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NATIONAL SECURITY AGENCY
FORT GEORGE G. MEADE, MARYLAND

CRYPTOLOG

DECEMBER 1976



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CRYPTOLOG

Published Monthly by P1, Techniques and Standards,
for the Personnel of Operations

VOL. III, No. 12

DECEMBER 1976

PUBLISHER

WILLIAM LUTWINIAK

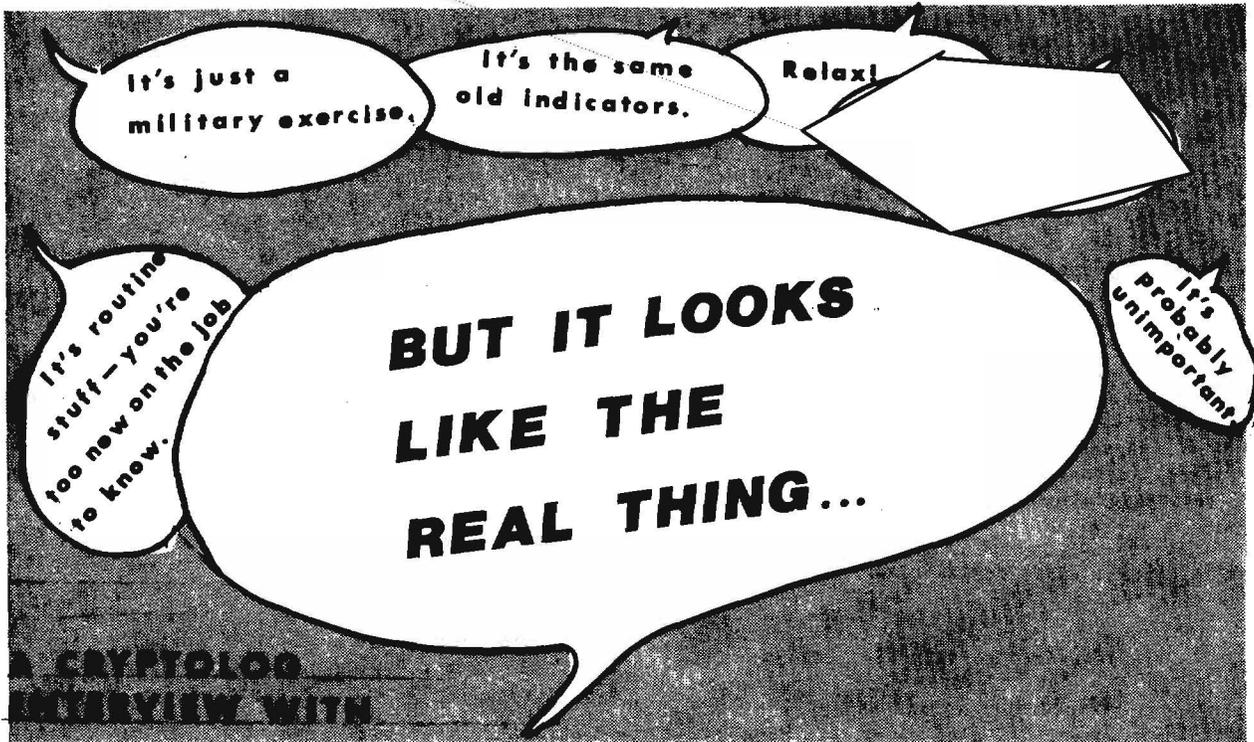
