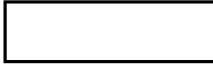


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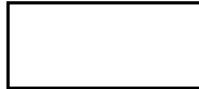
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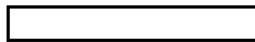
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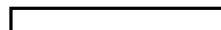
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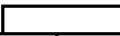


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CONTENTS

	<i>Page</i>
The Missing Link James D. Burke	1
<i>The search for Soviet deep-space signals (Secret Noform)</i>	
The Holocaust Revisited Dino A. Brugioni & Robert G. Poirier	11
<i>Photointerpreters look at Auschwitz (Unclassified)</i>	
Maxims for Analysts David S. Brandwein	31
<i>Advice from a master practitioner (Confidential)</i>	
Communication from the Editor: Intelligence Vignettes	37
<i>A new bottle for vintage wines (Unclassified)</i>	
Intelligence in Recent Public Literature	41



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*Through the third, fourth and fifth
dimensions in search of...*

THE MISSING LINK

James D. Burke

For nearly sixteen years the Soviet Union has been using a deep-space radio link that we have been unable to intercept. This is an account of our intelligence efforts leading, first, to a conviction that the link exists, second, to a knowledge of many other aspects of the Soviet planetary program, and finally to a determined but still unsuccessful effort to find the unknown signal.

Deep-Space Information Systems

To explore the planets, automated spacecraft must return information over distances of tens of hundreds of millions of kilometers. Because of the limits of spacecraft transmitter power and antenna size, the radio signals reaching earth are fantastically weak: many millions of times weaker than the energy collected by a car radio antenna. Deep-space ground stations therefore must have huge antennas and supersensitive receivers similar to the equipment used by radio astronomers. And even then, the rate at which information can be sent is severely restricted. In the early sixties, we and the Soviets received only a few symbols per second from our first planetary probes. Today in U.S. missions the rate has grown to hundreds of thousands per second, enabling the return of images such as those of Mercury from Mariner 10 and of Mars from Viking.^{1 2}

Soviet progress has been less spectacular, but it has also led to a capability for imaging the planets. Figure 1, a picture of Martian landforms returned by the MARS 5 spacecraft in 1973, is comparable to U.S. Mariner imagery. To send pictures such as Figure 1, the Soviet spacecraft must have had some combination of the following:

- a. a large directional antenna pointed accurately toward earth;
- b. a powerful transmitter;
- c. a high transmitting frequency (giving the most gain for a given antenna size); and
- d. on-board data storage so that the picture data could be slowed to a rate that the radio link could handle.

Soviet planetary pictures, having been proved genuine by comparison with data from U.S. missions, show that this design problem has been solved—though not, apparently, in quite the same way or with as high a priority as in the United States. Soviet planetary images have often been inferior in both quality and quantity to those from contemporary U.S. missions; nevertheless it is clear that the Soviets are able to return respectable quantities of data from planetary distances.

¹ Murray, B. C. and Burgess, E., "Flight to Mercury" 1976, Columbia Univ. Press. Lib. Cong. No. LC-76-25017.

² "Scientific Results of the Viking Project," Journal of Geographical Research 82, 28, 30 Sept. 1977.



Fig. 1: Photo of a 100 x 100 km region of Mars, sent to Earth by MARS 5.

Soviet Deep-Space Communications

In their large program of flights aimed toward the Moon, Venus, and Mars since 1970,³ the Soviets have consistently used and improved a few basic communication links, most of which have been described in public and confirmed by U.S. intercept. The known links and their functions are listed in Table 1. **One link remains unknown and we are now confident that this is no accident, for it is the one that carries prime, high-rate science data including orbital imagery such as Figure 1.**

Soviet announcements from 1962 onward have acknowledged that this link exists. The most explicit description of it appeared in *Pravda*, 19 December 1971, in connection with the MARS 2 and 3 missions:

Two radio channels—one narrow-band and one broad-band—are utilized for communication between the orbital apparatus and the Earth. The narrow-band channel is designed primarily for making trajectory measurements and transmitting telemetry information; it operates in the decimeter waveband. The broad-band radio channel, which functions in the centimeter waveband, permits

³ Sheldon, C. S. II, "United States and Soviet Progress in Space: Summary Data through 1976 and a Forward Look" Lib. Cong. Document 77-99 SP, 5 April 1977.

Table 1

SOVIET DEEP-SPACE DOWNLINKS		
Wavelength (cm)	Frequency (MHz)	Use
163	183.6	Lunar telemetry
32	922.76	Lunar telemetry and imaging
32	928.4	Planetary narrow-band data (including some imaging)
8	3691 or 3713.6	Coherent 4x multiple of 32-cm carrier, for dual-frequency plasma and occultation experiments
5?	?	Planetary broad-band data including orbital imaging and science

the transmission of large volumes of information from the television assemblies and scientific instruments.

Since all statements about the narrow-band channel were proved correct by intercept, we have tended to give some weight to similar statements about the broad-band channel. Given such a clear target, one may well ask why this signal has never been intercepted. To answer this question, we must consider some technical matters and also the intelligence environment within which deep-space SIGINT collection occurs.

Early U.S. Deep-Space Collection Efforts

Twenty years ago both the United States and the USSR began trying to reach the Moon. The Soviets succeeded first and then, in the decade 1959–1969, were overtaken by the massive U.S. response that put Apollo astronauts on the Moon and caused the Soviet manned lunar program to collapse. During the great lunar contest, both parties also were active in automated exploration of the planets. The Soviet planetary exploration effort was much larger than that of the United States, but its successes were few.

At the outset of both programs in 1959, we had no capability for intercepting Soviet signals from deep space, and there was some debate over the need to do so in the absence of any evident security threat. In the end it was decided to build a multipurpose station which could collect deep-space signals and also those from high altitude communications satellites, the latter being, of course, of possible military importance. Because the Soviets normally transmit only to stations on their own territory, our station had to be in the Eastern Hemisphere. The site selected for it was near Asmara, Ethiopia, in the vicinity of other existing U.S. facilities. From 1965 to 1975 this deep-space station, named STONEHOUSE (Figure 2) functioned with increasing competence, recording signals from Soviet lunar missions, comsats, and planetary spacecraft. Before its successful career was ended by political unrest and terrorism in Ethiopia, STONEHOUSE—with the aid of several collaborating sites—gave us a fairly full understanding of the Soviet lunar and planetary program.⁴ We learned how the known data links listed in Table 1 were used, and we came to understand much of the information that they carried. We even obtained some scientific data superior to any released by the Soviets, indicating that STONEHOUSE

⁴ (SECRET) Burke, J. D. "Seven Years to Luna 9" *Studies in Intelligence*, Summer 1966, X/3, pp. 1-24.

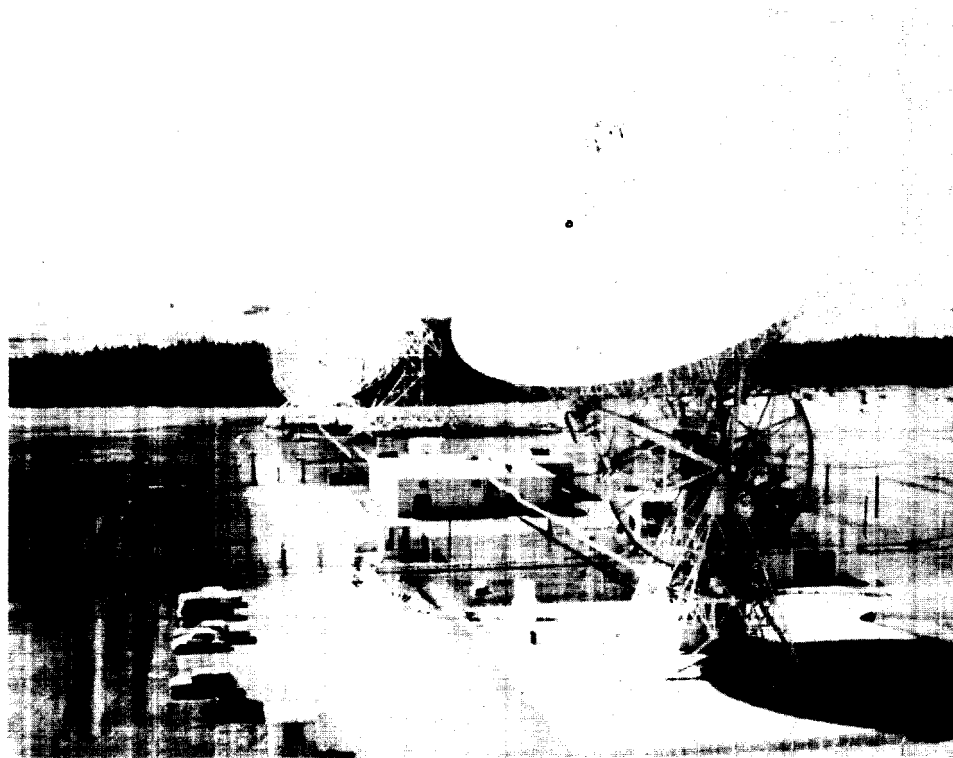


Fig. 2: STONEHOUSE deep-space receiving station near Asmara, Ethiopia. The antenna in the foreground was 26 meters in diameter; the one in the background was 46 meters in diameter.

was performing as well as or better than the Soviet Crimean deep-space stations, at least for the decimeter-wave, narrow-band telemetry. In all this time, however, we never acquired the centimeter-wave, broad-band signal. We came to know exactly where to look and when to expect it to be on the air; we thought we knew its approximate frequency; we searched and did not find it.

The problem in such searches is that one seeks a small needle in a large haystack. The search dimensions are space, time, and frequency. In space, one must point the receiving antenna precisely toward the signal source. We had to determine the trajectory of each outbound spacecraft soon after it left Earth, so that we would know where to point the antennas during the months of interplanetary flight. This was done with the aid of radar tracking from Diyarbakir in Turkey and sometimes with angle tracking, either radio or optical, from sites in Iran and California.

In the time dimension, one could try to search continuously whenever the spacecraft is in view, but this would be very costly and frustrating because Soviet planetary spacecraft transmit only for occasional short periods. We therefore had to devise schemes, based on the behavior of other observed signals, to concentrate our searches at the right times. STONEHOUSE was greatly aided in this task by information from another site, in which intercepted Soviet deep-space command uplink transmissions from the Crimea.

As we went on trying, we thus developed reliable means for telling where and when to look. The overseas sites were tied into a real-time system using NSA

computers and secure communications centered in DEFSMAC. Though often plagued by communications problems, this system essentially solved the space and time search problems. **This left the frequency dimension, which was and remains the chief obstacle.**

In a deep-space mission the expected radio signal power within any small frequency interval is minute. If the receiver bandwidth is widened to admit more signal power or to cover a larger search region, it also admits more cosmic radio noise masking the desired signal. But to search a broad frequency band a little at a time takes forever, and the Soviet signals are typically turned on only for an hour or two. Unless there is some clue as to where to look in frequency as well as in space and time, the search may be hopeless.

Clues

Apart from the Soviet announcement quoted earlier, what clues do we have for the frequency search? Over the years we have accumulated quite a few. Until the signal is found, of course, we have no way to evaluate their validity. We could be the victims of a prolonged deception—but we wonder if the Soviets would really deem such an effort worthwhile. In other parts of their deep-space enterprise they seem to have followed a fairly consistent pattern: reluctance to release information before launch, lack of candor about failures, and accurate but incomplete information about successes. Outright lies appear to have been rare. Therefore, in planning our searches for the hidden signal, we have tended to give some weight to Soviet-released circumstantial evidence.

The first announcement of our target was made in 1962, during the unsuccessful MARS 1 mission. That spacecraft, the only survivor of six launched in that year for Venus and Mars, was said to be transmitting on wavelengths of 1.6 meters and 32, 8 and 5 centimeters. Though we had no way to confirm these numbers at the time, on later missions we found and identified the 1.6-m, 32-cm, and 8-cm signals as described in Table 1. Therefore, we have always thought it likely that the remaining signal would be in the 5-cm region of the radio spectrum. This belief was reinforced by the next clue, presented to us in 1967 at Montreal. The Soviet EXPO-67 exhibit included a spacecraft (Figure 3) purporting to represent ZOND 3, a camera-carrying planetary spacecraft that had returned test photos of the Moon.⁴ The ZOND 3 camera package apparently contained a centimeter-wave transmitter whose output was conveyed to the spacecraft's directional antenna by a waveguide. A waveguide is a pipe for carrying radio waves, somewhat analogous to a speaking tube for sound, and its outer dimensions give a rough indication of the design frequency. We measured the EXPO-67 waveguide and found that it could indeed handle a 5-cm signal.

Over the next several years we pursued the subject of Soviet waveguides as shown in various hardware exhibits and design handbooks, and we even found some (on Molniya comsats) that could be clearly correlated with intercepted signals. On the planetary spacecraft exhibits, however, the hardware varied and at times we suspected a spoof; in the end we decided that the designs had been evolving and the exhibits were just pieced together from available, perhaps partly obsolete, items. After wondering about this problem with exhibits in Paris and Moscow in 1974, we finally got a good look at a full-scale and obviously genuine spacecraft representing Venera 9 and 10 at Los Angeles in December 1977, where the waveguides and antenna hardware appeared at last to be self-consistent. Figure 4 is a photo of this craft and Figure 5 is a closeup of its antenna feed structure showing the waveguide and two coaxial cables. Pride of place in the feed structure (on the antenna axis) is given to the

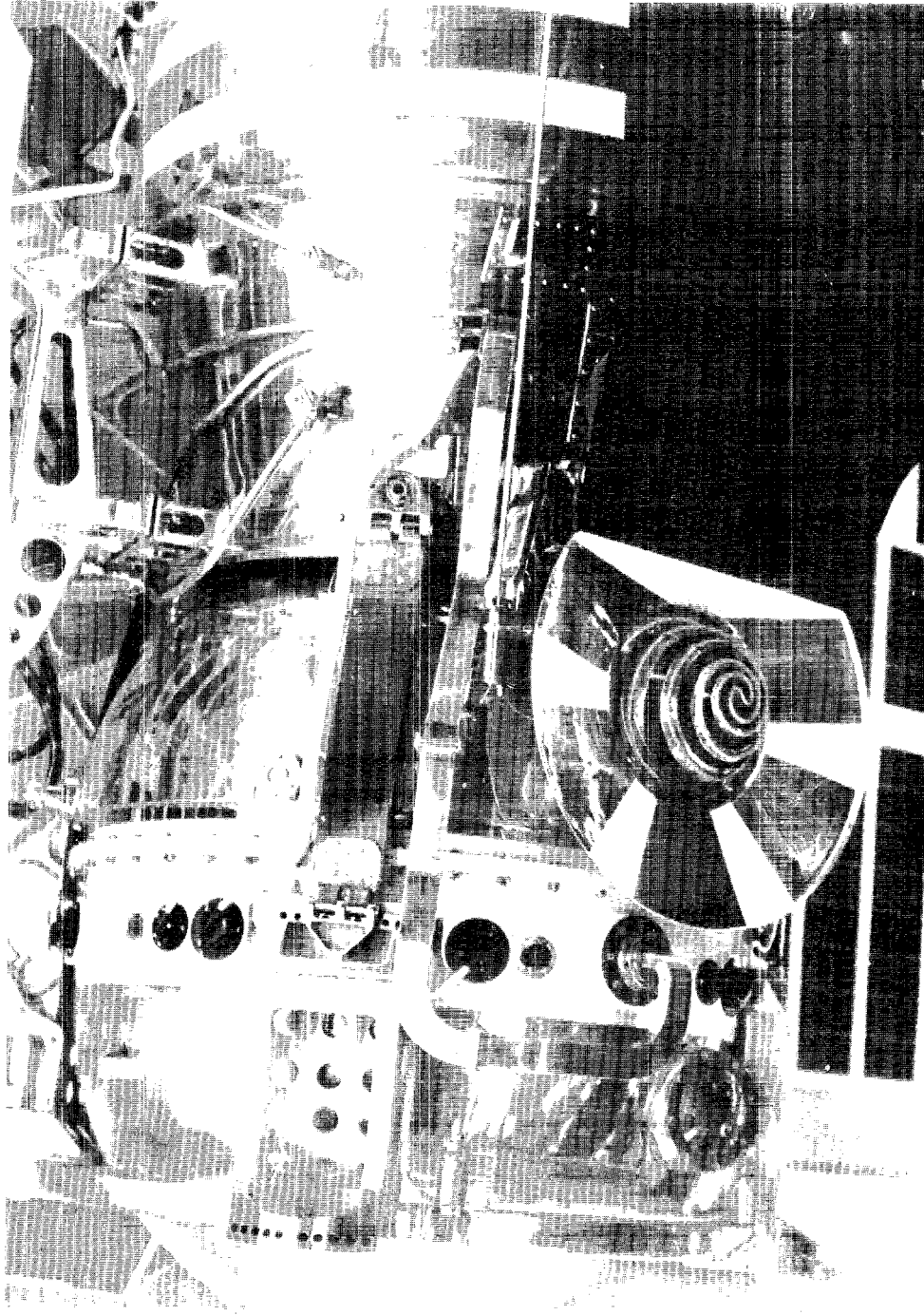


Fig. 3: ZOND 3 type spacecraft, EXPO-67, Montreal. Centimeter-band waveguide is the curving rectangular tube emerging from camera compartment (left) and going to main spacecraft body (right). Part of the rear of high-gain paraboloid antenna can be seen along top edge of picture.

