AAF was basing strategic bombers in the Mediterranean Theater. Compared to the Eighth, these bombers were primarily engaged in interdiction and long range support of the ground forces until November 1943. As a result, they did not suffer the heavy losses sustained by the Eighth. Because of this and the fact that the Fifteenth was not created until November 1943, a comparison between the two air forces is not valid until after that date.

In late 1943 the AAF reorganized its

forces in both the European (British-based) and Mediterranean (based primarily in Italy) Theaters, establishing a separate tactical and strategic air force in each theater. The argument for creating two strategic forces was that it would permit bombers to reach targets inaccessible from Britain, divide the German defenders, lessen the congestion of aircraft and units in England, and use Italian bases where the weather was better. Top U.S. leaders such as Arnold, Spaatz, Doolittle, and Eisenhower favored this scheme, while Eaker, commander of the Eighth, and Harris, head of RAF Bomber Command, opposed it. Eaker anticipated supply and maintenance problems and noted that weather was most critical over the targets, not over the bases. He also pointed out that only a few targets were closer to Italian bases. In addition, bombers operating out of Italy would have to cross the Alps going and returning, a much more daunting obstacle than the English Channel. Nevertheless, on 1 November 1943 the Joint Chiefs of Staff approved the scheme. (3)

Common Elements and Differences

The Eighth and Fifteenth had many common elements and at first glance the two

forces appeared to be essentially the same. Their personnel were trained in the same training centers, their equipment was essentially the same, they shared and attempted to apply the same doctrine, they pursued the same goals, and they bombed similar targets, sometimes the same targets. Both faced the same problems of weather, aircraft malfunctions, and of course German flak and fighters. It would seem the only difference was that one unit was based in England and mainly bombed targets in Germany, while the other was based in Italy and primarily bombed targets in southern Europe.

This impression, however, is only valid at the most casual level. The Eighth was about twice the size of the Fifteenth in terms of numbers of units and aircraft; at its peak it had forty heavy bomber and fifteen fighter groups compared to the Fifteenth's twenty-one heavy bomber and seven fighter groups. (4) Thus the Eighth flew nearly twice as many sorties and dropped just over twice as many tons of bombs as did the Fifteenth. The English-based airmen also had the advantage of superior facilities. Many of the Eighth's airfields were long-established compared with the recently constructed fields in Italy, many of which used PSP (Pierced Steel Planking). As a result,

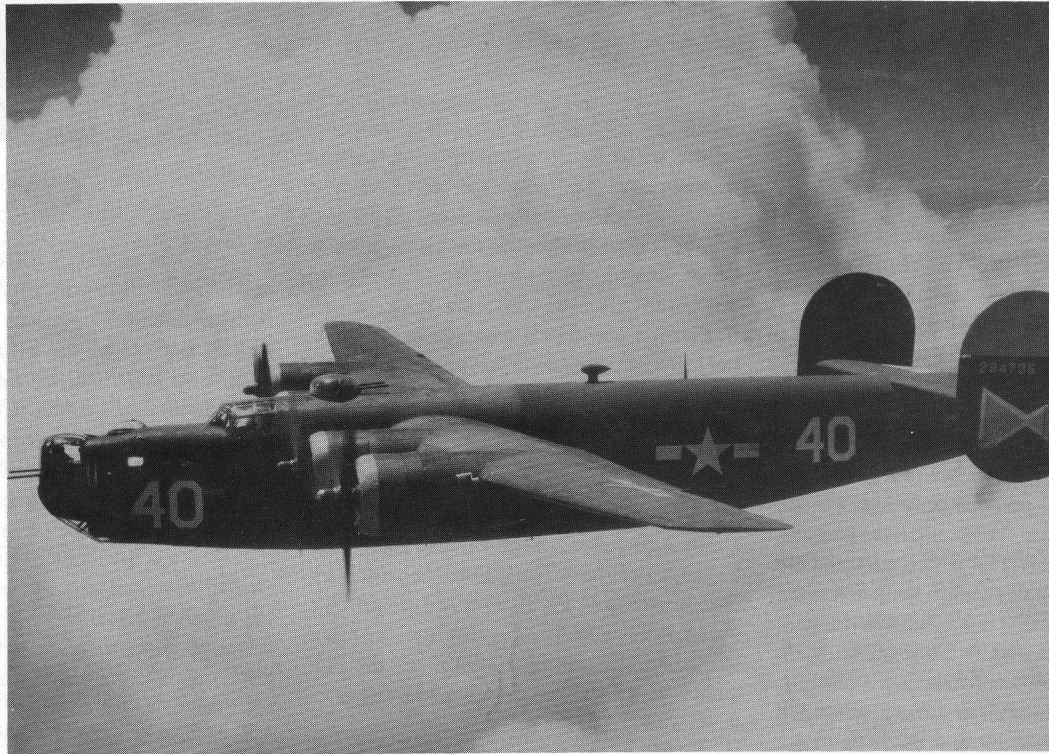
the Fifteenth had many more problems with fields being washed out, PSP curling, and the like. In addition to better airfields, Great Britain had better-developed facilities, ranging from a net of navigation and communications aids to air/sea rescue, repair, and supply. Terrain was another of the Eighth's advantages. Although terrain is normally not considered in air operations, it is relevant here in two respects. First, the Fifteenth had to cross mountains to and from its targets. This was not a major problem when all was well, but it certainly made a difference in poor weather or when aircraft were not functioning normally. Second, the Eighth was closer to its foe. Until June 1944, it was only a short hop

across the Channel to enemy-controlled territory and the distance to the German border from the British bases was but 250 miles, while the Fifteenth had to fly 450 miles to get to Austria. As a result, the Eighth's average missions were shorter than those of the Fifteenth. (5)

The expectations that weather would favor operations from Italy proved in error. Because of Eighth Air Force advantages in terrain, better weather data, shorter missions, and lesser use of the B-24, it was less hindered by the weather. While 25 percent of the Eighth's days were non-operational, the Fifteenth averaged 37 percent. Put another way, between September 1944 and April 1945 the Eighth aborted fewer missions due to bad weather (5.76 percent vs. 15.05 percent) than did the Fifteenth. (6)

To the men who served in the two units during the war, the biggest difference between the two was the living conditions. While the Eighth's personnel lived in either

permanent quarters or Quonset huts with showers, the Fifteenth's crews were billeted in tents with homemade heaters, infested with snakes and insects of all descriptions, and were forced to wash in their helmets. The Italian-based airmen went to the nearest town once a month for baths, haircuts, and shaves. Although there is some disagree-



A B-24 H of the 825th Squadron returning from a mission 1944. (Bill Keese photo)

ment over which unit had the best food (or the worst!), the Eighth ate in mess halls with waiter service while the Fifteenth ate sandwiches in one big tent with "bitter coffee [served] for days at a time." In contrast to the Italians, the British spoke a language generally understandable to the Americans. In addition there were many more opportunities for recreation and entertainment in Britain than in Italy. Unlike the airmen in England, those in Italy had to pull guard duty. During one of the shuttle bombing missions of Operation FRANTIC, a Fifteenth Air Force unit historian wrote of visiting Eighth Air Force crews: "Our visitors from England via Russia don't think much of our hospitality. We are sorry but at the time we are unable to furnish cokes, USO shows, and clean sheets." (7) In short, the living was more comfortable in England than in Italy. (8)

Another view of these two air forces

can be found in the perceptions of airmen who served in both organizations. Some of these crewmen were flying their second tour, but most were transferred in 1944, ostensibly to bring lessons from one theater to the other. Besides confirming the comments presented above, they also add the following observations. The Eighth ran a

m u c h tighter operation than did the Fifteenth, which seemed undisciplined, if not haphazard, to some. The Fifteenth also appeared less organized and professional. "The Fifteenth," wrote an airman who had completed one tour with the Eighth, "is a rude contrast to the smooth operation of the Eighth." (9)

Bomber Operations

Perhaps the major operational difference between the two air forces was their aircraft. Throughout most of its service, two-thirds of the Eighth's heavy bombers were B17s and one-third were B-24s, while the Fifteenth's composition was the reverse. To pull no punches: the B-17 was a much better bomber than the B-24. Aircrews believed the Fortress was a superior combat aircraft, a view shared by many and supported by the statistics. A 1944 systems analyst's report that compared the two bombers stated: "The B-17 is very much the more valuable airplane." (10) One report in the U.S. Strategic Bombing Survey concluded in more detail: "The B-17 was a more efficient combat aircraft than the B-24 from a viewpoint of bombing accuracy, life of aircraft, tons dropped for each effective sortie, and losses." (11)

While aircrews are loyal to their aircraft, after all, they stake their lives on their machines, most would agree that the Fortress both looked and handled better than the Liberator. One former B-24 pilot labelled the Lib a truck: "It looked like a truck, it hauled a big load like a truck, and it flew like a truck." (12) In contrast to the Liberator, the Fortress was a "forgiving" aircraft, which may have been its outstanding virtue considering its hastily trained and inexperienced crews. This characteristic is reflected in the accident rate, both stateside and overseas, which clearly favored the B-17. (13) The B-24 did have a performance edge, at least initially, but wartime modifications had a more detrimental effect on the Lib than on the Fort, so that the latter emerged with both range and bomb load advantages. (14)

More importantly, the Boeing bomber was more combat worthy. The B-17 could fly higher, which afforded more protection from German flak, and was more stable, which allowed it to fly tighter formations and steadier bomb runs. B-17 aircrews relate, perhaps only half in jest, that the best escort they could have had was not fighters, but B-24s, which attracted the GAF. (As we shall see, the statistics seem to bear this out.) The B-17 could be ditched, something done with extreme difficulty in the B-24 due to its construction and high-mounted wing. (15) The Liberator tended to catch fire when hit and could not take punishment as well as the legendary B-17. In combat, the B-24 was 1.5 times as likely to be lost when hit. It should also be noted that the two aircraft were not sent on comparable missions, the Forts pulled the more difficult ones. The bottom line was that the average Fortress in the Mediterranean Theater of Operations flew over twice as many sorties as the Liberator, 77 sorties to 35.8. (16)

The crews were aware of these differences. A 1944 survey of heavy bomber crew members in Europe asked: "Do you think you have the best type of airplane for the particular job which you have to do?" While 92 percent of the B-17 crews answered "yes" and 4 percent "no," the responses from the B-24 crews were, respectively, 76 and 16 percent. Two-thirds of the B-24 crew members who answered "no" said they wanted B-17s; none of the B-17 crew members who answered "no" desired service with B-24s. (17) These facts highlight the achievement and courage of those who flew the B-24s. At the same time, they

also raise serious questions as to why over eighteen thousand Liberators were built, three for every two Fortresses, at a cost slightly higher than the B-17, when they did not perform as well in combat. (18)

Fighter Operations

The Eighth had even a greater superiority in numbers of fighters than bombers. While it had twice the number of bombers, it has almost three times as many fighters and consequently flew three times as many sorties as the Italian based fighters, claimed three times as many enemy aircraft destroyed in the air, and yet suffered only twice as many losses. (19) In addition the Eighth Air Force also received escort protection from the Ninth Air Force and the RAF, which further increased its advantage in the number of fighter escort sorties per bomber sortie.

The Eighth Air Force also had a qualitative advantage. Over one half of its fighter sorties were flown by P-51s and over one-third by P-47s, while the Fifteenth flew almost equal numbers of fighter sorties with P-51s and P-38s. The Eighth received its first Mustang in February 1944 (Ninth Air Force P-51s began escort of the Eighth's bombers in December 1943), while the Fifteenth was first escorted by Mustangs in April 1944. (20)

The point is that the P-51 was clearly a better air-to-air fighter than the P-38, which, when combined with its greater range, made it the best escort fighter in the European war. In the Fifteenth Air Force the two fighters flew almost exactly the same number of sorties, but their combat record was dramatically different. While the Lightning had more encounters with enemy fighters, giving it a better chance to prove itself, it suffered more combat losses while registering far fewer claims. The overall loss rate per sortie was 1.27 percent for the P-38 vs. 1.02 percent for the P-51. In air to air combat, P-38 pilots claimed 4.64 kills for every known Lightning loss to enemy aircraft, while the figure for P-51 pilots was 19.14 to (21)

The P-51's superiority can also be seen in the Eighth Air Force operations. Unfortunately, the Eighth did not break down fighter operations by aircraft type on a regular basis, but we do have a comparison by fighter types for the most critical period of the air war, November 1943 through March 1944, during which the AAF won daylight

air superiority. In that decisive five-month period, the Eighth's P-38s claimed fewer German aircraft destroyed than its overall losses in combat (.98 ratio). In comparison, the P-51s claimed 4.73 enemy fighters destroyed for each loss and P-47s claimed 3.63 enemy aircraft destroyed for each loss. Little wonder that Eighth converted almost entirely to P-51s by October 1944. (22)

In short, the Eighth flew only 10 percent of its fighter sorties with other than the AAF's best (P-51) or second best (P-47) fighters, while the Fifteenth flew over 40 percent with the third best (P-38).

Targets

There is also a difference in where and on what the two air forces dropped their bombs. About 43 percent of the Eighth's and 24 percent of the Fifteenth's tonnage fell on oil facilities, aircraft factories, and other industrial targets. Compared to the Fifteenth, the Eighth dropped only about half the percentage of bombs on oil targets (10.7 vs. 19.4 percent), but almost three times the percentage on industrial targets (13.4 vs. 4.8 percent). Tonnage figures for aircraft factories and airfields are unclear, but indicate that the Eighth dropped about the same percentage on airfields as did the Fifteenth, but a greater percentage on aircraft factories. In contrast, about one-third of the Eighth's and one-half of the Fifteenth's bombs fell on land communications targets: especially marshaling yards, but also bridges. Tactical targets (air/ ground support, airfields, etc.) consumed the remainder of the total bombing effort. (23)

Quite striking is the modest percentage of bombs delivered by American strategic bombers on strategic targets. There is a problem of both definitions and record keeping, but clearly oil and factories fall into the strategic category, less clear are what are termed "land transportation targets" which cover both marshaling yards in Germany, probably strategic targets, and marshaling yards in other countries, probably tactical targets. Of all the bombs dropped by the Eighth and Fifteenth Air Forces, 54 percent were aimed at and transportation targets in Germany, oil facilities, and industrial factories throughout Europe. (24)

The location of the targets was determined by the geography of the air forces bases. Roughly three-quarters of the Eighth's bombs fell on Germany and one-fourth on France. As might be expected, the Fifteenth's bombs fell mainly in southern and eastern



In an effort to reduce air crew losses, this B-24-H of the 309th Bomb Group, 8th Air Force received what appears to be a depot modification to the pilots center windshield panel and the sliding window by the addition of bullet proof glass. A slab of armour plate has been bolted on just below the pilots sliding window. Tony North photo.

Europe with only one-third falling on Germany (11.7 percent) and on Austria (24 percent). The largest percent of Fifteenth Air Force bombs fell on Italy (29.4 percent). (25)

Radar Bombing and Accuracy

Another difference between the two air forces is that the Eighth used radar-bombing devices more extensively than did the Fifteenth. Although the AAF bombing doctrine was based on daylight, visual, precision bombing, a host of factors forced the American airmen to adopt non visual bombing techniques. In fact, the Eighth Air Force aimed half of the bombs it dropped with non visual means, while the Fifteenth used the device to deliver just under one-fifth of its total bomb tonnage. (26) The Eighth first employed the device in September 1943, followed in April 1944 by the Fifteenth. During the last eighteen months of the war, the Eighth used non visual aiming techniques more often than visual techniques in twelve months, while the Fifteenth used non visual methods more often in but three months. (27)

The significance of this is the marked decline in accuracy due to the use of non visual bombing. The two air forces achieved about the same accuracy in daylight, visual conditions, claiming that 35 to 40 percent of bombs dropped landed within one thousand feet of the aiming point. (28) (Yes, only 40 percent within one thousand feet) I would stress that accuracy figures, similar to the claims of enemy aircraft destroyed, are at best optimistic, most likely overstated, and

at worst unrealistic. But accuracy, with non visual methods, was measured in miles. An Eighth Air Force study in late 1944 concluded that when using visual techniques the unit was able to put half of its bombs within one-third of a mile of targets, but when using non visual techniques in 10/10s overcast, only half landed within 3.9 miles. (29) As the Fifteenth Air Force employed non visual aiming less often than did the Eighth, the Fifteenth probably delivered its bombs more accurately.