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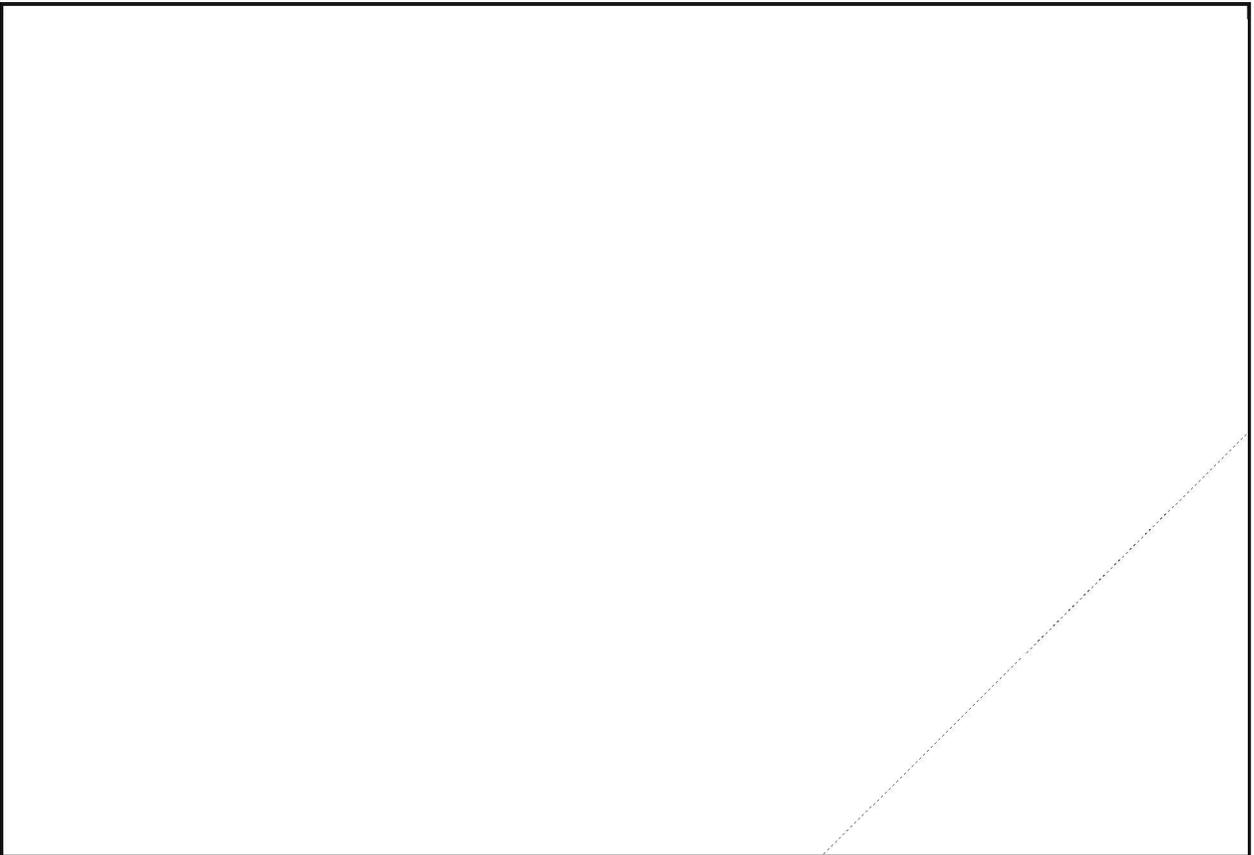
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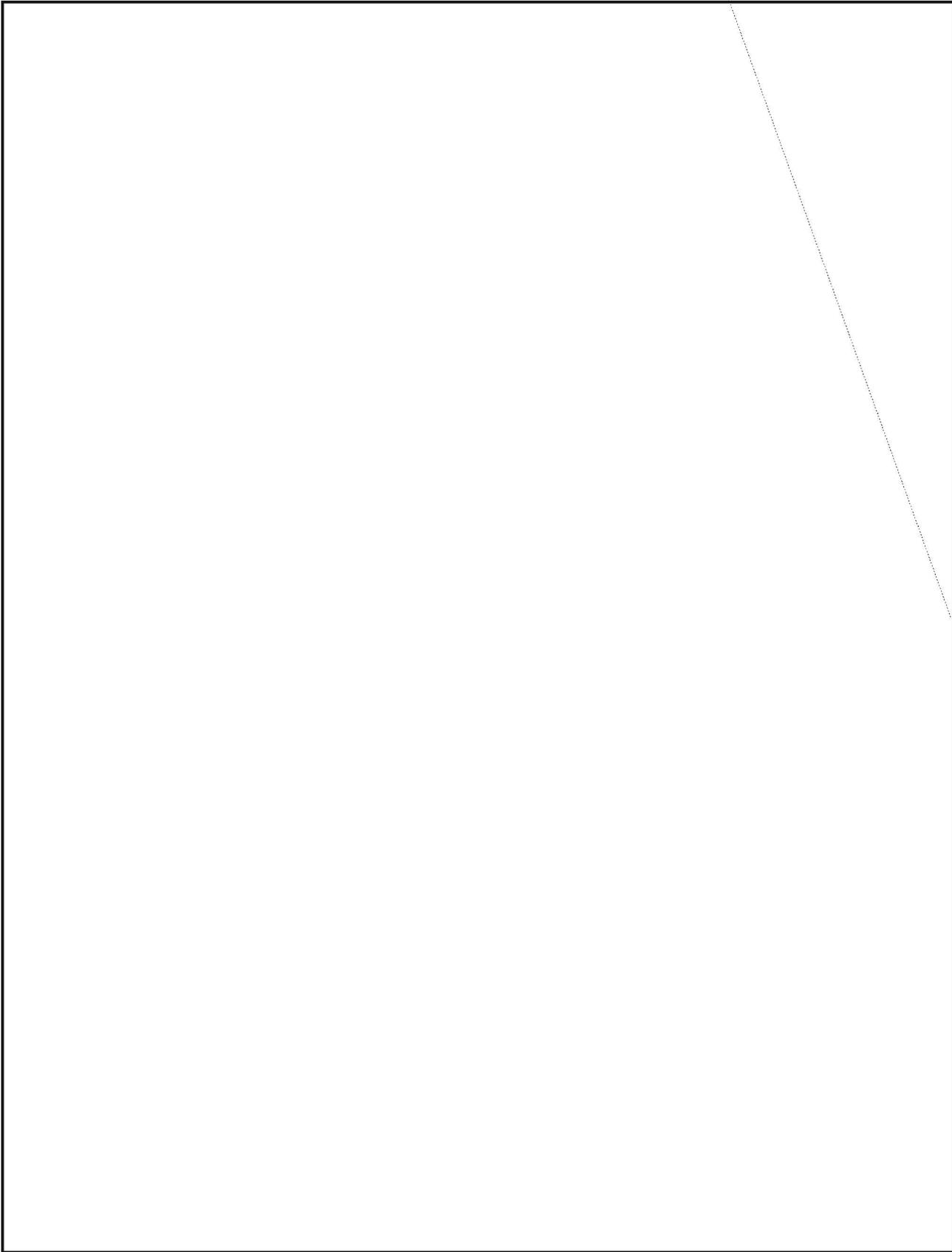


