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STUDIES in INTELLIGENCE

JOB NO. 78-03921A

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DOC 1 REV DATE 8 APR 1980
ORIG COMP 11 OPI 11 TYPE 30
ORIG CLASS S PAGES 144 REV CLASS C
JUST 22 NEXT REV 2010 AUTH: HR 10-2

VOL. 3 NO. 2 SPRING 1959

CENTRAL INTELLIGENCE AGENCY

OFFICE OF TRAINING

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SECRET

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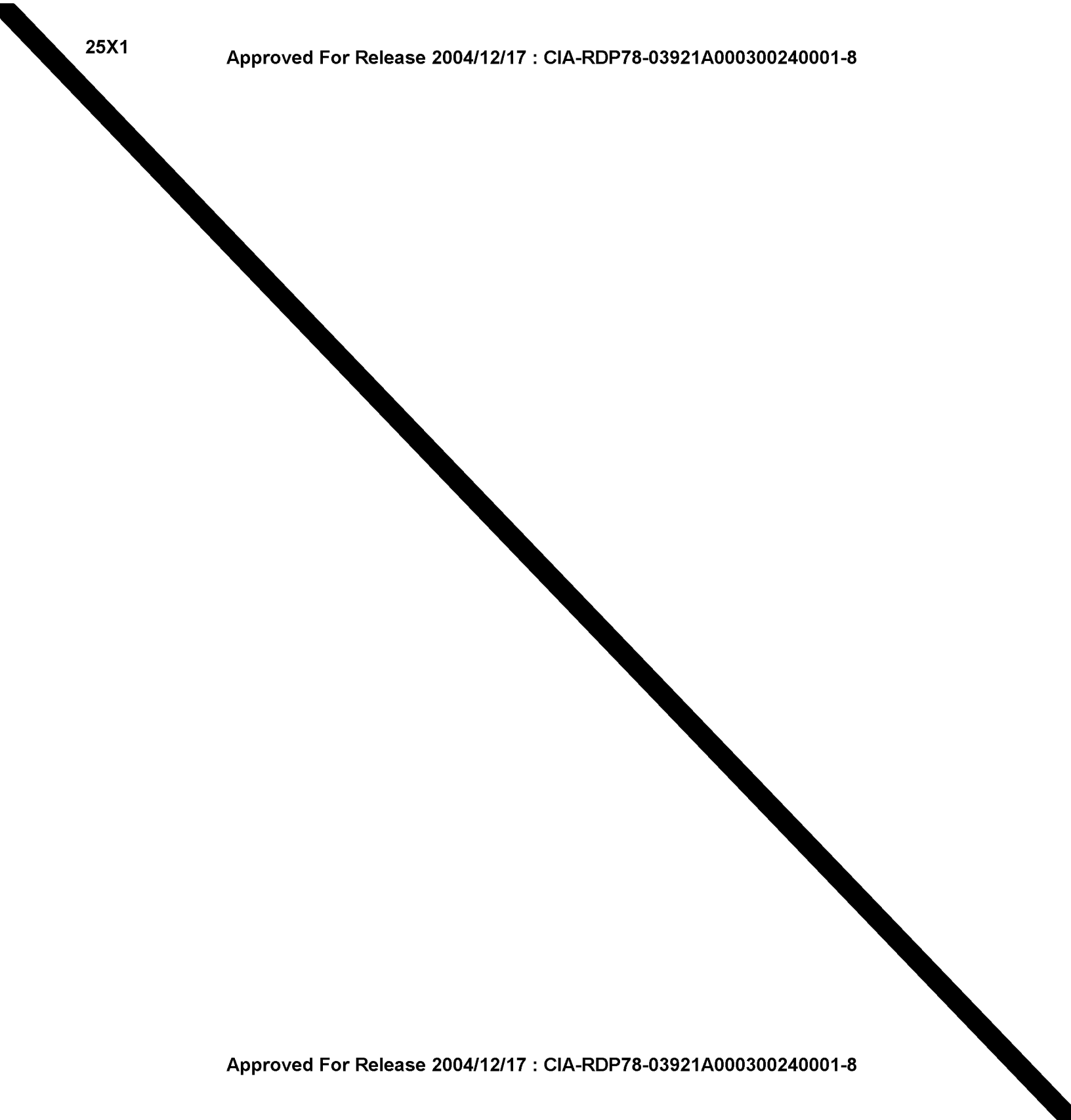

Approved For Release 2004/12/17 : CIA-RDP78-03921A000300240001-8

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Difficulties and new proposals [redacted] in a dozen military geographic fields.

GEOGRAPHIC INTELLIGENCE

K. C. Duncan

Geographic intelligence is one of the oldest forms of military intelligence, and one of the most important. From earliest times, when man first conspired against man, through ancient history and mediaeval conflict to the most recent wars of our own time, an accurate knowledge and appreciation of geographical factors has been an essential part of strategy and tactics. But today, instead of merely giving some simple information on what lies beyond the neighbouring hill, geographic intelligence is required to provide knowledge on a world-wide basis and in infinitely greater variety, detail, and (above all) precision than ever before.

In the face of unlimited conceivable demands from planning and operational staffs it is essential that our geographic activities should be carefully guided and controlled, so that none may be wasted on aspects which, though previously important in military thinking, have now lost their importance in modern strategy and tactics. It is in the light of this thesis that I propose to examine several fields of geographic intelligence and discuss problems encountered in each.

Cross-Country Terrain

Assessing the suitability of terrain for cross-country movement has been a major problem in modern warfare. Of the many instances when failure to appreciate this factor has proved disastrous, one is perhaps outstanding. In 1917 Lord Haig launched his Flanders offensive in disregard of his engineers' warning that the ground would revert to bog under the necessary preliminary bombardment and his weather experts' advice that the autumn rains, then due, would further aggravate conditions. His failure to take into account the terrain requirements for cross-country movement led to the

costliest battle in British military history, Passchendaele, involving the sacrifice of some 400,000 men.[1]

The suitability of cross-country terrain is today in some ways more critical than ever because of heavier equipment, increased speed and mobility, and probable need for dispersal off surfaced roads as a precaution against tactical nuclear attacks. Its assessment, however, is a most difficult matter, involving a matching of the characteristics of various types of military vehicle to a wide range of detailed information on the terrain—local or seasonal variations of bearing capacity, width and depth of water obstacles, height and steepness of their banks, and the effect of day-to-day or seasonal climatic influences. The task is rendered especially difficult when no practical precedent exists: take for example the movement of [redacted] tanks across ricefields.

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The military geographer really has two major tasks—first, to acquire and collate the necessary mass of factual data on the terrain, and second, to apply those data to foreseeable military operations on the basis of proved vehicle performance. For both, I suggest, careful liaison with planning staffs is essential. It is beyond our resources to acquire and collate detailed information on all areas; we must concentrate on areas where the planners consider movement most likely to occur. And we must keep aware of movement plans for particular vehicles in order to spot the need for experimental maneuvers as basis for an adequate assessment of the practicability of these movements.

Ports and Beaches

An outstanding feature of World War II military operations was the extensive use of beaches for landing troops with their arms and supplies. New techniques led to operations of this kind on a far greater scale than had previously been thought possible. It became the policy to by-pass the seaports in the opening stages of a campaign, relying on the beaches until harbors were captured and reopened to the use of conventional vessels. It was found possible to land stores and equipment on beaches and clear them inland at remarkable rates, averaging 2,500 tons per day per mile of beach. Thus performance over a good beach compares favorably with

[1] *Cf.* Leon Wolff's *In Flanders Fields*, reviewed on pp. 134–138 of this issue.

that of a medium-sized seaport, and in some cases can be better: on the basis of the wartime formula a two-mile stretch of beach west of Tourane, in South Vietnam, would have a capacity of 5,000 tons per day, as against only some 500 for the port.

The importance of beaches for military operations has probably increased since the war. Modern weapons seem likely to damage seaports more effectively and thus delay their rehabilitation for longer periods, while improved equipment for beach landings will probably permit the movement of tonnages far in excess of the figures achieved in World War II. In these circumstances, I suggest that our organizations should consider carefully whether they are over-concentrating on detailed studies of ports and their capacities to the neglect of beaches.

We should at least aim at a high standard in respect of those beaches which the planners consider may be used in operations. Experience in Melbourne indicates that accumulated beach intelligence is generally sufficient as a guide to planners, but lacks the detail required for mounting specific operations with confidence. It is a fallacy to suppose that observations made years ago are necessarily accurate today and adequate for present requirements. The characteristics of some beaches can change surprisingly overnight in a storm, and the heavier equipment available today poses problems not previously encountered. Factors such as bearing capacity (involving assessment of the sub-strata), slope at various tides, variations of surface and slope at different seasons, effects of tide and local currents on inshore approaches—these are typically deficient in our present information.

These deficiencies could be reduced, I suggest, by carrying out special technical reconnaissance, whenever practicable, in respect of those beaches which are of interest to our military planners on the evidence of present information. Where this reconnaissance is not possible (*e.g.*, beaches in potential enemy territory) our procurement channels should be activated far more than at present. If this is not done, we can only continue to plan on imperfect data, risking uncertainties and perhaps jeopardizing the success of vital amphibious operations.

Railways

An important problem in the study of railways is the assessment of route capacities. In ideal circumstances this assessment would be made by analyzing the physical characteristics of the lines—gauge, number of tracks, weight of rail, length and spacing of passing loops, speed or weight restrictions, and so on—to arrive at a theoretical physical capacity. The practical operational capacity would then be determined by such factors as size and type of locomotive and rolling-stock park, fuel availability, quality and location of repair shops and engine sheds, etc.

In foreign countries, however, particularly those which are behind a "curtain," acquisition of all the detailed information necessary for these analyses is most difficult, and present assessments of the practical capacities of railways in those countries can at best be regarded as approximations based on very imperfect data. Unfortunately, there is little prospect of obtaining the detailed information required to fill our gaps, and it is therefore worth considering whether some short-cut method might improve our assessments.

One such method might be to make an all-out effort to acquire working timetables of those lines which have importance in planning. These working timetables—not to be confused with passenger timetables—contain details of all classes of traffic, both passenger and freight, and are available in one form or another on all railways. An analysis of them in conjunction with other textual and photographic information might give reasonable accuracy in the assessment of practical capacities. It would not be easy, but if our agencies agreed on a standard approach it seems likely that the assessments achieved would be more soundly based and adequate at least for the purposes of war potential appreciations.

Roads

The great effort devoted to reporting on roads has amassed a considerable amount of information, which, however, is deficient in certain technical aspects critical for accurate assessments of road potential. This deficiency is due chiefly to the fact that reports come from nontechnical observers, but a contributing cause is that reporting officers not unnaturally tend to judge the condition of roads in foreign countries on

the basis of road standards in their own, so that their assessments tend to vary inversely with these standards.

The effect of inaccurate reporting can best be shown by a practical example. Let us take a road across undulating country with an overall width of 20 feet and a waterbound macadam surface in bad condition. Applying the standard NATO Road Capacity Table to these details, we arrive at an estimated capacity:

$$550 \times \frac{30}{100} \times \frac{80}{100} = 132 \text{ vehicles per hour.}$$

If 3-ton vehicles are used for a 10-hour running day, the estimated capacity becomes 3,960 tons per day.

But if the reporting officer, because of the bad condition of the surface, mistakes the waterbound macadam for crushed rock, our calculations would be:

$$280 \times \frac{25}{100} \times \frac{80}{100} = 56 \text{ vehicles per hour.}$$

With 3-ton vehicles and a 10-hour running day, the estimated capacity is only 1,680 tons per day. A simple mistake on the nature of the surface has thus resulted in an error of 57% in the capacity of this particular road. Cumulative errors in the NATO Table factors, applied to a number of roads in a given area, might seriously affect logistic planning.

But the full assessment of a road's potential requires also consideration of the maximum live-load capacity, *i.e.* the weight of the heaviest vehicle that can use it. This involves other technical reporting, in particular on the strength of bridges and culverts, which not infrequently impose strict limits on traffic. In the example we gave just now I assumed that 3-ton vehicles were used, but planners might well want to know whether they could move 10-ton trucks or even 50-ton tanks along a given road. This problem is one of educating reporting officers so that the technical details they supply are far more accurate than at present, or of obtaining this necessary information in some other way.

A secondary problem in this field, as in many others, is to ensure that procurement and research are conducted in accordance with the priorities of planning requirements, for the potential areas to be covered are so vast that with the

limited resources available we cannot hope to achieve detailed results on everything. If this control is not exercised, there is a real danger that essential work will be neglected.

Inland Water Transportation

Compared with railways and roads, inland water transportation is being neglected by intelligence. This, I believe, stems largely from a natural tendency to think first of rail and road transport for military movement because of their greater speed. Moreover, railways and roads, being able to traverse natural obstacles such as mountain ranges, can link widely separated regions and provide local access in any direction. Rivers and canals cannot provide the same through access or choice of direction, and the capacity of rivers normally decreases as one proceeds upstream. Another reason for the preoccupation with rail and road transportation systems has been the relatively large reporting on them in connection with Western aid to backward countries, in which the construction or rehabilitation of these systems has loomed large.

This neglect of waterways has meant that we have acquired insufficient detail to permit a rational reconsideration of the validity of our preferential emphasis on railways and roads. The situation, in short, presents a vicious circle. The vulnerability of rail and road transportation networks, particularly around major cities and ports, to modern techniques of attack suggests that greater attention should be paid to the capabilities of waterway systems as a means of moving supplies inland. They merit at least sufficient procurement and research that their role may be more accurately assessed in those areas which have the highest priority in over-all planning.

Airfields

The basic problem of airfield intelligence is the assessment of the capabilities of a given airfield, *i.e.* to decide what aircraft can operate from it, and in what circumstances. Before this assessment can be made it is necessary to know in detail such physical characteristics of the airfield as the dimensions, surface, and weight-bearing capacity of the runways, taxi-tracks, and dispersals, the nature and disposition of supporting facilities, the location and height of obstructions to the approaches,

the altitude, and the temperature. It is necessary to know, too, the seasonal variations in some of these factors.

Except when photoreconnaissance and detailed reporting are available, it is extremely difficult to get this information with the required accuracy, and even then a full knowledge of bearing capacity is practically impossible. Detailed tests have been conducted at a negligible proportion of the airfields in which we are interested, and we are therefore compelled to base our opinions largely on a knowledge of what aircraft have operated from the fields, without any real means to assess their surplus of bearing capacity. In addition, we all too often have no knowledge of how a runway will stand up to intensive or prolonged usage, or of how its capacity will vary at different seasons.

The rated requirements of aircraft which use the field, moreover, may bear only a very indirect relation to operational requirements. For example, [redacted] 25X1

25X1 [redacted] publications state that the MIG–17 requires only 2,640 feet to take off and clear 50 feet. Yet intelligence research shows clearly that the Communists, having built their runways for these aircraft to an original length of 6,560 feet, subsequently lengthened them to at least 7,200. For the MIG–19 the technical handbooks give a requirement of 2,240

25X1 [redacted] and 3,000 feet [redacted] whereas research indicates that the Communists are lengthening some runways for these aircraft from 7,200 feet to at least 8,200. There is thus a wide margin between the minimum length of take-off run and the length of the runway itself.