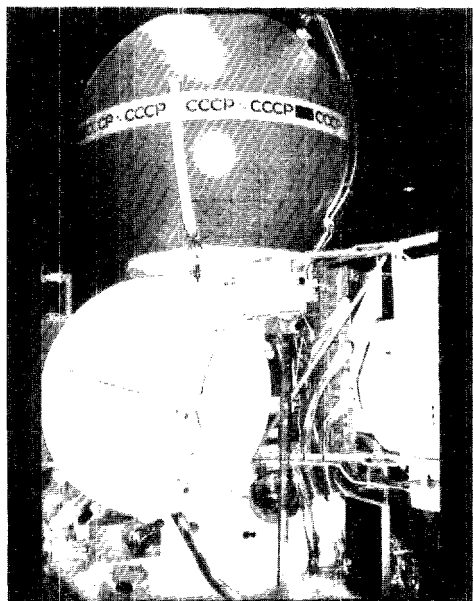


Fig. 4: Venera 9/10 type spacecraft. Parasol-like object is directional antenna.



Fig. 5: Venera 9/10 directional antenna feed showing centimeter-band waveguide and coaxial cables for two other signals

waveguide; the coaxial cables probably carry the narrow-band 32-cm and 8-cm signals.

Just as spacecraft components give some information on intended radio frequencies, so do ground installations. Figure 6 is a Soviet-released photo of one of the Crimean deep-space sites, showing in the foreground the eight-dish array that probably handles the 32-cm narrow-band signals, and in the background two 25-meter antennas of unknown function. Figure 7 is another view of these, showing a feed structure with four square horns and a central circular aperture. The horns could be for tracking the 32-cm signal and the on-axis circular feed could be for some higher frequency—perhaps the broad-band, 5-cm transmission.

Apart from hardware evidence, we have, over the years, gathered in a few other clues to the unknown signal frequency. In 1973 the Soviets launched four spacecraft toward Mars while we were preparing to launch Mariner 10 to Venus and Mercury. It was suggested that NASA Deep Space Net stations should acquire signals from the Soviet craft as a test of our new X-band (3-cm) radio system. Dr. John Naugle of NASA wrote to Academician B. N. Petrov suggesting this test, offering to share any acquired data, and mentioning the U.S. X-band frequency, 8400 MHz. Academician Petrov politely declined, adding that the Soviet frequency was "more than two GHz below" the U.S. frequency; i.e., lower than 6400 MHz, in the 5-cm wavelength region.

We then looked for nearby regions of the radio spectrum allocated, by international agreement, for deep-space use. (Such allocations, though unenforceable, are often observed because they give mutual protection against radio interference.) The nearest allocated band was the region from 5670 to 5725 MHz, so we decided to look first in this band.

Narrowing the Search

STONEHOUSE searched diligently in the selected region against the 1973 Mars missions and found nothing. In our post-mission reviews we concluded that we had not



Fig. 7: Crimean 25-meter antennas

The world of the large space antennas, including the 25-meter antennas, from the "Yermak" deep-space antenna, each with a 25-meter diameter. The antennas weigh 1,500 tons and require 100 tons of steel.

PHOTOGRAPH BY ALEXANDER MOLETSOV

Fig. 6: Crimean deep-space antennas; 8-dish array in foreground, 25-meter antennas in background

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negated the signal: not all of the band had been swept out when the signal was known to be present and with all equipment at peak sensitivity. We therefore resolved to go after the 5670-5725 MHz band again at the next opportunity. This came in 1975, with the successful launch of Venera 9 and 10. Unfortunately we no longer had STONEHOUSE, and while the spacecraft were en route to the planet we also lost the use of the stations in [redacted]

We improvised a substitute search plan. While collaborating European sites prepared to record the known 32-cm and 8-cm signals with mission support through DEFSMAC, the CIA made an arrangement with [redacted] authorities permitting us to use the former NASA deep space station near [redacted] to search for the broad-band signal. Equipment was quickly designed, built, and flown to the site, and high-sensitivity searches began before the Venera spacecraft arrived at Venus. By the time this intercept effort ended without success, we believed that we had truly swept out and negated a good part of the 5670-5725 MHz band, and there was a certain amount of gloom. (All was not lost: a collaborating site produced excellent recordings of the 32-cm data, including panoramas of the surface of Venus which were relayed over the narrow-band link.)

In the aftermath of this first definitive but unsuccessful search, a review of all our knowledge was organized. Its main conclusion was that the signal was still most likely to be found somewhere in the 5-cm band, perhaps outside the allocated region but still in a region relatively free from other interfering signals. This led us to scan lists of known Soviet radar signals and other radio services; we concluded that there are several reasonably quiet regions around 6 GHz, any of which could contain our target. The haystack is a big one.

While we pondered what to do next, an exasperatingly specific clue came to light. A source of unknown veracity⁵ said that one of the Venera 9/10 data links had operated in the band 5532-5538 MHz. We went back and looked at our records and found that valid searches had been made in this band, though not at peak sensitivity since it was outside the prime target region, with no signal recorded. And there the matter rests today.

The Future

Perhaps we will never know what we are missing. The whole problem is more an annoyance than a crisis. Soviet planetary results have seldom been of primary importance to the United States and, when unique data are obtained, they are eventually published in the scientific literature. Because of the relatively low priority of orbital planetary imaging in the Soviet program, our own planetary mapping has been much better than theirs. And yet there may be valid reasons for pursuing the search. In both our program and theirs, the tendency has been for communication links to move upward in frequency with time: as technology has advanced, more efficient links can be designed for shorter and shorter wavelengths. If the centimeter-band signal ever replaces the decimeter-band ones in the Soviet scheme and we have not yet found it, even our present limited source of prompt and objective deep-space information will disappear. Also, any such search is an exercise of techniques that have other uses. Should it turn out that the Soviets have been deliberately hiding the signal by any of several possible spread-spectrum or suppressed-carrier techniques, we will have learned something important. There is some evidence that a similar signal may be in use as a privacy link from certain Soviet Earth satellites.

⁵ (SECRET) FTD Message 091845Z Jan. 78, Quoted in NSA W14/Vista Conf. 001-78, 11 Jan. 1978.

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The Missing Link

Finally, in pursuing this deep-space search whenever opportunities appear, we will be gathering rudimentary experience toward the much greater problem of searching the whole sky for signals from other civilizations in the cosmos. That effort, which both the United States and the USSR are now beginning to pursue seriously, will involve development of vastly more powerful search techniques.⁶ Systems will exist a few years from now, able to scan in space and frequency at rates thousands or millions of times as great as those of our present intercept sites—as if one could toss the entire haystack at once in search of the needle. When these techniques are in hand we may look back on our present efforts as feeble ones. Meanwhile, however, our target remains in view. We expect Soviet Venera missions in 1978, encountering the planet during December. As political conditions change, so does our access to collaborating deep-space sites; we just have to make the best of whatever resources come to hand. Nevertheless it is possible that this year there may again be an opportunity to seek, and perhaps this time to find, the missing link.

⁶ "The Search for Extraterrestrial Intelligence" NASA SP-419, 1977. U.S. Gov't. Printing Office Stock No. 033-000-00696-0.

Acknowledgement

To pursue a search of the kind described in "The Missing Link" takes advanced equipment, fast international action, discipline, devotion and skill. An acknowledgement is due the many dedicated people here and abroad who have, usually in the presence of other priority tasks, given their energies to this search.

J.D.B.

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*New photointerpretation illuminates
a grim chapter of history.*

**THE HOLOCAUST REVISITED:
A RETROSPECTIVE ANALYSIS OF THE
AUSCHWITZ-BIRKENAU EXTERMINATION COMPLEX**

Dino A. Brugioni and Robert G. Poirier

The authors have been strong advocates of the application of aerial photography to historical research and analysis.* Our convictions about the utility of this medium to the professional historian have been strengthened as we became increasingly aware of the many historical problems to which the exploitation of aerial photography can contribute an added dimension. In this paper, we attempt to demonstrate the application of aerial photography to a historiographical problem.

Our interest in the subject of Nazi concentration camps was rekindled by the television presentation "Holocaust." In the more than thirty years since VE Day, 8 May 1945, much has happened to these camps. Some, like Treblinka, have been completely obliterated; others, such as Dachau and Auschwitz, have been partially preserved as memorials.

Aerial reconnaissance was an important intelligence tool and played a significant role in World War II. We wondered whether any aerial photography of these camps had been acquired and preserved in government records. If imagery was available, we thought it likely that the many sophisticated advances in optical viewing, and the equipment and techniques of photographic interpretation developed at the National Photographic Interpretation Center (NPIC) in recent years would enable us to extract more information than could have been derived during World War II.

We had a number of advantages not available to the World War II photographic interpreters. Instead of 7X tube magnifiers, we had micro-stereoscopes. Our modern laboratory photo-enlargers were vastly superior to those available to earlier interpreters. While the World War II photointerpreter performed his analysis by examining paper prints, we would use duplicate film positives allowing detailed examination of any activity recorded on the film. The present day imagery analyst also has the advantage of years of training and experience, while the World War II photointerpreter was extremely limited in both. Most importantly, for this project, we have the advantage of hindsight and abundant eyewitness accounts and investigative reports on these camps.¹ We therefore had the opportunity to study the subject from a unique perspective.

We faced two immediate problems as we began our investigation. We knew that the cameras carried by World War II reconnaissance aircraft were limited to about 150 exposures of Super-XX Aerocon film per camera and that this film resolved about 35 lines per millimeter. The film was exposed at "point" rather than "area" targets

*"Rome East of the Jordan: Archaeological Use of Satellite Photography," *Studies* XXI/1, p. 13; "Satellite View of a Historic Battlefield," *Studies* XXII/1, p. 39.

¹ The "intelligence collateral" for this paper was drawn mainly from O. Kraus and E. Kulka, *The Death Factory*, New York, 1966; N. Levin, *The Holocaust*, New York, 1973; and the official Polish government investigations, *German Crimes in Poland*, 2 Vols., Warsaw, 1946-47, which draw on primary sources.

which were selected for their strategic or tactical importance. Thus, when the reconnaissance aircraft approached the target, the pilot or aerial photographer would switch on the cameras shortly before reaching the target and then turn them off again as soon as the target was imaged. There was nothing like the broad area coverage which modern photoreconnaissance makes available to the photo researcher. To find photos of a concentration camp, therefore, we would have to identify one which was located close to a target of strategic interest.

Since the Nazi concentration camp system was so widespread, we also had the immediate chore of narrowing the scope of the investigation to manageable proportions. Our research revealed that the Auschwitz-Birkenau extermination complex was only 8 kilometers from a large I. G. Farben synthetic oil and rubber manufacturing facility. We knew that oil and rubber production plants were high on the Allied bombing list. Auschwitz, then, in addition to providing us with a high degree of name recognition, offered a strong probability of having been filmed as a by-product of tactical reconnaissance. Our research soon produced positive results.

The Defense Intelligence Agency, which is the custodian of World War II aerial reconnaissance records, was given the coordinates for Oswiecim (Auschwitz), Poland, through NPIC's film distribution and control center. DIA ran a computer search against the coordinates within the time frame we had selected and produced a print-out of all the unclassified photographic references to film stored in the National Archives' records center at Suitland, Maryland. From this list we were able to order the photography we desired sent to NPIC for photographic analysis. On off-duty hours, we examined all the available unclassified aerial imagery for evidence of the Holocaust at Auschwitz.

The Auschwitz-Birkenau Extermination Complex

The Auschwitz-Birkenau complex had its origins in spring 1940. A concentration camp was organized in a former military camp in the suburbs of Oswiecim (Auschwitz), Poland. When the first trainload of German criminal prisoners arrived in June 1940, it marked the beginning of a system which would eventually total some 39 subsidiary camps and make the name of Auschwitz synonymous with terror and death.²

In the fall of 1941, the Auschwitz concentration camp entered the most sinister phase of its expansion with the construction of a camp on the moors of Brzezinka (Birkenau). Under cover of a prisoner of war camp, it would become a center for *Sonderbehandlung*, i.e., "Special Treatment," the Nazi codeword for extermination. During the following three and one-half years, an estimated two to three and one-half million people would meet their deaths on this remote Polish moor.

Details of the horrors perpetrated at Auschwitz have been reported many times and at length. It is not our purpose to reiterate that type of detail but rather to see if any of that activity had been recorded by the World War II aerial reconnaissance cameras.

Auschwitz is located in a remote area southwest of Warsaw on the Krakow-to-Vienna rail line. We found no evidence of any Allied reconnaissance effort in the Auschwitz area prior to April 1944. On 4 April 1944, an American reconnaissance aircraft approached the huge I. G. Farben facility for the first time.

The format employed in the balance of this paper will present the background information for a particular topic and then a photographic analysis of the pertinent

² Kraus and Kulka, *The Death Factory*, p. 8.



I.G. FARBER, COMPLEX

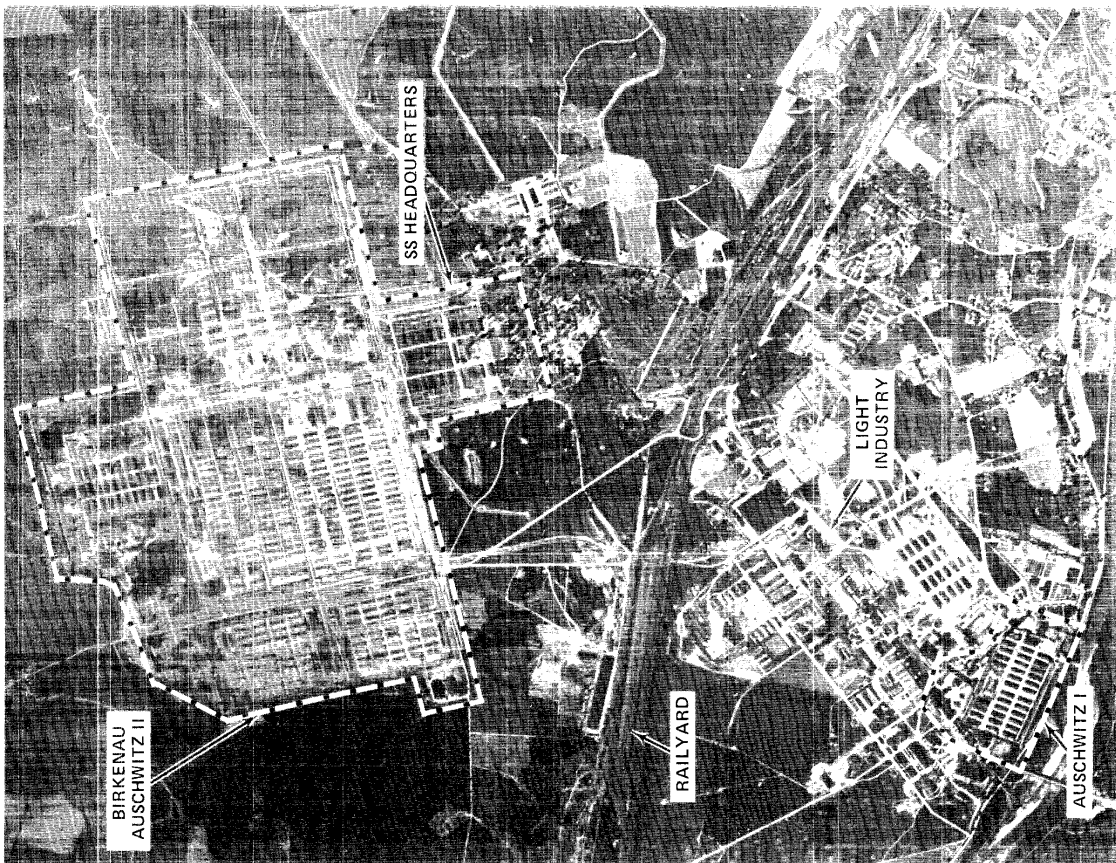


FIGURE 1. THE AUSCHWITZ-BIRKENAU COMPLEX, 26 JUNE 1944

imagery. All available imagery on Auschwitz acquired between 4 April 1944 and 21 January 1945 was examined.

Background: Construction of the various Auschwitz camps began in spring 1940. Auschwitz I, the so-called Main Camp, was operational by fall of that year. The development of Birkenau (Auschwitz II), began in fall 1941 with Russian prisoners of war as construction crews. The I. G. Farben industrial facility, referred to as "Buna" (Auschwitz III), was begun at Monowice in April 1941. Expansion of these facilities was virtually continuous until the evacuation of the area by the Nazis in January 1945. The operation of these vast petrochemical facilities was a joint SS and I. G. Farben venture. Farben had full access to a source of slave labor—prisoners from Auschwitz and local British prisoners of war—and the SS received the salaries paid their prisoners.

Crippling the German petrochemical production system was a high Allied priority, so the targeting of the Farben complex was inevitable. The late date of the reconnaissance effort is probably attributable to the plant's production status; it produced no significant amounts of fuel until 1944. Another factor was probably the distance from Allied air bases—about 750 miles from England and 700 miles from Italy.

Photo Evidence: The mission of 4 April 1944 produced very little photographic coverage of the I. G. Farben complex. It was not until the 26 June 1944 mission (Photos 1 & 1A) that an overall view of the complex, both as to extent and purpose, could be interpreted. For our study, however, even the partially successful mission of 4 April provided positive evidence.

Auschwitz I

Background: Details of the origin of the camp have been outlined earlier, but some additional comments are appropriate. It was at this facility that experiments in mass extermination by using *Zyklon-B* gas were first carried out. Rudolf Höess, the notorious camp commandant, initially tested the use of that gas on Russian prisoners of war in 1941. The first gas chamber and crematorium, number I by the Nazi numbering system, was later constructed at this camp. The Main Camp penal barracks for problem prisoners (Barracks Block 11), and the medical experimentation barrack located here would both become infamous.