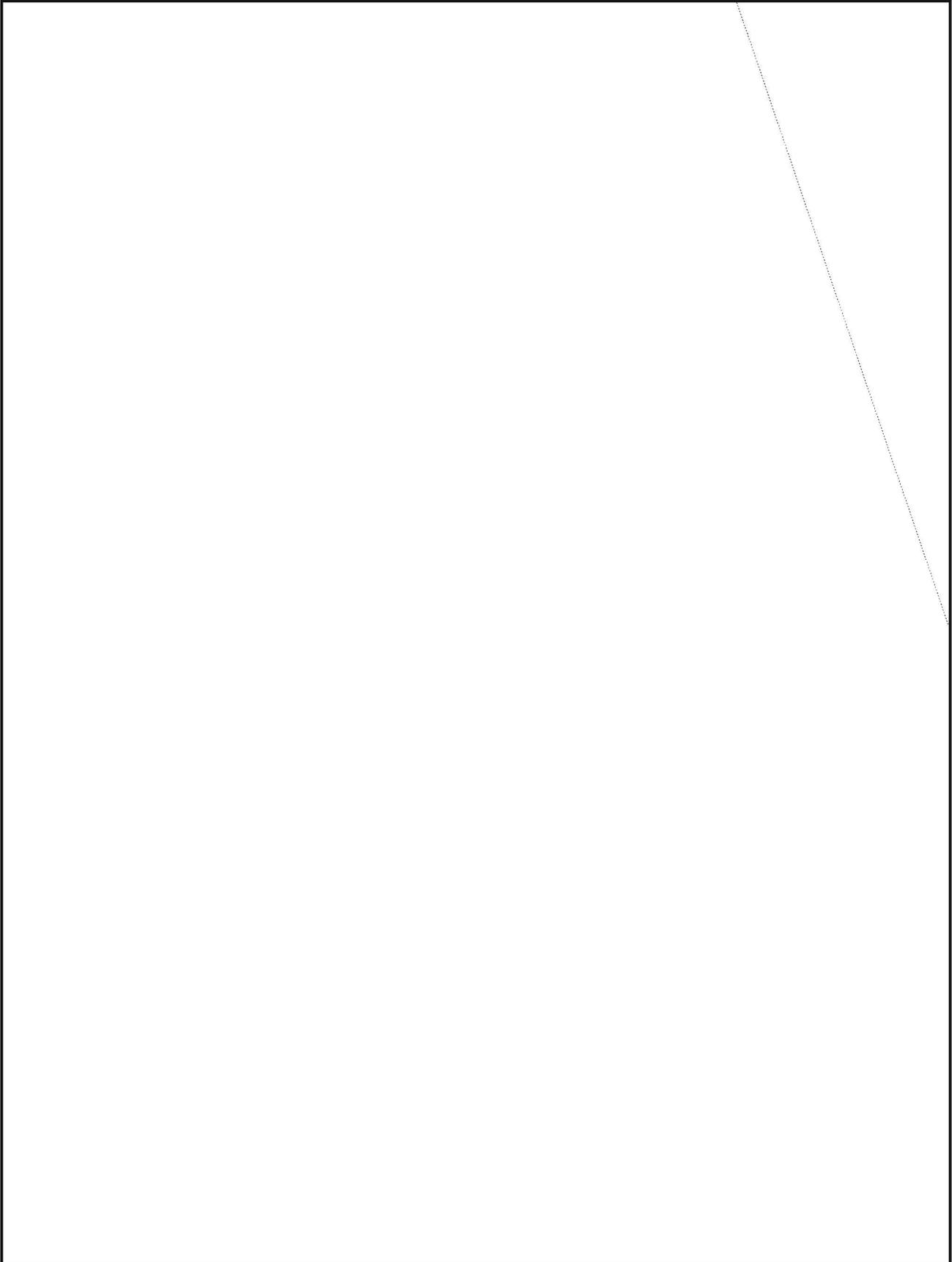
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