There is no easy solution, but I feel that considerable improvement would be achieved if our respective air forces and airfield intelligence could reach some agreement on the total lengths of runway from which enemy or friendly forces would be prepared to conduct both sustained and limited occasional operations. If lists could be agreed, showing on a country-by-country basis the full runway requirements for the operation of various aircraft likely to be used by that country, then the airfield intelligence branches would at least have a basis for their assessments and could write with far greater unanimity than at present.

Climate

Climate of course affects most other aspects of geographic intelligence, but some applications of its study in modern warfare may not yet be generally appreciated. For example a full knowledge of *local* wind variations is necessary for the study of the movement of radioactive fallout from nuclear explosions. Important as this is in strategic nuclear attack, it is even more so in tactical applications, when friendly forces are relatively close to the point of impact or may have to advance towards it. The same principle applies to chemical or bacteriological warfare. The study of local temperature inversions and local rains will also be very important should gases be used by either side in a future war.

You will note my repetition of the word "local." Intelligence is on the whole fairly well provided with generalized data on climate, normally based on long periods of observation, which gives a reasonably accurate basis for regional appreciations. What is lacking—and I suggest it is the main deficiency in this branch of geographic intelligence—is information on local peculiarities or variations within the broad regional pattern.

Mapping

The need for accuracy in mapping has always been important, but today this need is greater than ever before. Whereas minor inaccuracies can reasonably be corrected by visual observation in conventional air operations, the concept of guided-missile warfare highlights problems which have hitherto been only marginal. One of the greatest limitations to ICBM accuracy is the present inadequacy of intercontinental geodetic survey. The use of any guided missile which is not equipped with some terminal-guidance system requires precise knowledge of the relation between launching point and objective, and though some margin of error may be allowed where area damage is acceptable, no such margin is permissible if it is desired to hit a single objective with the minimum of damage to surroundings. If a terminal-guidance system is fitted to the missile, a prerequisite is often a knowledge of the radar return from the target area. In peacetime or in the early stages of a war, when it may not be possible to acquire this

knowledge by prior reconnaissance, the only alternative is the simulation of the return by a careful analysis of maps.

Since mapping represents graphic collation of many aspects of intelligence, it is pertinent to examine briefly our role vis-a-vis that of the map-producing authorities. Procedures no doubt vary between our countries, but certain fundamental principles are valid irrespective of their detailed application. First, there must be a system for feeding our information to the map producers, and for checking their drafts. This assumes particular importance when no recent photography is available to the mappers, but even when it is, there is inevitably a time-lag between it and the map compilation, and in that interval changes may occur. A map becomes out of date all too quickly; we must at least ensure that it is as accurate as possible when issued.

Second, there must be a system for informing the mappers of inaccuracies detected after issue, and for letting them know when certain series or individual sheets have become obsolete. Many of us, noting inaccuracies on maps, have done nothing to draw attention to them because there was no routine procedure for doing so. Third—and this applies primarily to areas over which peacetime photoreconnaissance is not practicable—there must be a system whereby doubtful map details noted in everyday research are recorded, so that procurement agencies may be briefed to check them.

Fourth, there must be a system whereby mapping priorities are related to planning. This is primarily a matter for liaison between planning staffs and the mappers; the responsibility of intelligence organizations lies mainly in drawing attention to the deficiencies and inaccuracies in existing maps of the priority areas so that new editions may be put in hand.

Photography

Photography is a basic requirement in mapping, in most forms of intelligence research, and in operational planning; and any deficiencies of photography must adversely affect these activities. Of the two forms of photographic coverage, print coverage and negatives backing it up, the need for the former is well recognized, but the need for film is not so generally appreciated. Film is required to meet the demands of various sections and organizations in peacetime and in war,

and the alternative of copying from prints, besides being slower and more costly, does not provide first-class quality, especially when, as frequently, the original prints have deteriorated through age.

It seems somewhat illogical that whereas the exchange of textual information between our agencies has been developed to a high degree, the exchange of photographic prints and film has been comparatively neglected. In addition to the direct advantages of such an exchange to peacetime intelligence research, we should not overlook its importance in those "hot" situations which occur from time to time and in the period of extreme military activity which would immediately precede the next war. At such times it is clearly a complicated and inefficient procedure to be obliged to signal

25X1 [redacted] for urgently required photographs and film, and then to await their arrival "by best possible means." Once the war had started, it is reasonable to suppose that fresh photographs would become available, but in the pressure periods in the meantime we have to depend on existing holdings.

One appreciates, of course, that clauses in peacetime reconnaissance contracts may preclude the exchange of the resultant photography, but this restriction applies to a very small proportion of overall available holdings and does not invalidate my thesis that much more could, and should, be

25X1 done in the matter of exchange. [redacted]

Geographic Names

Much painstaking work has been done by the U.S. Board on Geographic Names [redacted]

25X1 [redacted] towards the standardization of place names and generic terms, and this has been of particular value where transliteration from a non-roman to a romanized form is required. Difficulties are still encountered by the in-

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telligence community, however, in applying the authorities' decisions.

The main difficulty arises from the fact that the decisions, being based on academic principles, are sometimes ahead of popular usage, and in such cases the "preferred" (or decision) name tends to make the text less readily intelligible to the non-specialist reader. In current intelligence reporting, it is desirable to use a style which permits the easiest comprehension by a wide range of usually high-level generalists; any irritant which interrupts their concentration on the subject matter is undesirable, and might even result in failure to appreciate the importance of the intelligence. A few examples of what I term irritating preferred names are Krung Thep (Bangkok), Kuang-chou (Canton), Chin-men Tao (Quemoy Island), Sulawesi (Celebes), Shen-yang (Mukden) and Hsia-men Tao (Amoy Island); there are many others which, being less common, are perhaps all the more irritating when they are encountered.

The problem is complicated by the fact that some of these preferred names may, in course of time, become more commonly accepted in daily usage throughout the world. This raises the question whether we are to concentrate on ease of comprehension at the present time or should tolerate irritating names with the object of gradually educating ourselves and our readers to accept the academic decisions. The decisions of the two boards are progressively being incorporated in new map series, and therefore confusion is likely to arise in basic or long-term reporting if we do not adhere rigidly to them. One can imagine, for example, the frustration of a commander in the field when he realizes that he has the task of reconciling the "preferred" names used on his basic maps and the "conventional" names used in a detailed study of the region's topography.

Another aspect of the decisions which brings complications is the retention of many indigenous generic terms for such topographical features as capes, rivers, islands, mountains and lakes. The topography of foreign lands is sufficiently difficult for generalists to comprehend without the added difficulty caused by the use of these terms, and there would appear to be a strong case for the substitution of English-language equivalents. Although we, the peacetime elite of [redacted]

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intelligence activities, can perhaps overcome the difficulties by acquiring familiarity with new terms, the problem would assume increased significance in wartime, when a large body of untrained recruits would be unfamiliar with our nomenclature.

Air Targeting

While the production of air targets material is primarily a Service responsibility, the intelligence organizations must provide the basic information required and play an important part in writing the appreciations on which the priority of target systems and individual targets are based. It is therefore relevant to examine whether we are devoting our resources to any non-vital aspects of targeting, or on the other hand are neglecting others of importance.

Let us look first at strategic targeting. In World War II the basic documents for operations were detailed information sheets and annotated photographs of individual targets, and similar, usually more generalized, graphics on important concentrations of targets. These were necessary for attacks by manned aircraft, since visual recognition of the target and of the selected detailed aiming point within it played a major part in such attacks. With the concept of nuclear and guided-missile strategic attack, it should be examined whether it is still necessary to devote a major part of our targeting activity to detailed graphics on individual targets; in view of the area damage attainable by modern weapons, should a greater proportion of effort be devoted to urban and industrial complexes?

There is probably no aspect of aerial warfare on which more has been written than target selection. It is fairly easy to be wise after the event, as we have seen from the spate of criticisms of allied bombing policy published since World War II. It is very difficult to be equally wise before the event, and to be sure that the golden role of targeting is observed—hit the enemy where it hurts him most. In a future war, because of the striking power of weapons likely to be held by both sides, it is more than ever essential that target selection be right, and from the very beginning of hostilities. There may be no opportunity to experiment with priorities as in the last war. We in intelligence have, therefore, a responsibility to

ensure that our recommendations in this field are based on sound principles.

The discharge of this responsibility is rendered more difficult, in my opinion, by the lack of any sound system for assessing the relative priority of complexes as targets. This is quite a different task from assessing the priority of a single installation relative to others of like function. One complex may, for example, contain a transportation target of major importance to the country's war potential, a steel plant and oil refinery of medium importance, and so on. How can the priority of this complex be determined in relation to that of other complexes which contain various other combinations of installations, each with their own relative importance within their functional systems? This is too critical a matter to be left to haphazard methods, and merits some close examination.

I have long felt that the solution may lie in some sort of point system. What I have in mind is that within each country for which strategic targeting is undertaken a factor should be agreed on for each functional system (*e.g.* oil-refining, transportation, steel industry, administration), the factor being based on the characteristics of the war potential of the particular country. Then within each system a factor should be agreed on for individual installations in accordance with their various degrees of importance. A combination of the two factors would give a points value for each installation, and the sum of these values would give the total value of each complex, thus providing an indication of its relative priority for attack. It would, of course, be necessary to keep all the factors under periodic review, and to adjust them in the light of changes in the war potential of the country concerned. While this method would not be without its difficulties, it provides the basis for a positive approach to the matter and should, I suggest, be investigated.

One important aspect of graphics on complexes is a representation of the anticipated radar return from the various installations, buildings and natural features. In the absence of actual radarscope photos—and this must at present apply to vast areas which might be attacked in war—it is necessary to simulate the return, basing the simulation on an analysis of such factors as the height of buildings, their type of con-

struction, their lay-out, the density of built-up areas, and the configuration of such features as rivers, lakes, and woods. All this information must be provided by the intelligence agencies.

I doubt whether our procurement policies take sufficient account of this requirement. Are we equipped to provide such information with the degree of detailed accuracy which is required? In respect of a country such as China, for example, I am fairly sure we are not, particularly when the constant development of existing and new centers is borne in mind. I suggest that this deficiency is worth examination, with a view to the better briefing of procurement agencies active in the field.

In World War II probably as much activity was devoted to tactical targeting as to strategic, and the allied tactical air forces played an important part in the victory. Today, the tendency to talk in terms of a short, decisive nuclear attack or at least an air offensive conducted at long range with guided missiles has given rise to a feeling that in the next war little in the way of tactical bombing will be needed. But this is not necessarily so. In some areas where our forces might be engaged it is still probable that for various reasons tactical attacks would be required, even if they did not actually predominate. Because of this, some effort directed towards the preparation of tactical target material can still be justified, but we must ensure that the effort is commensurate with the use that will be made of the material, bearing in mind that on the outbreak of war photoreconnaissance would quickly provide completely up-to-date information.

Conclusion

The field of geographic intelligence, as we have seen, is a very wide one, affecting either directly or indirectly most forms of military operations and planning. If there is any common factor in the problems I have indicated, I believe it to be this: priorities for procurement and research must be more closely related to planning requirements than they are at present, not only in respect of the degree of detail but also in respect of the areas covered. For geographic intelligence is not an end in itself; it is a means to an end—military operational efficiency.

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Approved For Release 2004/12/17 : CIA-RDP78-03921A000300240001-8

A clandestine requirements officer reveals to the intelligence analyst a magic formula to summon and command the powerful ginni of last resort.

SPY AT YOUR SERVICE, SIR

Lowell M. Dunleigh

"The obtaining of intelligence by covert means is an inefficient, expensive and unsatisfactory business. No secret intelligence is worth collecting unless it is absolutely certain that the intelligence is genuinely and urgently required by some executive authority. . . . The art of being an executive in a secret service (and it is an art, not a science) consists largely of seeing that the operating case officer knows exactly what intelligence he is required to obtain, or what target he has to attack. . . . The further the best brains of a secret service divorce themselves from this basic problem, the less efficient the service will be."

So writes a distinguished British colleague, crystallizing these nuggets of wisdom from his wide experience and the long traditions of his service. It is the duty of headquarters, he adds, "to see that the customers don't ask the field damn fool questions." To this negative thumbs-down on foolish questions we would add an outstretched palm begging for good ones, questions calculated to produce the highest yield of essential information.[1]

Putting the right questions to the covert collector in order to get the right answers is not simply a matter of professional neatness, it is imperative to the performance of the intelligence function. Clandestine assets for the collection of information are limited, and in the progressive complexities of the modern world we must be sure we are aiming them at the pivotal factors of power. On the other hand, the flooding of

[1] See William P. Bundy, "The Guiding of Intelligence Collection," *Studies in Intelligence* III 1 (Winter 1959), p. 49, for a review of guidance problems in clandestine collection as presented to the Melbourne Research Methods Conference.

the information channels is already acute and may soon become overwhelming. Every day more than 1,000 classified documents are poured into the intelligence stream. How many are brightly illuminating, how many of low candlepower? That depends not entirely on the validity of their information, but on what questions they answer.

Process and Rapport

From the viewpoint of the collector, the whole intelligence process has four phases, represented by quadruple R's—Research, Requirements, Reports, Reaction (or evaluation). The third phase is the collector's own, but is dependent on the other three, which belong to the analyst.

The analyst or producer must approach his analysis of the past or present and his estimate of the future through research—the assembling and collation of raw information. He usually finds that he needs more information than he has on some phases, or perhaps current coverage of a developing situation. So he levies a question on the collector, overt or covert. The question is answered by an information report. Then if the system is working properly, the analyst will react, evaluating the report to let the collector know whether he is on the beam. So the intelligence wheel turns: Research, Requirements, Reports, Reaction. Whether it turns smoothly or develops an eccentric wobble depends very considerably on the relation between analyst and collector. This relationship is the key to a pair of most critical and sobering problems—how to get the indispensable information, and conversely how to avoid choking the intelligence stream with the luxuriant water hyacinth of trivia.

In simpler days the operations of the quadruple R's could be combined in one man. In the fifth century B. C., Thucydides both reported and analyzed the Peloponnesian War, ranging the fields of politics, economics, military action, psychological and subversive warfare. He set down a creed that can be warmly embraced by modern practitioners of the intelligence arts and sciences:

And with regard to my factual reporting of the events of the war I have made it a principle not to write down the first story that came my way, and not even to be guided by my own general impressions; either I was present myself at the events

which I have described or else I heard of them from eye-witnesses whose reports I have checked with as much thoroughness as possible. Not that even so the truth was easy to discover: different eye-witnesses give different accounts of the same events, speaking out of partiality for one side or the other or else from imperfect memories. . . . It will be enough for me, however, if these words of mine are judged useful by those who want to understand clearly the events which happened in the past and which (human nature being what it is) will, at some time or other and in much the same ways, be repeated in the future. . . .

I do not think that one will be far wrong in accepting the conclusions I have reached from the evidence which I have put forward. It is better evidence than that of the poets, who exaggerate the importance of their themes, or of the prose chroniclers, who are less interested in telling the truth than in catching the attention of their public. . . . We may claim instead to have used only the plainest evidence and to have reached conclusions which are reasonably accurate.