Photo Evidence: Analysis of the facilities at Auschwitz I (Photo 2) combined with the collateral information, corroborate eyewitness accounts of its description. We can identify Gas Chamber and Crematorium I, the Commandant's quarters, the camp headquarters and administration buildings, the prisoner registration building, the individual barrack blocks and the infamous "execution wall" between barrack blocks 10 and 11. This latter facility was used for the exemplary execution of "problem" prisoners. Death was inflicted either by hanging or shooting against the execution wall. In addition to the above, the camp kitchen, guard towers, and the security fencing can all be identified.

On the photography of 4 April 1944, a small vehicle was identified in a specially secured annex adjacent to the Main Camp gas chamber. Eyewitness accounts describe how prisoners arriving in Auschwitz-Birkenau, not knowing they were destined for extermination, were comforted by the presence of a "Red Cross ambulance." In reality, the SS used that vehicle to transport the deadly *Zyklon-B* crystals. Could this be that notorious vehicle? While conclusive proof is lacking, the vehicle was not present on imagery of 25 August and 13 September 1944 after the extermination facility had been converted to an air raid shelter.³

³ *Ibid.*

The preferred method of shipping prisoners to Auschwitz was by rail. Large transports arrived in the railyards of Auschwitz from all sections of Europe. To the west of the camp, as shown in Photo 2, a number of transports are present in the railyard and an additional train is arriving. A new rail spur from the main line into Birkenau is under construction. Eyewitness accounts indicate that work on this spur continued round the clock in anticipation of special shipments of Hungarian Jews in May-July 1944.⁴ Some equipment, probably construction gear, appears to be at work on the new spur. It was complete and operational when seen on imagery of 26 June 1944.

Birkenau

Background: Birkenau, the "Birch Wood," underwent continuous expansion from autumn 1941 until the suspension of the extermination effort in November 1944. As a "Special Treatment" facility, it had a planned capacity of 200,000 prisoners. Had Nazi Germany won the war, evidence presented at the War Crimes Trials revealed that it was destined to be the extermination center for the Czech and Polish nations.⁵ The camp contained more than 250 barrack blocks subdivided into sections and some 95 support buildings. Four large gas chambers and crematoria were constructed here in 1943.

Photo Evidence: A 7X enlargement of the 26 June 1944 imagery reveals the camp layout in considerable detail (Photo 3). The rail spur and debarkation point near Gas Chambers I and II are complete. A rail transport is present within Birkenau. The site of the four gas chambers and crematoria can be identified. The locations of the various Birkenau sub-camps, e.g., the "Gypsy Camp," the "Women's Camp," could also be traced. Expansion of the facility into Section III is under way. The SS Headquarters and Barracks complex is seen east of the camp. The security arrangements can be traced in considerable detail.

Several indications of extermination activities can be identified in the camp. Smoke can be seen near the camp's main filtration facility. While this is to be expected near the camp crematoria, where bodies had to be burned in open pits during the hectic days of the Hungarian Jewish influx, it is a surprise to see it here. There are a number of ground traces near Gas Chambers and Crematoria IV and V which could also be connected with extermination activities. Ground scarring appears to the rear of Gas Chamber and Crematoria IV and is very noticeable to the immediate north and west of Gas Chamber and Crematorium V. These features correlate with eyewitness accounts of pits dug near these facilities; they were no longer present on coverage of 26 July and 13 September 1944. The small scale of the imagery, however, prevents more detailed and conclusive interpretation.⁶

In portions of the imagery not shown in Photo 3, activity in the rail yards, the layout of the surrounding countryside, to include several of the Polish villages forcibly evacuated when the Nazis established Auschwitz, and the marshes south of the camp used for human ash disposal can be identified.

Imagery acquired on 26 July 1944 added little new information to the study. The first evidence of Allied bombing at the I. G. Farben complex and a very large transport of prisoners in Birkenau could be identified. While an overall view of the complex was obtained, the exceptionally small scale of the imagery precluded detailed interpretation.

⁴ Kraus and Kulka, *The Death Factory*, p. 132.; *German Crimes in Poland*, Vol. I pp. 88-89.

⁵ Kraus and Kulka, *The Death Factory*, p. 17.

⁶ *German Crimes in Poland*, Vol. I, pp. 88-89.

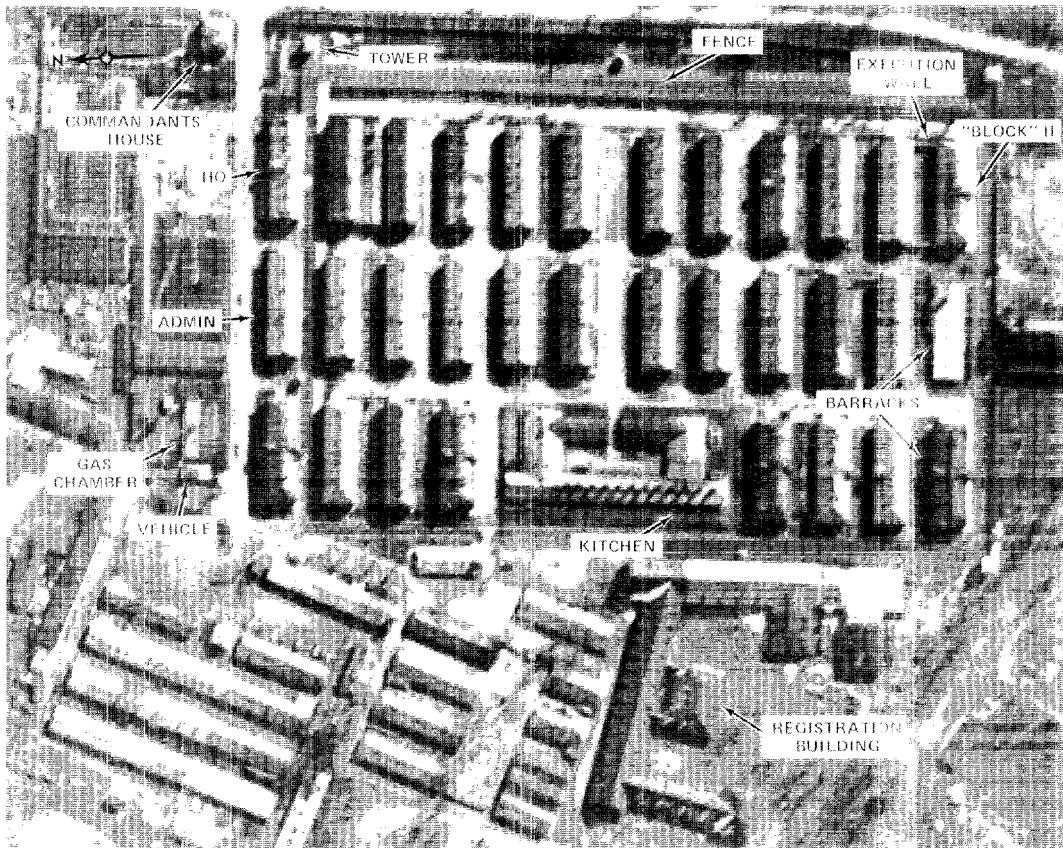


Photo 2: Auschwitz I, 4 April 1944

The Extermination Process

Background: Extermination operations in progress at Birkenau were recorded on aerial photography of 25 August 1944. By that time, rail transports of prisoners were being channeled into Auschwitz from locations throughout occupied Europe in a desperate attempt to achieve the "Final Solution" prior to the collapse of the Nazi war machine. After a trip lasting from a few hours to days, those who survived the journey faced a selection process. SS "doctors" screened the prisoners to determine those fit to be used as slave laborers and those to be exterminated. Those selected as laborers were sent "to the right" while those to be exterminated were sent "to the left," according to numerous eyewitness accounts of these last tragic moments.⁷

Photo Evidence: A 10X enlargement of imagery acquired on 25 August covers only the southern third of Birkenau and is of very high quality for its day (Photo 4). The imagery illustrates eyewitness accounts of the death process at Birkenau. A rail transport of 33 cars is at the Birkenau railhead and debarkation point. Prisoners can be seen beside the train. The selection process is either under way or completed. One group of prisoners is apparently being marched to Gas Chamber and Crematorium II.

⁷ Klaus and Kulka, *The Death Factory*, pp. 130-141.

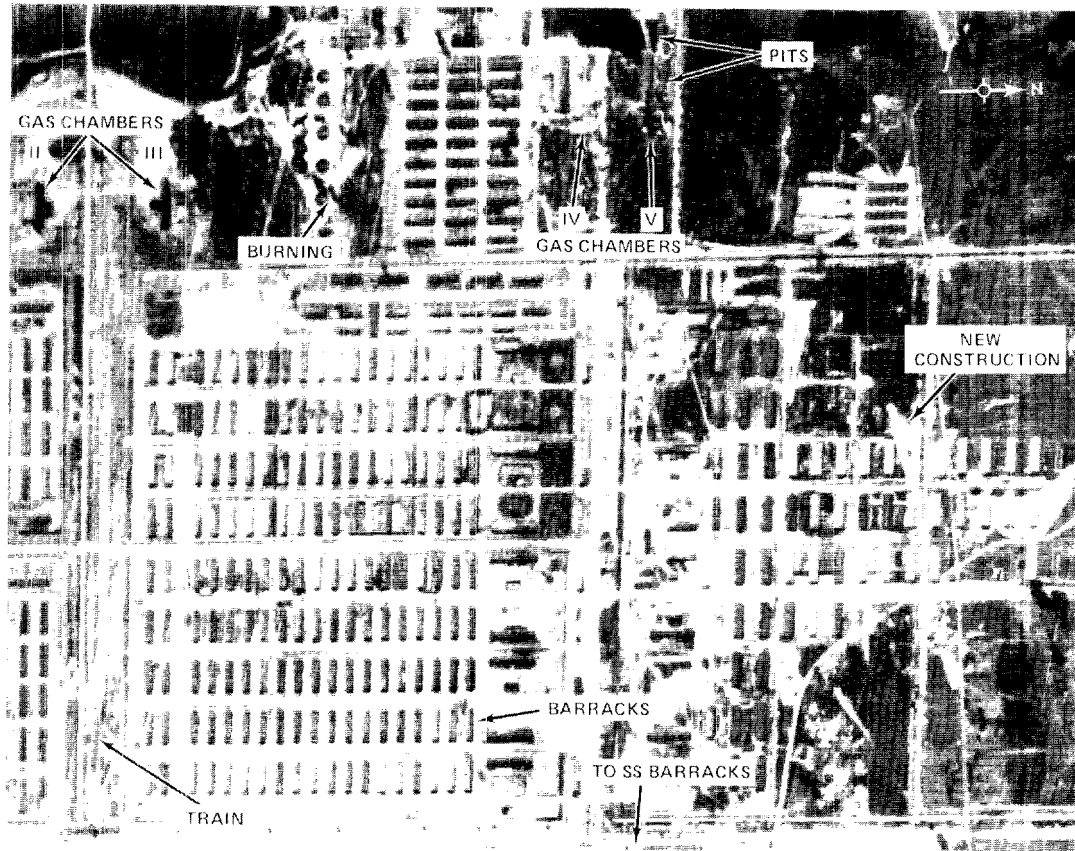


Photo 3: Birkenau Extermination Camp, 26 June 1944

The gate of that facility is open and appears to be the destination of that ill-fated group.⁸

Groups of prisoners can be seen marching about the compound, standing formation, undergoing disinfection and performing tasks which cannot be identified solely from imagery. A detailed view of the Women's Camp and individual barrack blocks was obtained. (Many of the so-called "barracks" provided as living quarters were originally prefabricated stables intended for use in Africa with the *Afrika Korps*.) We can also identify details of the camp security system - the electrified fences, guard towers, the camp main gate and guardhouse, as well as the special security arrangements around the gas chambers and crematoria

High quality imagery of the entire Birkenau complex was obtained for the first time on 13 September 1944. A huge transport of some 85 boxcars is present at the Birkenau railhead. Details of the compound, including the expansion into Section III

⁸ Collateral information indicates that this transport is very likely from the Lodz ghetto. This was the last Jewish ghetto in Poland to be liquidated. This action took place between 2-30 August 1944. A less likely possibility is that the victims were members of the French underground, who are known to have been sent to Birkenau during this period.

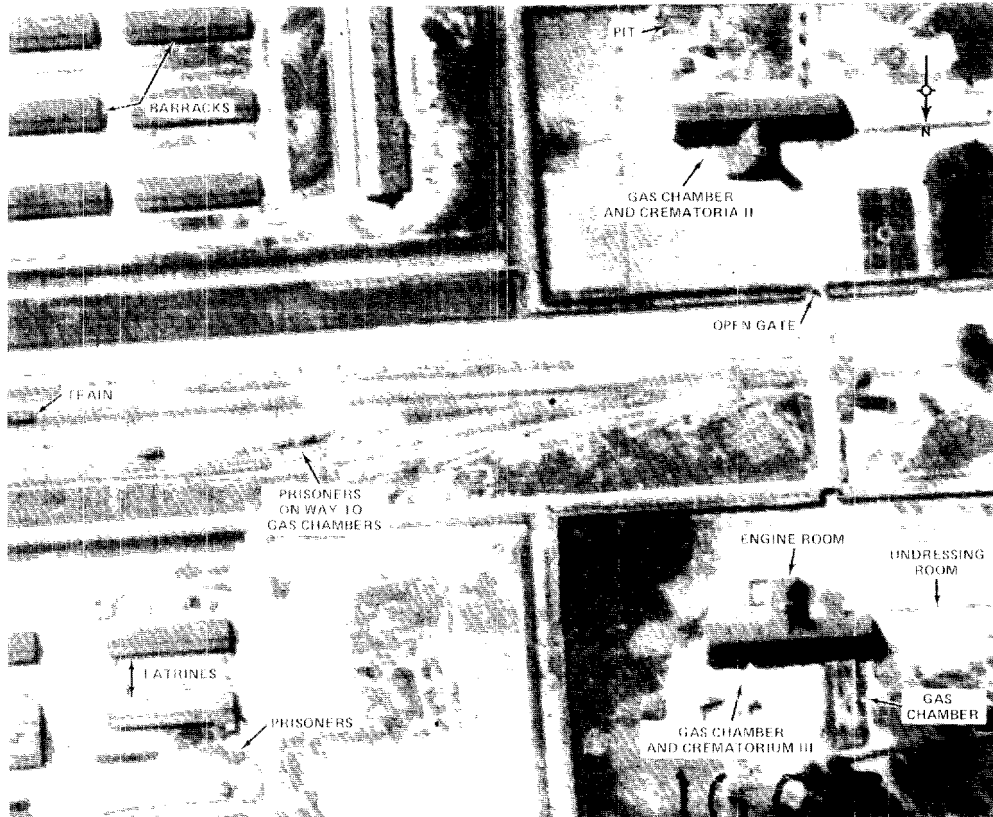


Photo 4: Extermination Process at Birkenau, 25 August 1944

necessitated by the large influx of Hungarian Jews, were observed.⁹ A large column of prisoners, estimated at some 1,500 in number, is marching on the camp's main north-south road. There is activity at Gas Chamber and Crematorium IV, and its gate is open; this may be the final destination of the newly arrived prisoners.

Registration

Background: Prisoners selected as slave laborers were processed through a registration system which culminated in numbers being tattooed on their arms prior to their being quarantined and assigned to work details.

Photo Evidence: In Auschwitz I, we have the other part of the drama, those sent "to the right," being enacted at Birkenau (Photo 5). In front of the Main Camp Registration Building, a long line of prisoners is visible. This was undoubtedly the group spared death in the gas chambers but condemned to a living death in an SS work detail. They stand frozen in time, awaiting their tattoos and work assignments.

⁹ It was not possible to specify the nationalities of the groups in the photographs from the collateral information. They might have come from either the remnants of the Lodz ghetto or from Czechoslovakia.



Photo 5: Registration, Auschwitz I, 25 August 1944

The Gas Chambers and Crematoria

Background: The gas chambers and crematoria at Birkenau were designed to process some 12,000 people a day. The prisoners sent "to the left" were deceived into thinking they were going to be showered and disinfected. After undressing in an anteroom, they were herded into the shower/gas chamber and put to death by means of *Zyklon-B* gas crystals introduced into the chamber through exterior vents. The bodies were then moved to the crematoria or external burning pits for disposal.

Photo Evidence: The photography of the gas chambers and crematoria in the southern section of Birkenau appear to be historically unique (Photo 6). As far as we have been able to determine, no other photography of these facilities exists. The Birkenau gas chambers were special access facilities, even for most Nazis, and all photography was forbidden. The extermination facilities at the camp were destroyed by the Nazis prior to the camp's being liberated by the Red Army in January 1945.¹⁰

We can identify the undressing rooms, gas chambers and crematoria sections as well as the chimneys. On the roof of the sub-surface gas chambers, we can see the

¹⁰ Kraus and Kulka, *The Death Factory*, pp. 134-140.