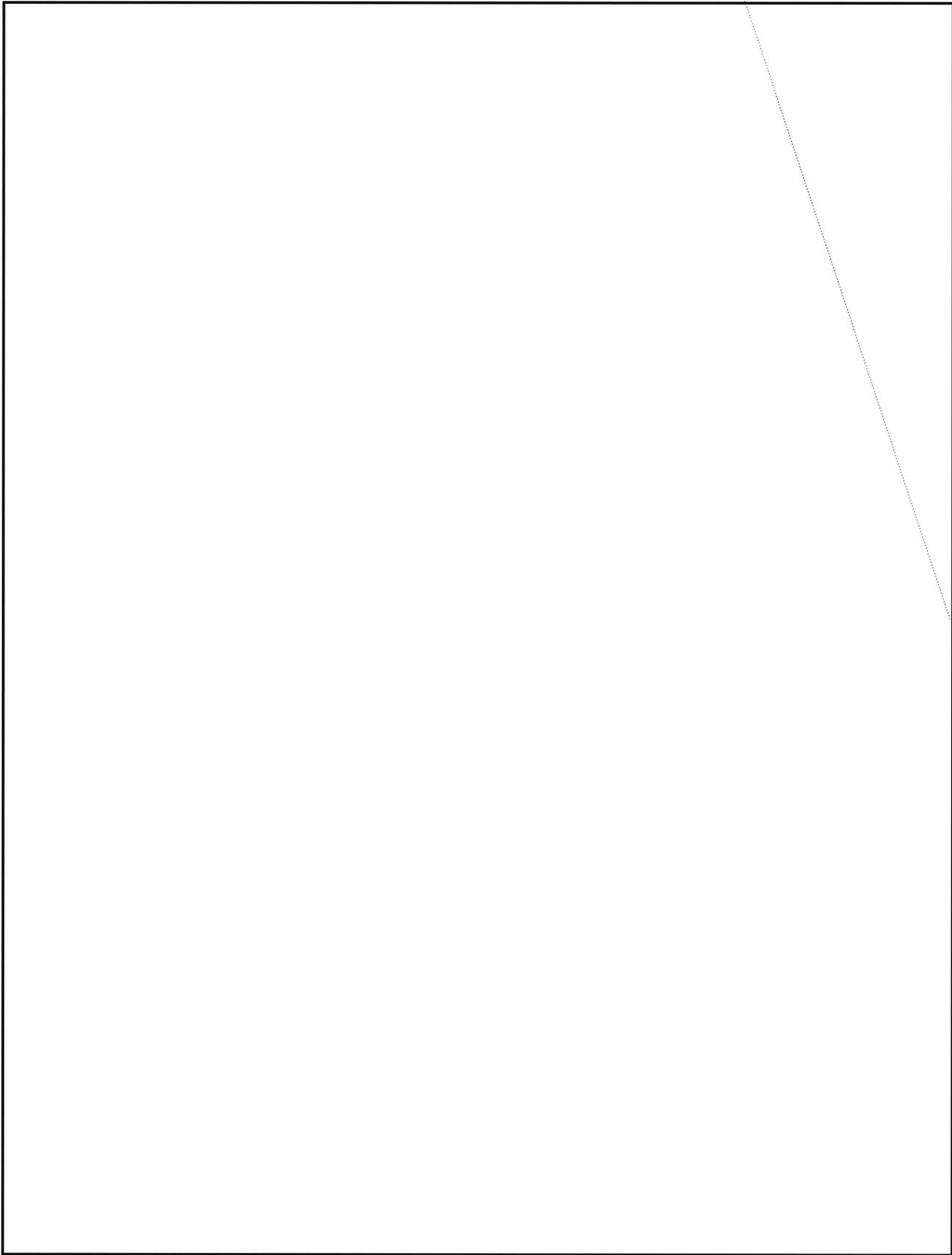
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