Electronic Countermeasures

Another advantage the Eighth had over the Fifteenth was greater use of electronic countermeasures (ECM). The simplest device, "chaff" (which the British called "window"), consisted of strips of metal foil, similar to Christmas tree "icing," that reflected radar signals and gave operators false readings. This system was first used by the RAF in July 1943 and by the Eighth in December 1943. The Fifteenth did not employ the device until March 1944. Chaff lessened aircraft losses by close to one-third. Another ECM device that jammed radar signals was "carpet," an electronic jammer. It was first used by the Eighth Air Force in October 1943, but it was not until August 1944 that the first unit in the Fifteenth received it. As had chaff, carpet lessened aircraft losses by one-third in 1943. (30)

Comparison in Battle

As already noted, for the most part the Eighth and Fifteenth hit different targets. During one important period (20-25 February 1944), however, the two air forces coordinated efforts for the famous BIG WEEK campaign. Although weather hampered the Anglo-American airmen's efforts, they were able to bombard German fighter factories for five days, including some of the same targets. Both flew four missions but the Eighth logged four times the number of bomber sorties (2,311:618) and was escorted by ten times the number of fighter sorties (4,000:413). This to some degree explains the Fifteenth's much higher loss rate of 14.6 percent of those attacking. The comparable Eighth Air Force percentage was "only" 4.8. (31)

One joint operation is too small an example upon which to base any firm conclusions. Yet total operations also indicate higher losses in the Fifteenth. Overall, they lost a greater percentage of bombers than did the Eighth, 1.85 vs. 1.32 percent of effective sorties, as well as a greater percentage of fighters, 1.08 vs. 0.87 percent loss of sorties. (32)

Conclusions

Although the Eighth and Fifteenth resemble each other more than they do the contemporary RAF strategic bombing of Germany or the B-29 bombing of Japan, they also differ in a number of ways. I believe the most important of these differences are: [1] aircraft employed; [2] amount of visually aimed bombs; [3] amount of ECM; and [4] the location of targets. The Fifteenth did extend the reach of the Allied bombing effort, but did so at a cost. The question as to whether these bombers could have been better employed elsewhere remains unanswered, if not unanswerable. As one airmen who flew with both air forces wrote: "on the surface [these differences] may seem important, but in the long run [they] didn't matter. A bunch of young kids went over there to do a job. No matter what the differences were we got the job done." (33)

Finally, this comparative approach reveals four important aspects of the American bombing campaign against Germany heretofore neglected, ignored, or unknown. [1] The combat record clearly indicates that the B-24 and P-38 were inferior to other American combat aircraft. [2] The AAF sent more of its best equipment to the Eighth Air Force (B-17s and P-51s, as well as ECM

equipment), sooner, than to the Fifteenth, which ended up with a greater proportion of less-capable aircraft (B-24s and P-38s) and less ECM. In this way the AAF clearly differentiated between its bombing forces. [3] Despite prewar AAF doctrine, wartime publicity, and postwar boasts, 40 percent of the bombs dropped by the AAF in the strategic air war were aimed by non visual means. As non visual accuracy was measured in miles, and visual bombing accuracy at best averaged one-quarter of a mile, U.S. strategic bombing resulted more in area, than in precision, bombing. [4] Only a portion of the bomb load, perhaps 54 percent, fell on, or at least was aimed at, strategic targets. Combining these two aspects, the amount of visual bombing and the amount of bombs aimed at strategic targets, the overall portion of the bombs dropped effectively on strategic targets was certainly less than 50 percent, perhaps half that. In conclusion, I believe that a comparative approach reveals much about the bombing and points out both what we do and do not know. It is for others to press forward from here.

1. An earlier version of this paper was presented at the Missouri Valley History Conference, Omaha, Nebraska, in March 1991.

2. See Werrell, "The Strategic Bombing of Germany in World War II," *Journal of American History* 73 (December 1986).

3. A. Munday, *Fifteenth Air Force Combat Markings, 1943-1945* (London: Beaumont, n.d.), 3; Statistical Story of the Fifteenth Air Force, 20 [all archival material is from the USAF Historical Research Center, Maxwell AFB, Alabama]; Frank Craven and James Cate, eds., *Title Army Air Forces in World War 11, vol. 2, Europe: TORCH to POINTBLANK* (Chicago: University of Chicago Press, 1949), 564-667, 723-28, 746-47, 751.

4. Statistical Summary of Eighth Air Force Operations, European Theater, 17 August 1943-8 May 1945, 12; 15AF SS, 27.

5. The average flying time of crew members completing their mission quota in the 301st Bomb Group (15AF) in early 1944 was about seven hours per mission, those finishing late in 1944 was about eight hours. "Who Fears?": The 301st in War and Peace," is scheduled for publication in the summer of 1991. One airmen who flew with both air forces averaged six hours (on 25 missions) with the Eighth between April 1943 and February 1944 and eight hours

(on 33 missions) with the Fifteenth between July and December 1944. Lawrence Pierson to author, June 1990.

6. The B-24 was less weather worthy, more affected by weather, than the B-17, as it could not fly as high and was more susceptible to icing. While Eighth Air Force B-17s suffered 9.2 percent weather aborts during the period January 1943 through April 1945, its B-24s suffered 12.8 percent. The figures for the Fifteenth between November 1943 and April 1945 were 11.6 percent and 13.5 percent. USSBS, Weather Factors in Combat Bombardment Operations in the European Theater, 1945, 10, 20, 21, 23, appendixes IXc and Xc.

7. 353BS History, 1394-95; John Muirhead, *Those Who Fall* (New York: Morrow, 1988), 6; Frank Fitzpatrick interview; Frederick Biggs to author, 11 June 1990.

8. N. Roger Mellor to author, 5 September 1990; Jay Mueller to author, n.d., c. June 1990.

9. Diary, John Comer, 46; Fitzpatrick interview; interview, Vance Heavilin, 5 April 1990; Lyman Whitney to author, 1 April 1990; Mellor to author; Biggs to author.

10. USSTAF, "Combat Comparative Analysis of B-17 and B-24 Airplanes in the Fifteenth Air Force," April 1944.

11. United States Strategic Bombing Survey, "Daylight Bombing Accuracy of the 8th, 9th, and 15th Air Forces," 1946, 3.

12. Carl Fritsche, "B-24 Liberator," chap. in Robin Higham and Carol Williams, eds., *Flying Combat Aircraft of the USAAFUSAF*, vol. 2 (Ames: Iowa State University Press, 1978), 45.

13. The B-17 had the lowest stateside accident rate of all U.S. bombers and fighters. Army Air Forces Statistical Digest, World War 11, 1945, 308, 310. In England, the B-17 also had a lower accident rate than the B-24. 8AF SS, 57. B-24 accidents were also more serious. Headquarters First Central Medical Establishment, Aircraft Accidents, 8 September 1944.

14. In addition, the B-17 performed better under adverse runway conditions and required less time to rearm and perform average maintenance. In the Fifteenth, the Forts had a higher in commission rate and lower abort rate than the Libs. "Combat Comparative Analysis"; 15AF SS, 12, 14, 23; 15AF Statistical Summary, March 1945, 32.

15. Perhaps 11 percent of the Eighth Air Force's bombers lost went into the sea; the Fifteenth's sea losses may have been somewhat less. 8AF SS, 54, 65. My research

of one Fifteenth Air Force B-17 unit (301BG) revealed a 9 percent ditching rate. In a survey of six months of bomber ditching in both the ETO and MTO, 22 percent of the B-17s broke up, compared with 62 percent of the B-24s; 6 percent of the B-17 crews drowned, while 24 percent of the B-24 crews drowned. Overall, 38 percent of Eighth Air Force B-17 crew members who ditched survived, compared with 27 percent of B-24 crew members. 8AF SS, 54; "Ditching of the B-24 and B-17," 1.

16. In the Fifteenth, the B-17's advantage was quite clear as 1.49 B-17s were lost per one hundred effective sorties compared with 2.02 B-24s on a like basis. 15AF SS, 12; "Combat Comparative Analysis"; Alan Palmer, "Directional Density of Flak Fragments and Burst Patterns at High Altitudes," chap. in James Beyer, ed., *Wound Ballistics* (Washington: Office of the Surgeon General, 1962), 639. Also see A. H. Peterson, R. E. Tuck, and D. P. Wilkinson, "Aircraft Vulnerability in World War 11," Rand memorandum RM-402, rev. July 1950, fig. 11.

17. S. A. Stouffer, et al., *The American Soldier*, vol. 2, *Combat and Its Aftermaths* (New York: Wiley, 1949), 326, 393.

18. Frank Craven and James Cate, eds., vol. 6, *Men and Planes* (Chicago: University of Chicago Press, 1958), 206-8, 360; AAF Statistical Digest, 118, 134, 310.

19. The more precise figures are 2.66 times the total (credit) sorties, 2.82 times the sorties flying escort operations, 2.99 times the claims, and 2 times the losses. 8AF SS, 23; 15AF SS, 15, 18.

20. The only breakdown I could find (create) for Eighth Air Force fighters by type was "fighter group months": 53 percent P-51, 37 percent P-47, 8 percent P-38, and 2 percent Spitfires. Because the P-51 flew most of its missions later in the war when unit capabilities were higher than earlier, I expect that this figure understates the percentage of P-51 sorties. 8AF SS, 4, 8-13, 21, 47, 48; 15AF SS, 24; 15AF Statistical Summary, November 1943-Nov 1944, 43; 15AF Statistical Summary, April 1945, 2, 10, 12.

21. Put another way, the P-38s logged 51.3 percent of the encounters and 55.6 percent of the losses, and 38.4 percent of the claims. These percentages refer only to the P-38 and P-51 as the P-47 figures are not broken out. 15AF SS, 15, 18.

22. VIII Fighter Command, Comparative Combat Performance [Nov. 1943-Mar. 1944]; VIII Fighter Command Ratio of Claims to Losses [Mar.-May 1944]. Other Eighth Air Force statistics indicate that the

P-38 had an attrition rate (whatever that is) of 25.1 percent of unit equipment compared to the P-51's 17.8 percent. 8AF SS, 63.

23. The significance of the oil targets was their rugged defenses and subsequent American bomber losses. The Fifteenth lost the greatest number of bombers against this target system (804 of 2,356 lost) and nearly its highest percentage of losses (3.11 percent). Only industrial targets claimed a greater percentage (3.12 percent). Against Ploesti, the Fifteenth lost 276 heavy bombers on twenty missions, 5.24 percent. More precisely, the Eighth dropped 31 percent of its bombs on industrial targets, 34 percent on transportation, 20.8 percent on tactical (plus 4.5 percent on V-weapons targets), and 5.9 percent on shipping and U-boat targets, leaving 3.8 percent on miscellaneous targets. The Fifteenth dropped respectively on the first four categories: 24.2, 51.6, 20.9, and 4.1. 8AF SS, 38, 39; 15AF SS, 2-7, 10; AAF Evaluation Board Report, vol. 6, "Ploesti"; "The Air Battle of Ploesti"; "Fifteenth Air Force Attacks on Ploesti."

24. The tonnage came to 260,000 tons on oil targets and factories, and 280,000 tons on land transportation in Germany. (The AAF strategic air forces dropped a total of 603,000 tons on land transportation). USSBS, Statistical Appendix to Over

AII Report (European War), February 1947, 1, 20, 49, 52, 53, 57; 8AF SS, 38, 39; 15AF SS, 2, 4-6.

25. 8AF SS, 40-44; 15AF SS, 2, 10.

26. To be precise, the Eighth dropped 49.7 percent of its bombs with non visual methods, the Fifteenth, 18.5 percent. 8AF SS, 21; 15AF SS, 12.

27. Ibid.

28. USSBS, "Daylight Bombing Accuracy," 23; 8AF SS, 21; 15AF SS, 12. Based on my research, I believe the actual accuracy was less than these figures.

29. In 4-5/10s cloud cover, half landed within 1 mile; in 6-7/10s conditions, half within 1.3 miles; and with 8-9/10s cover, half within 2 miles. Eighth Air Force Tactical Development, August 1942-May 1945, 72.

30. A 1944 study indicated that formations protected by carpet averaged 1.5 percent losses compared to 14.1 percent losses in unprotected formations. Air Ministry, Radio Countermeasures in Support of Offensive Operations (Europe), Air Staff monograph no. 1, April 1945, 20-24; Alfred Price, *The History of U.S. Electronic Warfare*, vol. I (Westford, Mass.: Association of Old Crows, 1984), 83, 99; Eighth Air Force, Operations Analysis Section, "Analysis of Window and Chaff Protection for Months of

Oct-30 Nov 1944," 5; Alfred Price, *Battle Over the Reich* (New York: Scribner's, 1973), 57-70; Air Ministry, *Rise and Fall of the German Air Force* (London: Air Ministry, 1948?), 271-79; James Baxter 111, *Scientists Against Time* (Boston: Little, Brown, 1946), 93-94, 164; Irving Holley, *Buying Aircraft: Materiel Procurement for the Army Air Forces* (Washington: GPO, 1964), 180; Alfred Price, *Instrument of Darkness* (London: Kimber, 1967), 112, 117, 141-42, 164; Ist Operations Analysis Section "Evaluation of Anti-Flak Radar Countermeasures Fifteenth Air Force," October 1944; Folder, Carpet Messages.

31. Eighth Air Force Mission Folders, 20-25 February 1944; Craven and Cate, 3:43-44; Intops nos. 215-19 (20-25 February 1944).

32. The Fifteenth's fighters posted a claims-to-total-loss ratio of 1.7:1, while the Eighth's ratio was 2.5:1. Although I do not know that the two units were using the same criteria, I believe the general trend of a lower claim ratio and higher loss ratio for the Fifteenth's fighters is correct, even if not precisely what these numbers indicate. 8AF SS, 16; 15AF SS, 8, 12, 15.33. Mellor to author.

The End

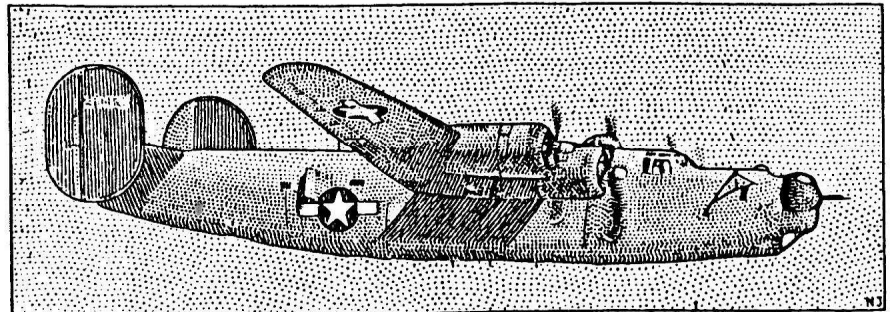
Remembering an Old Warrior

Letters to the Editor, Wall Street Journal

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Editor's Note!

These letters are included in this edition in support of the B-24 Liberator as a viable fighting machine. Readers are encouraged to add their remarks pro or con to this as perhaps the oldest controversy still lingering on from World War II. Was the B-24 better or worse than the B-17? Also comments on which air force was best, the 8th or 15th are solicited from members and readers.



Syosset, N.Y.

As a former flight leader in the 445th Bombardment Group of the Eighth Air Force in World War II, I should like to comment on both the March I advertisement of General Dynamics Corp. seeking contributions for restoration of a B-24 Liberator and the March 23 letter from Murray Grainger, whose description of the B-24's flight characteristics and mechanical deficiencies I believe not to be universally valid.

As a pilot in the same group as Jimmy Stewart (the actor), I completed 30 missions over Western Europe from England, pilot-

ing a number of Liberators in low-level attacks (D-day and the St. Lo Breakout) and high-altitude missions to target cities such as Munich, Berlin and Hamburg, the latter two defended by 900 and 600 anti-aircraft guns, respectively. On several occasions we thanked God we were flying a B-24 because of its highly efficient Pratt & Whitney engines and twin-finned tail assemblage.

When my B-24 lost two of its four engines and part of its tail due to German resistance over Hamburg, I still was able to return to base in England by joining a group of slower-flying B-17 Flying Fortresses. On

another mission, which I had to abort due to flak damage to two engines over France, I returned to base and made a routine landing with the bomb bay still loaded with 500-pound demolition bombs.

The Liberator's reliability was equal or superior to other combat aircraft.

Roy Carlton

Coral Gables, Fla

I salute Mr. Grainger for telling it like it was in World War II for those condemned to fly in B-24s. His assessment of the plane is, if anything, too laudatory. My own B-24 experience began at Langley Field, Va., where the view from the air was less than heartening—the field dotted with scores of burn marks, each the size and shape of a B-24.

George Patrick

Aurora, Colo

In World War II, we affectionately called the B-24 the "Flying Boxcar" or the crate the B-17 came in," but we loved it. Once we made an 18-hour bombing raid from India into Burma; the planes were outfitted so the pilot could release the bombs, and we dive bombed against enemy freight trains. We also ferried gasoline into China. Flying "the hump" from India into China was often exciting due to the altitudes we had to fly—thunderstorms like none seen in the U.S., icing conditions, and more often than not on instruments only. When Japan surrendered, we flew our B-24s back to Florida.

The B-24, God bless her, was one "helluva" plane for her time.

R P Lee

Denver, CO

As a navigator, bombardier, radar observer, bombardment officer and instructor, I have flown in every aircraft the Army Air Corps had to offer in the war. Each was built to serve a specific need.

The B-17 carried a bigger payload

but was slower. The B-24 carried a smaller payload but was much faster. The B-25 and B-26 were shorter-range bombers. The A-26 was meant to be a "skip bomber."

By today's technology standards they were all junk. But, Mr. Grainger, who the hell won the war?

W.G. Johnson

Houston, TX

As one of the chief industrial engineers at the Fort Worth plant producing the B-24 Liberator bomber, I must take exception to Mr. Grainger's letter. The innovative "Davis Wing" and every part and every assembly were carefully designed and manufactured to the highest specifications of the time, and resulted in what became the workhorse long-range bomber of the Atlantic and Pacific theaters.

This great plane saved the European bound ship convoys from submarine attacks in the 400 mile black hole of the Atlantic beyond the reach of any other air cover. Thousands of long-range B-24s, flown from bases in England and North Africa, did much to bring German industry to its knees. We might not have won the war in the Pacific without the capabilities of the long-range B-24. Many pilots will tell you a shot-up B-24 would continue to fly when all hope had been abandoned.

Harry S Crowder

New York

Mr. Grainger omitted the affectionate nickname the B-29 personnel on Saipan had for the B-24 "The Ruptured Duck." No explanation is needed: Just watch one waddle down the runway.

Henry S Glazier

Tampa, Fla.

I was also a B-24 pilot who began flying same in 1943 at age 21, flying 51 missions over Europe, then continuing as an instructor pilot through the war's end into 1946. I had no crew members hurt during

this period and cannot recall any gross or life threatening mechanical or design problems. On the contrary, it was a very forgiving airplane, which our group commander affectionately referred to as a "wonderful piece of machinery."