Alas, no modern Thucydides is competent to undertake alone the full reportorial description and the analytic evaluation of the Cold War; they are a task for many men and many minds. And, perhaps unfortunately, the stylus and papyrus which limited even the prodigious industry of the phenomenal Greek have been replaced by a boundless proliferation of paper and the ever faster writing machines of today. But let us waste no time in tears for the past, for we cannot become our own ancestors; we have no choice but to seek some contemporary means of elevating the quality and reducing the quantity of information which now pours into the intelligence hopper.

I believe the way lies in a closer integration of the question and answer process, a better understanding between producer and collector as to their functions and mutual responsibilities, a realization that they are parts of the same body, lobes of the brain of a master institutional Thucydides. To the superficial observer there is no problem here. Machinery exists, and generally it is good machinery. With minor adjustments it would win a good rating from management experts. The river of paper, properly diked and leveed, flows smoothly from port to ordained port. There is a procedure to

fit every need, a good bureaucratic procedure. Everyone does what he should do according to the book. But what is often lacking, and this is the crucial point, is an empathy, an understanding appreciation, between analyst and reporter.

The collector has many obligations indeed to the harried analyst/producer, and many faults to account for and to remedy; these we shall discuss another time if we are invited back to these pages. At present our concern is with the analyst's obligation to the reporter, if action in his own interests should be called an obligation. It is really only the sensible use of his opportunity to ask questions and criticize the answers. This process can give him an overwhelming influence on the collection course, can make him an effective navigator of the overseas flight piloted by the collector. The navigator is obliged to indicate the route, the pilot is obliged to pursue it. The failure to exercise these roles with mutual helpfulness can cause a bumpy ride or even ditch the craft.

The British colleague we quoted spoke of the expense of clandestine collection. If the checks and balances of capitalistic enterprise only prevailed in intelligence, and the producer were charged for his raw material on the basis of cost and rarity, he would make sure his requests concerned only real and imperative needs. His parsimony with orders and his generosity with complaints about quality would ensure the most efficient use of the precious assets of clandestine collection. By its nature, however, a bureaucracy is akin to socialism or state capitalism, a system which can achieve efficiency only through an *esprit de corps,* an *élan vital* springing from the zeal and drive of personal responsibility. Without these, means will be mistaken for ends, shadow for substance, movement for achievement, and worst of all the size of the highway vehicle for the value of its cargo.

The Rolling Stock

Let's look at some of the vehicles on this highway between questioner and reporter—paved, like a more famous road, with most laudable intent—and weigh those that carry guidance to collectors.

Priority National Intelligence Objectives. These plot the cardinal points of the intelligence compass, the North, East, South and West for research, production and collection of all

types, overt and covert. They list, in order of priority, the areas of danger to national security. Here are the grand, heroic questions which must be answered for policy-makers. From an indifferent beginning nine years ago, they have become increasingly valuable with each revision. The latest edition, with its functional appendices, is an excellent document. Most heartening is this serious attempt to bring the great galaxies of the intelligence firmament into telescopic focus, though they are perforce beyond our quick and easy reach.

Interagency Clandestine Collection Priorities Lists. Keyed to the PNIO's, these lists are tailored for the clandestine collector and formulated on a lower level of abstraction. In many cases they not only list specific requirements but even suggest targets, for instance an installation which might yield the required information. They are growing steadily better, and so are used increasingly for collection and planning. Unfortunately the IPC has confined itself almost wholly to the Denied Areas, in obeisance to the questionable notion that only the Sino-Soviet Bloc, particularly its military power, is a really worthy intelligence target. There's no denying the dangers of hot war or military blackmail, but the hazards and manifestations of the cold war are worldwide. The IPC would seem to be somewhat in conflict with Messrs. Allen Dulles and Nikita Khrushchev, who in a rare duet of agreement have pictured the main battle lines stretching across the field of economics, chiefly in the underdeveloped areas outside the Bloc.

Post Mortems of National Intelligence Estimates. These report information gaps revealed in the preparation of NIE's. Properly they should be translated into collection requirements by the contributors to the estimate in question, but this responsibility is too often overlooked.

Related Mission Directive. This basic instruction for the operation of a clandestine station includes a section devoted to informational objectives. The producers are invited to express their general requirements for integration in this section. The response varies in quality and specificity.

Periodic Requirements Lists. These are regional or country lists issued quarterly through cooperative effort of CIA's Office of Current Intelligence and the State Department. Although not tailored to clandestine collection, they are valu-

able guides for the covert operator. They are improving rapidly in comprehensiveness and general quality.

Clandestine Collection Requirements. These are the particular questions directed specifically to the clandestine collector. In present usage "requirement" covers almost any expression of need for field response, and these questions extend over the widest range. In concept, understanding, and formulation a requirement may be the joy or the despair of the collector. It may be one of those "damn fool questions" or on the other hand a carefully conceived, skillfully formulated requirement which will stimulate the enthusiastic ferreting instincts of the field operator.

Now it is possible, I believe, to indicate quite clearly what makes it foolish or a potent catalyst to action. If the analyst will only give heed to the following recipe for concoction of a secret love potion, he can bend the collector gently to his will. The analyst who knows this secret will be able to practice the most rewarding kind of one-upmanship on his ignorant or careless colleague whose appeals to the field reporter evoke indifferent responses, or none.

The Magic Formula

The ploy, like so many general formulae, is simple to state, but not so easy to *em*ploy. It is this:

Be sure 1) that the information requested does not already exist in the catacombs of an intelligence library, 2) that the information cannot be gathered overtly, or if a question has both overt and covert aspects, that the latter are spelled out, 3) that questions expensive to answer in money and manpower are really significant, 4) that the formulation contains background information to help the collector understand what he is doing, most particularly in scientific and technical subjects, 5) that the questions are not analytic conclusions in interrogative form but are directed at specific informational unknowns upon which the conclusions must be built, 6) that the requirements statement makes a serious effort to suggest targets and indicators (signs, portents and outcroppings that signal subsurface developments, present or future).

Each element of this formula illustrates a vice or virtue which is manifested every day in the requirements traffic. Let's examine these elements one by one.

Be Sure It's Not in the File. Resist the lure to write a field collection requirement until the repositories of information have been searched. This is the analyst's responsibility. The admonition is obvious, though often ignored, to the great and righteous annoyance of the collector. Recently a regional service unit asked about a transportation facility in a denied area. A cable alerted the clandestine station. Meanwhile a curious intelligence officer at headquarters, stirred by vague remembrance, found the information reposing in the files, quite where it belonged. And the shades of Dale Carnegie shivered a bit. Remember, a library search is cheaper than clandestine field collection, certainly in precious manpower if not in cash.

Don't Ask for What's in the Newspaper. Never ask the covert operator to collect overt information. You are cracking pecans with a piledriver if you see the field operator as an all-purpose collector and refuse to believe that he can't undertake such easy tasks as collecting publications, clipping the press, etc. One avid and able analyst begged a covert office for overt collection on his specialty because the overt collectors were busy entertaining important visitors from Washington!

The demands for this kind of thing are greatest in times of crisis, when analysts and policy-makers expect the covert operator to turn himself into a news association. His proper role on these occasions is to probe behind the news, using his covert sources to illuminate events by infra-red; and this role presents a wonderful opportunity for the analyst. Recently I phoned a crisis-stricken analyst, suggesting with apologies that he take just five minutes from his dizzy whirl to frame a few important questions whose answers would be helpful in his round of analyses, interpretations, briefing papers, etc. From past reporting he was familiar with the general capabilities of our sources. He produced three questions, of which one became obsolete in a few hours; but the others were answered next day, to his profit and delight. This is the proper use of an important intelligence tool.

The working analyst who through ignorance or eagerness wants everybody to collect and transmit everything is not the sole culprit. More elevated chiefs may be even worse offenders. They often generate the greatest confusions by

expecting and encouraging their particular collectors to range the spectrum of conditions and events. The result is wasteful competition, duplication, and superficial coverage. Policy-makers have even greater expectations. Anachronistically and conflictingly in this age of science, their naive faith in the collector as seer and soothsayer is a last refuge of the belief in magic.

Here we get into the problem of expecting from the covert collector not exactly overt information, but something more than raw, unevaluated information, some analysis or interpretation. Even the experienced analyst will sometimes be led astray by undue faith in the wisdom of field collection, in its on-the-spotness. In a recent upheaval abroad the covert operator tried to analyze and focus a puzzling development. His reasonable, informed, but too parochial interpretation was not so good as that of a Washington analyst. The collector was fitting news events into the framework of a locally expected trend. The Washington analyst, without personal involvement, had been considering material from all sources in a larger context.

The role of the collector as analyst or interpreter is highly controversial. But in no case can it properly be more than a secondary, contributing function, whether voluntary or by request. The clandestine collector, in particular, though often extremely well informed, is a methods specialist, not a subject specialist. His interpretations and estimates, while they can often be helpful thought-provokers, should be taken into consideration not as authoritative but as tentative contributions to the ever elusive truth. So the good analyst will not encourage the covert collector to act the pundit and write editorials (a bait to which many leap eagerly), but rather will ply him with questions to keep him busy as a reporter developing information. Sound information in the covert field is more precious than prophecy.

Be Sure It's Really Significant. Be sure the questions are inspired by necessity, not curiosity, and that their answers will yield important dividends. This should be a matter of design, not of chance. Resist the temptation to play it safe and cover everything, thus nullifying the whole effort to concentrate limited assets on targets of major importance.

In a recent exercise a group of economic analysts set down a list of industrial establishments on which they wanted information. Almost all were vulnerable to attack. But to get complete information on all of them would have required the total assets of the collectors, with nothing left over for other targets. It was discovered that the analysts didn't really need complete information; what they needed was to fill in certain significant gaps in the production picture. So amiable negotiations between representatives of the collector and the analysts produced, first, an arrangement of the targets in some order of priority, and second, specifics as to what quantity and kind of information was needed on each.

This kind of complex determination requires stern self-discipline by the analyst, as well as understanding by the collector. Many a concentrated specialist could easily use up all existing covert assets on the gaps in his own specialty. A good analyst is always ravenous and omnivorous, but quick and greedy satiety might well be followed by intestinal obstruction and future famine!

Be Sure to Give Background. The operator needs to understand what he is collecting, and why. One disconcerting phenomenon in a bureaucracy is the descent of instructions or requests down through the echelons, losing direction and momentum like the steel pellets of a pinball machine bobbling unpredictably down among its pins. Requirements should have the speed and sharpness of a dart, and the feather end is background information to steady the shaft toward its goal.

The ultimate collector may be an agent limited in understanding. Ideally, of course, the case officer should be able to fill him in and tailor the requirement to his limitations. But if the case officer gets only a list of questions or, worse still, a bare request for "information" on some topic, he cannot always illuminate the subject. The field collectors are not always blameless, to be sure: some are so concerned with the operation of their delicate covert mechanisms that they do not dig deeply enough into the substance of their collection.

Considerable progress is now being made on this count. IPC lists are including increasingly good background statements. Economic analysts are adding blood and sinew to

the bare bones of requirements. Exceptionally good in this respect was the recent Guided Missiles Task Force study, which not only reviewed past collection but described present gaps and pointed the path to future collection. It was a true *Vade mecum* for the case officer. Though mildly encyclopedic, its items could be split up and developed for specific purposes and individual agents. The physician, no matter how refined his specialty, must be well informed on the anatomy of the whole body.

Our British colleagues do these background studies (Green Line papers, they call them) exceedingly well. They take a puzzling subject important to future policy, analyze it, and indicate lines of inquiry. We have experimented with a similar but more elaborate procedure, selecting a target country, relating it to its environment, reviewing existing requirements, speculating on alternative developments, pointing out avenues and targets for collection, and searching for valid indicators. Producers may be asked to participate in this exercise when the technique is better developed and better insured against getting bogged down in endless coordination. Meanwhile the producer can contribute by providing as much background as he can with his collection requests.

The point is that there is an important type of analysis whose aim is not to weigh precisely all facts and arrive at agreed conclusions, but rather to appraise tentatively, to speculate on alternative developments and their import, so as to stimulate the collection activity which will make agreed conclusions possible. The purpose here, again, is to concentrate limited assets on significant lines in a large context.

Ask Collection Questions, Not Conclusions. Conclusions are reached by totaling all evidence from research and all types of collection. The bane of the clandestine collector is the analyst who thinks he has posed a keen requirement when he asks, "Will the government of Country X remain stable until the next election?" or in variant form requests "all evidence of the stability of the government of Country X." Who, the collector might ask, can determine better than the analyst what type of evidence shows that Country X is crumbling? He sits at the center of all information on X. He's an expert. Let him tell us what kind of evidence he wants, and we'll look for it.

Of course, it's not quite so clear-cut as that. The collector is no mere mechanic. He often has an intimate knowledge of his area, but his position and his myriad chores (and perhaps his temperament) do not usually permit him an analytical approach.

So the analyst must not put himself in the position of a judge passively awaiting a verdict. Rather he is an attorney or even a police official directing a difficult quest for evidence, deploying all his overt uniformed police and covert plainclothesmen. Success depends upon search of police records, research by laboratory technicians, and interchange of information between field and headquarters, as well as upon the skill and zeal of the detectives in applying headquarters' instructions.

Suggest Targets; Point Out Indicators. Although the collector will certainly have good ideas of his own, the analyst can turn his intensive knowledge to good advantage by the selection of targets for investigation and indicators that bear watching. He is like the trained petroleum geologist who by carefully studying the terrain can show the field crews where best to drill because he will recognize indicators in the terrestrial environment that signal the likelihood of oil.

A medical diagnostician will suspect from preliminary observation that the patient has one of several possible ailments. This preliminary diagnosis enables him to order specialized examinations and laboratory tests to develop new information which, upon evaluation, will confirm, narrow, or change his original views. He has thus selected a few significant targets and indicators for investigation. He does not send the patient to a clinic for all the tests in the book, with the instruction to "tell me what's wrong with him." The whole galaxy of tests would require endless time, and most would be useless. The intelligence producer is in effect an internist, concerned with diagnosis and prognosis, whose success depends on the care with which he guides the collection of data by specialist-technicians.

In medicine, too, indicators are commonly watched to signal deeper conditions—temperature, pulse and respiration, the condition of tongue, skin, or fingernails, for example. In intelligence, the simpler military indicators are common enough: clearing of the border zone as a portent of invasion,

cancellation of leaves, and a host of other early warning signs. Scientific and technical intelligence has developed many indicators in its field: "What color smoke issues from the chimney of the chemical plant?" "Is the nozzle of the tank car frosted?"

The determination of simple indicators for significant information is a promising field for expansion, and a worthy and profitable task for the analyst. It should be particularly rewarding in the boundless expanse of the social sciences—politics, economics, psychological and social reactions, etc. We stand here greatly in need of indicators and measuring devices which will reveal trends or show where to dig. In the question of a government's stability, for example, the analyst might point out vulnerabilities which the opposition could be expected to attack effectively.

The indicator approach should have fruitful application to the known Communist tactical pattern, in detecting the first hints of infiltration before it becomes manifest—in press and radio, in the army, among the police, in key ministries. For instance, an early move toward getting control of the press is to get control of newsprint. The target for this information might be a local business firm or a newsprint producer abroad.