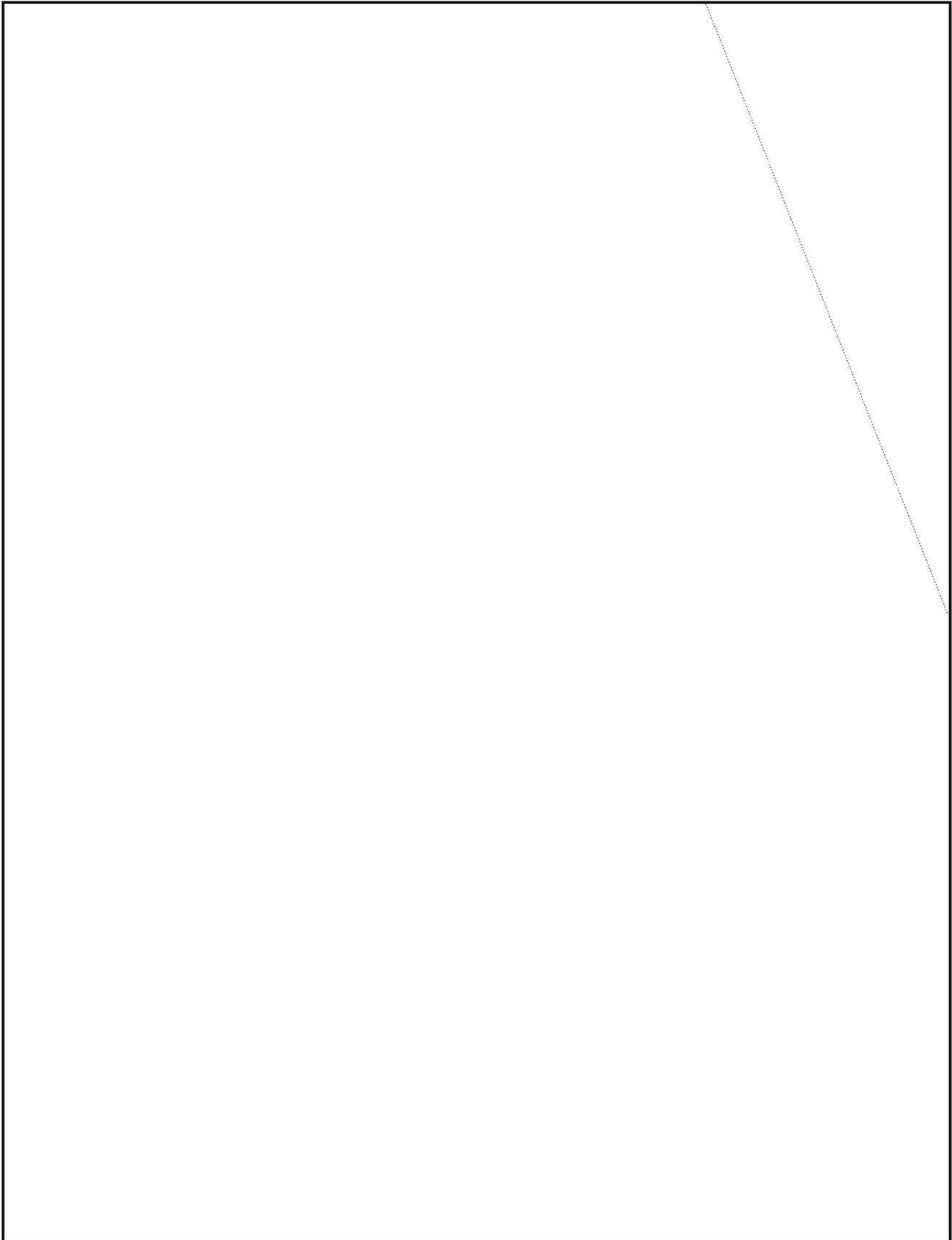
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UNCLASSIFIED