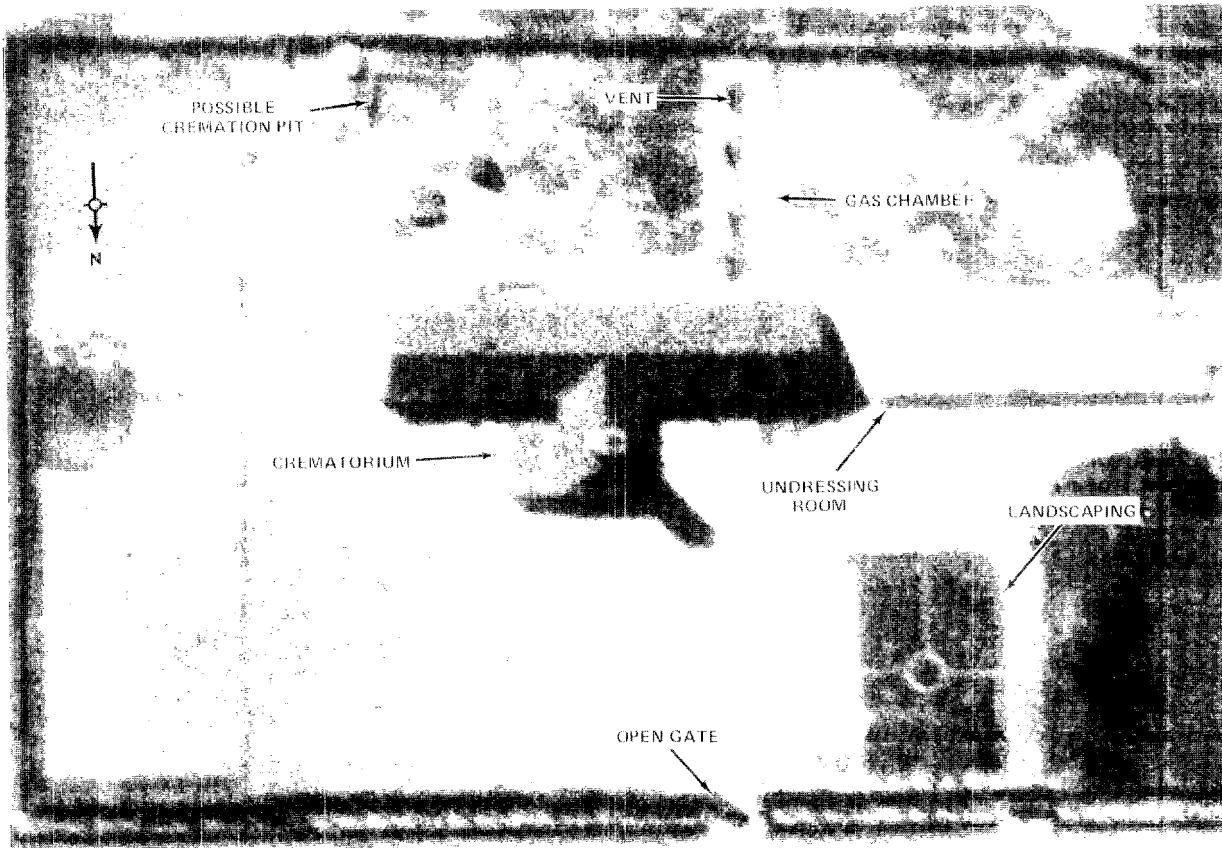


Photo 6: Gas Chamber and Crematorium II, 25 August 1944

vents used to insert the *Zyklon-B* gas crystals.¹¹ A large pit can be seen behind both Gas Chambers and Crematoria I and II; it is probable that these were the pits used in summer 1944 for the open cremation of bodies which could not be handled in the crematoria. Measurement of Gas Chambers I and II by NPIC photogrammetrists provided construction data on the crematoria not available from the architectural plans.

Numerous sources speak of the well-kept lands and landscaping around the crematoria; some described the buildings as “lodge-like,” “industrial looking,” or having a “bakery-like” appearance. These descriptions are borne out by the imagery of 25 August 1944 in which a park-like rectangle is visible. In the imagery of 13 September 1944 landscaping is visible around all four extermination facilities. Although survivors recalled that smoke and flame emanated continually from the crematoria chimneys and was visible for miles, the photography we examined gave no positive proof of this.¹²

¹¹ *Ibid.*

¹² The imagery examined from records of the extermination period include 4 April, 26 June, 26 July, 25 August, and 13 September 1944.



Photo 7: Gas Chambers and Crematoria IV and V, 13 September 1944

The imagery acquired on 13 September 1944 provides a unique view of Gas Chambers and Crematoria IV and V (Photo 7). Located among the trees of the "Birch Wood," these facilities could not be seen by surviving prisoners in the camp. They were of a different design than Gas Chambers and Crematoria I and II; they had two rather than one chimney each, and were built totally above ground rather than having underground sections. An additional piece of information, not included in Photo 6, is the view of two large buildings some 500 meters west of the disinfection block. It is probable that these are two of the 1942-43 era extermination facilities used prior to the construction of the four main gas chambers in 1943.

Deactivation and Dismantling of the Complex

Background: When imagery of Birkenau was next acquired, the operational status of the camp had changed radically. By 29 November 1944, the Nazi war effort on all fronts was on the verge of collapse. A dramatic though futile revolt of the *Sonderkommando* had occurred on 7 October 1944 at Gas Chamber and Crematorium IV.¹³ Extermination at Birkenau was officially terminated on 3 November 1944. The first stages of evacuation of the prisoners and the technical equipment began shortly thereafter.

Photo Evidence: Photography of 29 November and 21 December 1944 enables us to monitor the progress of the Nazi evacuation efforts (Photo 8). For the first time since Allied photography had been acquired, no train is located in the Birkenau railhead. The exterior of all extermination facilities, with the exception of Gas Chamber and Crematorium IV destroyed on 7 October 1944, appear to be intact. The dismantling of Section III of Birkenau has begun.

On imagery acquired on 21 December 1944, the progress of the evacuation effort is clearly discernible. The electrified fence around Section III and the guard towers there have been dismantled. The former location of the various barrack blocks and support buildings can be identified. The light snow cover provides an aid to our interpretation efforts by highlighting soil marks and depressions, making it easier to identify man-made disturbances. There is a clear view of Gas Chamber and Crematorium IV's former location.¹⁴ Additionally, Barracks Block B II/C II has been destroyed, probably by fire. We were able to find no reference to this event in the collateral material.

Photo 9 details Nazi efforts to dismantle the technical equipment at Gas Chambers and Crematoria II and III. We can trace the dismantling of the special security fencing around these installations, the removal of the roofs and the underground dressing rooms, the dismantling of the chimneys, and the filling of the pit to the rear of Gas Chamber and Crematorium III. As far as we know, this is a unique photo of that activity.

Evacuation

Background: The final period of Auschwitz is that immediately prior to the evacuation of January 18-21, 1945. By that time, the Nazis faced defeat on every front and were trying desperately to erase all traces of the extermination program. When prisoners could not be evacuated, their destruction was the alternative. Many of the Auschwitz facilities had, in fact, been dismantled and shipped to Germany for use in other concentration camps.

Photo Evidence: The heavy bomb damage inflicted upon the I. G. Farben complex is visible in Photo 10. This 14 January 1945 imagery revealed more than 940 bomb craters and 44 damaged buildings at that facility.

The camp at Buna (Photo 11), is still operational as evidenced by the melting snow on the barrack block roofs. Cleared footpaths and streets are further evidence of movement in and around the compound.

Auschwitz I is also occupied on 14 January 1945 (Photo 12). It was the last camp to be evacuated. Snow melt on the roofs indicates that the barracks remain occupied.

¹³ The *Sonderkommando* was a special unit of prisoners forced by the Nazis to assist in the extermination activities, especially in the disposal of bodies. Themselves marked for extermination, one group attempted to rebel. Although they succeeded in destroying Gas Chamber and Crematorium IV, they were all killed.

¹⁴ See *The Death Factory*, pp. 261-263 and *German Crimes in Poland*, Vol. 1, pp. 90-92.

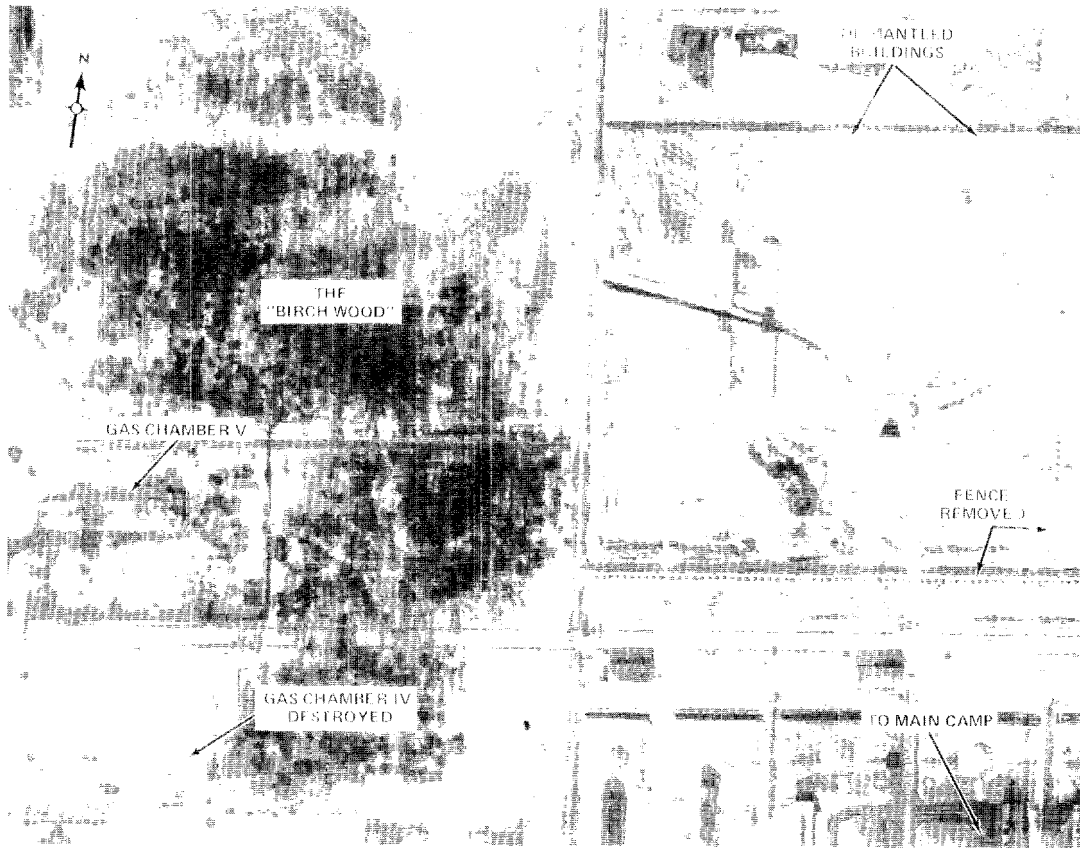


Photo 8: Evacuation Process at Birkenau, 21 December 1944

with one important exception. The lack of heat and presence of snow on the roof of Barracks Block 10, site of the infamous medical experiments, indicate that it is empty.¹⁹

Imagery of Birkenau (Photo 13) also presents an informative and surprising record. Section III of Birkenau has been completely dismantled and evacuated, including the guard towers. The snow cover on the roofs of the Women's Camp indicates that it had been evacuated. Within Camp II, it is easy to detect which of the barracks are probably still occupied as evidenced by the melting snow on the barrack block roofs. The camp had been partially evacuated. Several buildings had been dismantled in the Women's Camp since the 21 December 1944 coverage.

The most revealing photographic evidence to emerge from analysis of the 21 December 1944 and 14 January 1945 imagery centers on Gas Chambers and Crematoria II and III. The official Polish investigation stated that these facilities had been dismantled and blown up in November 1944, but this is clearly contradicted by the presence of the installations on imagery of 29 November and 21 December 1944.

¹⁹ The SS conducted hundreds of "medical experiments" on prisoners during the existence of Auschwitz. These included pseudo-scientific investigations into infections, attempts to "create" twins, starvation experiments, etc. carried out by SS doctors.

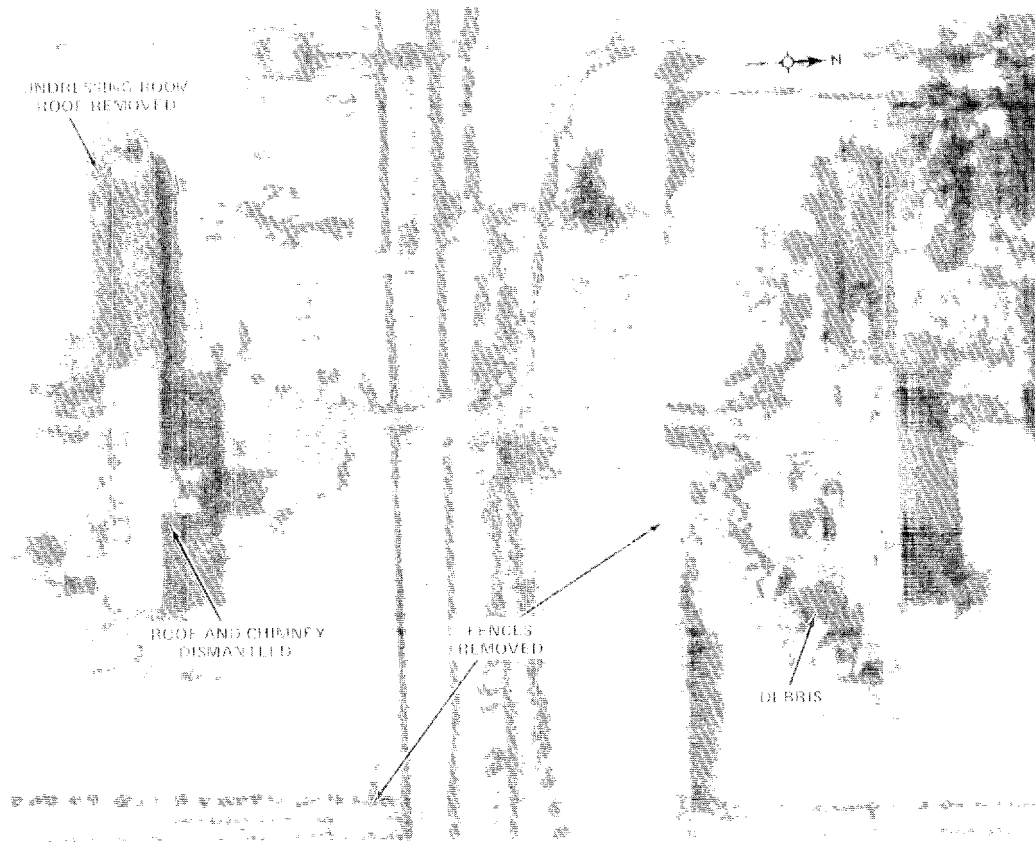


Photo 9: Dismantling of Gas Chambers II and III, 21 December 1944

and that of 14 January 1945.¹⁶ Examination of those facilities shows them to be only partially dismantled. On the 14 January 1945 imagery, however, evidence of final preparations for destruction may be under way. Snow patterns indicate activity by vehicles and personnel at these sites. In any case, they had been destroyed prior to the camp being liberated by the Red Army.¹⁷ Here in a small way, photographic intelligence contributes evidence clarifying the official history of Auschwitz.

Conclusion

Our review of the imagery acquired over the Auschwitz-Birkenau extermination complex was interesting and, we think, historically valuable. The photographs illustrate a major historical phenomenon from a new perspective and in some cases provide data unavailable from other sources. Our experience strengthens our belief that aerial photography, interpreted with modern intelligence techniques and equipment, is a research source which could be profitably mined by the professional historian.

¹⁶ *German Crimes in Poland*, Vol. I, p. 91.