Wesley W. Rink

Ocean Springs, MS

All WWII combat aircraft were dangerous, especially in the hands of young, inexperienced pilots and maintenance crews.

Slapped together? I guess so. After all, production rates ranged from one every four hours to one every 90 minutes, in slapped-together factories, by crews of newly trained, formerly jobless people from all walks of life. With battle-tested modifications being added during production and after, I don't think I ever got into two B-24s that were alike.

But in its time, and for its purpose, I think it was a great airplane and deserves to be preserved.

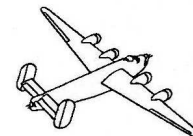
Clement R. Coggin

Berlin, N.H.

Mr. Grainger unmistakably belittled the B-24 calling it the "Flying Prostitute" that nickname belonged to the Martin B-26 Marauder bomber, which under certain conditions was difficult to control; many crews were killed.

It's a good gesture General Dynamics is making in restoring a B-24. It will show future generations how things were.

Oliver R. Bell





Stan Hutchins, Fall 1944

Col Gunn is Back

By
Stan Hutchins 824-060



Capt. Carl Cantacuzino (Left) and U. Col. James Gunn 111 (right) celebrate Gunn's return from POW camp on the 27th of August, 1944. Cantacuzino flew the Me-109 that brought Col. Gunn to San Giovanni Airfield.

captors of some 1,100 U. S. and RAF airmen, mostly 15th AF, but some veterans of the 1 August 1943 low level raid, opened the POW camp gates and discreetly walked away.

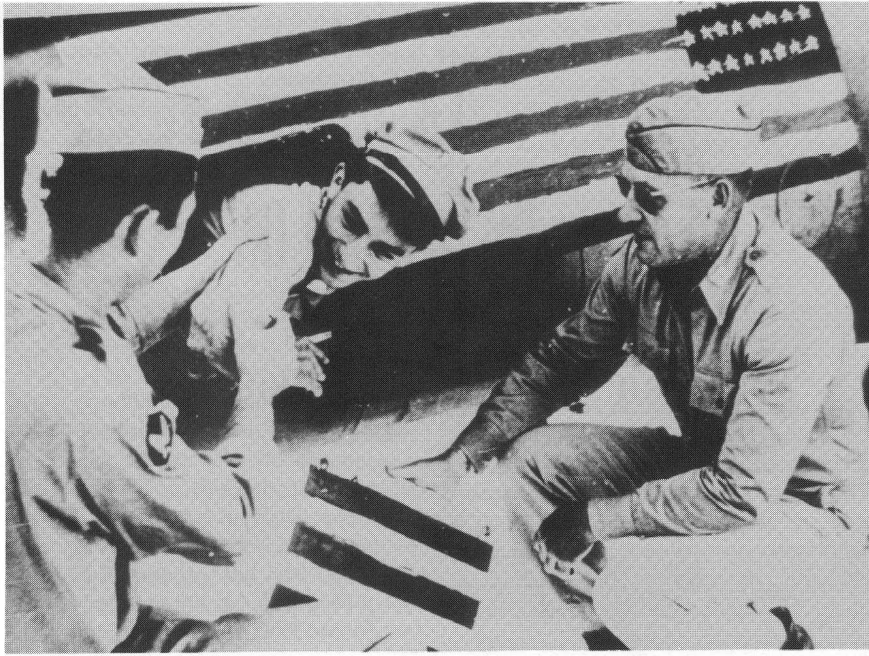
An alert USAAFPOW, Lt. Col. James A. Gunn, talked the ambivalent remaining Rumanians into furnishing a plane and a pilot to fly him back to Italy to arrange a wholesale rescue of the "freed" prisoners. The initial attempt of 25 August 1944 had to be aborted since the war-weary Savoia-Marchetti developed engine trouble shortly after takeoff.

Finally, on, August 27, 1944, a Rumanian Air Force Me 109 piloted by Capt. Carl Cantacuzino with Col. Gunn squeezed in behind the pilot—popped into sight a few hundred feet above the southern Italian land-

August 1944 was an exciting time for those of us in strategic bombing operations out of southern Italy. We flew everywhere — the Black Sea, the beaches of southern France, the depths of Luftwaffe fighter country around Vienna, Austria. The last four bombing missions to the Ploesti oil refineries were flown on the 10th, 17th, 18th and 19th August. The bad news was that German ground and air strength was still very potent and "testy" in the Bucharest area, so much so that they were beating up on their Rumanian colleagues for merely contemplating a surrender to Soviet forces now massing for the final push into the refineries. Daily, we gathered in the S-2 office to watch the posting of the latest advance by Soviet forces. Unknowing to us, on about 23 August, the Rumanian



ME 109 F with American flag flown out of Ploesti Rumania on 26 August, 1944 by Capt Cantacuzino. Rumanian Air Force Ace with Lt Col Gunn stowed in the radio compartment.



Intelligence Officer (right) shows other members of the crew at San Giovanni the radio compartment door Col Gunn squeezed through to climb up behind the pilot in the Me 109.

scape, southwest of Cerignola. I had been in Italy two months and had flown seven missions, two to Ploesti.

The 29th of August was a day off for me and we were having a small stakes poker game in my tent. I was facing the entrance to the tent (approximately north) when I noticed a low flying fighter doing a 60 degree bank a half mile away over the gravel road leading northeast to Cerignola. The first pass was fast but now he pulled up to about 600 feet and dumped his gear in what appeared to be the pattern for an approach to San Giovanni Airfield, the home of two bomb groups of our neighboring 304th Bomb Wing (heavy). When I saw the gear come down, I was sure it was an ME. Only two years before I had made a balsa solid model of a 109E and I knew every panel and bump. Now, at nineteen I was seeing the real thing. I jumped up and ran out toward the rapidly disappearing 109 yelling, "It's an ME, it's an ME" At S-2, 30 yards away, they assured me that no ME could get by our defenses and that I should go lie down until I "felt better." I was adamant and certain. My own poker buddies pooh-poohed the idea although several had seen the second, slower pass. Perhaps it was a 51? "No, dammit! It was a (invective) ME 109!"

We had just started to re-deal the cards when the S-2 officer, a 1st Lt. Lange,

soon to make captain, came driving up in his jeep in hi-blower. With the dust still flying, he leaped out and yelled, "Col Gunn is back, Col. Gunn is back." People came from everywhere to the S-2 office to hear the incredible news. It was particularly incredible to us who didn't know about the Rumanian handshake agreement with the POWs. I could visualize the mad dash to the sitting 109, past the German guards, the quick dopping out of the primer/starter switches and jamming all handles forward while tail-up taxiing to the nearest runway, "Come on, baby" Then the sober second thought, "Boy, I hope we don't run into 200 P-38s near Barletta." Have the British ever used those 40 mm guns around the U. S.

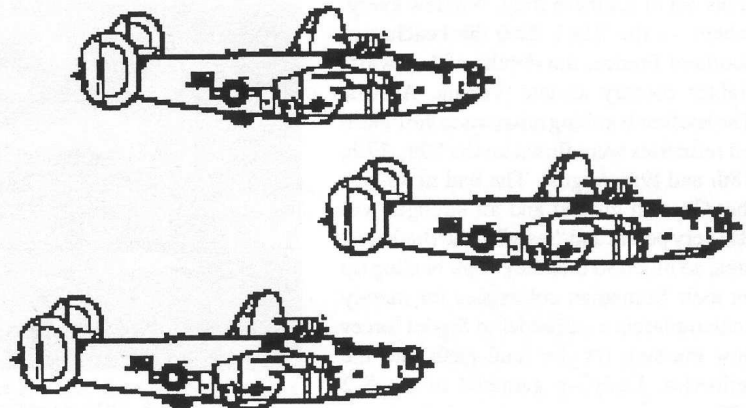
airfields? I don't know what actually happened in those mind-numbing seconds as the 109 sat down on the south end of the north/south runway.

This was the month when anything could happen. On 4 August, one guy even landed a P-38 on a farm field near a Rumanian airstrip to rescue his flight leader who had crash-landed. The flight leader ditched his chute, calmly lit his P-38 on fire and pointed out a relatively clear area for his rescuer, a new guy, to set it down. The rescued captain did the takeoff while sitting on the lieutenant's lap. Yes sir! that August 1944 was something. Following the U. S. 1st and 3rd Army breakout at St. Lo, the Germans gambled their Seventh Army in a futile attempt to recapture Mortain. The 1st Army didn't budge and the 3rd Army closed the trap in a wide, counterclockwise sweep around the back door at Falaise.

The proud German Seventh Army was junk by the third week of August. The run to the Rhine was started and the Germans, much to the world's amazement, were giving up land at the same rate they had captured it in 1940. Fresh allied troops in the south of France pushed up toward Lyon. I attended both the textbook invasion on 15 August and the 11 September squadron strength fly-in at Bron Control outside of Lyon. Ooh, la, la.

But what happened to Col. Gunn's trophy, the stolen Rumanian ME-109? Gunn was going to fly the ME down to Bari where it was going to be shipped stateside for some massaging by the boys at Wright Field. On takeoff, the pilot's hatch flew open and Gunn tried to reach up and close it, nosing the 109 over. That was the sad end to a great feat of daring.

The End



United States Strategic Bombing Survey A Summary

Editor's Note: After the surrender of Germany in May 1945, the United States wanted to know the effects of the aerial bombing campaign carried out by the European based Army Air Forces. The United States instituted the United States Strategic Bombing Survey. J Kenneth Galbraith was named director, assisted by Burton H Klein. A large team was gathered to interview heads of the industrial complex, plant managers and the workers. Production records and books were examined. The actual work sites were visited by the team members, who prepared reports and took photographic records. The work was very detailed and lengthy.

It was known before the survey was started that bombing accuracy during World War II left a lot to be desired. Bomb plots made from the strike photos were all too revealing of inaccuracies. This was the starting point of the survey.

This report was printed out from micro films in the possession of the Association. This brief chapter outlines summaries and conclusions of the survey team.

Acknowledgment

The following report has been prepared not as a series of separate studies but rather as a single over-all account of the effects of strategic bombing on the German economy. It is the result of the interchange of materials and ideas among all those who participated in planning and carrying out the project.

A BRIEF SURVEY OF THE AIR OFFENSIVE

In reviewing the history and changing scope of the Allied air offensive against Germany, three main considerations must be kept in mind.

The first is the phenomenal increase in the weight of attack that could be brought against the enemy. In 1940 the RAF started out with an average monthly delivery of 1,128 tons, which increased to almost 6,000 tons in 1942 when the USAAF joined the offensive. In 1943 the monthly tonnage was 26,000 tons, in 1944 it was 131,000 tons, and in 1945 170,000 tons. By far the greatest increase occurred during the pre-invasion months.

The second consideration is the equally impressive improvements in operational technique. The most important among these were the development of the P-51 long-range fighter early in 1944 and the introduction during the same year of radio direction devices like OBOE and H2X. The first provided continuous fighter escort for attacks deep in the heart of Germany; the second rendered possible precision bombing through clouds and at night. Other important developments were the improvement of bomb-aiming techniques and the improved quality and increased weight of bombs. The heaviest bombs dropped by the RAF weighed one ton in 1940 and ten tons in 1945.

The third consideration to bear in mind is that throughout most of the period of the air war the choice of targets was greatly influenced by the requirements of the immediate military situation. First the submarine threat to Allied supply lines in 1942-43, later the danger from Germany's growing fighter force to Allied air supremacy made it advisable to concentrate on the submarine and aircraft industries even though other targets may have promised far better results. In the spring of 1944, at the very time when the greatly increased capabilities of the strategic air forces first made possible a large scale strategic offensive, this had to be postponed in favor of lending full tactical support to the coming invasion. After D-day the tactical requirements of the ground forces continued to divert the strategic air forces until the very end of the war; and paradoxically enough it was in the course of such diversion that some of the greatest strategic successes were achieved.

The air war against Germany can be conveniently divided into the following four phases: (1) the early period (until the end of 1942); (2) the period of limited capabilities (January 1943-February 1944); (3) the aircraft period (February 1944-June 1944); and (4) the period of full scale offensive (July 1944-April 1945). The salient characteristics of the history of each period are given below.

1940 TO DECEMBER 1942

The period from 1940 to 1942 is marked by the development of the great area

war with the doctrine that daylight bombing would be too costly and that night bombing can be precise enough for attacking specific targets. A few early experiments with day bombing confirmed the first point. The second was not confirmed, since on most occasions the specific target could not be hit or even located. The targets selected by the RAF for 1940 were oil, aluminum, and aero-engine plants. Marshaling yards were treated as secondary targets, to be attacked only when the main target could not be located; but the frequency of attacks on Hamm and other marshaling yards show how rarely the primary targets were found. In the fall of 1940 it was realized that this plan was much too ambitious. A last attempt at bombing oil targets was made early in 1941; but when this showed very poor results it was abandoned. In May-June 1941, the RAF concentrated on the marshaling yards of the Ruhr, believing that they offered sufficiently large targets to secure hits. When this campaign also proved abortive the idea of precision bombing was abandoned. Area bombing came into being not as a method desirable in itself but as an expedient of necessity to be resorted to until the precision of night attacks could be improved.

With the appointment early in 1942 of Sir Arthur Harris as Chief of the Bomber Command, the picture changed, for he regarded area bombing not as a temporary expedient but as the most promising method of aerial attack. Harris and his staff had a low opinion of economic intelligence and were skeptical of "target systems." They had a strong belief in Germany's powers of industrial recuperation and doubted that her war potential could be significantly lowered by bombing. At the same time, they had a strong faith in the morale effects of bombing and thought that Germany's will to fight could be destroyed by the destruction of German cities. Under Harris' forceful leadership the great area offensive was launched in the summer of 1942, to continue through subsequent years until 1944. The first thousand-bomber raids on Cologne and Essen marked the real beginning of this campaign. Before and up to the second quarter of 1944 the great bulk of RAF tonnage (60 percent of the total dropped in 1942 and 1943) was concentrated on area raids. In 1943 the RAF made a concentrated attack on the Ruhr cities and later in the same year on Berlin.

The USAAF commenced operations in the European Theater on August 17, 1942. The first six weeks were spent in testing the force on objectives in France, Belgium and

bases and yards began in October and took up the major part of the Eighth Air Force's activities until the following June. The attacks begun on bases were later extended to the building yards of northern Germany. In the course of this campaign 2,500 tons were dropped on bases and building yards.

JANUARY 1943 TO JANUARY 1944

A new period of the air offensive can be considered to have begun with the Casablanca conference of January 1943, which established for the first time a joint plan of operations for the Allied forces. The famous Casablanca directive stated as the primary object of the strategic air offensive "the progressive destruction and dislocation of the German military, industrial, and economic system, and the undermining of the morale of the German people to a point where their capacity for armed resistance is fatally weakened."

The directive [1]* named five primary target systems in the following order of priority: (1) German submarine construction yards, (2) the German aircraft industry, (3) transportation, (4) the German oil industry, (5) other targets in the enemy war industry. This selection, wide enough in itself, was further qualified by the statement that "the above order of priority may be varied from time to time according to developments in the strategical situation. Other objectives of great importance either from the political or economic point of view must be attacked." It is clear from the above that the Casablanca conference intended to give the maximum freedom to the commanders of the air forces to act according to their own judgment. This also explains the avoidance of any definite statement on such vital issues as the choice between concentration on general and specific target systems, or between destruction of morale by area bombing and of economic potential by precision bombing.

In June 1943, a new and much narrower directive issued by the Combined Chief of Staff ordered the Eighth AF to attack Germany's fighter strength (airframe, engine and component factories, aircraft repair and storage depots, enemy fighters in the air and on the ground) as the top priority objective; with submarine yards and bases, the rest of German aircraft industry, ball bearings, and oil as further primary targets, and synthetic rubber, tires, and military motor transport vehicles as secondary objectives. This directive (establishing the "Pointblank"

gic operations of the Eighth AF and Fifteenth AF until D-Day. The main considerations behind it were: (1) the increasing strength of Germany's fighter defenses which made it desirable that strategic bombing should aim at establishing air supremacy first; (2) the desire to concentrate on targets which would affect front-line strength fairly quickly and thus render maximum assistance for the invasion of Western Europe, the date of which was still uncertain; and (3) the exclusion of objectives whose effective reduction was considered beyond the capabilities of the air force.

The first of these considerations was undoubtedly dominant in the minds of the planners. After the brilliant victories at sea in May 1943 it was clear that detecting and sinking submarines at sea was far more effective than bombing yards and bases. Submarines ceased thereafter to be a priority target. At the same time intelligence indicated the existence of ambitious plans in Germany of increasing German air power; and it was feared that unless prompt preventive measures were taken new improved fighters, capable of devastating attacks against heavy bombers would soon come off the production lines and destroy our air superiority.

The offensive, however, started very slowly. Only seven major attacks were made against aircraft production centers in the latter half of 1943, with a monthly average of only 700 tons of bombs dropped. The probable reason was that at that time only a small part of the heavy bomber force was equipped to carry the gasoline necessary for deep penetrations needed to attack aircraft plants. Moreover it was realized that a major blow against the aircraft industry would require a simultaneous or nearly simultaneous attack on all the major airframe factories; [2]* and for this the available forces were sufficient. Hence, the ball-bearing industry was chosen as the target for the main attack since it was known to be concentrated in three cities, with the glittering prize of half the industry's total capacity located at Schweinfurt.

The Eighth AF raided Schweinfurt on August 17 and on October 10, 1943. The latter raid caused serious damage to the plants, but the unescorted bombers were heavily attacked by German fighters and lost nearly 30 percent of their strength. The experience of this attack led to the abandonment of unescorted bomber attacks, and it stressed the importance of reducing the fighter strength of the German Air Force at the earliest possible opportunity.