Mutual Understanding and Responsibilities

If the analyst asks important, practical, and appropriate questions, if he tries to convey to the collector an appreciation of why they are important, and if he helps select high-yielding targets and indicators, he is likely to get good information: the collector for his part is obliged to use his classic formula and operate good agents against good targets. The mutuality of this responsibility is inescapable. Producer/analyst and collector/operator are tied together, for better or for worse.

In the bad good-old-days, particularly when the end of the war opened large new areas, the information-hungry analyst welcomed almost everything, and the operator collected with slim discrimination. In those honeymoon days of the analyst Owl and the spying Pussy-cat, they dined on mince and slices of quince and danced by the light of the moon. But as every marriage counselor warns, the honeymoon does not last forever. Ideally it merges into a workaday world of practical

partnership, exchanged tolerances, happy dialogue, and mutually accepted responsibilities. So we hope it will be with this couple; it would be too bad if their beautiful peagreen boat foundered on too many "damn fool questions."

Some problems common to the intelligence community and some particular to Air Targets find their not flawless solution in the use of machine methods.

DEVELOPMENTS IN AIR TARGETING: DATA HANDLING TECHNIQUES

Outten J. Clinard

The production of any kind of finished intelligence rests upon processes which require the handling of data in large quantities. When the finished intelligence is global and encyclopedic, as in air targeting, these quantities assume massive proportions, and their management requires substantial resources in time and people or machines. Since more than storage and recall of documents or even basic intelligence information is involved in air targeting, data-handling techniques have perforce developed in a complex rather than straightforward pattern.

Responsibilities of Air Targets

Air Intelligence has the responsibility for providing defense staffs and commanders the intelligence necessary to enable them to get the best possible results from the employment of airpower in the event of hostilities. As a part of this responsibility, the Director of Targets is charged with producing for the Department of Defense the common target intelligence base for joint staff and command plans and for the development of weapon systems. Specifically, the Director of Targets must determine enemy vulnerabilities to air attack, estimate weapon requirements and effects, plan and coordinate the production and distribution of data on target systems, and produce estimates of best opportunities for U.S. and allied offensive air action.

A fundamental difficulty in dealing with air weapons and the required operational and supporting systems is their dynamic development, their constantly changing capabilities. This is true both of our own weapons and their delivery vehi-

cles and of those of our potential enemy. Changes in the values of the great number of variables involved could be largely ignored when the United States had an overwhelming superiority in atomic weapons, but intelligence estimates must now take them minutely into account.

With present-day weapon systems it is no longer sufficient to focus on target categories—airfields, for example—as target systems or to assume that our weapons are delivered to the bomb release line. Targets must now be rated according to the immediacy of their potential threat to the United States and its allies, and target systems may consist of a number of different categories, depending on the situation and the objectives to be achieved. For example, a target system may include not only all long-range air bases in an area, but also missile launch sites, weapon storage, liquid fuels, transportation, and control centers. To measure the effects of an attack on such a target system, moreover, we need to know how many weapons would be actually delivered to the target area and where they would fall. We also need measurements of enemy net capabilities at frequent intervals to determine at what stage the attack would have achieved the desired objectives.

Targeting, like the development of weapon systems, has become a swift-moving, ever-changing process. A sampling of the types of questions asked of the Director of Targets during the past year will illustrate its complexity:

Where can I best apply such and such forces available at present? Available in the future?

From what points can I reach the greatest number of priority targets?

How much damage is necessary to eliminate airfields for varying time periods?

What is the operational effect of using such and such alternative damage criteria in calculating the forces necessary to achieve certain ends?

With a given-sized weapon at bomb release line, what are the probabilities of damage and of contamination to the target?

If we attacked this or that target category, how much damage would we effect in other categories?

What would be the effect of fallout in the initial phase on troop movements in certain areas?
What capability would be left the enemy after this strike for atomic weapon delivery, air defense, war production, and general economic activity?

Although it is not impossible to solve most of these problems by manual calculations, the time requirement and cost of manual solution would be prohibitive. Some sort of machine methods have therefore become necessary.

Data handling in the Directorate of Targets may logically be broken down into three distinct processes—*document handling,* or the extraction of individual data from source materials; *data manipulation,* or the consolidation and organization of data in various arrangements; and *data integration,* or the synthesis of data in application to operational problems.

Document Handling

Since research on source materials for the extraction of basic data is an operation common to all intelligence components, a detailed presentation of the procedures used in the Directorate of Targets is not necessary here, but some mention of past difficulties and the still current effort to solve them may be useful. Most of these difficulties, as would be expected, are library-type problems. In the Directorate of Targets there is no central repository where *all* incoming materials may be found, nor is there a reference service where the existence and location of a needed document may be ascertained. Comprehensive documentation is therefore extremely difficult: an analyst can never be sure he has seen all of the available documents pertinent to his study. Not knowing what is available and where makes difficult also any effective control of the collection effort. Other aspects of the same problem turn up in excessive document handling, effort devoted to management of files, and difficulty in making available to all analysts the work of each.

Most of these shortcomings lend themselves to mechanized corrective measures. In Air Intelligence the corrective effort over the past five years has centered on the development of the Minicard System, primarily for document retrieval. The tiny Minicards of film, only 16 x 32-mm, can record photo-

graphically up to 12 legal-sized pages, along with sufficient digital information to index the contents. They can be manipulated by machines in any desired order or selection by content and can be reproduced either as film miniatures or as paper prints enlarged to original size.

The Minicard System has recently undergone a full operational 30-day test in Air Intelligence and has proved itself mechanically satisfactory. The official report on this test, noting that the system requires a few more personnel slots, emphasizes that its justification lies in providing a fast and accurate system of document retrieval and an automatic means for consistent and accurate dissemination of Air Intelligence information reports.

A solution to the document-handling problem thus appears to be in sight, even though this particular equipment is still in the experimental stage and may eventually be replaced by an entirely different system. If recent plans are realized, a new Air Force Intelligence Data Handling System will include an Air Targeting sub-system with a much broader capability both for document retrieval and for other kinds of data handling.

Data Manipulation

Meanwhile, the closely related problem of data manipulation has been receiving attention. In the early days of air targeting, most of the evaluated intelligence on individual targets was maintained in "Phase I Lists." These were simply lists of targets in each category and country arranged alphabetically or by importance. Although they were kept current by analysts as new information was received, formal revisions were published only infrequently. A complete up-to-date set of these lists was seldom available.

The chief defect of the Phase I List system, however, was that the data could not be manipulated easily. This defect has been accentuated by the growth of the target lists. The increase in the destructive potential of weapon systems has made it necessary to extend the range of targeting into areas and installations not previously included. The *Bombing Encyclopedia,* a listing of all identified targets, has grown from some 2,000 entries in 1946 to over 78,000 at present. The *Target Data Inventory,* a compilation used as a basis for war

plans, now has over 14,000 entries, including over 9,000 installations and 4,500 populated places. Air Target Materials, a collection of maps, charts, and mosaics produced for operational use, now cover some 15,000 targets, as against 9,300 just a few years ago.

Although presented in different forms, essentially the same information is used in all these publications; at least, it all comes out of a common fund of target information. So also does the information required to answer numerous individual questions and to solve the equally numerous targeting problems posed to Air Intelligence. This common fund of target information is in short the primary working base for all air target intelligence production. To be effective for these purposes, it requires careful management in all phases of compilation, organization, control and use.

The targets publications, for all they may seem overlapping and duplicative, are required in their various tailorings to meet the needs of particular customers or for a particular mix of information. Consolidation of some publications with others would have alleviated the data manipulation problem somewhat but would not have solved it, and would have created new problems for the consumer. For what might appear to be a large amount of duplication was actually not so much duplication of product as it was a duplication of effort required to produce a variant product. This was where too much valuable analyst time was being expended in repetitive clerical activities like checking, tabulating, arranging, and verifying lists.

Aside from the waste of personnel time in the tedious compilation of data for a variety of products, manual manipulation provided no effective means for controlling the quality of information in the fund, for preventing losses through change in emphasis, functions, or personnel, for providing other headquarters with current information, for supplying quick answers to spot questions of an urgent nature, or for extracting masses of data in preparation for the data integration processes discussed later.

The problem assumed more formidable proportions early in 1957, when the Joint Chiefs of Staff designated the *Target Data Inventory* as the basis for atomic annexes to Command Plans. All codes, reference numbers, and other tar-

get identification elements in the *Inventory* now had to agree with those in other targets publications. It seemed desirable and feasible to standardize the format of publications and information files at the same time, and the outcome was the development of what is now known as the Consolidated Target Intelligence File (CTIF).

The CTIF Solution

The primary element of the CTIF is the standard form herewith illustrated, which is filled in for each target listed in the *Bombing Encyclopedia.* The form's five parts, separated by the heavy horizontal lines, respectively contain:

I. Codes for machine processing and hand processing.
II. Information identifying and locating the target.
III. Information on the category of the target and its individual characteristics within the category.
IV. References to graphic coverage on the target.
V. Sources.

Much of the information is entered on the form uncoded and may be read directly, for example the target's name (02), location (06), elevation in tens of feet (20), roof cover in thousands of square feet (23), and output in thousands of pounds (57). Some of it is entered in a simple code for which the IBM 705 is keyed. On the form shown, in the *country* block (09) "UR" represents the USSR; under *command interest* (28) the figure 2 in the *E* block indicates that the target has been nominated by the U.S. European Command; and under *category requirements* (68) the letters C and F indicate that additional information is needed on capacity/output and labor force, respectively.

Two subsidiary forms are also used to feed information into the CTIF. One of these, a Graphic Materials Data Sheet, carries the information given in section IV of the major form plus additional detailed data describing the maps, charts, and photo mosaics which cover the target. The other, called Category Data File Corrections, is used as a corrective supplement to capacity and output figures on target categories where these data elements apply. It is designed to give the figures on capacity and output, over and above those attributed to known plants and installations, required to arrive at a total national estimate. Such estimates are necessary for

CTIF FORM

SECRET (CLASSIFICATION) | TDI (PROCESSING)

B.E. NUMBER	PURPOSE TARG	PURPOSE CAT	ALT CATEGORY CODE	MINOR REF NO. PART
001300123 4	C		61241	

01 B.E. NUMBER	02 B.E. NAME	03 TAB NUMBER	04 IO MIN WAC GRID
	YARLINSK AIRCRAFT ENGINE PLANT		

05 TDI REFERENCE NOS. MAJOR	MINOR	06 COORDINATES LATITUDE	N/S	LONGITUDE	E/W	07 SOURCE OF COORDINATES: MATERIALS IDENTIFICATION B.E. NUMBER	SERIES	PROD	SHEET NO.	EDIT	BASE NO.; DATE	TYPE	HDLG	08 SHEET NOS. 200	50	CNTRY 09	TDI 10 ZN
99995		81451 7	N	1122932	E	001300998 7 1 00		E	01	2	20007 58	CA				UR	

11 CEIR REG	12 AIR DEF REG	13 NEW ECON REG	14 SSR	POLITICAL SUBDIVISION & SUBORDINATION 15 ASSR	16 DBL	17 N.O.	18 RAYON	19 STAT OR MIN	20 ELEV	E	21 DIMENSIONS LENGTH	WIDTH	HT	DEPTH	E	22 ORI	E	23 ROOF COVER	E	24 FLOOR AREA	E	25 LABOR FORCE	E	26 ROUTE CODE
									0031									00800	F					

27 ATMP PRIORITY	28 COMMAND INTEREST S E P L A J R V C G	29 TDI STAT	30 B.E. STAT; DATE	31 ACC POS INTEL	32 ACC POS CARTO	33 DATUM	34 ATTBL	35 PHOTO REQS V O S G R I	36	TGT REVIEW INDEX; 37 DATE OF REVIEW DAY MO YR	38 IO MIN GEOREF	39 RECON PRIORITY	OLD 40 ECON REG
	2	A	A58							S23 1 1 58			

51 CATEGORY CODE	PART 52 NO.	SUB- 53 CAT	54 ENTRIES B.E.	TDI	ATM	1001	AT$_{GL}$	55	56 UNITS/MEASURE	57 OUTPUT/ POPULATION	58 TIME PERIOD; DATE	59 % OUTPUT/POP NAT	BLOC	60 OUTPUT/POP EVAL; DATE OF INTEL	61 CAPACITY	62 TIME PERIOD; DATE
61241			AA						1000LBS	25570	YR57	13.7	10.4	A0758		

63 % CAPACITY NAT	BLOC	64 CAPACITY EVAL; DATE OF INTEL	65 PRIORITY	66 JCS PRI	67 TDI RMK	68 CAT REQS L	C	D	E	F	X	69 INTEL CUTOFF DATE	70 CAT REVIEW INDEX; DATE OF REVIEW DAY	MO	YR	PRINCIPAL CATEGORY COMPONENTS 71 STRUCTURE TYPE	72 LATITUDE	N/S	LONGITUDE	E/W	73 R-95
			22001		01		C			F		0656									

74 VN-T-K SEVERE	MODERATE	75 PHYSICAL CHARACTERISTICS	76 MILITARY SUBORDINATION	77	78	79	80	81	82
152Q	132Q								

83	84	85	86	87	88	89	90	91	92	93	94	95

96 CATEGORY REMARKS

97 CATEGORY REMARKS (CONT.)

98 CATEGORY REMARKS (CONT.)

99 IDENTIFICATION OF GRAPHIC MATERIALS WHICH COVER TARGET

A/D	B.E. NUMBER	SERIES	PROD	SHEET NO.	ST

A/D	B.E. NUMBER	SERIES	PROD	SHEET NO.	ST

A/D	B.E. NUMBER	TAC CAT	S	DEGREE SQUARE	TAC SERIES	PROD	PROD SERIES	ST
					SERIES	PROD	SHEET NO.	ST

Sample TDI Extract

100 SOURCES OF INFORMATION

[NOTE: TARGET IS FICTITIOUS]

SECRET (CLASSIFICATION)

101 ANALYST'S NAME: John Doe | UNIT: 3A2 | DATE: 1 DEC 58

AFHQ FORM

calculating percentages and for evaluating the relative importance of individual installations in each category.

The Consolidated Target Intelligence File is maintained in three sets. Working copies of the CTIF form are held by each category analyst in the appropriate target jackets of his own files. Then a complete and up-to-date collection of CTIF forms is maintained centrally as a handy tool for answering numerous questions of some urgency and of limited scope. This collection must be manipulated by hand. If the CTIF stopped here, it would still be very much worth while; for even here it saves much valuable analyst time formerly spent in digging out the same information over and over for different purposes. The CTIF contributes much more, however: its third set is on magnetic tapes and is susceptible of rapid and complex manipulation in electronic data-processing machines for a wide variety of purposes.

The flexibility of the machine-manipulated CTIF is illustrated in the programs now carried out, for example:

Floor space/capacity printouts for specialized installations by type. These lists are required for effects analysis and for input data for military resources models.[1]

Listing of significant installations in any category along specified transportation routes. These lists are used for travel briefs and other collection purposes.

Listings and plottings of airfields situated within range of specified types of aircraft. These lists are required for the air battle model[2] and other types of effects analysis.

Lists of major components plants within a specific industry, for example airframe, engine, electronics, and other components plants in the aircraft industry. Construction of such lists is useful in showing the dependence of certain plants upon the products of others and for pointing up methods of disrupting production.