¹⁷ *Ibid.*

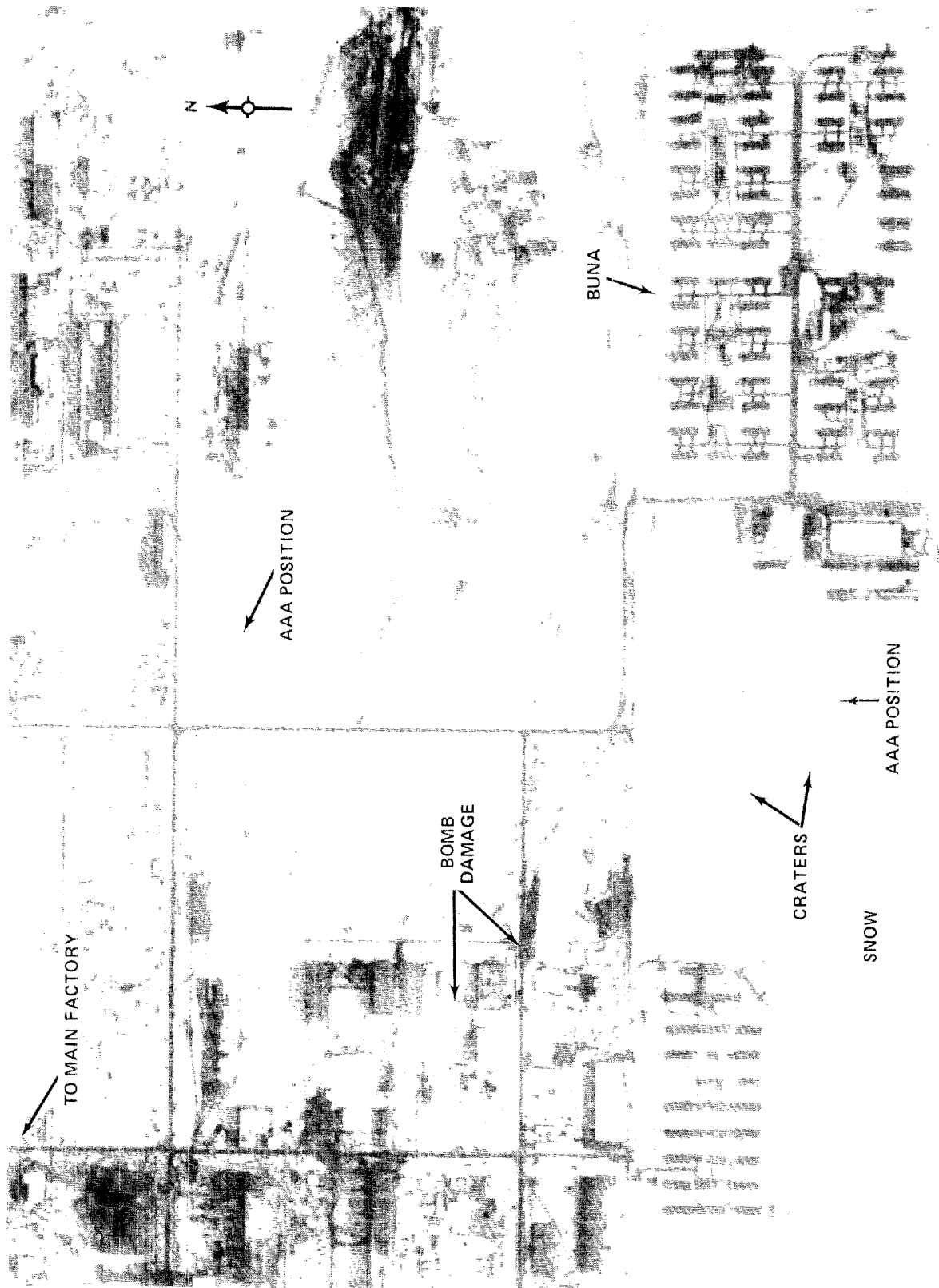


Photo 10: I. G. Farben Complex and "Buna," 14 January 1945

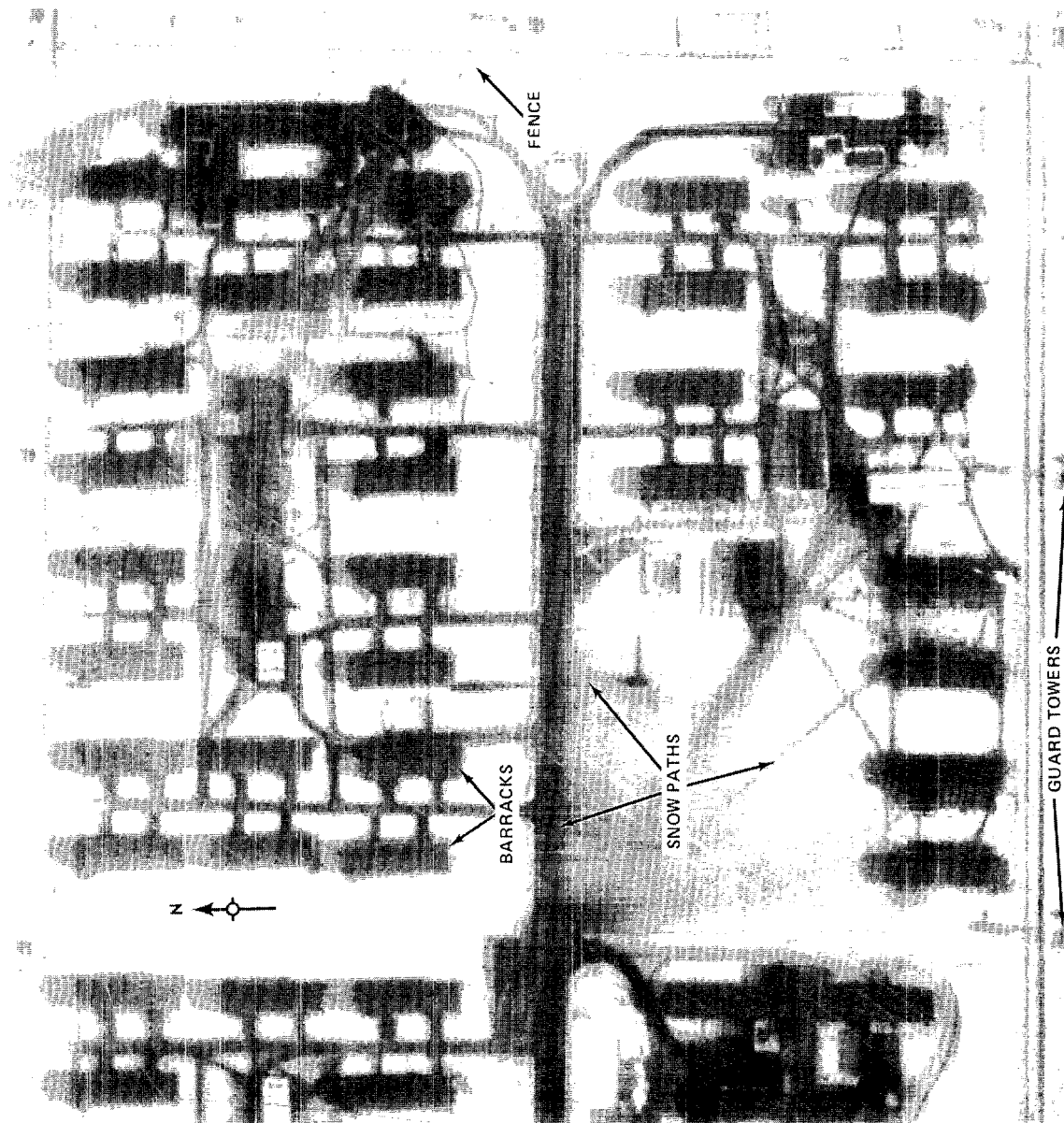


Photo 11: Section of "Buna," Auschwitz III, 14 January 1945

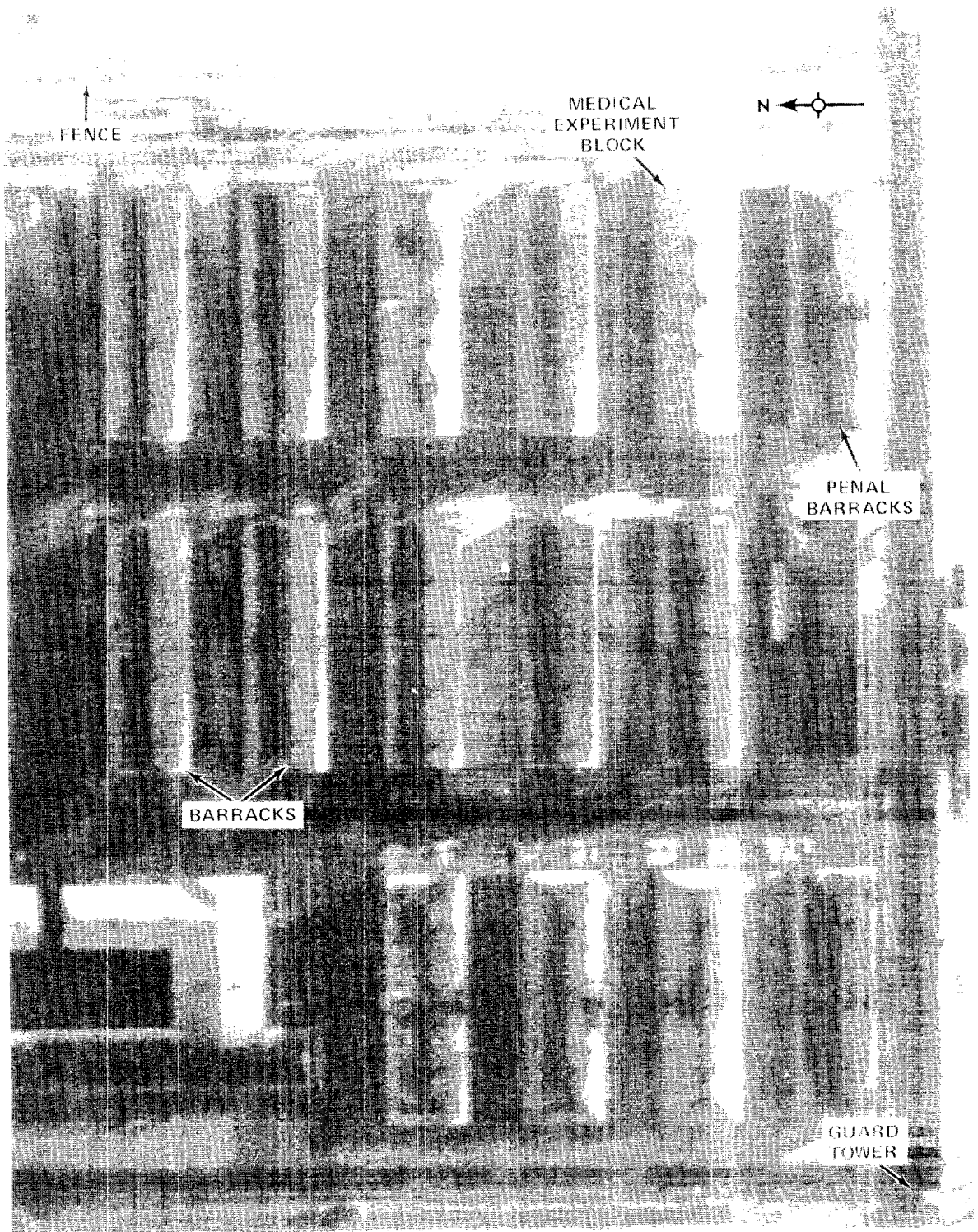


Photo 12: Auschwitz I, 14 January 1945

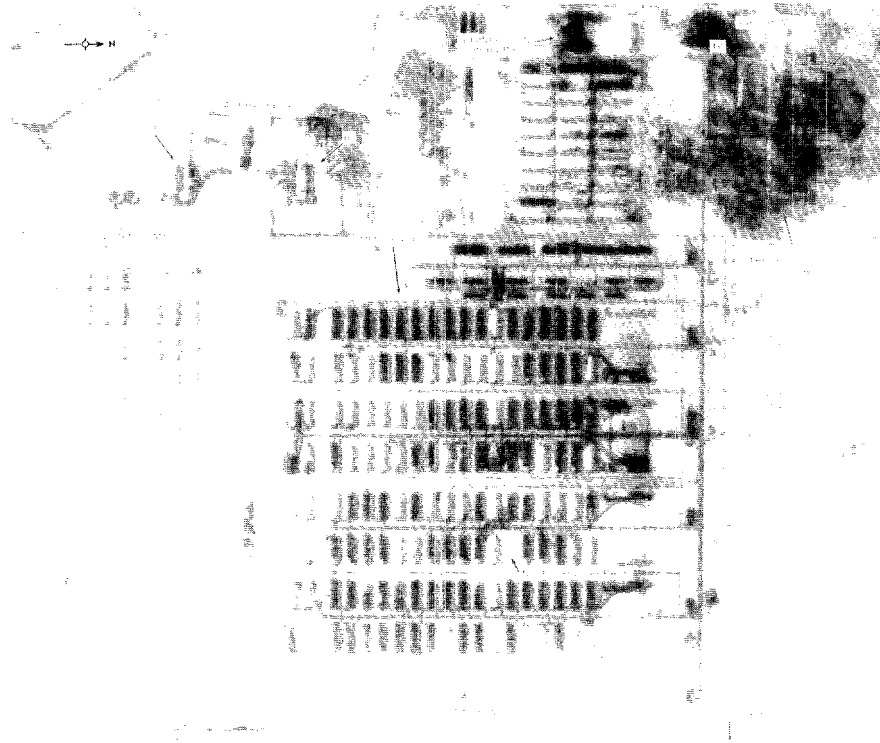


Photo 13: Birkenau Extermination Camp, 14 January 1945

The reconnaissance pilots who risked their lives to photograph the I. G. Farben complex had no idea that their efforts would one day be remembered not for that particular target but for the grim evidence subsequently revealed on the fringes of their photographs. The World War II photointerpreter probably could identify nothing more than the Farben plant and some labor/prisoner of war camps. He could neither see nor imagine the scope of the human drama hidden beneath his eyes, which modern imagery analysis and retrospective historical analysis would eventually reveal.

*A checklist for the practice
and presentation of analysis*

MAXIMS FOR ANALYSTS

David S. Brandwein

Some time ago the Center for the Study of Intelligence sponsored a seminar on intelligence analysis. I was invited to make a presentation to the group, and in preparing for it, I felt that one could make some useful generalizations about analysis. The result was a set of eight "maxims for analysts" which were presented at the seminar. They are reiterated below, with some elaboration drawn from my own experience in the analysis of foreign weapons systems.

1. Before launching into an analysis effort, ask yourself why it's important, and keep asking this question as you proceed. It's easy to trap yourself into a research effort which is intellectually satisfying, but has no prospects of enhancing national security even if successful.

Collection systems, particularly technical systems, nowadays return huge volumes of data. All of it must be screened to filter out that portion which might profit from detailed analysis. Even the volume of this residue is formidable, and analysts who have access to it must do their research with an awareness of the potential impact of the end results on national security. If this awareness is not present, then analysts risk wasting their time in research which is intellectually satisfying but for which there is no real payoff.

For example, modern-day ICBMs are test-fired carrying a number of telemetry sets, each of which transmits measurements by hundreds of sensors located in various parts of the missile. Technical collection systems are able to intercept these transmissions from each of the missile's main propulsion stages, from the post-boost vehicle and from the reentry vehicles. From a single test flight an analyst might have available for study a thousand or so telemetry channels which are monitoring pressures, temperatures, liquid levels, flow rates, velocities, accelerations, linear motions, angular motions, and so on. Truly a plethora of data.

Faced with all this, it might be fascinating to an analyst to study an ICBM's first-stage propulsion telemetry. He might hope to construct a schematic design of the internal plumbing, to work out the arrangement of propellant tanks, to determine the oxidizer-to-fuel mixture ratio, and so on. But what would it prove? The important issues one needs to address about ICBMs are those having to do with the accuracy and explosive yield of the payload. At best, an exhaustive analysis of an ICBM first-stage might yield an estimate of the lift-off weight of the missile. From this one might infer the throw weight, and finally the yield—but subject to large errors. There just isn't enough gold there to make it worth all that digging. This isn't to say that the analyst doesn't need such data, or that he shouldn't give it some study, but rather that he should avoid making a career of it.

2. Beware of getting yourself locked into a position at the beginning of the analysis cycle. You must be flexible enough to junk your first hypothesis if new data show it to have been unsound.

There is a sort of "Catch 22" in the analysis business which says that the analyst gets the most pressure to make a judgment when he is in the worst position to do so,

and that when he is in the best position to change an earlier judgment, the pressures to keep him from doing this are the most intense.

Typically, as soon as a new event takes place the analyst is beleaguered with demands for an instant diagnosis. He reluctantly makes a tentative judgment on the fragmentary data, loads it with caveats, and passes it out. His hypothesis propagates up the line, but with retelling the caveats are omitted, and by the time it gets to the intelligence consumer it is presented as a hard conclusion. Indeed, by the time all this reverberates back to the analyst he could very well be deluded into thinking that his original hypothesis had been buttressed with information from other quarters.

As time goes on, more data relating to the original event accumulate, such that if there were a fresh look at all of it a different diagnosis might be indicated. But the analyst is no longer objective. Subconsciously he may worry that if he changes his position he will lose face or credibility with his bosses. So he tries to force-fit all the new information in a way which supports the original conclusion.

What is one to do? The answer isn't easy. Analysts should resist making judgments too early; when they make a judgment they should insist that it retain all the caveats; and most important, they should have the guts to change their position in the face of an unwillingness to accept change by higher authority.

3. In trying to understand foreign weapons programs, avoid giving too much weight to your perception of the requirement for the system. Also, avoid the "not invented here" syndrome.

When some new initiative by a foreign country becomes apparent, like the testing of a new weapons system, the first questions to ask are what kind of a weapon is it, what are its performance characteristics, and what purpose will it serve? Obviously, if previous studies of a country's weaponry showed them to be deficient in certain areas, one can postulate a "requirement" for a new weapon system to correct the deficiency. Thus, when a new program becomes visible the temptation is very strong to characterize the system as the response to the requirement.

All this is sensible enough. But some caution is indicated for the analyst, because sometimes the genesis of a new program may have very little to do with our perception of the requirement. Some of the weapons produced and deployed by the Soviet Union appear to have been more the products of institutional momentum than anything else. For instance, in the 50's and 60's Soviet offensive missiles were produced by two different design bureaus which competed with each other. But in some cases their competition did not result in the choice of a single system. It seems that both design bureaus had enough clout to get their systems accepted for deployment. This phenomenon was not unique—witness the deployment of both the THOR and JUPITER IRBMs by the United States in the early 60's.

There doesn't even have to be competition between two or more design bureaus to account for more systems than seem required. A design bureau with an exclusive franchise in a particular field is likely to represent a major investment and a work force numbering in the thousands. Well before it has delivered its weapon to the armed forces, teams of engineers invariably start working on improvements which might be incorporated in a "follow-on" system. And even though there may not be a requirement for a better system the power of the organization is oftentimes great enough to bowl over opposition based on logic.

A second caution to analysts has to do with the dangers in assuming that alien weapon systems will be designed with components which are mechanically,

electrically, hydraulically and structurally like those of their U.S. counterparts. Or, if it is obvious that the components are unlike their U.S. counterparts, there is a danger in assuming that the alien designs are necessarily inferior. With respect to Soviet systems, a lesson learned a long time ago was that they did not match U.S. standards of workmanship and quality control in their military hardware—in fact, they may not have tried to do so. Instead, they put greater emphasis on solving complex problems (like missile guidance) by coming up with designs which required much simpler, easier-to-build components and with enough redundancy at critical points so that high failure rate of the subassembly would not result in a high rate of mission failures. This doesn't mean that the Soviet designs were inferior, but only that they were different.

4. Be willing to publish a technical report without having all the data at hand, even if some of the conclusions are tenuous. You'll never publish if you insist on waiting for all the data to come in.

Maxim number two is a caution against a rush to judgment. This maxim is the other side, a caution against straddling the fence indefinitely. The problem is that the information needed to solve an intelligence question arrives irregularly in bits and pieces. You can't guarantee to your boss exactly when the next accession of data will come or that it will be definitive—and he can't wait for an answer forever.

It's like having to work a jigsaw puzzle with most of the pieces missing. To take the familiar analogy a bit further, every few weeks you get a few more pieces in the mail. But after you have received perhaps 50 percent of all the pieces which make up the puzzle the intervals between the arrival of additional pieces begin to get longer and longer. If you were to hold out for more pieces before describing the picture you might do a better job of it, but maybe by then people will have lost interest in what you are doing.