FEBRUARY 1944 TO JUNE 1944

A new period began early in 1944 at a time when the air forces' capabilities were very much increased by the appearance of the P-51 long-range fighter, the introduction of blind bombing techniques, and the rapid build-up of both the RAF and the Eighth AF to over 1,000 heavy bombers and of the 15th Air Force to almost 600. The stage was set for an all-out assault on the German aircraft industry, but the offensive was delayed for two months by bad weather and urgent commitments against flying-bomb sites. The operation "Argument" was only delivered at the end of February. In the week of February 20-25 approximately 4,000 tons of bombs were dropped on aircraft targets, accounting for 90 percent of the production at that time. The offensive was continued during the subsequent months, reaching a peak in April when 7,758 tons were dropped on aircraft production centers. During this period there was some shift to aero-engines, but airframe plants remained the first priority because the previous damage to these plants was thought to have created a surplus in the other components.

A reexamination of target potentialities by the U.S. Strategic Air Forces led to the recommendation on March 5 that oil should henceforth be given top priority, since by that time the reduction of this target was fully within the air forces' capabilities. At the same time, the newly created Allied Expeditionary Air Force presented a plan in support of the coming invasion, involving the use of the entire British-based air forces in an all-out attack on the French railway system for a period of about six weeks. On March 25 General Eisenhower decided in favor of the plan to attack French and Belgian marshaling yards in addition to the interdiction of railway lines. Permission was granted to bomb oil targets for two days in May, but the real attack on oil was postponed until after the invasion.

JULY 1944 TO APRIL 1945

The full scale offensive started in July. The operations of the three major air forces were for the first time fully coordinated, with the RAF as a full scale partner in precision attacks both by night and day. The great bulk of the offensive was concentrated on oil and transportation, with munitions as a secondary target.

In June the impending capture of Ploesti by the Russian armies strengthened the case for an all-out attack on the synthetic

oil industry, henceforth Germany's sole source of oil. On June 8, two days after D-day, a new directive stated that the "primary strategic aim of the United States Strategic Air Forces is now to deny oil to enemy armed forces." After preliminary attacks on May 12 and 28, the full scale attack started at the end of June and continued until March 1945. Over 160,000 tons were dropped during this period on synthetic plants, refineries, and benzol plants and a further 23,500 tons on oil storage depots. There were 555 separate attacks on 135 different targets, in the course of which every synthetic plant and major refinery known to be in operation was successfully attacked. During the summer most of the attacks were made mostly non-visually and the RAF applied the new precision techniques in night bombing in a notable series of raids in January.

In July the requirements of the ground forces called for an attack on the tank and motor vehicle industries. Attacks on the major producers were carried on until November when a directive from SHAEF requested the discontinuance of these attacks in order to free resources for a more concentrated attack on transportation, which then assumed second priority after oil. The attacks against tanks, motor vehicles, and ordnance were not resumed until February.

THE TRANSPORTATION ATTACK

Throughout the war, a considerable tonnage of bombs was dropped on transportation targets both by the RAF and the U.S. Strategic Air Force. These early attacks, however, were not systemic, and almost always when transportation targets were attacked, it was because weather conditions made it impossible to attack other targets, or because the primary target could not be found. It was fully realized that transportation was a strategic target system with great potentialities, but the task was considered too large and the time too short for engaging in an operation that promised only a distant return. The systemic use of the strategic bomber force against the railway system started in the months before D-day as a tactical operation in direct support of the ground forces. It continued as a tactical operation during the months after D-day, but with a gradual shift of emphasis towards the strategic aspects of the campaign.

The use of the strategic bomber force in mass attacks against marshaling yards as a means of denying military traffic to the enemy was the subject of acute controversy from the beginning of the air war. It was

argued that purely military traffic was only a small proportion of the total traffic, and that even if the attacks on marshaling yards succeeded in reducing the railway system's carrying capacity by two-thirds or three-quarters; this would cut only into non-military traffic and leave essential military communications unhindered. It was also argued that the interdiction of military traffic could be accomplished much more easily and effectively by tactical bombers disrupting railway lines and destroying bridges. The military leadership insisted, however, on a combined plan both for attacking yards and for interdicting railway lines, putting more emphasis as time went on, on the economic effects of the operations.

The attack on transportation shows seven distinct phases. (1) During the months of August-October 1944, the attacks though fairly heavy, were largely tactical in character and concentrated on the yards through which the bulk of the military traffic was supposed to go (Saarbrücken, Karlsruhe, later Frankfurt, Ludwigshafen, Mannheim, the Cologne area, etc.). (2) In November and December when transportation obtained second strategic priority after oil, a detailed plan of paralyzing the railway system of western Germany was worked out and was being carried into effect. This plan divided the belt between the Rhine and Longitude 10E into zones, a systemic attack to be made on each zone according to priorities established on the basis of military requirements. (3) During the period of the Rundstedt counter-offensive the carrying out of the strategic plan was interrupted and the bomber forces concentrated on paralyzing the Cologne-Coblenz-Trier area for tactical purposes. (4) During February 1945 the strategic operations were resumed but concentrated on a smaller area than was envisaged in the November plan. (5) At the end of February, in the operation "Clarion," 8,000-9,000 planes from British and Continental bases attempted to paralyze the whole of Germany's railway system. (6) In the next phase the Ruhr interdiction plan succeeded in isolating the Ruhr from the rest of Germany by March 24, when the Allied offensive across the Rhine had started. (7) In the final phase in April 1945, the air forces reverted to a general attack on central Germany with the object of cutting reinforcements and supplies both to the eastern and western fronts, and of preventing the enemy from moving forces into the Nation Redoubt area.

This in brief is the story of the air offensive. How successful it was in

achieving the objectives aimed at will be appraised in the following sections.

THE GERMAN WAR ECONOMY

The outstanding feature of the German war effort is the surprisingly low output of armaments in the first three years of the war-surprisingly low as measured not only by Germany's later achievement but also by the general expectations of the time and by the level of production of her enemy, Britain. In aircraft, trucks, tanks, self-propelled guns, and several other types of armaments, British production was greater than Germany's in 1940, 1941, and 1942.

For these early years, the conclusion is inescapable that Germany's war production was not limited by her war potential, by the resources at her disposal but by demand; in other words, by the notions of the German war leaders as to what was required for achieving their aim. The Germans did not plan for a long war, nor were they prepared for it. Hitler's strategy contemplated a series of separate thrusts and quick victories over enemies that were even less prepared than Germany; he did not expect to fight a prolonged war against a combination of major world powers. The Polish campaign, while it brought an unexpected declaration of war from France and England, went according to plan. The Norwegian and later the French campaign further justified the German faith in "Blitzkrieg." Both ended in complete victory within a very short time and with an unexpectedly small expenditure of military resources. After the occupation of France, England, though not invaded or brought to heel through aerial bombardment, was no longer considered an immediate threat. Eventual intervention by the United States was not taken seriously. The attack on Russia was started in the confident expectation that the experience of the earlier campaigns was to be repeated; Russia was to be completely subjugated in three to four months.

The underestimation of Russia's strength was the major miscalculation in this strategy. The Polish and French campaigns had shown that Germany's military preparedness, large or small, was fully adequate for achieving her strategic objectives. But in the case of Russia the same strategy would have required preparations on a far greater scale; and in the critical nine months that separated the decision to invade Russia from the actual beginning of the campaign, such preparations were not made, even though there were no serious obstacles

to an all-round expansion of armaments production. The first three months of the Russian campaign did, in fact, go entirely "according to plan"; and at the end of September Hitler, believing the war about won, ordered a large scale reduction in armaments production. This order, even though only partially carried out, caused important reductions in stocks, particularly of ammunition, the effects of which were not overcome for a considerable time.

The defeat before Moscow, and the entry of the United States into the war in December 1941, brought the German leaders for the first time face to face with the prospect of a prolonged war with the three greatest powers ranged against them. From that time onward limitations of demand no longer played a role in restricting armaments production; Germany's leaders called for an all-out effort. Yet, measured by the standards of other belligerents, there was no "total mobilization" and no long-term planning to bring the war effort to its attainable maximum. The production of civilian goods was restricted only to a moderate extent; there was no further mobilization of women and no large scale transfer of labor from nonessential to essential industries.

THE SPEER PERIOD

In February 1942, Albert Speer, Hitler's personal architect, was appointed Minister of Armament Production with wide powers; and the production history of the following two and a half years bears the stamp of the "Speer Period." Speer set about replacing the existing machinery of control with a new organization (the "Rings" and "Committees"), manned by people selected from among the production managers and technicians of industry. They were charged with the task of increasing production by rationalizing German war industry; that is, by simplifying designs, standardizing components, concentrating production in the most suitable plants, reducing the number of different armaments orders given to a single firm, exchanging patents and secret processes, and generally adopting, throughout industry, the most efficient processes of production. The result of this policy was a more than threefold increase in Germany's munition production.

The index of finished armaments production prepared by the Planungsamt (Planning Office) of the Speer Ministry discloses three distinct levels of armament production separated from each other by three distinct periods of expansion, each of which raised

production by about half of the preexisting level. The first level was the rate of production of the years 1940-41, which lasted until February 1942. (Although comprehensive monthly figures are not available for the years 1940-41, available data indicate that the movements over this period were comparatively small, a gradually rising trend up to August 1941 being followed by a decline until the end of the year.)

The first spurt, beginning at the time of Speer's appointment to office, raised the general level by about 55 percent by July. This increase, in which all armament categories participated, must have been largely the result of earlier plans or simply of the changed attitude toward the war, rather than of any positive measures taken by the Speer Ministry. It came to a temporary halt owing to the redesigning of tanks and to bottlenecks in the parts and components making industries, which were not prepared for this sudden expansion. The removal of these bottlenecks was largely a matter of improved organization; and in October the expansion was resumed with a second spurt, which, led by an almost threefold increase in tank production, raised the general level of output by 50 percent, bringing the index to 232 by May 1943. During the second half of 1943, the expansion suffered a new interruption owing to a variety of causes, among which the change-over to new types in submarines, the air raids on the aircraft industry, and the ensuing dispersal measures, were the most important. The last spurt, confined to aircraft, weapons and tanks, began in December and raised production by another 45 percent by July 1944, when the general index reached its peak at 322. In the following month the decline set in, turning into complete collapse by the spring of 1945.

Within two and a half years Germany's military output in aircraft, weapons and ammunition was raised more than threefold, in tanks nearly six-fold, an achievement for which Speer and his associates take most of the credit. One may ask, however, whether this expansion represents the full utilization of the potentialities of the German economy.

There can be no doubt that Germany started the conversion of her economy to a wartime footing far too late. Had Germany's leaders decided to make an all-out war effort in 1939 instead of 1942, they would have had time to arm in "depth"; that is, to lay the foundations of a war economy by expanding their basic industries and building up equipment for the mass production of munitions.



Bomb strike photo mission #21 484th Bomb Group May 30, 1944, 10:36 AM. Aircraft factory Wels, Austria. 37 planes made the attack, 1 returned early, 81 tons dropped, losses nil. (Bill Keese photo).

Starting their armament program as late as 1942, they could only arm in "width"; that is, accept their equipment and material base as given and expand munitions production on the basis of available capacity.

But, to ask the next question, was Germany able to make full use of her existing capacity? It will be shown below that she was not. While the German economy was approaching its basic limitations in mid-1944, it never attained its full war potential. Production capacity, except in a few special cases, of which oil was the most notable, was never really short; machinery capacity was never fully utilized. Manpower—particularly woman power—was never mobilized. Raw material stocks of the most important categories, such as steel, were rising up to mid-1944. The output of civilian consumption goods, after the restriction of the first two years of the war (which still left the civilian standard of living at a fairly comfortable level and above that of the depression years in the early thirties), was maintained virtually stable until the second quarter of 1944.

Yet, at least from the end of 1942 onwards, the Germans were arming as fast as they could. If they did not reach their full war potential before the end of the war, this was due to limitations on the speed with which they were able to convert and expand. Expansion was held up by temporary shortages of components and parts and by the introduction of new types of armaments. Air raids and the dispersal of industry also played their part in slowing down expansion.

Some of the impediments to the expansion of German war production might have been removed by better coordinated planning. Speer's work was more the result of brilliant improvisations than the execution of a single well thought-out plan. His main achievement, the exploitation of mass production techniques, was not done in any prearranged and systematic manner over industry as a whole, but in a piecemeal fashion, as urgent military needs called for the achievement of high output levels now in tanks, now in aircraft, now in guns or ammunition. Better coordination and overall planning might have speeded up the rate of expansion somewhat; but it is doubtful if a significant improvement could have been obtained.

GERMANY'S PRODUCTIVE RESOURCES

To assess the effects of strategic bombing on the German economy, one must analyze the extent to which Germany utilized her resources, and the extent to which she could afford losing industrial capacity or divert resources to the restoration of destroyed capacity. The basic resources of an economy are the capital equipment of its industries, its industrial manpower, and its supply of raw materials. Of these three, capital equipment alone is directly vulnerable by aerial attack; and the strategic bomber offensive mounted against Germany aimed primarily at lowering military industries, in the industries supplying basic materials and components, and in the transportation system. The supply of raw materials can only be affected indirectly by bombing, through the destruction of equipment in the raw material extracting and manufacturing industries. Similarly, in the bombing of Germany, industrial manpower could only be affected indirectly by strategic bombing, insofar as it affects morale, causes absenteeism, and diverts labor to anti-aircraft defense and to debris clearance and reconstruction.

CAPITAL EQUIPMENT

The German economy does not appear to have suffered from shortages of machine tools, general machinery, or plant facilities—except temporarily in a few isolated cases. On the contrary, machine tool and machinery capacity was generally in excess of needs. Detailed inventories of industrial equipment are not available, but the total inventory of machine tools suggests that on the whole, machine tool capacity was more than sufficient. This view is also confirmed by the fact that apart from the aero-engine industry and a few other exceptions, the German armament industries worked only a single shift throughout the war, and the great capacity reserve that would have been available from double or triple shift operations was largely unutilized. Furthermore, the German machine tool industry hardly expanded during the war, worked on a single shift basis throughout, and converted almost 30 percent of its capacity to direct munitions production.

Germany's easy machine tool position is in striking contrast with the experience of the United States and Great Britain, where machine tools were kept working 24 hours a day seven days a week, and the machine tool industry was very much expanded and strained to the utmost to supply requirements. One reason for Germany's

strong position was her large machine tool industry which, being an important exporter, had a capacity greatly in excess of Germany's domestic peace time requirements. Secondly, Germany started the war well stocked with machine tools which, unlike the American inventory, consisted mainly of universal machines and could therefore easily be converted to war production. In any case, Germany's war production was not limited by her machinery equipment. The important exceptions to rule occurred in the synthetic oil and chemical industries, in the electric power system, and in the manufacture of high grade steel. Germany had ample capacity also in plant facilities. Statistics of factory floor space are lacking; but it appears that new factory construction was moderate during the war, while the large industrial dispersal programs occasioned by the Allied air offensive were carried out without being handicapped by a shortage of factory space.

MANPOWER

Germany's experience was fundamentally different from that of the Anglo-American Allies also as far as the manpower problem is concerned. While England and America both entered the war with substantial unemployment, Germany's labor force was fully employed already in 1939. Total employment increased by 8 million, or 30 percent, between 1933 and 1939. Industrial employment nearly doubled, with most of the increase concentrated on the heavy goods industries.

The absence of unemployment does not mean, however, that Germany was fully mobilized for war in 1939. The percentage of workers in her nonagricultural population of working age was hardly greater than it was in Great Britain at the time; and what manpower she utilized was not concentrated unduly on war production. According to German statistics, civilian consumption in 1939 was above the 1929 level and had only fallen slightly by 1941. This shows that Germany entered the war with a "guns and butter" philosophy which was continued well after the initial defeats in Russia.

With the progress of the war, the mobilization of manpower increased both in Great Britain and in the United States; but not so in Germany, where the total employment of Germans (including those called up for the Wehrmacht and not deducting casualties) remained practically unchanged throughout the war and reductions in the civilian labor force due to military draft

were not completely offset by the employment of foreigners.

The increase, from September 1939 to September 1944, in the number of German men and women employed (including the armed forces) was less than one million, and it fell short of the natural growth of the working age population over the period. The armed forces mobilized 11-1/2 million men from the outbreak of the war up to September 1944; and their place in the civilian labor force was but partially filled by 7 million foreign workers and prisoners of war and the 1 million newly mobilized Germans, resulting in a net loss of 3-1/2 million (10 percent) to the civilian labor force.

This decline in civilian manpower is the more remarkable, because Germany did not exhaust her reserves of manpower in the course of the war. She began the war with about the same proportion of occupied women (outside agriculture) as Britain. But while in Britain the number of women in full or part-time work increased 45 percent in the course of the war, the number of German women mobilized remained practically unchanged. In Britain, the number of domestic servants was cut from 1.2 to 0.5 millions in the course of the war; in Germany it fell only from 1.5 million to 1.3 million. There were also other sectors of the economy that had large reserves of labor which could have been utilized for war work. Among them were the public administration system employing some 3.5 million workers, which Speer attempted unsuccessfully to reduce; and civilian industry which had a considerable cushion until the last stages of the war.

It is possible that the Germans considered the further mobilization of labor impolitic and psychologically undesirable; on the other hand, such considerations would hardly have stood in their way after the defeats in Russia, had manpower been the real obstacle to the expanding of armament production. The policy adopted at the time secured the additional resources needed for increasing current armament production by halting the expansion of basic industries - an expansion which in any case would not have borne fruit soon enough to contribute to the war effort. This policy limited industrial manpower requirements to an extent where they could be fully satisfied by measures which fell short of total mobilization. These measures included, in addition to the draft of foreign workers, the lengthening of the working week in certain critical industries, the shifting of workers from non-essential sectors of the economy, and the increasing of

labor productivity through rationalization measures.