Numerous routine listings by category, function, capacity, location, priority, *Bombing Encyclopedia* number, or *Target Data Inventory* reference number. These are useful for coordinating target lists, locating interdiction lines,

[1] See *Studies in Intelligence*, Vol. II, No. 1, p. 51, for a description of these models.

[2] See *Studies*, Vol. II, No. 2, p. 13, for an account of the air battle model.

and analyzing needs for such utilities as transportation, electric power, water, and fuels. Probably their most important use, however, is the production of the printer's copy of the *Bombing Encyclopedia,* the *Target Data Inventory,* and other targets publications.

Against the evident advantages of the CTIF, certain difficulties must be ranged. The preparation of the CTIF forms entails coding much of the information and translating it into the precise language required for machine handling. Training analysts in these new techniques is a continuing requirement. To promote uniformity in reporting and exchange of data between Air Force Headquarters and the major field commands, there is being developed a special reporting form keyed to the CTIF but allowing for variations from command to command. Analysts will integrate information reported on these forms with other available data and enter it into the CTIF. In performing these more or less mechanical functions, they will have to guard against a mechanical approach to the information and keep alert not only to the facts they are recording but also to their meaning in association with other facts known to them. Otherwise they will be in danger of losing the feel for the intelligence on which so many of their judgments must be based.

In machine manipulation of data, programing is required for even the smallest requests. Programers trained in translating target data into machine language must be available, and time must be allowed for designing, testing, and if necessary correcting the program. In due course, however, a library of stock programs will be built up for most uses and should alleviate the programing problem. Another problem is the availability of machine time. The larger, high-speed machines such as the IBM 704 and 705 must serve many Air Staff offices, and time on them is not always available when needed. This situation will in large measure be remedied when Targets acquires an expected magnetic tape facility and can process many of the less complex requirements on its own IBM 650.

Despite these shortcomings, the CTIF still marks a significant advance in data-handling techniques. It provides an up-to-date, comprehensive file of target information; it facilitates the manipulation of great volumes of data; it pro-

duces answers to complex problems quickly; and it makes positive control of target data possible. An electromechanical plotter, soon to be added to the data-processing equipment, will allow rapid recording or plotting of information in a wide variety of formats and should greatly increase the scope and utility of target compilations. The CTIF will assume additional importance as a major input source for the new Air Force Intelligence Data Handling System when it becomes operational.

Data Integration

The third data-handling process is data integration, in which the data are applied to an operational problem and are altered in form or lose their identity completely in the solution. Consider, for example, the Damage and Contamination Model described in the Summer 1958 issue of *Studies*.[3] This is a large and complex program, involving 58,000 targets and geographic "cells" and 700,000 to 900,000 computations. With requisite inputs from a war plan, that is, a pattern of ground zeros, weapon types, etc., this program is capable of calculating the probabilities of blast damage to some 9,000 targets, the radiation dose and contamination pattern from the weapons which were ground burst, and the fatalities and other casualties in 40,000 geographic "cells." It will also give damage and casualty summaries by categories and by regions. The Air Battle Model and the Military Resources Model discussed in previous articles[4] are programs of similar magnitude and complexity.

In addition to these major programs, the day-to-day operations of the Directorate of Targets have led to numerous special techniques for the solution of data integration problems. A number of manuals and memorandums present in graphic or tabular form the results of complex and extensive calculations. In one of these, for example, a probability chart was developed for calculating contamination effects when a ground zero is offset from the center of the target area. Another example is a slide calculator which permits rapid estimates of damage probabilities for various yields, heights of bursts, distances from aiming point, etc. Another is an anal-

[3] Vol. II, No. 3, p. 23.
[4] See footnotes 1 and 2.

ysis of the effects of topography upon atomic blast waves, showing the enhancement or attenuation of blast pressures on hills, ridges, slopes, and valleys.

A Look Ahead

Although significant progress has thus been made in data-handling techniques, the development effort is continuing. This effort is directed at the areas of greatest potential benefit, namely those where large amounts of technical and professional manpower are required to do basically clerical tasks, where many manhours are required to redo things previously done, where human ability to assimilate, integrate, differentiate, and remember is swamped by the volume or complexity of data, and where hand methods are too slow to be effective.

Improvement in these areas is essential if the targeting effort is to keep abreast of developments in weapons and delivery systems. The requirement will be accentuated with the introduction of new reconnaissance systems whose contribution in volume and types of additional data cannot now be predicted. If the Director of Targets is to continue to discharge his responsibility to provide defense staffs and commanders with timely and accurate target intelligence, he must be prepared to meet the problems of the future. The development of these data-handling techniques is a significant part of the effort to meet that challenge.

This true story of an exceptional spy has been reconstructed from records of the postwar debriefings of participants and witnesses to his adventures.

THE SHORTHAND OF EXPERIENCE

Thomas F. Elzweig

This is the story of two men who broke nearly every rule in the spy's handbook, and were right. One was a German. The other was one of the topdrawer Czechoslovak military intelligence officers. As a young man, long before World War II, he had studied intensively the unchanging axioms of espionage, and was thoroughly versed in these fundamentals:

Identify the agent. Don't do clandestine work with parties unknown.

Study the agent. Know as much about him as possible before asking him to work for you.

Recruit the agent. If it is he that selects you, beware of provocation. *You* choose *him*—for access, reliability, motivation, stability, etc.

Train the agent. Untutored, he is a menace to himself, to you, and to your service.

Test the agent. Be skeptical not only of his capability but also of his loyalty. Establish all possible independent checks on all his contacts.

Control the agent. You ask all the questions; he provides the answers. You order; he obeys.

The man who breaks these rules in ignorance is likely to die young, at least professionally. But General Z, the Czech, and Major L, the German, broke them wittingly and for good reasons. The result was a brilliantly successful operation that began before World War II, provided Czechoslovakia and the Western Allies with invaluable intelligence, and survived to the end of the war. It was like the other great espionage coups of history, which are almost all full of deviations and exceptions to the rules. But in all of them the controlling

service planned the rule-breaking before the operation began. It did not begin by the book and then stumble into anarchy.

The story begins on 4 March 1937, four years after der Korporal became der Fuehrer. The wind from the north, Dr. Goebbels, howled around the ears of the Czechs. But their houses were snug, their stores full; they were prosperous and free. The Nazi occupation of Austria was still six months away. A year and a half would pass before Chamberlain would go to Munich with his symbolic umbrella and return in a figurative barrel.

In Prague the Agrarian Party was in power. It saw keenly the full national granary but only dimly the shaking of Sudeten German fists. And this myopia spread throughout the country. Only a handful of people, among them the Czech intelligence officers, saw the growing danger clearly. Intelligence was busier than it had ever been before. On the positive side, it was straining to learn everything possible about German political and military intentions, while counterintelligence struggled to prevent or manipulate the activities of the Abwehr. This small group of men knew that war was coming.

The Agent Recruits a Case Officer

General Z reached his office in the General Staff building punctually at eight. He hung up coat and cap, sat at his desk, read his correspondence. In other offices administrators and analysts, code clerks and comptrollers, were also starting the day. The machinery began to move. The general sorted his correspondence swiftly. Policy, promotions, pyroelectric techniques. And then he stopped. He had opened an envelope typewritten in Czech and addressed to him by full name, rank, and function. It had been mailed in Chomutov, a town in northwestern Bohemia. It held a three-page letter, also typewritten, but in German, with only the initial L for signature. This is what it said:

Dear Sir:

I offer you my collaboration. After we have had a personal meeting and you have been given the first samples, and after mutual agreement on the terms of further co-

operation, I shall be paid one hundred thousand Reichsmark.[1] *I need this money urgently.*

Here is what I can do in return. I can provide you with information, partially documentary, on German preparations for mobilization; detailed order of battle; documentary material on Wehrmacht developments and current disposition; documentary material on German defences along the Saxony border; information concerning German armament, tanks, planes, and airfields; Sudeten-German underground activities and the support provided for these by the government of the Third Reich. I can also provide information about German espionage in Czechoslovakia.

Our interview will take place in the restaurant at the Chemnitz railway station. The time and date are for you to select. Please send your reply, general delivery, to [a code name], Chomutov, main post office.

L.

General Z read the letter several times. Never in his wide experience had a peddler made quite so crassly commercial an offer. You couldn't take it at face value: even worse than the possibility of fabrication was the probability of provocation. Chemnitz was well inside Germany, and the specification of the meeting place would make it simple for the German police to arrest a Czech officer there. And what an array of information the writer claimed—not only military, but political and clandestine as well. Surely no one German could have access to so much. The language, too, had a faintly technical flavor, as though formulated by a military intelligence service. General Z had recently conducted a successful provocation against the Abwehr; sweet is revenge. No doubt the technical examination of letter and envelope would prove only that both were sterile. Chomutov was in Sudeten territory; a check at the post office there would probably draw a blank.

But while the general's mind pondered everything that was wrong with the letter, his nose was telling him something different. Somehow the distinctive odor of the phony was missing. His mind, intrigued, began to consider what was

[1] $40,000 at that time.

right about the letter. Well, it was *too* suspicious; the Abwehr had demonstrated that its provocations were professional. Again, it dangled too many kinds of bait. A provocation is built like a tunnel; he who enters may go deeper and deeper, seeing more and more; but he cannot turn to left or right. He is confined to that area which the provoking service can control and exploit. Then too, that sentence about needing the money urgently—a personal consideration, of no concern to the Czechs, somehow not the sort of thing that an enticer would hit upon.

The general summoned the chiefs of his espionage and counterintelligence sections. Both read the letter attentively. Both looked a bit blankly at the general, as though to inquire why he asked advice in so elementary a matter. Both had the same opinion: swindle or provocation.

The letter was subjected to technical examination. Nothing. The Chomutov postmark was genuine. The general decided not to risk a check at the post office, because it would not reveal a hoax and might ruin a possibility. What next? If he dropped the matter, he could not be wrong.

Instead a letter went to Chomutov. It expressed interest in L's offer but flatly rejected a meeting on German soil. L could select any Czech site he found convenient. He was to send his reply to the Chomutov post office, box 83. The general particularly liked this last touch. It did not matter if every postal employee in Chomutov were a Nazi: his own men would watch. They would find out who picked up the letter to L; or, if anything went wrong, they would at least see who slipped L's reply into box 83.

But they didn't. They could not determine who picked up the Czech reply, in its distinctive off-blue envelope. And the postal clerk who put L's response in box 83 was sorting his mail in normal fashion. The letter was stamped.

L proposed that General Z meet him in Linz, Austria. Technical examination revealed only that his second letter was like the first, written on the same German machine. Perhaps it was just a diversion operation. If so, it had already succeeded in tying up a surveillance team and some technical experts, not to mention one of the key men in Czech intelligence.

Linz, of course, was as unacceptable as Chemnitz. By this time the Nazis were already on the march in Austria. The

Anschluss was coming, and everyone knew it. So L received another rejection and another proposal to meet on Czech soil.

Finally he agreed. As the place he chose Kraslitz, a little town situated directly on the Saxony-Bohemia border and lying partly in Germany, partly in the CSR. He set the time at midnight on 6 April 1937. His letter said that he could be recognized—in the unlikely event that anyone else should be standing in the square of the sleepy town at such an hour—because he would set his watch by the clock in the tower.

General Z was decidedly unecstatic about this proposal. The border town could not be controlled as tightly as a wholly Czech village. The dark forest which came marching to the outskirts on one side was on German territory. Ninety-nine percent of the 8,000 villagers were Sudeten Germans, the most fanatical of Nazis. Available for protection in this situation was a six-man patrol of local gendarmes with doubtful loyalties. Recently there had been several kidnappings along the German border. Not long ago, in fact, an intelligence officer of the East Bohemian 4th Division had been taken by force.

The general nevertheless decided that he too would be in the town square at midnight. He knew perfectly well, of course, that by simple logic he should be anywhere in Czechoslovakia except Kraslitz that night. But his initial decision to pursue this matter had been intuitive, and it was not to be expected that later decisions could be based entirely on reason. General Z knew his subordinates agreed unanimously that L's offer was a piece of cheese poised neatly on an especially vicious trap. Therefore he did not feel justified in forcing them to run a risk which he evaded. But at least preparations could be made. His own trusted men, heavily armed, would form a hidden ring around the square. The most loyal of the gendarmes (or least disloyal, thought the general) would serve as outer circle. Signals for the inner ring were established: one to indicate the approach of L, or anyone else; the other to warn of danger. Finally, the general would remain in Kraslitz only long enough to identify L. Within minutes he and L, with selected subordinates, would be in a car and on their way to Chomutov, some thirty miles away, where a villa had been fully equipped for just such a purpose.

The night was black. There was no moon, and an oppressive blanket of black clouds shut away the stars. There was no

wind, either. Standing at one side of the seemingly empty square, the general heard all the unreal noises created by the ears of a waiting man. Now and then he glanced at his luminescent watch. The unlighted clock was as invisible as the tower in which it was ensconced. Darkness blotted out everything. The hands on the general's watch moved to midnight and beyond. No one came. The general began to berate himself silently. It was obvious now. The cat had spotted the mouse in the town square, but it had also spotted the waiting dogs. No one would come.

Then, 25 minutes past 12, the general saw a figure standing motionless in the center of the empty space, near the fountain. Neither the approach signal nor the danger signal had been sounded. The stranger had apparently not walked into the square. He just stood there. Then he turned toward the town clock that he could not see, raised an arm, and made an indistinct motion with the other hand. Immediately a young Czech officer emerged from a doorway, walked over to the man, and spoke a few words. The two approached the general, who now could see that the stranger was carrying a suitcase in either hand and a long roll of white paper under one arm. No greetings were exchanged. The three men walked swiftly to the car, parked in a near-by street. There a staff officer, drawn aside to report, said that neither the outer nor the inner ring had spotted anyone entering the square. The general ordered that the outer ring stay in place for three more hours.

The villa in Chomutov was comfortably furnished and warm. Among its facilities was an excellently equipped photographic laboratory. The experts and technicians were waiting.

In the living room L put down his suitcases and turned to the general. "This one," he said in fluent, accented Czech, "holds what you may keep. You'll have to photograph the contents of the other, which I must take back with me. I have to be over the border before dawn."

"We'll help you return," offered the general.

"Thank you, but I prefer that the car drop me near Kraslitz; I'll make my own way back. I know the border well."

The general heard the faint click of the shutter as a concealed camera photographed L while he spoke. He hoped that L had not heard it. Two Czech officers, both blown to the Abwehr, came into the room. One left with the suitcases and

the roll of paper. The other, a colonel, remained. The three men sat down.

Identification, Study, and Control

The general leaned forward slightly. The time had come, clearly, to get this operation on the tracks. "Would you mind telling me your name?" he asked pleasantly.

"Yes," L said.

"Oh. Well, in that case, would you please state your occupation?"

"No."

"But this information is necessary, so that I can determine what possibilities exist, what you can do for us."

"You have my suitcases. They speak for themselves."

"Why do you need 100,000 Reichsmark?"

"For personal reasons."

"Is the money your only reason for offering to work for us?"

"No," said L, and now for the first time he looked less guarded and withdrawn. "My fiancée, who comes from Lausitz, is of Slavic origin. I do not like the things that our beloved Fuehrer and his buddies have been saying about Slavs. In fact, there are several things that I do not like about our heroic leader and his little group of trained animals."