So you have to make a judgment call and publish your findings even if some of the conclusions have to be hedged. You also have to be prepared for the sensation of having finished a draft report, perhaps even having it reach the galley proof stage, when a new accession of data comes in which forces you to rewrite sections. Comfort yourself with the thought that it's something all people in the press and publishing fields have had to cope with.

5. When you write up the results of your research, devote your best efforts to making sure that the conclusions are lucid and as precisely worded as possible. The conclusions section is the only part of your report most people will read.

Although it may be depressing to them, analysts should realize that most of the people who get their reports won't read them from cover to cover. The only ones who will do that are other analysts working in the same field. But the people who count most are the ones who will use the conclusions as inputs to estimates or other papers which may influence policy. These people are usually without technical backgrounds. Even if they were technical, they would probably be too busy to wade through the sections of the report which support the conclusion.

If you agree with all this, then it is evident that you should put your best effort into making the conclusions as lucid as possible. A good way to start is to try to state what your problem was to begin with, in the form of a question. The conclusions should answer the question, and nothing more. Interesting observations which fall out from the analysis but which don't answer the question should be left out of the conclusions. And don't use technical jargon or equations in the conclusions. To the assertion that some topics are too complex or too technical to put into lay language, the answer is *nonsense*, pure and simple. Go back and try again.

Finally, position the conclusions up close to the front of the book. Since we have already agreed that most of your readers won't be interested in the whole report anyway, why put them to the trouble of leafing through the whole report to find the conclusions? A good format for the technical analysis report is to start with a short introduction which tells the reader why the subject of the report is important, then a statement of the problem, then the conclusions, followed by the main text.

6. You are not done when you have published a technical report describing your work. Many people at the policy level don't like to read and you must be prepared to give an oral brief of your work if it is to have any impact.

Not only will some people at the policy level pass up reading the whole of your report, but they may even forgo reading any of it. They will say that they are just too busy to get around to it. On the other hand, busy or not, the same people can often be induced to schedule a half hour or so of their time to listen to you brief them on the contents of the report. One might be tempted to grumble that those who ask for a briefing are merely indulging in an ego trip at the expense of the analyst's time. Maybe so, but a briefing can be a more effective way of communicating than the written word. First, it enables the person being briefed to ask questions as they occur to him and to get answers instantly. Second, it makes it easier for some people to form a judgment on the validity of the work. Eyeball-to-eyeball contact will always be a very good communication mechanism.

Perhaps a few comments on briefers and briefing techniques might be helpful as well. If possible, the briever ought to be the analyst who did the work. Sometimes that isn't practical, as when many different topics need to be covered in a short space of time. But if there is a choice between having the material presented by a "professional briever" or by the analyst himself, it's usually better to go with the analyst even if his briefing technique isn't all that good. Nothing beats really knowing the subject you're talking about to convince an audience.

Finally, if it is necessary to use visual aids in a briefing, use vugraphs, slides, boards, butcher paper, or chalk on a blackboard, but do not use handouts! A briefing is, after all, a form of show business. One needs to sustain eye contact between the briever and briefees if the attention of the latter is to be held. You can do this standing up at a screen with a pointer in your hand, but you will lose your audience if you give each of them a sheaf of papers to skim through while you are talking.

7. Advisory panels of eminent scientists are usually useless. The members are seldom willing to commit the time to studying the data to be of much help.

If the analyst needs help in solving a difficult problem, he is not likely to get it from a panel of scientists. What is needed is an exhaustive review of the data and meticulous checking of the analyst's work at each step in the process. A group of experts who have gathered together for only a day or less will have neither the time nor the appetite to do the job. They are all busy people, and even though they may take their service on an advisory panel seriously, their other commitments will make it difficult to get their attention for long enough to do any good.

On the other hand, if the analyst has already solved his problem, an advisory panel can be quite useful. The members can perform a sanctification function. The analyst can brief them on his work and present the results. If he does so with assurance and is reasonably articulate he should have little trouble in getting the group of sages to agree with him. The credibility of the finished results to people at the policy level can be much enhanced if they bear a seal of approval from a scientific panel.

A better way for the analyst to get help is to present his problem to peer groups. There are few things which delight an analyst more than finding holes in another analyst's work. So if you really want to find out where you went astray, the way to do it is to have your work exposed to other analysts, preferably from some other organization in the Intelligence Community. Another way to get help is to retain an expert scientist through a consultant arrangement in which a block of the scientist's time is contracted for. If you must use a scientific panel, at least try to get members to pledge in advance to commit enough time to your problem to really look at it in depth.

8. Stop griping about all the millions spent for collection and processing compared to the pittance spent for analysis. That's the nature of things.

At today's prices spending as much as a hundred million dollars per year on an intelligence collection satellite system would not be uncommon. The same amount of money would buy about 2,000 man-years of analysis. However, the resources committed to the analysis of the "take" from a new collection system would more likely come to only a tenth of the cost of the collection system itself. Analysts, looking at the disproportion of funds expended for collection compared to those spent on analysis, very often feel abused by the system.

But it is time analysts make their peace with the idea that collection will *always* cost a great deal more than analysis. That is simply the way things are. Analysis is a lonely business. Most of the important breakthroughs have been by individuals, and not by groups of analysts. In fact, a case can be made that multiplying the numbers of analysts by a factor of five or ten would cause the quality (and perhaps even the quantity) of the work to decrease. In general, overstaffed organizations tend to compete poorly with those having a lean T.O. It is analogous to one of Parkinson's laws, in which he stated that the work produced by committees is in inverse proportion to the size of the membership, and that by the time the committee membership reaches about 20 the useful work output has dropped to zero.

What needs to be done to improve the quality of analytical results is not the hiring of hosts of analysts, but improvement in the techniques for processing the data, and provision of better analytical tools to analysts.

COMMUNICATION FROM THE EDITOR

Studies in Intelligence inaugurates in this issue a modest new feature in the form of intelligence vignettes and anecdotes drawn from previous issues, from other published works, public speeches, private research, and the memories of intelligence officers.

Contributions are earnestly solicited from the *Studies* readership. Like our articles, they may bear on any theoretical, doctrinal, operational or historical aspect of intelligence. They should not exceed three double-spaced typewritten pages in length; shorter items of one, two or three paragraphs are preferred, but no item will be rejected solely because of its length.

Quotations from published works or public statements should be sufficiently documented to permit checking by the editor or reference by readers.

WOODROW WILSON ON INTELLIGENCE

(From the Historical Intelligence Collection)

[Excerpted from a speech delivered at the Coliseum, St. Louis, Missouri, September 5, 1919]

“... You have got to think of the President of the United States, not as the chief counsellor of the Nation, elected for a little while, but as the man meant constantly and every day to be the Commander in Chief of the Army and Navy of the United States, ready to order them to any part of the world where the threat of war is a menace to his own people. And you cannot do that under free debate. You cannot do that under public counsel. Plans must be kept secret. Knowledge must be accumulated by a system which we have condemned, because it is a spying system. The more polite call it a system of intelligence. You cannot watch other nations with your unassisted eye. You have got to watch them by secret agencies planted everywhere. Let me testify to this, my fellow citizens: I not only did not know it until we got into this war, but I did not believe it when I was told that it was true, that Germany was not the only country that maintained a secret service. Every country in Europe maintained it, because they had to be ready for Germany's spying upon them, and the only difference between the German secret service and the other secret services was that the German secret service found out more than the others did, and therefore Germany sprang upon the other nations unawares, and they were not ready for it. ...”

THE “AMERICAN” WHO HEADED BRITISH INTELLIGENCE

(From the Historical Intelligence Collection)

Following the dissolution of the British Parliament in 1629, the family of George Downing fled to New England. There he attended school—he was the second graduate of Harvard College—and became a Puritan minister.

After the defeat of the Royalists at Naseby, he returned to England and became a padre and soldier in the New Model Army. In 1650 he was appointed Scoutmaster General (chief of intelligence) in Cromwell's army in Scotland.

Little of Downing's secret activities in that post survive, generally attributed to prudent destruction of incriminating intelligence files at the time of the Restoration.

Downing was elected M.P. for Edinburgh in 1654, and M.P. for Carlisle and Haddington boroughs two years later. He headed the movement to offer the crown to Cromwell, and in 1655 was dispatched to remonstrate with Louis XIV on the Vaudois massacre.

Downing stepped down from his post as Scoutmaster General in 1657 and took up residence at The Hague. Even during his residence at The Hague, Downing continued his intelligence work, evidence a letter to him there by Secretary of State John Thurloe:*

"I desire you not to spare money for intelligence . . . I pray you endeavour to lay a correspondence, and a good one, in Flanders in the Spanish court there, as also with Charles Stuart's party. I shall be at the charge thereof . . . I would give some £1,000 so that it were near and intimate. I pray inform yourself what strength de Ruyter's ships are and whither bound, and when the rest of their fleet will be ready and what their number and strength will be. I pray be a little curious to know what the fleet bound for Spain carries, both the merchantmen and their convoy."

After Cromwell's death, Downing made overtures to King Charles, and because of his established reputation as an intelligencer, was given such appointment, and as a teller of the exchequer. In 1662, he located and arrested the three men responsible for the execution of the King's father. The three were convicted of regicide and executed.

As a reward, Downing was created a Baronet in 1663. As Sir George Downing he served in a succession of important diplomatic and governmental posts, including Secretary to the Treasury.

Downing built himself a townhouse in London, "the house that intelligence built," which remains in government service today, as No. 10 Downing Street.

*Thurloe, a 36-year old lawyer, was given responsibility for intelligence and the postal department with his appointment by Cromwell as Secretary to the Council of State. Thurloe held the post for seven years and during that time built an organization of military and political intelligence which, in the opinion of historians, has never been equaled in England. Thurloe spent £70,000 a year, a staggering sum for the 17th Century, for a system of spies in the capitals of Europe and for informers at home. He developed a strong counterintelligence service, and in 1659 (following the death of Cromwell) left the post—refusing to identify his agents to his successor "esteeming it treachery to reveal them without their consents."

THE SCOUTMASTER

(From the Historical Intelligence Collection)

Even before the formation of England's "New Model Army" in the mid-17th Century, an event marked by many historians as the birth of the British army, there was a man appointed to "discover the whereabouts and intentions of the enemy." He was called the "Scoutmaster," one of the most senior titles in the army. The Chief Engineer was established by Edward II in 1347, followed in the middle of the 15th Century with the creation of the Master of Ordnance, followed thereafter with the post of Scoutmaster, "the chief reconnoiter of the army."

King Henry VIII described the responsibilities of the post in 1518:

"It is the office of the Scoutmaster when he cometh to the field, to set and appoint the scourge; he must appoint some to the high hills to view and see if they can discover anything. Also the said Scoutmaster must appoint one other company of scouragers to search, and view every valley thereabouts, that there be no enemies laid privily for the annoyance of the said camp, and if they do discover any, they are to advertize the Scoutmaster and he must either bring, or send word, to the high marshal of their advertisement, with speed."

At the outbreak of the Civil War in England, both sides created their own scoutmasters. Sir Samuel Luke was appointed Scoutmaster to the Earl of Essex and soon won a well-deserved reputation for the excellence of his intelligence: "This noble commander who watches the enemy so industriously that they eat, sleep, drink not, whisper not, but he can give an account of their darkest proceedings." Based at Eton College, then at Newport Pagnell, Luke successfully ran a series of scouts and spies who provided detailed and accurate information about the Royalist forces. He was given a very large salary of 8 pounds a day (a Lieutenant General received 3 pounds a day) but out of this he had to pay his scouts and one pound a day spy allowance to employ "gentlemen and servants residing in the Royalist Court." In 1643, Luke was promoted to become Scoutmaster General and was made responsible for coordinating the intelligence gathering activities of several deputies and a far greater number of scouts and horsemen. Luke is credited with being well aware of the clear distinction between close tactical reconnaissance, which has always been a unit commander's responsibility, and his own responsibility for gaining intelligence in depth. Luke was responsible for knowing all the enemy's activities, but he did not have executive power over the patrolling duties of forward units.

The post of Scoutmaster General disappeared in 1686 with the accession of James II, and the amalgamation of the Harbinger, the Provost Marshal and the Scoutmaster General into the new post of Quarter Master General.

ON OBJECTIVITY

John C. Morfit

We've got to keep our absolute integrity. Keep out of politics. Be absolutely fearless. Report the facts as we see them regardless of whether they're palatable or unpalatable to the policymakers. If we ever lose that objectivity, then we are finished.

*Allen Dulles
N.Y. Times Magazine
16 March 1958*

There must never be any grounds for suspicion that intelligence is bending its conclusions to suit some policy preference. If we ever lose our reputation for honesty in this matter, we lose all our usefulness along with it.

*Richard Helms
National War College address
13 October 1971*

Intelligence must be first class. The story must be told exactly as you see it. . . . There must be no muffling or waffling of the message. Differences can be clearly stated.

*James R. Schlesinger
Farewell Memorandum
2 July 1973*

The CIA's role is to try to call what is happening abroad very accurately and precisely, and incidentally, to show two or three different interpretations if they legitimately exist. The Intelligence Community should not get into recommending what should be done.

*William E. Colby
Confirmation Hearings
July 1973*

Total objectivity is the hallmark of all intelligence reports and estimates.

*George Bush
DCI Report on the IC
January 1977*

Objectivity is the single most important quality of analysis. Objectivity requires that the analyst be free from outside pressures, willing to accept that even the best raw intelligence is subject to more than one interpretation, and capable of producing a range of alternatives which take into account all reasonable interpretations. Through objective analysis, the decisionmakers' legitimate options are laid out along with adequate criteria to judge them.

*Stansfield Turner
June 1978*

INTELLIGENCE IN RECENT PUBLIC LITERATURE

HITLER'S SPIES: GERMAN MILITARY INTELLIGENCE IN WORLD WAR II.
By David Kahn (Macmillan Publishing Co., Inc., New York, 1978. 671 pages.)

This book is recommended to all intelligence officers, and to the general reader too, as one of the best histories of any kind written about World War II. Another view was recently given to me by a man who said that it was not a book for the average New York *Times* reader since it had too much detail. By this definition, Barbara Tuchman's *The Guns of August*, or Cornelius Ryan's *A Bridge Too Far*, both larded with lots of military details, are also too much for the average NYT reader. I think he was wrong. *Hitler's Spies* is a magnificent achievement, the definitive work on a fascinating subject.

David Kahn, the author of the excellent *The Codebreakers*, has written a highly readable book, meticulously researched (mostly from primary sources), well organized, and with conclusions which flow logically from the evidence. He spent two years at St. Antony's College, Oxford, where H. R. Trevor-Roper "guided this work through its dissertation stage." He had access to Wheeler-Bennett's uncatalogued papers, and travelled extensively through England and Germany to interview 115 persons and consult numerous archives. There is an excellent bibliography and 51 photographs.

One of the book's great virtues is that you can pick a special subject, such as Foreign Armies East, and find a single chapter that gives a good historical account of its organization, personalities, and successes and failures. Equally good is a chapter called "The Biggest Surprise," which deals with the Allied landings in North Africa in 1942. These accounts are self-contained and could easily be run as magazine articles.* Naturally it is better to read the whole book, for there is a thread of continuity, but you can profitably dip around in it.

The reader should know that Kahn does not limit his treatment to pure espionage in World War II, as the main title might suggest. He takes up every aspect of foreign intelligence, including interrogation of prisoners, communications intelligence, factory markings, line crossers, diplomats and military attaches, the equivalent of the FBIS, captured documents, aerial and ground reconnaissance, and espionage. These and several other subjects are in Part II, "The Finders." There is a good account of the many government and party intelligence organizations of the Third Reich and their power struggles, particularly the Abwehr and Amt VI, an SS organization. Part III, "The Weighers," is concerned with intelligence analysis, as practiced by such entities as Foreign Armies East and West and the general staff intelligence officer, clear down to division level. In these 23 chapters there is an extraordinary amount of interesting detail—descriptions and photographs of reconnaissance aircraft, aerial photographs and maps, personalities, details of espionage operations, and so on. If factory markings intelligence puts you to sleep, perhaps you should not read the latter half of Chapter 10, "Traitors in Paper and Steel." I, who have never had but the slightest interest in the subject, found the section engrossing, thanks to Kahn's rare ability to make a technical subject interesting to the layman.

*One appeared in *Studies*, Winter 1977, XXI/4, p. 19.

There is no counterintelligence in this book. Kahn says he excluded it because he was interested solely in the intelligence which flowed into Germany, not the other way around. This is reasonable, but the omission is a pity; it would be a treat to read his account of the Red Choir or the North Pole operation.

One of the charms of the book is the large number of fascinating anecdotes about German intelligence. Many of these have appeared in other publications, but here they are in one volume, and many others are in print for the first time.

1) During the Munich crisis the Germans intercepted telephone conversations between Jan Masaryk in London and President Benes in Prague. When Masaryk told Benes that the UK had dropped its support for the Czechs, Hitler could be as tough as he wanted to be, and was.

2) In August 1941 the Germans were reading State Department cables between Robert Murphy in North Africa and Washington. Learning that General Weygand, the French commander in North Africa, had asked for U.S. aid, the Germans forced Vichy to fire him.

3) The Germans had some success with Soviet military communications, but only at the tactical level. Kahn concludes, rightly so, that the overall German COMINT effort "failed utterly" at the strategic level, in contrast to the Allies'.

4) The most successful German intelligence effort was the Navy's COMINT service, the *B-Dienst*. It could read the Royal Navy's major code systems on the day war broke out and it achieved numerous tactical successes.