There is no doubt that manpower for the armed forces was short, in the sense that after the Russian defeats, Germany would have liked to put a larger army in the field. Even here, however, there remained some reserve which could have been mobilized for the Wehrmacht. Several of Germany's leaders argued that at least half a million of the men deferred for occupational reasons could have been replaced. These critics also argued that the ratio of combat troops to total troops was very low and that only tradition prevented it from being increased. That the Germans did not take more extreme measures to increase the size of their armies may be due to the overconfidence of the German war leaders, which was fostered in the early war years and given up only after the initial defeats in Russia. Or, it may also be due to the fact that the Germans, having begun an energetic munitions production program only in 1942, could not increase their armament output at a fast enough rate to arm more divisions.

RAW MATERIALS

Germany's dependence on imported raw materials was always regarded as the main weakness of her war potential. The Four Year Plan of 1936 which was designed to mitigate this weakness, secured her a certain degree of independence in critical war materials - chiefly through the synthetic production of rubber, oil, textile fibers and fats, the development of domestic iron ores in central Germany and through increasing the capacity of aluminum and magnesium production. These steps, however, did not render Germany self-sufficient - not even in the limited field of materials that could be synthetically produced. At the outbreak of the war, Germany still depended on foreign sources for 70 percent of her iron ore, 90 percent of her copper, and for all of her manganese, chrome, nickel, wolfram, tungsten and a host of other raw materials. Apart from nitrogen and coal, in no war material of importance could German production cover peacetime consumption, still less any additional requirements of war.

Germany managed, however, at least until late in 1944, to avoid any serious embarrassment to her war effort from the shortage of imported materials. When the war started, stocks of copper, iron ore, lead and magnesium were adequate for less than nine months' consumption and only in the case of

manganese was there a supply sufficient for 18 months. In the case of copper and ferroalloys, the Germans found that consumption could be drastically cut without real detriment to the quality of armaments; and they were able to reclaim considerable stocks from scrap. The annual consumption of copper, wolfram, molybdenum, and cobalt was reduced by more than one-half. The victories of 1939 and 1940-41 led to the capture of considerable stocks of these materials and also to new sources of current supply, such as chromium from Bulgaria and Greece, nickel and molybdenum from Finland and Norway, copper from Yugoslavia, Norway and Finland, manganese from Russia, mercury from Italy and Spain, and bauxite from Hungary, France, Yugoslavia and Italy.

Synthetic capacity for rubber and oil was increased during the war, or at least until 1944, when it was reduced by bombing. Synthetic rubber production was raised from 5,000 tons in 1938 to an annual rate of 117,000 tons by the beginning of 1944. Synthetic oil production was raised from 1.6 million tons in 1938, to an annual rate of 6 million tons by early 1944, and crude oil production was expanded from 0.6 million tons to 2 million tons. Together with the Rumanian and Hungarian imports of about 2.5 million tons, oil supplies were considered adequate for the type of strategy adopted. It is to be noted, however, that this strategy was itself adjusted to the oil supply. Means of warfare involving heavy oil consumption - such as a fully motorized army or a large force of heavy bombers - were and perhaps had to be foregone.

The supplies of normally home-produced materials, such as steel and coal were likewise adequate or more than adequate for the armament program, at any rate up to the middle of 1944. Steel allocation formed the basis for all production plans from the beginning of the war; and in the period 1939-40, it was the scarcity of steel which Germans believed to be the limiting factor on the scale of their armament program. But, as it subsequently turned out, military steel requirements were grossly overestimated by the Wehrmacht. Allocations were far too generous in relation to production schedules and considerable quantities of steel were diverted to non-military uses and stocks. Even with these excessive allocations only 0.9 million tons of steel, half the total monthly supply, was appropriated for the direct armaments program. With the occupation of the western countries in 1940, Germany's

steel supplies increased by another 0.8 million tons per month. By the second quarter of 1944, approximately 1.5 million tons were allocated to direct armaments programs, out of a total supply of 2.7 million tons. Even for the peak production levels of mid-1944, the steel supply appears on the whole to have been sufficient and to have left room for further expansion. Only of high quality steels was there a shortage, in particular of electric furnace steel. This last was the only steel product whose production capacity was expanded during the war (from 65,000 to 250,000 tons per month), but the increase appears to have been insufficient for meeting the growing requirements.

The supply of power, despite a considerable expansion of capacity, became tight early in the war. The curtailment of less essential uses began in October 1941. By the winter of 1943-44 the shortage had become so serious that from time to time temporary cuts were made in the allocation of power to the aluminum, nitrogen and other chemical industries, the main consumers of power.

An economy such as that just analyzed is peculiarly unsusceptible to damage to its finished goods industries. Destroyed capital equipment can be replaced out of reserves, destroyed factory space can be made good by drawing on empty factory space, lost man-hours can be made good by making working hours temporarily longer and by taking on more labor. Each and all of these methods were, of course, resorted to by the Germans to offset the effects of air raids. The strain imposed on the economy through an air war may, under such conditions, merely slow down or temporarily halt the process of expansion, without causing an actual diminution of production in the vital industries. An expanding and resilient economy moreover is not merely better adapted to absorb the shock effects of a bombing offensive; it can also afford to take more far reaching measures to immunize itself against future attack. Large scale dispersal schemes, which under more stable conditions would have inevitably involved a loss of production, could be carried through in Germany often at the cost of postponing increases in output. The analysis of the effects of air attacks on the German economy show unmistakably that this economy was not an easy target.

OVER-ALL EFFECTS OF THE AIR OFFENSIVE

Prior to the summer of 1943, air raids had no appreciable effect either on German munitions production or on the national output in general. The area attacks of the RAF did considerable damage to building and caused local delays in production by diverting labor to repair work and debris clearance, and by causing absenteeism and local disorganization. The first big raid on Kiel, for instance, seems to have caused a three weeks' delay in submarine production; and similar small delays were caused by the late 1942 and early 1943 campaigns against submarine production. But considering the nature of the German economy during this period, it is impossible to conclude that either submarine production or munitions output as a whole was any smaller as a result of air raids than it would have been otherwise. The only important bottlenecks at this time occurred in certain sectors of the parts and components industries; and there is no evidence that these industries suffered through air raid damage.

The effects of air raids became more noticeable from the summer of 1943 onward. This was partly due to the heavier weight of the RAF attacks and partly to the appearance of the AAF in major strength. Area raids on the Ruhr caused an estimated 8 percent loss of steel output, but adequate stocks in the hands of industrial users prevented the loss from affecting armament output. The same attacks also created a bottleneck in crankshafts, which may have slowed down the output of tanks and motor vehicles. Raids on the aircraft industry caused an estimated 13 percent loss of total production for the period July through December. The loss from direct damage, however, was less important than the sacrifice in output caused by dispersal and other defensive measures taken as a result of the intensification of the air war. These latter factors explain the relatively great loss of output following the early raids on the aircraft industry compared with the smaller effect of the much heavier later raids. Ball bearing production fell 5 percent below the pre-raid average as a result of attacks in the fall of 1944, but the presence of large supplies forestalled any effect on armament output. The total loss of German armament output from air raids in the latter part of 1943 is estimated at 5 percent.

For the first four months of 1944 the AAF, capable for the first time of carrying out repeated attacks deep into Germany, concentrated its strength on aircraft and ball bearing targets. During the attacks beginning in February, about 90 percent of Ger-

man fighter production capacity was attacked and 70 percent destroyed. Production fell during the first month of the attack but rose phenomenally in succeeding months, despite the continuance of the offensive. The total number of aircraft produced rose from 1,525 in January to 2,475 in July; single-engine fighter output rose from 381 to 1,050. This large increase in output is explained by the adoption of energetic rationalization measures, by drawing on the pipe line of components, and by the fact that a large scale expansion of the industry had been planned previously. To what extent bombing prevented the realization of these plans is difficult to decide. It is possible that production would have been 15-20 percent higher in the absence of bombing.

As a result of continued attacks, the production of ball bearings in the second quarter of 1944 fell to 66 percent of the pre-raid average. An energetic dispersal policy, however, made it possible for production to reach almost the pre-raid average in the third quarter of the year. In the meantime, careful use of stocks, substitution of plain bearings for anti-friction bearings, and redesign of equipment to eliminate the previously luxurious use of bearings, enabled the Germans to prevent the fall in bearing production from affecting the output of finished munitions.

The only other measurable effect of air raids on munitions production was a 5 percent loss in panzer output caused mainly by the RAF attack on Friedrichshafen and a small loss of ammunition output mostly due to area raids. In the absence of these losses, total armament production in the first half of 1944 would have been almost 10 percent higher than it actually was.

The campaigns which carried the promise of decisive results began after D-day. The offensives that started against oil and nitrogen plants in May and June, against the German transportation system in September, and against the Ruhr steel producing area in October, all achieved results fully up to expectations or above them. In addition to these major campaigns, the raids on aircraft plants were continued and attacks were made also against motor vehicle and panzer production.

The attack on oil was concentrated against Germany's synthetic plants. They produced 90 percent of her aviation gasoline and 30 percent of her motor gasoline. Synthetic production (hydrogenation and Fischer-Tropsch) fell from an average of 359,000 tons in June and 24,000 tons in September. The aviation gasoline output of

these plants fell from 175,000 tons in April to 5,000 tons in September. In the same period stocks of motor and aviation gasoline fell by two-thirds, and only drastic curtailments in consumption kept them from falling still further. As in the case of ball bearings and aircraft, the Germans took the most energetic steps to repair and reconstruct oil plants. As many as 350,000 men were engaged in reconstruction projects and the building of underground plants, but these measures proved of little value. Reconstructed plants were soon re-attacked, while underground plants even at the end of the war produced but a fraction of Germany's then minute oil supply.

The attacks on the synthetic oil plants were found to have cost Germany a considerable part also of her synthetic nitrogen, methanol and rubber supply. These products were either produced in conjunction with synthetic oil or their manufacture required by-products of oil production. By the end of the year synthetic nitrogen output was reduced from a pre-raid level of over 75,000 tons to 20,000 tons monthly. The Germans were forced to curtail the use of nitrogen in agriculture, and then to cut supplies used for the production of explosives. Methanol production also necessary for explosives manufacture was similarly cut. These shortages were largely responsible for the 20 percent loss of ammunition production in the last half of 1944.

By the end of 1944 synthetic rubber production had been reduced to approximately 15 percent of the January-April average. Had the war continued, Germany's rubber position would have become critical. No indication was found, however, that the rubber shortage was a limiting factor on German war production or on the movement of the German army before the war ended.

The raids on the aircraft industry continued in the summer months of 1944, and their center of gravity shifted from assembly plants to engine production. This was more vulnerable than assembly owing to the greater difficulty of dispersal and the lack of excess capacity in the industry. Aircraft production in December was only 60 percent of what it had been in July and the total loss of output for the period due to both direct and indirect effects of bombing can be put at about 25 percent.

The attacks on panzer production set back an ambitious expansion program and caused a 20 percent loss of output in the latter half of 1944. The motor vehicle attacks also caused a 20 percent loss in production, but reduced the total stock of trucks and

passenger cars by only 4 percent. Motor transport was undoubtedly more limited by the gasoline shortage than by this reduction in the vehicle supply.

The heavy attack on the Ruhr area in the last quarter of 1944 reduced its steel output by 80 percent. Total German steel production (including that of the occupied territories) declined from 2 million tons in September to 1 million tons in December. Approximately 80 percent of this decline was due to air attack. Although production continued to fall to the end of the war, the steel shortage-overshadowed by the transportation breakdown-was not a significant causal factor in the decline of munitions output.

The attack on transportation beginning in September 1944 was the most important single cause of Germany's ultimate economic collapse. Between August and December freight car loadings fell by approximately 50 percent. The progressive traffic tie-up was found to have first affected commodities normally shipped in less than full trainload lots, finished and semi-finished manufactured goods, components and perishables. The effects of the attack are best seen, however, in the figures of coal transport, which normally constituted 40 percent of rail traffic. Shipments by rail and water fell from 7.4 million tons in August to 2.7 million tons in December. By March coal shipments were scarcely adequate even for the needs of the railroads. The operation of Germany's raw material industries, her manufacturing industries, and her power supply were dependent on coal. By January their stocks were becoming exhausted and collapse was inevitable.

The index of total munitions output reached its peak in July 1944 and fell thereafter. By December it had declined to 80 percent of the July peak, and even this level was attained only by using up stocks of components and raw materials. Air raids were the main factor in reducing output, which in their absence would probably have risen. A loss of armaments output somewhat above 15 percent can be credited to bombing in the last half of 1944. This compares with a 5 percent loss for the last half of 1943 and a 10 percent loss for the first half of 1944.

By the third quarter of 1944 bombing had succeeded in tying down a substantial portion of the labor force. This diversion amounted to an estimated 4.5 million workers, or nearly 20 percent of the nonagricultural labor force. This estimate includes 2-1/2 million workers engaged in

debris clearance, reconstruction and dispersal projects and in other types of activity necessitated by bombing, 1 million workers engaged in replacing civilian goods lost through air raids, and slightly less than 1 million workers in the production and manning of anti-aircraft weapons. Air raid casualties were not numerous. By the middle of 1944 they had reduced the labor force by not more than 250,000 or less than one percent. Late in 1944, the diversion of laborers due to bombing began to lose importance because the disintegration of the economy had reached a point at which the full utilization of the total labor force was no longer possible.

As to the effects of bomb damage on the civilian economy, there is no evidence that shortages of civilian goods ever reached a point where the German authorities were forced to transfer resources from war production in order to prevent disintegration on the home front. It was not until the end of 1943 that the area raids of the RAF had caused important shortages in certain segments of the civilian economy; and even for the whole of 1944, the output of manufactured consumer goods was only slightly below that of 1943. The most that can be said is that bombing destroyed a substantial part of the consumer goods cushion and thereby prevented the further conversion of the civilian economy to war production in 1944.

THE COLLAPSE

From December 1944 onwards, all sectors of the German economy were in rapid decline. This collapse was due to the results of air raids working in combination with other causes. The armament index fell from 322 in July to 263 in December and 145 in March (the last month for which records are available).

These figures fail to show, however, the full extent to which the situation had deteriorated. During the process of contraction the shrinkage in final output always lags behind the shrinkage in productive activity. Some production of finished munitions could be temporarily maintained because of the relatively large stocks of semi-finished products, at least for as long as the minimum coal and power requirements of the munitions industries could be covered. After the end of March this was no longer possible. Even in February 1945, coal deliveries, partly through the loss of Silesia and the Saar, fell to 25 percent of normal. In March they fell to 16 percent and, by the end of the month, to only 4 percent of normal.

Coal production was down to 38 percent and steel output to 15 percent of normal. The supply of gas and electricity fell similarly. The combined index of raw material production went down to 37 (1942=100). Car-loadings in March were only 15 percent of the normal level and were still falling. "The German economy," Speer wrote in his report of March 15, "is heading for an inevitable collapse within 4-8 weeks." Even if the final military victories that carried the Allied armies across the Rhine

and the Oder had not taken place, armament production would have come to a virtual standstill by May; the German armies, completely bereft of ammunition and motive power, would almost certainly have had to cease fighting by June or July.

In the actual case-as in most other cases in the history of wars-the collapse occurred before the time when the lack of means would have rendered further resistance physically impossible.

FOOTNOTES: [1] * January 21, 1943

No. C.C.S 116/1/d. [2]* Airframe factories were chosen in preference to aero-engine factories, though it was realized that attacks on the latter would have a more lasting effect. But attacks on the former were regarded as having a more immediate effect on first line strength; also the intelligence about airframe production was considered better than that on aero-engine production.

The End

A CHRISTMAS NOTE HIGH OVER THE SKIES OF GERMANY

This story was reprinted from "Poop From Group" the publication of the 401st Bomb Group.

On Tuesday, December 19, 1944, the Eighth Air Force went after tactical targets in an attempt to hold up the German counter-offensive launched in the Ardennes three days before. We were returning from our fifth mission which was to Koblenz, Germany. We were rejoicing because there was no flak, no enemy fighters, no casualties and no battle damage. However, thick freezing fog had closed our airfield at Deenethorpe and we were diverted to Predonnick airfield. We spent four days waiting for the weather to clear.

On December 23rd we attempted to fly to our home airfield but we were diverted again this time to Deopham Green airfield. I was a twenty-one year old Californian and I was experiencing my first white Christmas. I was thousands of miles from home, homesick and feeling sorry for myself because I was not spending Christmas with family and friends. The severe winter weather added to the discomfort of my life. The flying clothes I had on for the last six days felt uncomfortable and it was difficult to walk in the heavy flying boots.

It was a bitter cold Sunday morning, December 24th, Christmas Eve, and we were preparing for our sixth combat mission. Deopham Green airfield was covered with a light freezing mist. Because of the diversion of December 19th, the group was taking off from six different airfields. Our aircrew, named the "Grumlin Gremlins", was commanded by Lt. John Gerber, pilot. We loaded our gear and equipment into our B-17G, 44-6146 and made our usual inspection of the Flying Fortress. We were loaded with 2780 gallons of gasoline and

with five, 500 pound incendiary bombs. I checked the radio equipment and tuned the transmitter and receiver. We waited for the signal to start the mission. The green flare signal was finally given and we took off over a runway coated with ice at 0830 hours.

The 401st Bomb Group was scheduled to bomb an airfield near Darmstadt Germany. However, the operational records indicated that we attacked the marshalling yards and factory areas of Koblenz, Germany. This was to be a maximum effort and our group had 48 aircraft airborne. The 401st furnished a complete 36 aircraft group for the 94th "B" formation. The Eighth Air Force was dispatching over 2000 bombers and over 800 fighters. I was taking part in the making of history. Hundreds of aircraft stretched over the skies for hundreds of miles for as far as the eyes could see, "the largest force of bombers and fighters ever dispatched".