"Money and ideology do not usually go hand in hand this way," the general observed bluntly.

L smiled. "If it were not for the devil," he said, "who would believe in God?"

They fell silent, waiting for the analysts to report whether the stuff was jewels or junk. No one said anything until, on signal from a sergeant, the general excused himself and left the room. In the hallway the first analyst reported, and then the second. They were enthusiastic. The report on the defenses along the Saxony border tallied with information from other sources.

It was hard to believe that Czech intelligence now had in its possession a true copy of the German *Grenzschutz* plan in all its meticulous detail. The plan for border protection was in all the countries of Europe one of the most closely guarded secrets. The Germans had ordered a state of border alert in order to proceed with their mobilization on schedule and without detection; knowledge of the preparations for war would

reveal to the Czechs the areas of main concentration of force, and therefore their intentions, not to mention other logical deductions. Yet the information on border defenses checked out.

The general re-entered the living-room, the border plan still in his hand. "This document is a hand-made copy, I presume?"

"Yes," said L. "I did it myself. Took me two months."

"It will require further study," said the general.

L grinned. "It's all there. And now that you have it, you may be interested to know that we have yours too." From his pocket he drew several sheets of paper and passed them to the general. The briefest of inspections was sufficient to reveal that it was the Czech border plan for Northeastern Bohemia and that it was wholly accurate.

"Where did you get this?" the general asked.

"I am sorry, but I shall not be safe unless you figure it out for yourself. I do assure you that this plan, like everything else I've brought, is genuine."

(Subsequent investigation led finally to the arrest of a captain of the Czech General Staff. He was hanged for treason.)

The general turned to other documents. Two contained original orders from Abwehrstelle Chemnitz concerning certain subversive activities of Sudeten Germans. The nature of the orders made it clear that the underground work was directed entirely from inside Germany, by the Abwehr. Moreover, it had been instigated by German intelligence and was financed by Abwehr funds. (These documentary proofs were shown to the Czech government, which in turn passed their contents to its Western allies, but the evidence was largely ignored in the prevailing atmosphere of appeasement.)

After four hours of talking with L and examining his materials, General Z had formed several conclusions about the German. First, he had a military background; it was apparent in his speech, in his bearing, and in the documents he had submitted. Next, he was an Abwehr officer or at least was closely associated with the German service. He knew Saxony well and specialized operationally in this border area. He was particularly knowledgeable in security matters. Apparently he had direct access to secret documents. He was intelligent.

Mentally General Z reviewed the standard data form for new agents: true name(s) in full, with all variants; aliases; exact place of birth; etc., etc., etc. Not one of the required blanks could be filled. There were only these deductions and conjectures.

So the general hired L. He paid him his 100,000 Reichsmarks. And feeling rather like a man who props up one splintered door at the entrance of a building wracked by war or revolution, he asked a little weakly, "I wonder if you would mind signing a receipt? The administrative people. . . ." His voice trailed off.

L grinned companionably. "I know," he said. "Sure, I'll sign it."

He picked up the receipt, made a motion, and returned it to the general. It now bore a block L in the lower right-hand corner.

Well, there was one consolation. In General Z's shop the auditors had no jurisdiction over operational expenses. Otherwise this first meeting with L would have been the last. And maybe it should be, the general thought.

"Naturally," he said in firm tones, "our work is beginning in unorthodox fashion. I quite understand that it had to begin this way, or not at all. But I'm sure you'll agree with me that it would be best to—ah—regularize the circumstances in the future. We shall need one or two rules."

"Naturally," L agreed. "Three, in fact. The first is that you will not pass any requirement to me but will be content to review what I provide. If I were to try to carry out assigned tasks, I'd be practically certain to make mistakes. If I bring apples and peaches, and you want apples and pears, throw the peaches away. You needn't pay a groschen for them. But if I try to steal pears for you, I'm likely to lose my neck."

"Agreed," said the general. He did not even wince.

"The second rule," L continued, "is that you will not attempt to ascertain my identity or my vocation. If you do so, you are likely to direct the attention of German counterintelligence toward me."

Again General Z agreed.

"The last rule is that there will be no other rules."

"Unless mutually agreeable."

"All right."

It was near dawn now. There was time for only two more questions. "Tell me," said the general, "how did you manage to mail your letters from Chomutov?"

"I have my ways," said L.

"Well, what about coming across the border, then? Rather risky for someone who stresses security as much as you do."

"I know the area," said L. He smiled at the general, not in the least insolently or tauntingly, but understandingly, as a friendly fencer might smile at a highly-trained opponent who looks clumsy against an unorthodox attack.

Arrangements were made, of course, for continued contact, personal and postal. The next meeting was set. Two Czech officers took L by car to the outskirts of Kraslitz. He walked away from the road, into the last of the darkness.

But he reappeared on schedule, not once or a few times but through the years. His value remained extremely high. In fact, General Z and his staff, both in Prague and later in London, had no source of greater worth or reliability. The Allies, too, discovered that L was a pearl beyond price. One British general said, "When L reports, armies move."

Episodes in a Partnership

The value and validity of L's information clearly reduced, or even eliminated, the normal need to establish a source's identity and obtain as much personal data as possible. Unless, that is, the entire operation were aimed at one master stroke of deception. What if all this accurate reporting which clearly hurt the Nazi cause were intended solely to insure that when the big lie came, at the critical moment, it would be accepted unquestioningly? But in that event any prying at L's secrets would be certain to establish only that he was exactly what he seemed to be, an Abwehr officer.

Of course, as the contacts continued, the Czechs learned more about L. For one thing, the general and the agent began to discuss their respective needs and capabilities with growing frankness. And L became less guarded about himself as time went on. Gradually it was learned that he was indeed an Abwehr officer, stationed in Chemnitz and assigned to Abwehrstelle IV, in Dresden. He mentioned his age, 35, quite casually one day. But not until 1940, three years after the

operation started, was his identity established by name, and then only because he chose to reveal it.

The major unsolved mystery remained his motivation. At the outset he had claimed an antifascist idealism while demanding at the same time large sums. He was in fact paid handsomely: he had received more than 800,000 RM up to the German occupation of Czechoslovakia. General Z was well aware that the swindler (especially the wartime swindler) customarily professes the highest motives while lifting your wallet; but L was no swindler. A mercenary, then, a salesman of secrets without loyalties. Strictly cash-and-carry. Or was he truly antifascist? Perhaps he belonged to a small clique that was deliberately leaking information as one means of hastening der Fuehrer's defeat?

Whatever else he might be, he was engaging. Once in 1938, in the safehouse at Chomutov, L was smiling a little, as usual. "How about doing me a favor?" he asked.

General Z was painfully conscious that a significant raise or bonus for L, already better paid than any other source, might place the G–2 budget squarely in the red. "What is it?" he asked cautiously.

"I have orders to establish four new W/T sets inside the CSR. Two go to Slovakia. The other two are supposed to be placed in Moravska Ostrava, in Moravia. I don't have any operators in the towns chosen by the brass for these four sets. I could recruit them, of course, and let you know who they are. I'd like to do it that way, the natural way. But the brass have put one of those blasted 'urgent' stamps on this one. The sets aren't supposed to go on the air now, you understand. They come up when you begin emergency mobilization. So how about giving me a hand?"

"Your realize the problems?"

"Well, I'll read them from our side, and you read them from yours."

The problems were indeed horrendous. The four radio sets could not be faked or quietly forgotten; the Abwehr might check at any time. The four operators—

"Let's say three," said the general. "Better to fail on one; nothing more suspicious than infallibility."

"No," said L. "I want all four. After all, my professional reputation is involved."

"All right; maybe they do think you're infallible. But these four men must be completely loyal to us and yet acceptable to you. And they must be skilled already or else they will have to be trained. They can't be trained because I don't want to tell them the story, and your people would have to do the training. And you're going to want test runs, I suppose, which my people are likely to pick up."

But L remained cheerful and helpful. One by one the knotty problems were solved. Finally the four sets were all in place, and Czech intelligence gained a thorough knowledge of German methods and tactics in radio operations, German equipment, German codes and signals. Exploitation of the information led to the discovery of seven really German-controlled sets in the CSR. L's four sets could be used by the Czechs at will, to remain silent or to furnish deception. Finally, the severe pressure exerted upon L for speedy placement of the sets had been an unmistakable warning that the war was near.

This success seemed to make L even happier. By 1938, in fact, there was a genuine and mutual cordiality in the relationship. In the summer of that year occurred another episode which is worth describing because it reveals how constantly danger threatened the operation and also provides an added insight into L's character. At that time serious public disturbances, nearing the proportions of armed revolt, occurred in the Sudeten German area of the CSR. Units of the Czech Army had to be dispatched to the border regions to put down the rebellion. L continued to appear for scheduled meetings, punctual and serene. One night two Czech intelligence officers were returning him, as usual, to the outskirts of Kraslitz. The car was stopped by a barricade; armed men appeared; their leader, in gutteral Czech, ordered the occupants to get out of the car and hand over their identity papers. There was no doubt that this was an insurgent group, and the lives of the two Czech officers would be in serious danger if they were searched and exposed as intelligence personnel.

In sharp German L ordered the leader of the group to step aside with him. At a distance he showed the leader a paper of some kind. The Sudeten German listened respectfully to L, saluted, and then shook hands, as though he could not

decide whether civilian or military courtesy was required of him. L and his two associates got back into the car, armed now with the password for the return trip.

At the next meeting L laughed over the incident. "Nothing could be simpler," he said. "I showed him an official Abwehr document—without a name on it—and told him that your chaps were two of my best agents who had just supplied me with excellent material and now were guiding me back to the border."

"You thought quickly. I want to thank you on behalf of my subordinates as well as myself. You saved their necks."

"Mine was on the same block," said L.

Being human, L was not an ideal agent. It was obvious, for example, that he knew a great deal about Czechs who were spying for the Abwehr. In fact, he had promised at the outset to deliver precisely such information. But when General Z pressed him for it, he became evasive. "Do you remember hanging that General Staff captain because he was an Abwehr agent?" L asked sharply. "Every one of your arrests is thoroughly investigated by the III-boys [Abwehr counterintelligence]." L grimaced at the memory. "And not only the Abwehr, but the Gestapo and the Sicherheitsdienst as well."

"But you did not identify that man," the general protested.

"Exactly. That's why I'm still wearing a head."

Yet once, inexplicably, he volunteered the information that someone in Artillery Regiment No. 305 in Ctyry Dvory (Southern Bohemia) was a German agent. A lieutenant colonel of German parentage was arrested and confessed. "This time it was safe," said L.

He was proud and sensitive. At the time of one scheduled meeting other business had called General Z away for three days, and his deputy filled in. The deputy was a scholarly man, precise of habit.

L was coldly angry at his next meeting with the general. "Keep your good little boy away from me from now on," he snapped. "I do not risk my hide this way to talk with fools and pedants."

"I am sure that he meant no offense."

"Of course not," said L, unmollified. "But he is forever saying, 'In such a case, one does thus and so. The rule to follow is this or that.' He doesn't appreciate our nice little opera-

tion, he isn't interested; he only wants to know what *type* of operation it is, so he can decide which of the three sets of rules he has memorized ought to apply here."

"Perhaps he is right," General Z argued. "Rules are the shorthand of experience."

"Rules of this kind are the crutches of feeble minds," retorted L. "The simple truth is that the world we live in is a chaos. And most minds are uncomfortable when confronted by chaos. Scatter blocks in front of a baby, and it makes patterns. Any child can do it, and does. So we impose on this whirling formlessness all kinds of imaginary structures, each different from the next. Confusion is too much for us; we create an arbitrary order. That's all right; but then we confuse our subjective patterns with reality and say that these structures are inherent, that they belong to the nature of reality."

The general drew the correct conclusion from this discourse. He decided that his deputy had somehow offended L's sensibilities.

Munich and After

The work of Major (later Colonel) L for the Czechoslovak G–2 falls into two periods: from March 1937 to the German invasion of the CSR in March 1939, and from then to the end of the war. Through both periods he was an invaluable source. The Czech army and government were kept steadily apprised, up to the time of the Munich conference, of German intentions and capabilities affecting Czechoslovakia. Moreover, this flood of reliable information served to reveal new gaps in Czech knowledge and thus to stimulate new efforts, both in positive collection and in counterintelligence. During the Munich crisis L appeared only once. Obviously he was very busy in connection with the German mobilization and final preparations for the forthcoming campaign; it was surprising that he could get away at all. Moreover, the increased tension had tightened the border controls on both sides. L looked completely relaxed, however, as he sat in his favorite armchair at the safehouse and calmly reported that unless the Czech government surrendered the Sudeten territory, the Germans would open fire.

"Der Fuehrer and his foot-kissers are convinced that there is not a country in Europe, including your ally France, that will come to your aid if Germany attacks. The main thrust will come from Lower Austria, where your fortifications are weakest."

L continued, explaining the German plan in detail. On the basis of his information the Czechs were able to inform the French High Command that all but two of the first-class German divisions would be employed against the Czechoslovak army. The rest of the divisions along the border of France would be second and even third class, incompletely equipped. The entire length of the Polish border would be guarded by only two divisions. This concentration of force upon the CSR left the German flanks obviously exposed, although the Czechs were under no illusion that the Allies would counter a thrust against the CSR by an attack elsewhere. The solution, instead, was "peace in our time," and some months later the Nazi occupation of Czechoslovakia.

L did not appear during this interim. General Z assumed that Munich's elimination of Czechoslovakia as a military power had caused him to lose interest in any further collaboration. Moreover, the changing times had wrought collaborative changes in the Czech G–2; L now had increased reason to fear betrayal to German counterintelligence if he persisted. Perhaps, too, he suspected that there was little cash left in the Czech coffers. General Z reasoned that L either would cease to work against the Hitler government or would now seek support from a stronger, wealthier power.

General Z was wrong. L came, hurried but unagitated, to the safehouse on 2 March 1939 and told the houseman to arrange an immediate meeting with the general. The latter left an important conference and sped to Chomutov. Without preliminaries L reported that the occupation of Bohemia and Moravia would take place on 15 March 1939. He identified the German armies scheduled for participation, the commanding generals, the directions of advance, and the objectives. Armored and mechanized units were to reach Prague and Brno as fast as possible. Only token resistance, or none at all, was anticipated from the demobilized and demoralized Czech army. Slovakia would become an independent German protectorate. L provided a copy of a document which ordered

police units advancing with the German armies to arrest all Czechoslovak intelligence officers and subject them to immediate interrogation. Of key interest were the identities of all Czech sources in Germany or reporting about Germany.

Thirteen days! And so much to do.

L was not smiling now. His face showed plainly his sympathy and deep concern. "Look here," he said, "what are your plans?"

"Oh, we have something cooked up, of course."

"Well, it's plain that you've got to clear out, unless you want to invite the Gestapo for tea. I don't advise France. Wherever you go, you'll be able to set up a safe meeting place or two, nicht?"

"Yes, I can give you an address in Holland, and another in Switzerland."

"Good." L wrote them down. "I promise to get word to you as soon as I can. And I want you to promise me something."

"Whatever I can."

"See to it personally that any file material which identifies me, or even points toward me, is destroyed."