5) Many SS officers in Amt VI, the foreign intelligence arm of the SS—presumably much nicer than the Gestapo types of Amt IV—were allowed to substitute service in extermination squads for their obligatory spell of front line duty.

6) Before the war the Abwehr organized a loan company which advertised in foreign newspapers, seeking business from officers and civil servants. Failure to repay loans led to obvious pressures, which were successful.

7) To infiltrate agents into Brazil, the Germans used a small four-man sailboat under Portuguese colors. It took two months to get there, but it made it.

8) During the 1944 U.S. presidential campaign, the foreign office asked Amt VI for Thomas Dewey's political views. The answer was an estimate from a man who had "been a party comrade since 1922" and who knew Dewey. This worthy declared that Dewey had "an instinctive antipathy toward Jews" because: (a) there were many Jews among the gangsters he had prosecuted; and (b) Herbert Lehman had defeated him for the governorship in 1938! As Kahn observes, it is incredible that high level people could be so purblind.

9) From 1942 to 1944 the Germans had 500 to 800 line crossers behind the Russian lines at any one time. One woman was parachuted in seven times and returned seven times. However, as one German officer put it, "If losses were not over 90 percent, we were satisfied."

10) The prize German penetration of the USSR was an agent known as Max, whose Abwehr case officer was a Jew operating out of Sofia. Many

Germans believed Max's reports of high-level Kremlin meetings, but the case reeks of Soviet deception. Here I differ with Kahn, for although he mentions the possibility of Soviet deception, he does not press it strongly enough.

Three chapters in Part IV—"The Cases"—are interesting. "The Biggest Surprise" has been mentioned. "The Greatest Mistake," the horrendous miscalculation of Soviet strength and capabilities, is excellent. Kahn places the primary blame for this failure on German arrogance. By this time the Germans felt they could beat any nation in the world, and the officer corps, like Hitler, was vehemently anti-Slav and anti-Communist. Not just in the sense of being opposed; they were convinced that the despised Russians and their system were vastly inferior to the Germans. The General Staff now had no fears of a two-front war, something which German planners traditionally had dreaded, because they now were sure that they could finish the Russians off in a matter of weeks.* One can easily imagine the feeling of horror which crept over these men, even during the initial blitzkrieg, when they realized that the Russians had not 10,000, but 24,000 tanks, including the superb T-34 of which they had had no inkling (the Germans had 3,500 tanks). The Luftwaffe thought the Russians had 10,500 aircraft—the true figure was 18,000. But worst of all, as Halder, the Army Chief of Staff, noted in his diary when the campaign was in only its ninth week, "at the start of the war we reckoned with about 200 enemy divisions. So far we have counted 360."

"The Ultimate Failure," the Allied deception which convinced the Germans that the Normandy invasion was a secondary effort and that the main effort would be in the Pas de Calais, is a fine account of a very well known subject.

Kahn's overall conclusion is "Thus Germany lost the intelligence war. At every one of the strategic turning points . . . her intelligence failed. It underestimated Russia, blacked out before the North African invasion, awaited the Sicily landing in the Balkans, and fell for thinking the Normandy invasion a feint." Two grievous tactical intelligence failures in Russia were in not expecting the Soviet counterattacks at Stalingrad and against Army Group Center in July 1944. By comparison the Allies did quite well: They were only two percent off on German strength in France in 1944. The British recognized in the fall of 1940 that Hitler had given up the idea of an invasion, and acted on this estimate. The German rocket installations were discovered and bombed. Finally, the Allies had phenomenal success in deciphering German radio traffic. True, there were bad intelligence failures in Norway in 1940, at Arnhem, and before the Battle of the Bulge, but Allied intelligence surely shortened the war.

Again, on the German side, the intelligence officer (Ic) was always treated as a poor cousin to the operations officer, the Ia, at every level; indeed the subordination of the Ic to the Ia was specifically spelled out in service regulations. When you are winning, you may choose to ignore intelligence unless you are extra tidy; the Germans had a lot of victories all the way through 1942, and developed some bad habits. If these bad habits among the General Staff were not enough, Hitler's attitude made for an appalling situation. He never actually ordered a bearer of bad tidings executed, but he did not like to receive bad news which might interfere with his intuition, and his staff shielded him from it. The title of the last chapter, "Hubris, Glory, Charisma, Fuehrer," sums this up pretty well.

I found one very small factual error. On p. 520 Kahn writes that Foreign Armies West carried First U.S. Army Group, (the formation supposed to invade the Pas de

*On 1 October 1941, in fact, Reichs Press Chief Dietrich claimed total victory and said nothing remained to be done but "mopping-up operations beyond the Urals." Ed.

Calais) on its situation map until 31 October 1944, and retained "three nonexistent army headquarters—the English 4th, American 14th, and the Allied 1st Airborne." The first two never existed, but the latter remained in existence as a headquarters at least until April 1945, when it was planning an airborne assault on Berlin.

William P. Bird

HONORABLE MEN: MY LIFE IN THE CIA. *By William Colby with Peter Forbath.*
(Simon and Schuster, New York, 1978, 473 pp.)

The changing world of American intelligence is vividly reflected in the only two books that have been authored by former Directors of Central Intelligence. Fifteen years ago Allen Dulles published a text book for the profession. As *Studies* reported at the time, it was "essentially an encyclopedia of the terminology, concepts and craft of the trade."* In addition to describing the procedures, tasks and goals of the profession, it was vividly illustrated with examples of the role of intelligence in the Cold War and the threat posed by our Communist adversaries. And it presented a passionate and well argued defense of the importance of intelligence, and particularly CIA, in the defense of our freedoms.

The reader does not need to be reminded of how world and domestic events have transformed the environment for intelligence and CIA since Mr. Dulles set forth his views. But if he had somehow escaped in 1963 to an exotic isle to pass these years in innocence, an examination of Mr. Colby's new book would be quite a jolt. Techniques and tradecraft are not a principal focus, though they are abundantly illustrated by the descriptions of operations and activities that Mr. Colby commanded, directly or indirectly. The revelation of details, all passed by the CIA Publication Review Board, would have been unthinkable even six years ago, before Mr. Colby reached the pinnacle of the career ladder when President Nixon nominated him to be the DCI in 1973.

The importance of persuading the intelligence profession to change its concept of what needs to be kept secret and what does not is one of Bill Colby's principal purposes in this work. As we shall see, there are a number of other messages which he is eager to transmit to both the lay reader and to the professional. For although this book is written as a memoir of his career in intelligence, it provides at the same time a defense and explanation for his conduct in various controversies in which he became embroiled; more importantly, it preaches the lesson which he draws from his experiences, with particular emphasis on the conduct of intelligence in American society in the future.

A major message which Mr. Colby has espoused on the speaker circuit since his departure, as well as in this book, is that modern intelligence must inform the people—that in America at least it can no longer exist solely to serve the President. In an increasingly technological and interdependent world society the facts and analysis on which policy is based must be made available as a part of the process of educating the Congress and the people if public support for our foreign policy is to be sustained. More importantly for the intelligence profession and its place in the foreign policy process, the change in the character of the intelligence establishment demands that it fulfill a role in educating the public if support for its mission is to be regained and maintained. He argues persuasively that its size, its budget, its command of the most sophisticated technology and its influence among the departments of government are such that it can no longer function as a hidden cubbyhole in the Office of the President.

In fact, as he would be the first to acknowledge, Mr. Colby is defending a trend in the uses and role of intelligence that has accelerated in the last several years. One of his purposes is to remind us that obsessive and overweening secrecy can lead to abuses

**Studies*, VIII/1.

that destroy the foundations of support essential to our existence. This leads him into an elaboration of his concept of CIA as an "integral part of our democratic process" subject to the checks and balances exercised among the separate powers of the executive, the Congress, and the judiciary, or in other words, CIA under the Constitution.

Mr. Colby confesses that he came to these conclusions in the latter part of his career, that, in his earlier days as an OSS and CIA operative and then as a DDO manager, he fully accepted the tradition of total intelligence secrecy. Though this tradition had occasionally (and more frequently by the end of the sixties) been questioned in academic and journalistic writings, he is the first intelligence professional to argue the case so fully and cogently. In the view of many, his position has had an important part in shaping the tone and direction of debate on the future role of American intelligence and the CIA, and certainly it has had a significant impact on the policies of both his successors as DCI.

While intelligence professionals indeed must accept that the time when they enjoyed "special status" in the American government has come to an end, there will be less unanimity that they must "take on the task of informing the public of its nature and its activities *as any other department or agency*" (*italics added*). Mr. Colby does not ignore the special problems that confront CIA and the Intelligence Community that flow from his concept of intelligence under the Constitution. Two examples: he gives appropriate attention to the protection of proper secrecy and the necessity to develop more effective sanctions against their disclosure. Also, better public understanding of intelligence will help assure public acceptance of the need for proper secrecy. Secondly, he illustrates the difficulties that ensue when the results of intelligence are exploited for partisan purposes in a politically controversial issue.

The intelligence professionals among his readership will wish that he had considered the organizational and procedural adjustments and innovations that must be devised to ensure fulfillment of this new concept of intelligence while protecting legitimate secrets, assuring that professional talent is kept focused on its main task, and avoiding a bureaucratic proliferation that could be self-defeating. Of course, there are no easy answers, but today's management might have benefitted from Mr. Colby's views.

It would also be instructive to have his thoughts on the conduct of business between CIA and foreign intelligence services. These relationships are likely to be more, not less, important in the future. This observer is not aware of any other country that has repealed the traditional mode of its secret intelligence services. Nor is there significant popular demand to do so, although this could change. In the meantime, while new ground rules are evolving, cooperation from foreign services is extended more warily, and on some matters not at all. After the revelation of abuses, along with exaggerations and distortions, it is undoubtedly reassuring to the public to read about Mr. Colby's thoughts on CIA's new place under the Constitution, especially since his views are evidently influential in shaping new legislation and practices. However, it might have been helpful—for example, with Congress—if he could have demonstrated the importance of implementing the new arrangements speedily and in such a way as to assure foreign services that are disposed to cooperate with CIA that they can do so without fear of embarrassment through unauthorized disclosures.

Mr. Colby gives considerable attention to working out a new relationship between American intelligence and Congress. He suggests that Congressional oversight, properly and responsibly exercised, can give new meaning to the initials CIA—Constitutional Intelligence for America. On the whole, he was encouraged by the

results of the Church Committee, discouraged by the work of the Pike Committee. When he wrote in 1977 the new Select Committees in each House appeared to be making a good beginning. He writes in ample detail of his efforts to establish a responsible relationship, for reasons both of immediate necessity and to provide the proper foundation for the future.

Aside from the Church and Pike Committee investigations, the major innovation during his tenure on the Congressional front was the new legislation resulting in the requirement to keep eight legislative committees briefed on all covert action operations. Every new project he briefed to the committees in 1975 leaked to the press. Mr. Colby understandably contended that Congressional oversight, if secrets are to be kept, must be limited to a few Congressmen. Later, he applauded the work of the new Permanent Select Committee in the Senate as a demonstration of effective supervision while secrets are kept. Unfortunately, subsequent events do not fully support his enthusiasm. Even as recently as earlier this year (1978) the new procedures for reporting covert operations have resulted in several being leaked. While most will agree with Mr. Colby on his general thesis concerning Congressional oversight, the burden of proof remains on his adherents in Congress and the administration to demonstrate that this oversight can include the level of specifics involved in current reporting procedures without jeopardizing the executive capacity to conduct a covert operation successfully and securely.

It is a pity that this conundrum was not faced squarely. For it is a fact that the executive branch has foreclosed or abandoned covert action options in some situations—not because of any inability to make a good and persuasive case for them with Congressional committees—but due to the risk of disclosure and subsequent harm to U.S. interests. Those who argue for maintaining a covert action capability in CIA *and* for continuing current reporting procedures as the method for discharging proper Congressional oversight seem to ignore the experience of four years and the proclivities of human beings—each with his own political ax to grind.

Many CIA employees and other intelligence professionals will be particularly interested in the rationale by which Mr. Colby defends his actions that were controversial within the intelligence community. Clearly, the one which caused him the most anguish was his referral to the Justice Department of Mr. Helms' testimony to Congressional committees on CIA activities in Chile. He relates the sequence of events that caught him in an ethical, legal and bureaucratic snare. Whatever one concludes about the wisdom or the necessity of the decision he reluctantly took, it is evident that he found himself confronted with a painful dilemma, both personally and professionally. Those interested should turn to page 383 and read Mr. Colby's recitation of how this came about and why he felt compelled to take the action he did.

Though it was less contentious, there remains a strong minority among professionals and ex-professionals who find fault with Mr. Colby's action to force the resignation of Mr. Angleton as Chief of Counterintelligence. Here, however, the issues were more clearly defined. In Mr. Colby's mind these issues revolved around the effectiveness and the consequences of the direction and management of CI from the early fifties until Mr. Angleton's dismissal at the end of 1974. Mr. Colby's critical evaluation of this performance appears at various points throughout this story. His views are set forth candidly and without recourse to *ad hominem* arguments. One of his concerns is to refute allegations, despite the timing of the dismissal, that the action was motivated by the appearance in the *New York Times* of the Seymour Hersh articles which ignited the Congressional investigations. A useful index will help guide those interested to the places in the book where Mr. Colby's position on the differences between the two men is discussed.

Inevitably Mr. Colby's administration of CIA will be most remembered for and judged by his conduct of the Agency's response to the investigations of, first, the Rockefeller Commission, and then the two Congressional committees chaired by Senator Church and Congressman Pike. Though a complete summary of these events would have required a separate book, sufficient details and incidents are provided which will help both the professional and lay audiences to understand the difficult choices confronting him and the loneliness he felt at various times as he attempted to navigate a path through uncharted waters. To his credit he confesses a number of tactical errors in the course of the long drawn-out hearings (though the need for him to identify high administration officials like Mr. Rockefeller who differed with his game plan is questionable). But his main purpose is to leave the reader with a clear appreciation of the strategy and tactics which guided him throughout.

Mr. Colby was convinced, probably rightly, that the very survival of CIA was at stake during this period. He had already been persuaded, as noted earlier, that the secluded position of intelligence within the American government was no longer tenable. "My strategy quite simply . . . (was) to be guided by the Constitution, and to apply its principles. This meant that I had to cooperate with the investigators and try to educate the Congress, press, and public, as well as I could, about American intelligence, its importance, its successes and its failings." Support within the White House for this strategy varied from lukewarm to hostile, and Mr. Colby is persuaded that President Ford fired him because of the way he handled this crisis. Be that as it may, he reports that others like Secretary Kissinger later concluded that he had been right.

Mr. Colby's commitment to "intelligence under the Constitution" was buttressed by his interpretation of practical considerations. He was determined to protect "true secrets"—names of agents and cooperating Americans, the identification of sensitive technologies and the like. This could be accomplished, he felt, only by endeavoring to develop an understanding of intelligence and avoiding an adversary relationship with the investigators. "The Agency's survival, I believed, could only come from understanding, not hostility, built on knowledge, not faith."

There were times when this belief was severely shaken. He had not quite calculated what he calls the extreme vulnerability of the Agency to suspicion and sensation rising out of the long tradition of total secrecy. The result was that journalists were attuned to believing that his revelations of past misdeeds or mistakes were "just the tip of the iceberg" and that he was concealing a great deal more. After Mr. Ford unwittingly caused the subject of alleged assassinations to find its way into the media, Mr. Colby confessed that at least on this subject his hopes for educating the public and introducing a new era for intelligence in this country collapsed. The management and staffing of the Pike Committee investigation was a near disaster for the execution of Mr. Colby's strategy. Despite these setbacks, he persevered.

His experience with CIA's tangential involvement in the Watergate investigation also strongly influenced his course of action. The "distancing" strategy employed at that time, by which CIA revealed only the information which was specifically requested and then only when it could no longer be withheld, had generated suspicion and distrust and an "implied culpability." He acknowledges that this strategy succeeded in the short term in exonerating the Agency as having been involved in the Watergate cover-up, but felt that the sensational headlines and speculations spread across the country before the rumors were laid to rest served in the long term to undermine whatever residual public faith in the Agency remained. At one point he states that it was CIA's experience in Watergate "more than anything else" which

prompted him to confess to the "few misdeeds in the past," put them in perspective and show how they had been stopped and would be prevented in the future.

Doubtless the argument over his conduct of these investigations will continue for some time. Supporters and detractors can mount persuasive supporting evidence. Perhaps it is a cop-out, but this reviewer is inclined to be wary in attempting to render a definitive judgment on his performance. The temptation to act as judge and jury in assessing this dramatic period of CIA's history may be strong, but none except Mr. Colby himself was in a position to know and weigh all the facts and pressures with which he had to contend. The responsibility was his and he met it unflinchingly. Most will agree that CIA emerged from this travail reasonably intact and in a strong position to rebuild for the future, despite the reverberations that continue to distract and plague the Agency on various fronts. We can be grateful to him for setting forth fully and frankly so much of the background of events and the rationale for his conduct, along with his hopes and disappointments and his own evaluation of the outcome. By this time it should come as no surprise that he remains steadfast in his view that he really had no other recourse, given his interpretation of how the intelligence establishment must now conduct itself in the American constitutional system.

There is a great deal more in this interesting memoir. Four chapters are devoted to Vietnam—not unexpectedly. Few in CIA spent more time working in and on Vietnam, and none had more responsibility for shaping the direction of CIA's activities there. Historians will find much of value in this recitation of events, though for a more penetrating analysis of the results of the so-called pacification program one must turn to the chapters on Vietnam in Blaufarb's volume on counterinsurgency.*

In describing his experiences in Italy in the fifties and later in commenting on Chile, Mr. Colby provides us a primer on covert action in support of democratic forces in contested countries. His description of CIA's effort to disentangle itself from Watergate is illuminating. James Bond devotees will be attracted to the first chapter on his OSS days in the underground behind enemy lines.