Little did I know that an airfield in my home state of California would be named after General Frederick Castle the Air Leader of this large armada. It was his heroic action to save his crew on this historic mission that would earn him posthumously our country's highest honor for bravery.

I settled into my routine as radio operator as we reached the assembly area and joined our squadron, group and the division stream. We were on our way to our assigned target and I was monitoring the assigned radio frequencies given to me. There was always static on the Liaison receiver and it took my full attention and concentration to monitor and copy the radio code from these frequencies.

As we approached the flak areas I put on my flak helmet and vest. Our intercom was working intermittently but I could hear some talk about engine problems. I was too busy monitoring my frequencies to be aware that two of our engines were running very rough. As we were approaching the IP point the pilot feathered engine no. 1. As we began the bomb run we engaged for about 27

minutes with moderate but accurate flak. We observed 6 to 8 jet aircraft identified as ME 262s which circled our formation.

As we reached the IP point, I turned on the bomb strike camera. I began the task of discharging chaff, which is metalized paper strips that reflect radar beams and reduced the accuracy of radar data used by flak gunners. I had to be careful working because the oxygen mask had a tendency to pull away from my face when the oxygen hose was stretched too far. The lack of oxygen would cause one to pass out. I could hear, over the intercom, the concerns of the crew about the flak and the fighters. I was pretty scared, I could hear the thump of the flak bursting around and I was saying my usual prayers.

While opening one of the boxes of chaff I found a slip of chaff paper with a hand written note. It was like a note in a Christmas card. Time seemed like an eternity as I read the note. The thump of the flak and my fears seemed to disappear. I became calm and I momentarily forgot all about the airwar. This note was meant for me. It read:

"If you've no Girl Friend to care where you roam. And if you've no Wife sitting waiting at home. If you'd care for a pen friend, then now is the time. To sit down and write Joy or Winnie a line.

Miss Winnie Bevan
106, Eversly
Barnehurst, Kent

Miss Joy Chaplin
26, Hurst Rd.
Erith, Kent

I was thinking about these girls as I resumed my task of sliding the chaff bundles into the special dispensing chute.

I was beginning to wonder if I was going to be able to write Win or Joy a line. We had dropped our bombs, were losing

(Continued on next page)

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altitude and our B-17G was moving down and away from the formation.

We were flying alone and continuing to lose altitude. Our pilot ordered us to jettison all of the loose equipment including the ammunition. We attempted to salvo the ball-turret but we could not unfasten it from the fuselage. I remember how quickly our ball-turret gunner, Jim McKenna, came out of the turret when we started pounding on it. The laugh we got from his antics helped

reduce the tension of our situation.

Our Gee Box (special navigation receiver) was inoperative as was our intercom. We were flying on three engines with one running on a prayer. We had the utmost confidence in our pilot and Flying Fortress, but we still were very worried. As we approached the English Channel I was able to contact Air Sea Rescue. We were tracked across the channel by ASR without having to ditch in the sea. We were low on gasoline. Hundreds of aircraft were returning from

their missions and many were trying to find airfields to land on. The inclement weather and poor visibility made a landing very hazardous. Would we have an air collision was one of my thoughts.

We finally made an emergency landing at an RAF airfield at Great Massingham with little or no gasoline in our tanks. We really sweated out this mission and landing. After being in the air for 9 1/2 hours we were very happy to be on the ground again.

The End

Odds and Ends
826 Bomb Squadron
By Rod Stewart

Against all odds!

In 1942, I met a young man who joined me in a prep school in Los Angeles to prepare us for entrance into the Army Air Corps. I got to be a pilot but Christensen, Robert D., washed out and became a bombardier. He got shot down on his 5th raid to Berlin. In the winter of '44, they moved Chris down to the POW camp just north of Nuremburg where there were 67,000 POW's, many of them Russian. While this was going on, my co-pilot, Robert D. Mason, of Syracuse, New York decided to stay at the base while the rest of the crew went to rest camp at San Caesaria, Italy. When we got back, I found out I didn't have a co-pilot. He and the crew had gone down on (his) third mission as the aircraft commander. He was interned at the same camp as Chris and one day, sitting on their bunks, Chris happened to mention L.A. Mason says that's where my pilot is from but you couldn't possibly know him. When Mason mentioned my name, Chris (told me after the war), that he almost fell out of his bunk! In a camp of 67,000 these two met. What are the odds of that ever happening to two people? I don't know where Mason is but Chris is well and happy in Houston, Texas.

Have a Happy New Year!

In the winter of '44/'45, we got replacement aircraft flown down to Istres le Tube A/P outside Marseilles. (sp?) These were the first planes we had seen that had the steel seats for the pilot and co-pilot. Just prior to our getting on board a C-47 for the trip, the squadron executive officer, a rolly-polly major I believe his name was Hicks, gave me a large denomination of francs and told me to fly on up to Bron A/P in Lyon,

France, and pick up some small mementoes that had been ordered a few months before. They were made out of aluminum, were about the size of a half dollar and showed a vulture atop the barrel of a .50 caliber mg. The shells in the m/g belt were first, 8, then 2, and then 6 or the 826th BS. We picked up a whole box of these and they were handed out to all squadron members. I had mine for years but somewhere along the way, lost it. It would be interesting to know if anyone else still has this coin in possession.

Now, back to the subject: New Years. We flew back to Istres le Tube from Lyon to spend New Years Eve there before going back to Italy. When we walked into the mess hall at the airfield, we noticed everyone was armed to the teeth. When we asked what all the firepower was for, we were told that the Germans were going to parachute women into So. France to kill off the high ranking officers in the area. We never heard any more about it but it did make for a 'cautious' New Years on our part.

The flak magnet and Augie.

The flak magnet was otherwise known as Major Riddle. I don't think he ever went out without getting shot up. On this day he was in the lead in Able 11 and we were off his right wing, or Able 12. From the IP to the target, he got shot up again and fired a flare to let the group know they were to drop on us as the alternate lead aircraft. Just prior to the target, we got two near-direct hits in the bomb bay. Fortunately, the bombs didn't go off and we dropped a short time later. Coming off the target, which was Augsburg that day, I noticed that the bomb bays would not close. The engineer, Stud Sowers, got out of the top turret and went to the bomb bays to see what the problem was. He reported the catwalk shot through and the hydraulic lines cut, (with fluid flying all over the place), we had no pressure to close the doors. As you remember, they slid up on either side of the fuselage like a venetian blind, and when

they don't close, you have a lot of drag. We couldn't stay with the group in that condition plus, with all the flak holes, we thought we had to be losing fuel somewhere. I asked the Navigator, Norman Weser, for a course to Switzerland. In the meantime we were checking the fuel gages for fuel loss but couldn't notice any. I asked the crew to take a vote to see if we should get interned or should we try to make it back to Italy. Let's go home they said. It was risky coming home alone, particularly passing over the Brenner Pass because the Italians or Germans were flying Macchi 202's and shooting down stragglers trying to get home. We made it but had to tie two parachutes to the waist gun mounts for brakes due to the loss of all the hydraulic fluid. We came down shooting red flares; I touched down as close to the end of the runway as I could, applied the brakes and held them down. Lo and behold, there was enough fluid in the system to bring us to a stop. Because the chance of fire is so great after the plane stops, (and has no cooling airflow), I told the crew to evacuate post haste or I would be climbing over someone's back when I got out. We all got out and ran like rabbits for a least a city block; expecting at any time to see the airplane go up in flames. It didn't and we went to get debriefed. The next day we went to look at the bird but, it had been towed to the bone yard. We went over and counted 177 holes in it. The maintenance officer said it wasn't worth fixing.

But now, what about Augie? It was the name of a little mutt we had befriended around the camp. I guess I knew she was a girl but I sure as hell didn't know she was pregnant! Neither did I know that while we were gone, she would elect to give birth to her puppies, (six of them), on guess where? My sleeping bag! Prior to that mission, she was just "dog", but after, we had to name her "Augie."

Major Riddle got back O.K. and a week later, finished his missions and went home.

Letters to the Editor

St Louis, Mo
Dear Bud:

On page 8 of the last issue of the Torretta Flyer there is a picture of the Stedman twins with the observation "that we were the only twins in the 15th Air Force. Not so! We had twins on our crew piloted by Dave Arnett. They were Woody and Wilson Richardson, who were shot down and killed over Ploesti in June or July of 1944.

The name of the radar ship was "Abroad Abroad" not "Broad Abroad" I believe I was the first radar bombardier at least in my squadron on the "Mickey" ship as we called them. We were one of the first replacement crews in the 827th arriving at the base on May 9, 1944. I became a lead bombardier and was assigned to the "Mickey" equipped airplanes sometime in July or August of 1944. I never did find out the results of our bombing efforts on the radar missions. I suspect they were not good or we would have been informed.

Two quick stories concerning Captain George Ingram, our West Point pilot and assistant squadron commander. We were leading the group one mission flying in Able 11. To and from the target Capt. Ingram kept getting on Baker 11, "Baker 11, keep in formation, you're all over the sky!! Keep up!! Keep up!! Don't drop so far behind, etc., etc. our flight sheet showed who the pilot was in Baker 11, and Ingram was looking forward to really chewing him out when we got back to base. As we were going into the briefing shack we ran into General Nathan Twining, Commanding General 15th Air Force. Captain Ingram recognizing a fellow West Pointer, asked him what he was doing at the base. The General replied that he flew the mission that day in the Baker 11 slot. Nothing more was said.

Another time I ran across Ingram digging away frantically at the area dump. I asked him what he was doing, he tersely replied "everyone says to hit them with everything but the kitchen sink, and now I'm going to hit them with the kitchen sink." That is what he was looking for. I enjoyed our somewhat brief association.

Eugene J Callahan, 827 squadron.

* * *

Mr. Bud Markel
Editor, The Torretta Flyer

Dear Mr. Markel:

It was a pleasure to talk with you yesterday evening about the 484th and to hear of your interest in the work of the 496th. I will be glad to make inquiries of my old comrades in order to get some overview of the dimensions of our support to the 484th. Hopefully, the



Fritz G. Cohen, 496th Service Squadron. (Fritz Cohen photo)

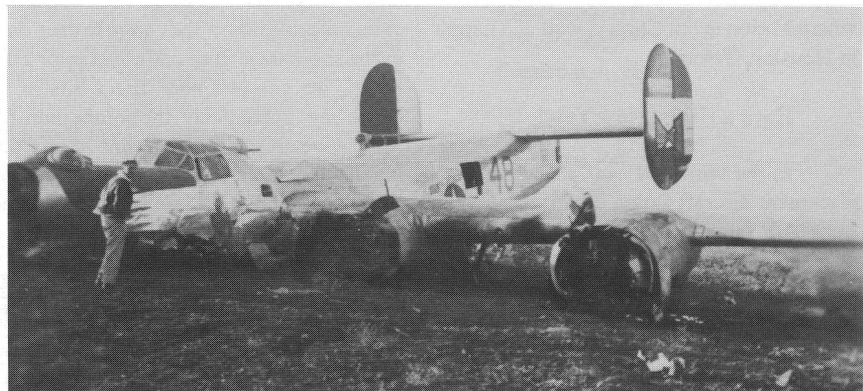
response will be quick and ample. I will then attempt to collate it into some sort of narrative, but will send you a copy of the material, as received, so that you can undertake editorial changes.

I have enclosed two photographs, unfortunately not dated. I recall the crash landing of #48 vividly. The photo of myself and the jeep with its marking is merely for the sake of authentication. Somewhere among my memorabilia is a picture of aircraft #10 with shark's teeth and camouflage paint, which was removed later on.

I will make every effort to locate it.

At any rate, I hope that you will be able to find the roster of the 496th and I will look forward to seeing it.

With my best wishes,
Fritz G. Cohen
496th Service Squadron
Port St Lucie, FL
Dear Bud:

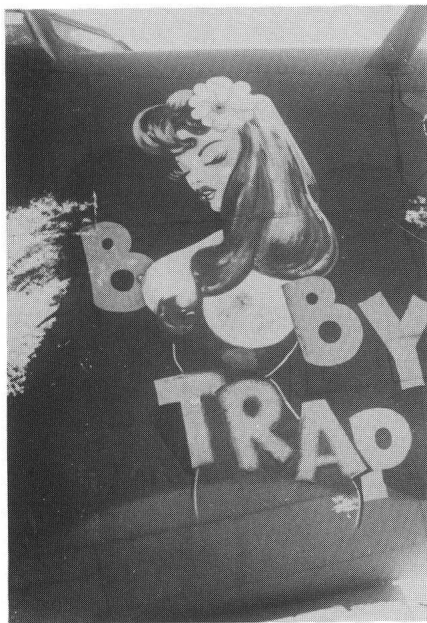


Crash of ship "48" 825 squadron, (Fritz Cohen photo)



Top row from left: Walter S Rogel-B, unknown-N, Stanley Dunsmore-C/P, and John W Roney-P. Bottom row: Forrest Parkins-T/G, Arthur Johnson (D)-E, Grifford-U/G, Stephen A Cronan (D)-R/O, Von Ray Harris-N/G, and William Delonga-B/G. (William J Delonga photo)

Here is a photo of my crew (above).
Take care,
William Delonga



Booby Trap, (Tillman Gressitt photo)
per left hand corner co-pilots sliding window. Some German FW-190 fighters were reinforced in a similar manner. See also on page 11 "Rhapsody in Junk."

Atlantic
Highlands, NJ

Dear Bud:

Please find enclosed a photograph taken at Torretta: photo 1 Booby Trap,

Tillman Gressitt
827 squadron

Editors Note:
This ship may have been transferred from the 8th Air Force. The copilots 'sliding glass window is bullet proof. See the extreme up-

M/Sgt Harold C. Jacobs 37414279
484 BG, 825 Sq

West Caldwell,
NJ
Dear Bud:

In response to your request for data on the 766 squadron, I am enclosing a photograph of the Ordnance Section taken in Italy in 1944. The picture of me was taken during basic training Miami Beach, Florida. Sorry I can't give you any more information, but after 50 years a lot of things have been forgotten.

Sincerely,
Russell C
Mac Eachern,
766 Sq.



Russell C Mac Eachern, Miami Beach, FL, 1943 (R C Mac Eachern photo)

Palmyra, Missouri 63461
Dear Bud:

In reply to Torretta Flyer # 20, back page with picture of "The Rover Boys." This was my airplane, I, being Crew Chief.

The photo in flyer #20 shows Lt. Henshell, Assistant Maintenance officer, Capt J.R. Dowless was Chief Maintenance Officer.

The "Rover Boys" came to me as a replacement airplane . S . B . Porter's crew flew this aircraft a lot. I changed the name from "Rover Boys" to "Ahhhh What's Up Doc" and it was with this aircraft that I won the "Bronze star Medal" it had, I forget, how many continuous missions without missing one. This aircraft also was involved in the "supply" missions in France where we were based at Avignon, flying gasoline, bombs and ammunition to Patton's forces at Lyon and Dijon. While "34" "What's up Doc" was in France many of the French people came to the airport to see the nose design.

"34" was assigned to the 825th Squadron and crashed on take off destroying the aircraft. One picture of the crash was featured in your Flyer#10 dated Spring 84.



461st BG 766 Squadron B squad Hammer Field, Fresno, California Winter 1943

Lexington, KY

Dear Bud:

I am enclosing a picture of our crew headed by first pilot Wilson B Wilkes. Did you know that a red headed gunner from Chicago had a dark room setup in the squadron milk house. We would go in there and help develop pictures for other crews.

I saw S/Sgt Low in Joliet about a year after we got out of the service. He came to settle his brother's estate. (He had been killed in a car crash). I also saw Clarence Bush in the early seventies during visits to Florida.

After 25 missions our crew was sent to rest camp in Cairo for a week. We did complete 50 missions then came home. Wilkes, Bush, Sparks, Low, Moore, and myself finished at the same time. The other members of the crew were bumped when we flew radar lead. Capt. Wilkes would fly co/pilot. Different bombardiers and navigators would be assigned to these missions. Our lead crew won the DFC for one particular mission, the details are outlined in the accompanying clipping from a Joliet newspaper.

Hope this finds you well,

Bob Moberly
824 Squadron

*Citation
With the 15th AAF In Italy*

SI/Sgt Robert G Moberly, top turret gunner of a B-24 Liberator has recently been awarded the distinguished flying cross (DFC) for extraordinary achievement in aerial flight over enemy territory. During a bombing mission on the vital oil installations in

Austria, Sgt. Moberly's crew led the wing formation. Enroute to the target, their formation was aggressively and persistently attacked by approximately 100 enemy fighters. Despite intense heavy and accurate enemy anti-aircraft fire, together with continued attacks by enemy fighters, they brought the wing through the enemy defenses for a successful bombing run inflicting heavy damage on the target. Turning from the objective, tho their ship was heavily damaged by enemy fire, they remained in the lead of the wing formation, making a safe landing at the home base with a minimum



Photo 1 Back row left to right: Clarence L Bush-E, Frederick H Sparks-RIO, Robert G Moberly-UIG, Ralph F Moore-NIG, and Zehnder S Low-TIG, Kneeling left to right: Wilson B Wilkes-P, William F Oldroyd-C/P, and George B Hayes-N. Richard M Pearce-B is not shown.

Clay Center, KS
Dear Bud:

Our crew left Mitchell Field, Long Island, New York around December 12, 1944. We ferried a brand new B-24J from Newfoundland, the Azore Islands, North Africa, and finally Italy. We left the plane somewhere south of the river and transferred by truck to the 765th squadron area. The river was flooding and we drove for hours before reaching the base at about midnight. We were temporarily housed in a tent of a crew that was reported missing in action that very day. Welcome to Italy. We flew our missions as a crew. We were very lucky, no purple hearts. We flew several different planes, but one I remember was Rhode Island Red II, No #32.