"It has already been taken care of," said the general.

The two men stood, then, and shook hands. "God protect you," said L in German. "This is not goodbye. I'll be in touch with you soon. Just get out in time to save your skin."

"Yes. Thank you."

"Not necessary. If you're stabbed, I bleed." But L's eyes, usually full of inquisitiveness or amusement, now showed his anxiety for his associate.

The general sat down again after L had gone. There was much to do. But L was, as always, a teasing enigma. Why did he risk his life to appear at such a time? And why did he volunteer to continue serving the Czechs even after his own people had driven them from their homeland? He could withdraw now. Even if the Czechs were so unscrupulous as to betray him, they would not profit thereby. He had been paid so well that he could now live comfortably throughout the war and for years thereafter. Or if he were greedy, he could seek out a major power and reap far handsomer rewards than could be offered by an impoverished government in exile. Perhaps the promise was empty, a gesture intended to console

an associate in distress, offered without any intention of carrying it out. Yet his manner had not been one of pious sympathy; it was too sincere and friendly.

Still baffled, the general was driven back to Prague, where he reported his latest information to the Chief of Staff. But the report was met with governmental skepticism. Collaborators had already infiltrated the government, and many of those free of this taint seemed half paralyzed by the headlong rush of events and the ominous clouds gathering. L's information was labelled incredible, and the general was forbidden to disseminate it. Under these circumstances he concentrated on plans for the security of his own staff. At 6 p.m. on 14 March 1939, six hours before the German armies crossed the border and twelve hours before they entered Prague, the general and twelve of his staff members left the capital in a plane made available by the British.

Intelligence-in-Exile, Impoverished

Czech operations were resumed from London through offices in Switzerland, Holland, Sweden, Denmark, and Poland. The ranks of Czech intelligence officers were augmented by a number of military attachés abroad who refused to serve a Hitler-dominated government.

The spring passed, and the summer, without word from L. Despite the refutation of his earlier doubts, General Z was by now convinced that he would never again see the Abwehr major, or hear from him. Undoubtedly, he thought one day as he attacked his morning mail, L had worried in the spring about the possibility that Czech documents or arrested Czech intelligence officers would reveal his identity and the story of his silent battle against the Nazis. Now that nothing had happened for nearly half a year, he probably felt safe. And freedom from this anxiety would be such a welcome relief that he would not be likely to put his neck into the same noose a second time.

Thus theorizing, General Z opened a letter from Switzerland. It came from L. He would soon arrive in the Hague, where he would like to meet General Z or even the once-hated deputy. He would reach the Hotel des Indes at 2 p.m. on the afternoon of 4 September and would register there under the name of Braun.

On the appointed day L received the deputy cordially. "Please tell General Z," he said quietly, "that if he is interested, I am prepared to resume our association."

"I am sure he will be delighted."

"I've been transferred to Berlin, to the OKW Abwehr Abteilung [General Staff G–2]. I shall have plenty of opportunities to travel and can easily meet you. And I'll have some first-rate information for you."

The deputy looked a shade uncomfortable. "This is wonderful news, of course," he said, "but—"

"But what?"

"It's the money. You'll understand that things are not the same for us now. I do not mean that we cannot pay anything, but in comparison with the old days we—"

"I don't want pay," said L. "General Z has done very well by me; my only money problem now is to keep your generosity from endangering my security. So don't give it another thought."

The general's deputy was tempted to ask what caused this remarkable about-face on the part of an agent who had required about one million Reichsmark for two years' work. But his earlier encounter with L had made him cautious.

L turned over valuable and detailed information about German armored and mechanized divisions. The deputy agreed to his proposed arrangements for the next meeting, and returned to London to report.

General Z listened to the story with surprised delight. Was nothing that L did ever to conform to expected patterns of behavior? Now he did not want money, and was willing to serve an emigré organization that had lost much of its power along with its funds. Why? His fondness for a Slavic fiancée seemed a far from sufficient answer. If he were a burning anti-Nazi, was he operating all alone? Or did he perhaps tie in to some German underground group dedicated to Hitler's overthrow? Was he part of the dissident Canaris group? Was this group seeking a liaison channel to the Allies? But probably, in that event, it would have sought contact with the English, or another power, rather than the exiled Czechs.

Now that contact had been reestablished, reporting flowed smoothly. Correspondence embroidered with secret writing went to cover addresses in neutral countries, usually Switzer-

land or Portugal. Personal meetings were also held in these countries and in Holland. One meeting was held in Constantinople. It is no exaggeration to say that L's reports, submitted on both military and intelligence subjects from 1937 to 1945, were of momentous significance. Here are a few examples:

- ★ Accurate advance information about the German attack on Poland and plans for the subsequent campaign. This information included the now familiar fact that German SS units garbed in Polish uniforms would simulate an attack on German positions to furnish a pretext for war.
- ★ The concentration of German armies for the invasion of Denmark and Norway.
- ★ Prior warning of the German attacks upon Belgium and France, together with clear indications of the main lines of thrust.
- ★ The opening of hostilities against the U.S.S.R.
- ★ Plans for the German offensive in the Kharkov area in the spring of 1942.
- ★ A series of reports on German order of battle.
- ★ Reports on the movements of major German headquarters from one battlefield to another.
- ★ Some information on preparations for the V–1 and V–2.
- ★ Hitler's plans for Spain, which did not materialize.

L's written reports were almost always brief. Sometimes the secret text consisted of a single sentence. His oral reports were somewhat lengthier, but they too were pithy. During these personal meetings the friendship which had grown between General Z and the agent never led L into confidences or irrelevancies. In time the Czechs managed to organize from London a respectable agent network, but L's value continued to outweigh the combined work of the others.

At one meeting in Lisbon he eyed the general reproachfully. "It looks as though your British friends pried my name out of you," he said.

The observation was accurate. For quite a long time General Z had withstood the pressure of British questions about L's identity, but finally things had reached the point where withholding it was no longer possible.

"Some very smooth customer dropped in on me right after our last meeting and with an air of engaging frankness explained all the practical reasons why I should work for his firm directly instead of through an intermediary."

"Oh?" said the general. "And what did you tell him?"

"I told him that I didn't know him and that he had obviously made a mistake. You know, you might tell them to check with you before they come calling, and get your blessing."

"Perhaps you should agree to cooperate with our friends," said General Z. "They can pay you better than I."

"I've told you I don't want money. Look here: I've worked with you for about three years now, and I'm still alive."

General Z said nothing more. It was typical of L to profess the purest self-interest as his sole motive. He would have blushed at the mention of loyalty. In fact, the general reflected, the idea of fealty has been out of fashion for a long time.

In January 1944 L wrote to ask for a meeting in Constantinople. He reported that he had been promoted to the rank of colonel and transferred to the Prague military command. His new assignment precluded frequent travel.

General Z discussed this change with his deputy. It had serious disadvantages. The transfer from Berlin took L away from the brain of the German Army. It also posed delicate problems of communication, for secret writing mailed from Prague would obviously be too risky. There were some advantages. The Protectorate had grown increasingly important to German military operations as the result of developments on both fronts. The war industry there was virtually unmolested by Allied bombing, so that the railroad network served the German High Command efficiently. Moreover, it had become clear by 1944 that the Allies were going to win the war. The exiled Czech government therefore needed information from Prague. Communications were the hardest problem. There was good radio contact between the Prague underground and London, but General Z felt that placing L in touch with the underground so that he could use its facilities was too risky. He anticipated, in fact, that L would reject such a proposal.

The deputy met L in Constantinople. The new Abwehr colonel proposed that communications be maintained by

radio; he was willing to use the Czech underground if his contacts with it were restricted to a single reliable man. General Z had previously selected such a man, a Colonel Studeny. It was decided that a separate code would be employed for L's reports. The time and place for future meetings with Studeny were chosen by L, and arrangements for dead drops were worked out in detail.

And so L began a new life. His assignment as chief of the counterintelligence section of the Prague military command, under General Toussaint, provided him a measure of protection. He usually knew in advance which persons were suspect to the Germans and which were slated for arrest. This knowledge was not infallible; the Gestapo and Sicherheitsdienst were often—and increasingly—on unfriendly terms with the Abwehr. And sometimes Gestapo arrests were not only unannounced but seemingly capricious, made for precautionary reasons, on suspicion rather than evidence.

But at least the operation was now conducted in accordance with the rules. Colonel Studeny had dropped all other underground activity and functioned solely as L's cut-out. There were no more chancy meetings in neutral countries. L had received no money for years, so the danger which an added and inexplicable income always brings had now evaporated. L and Studeny never met; they used a number of cleverly concealed drops. Perhaps it was a miracle that the operation had survived its cowboy years, but now L had for protection an intelligent application of the rules.

His reports continued to be very valuable, fulfilling also the new function of providing warning about forthcoming Gestapo arrests. The months rolled by, months in which the German armies met a series of major defeats. The end was in sight.

Mission Fulfilled

In October 1944 Colonel Studeny was arrested. It seems that he had been under surveillance for some time. And yet, surprisingly, the Gestapo had not found his dead drops; for if they had they would have arrested L as well. What they did find, when they searched Studeny, was a piece of paper bearing questions obviously addressed to someone in the German headquarters at Prague. Colonel Studeny was inter-

rogated under relentless torture. He died a hero, without revealing anything about the radio station or the identity of the German collaborator. L even participated, on behalf of the Abwehr, in the investigation of the case.

L's own arrest came in December. Its causes remained as obscure as those that had led to Studeny's apprehension. Perhaps an analysis of the requirements on Studeny's person had led, in turn, to investigation of the past activities of all logical suspects. Such a review would presumably have revealed L's presence near the Czech border before the war started, his specialization as intelligence officer in Czech matters, his extensive travels, and a number of other significant indicators. Or perhaps, after the attempt on Hitler's life in June 1944, L was one of the large number of Abwehr officers who fell under suspicion of complicity. Whatever the reasons for the arrest, the Gestapo used much the same barbarous methods on him as it had previously employed on Colonel Studeny.

There was one difference. L must have sometime read *The Arabian Nights*. At any rate he emulated Queen Scheherezade by prolonging his story, relating only one episode at a time, and ensuring that much additional investigation would be required before the next chapter could be drawn from him.

In this way Colonel L sought to remain alive until the dying war reached its end and he, along with the other prisoners at Terezin, was set free. He nearly succeeded. In fact, this rational plan would almost certainly have worked except that fate is notoriously irrational. The SS guards at Terezin, growing more frightened daily as the Russians stormed closer and closer, got thoroughly drunk on their last afternoon as masters of the concentration camps. They decided to shoot forty prisoners in a final Teutonic orgy of death. By chance a sodden sergeant chose L as one of the forty.

As he was led from his barracks, he managed to exchange a few words with a Czech inmate not marked for execution. He told him to seek out General Z and tell him what had happened.

"Tell him it was a wonderful time. I'm sorry it stops here. And tell him—he always wanted to know *why*, so tell him that my reasons in life were just as logical as the reasons for my death."

And there you have it, thought General Z, pondering the story. Maybe no one can proceed by logic or rules alone; maybe nobody knows enough. I don't know why he was the best spy I ever knew. I don't know why he was a spy at all. I don't even know why I broke all the rules at the outset. One of my English friends once said that the prerequisite for intelligence is intelligence. He's wrong. The indispensable organ in this business is not the brain. It's the nose.

COMMUNICATION TO THE EDITORS

Dear Sirs:

The recent *Studies* article by Louise Omandere entitled "Covert Scientific Collection" [1] represents a good first step in examining a critical field of intelligence collection which has remained relatively untapped. There is no doubt that the collection of scientific information is one of the biggest problems facing the intelligence community. The challenge was stated clearly by Mr. William P. Bundy in his presentation to the Research Methods Conference in November 1958:

> It is in advanced weapons and scientific progress that we find at once our most critical area and the one where our present status is least good. . . . It is one thing to train an agent to count the flatcars going through Brest-Litovsk; quite another to train and give the right questions to an agent in a low-level position in a scientific establishment.[2]

Most of the views in Miss Omandere's discussion of this problem are quite valid, but some portions of her article, I believe, are erroneous in concept. She begins by defining the two basic steps in obtaining covert scientific information, first "What to collect," and second "How to collect." I don't believe this analysis wrong as far as it goes: if our main target (as determined by a valid requirement) is Establishment X, Department A, it behooves us to do everything in our power to develop available assets in this locale. But more often the *How* comes first, with the fortuitous acquisition of assets in Department B of Establishment X, or even more remote from the predetermined target. Here targets become the targets of opportunity, and with the philosophy that "half a loaf is better than none," or "gold is where you find it," no opportunity should be overlooked. The history of intelligence and espionage operations show that a direct line is rarely established between the case officer and the target, and the case officer who waits for such an ideal setup is apt to have a long wait indeed. In other words, we are more often than not faced with a here-is-an-agent-how-can-we-use-him situation, and this situation will be wasted if we adhere to the order of the textbook *What* and *How*.

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[1] Vol. II, No. 4 (Fall 1958), pp. 23–31.

[2] See *Studies*, Vol. III, No. 1 (Winter 1959), p. 53.

The author goes on to point out that the covert collection of scientific intelligence is fraught with more difficulties than any other type, mainly because special knowledge is required to understand its meaning. To this I can say only, "Amen!" Her example of an elusive target, however (do-it-yourself BW operations fomented in a camp kitchen), has little bearing on the proposition. An inconspicuous atomic bomb can similarly put an entire city out of commission, but what we are looking for is the scientific effort which went into the development of the bomb. The example would be valid only if the Soviet Bloc carried on BW *research* in apparently innocuous soup kitchens. The covert collection of scientific information differs from other covert collection only in the absolute necessity that the case officer be competent to direct the agent in scientific matters and competent to sift the information received for pertinent scientific fact. Unless the case officer can do this, he had best channel his efforts into a less esoteric field.

Scientific group discussions and social affairs at which scientists mingle are, as the author points out, excellent stages for the elicitation of scientific information and possible recruitment of Iron Curtain scientists. Here, however, she touches lightly on one of the biggest problems of exploitation: the transition from overt to covert scientific contacts has too often been handled like a Marx Brothers comedy, with rapid entrances on scene and exits (left, behind curtain) of various unrelated people before the confused scientist's eyes. Where does overt exploitation leave off and covert exploitation begin? And by whom is each conducted? And how is continuity maintained? These are the big questions which remain unanswered. Any exploitation or recruitment of scientific personnel has to be carried out on an intimate basis; it cannot be accomplished by continual replacement of contacts like substitutions in a football game.

The article also slights another problem—the fact that, while exploitation of the scientist himself is certainly desirable, we are often faced with the prospect of dealing with a low-level agent in a target establishment. What requests, couched in simple terms, can we make of, say, a janitor? Properly exploited, he can supply much valuable information; but we *must* have a scientific man in contact with him, one

who can not only pose the questions but also interpret the answers.

This brings us to the main point, the article's thesis that we can improve our collection of scientific information by training nonscientific case officers in general science. Desirable as this may be for rounding out education and background, it is not the answer to the problem of conducting scientific operations. The answer, I suggest, is rather to recruit scientific personnel specifically for use as case officers in the fullest sense of the word.