Much of our work in the intelligence community is, of necessity, denied current widespread reporting. It thus may be months, years, or even decades before cryptanalysts at large learn of some of our most exciting efforts. However, a current operation is beginning, on which we are fortunate to be able to report. It is hoped that, by sharing these first efforts, we will enable Agency analysts to read between the lines of regular news reporting and infer our (expected) successes.

This juicy problem began a few years ago when Gino's restaurants began an advertising campaign stressing "freedom of choice." It is well known that this is a code phrase for many right-wing, extremist organizations, and the fact did not escape the attention of high-level management.

Wanting to get to the meat of the problem, operatives began a careful surveillance of selected restaurants. Then, several months ago, a crucial observation was made -- *Gino the Genie Magic Kits* were being sold at most local units. Upon purchase, it was discovered that each kit contained a *message decoder card!!!* (see Fig. 1).

A little careful backgrounding quickly showed that Gino's restaurants are owned by *A & G Foods of King of Prussia, Penna.* The obvious connection with *A.G. Crypto of Zurich* was immediately made, and the operation entered its second and more intensive phase.

At the risk of putting an agent in a pickle, it was determined that someone must infiltrate the organization. After carefully laying the groundwork, we were able to place an operative at the highest level of the organization. (See Fig. 2, black rectangle "to protect his identity").

We are now in the third phase of the project -- analyzing data and awaiting further intelligence from our informant. The meat and (french-fried) potatoes problem of understanding the intricate grill system has been turned over to a special team of *PI cryptomathematicians.*

However, the major burden rests with our intrepid interloper -- to discover the big cheese behind the entire scheme. Barring some jam-up of data, we hope to issue future reports on this topical subject.

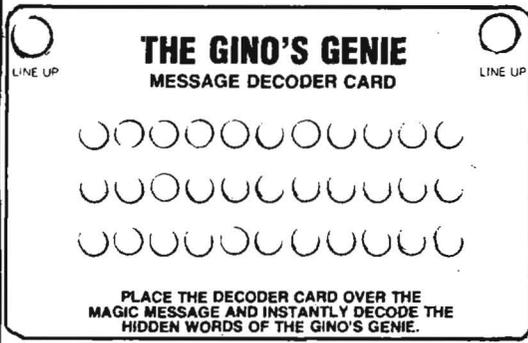


Fig. 1



Fig. 2

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WHY CAN'T THEY DESIGN A GOOD S.R. TEST?

Kathy Bjorklund, G633

Several recently published articles on the testing process for professionalization have prompted me to share my limited experience in that process in the Special Research (SR) field.

In my brief exposure to education and testing methods during my undergraduate days, I learned that the stress must always be placed upon goals or purposes. The goal must be defined ahead of time and, once defined, must be kept in mind firmly and constantly. The principle is obvious: if a person is studying plane geometry, he should not be tested on his abilities in solid geometry or trigonometry. If he is being taught certain theorems that apply to the circle, he should be tested specifically on those theorems -- and not as they apply to the rectangle, but to the circle.

The idea that the testing of an aspirant in a professional field at NSA should follow the same principle seems clear enough. The aspirant should learn certain techniques in his field, should learn how to apply them, and should then be tested specifically on those abilities. Simple, isn't it? Not the rectangle, but the circle! Stick to the goal!

That is all very well for Academia, where the simplistic can be achieved, although it is often couched in such ethereal terms that one outside the hallowed halls could not recognize it as such. But can it be achieved in the workaday intelligence world? A glance through the appropriate chapter of the Personnel Management Manual (Chapter 402.2, in case you want to read it yourself) would have us believe that it can.

This is how it's done. A panel of professionals in the field is selected. They draw up the professionalization/criteria requirements within the field, with the approval of M3. Under this aegis falls any Professional Qualification Examination (PQE), which, in the SR field, has traditionally been a joint project carried out by a panel subcommittee and the appropriate staff from the National Cryptologic School. It still looks easy, doesn't it?

A sketchy review of the history of establishing the criteria for the SR field quickly demonstrates that this proved to be a ticklish job and that this field (which is one of the major categories at NSA, together with CA, TA, and Data Systems) was the last to publish its standards -- in 1970. Then there followed a period of 2½ years during which the only testing done was in the form of an interview of the aspirant by a group of professionals. This was found to be too subjective. Hence the era of the "objective test" dawned in June 1973. At that point, the problem seems to have become clouded exponentially beyond belief. For when objective methods began to be applied to a highly subjective field, logic failed. The

designers of the various tests tried to examine groups of aspirants for their knowledge of the circle, but found that the aspirants, despite a careful culling that was done by evaluating the Professional Qualification Records (PQRs), were equipped to deal with the rectangle, the square, or even the parallelogram -- anything *but* the circle.