Some of our targets were: Munich, Linz, Vienna, Salzberg, Innsbruck, and Northern Italy places. On a trip to Europe in 1989 I revisited some of these places including the famous Brenner Pass.

My wife and I are retired and live about 150 miles west of Kansas City. We are frequent travellers who love to "Hit the Road."

I am not a farmer, but spend some of my time out at the farm fixing fences, spraying weeds, and cutting down trees in the pasture and watching the wheat grow. I enjoy meeting with a group of retirees at the local coffee shop nearly every morning, where we solve the world's problems.

Above. Charles Partridge. Bari Harbor behind, Spring 1945

Best Regards,
Charles Partridge 765th Squadron



My Crew from top left: Joe Student-TIG, Dana Coolbroth-BIG, Albert Brown-RIO (WIG), Ralph Johnson-NIG, and Charles Partridge UIG. Bottom row from left: Ernest Skinner-P, Harold Zuber-CIP, Dave Jefford-N, and Bob Skelton-E (WIG). (Charles Partridge photo)

Haines City, FL
Dear Bud:

I am sending you a picture of myself and two buddies (below) I am still looking for. Our tent was #62 Sleepy Hollow. From the left, Lou Peterson, Ray Monson control tower operator, and Joe Mihelei, a crew chief. We were all from the 826 squadron.

I am,
Lou Peterson 826 squadron.



From the left, Lou Peterson, Ray Monson control tower operator, and Joe Mihelei, a crew chief. (Lou Peterson photo)

York, PA
Dear Bud:

In the next Torretta Flyer please print a request for me. As you know "OI 45" went down on a mission to Moosebierbaum February 7, 1945. I would like to know if anyone has a picture of this aircraft or knows the tail number. *

Just recently I made contact with Bob Pahl, radio operator from Dayton, OH through Charles McKew. He told me that Ernest Thyberg, ball gunner has passed away. Following is a partial list of the crew with their wartime addresses. If anyone has any information on the plane or crew, I would appreciate hearing from them.

Alva M Schick-P Nashville, TN; James K Calvert-C/P Covington, OK; Kenneth D Limbocker-B Loveland, CO; Neal Spierling-N, Lansing, MI; Claude T Torgerson-E Lake Crystal MN; Walter J Sysko -Dudley, MA; William C Holmes-G Marinette, WI. 825 Squadron.

Thank you,
Bud Pressel,
Phone 717/757/1218

* Editor: The tail number was provided through the courtesy of John Beitling of Kansas City, MO. The tail number is 42-52635.

Ridgway, PA 15853
Dear Bud and Bea:

I have been meaning to write for some time to send you a few pictures for the archives. Seeing my "Diary of 51 missions" in the latest Flyer pushed me into action.

Most of the pictures enclosed are of people unknown to me, but I think they are probably all from the 767th or one of the HQs. George Thullerson sent me these and said I could do whatever I wished with them, so I'm turning them over to the organization. Maybe at some future time you could run a page on "Can anyone ID these people?"

I would also ask if you could send me a couple copies of the TF-20 Flyer, I would like to send them to the kids. "The Torretta Flyer" is great. Very professional. I look forward to every issue, even the ones I'm not in.

Thanks.
Wally Robinson
767 Sq



Who are They ? Wally Robinson photos

Dallas, TX
To: Bud Markel

Per your request, membership application is enclosed, together with requested photo.

Re your 7-26-91 printout on Reed Sprinkel crew. Gordon Dangremond was not to the best of my knowledge a member of the crew. Ken Query's address is incorrect, see new address on the app.

Reed Sprinkel wrote an article on our mission # 8 that appeared in the Torretta Flyer #19 Summer-Fall issue. I would like a copy if it is available. Just let me know the charge. The name of the copilot in that article is incorrect. "Sheldon" should have read "Skelton". That is close.

Thank you.
Bob Skelton 825 Sq

Minneapolis, MN
Dear Bud:

A point of information for our files and perhaps a listing in the next published roster of the deceased members of the 824 squadron. Then and now the task of keeping track of our crew fell to me, co/pilot. I have remained in contact with the surviving members of our original crew. We lost ball/gunner Douglas Morse many years ago. He was listed in the deceased column of our 1989 memorial booklet issued at the New Orleans reunion.

Upon returning to the States in 1945, I was never able to locate or establish contact with two members of our crew, Howard I Hoffman-T/G, Asn 32870103 or Norman K Hartmen-N/G, Asn 35538313. The US Department of Veterans Affairs informed me that Norman K Hartman had died February 8, 1989, but they were unable to forward my letter to his family.

Last fall while returning from a bird hunting trip, a detour took me to Harvard, Nebraska, where the original 484th Bomb Group had trained. I was directed to the field by an employee at the town hall. The concrete ramps, taxi strips, and runways appear to be intact, One large original hanger remains. Several new metal hangers indicate the field is being used by private aircraft

Yours Truly,
Dexter C Shultz, 824 squadron.
Philadelphia, PA



*Bob Skelton, downtown
Cerignola November
22, 1944*

Shreveport, LA
Bud Markel, Editor
Torretta Flyer

Dear Bud,

Enclosed are two pictures for the Flyer. One is Lyman Fairbanks' crew. In the picture are the ground crew chief and the assistant ground crew chief. I do not have their names, but you might recognize them from the pictures. We are standing by the replacement plane they assigned to us after the crash landing.

All members of the crew were not present when this photograph was made. Bill Bryan, the bombardier~ was a replacement as Jack Cosper, who was with us originally as our bombardier, went into Switzerland with another crew.

The other is a picture of our plane which crash landed after a raid on Gîrgui, Rumania on June 11, 1944. Lyman thinks this was published earlier but not identified.

Hope you can use these and hope to see them published

Harry C Sadler Jr.
827th Squadron



Lyman N. Fairbanks, Crew—827th Squadron. Top Row—Left to right: Harry Sadler—Navigator, Lyman Fairbanks—Pilot, Fred House—Co—Pilot, Bill Bryan—Bombardier, Jack Frease—Tail Gunner. Bottom Row—Left to Right: Ground Crew Chief—Name unknown, Irving Gilbert—Radio Operator—Waist Gunner, Assistant Ground Crew Chief—Name unknown, Dick Radar—Ball Turret Gunner, Paul Walko—Crew Chief—Waist Gunner. Not shown: Philip Kuntz—Top Turret Gunner, John Zuest—Nose Gunner. (H C Sadler photo)



This is a picture of our plane which crash landed after a raid on Gîrgui, Rumania on June 11, 1944. (H C Sadler photo)

Fairborn, OH
Dear Bud

The crew of "Flack Strainer" met for its annual meeting last year in Bramson, MO. Seven members attended.

I am enclosing a photo of our crew at your request. Rua L Petty was our first pilot, although the photo does not show him.

Best Wishes,

Wayne "Tommy" Tompkins
825 Sq.



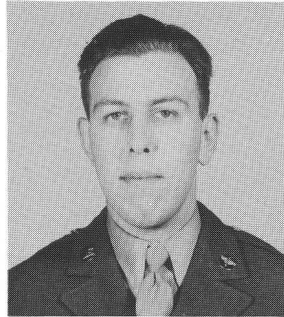
From Top left: Donald D Reifschneider-B, John Hughey-N, Pat Schnazmyer-P, and Wayne Tompkins-C/P. Bottom row from left: Walter Kressen-G, Chuck Killen-W/G, Cliff Adams-R/O, Harold Parks-E, Ted Janes-G. (Wayne Tompkins photo)

Dear Bud:

At the Nashville reunion I gave you some photos but did not identify them.

Here are some captions to go with the photos.

See you,
Manny Weber
764 squadron



*My mug shot taken radio
School Sioux Falls
SD,(Manny Weber photo)*

Lower Court Rd
Trumansburg, NY

461st & 484th BG Assn.
Dear bud:

I'm sorry I haven't had the opportunity to tell you how much I appreciate all of the work you and your wife have done to bring together so many memories of my days in Italy. I have had a stay in the hospital to take up my time, but have recovered completely and hope to get back in the mainstream again.

I have enclosed a photograph of my crew which you might be able to use. Identification is listed below.

Sincerely

Robert J Kieber
825 Squadron



Crew of Bob Arnholt 764 squadron, they are from top left: Bob Arnholt-P, Fred Dillard- N, and Jack Begley-C/P. Bottom row from left: John Rees (D)-E, Pete Louricas-R/O, Don Windmuller-N/G, Jim Tessitore-U/G, James O'Rourke-G, John Ritz-G. Taken Pueblo, CO OTU December 1944. (Manny Weber photo)



Standing left to right: P-Robert J Kieber, C/P-Joseph Orell, N- Forest G Kitson Jr, and R/O Stanley Parda. Bottom row from left: W/G-Francis Urbanek, B/G-Richard McCarty, E-Irving Rosen, N/G-Chester Peacock, and T/G-Roland Perreault. Robert J Kieber photo.



Last flight of "Swee Pea," (from the Popeye cartoon character). Crew 18, Linz Mission August 24, 1944. (Manny Weber photo)

The Last Mission

Robert T Chalmers 765 Squadron



Captain Robert T Chalmers (right) looks over the flak damage on "Judy R." M/Sgt Robert E Basiliere (left) of Pawtucket, RI, crew chief of the "Judy R" looks on. (Robert T Chalmers photo)

Ronald Chalmers, Robert M. Chalmers, and a brother retired Navy Capt. George Chalmers.

Capt. Robert T. Chalmers, 25, pilot on a B-24 Liberator bomber in the 15th AAF, landed his ship, the "Judy R," at his home base with her hydraulic system shot out and the craft severely damaged by 20 millimeter shells. "I should never have attempted to bring her back," he added, "if I could have seen how badly she had been shot up in the waist and tail. The interphone was one of the first installations to be hit, though, and I was out of touch with the rest of the crew from the very first approaches to the target." Chalmers' crew was briefed for the Odertal oil refineries in Germany, but just before they reached the target, they were singled out by an angry Luftwaffe for the kill. Formations of FW-190s and ME 109s continued to harass the Liberator for fifteen minutes while she floundered about with her fuel lines slashed and three guns knocked out. "There must have been over 50 fighters that had their guns on us at one time or another," Chalmers said. "I remember two distinct attacks, but in between those "Krauts were hitting us from all angles." In the meantime a shot in our number three engine had

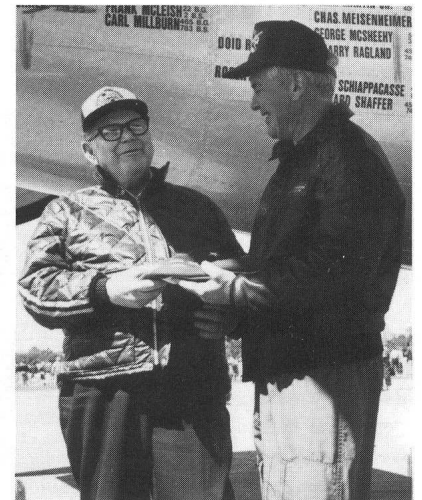
Robert T. Chalmers, 71, a retired Air Force lieutenant colonel, died June 17, 1991. He was born in Rutland, Vermont a veteran of three wars and 25 years of military duty, Lt. Col. Chalmers was pilot of the B-24 called the "All-American" when it was shot down in World War II. He was a member of the American Legion, Retired Officers Association, and Sons of the American Revolution. Survivors include his wife, Eunice Chalmers, sons, Larry Chalmers,

knocked out the supercharger and at the same time I noticed that a fuel leak was causing a dangerous shortage in our supply. We joined the rest of the formation after they came off the bomb run, and at a lower altitude we tailed first one and then another flight until we had cleared the dangerous territory. For a while we thought of setting her down in some friendly field, but it would have made the third time this crew had done so. The leak stopped in the meantime and we had sufficient fuel to risk a run to our home field."

But Capt. Chalmers' real problem began when he attempted to land. Since the hydraulic system that controls the flaps and landing gear was out, the engineer had to crank down these mechanisms. In place of the hydraulically operated brakes two parachutes were flung from the waist windows and simultaneously opened on the moment of impact. "The engineer couldn't get the flaps all the way down on one side," says Chalmers, "since a shot had struck the wing at that point. The steering wheel pulled violently and the nose of the ship seemed bound to strike first. My co-pilot and engineer both threw all of their weight behind the wheel and we managed to land her without a crack-up. After looking at "Judy R" on the ground and seeing that great gash in the wing and the two-foot hole in the waist, I'm surprised that we got home at all."

Chalmers served with a veteran Liberator group under the command of Lt. Col. Brooks A. Lawhon, that has flown more than 150 bombing missions and has twice been cited by the War Department.

Chalmers was graduated from Rutland High school in 1938 and attended the Curtiss-Wright Technical Institute in Glendale, Cal. He was employed as an aircraft mechanic and machine inspector by the Glen L Martin Corporation in Baltimore, MD. He entered the AAF January 2, 1942 and received his second lieutenant and pilot wings at Columbus, Miss., February 1943. He instructed advanced cadets in twin engines at



Robert T Chalmers (left) receives the flag that flew over the "All American" last year from Bob Collings. Photo taken March, 1991 (Robert Chalmers Photo).

Stuttgart, Ark., for 14 months. and then received further training in four engine ships at Smyrna, Tenn.

Editor's Notes: The target that day was the Herman Goering Tank Werks, Linz, Austria. Bomb Load 1000 Lb G. P. Weather CAVU. Reichmarshall Herman Goering, Chief of the Luftwaffe, also owned the Herman Goering Tanks works outright. He had the power to order a huge fighter force to defend his property, and apparently he did so with disastrous results for the 461st BG. A huge air battle took place that day with 15 B-24's lost from the 461st Bomb Group. Claims for enemy aircraft shot down were 31, 19 probables and 9 unconfirmed. All bombs were salvoed short of the target. If the claims of fighters shot down that day are correct then the crew of "All American" accounted for almost half of the claims. Not bad shooting.

The First "All American"

The First "All American" was a B-24 in the 765th Squadron, 461st Bomb Group. Reliable information suggests that she was flown by Bob Chalmers on 25 July, 1944 on a mission to Linz, Austria. The group was attacked by 25 FW190 and 125 ME109 Fighters. Eleven 461st B-24's were lost over the target and four more on the way home. The "All American" made it back and was credited with shooting down 14 German aircraft, the largest number of planes shot down by any aircraft on a single mission during World War II. On 4 October, 1944 the "All American" herself went down over Yugoslavia.

—From the 461st LIBERAIDER

James D "Dick" Cummins 825th Squadron

James D "Dick" Cummins, 70 passed away May 4 1991. In 1945 Lt-Cummins, assistant wing navigator 49th Bomb Wing was awarded the DFC for extraordinary achievement while on a mission to Vienna, Austria, when his bomber was so aged by anti aircraft fire that he was forced to bail out before a mission in 1945.

"We were up and there were wounded electrical gone and our crew were out. The was no longer Cummins re-



James D "Dick"
Cummins.

L t Cummins helped bail out the wounded and the others. Then just before the pilot, he jumped. He landed amid a group of Yugoslavian partisans. They first thought he was a German and it was not until he found a Tito follower who could speak French could

were badly shot down and there were several wounded. All our equipment was superchargers interphone also working," called. Cummins passed "Lighten ship"

were badly shot down and there were several wounded. All our equipment was superchargers interphone also working," called.

Cummins passed "Lighten ship"

Lt Cummins impress upon him that he was an American. The partisans took him to the Russians, who treated him wonderfully. Within 10 days his return had been arranged and he found himself back in Italy.

He entered the army in June 1942 and was commissioned on March 6, 1944. He flew his first of 34 missions on August 22, 1944 to Vienna and his last on April 25, 1945 to Linz, Austria.

After the war he served with the Air Training Command, the Alaska Command, and the Strategic Air Command. He is survived by his wife Nancy, two daughters Carolyn Cummins, Mary Kay Brittingham, a son James D Cummins III, and three grandchildren.

Colonel John B. Paine, CO 826 Squadron

John B. Paine, USAF retired, passed away November 6, 1991. He was a graduate of the University of Texas at Austin. He graduated from the Army Air Corps Flying School at Kelly AFB, San Antonio, in August, 1941, and married Hazel Jo Ivy Kilgore the same month.

Colonel Paine was Squadron Commander of the 826th Bomb Squadron based in Italy during World War two and accepted a regular commission in the Air Force after the war. His last two assignments during thirty years in the service were at Amarillo AFB as Wing Commander of the 461st Bomb Wing, which received the outstanding unit award under his command at Barksdale AFB, Shreveport, Louisiana, as Inspector General of the Second Air Force, where he was presented the Legion of Merit for outstanding achievement.

Col John L. Mulligan USAF Ret. 827 Squadron

John Mulligan, a longtime member of the Association, attended many reunions where he met and made many friends over the years. He started his military career at Maxwell AFB in 1942, he retired in 1973 after 31 years of military service. During World War II he flew a combat tour in B-24s with the 15th Air Force. Among his decorations are the Legion of Merit, Air Medal with clusters, and Purple Heart.

John Mulligan was navigator on crew #75, 827 squadron piloted by Joseph W Simmons. Other members of his crew were: Edward A Silven-C/P, Victor P Ranalletta-B, Herbert W Bucknall-E, Vincent S Maillard-R/O, Gilbert E Neher-B/G, Richard Koepke-U/G, Lawrence J Link-N/G.

Letter from John Mulligan's daughter Lisa:
Prattville, AL

Editor Torretta Flyer

Hello:

I am sorry that it has taken me so long to get back to you. Let me tell you first how nice it was to receive your letter. My family and I really appreciated it.