Miss Omandere apparently had two reasons for rejecting this solution. Her first is that unless the scientist is thoroughly experienced in the narrow field of the target, he is of little use, a physicist, for example, being inadequate in the field of microbiology. This argument is only a half-truth, for no scientific person, however highly specialized he may be, is completely ignorant in another scientific field. He may not know all the details of some other specialty, but he can certainly appreciate them, and more important, he can talk the language of the agent-scientist better than an economist armed with a copy of *Popular Science* can. If this were not so, we could expect nothing but chaos from the recent State Department move to place scientific attachés in embassies abroad, imagining how the attaché assigned to Paris, because he is a chemical engineer, would throw up his hands in helpless confusion every time he heard the word "electronics."

The author's second argument, the more important one for us, is that the scientist rarely has the qualities requisite for a case officer. Be it so; but do more economists, historians, lawyers, political science majors, etc., possess case officer qualities, including the necessary acquiescence to anonymity? If we look at the old OSS records and see the amazing variety of backgrounds which successful case officers had, we recognize that the case officer type is scattered sparsely through almost every profession, and it requires a certain amount of effort to dig him out. Whether the proportion of individuals who have case officer inclinations is significantly lower in the physical sciences than in other fields has not been demonstrated. From personal experience I know that persons who have majored in the physical sciences are not *all* interested in a life of research. And the conception that a person who

knows what goes on, say, inside electric light bulbs is an eccentric utterly incapable of normal dealings with normal people is a mythical one now discredited. It is dying a hard death, but it is dying, with a fortunate assist from the Sputniks.

Instead of bemoaning the lack of true scientific case officers, we should be going out to find some. For the short range, there are a number of likely candidates already within the community. I know, for example, of a skilled physicist, holding ten patents on radio tubes, who occupies a technician slot overseas because he is more interested in clandestine operations than in research. And there are others, if one should only look for them. For the long range, we should start pulling some scientific people in from the colleges for the JOT program; I am sure that they can be found in sufficient quantities to meet the needs of the Agency.

Miss Omandere has summed up my convictions in one of her later paragraphs, where she speaks of valuable information obtained from behind the Iron Curtain by using the "trained eye of the scientist." It takes a scientist to perform a scientific job, and where better could we have him than in the front ranks of the case officers?

ROBERT G. LEONARD

CRITIQUES OF SOME RECENT BOOKS ON INTELLIGENCE

SUSPECT DOCUMENTS—THEIR SCIENTIFIC EXAMINATION. By *Dr. Wilson R. Harrison.* (New York: Frederick A. Praeger. 1958. Pp. 583. $15.)

This is the most comprehensive and technically correct book ever written outside the United States on this subject, and it compares favorably with the best and newest works produced here. The author, Director of the British Government's Home Office Forensic Science Laboratory and an honorary member of the American Society of Questioned Document Examiners, is one of the comparatively few persons outside this country qualified by applied scientific experience to write with authority on the examination of questioned documents. He has been in this field for more than twenty years, having worked for a number of police organizations in England and in Wales. His scientific background is clearly discernible in the care and great detail of his explanations, which at the same time are couched in simple and direct language completely free from ambiguity.

The establishment of authenticity or the exposure of forgery is a difficult and complicated process, requiring the use of the latest developments in microscopy, photography, and microchemical analysis. Dr. Harrison describes the application of these sciences to document examination in a dozen chapters—on materials, preliminary examination, laboratory equipment, photography, dating problems, typescript, handwriting, disguise, forged signatures, preliminary phases, preservation and cleaning, anonymous letters, and a case at court—each followed by an unusually good bibliography, and the whole topped off with a detailed index and a superior glossary. He elaborates on such subjects as the deciphering of erasures, the chemical analysis of ink, the development and identification of latent fingerprints, the development of invisible writing, the dating of ballpoint-pen documents, the tracing of anonymous letters, and the authorship of typewritten matter. He tries to get the reader to participate, as nearly as possible, in the actual document

examination; and one of his devices is the generous sprinkling of excellent photographs—more than 150 of them—throughout the book. Printed on high-gloss coated stock, the photographs have lost very little detail in reproduction and vividly illustrate the points discussed in the text.

The reader must be cautioned, however, that Dr. Harrison's book, excellent as it is, will in no way qualify him to attempt work of this nature. Like other applied sciences, these subjects can be learned only by years of on-the-job training and application under the guidance of experienced personnel. But for the person who has cause to collect and submit questioned documents for examination, comparison, or identification, the fine chapter on their handling and preservation provides full instructions, which if followed will make possible a substantial increase in the content of the analyst's report and obviate many of the qualifications which would otherwise attach to his findings.

For the qualified questioned document analyst this book serves well as a reference on the techniques presently employed in police laboratories in England and, by association, other European countries.

IN FLANDERS FIELDS. By *Leon Wolff*. (New York: Viking. 1958. Pp. 308. $5.)

This readable new book about the Third Battle of Ypres (better known as Passchendaele), fought by the British against the Germans in the late summer and autumn of 1917, is a good sample of that now popular form of literature, the disaster story. Wolff, a former Air Force public relations officer, chose his subject well, for few campaigns in military history have been so often damned as disastrous. Moreover, no aspect of the British command's conduct of this campaign has been more criticized than its GHQ intelligence estimates; and Wolff faithfully repeats much of the criticism, adding some of his own.

Certainly one of the reasons why the battle was fought, though by no means the only or the most important reason, was the glowing picture of a possible early victory painted by Sir Douglas Haig's intelligence chief, Brigadier General John Charteris. Haig himself was a dogged optimist, and he liked to

have optimists about him. Charteris, once a correspondent of *The Times* in Vienna, had served with Haig in India, at Aldershot, and at all of Haig's wartime commands. In effect, he was Public Relations Officer, Chief Censor, and GHQ Morale Officer, as well as Chief of Intelligence, and he seems sometimes to have confused his various duties. He was convinced that the Somme battles in 1916 had done the Germans great damage, that the food shortage in Germany was becoming acute, and that revolutionary tendencies were emerging there. On 11 June 1917 he ended a report with the "fair deduction that, given a continuance of circumstances as they stand at present and given a continuation of the effort of the Allies, then Germany may well be forced to conclude a peace on our terms before the end of the year." Haig himself repeated this in substance to the cabinet: assuming that fighting continued at the same intensity, he said, the Germans would be at the end of their manpower in six months.

In retrospect this certainly seems optimistic, for by the end of 1917 Russia had ceased fighting and Italy and France were greatly weakened, while Germany was bringing more divisions to the Western Front. Haig's and Charteris' prognosis contrast with a memorandum of 9 May 1917 from the Director of Military Intelligence in London, G.M.W. Macdonough, who, observing that Germany was still strong and Russia near collapse, recommended remaining on the defensive until the Americans arrived. This memorandum, addressed to the War Cabinet, influenced its opinion of Haig's and Charteris' views. When serious criticism of GHQ developed in the autumn, Charteris became, not surprisingly, the first target. He has in fact been a target ever since. David Lloyd George, in a passage quoted by Wolff, spoke of "more stuff from the Charteris still-room," and Wolff himself deprecates "the fine Scottish hand of General John Charteris." Captain B. H. Liddell Hart and Winston Churchill have also attacked the man, and one is left with the impression that he was little more than a fabricator.

Such a conclusion would be, to borrow a phrase from the other side of the hill, *etwas uebertrieben*. If we look at his diary and the full text of his report, we see that Charteris got his basic information from the classic sources of military intelligence—PW interrogations; captured letters, records and

paybooks; overt publications; and agents. His interpretation of the effect of the Somme battles has since been documented by German writers. His June estimate of the number of German divisions in the West (157) was, if anything, one to three divisions high. He foresaw the danger of bad weather. He had captured orders indicating that German field rations were being reduced by a third and captured letters revealing the food shortage in Germany, a shortage since amply confirmed in German sources. Perhaps most important, he had an agent report that German casualties in the spring battles in the West up until June had numbered 400,000. The German official study dated 1941 put losses for April through June at 384,000, of which 121,000 were killed or missing. Although this tally includes June, in which there were probably at least 60,000 casualties, the discrepancy with Charteris' report is offset by the fact that the official figures do not include those lightly wounded who were not evacuated out of the corps area; roughly 30% should be added to the net figure of 324,000, making some 420,000 to the beginning of June.

Thus Charteris does not seem to have been so far off in his picture of the German situation in June 1917. His rosy estimate that Germany would be exhausted at the end of the year was probably influenced by recent events in the Battle of Messines, where the greatest explosion of mines in military history for a time demoralized the German defenders. It should also be remembered that he was counting on a continued effort by the French which did not materialize. But he did not grasp the danger and the significance of a Russian collapse, which even a month earlier Macdonough, from his broader perspective in London, had seen more clearly in making his soberer estimate of the German power to resist. Perhaps we may claim Macdonough's clearer view as another proof of the advantages of centralizing intelligence estimates.

The Third Battle of Ypres began on 31 July, and from this time on Charteris seems to have made more errors. He reported at one point that all the German divisions in one sector had been on the front line and had therefore been mangled, when actually some had still not been engaged. For some mysterious reason, he (not just Haig, as Lloyd George and Wolff state) revised his estimate of German divisions in the West downward to 145, now placing 12 more on the Eastern

Front. Four divisions actually had been sent east in June, but in July eight were moved west from the east, so that the number in France and Belgium was now greater, not smaller. Charteris also reported that the 1919 (1899) class of German conscripts was entering the trenches, a mistake he had to correct later.

It might be pointed out in Charteris' defense that other intelligence chiefs have erred on the side of optimism and lived it down. Some readers may recall that in 1943 the Supreme Allied Command devoted considerable effort to working out what to do in the event of a sudden German collapse.[1] It is natural, unless the enemy is practicing deception, to underestimate him; no news is good news, but it may not be true news. The real trouble in Charteris' case was that his veneration of Haig made his judgment suspect, both in London and in the armies.

Haig told the War Secretary, Lord Derby, that he always discounted Charteris' optimism, but this does not seem to have been true, and Haig always erred on the optimistic side himself. On 12 December, after the German counterattack at Cambrai, Derby gave Haig a month to get rid of Charteris. Haig regretfully replaced him, writing at this time to his wife, "It is now over a year since Derby and the War Office have set their faces against poor Charteris," and later, "He seems almost a sort of Dreyfus in the eyes of our War Office authorities." But when Charteris suggested that the attacks on him represented efforts to attack Haig, Haig did not hesitate to rebuke him; Charteris was told that the commander himself was the only one responsible for his decisions, and that they had been based on other information besides that furnished by GHQ Intelligence.

A reader who is familiar with intelligence will find Wolff's book scanty on details, not only in regard to Charteris but also on matters such as the German failure to exploit the French mutinies. Wolff, of course, has written on the battle as a whole, not just on its intelligence aspects. The truth is that his book is essentially a warm-up of the polemical campaign of the "Easterners"—advocates of an eastern strategy—

[1] The code-name RANKIN was used for the planned pursuit operation in case of abrupt German withdrawal.

principally Lloyd George and Churchill, against the "Westerners." This is not the place for details, but it should be pointed out that the "Easterners," by comparing non-comparable casualty figures, have made Passchendaele appear more disastrous than it actually was. Wolff adopts Churchill's data without checking into Churchill's source and fails to compare the available unit casualty reports, which show, when analyzed, that the battle losses on both sides were in the neighborhood of 250,000, with the German losses perhaps slightly higher than the British. As often in such polemics, the denunciations by Lloyd George and Churchill were really attempts to conceal or justify weak spots in their own records—Lloyd George's failure to supply manpower in 1918 and Churchill's Dardanelles fiasco. The records of Haig and Charteris were far from spotless, and there were some sound arguments for an eastern strategy; but sound arguments were not the only ones used. It is sobering for us to realize that no part of the denigration was more effective than the exaggerated charges levelled at GHQ's intelligence; an intelligence organization makes a good target.

WE SPIED . . .

We spied several books of considerable interest during the last quarter, one of which is *The Cat and the Mice,* by Leonard Mosley.[1] It tells the short and readable story of John Eppler, a German spy who worked for Marshal Rommel in Cairo until British security put an end to his activities. Born of German parents, but calling himself Hussein Gâafer after his Egyptian stepfather, Eppler was well known in Cairo cabaret circles and a natural for recruitment into the Abwehr. After training in Germany he and his radio operator, a German from East Africa named Peter Monkaster, were led in May 1942 across 2,000 miles of the Sahara back to Cairo, where he picked up the threads of his former gay life.

A belly-dancer and German agent named Hekmath Fathmy worked with Eppler and Monkaster, bringing British officers to their adjacent houseboats and giving parties where information could be extracted with the traditional help of wine and women. There Eppler met Lieutenant Anwar El Sadat, a young associate of the anti-British Captain Gamal Abdal Nasser. (El Sadat's book, *Revolt on the Nile,*[2] tells of these contacts with Eppler and Monkaster and records his opinion that the two agents were spending their German funds more on good living than on securing information. El Sadat attributes his own arrest a few days after Eppler's to the fact that he had been in the German's company.)

As the story is told in *The Cat and the Mice,* Eppler, with the help of the belly-dancer and some knock-out drops, found in an officer's dispatch case the answers to three key questions Rommel had asked about British plans for defending the Delta. But meantime the radio men who were to receive his messages in the desert had been captured by the British, and his alternate circuit would not be available for 24 hours. In those 24 hours British Intelligence, which had been investigating the source of forged English money ineptly introduced into British-held Egypt by the Abwehr, was able to trace it to Eppler and arrest him, bringing the espionage operation to a photo-finish end.

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[1] London: Arthur Barker Ltd., 1958. 160 p. 13s.6d.
[2] London: Allan Wingate, 1957. 131 p.

Mosley's version of this operation is evidently simplified and embellished for popular consumption, but it has a factual basis and makes good reading.

* * *

The prolific English writer, Ronald Seth, continues to pour out books of general intelligence interest. His latest work, entitled *For My Name's Sake,*[3] is a brief account of the struggle of the Roman Catholic Church against the Nazis in occupied Western Europe and against Communist persecution in Eastern Europe. The author has omitted the Nazi persecution of the Church of Germany as too complex a subject to cover in this volume. Mr. Seth's quick books reflect comparatively little original thought or research and often contain some inaccuracies, but this, like many of them, is useful as a broad outline of the resistance activity he describes. The growing literature of Clerical Resistance, which already overflows a three-foot bookshelf, is of considerable importance to the intelligence officer in the resistance field.

For light but informative reading, attention is called to two anthologies of escape tales recently published in England. One is a compilation of *Great Escape Stories,* edited by Eric Williams,[4] himself an escaper with several books on the subject to his credit. His anthology, largely devoted to World War II escapes, includes one during the Korean War and one from behind the Iron Curtain. *Great True Escape Stories,* edited by Fred Urquhart,[5] also deals largely with World War II, but leads off with Winston Churchill's 1899 escape from the Boers. Readers who are content with anthologies as a substitute for the originals will find that these two editors have picked from among the best.

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[3] London: Geoffrey Bles, 1958. 246 p. 18s.
[4] London: Weidenfeld and Nicolson, 1958. 256 p. 12s6d.
[5] London: Arco, 1958. 240 p. 16s.

Articles and book reviews on the following pages are printed without classification and without identification of the writers, for the convenience of readers who may wish to detach them from the classified body of the *Studies*.