Mr. Colby's discussion of his experience as Executive Director-Comptroller reflect his curious ambivalence to the execution of top management responsibilities. When Mr. Helms offered him the job in 1971, he viewed it as the third-ranking post in CIA on paper only, without significant influence over the four substantive Deputy Directors, and therefore an unsatisfactory platform from which to launch his own ideas about intelligence. That he subsequently came to have no regrets that he accepted the position he attributes to the opportunities afforded him to broaden and deepen his appreciation and understanding of the profession of intelligence. Yet it is clear even from the limited record provided here that he exercised significant responsibility during his tenure, that there were a number of opportunities which he grasped for trying out innovative ideas, and that he fulfilled a vital role in supporting the Director in his role as Agency manager.

Nevertheless, one of the first things he did when Mr. Schlesinger succeeded Mr. Helms as DCI was to persuade the former that the post of Executive Director-Comptroller was a "meaningless job" that should be abolished, and abolished it was. It seems not to have been important to him that the post was unique in affording others an opportunity to be groomed for higher responsibility (as he believes Mr. Helms did with him), that leadership styles and needs change, nor particularly that circumstances arise requiring flexibility at the top echelon of management. Though opinions may

* "The Counterinsurgency Era: U.S. Doctrine and Performance—1950 to the Present," by Douglas S. Blaufarb. The Free Press, 1977.

vary, the undersigned believes that there was a substantial majority view within CIA during Mr. Colby's tenure to the effect that the day-to-day management and direction of the Agency was significantly impaired when the Director's time was overwhelmingly absorbed by the demands of the investigators. The reliance on collegial leadership by a committee of the Deputy Directors was simply an inadequate substitute for something like the Executive Director-Comptroller.

In his epilogue Mr. Colby summarizes his views on "Constitutional Intelligence for America," the kind of legislation that is required to better protect secrets, the need for a Congressionally sanctioned charter, the future role of technology in intelligence, and the organization of the intelligence community (wiring diagrams are less important than improving the substance of intelligence and assuring the public support). Surprisingly, he has little to say about a subject that has commanded a not insignificant amount of time of recent Directors and especially Mr. Colby, i.e., the proper relationship, and the responsibilities of each within this relationship, of the media and intelligence.

Mr. Colby confesses that one of his biggest disappointments was his inability to give more attention to the analytical area of intelligence, for it is here that he sees the greatest need and potential for improvement. In recalling the events of his term as DCI, he had noted some of his efforts in this area, but these had mostly to do with matters of organization and presentation, such as the substitution of National Intelligence Officers (NIOs) for the Board of National Estimates and the creation of the daily newspaper to present key developments and interpretations to top policy makers. In the epilogue he pleads for more attention to finding new ways of thinking and communicating and for finding support for research to try out new approaches to analysis. It is this message which is most in danger of being overlooked. Lip service to this goal is bountiful. But changing traditional habits, allocating and rewarding time to activities sometimes not immediately productive, protecting new initiatives during a budget review process—all require leadership commitments and support from within and from executive and Congressional overseers that are difficult to sustain.

In reviewing Mr. Dulles' book, previously cited, Robert R. Bowie also concluded that making correct estimates about the complex matters with which intelligence must *deal* if it is to effectively serve policy making is in many respects more difficult than the collection of information on which analysis is based.* Mr. Bowie lamented Mr. Dulles' failure to treat this subject more fully. Mr. Colby evidently had hoped to focus his own efforts as DCI more sharply on this task. Regrettably, events conspired to divert his attention. His diagnosis of the problem is accurate; his brief sketch of possible remedies can best be described as suggestive. The challenge remains.

Lewis J. Lapham

**Washington Post Book Week*, 13 Oct. 1963.

THE NAZI CONNECTION. *By F. W. Winterbotham. (Harper & Row, New York, 1978, 222 pp.)*

In reading this book, the reviewer was frequently struck with a sense of *déjà vu* as he kept encountering descriptions and comments which seemed vaguely familiar. The mystery was finally solved by the Author's Note buried just before the Index at the end. There, Group Captain Winterbotham admits that in 1969 he did, indeed, publish a prior account of his experiences as an air intelligence officer during the pre-war Hitler years.¹ Of this earlier volume he is content to note that since "my methods of obtaining secret information were somewhat unorthodox, there was much that I could not write about." We must presume, therefore, that we are being presented with more detail in the present instance, even though the events described are the same.

Mr. Winterbotham's earlier work was not reviewed in *Studies*, so it may be instructive to look at some of the main themes presented, together with their implications, and to trace certain U.S. intelligence parallels during the same period. The author's theme in his two books on the thirties is a simple one: his own early recognition of Hitler's intention to dominate Europe (and of the overwhelming force of German airpower which was being developed in support of that aim), as against a persistent and inexplicable refusal of the leading elements of the British political and military establishment to heed the author's warnings, recognize the developing menace openly, and take the necessary steps toward rearmament.

Mr. Winterbotham took over the MI-6 air intelligence responsibility (i.e., the RAF representation in the Secret Intelligence Service) at the beginning of 1930. In 1931, he was able to place a trusted British intermediary in contact with Alfred Rosenberg, then one of Hitler's closest political advisors. That intermediary, in turn, came to be regarded by Rosenberg as "his English agent," and a means of contact with influential British military figures, namely, Major Winterbotham and his circle of aeronautical associates. Posing as a member of the Air Staff with important friends in government and business, Winterbotham invited Rosenberg to England in the spring of 1932 for a successful round of unofficial visits with leading personalities in British aviation.

This led, in 1934, following the Nazi takeover, to a reciprocal invitation to Winterbotham to visit Germany, and to a personal interview with Hitler, who candidly revealed both his admiration for Britain and his aims for Europe. This resulted in a continuing relationship with Rosenberg and subsequent visits to Germany in 1936 and 1938, during which the former was at pains to show Winterbotham Germany's growing "invincibility" in air power. The latter, of course, used these opportunities to fill in the details of his own picture of developments.

It took Mr. Winterbotham nearly a year and a half after his first visit to Germany before there began to be some acceptance of his findings on German rearmament plans in high military circles, notably the Air Staff. The Secret Intelligence Service and the Permanent Under-Secretary of State for Foreign Affairs, Sir Robert Vansittart (to whom MI-6 at that time reported), had long since taken heed of his warnings. The author, incidentally, suspects that Vansittart was eventually relieved of his post, in 1937, by the Foreign Secretary, Anthony Eden, because of the former's insistent warnings concerning the growing Nazi menace. Vansittart says as much in his own memoirs.²

¹ *Secret and Personal*, William Kimber, London, 1969.

² R. G. Vansittart, *The Mist Procession*, Hutchinson, London, 1958.

According to the author, it was at a Cabinet Committee meeting called in July 1935 at the demand of the Director of MI-6 that the full story of the growth of German air power was presented to senior ministers for the first time, over the opposition of Air Staff intelligence analysts.* In this the author describes himself as ably assisted by an MI-6 associate, Desmond Morton, to whom Winterbotham generously gives credit for the decisive presentation on German rearmament aims. This session then supposedly led to the appointment of a new Chief of Air Staff and a start toward the creation of a "shadow" defense production capability that was intended to be as unobtrusive to public opinion as possible. Full-scale, overt rearmament was not undertaken, however, until after Munich in 1938.

Concerning this key sequence of events, as well as at other points in his narrative, Mr. Winterbotham displays a certain amount of ignorance which a bit of historical research could easily have remedied. Thus, one suspects that the major confrontation with the Air Staff was merely the formal aftermath to a series of happenings during the previous two months in which Vansittart had already succeeded in convincing the Prime Minister concerning the state of German rearmament by means of detailed information obtained from his own private sources in Germany.

As recorded in Vansittart's autobiography (op. cit.) and in Ian Colvin's well-researched biography of Vansittart,³ that gentleman had personal, high-level, anti-Nazi sources within the German Air Ministry who for "patriotic" reasons preferred not to become directly involved with British intelligence. They reportedly provided him with conclusive detailed evidence of the course of German air rearmament. He claims that he showed this material to the Air Staff without revealing its source, but that they apparently discounted it for that reason.

The session of which Winterbotham writes could well have been a put-up job between Vansittart, the Chief of MI-6 and Desmond Morton, Winterbotham's colleague in MI-6, in order to introduce Vansittart's material into the intelligence system. Recall Winterbotham's description of the decisive nature of Morton's presentation. This confrontation, incidentally, made it possible to justify the removal of the generally ineffectual Chief of Air Staff as a scapegoat for the Government's failure to act sooner. If this reading of events is accurate, then the author may indeed be claiming a greater level of influence here and, perhaps, elsewhere as well, than he has a right to.

The author frequently asserts his inability to understand the British ruling party's refusal during this period to take a public stand against the German menace and begin to rearm openly. While many reasons have been advanced for the British policy of "appeasement" toward Fascism during the nineteen-thirties, a particularly cogent

*It is interesting to note that British reluctance to accept intelligence reports and judgments survived even in wartime. Just as Winterbotham had to argue his case before a cabinet-level committee to win acceptance of his 1935 estimates of Luftwaffe strength (pp. 128-133), R. V. Jones notes in *The Wizard War* (to be reviewed in a forthcoming issue of *Studies*) that he had to appeal to a cabinet-level review in June 1940 on *Knickebein*, the directional beam for Luftwaffe bombers over England (pp. 100-104) and again on other S&T matters in April 1943 (pp. 296-8). In Jones' case he asserts he needed Prime Minister Winston Churchill's intercession each time to get a hearing for his views. Ed.

³ Ian Colvin, *None So Blind*, Harcourt, Brace & World, New York, 1965.

analysis of British governmental policy toward the emerging Fascist dictatorships is to be found in a recently published book by the eminent British military historian Michael Howard.⁴ He sums up the situation in the following observation:

And stand aside from the struggle was of course exactly what the British Government tried to do. In terms of ideology it had little sympathy with the Left.⁵ In terms of national policy and planning it had no wish to get involved in yet another conflict in the wrong place at the wrong time, even if not now the wrong enemy. The Chiefs of Staff may not have been concerned with fighting Fascism, but they were very much concerned with the problem of fighting Germany, and in view of the disparity of air power they felt in no condition to do so yet. The Cabinet itself was profoundly reluctant to fight anyone; and by 1937, when it was clear that they faced not some swift, efficient police-action against a minor power, but a major war in which British cities would be heavily at risk, they were probably not unrepresentative of the bulk of British public opinion.

This, then, was the difficult situation faced by Winterbotham as he pursued his air intelligence mission during the nineteen-thirties.

His strivings to document the growth of German airpower were paralleled by U.S. efforts from 1936 onward through the use of reserve Air Corps Colonel (later Brigadier General) Charles A. Lindbergh to collect similar information for the U.S. Military Attache in Berlin, Major (later Colonel) Truman Smith.⁶ Invited to take up the task by Major Smith in 1936, and confirmed in his mission by Air Corps Chief "Hap" Arnold, Lindbergh made trips to Germany in 1936, 1937 and 1938 as a guest of the German government. He was entertained royally, shown and allowed to fly the latest military aircraft, and permitted to visit aircraft production facilities. In 1938, at the U.S. Embassy in Berlin, he prepared the first detailed intelligence estimate on the state of German airpower, a document which was signed by Major Smith and forwarded to the War Department.

It was clearly the aim of the German government to impress the American leadership with their overwhelming airpower, as was presumably also true in the case of then Major Winterbotham. It was the misfortune of the Americans not to have any funds for espionage in Germany, and to have to rely on a semi-formal relationship with a reserve officer. While that individual performed his primary mission in exemplary fashion, he was later to become involved in great controversy over his isolationist views, views developed in no small measure as a result of his first-hand observations in Germany. Lindbergh was so impressed with German airpower that he

⁴ Michael Howard, *War and the Liberal Conscience*, Rutgers University Press, New Brunswick, N.J., 1978.

⁵ Reviewer's Note: Who, in Howard's terms, until 1937, when they began to accept the overriding necessity for self-preservation, blindly supported the concept of "collective security" and opposed rearmament as likely to lead to Fascism at home in order to fight Fascism abroad.

⁶ Colonel Truman Smith, *Air Intelligence Activities: Office of the Military Attache, American Embassy, Berlin, Germany, August 1935-April 1939 With Special Reference to the Services of Colonel Charles A. Lindbergh, Air Corps (Res.)*, unpublished manuscript, Sterling Memorial Library, Yale University, New Haven, Connecticut.

felt that the United States should not involve itself again in a conflict with that nation, despite the importunings of the British and of various political pressure groups in the United States. Because of his public utterances prior to Pearl Harbor, he was pilloried in the press and excoriated by administration spokesmen as a Germanophile, a traitor, an anti-semitite, etc. The fact that he ceased all isolationist activity after Pearl Harbor and offered his services to the military is often forgotten.⁷

In different ways, then, the British and American specialists in German air rearmament, both honorable but obstinate and opinionated men, found themselves at odds with their respective political leaderships. It fell to Lindbergh's lot to pursue a course that was in line with German policy toward the United States, causing him to be regarded by some as a German spokesman.⁸ Actually, neither individual profited greatly from his early warning endeavors. Winterbotham served out WWII in an administrative post, albeit one of high trust, as chief security officer for ULTRA intelligence, while Lindbergh was not even permitted to serve in the armed forces (he had resigned his commission in protest prior to Pearl Harbor), and was forced to participate in WWII as the field representative of an aircraft firm.

Neither of these men appears to have been aware, at the time, that he was part of a high-level German propaganda (or reverse disinformation) effort designed to convince his country's leadership of the futility of military opposition to Germany. Winterbotham's claim of the difficulty that he had in extracting his information may have applied to some of the details, but, until the Germans realized that the British were not going to remain neutral, it was certainly not true of the general picture, which they surely wanted him to know. It is significant in this connection that those parts of the picture which they wished to hide, such as missile and electronics developments, Winterbotham had no access to, and, actually, did not learn about them until quite late in the game, and then only with the assistance of the redoubtable R. V. Jones.

Whether they realized at first that Winterbotham was an MI-6 officer seems almost irrelevant. To the German leadership, he was a member of the British Air Staff with access to influential people in government and industry, an agent of influence, so to speak. He became a failure to them only when it was recognized that his information was not having the desired effect. Lindbergh, strangely enough, by way of contrast, became an embarrassment to British (i.e., MI-6) propaganda efforts to involve the United States in the war against Germany and was made the subject of a propaganda campaign designed to discredit him by Sir William Stephenson's British Security Coordination.⁹ The German intelligence services did their best to avoid

⁷ While not directly concerned with the present story, it seems worth mentioning that Colonel Truman Smith, from his close association with Lindbergh during the late thirties, records his general recollection of Lindbergh's basic attitude toward Germany, as follows: (op. cit.)

Lindbergh distrusted the Nazi government of Germany and found its anti-Semitic policies abhorrent . . .

Lindbergh admired most of the leaders of German aviation, its scientists, generals and industrialists . . .

Lindbergh believed that a war in Europe would be a catastrophe for western civilization.

He thought that if such a war actually occurred, it would result either in a German victory or Russia's becoming the dominant power of all Europe.

Lindbergh hoped that if Hitler did launch a war, it would be against Russia and he believed that for France, Britain and the United States, the best policy would be to remain neutral while strengthening themselves militarily so that when Russia and Germany were mutually exhausted, the western powers would be in a position to dictate terms of peace.

⁸ Wayne S. Cole, *Charles A. Lindbergh and the Battle Against American Intervention in World War II*, Harcourt Brace Jovanovich, New York, 1974.

⁹ William Stevenson, *A Man Called Intrepid*, Harcourt Brace Jovanovich, New York, 1976.

causing him any embarrassment, since his goals and theirs happened to coincide at the moment.

To sum up, Group Captain Winterbotham, reaching back in his memory 30-35 years for his first account of the nineteen-thirties and 35-40 years for the additional material appearing in the present work, has presented us with a very interesting story of the problems of a pre-WWII intelligence officer in a fairly narrow area of specialization, German military aviation. In discharging his responsibilities, he repeatedly found himself forced to: define his intelligence target; plan his own collection strategy; find his own means of access to his target; participate directly in the collection effort; evaluate and analyze the collected information and place it in its proper perspective; and, finally, convince the proper authorities of the validity and importance of the intelligence product. Truly, the term "one-man band" would seem to fit this often beleaguered individual rather aptly. He actually displayed great initiative, determination, persistence and not a little creativity and common sense while achieving a considerable measure of success. Unfortunately, he occasionally comes across in his writing as a rather stuffy, pompous, opinionated, and somewhat ineffectual member of the establishment, a self-generated image that could account for some of his difficulties in getting others to pay serious attention to him at the time.

This former WWI pilot and POW, who never spoke German with much facility, ultimately managed to compile quite a record for himself. Through overt and clandestine means of his own devising, he built up a comprehensive picture of German air rearmament during the nineteen-thirties. During the late thirties, in cooperation with his French counterpart, he created the foundations of a later tremendously expanded British aerial photographic intelligence effort. He was an early advocate of interagency cooperation in intelligence analysis and, together with others, foresaw the need for some kind of joint organization to assure proper high-level coordination of intelligence activities. He fostered the development of the special aerial mine system for attacking the Eder River dams. He successfully guarded ULTRA security during WWII and, finally, as the latter's first supervisor in MI-6, helped to launch the career of the incomparable R. V. Jones, regarded by many as the father of technical intelligence. Not a bad legacy of accomplishment. Winterbotham may perhaps be forgiven if he occasionally sounds as though he had an inflated idea of the importance of his contributions. This is, withal, an interesting personal memoir, adequately told in a calm and matter-of-fact manner, if, at times, rather overplaying an atmosphere of intrigue and personal involvement.

R. J. Bowen

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