My dad actually passed away on April 8, 1991. He had been

ill since late November. In October, he drove all the way up to Boston, MA for his 50th high school reunion. He told me that "This one may be the last one I get to attend." He also attended your 9th reunion in Nashville, TN, on the way back home.

Enclosed you will find a copy of the obit that was in the local paper. Hopefully, that will tell you a few of the things that he did in the war time. I know that he really enjoyed coming to the reunions that you had, and I'm sure he would have been at the 10th one in Kansas City, if he was still here.

My mother died when I was only four years old. She had a brain tumor that was malignant and she lived for about eight months after she had brain surgery at Walter Reed Army Medical Center. My father had a massive heart attack in 1970, about two months after my mother died. Heart disease runs in my father's family. He was very close to death at the time but said that he asked God to let him live to get me raised up and get a good start on life.

He never remarried and I had the best childhood that any child could ever ask for. We took many trips. We went on a cruise to the Bahamas when I was in the 7th grade and when I was going into the 11th grade, he took me to beautiful Hawaii. My father was a best friend to me and a wonderful dad. I have two brothers and two wonderful sisters and we are a very close family.

I have never had the pleasure of meeting Dot Fetter, but I have talked to her on the phone several times. She is a very nice person and I know that my father was very fond of her and her husband.

My father was buried at Arlington National cemetery beside my mother. The day of the funeral was very nice. The weather was really nice. He was buried with full military honors including a 21 gun salute and the playing of taps on April 12, 1991. Of course I miss him very much as I saw him every day of my life.

After I got married in 1986. I really felt responsible for going by and checking on him, although he was very independent. He knew that death was near as the doctors had told him he could go at any time. He faced death very bravely and he was as prepared for it as anyone could have been. He told me that God had granted his wish (which I mentioned earlier) and much more. I stayed with him quite often at his house and I was with him the night he passed away. We stayed up talking until about 11:30 and when I woke up at 5:00 in the morning he was gone.

My family and I take comfort in the fact that he lived his life to the very fullest and that he was such a wonderful person. My husband and I will be moving over to my father's house soon.

Sincerely,
Lisa Mulligan Selix

Ralph D Pierson
826 squadron

Ralph D Pierson 69, Navigator on James E Kennedy's crew, 826 squadron passed away June 25, 1990. Multiple sclerosis prevented him from attending the reunions. He was extremely proud of his service to the country, and his family was proud of him.

He was the holder of the DFC, Air Medal and clusters completing 35 missions.. He was shot down over Yugoslavia and He flew his first combat mission October 31, 1945 to Podgorica, Yugoslavia to attack German troop concentrations. On his second

mission to attack a Vienna oil refinery, his squadron was diverted to bomb the Kafenburg tank works, near Brux Austria, their aircraft "Vicious Virgin" was hit by enemy fire. Number one engine could not be feathered. Engine caught fire and Lt Robert S Simkins the pilot on this flight, ordered the crew to prepare to bail out. On the way back to base number two engine went out and could not be feathered. Two men were able to jump, but the airplane was losing altitude so fast that all the others elected to stay with the plane. The airplane plowed into a valley between Ribnik and Medak, Yugoslavia in a controlled crash. They were picked up by partisans and were eventually turned over to the American Mission who transported them to the seaport at Bari, Italy after 18 days in enemy territory. The plane was later destroyed by Yugoslavian troops.

The crew picked up after the crash besides Pierson and Simpkins were: Cpl Robert C Rourk, Cpl Walter F Menn-photographer, Lt James E Kennedy-C/P, Cpl Howard Armknecht-B/G, Cpl Thaddeus J Mayewski-T/G, Lt Watson B Smith-B, Calvin Milam-R/O who had jumped earlier was reunited with the rest of the crew some time after the crash landing. With the exception of Robert S Simkins who was flying his 32nd mission, the rest of the crew were on their second mission.

Because this was an inexperienced crew the regular pilot James E Kennedy was flying co/pilot and Robert S Simkins with 31 mission experience was flying as first pilot. This and similar transpositions of individual crew members was quite common in the 484th Bomb Group with crews flying their first missions.

William Roller
825 Squadron

June 25, 1923 - May 15, 1991

Bill was a captain and a bombardier with the 484th, Bomb Group, 825th squadron, on a crew piloted by Elvin W Brush. According to his leather bomber jacket, he flew missions over Germany, Austria, Rumania, Czechoslovakia, Poland, Bulgaria and flew 52 missions or more.

On one occasion a 500 lb bomb had hung up in the bomb bay crosswise and easily dislodged. It was caught by Bill and the engineer struggled to free it before the peller spun off allowing the lives so that only



Bill Roller,
(Bill Roller photo)

the bomb to become a slight jar would set it off. Now the problem was, could they free the bomb without hitting other planes of the formation flying below. Here is a case where the lives of the other members of the crew depended on the skill of the bombardier and the engineer. Jim Pool the crew's navigator said this was the cement that held the bomber crews together, the sharing of a common danger. He goes on to say that Bill Roller was very conscientious about dropping his bombs directly on

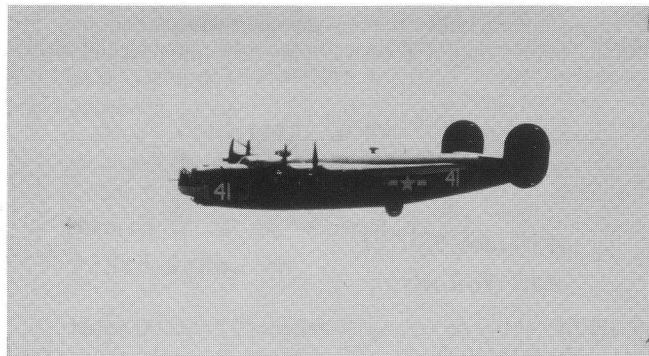
the target and not in civilian areas.

After the war, Bill was stationed at Ft. Polk, Louisiana, where he served as the base's legal representative. Among his decorations are: The Air Medal with clusters, Presidential Unit Citation, and MTO Theater Ribbons. He was discharged from the service in 1957.

Bill loved to square dance, and he made sure that he danced with everyone. He would glance at the women sitting on the sidelines and make a bee line to join them and ask them to dance the next one with him. Although frequently in pain from knee and leg problems and if he knew his partner enjoyed round dancing he made every effort to dance the rounds with her.

He had a great sense of humor and had the ability to form a pun or quip for any situation. He was a fountain of knowledge and could quote numerous writers and humorists. He always maintained an upbeat and fresh enthusiasm for the world around him. He couldn't stand hypocrites and pretentious people or institutions.

He is survived by three daughters. Pamela Kornitsky, Dr. Deborah Younger, and Barbara Fischer, and two grandchildren Grace Younger, and Adam Fischer. He was preceded in death by his first wife Grace.



Ship #41 The plane often flown by the crew of Elvin Brush of which Bill Roller was the bombardier. (Bill Roller photo).

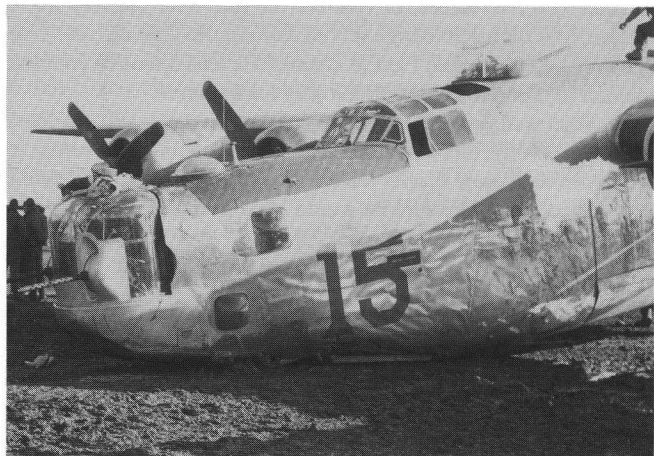
*Robert N "Bob" Roth,
824 Squadron*

Bob Roth.

Every airport has its own unique personality and if you happened to land at May's Flying Service, Piper Airport, Princeton, Illinois, during the late 1960's or early 1970's you would have met Bob. Actually, you could have met Bob after he popped out of the overcast into any one of a thousand airports around the country



Bob Roth (right) Bob Roth photo



An example of the B-24's weak nose wheel, ship #15, 824 Sq. (Bob Roth Photo)

during that period, as he traveled extensively around the U.S. in his job as a Champion Pneumatic Air Compressor salesman.

Bob learned to fly in the late 1930's while he was attending the University of Wisconsin. His original logbook was filled with entries of flights in such fine aircraft as the Taylorcraft, Aeronca K, Aeronca Chief, Luscombe, a Ryan and a Waco. The flights didn't go for any great distances, but as Bob remarked: "Neither did my money."

World War II interrupted the civilian flying, and put Bob in the U.S. Army Air Corps with a B-24 squadron, based near Foggia, Italy. Although World War II was supposedly a global conflict, I never ceased to be amazed at the number of people Bob knew that had rotated through that one B-24 squadron and how they would come to live in such a small rural town as Princeton, Illinois, or be a QB in the San Antonio, Texas hangar.

When I first met Bob, he had just "popped out" of the overcast after one of his sales trips. I had just returned from Vietnam and needed to re-instate my CFI, and was desperate to borrow his Jepps* to use on my check ride. Bob graciously consented, and asked if I would be doing any instructing while I was on leave. His reason for asking was although he had a complete set of Jepps* and flew IFR across the U.S., he had never quite obtained an Instrument Rating! He had taken the flight instruction, but just never found time to study for the written. This somewhat minor detail (I wasn't an FAA Inspector then, so it seemed minor to me) was overcome by flying all hours of the day and night and prepping for the written. It paid off.

During the following years it would not be uncommon for Bob to appear at whichever Army airfield I was stationed and visit a few days. The Fates would intervene in our lives and both of us moved to San Antonio, Texas in 1976.

After I was brought into "Ye Anciente and Secret Order of Quiet Birdmen," I wasted no time sponsoring Bob, as this was his kind of group. Bob took great pleasure in the friendships that he formed at QB. He was typical QB material, Hail Fellow—Well Met, and a great storyteller. Bob served as Gopher, Bartender, Doorman, Beam Man, Key Man, Governor, and whatever else necessary to help make each of the San Antonio hangar meetings something memorable. He was a procurer and salesman of unique items, and as such, he was probably the only QB any of us knew who wore boxer shorts that sported embroidered QB wings.

Bob and his wife, Pat, were lost in a boating accident in the Gulf off Mexico of Port Aransas, Texas on August 21, 1990. Bob's

body was found and positively identified on October 5 1990 and his wife's body is still missing. He is sorely missed by the membership of the San Antonio hangar, and every one else that knew him. QB like this guy are damned hard to find . *Jeppeson Aeronautical charts.

By JD Huss a fellow Quiet Birdmen

Editors Note: Bob worked closely with Fang Hansen, engineering officer 824 squadron, preparing maintenance reports, and forms. He tabulated airframe and engine times, and kept logs of the serviceable aircraft. His MOS (405) was clerk typist.

*Otis G Groom 71, Edmond, OK,
765 Squadron, Crew #27*

Hi Bud,

It is certainly with a deep sense of loss and regret that I inform you of the death of Otis G. Groom, of Edmond, Oklahoma, on March 19, 1991. Otis was the Bombardier on Crew #27, piloted by Thomas R. Moss. The crew has thus been reduced by one, of those known to still be living, to four.

Born Oct. 8, 1919, in Edmond, Groom graduated from Arcadia High School in 1936. He received his bachelor of science degree from Central State College in 1940, going on to earn a master's degree at Wichita University. He served in the Air Force for 24 years, including service in World War II and the Korean War, and retired with the rank of lieutenant colonel.

In addition, Groom was a retired teacher, and instructor for TWA and an FAA instructor for 10 years at the management school in Lawton, OK.

Tom Moss,
765 Squadron

*David J
Thomas,
766 Sq*

David J Thomas pilot of the 766 squadron passed away September 3, 1990. He was born and raised in Wilkes-Barre, Pennsylvania. He attended Columbia University. His schooling was interrupted by service in the Army Air Corps. After discharge he returned to Columbia University and graduated in 1948 from the



David J Thomas (David Thomas photo)

school of Engineering and Applied Science.

He worked for General Electric for 30 years in Pittsfield, Massachusetts, and Schenectady, New York, and was known as the "Transformer Man." In later years he was handicapped by MS but never stopped trying to remain active. He was thrilled to be reunited with his crew.

He is survived by his wife Dorothy Young Thomas, a son, a daughter and one granddaughter.

The family wishes to hear from anyone who has memories of David Thomas or recognizes the photograph.

*Robert "Bob" M Hale 68,
825 Squadron*



Robert "Bob" M Hale 68, 825 Squadron, passed away at his home on May 25, 1991, of heart failure due to complications from surgery for bladder cancer. He had a very positive attitude about his declining health and was determined to be brave and live his life to the fullest.

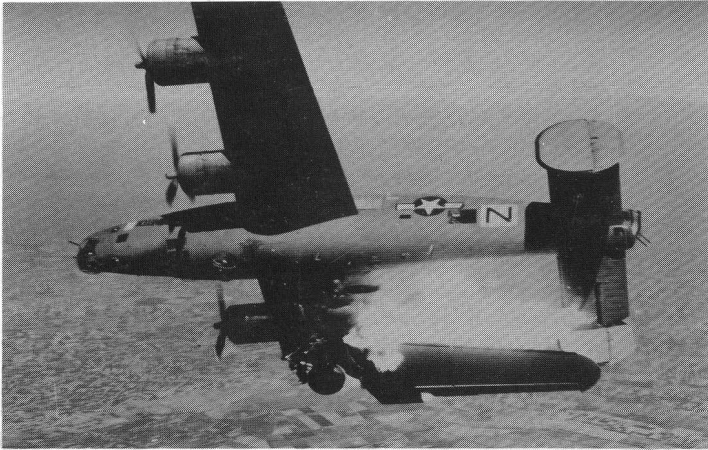
After serving in WWII he joined the reserves and was called back to active duty for one year. He was honorably discharged on March 9, 1952 from the Naval Air Force in New Orleans, Louisiana.

A native Tucsonian, he was an avid hunter and fish-man and also spent many years rock-hounding throughout the southwest. He cut and polished the more valuable gems and made jewelry for his family and friends. Bob and Dottie had several memorable trips to England, Wales and Scotland and Ireland in 1980 and 1981

He was a 32nd Degree Mason and a member of the Scottish Rite for the past ten years.

Bob retired in July of 1984 after 32 years in Civil Service at Davis Monthan Air Force base in Tucson, Arizona. Bob and Dottie attended the reunions in New Orleans and Nashville. Their children had a surprise 40th anniversary party for them on September 4, 1989.

Bob is lovingly remembered as a thoughtful and caring husband and father and for his countless good deeds over the years to his fellow man. He is survived by his wife Dottie, three daughters and four grand daughters and one grandson and also included are his fellow crew members who were so special to him : Charles Perry, Gene Hildebrand, Lynn Pennington, Don Weber, Robert Garvey, Nick Lackovic, Claude Wilson, and John Cross.



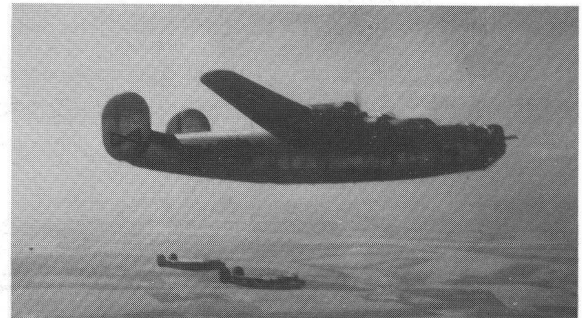
The downing of "Black Nan." A new Liberator "Stevonovitch II," from the 464th BG, a grey pathfinder was hit by one four gun anti aircraft battery on April 10, 1945, in support of "Operation Wowser" an attack on German troops in Italy led by General Von Vietinghoff, just under 3 weeks before the end of hostilities in Europe. Right after bombs away four flak shells burst near the 464th, the fourth shell hit "Black Nan" between the no 1 and no 2 engine. The final irony was because this was supposed to be a milk run, men who were about to finish their missions were sent along. One waist gunner survived.

The 464th BG, 484th and 461st and others were assigned to bomb Area Baker in support of the Eighth and the Fifth Armies led by Gen Mark Clark in the last spring offensive on the Italian mainland. The bombing completely crushed the German Armies in Northern Italy.

Operation Wowser was the greatest heavy bomber effort ever launched by the 15th Air Force in cooperation with Allied Ground Armies. The operation brought to peak of success the use of heavy bombers in a tactical role. A German officer, age 32 said during interrogation after a mass surrender of German troops below the Po River, "The effect on the moral of our troops was indescribable. We know now that you mean business in Italy and that we will not be able to stand up to these terrifying attacks much longer. I believe that my men were quite content to be taken prisoner after the last raid." (USAF photo via Lesley Seyler)



Crew of Lloyd J. Breisch, 827 sq. Top row from Left: P-Lloyd J. Breisch, C/P-H. O.McAllister, N-Alexander Sobelewski, B-Lesley L. Seyler, Bottom row from left: E-Leroy Smith, N/G-John R. Brennan, T/G- Elbert Wallace R/O Edward J. Fahey, W/G-Richard K. Rutledge, and B/G-Louis H. Heimbruch. The crew was assigned to 827th Squadron, but the plane was assigned to another group because it had Norden bombsight and the 827th used Sperry bombsights. The new plane was named 'The Eunuch'. Derivation of the name is now unknown. (Lesley Seyler photo)



The Eunuch ship 74, 827 Sq. (Lesley Seyler photo)

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