The next step was to try to break down the testing method, further diluting it. The aspirants would be given a chance to be tested on the general principles and the theorems in Part I, and on the application of those principles in Part II. This may be a solution in geometry, but there is a good deal of controversy over whether or not this gauges the ability of a professional SRA. For, with the process thus subdivided, the applicant no longer had to demonstrate his ability in an overall manner. This, too, is a highly subjective area, since in many parts of the Agency the SRA's job has been broken down into several parts, which are not always handled by a single analyst. Although this is an outgrowth issue of the general testing problem, it too merits consideration for there has been -- like it or not, by choice or by chance -- a use of the SRA title as a coverall. Many individuals hold the title (and some even the certification) but have never written a report or do not *exactly* fit the definition of an SRA, which states that the primary duties of the SRA should include "intelligence research and analysis and the preparation and presentation of written and/or oral reports, drawing, in both cases, from a thorough knowledge of user requirements" (page 1, paragraph B of certification criteria, as published by M3, 10 November 1972). The test was trying to gauge ability to do the job as defined. What may have been overlooked was that many jobs did not conform to the definition. Perhaps by attempting to serve the many, the procedure failed to single out the few who were qualified. Was this, or should it be, the goal? If so, is that goal being met? Perhaps not.

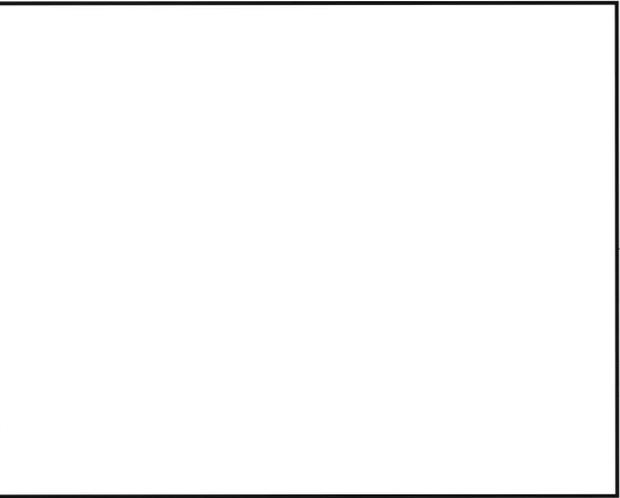
Let's leave the world of circles and parallelograms and get back to the business at hand -- the SIGINT business. A Special Research professional by anyone's standards -- and there are thousands -- should be able to communicate in general, and should be able to communicate an intelligence fact in particular -- that's what we're all about. In order to do that, however, the professional must be able to recognize the fact as something that is useable, no matter the vehicle or purpose. The SRA should also have a background in a specific operational area and, most important, must have a clear idea of how that fact came to his desk in the first place. If the SRA is to be able to make a value judgment (and he must indeed make them every day), anything less is unacceptable. Granted,

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this is a gray area, but "a clear idea" can be somewhat defined:



Leaving aside the question of how much depth the professional has to have, experience has taught many SRAs (in Production, at least) that a good TA background is a must. (Some would go so far as to say that the SRA and TA fields are almost synonymous.) An understanding of the collection and forwarding process is more tangentially related, but if an SRA is ever asked to explain why a report is 72 hours old, a fair explanation based on this sort of background can give the reader a lot more faith in the SIGINT facts.



This is the type of question that it seems the professionalization test should try to answer as a whole, instead of as the sum of its parts. No one who has ever been in the position literally of "translating into English" the flowery phrases of a would-be writer, or trying to tell an "outsider" what the "SIGINT-ese" really says, would agree that a good writer or a good technician can be found all rolled up in one SRA. However, the whole or complete SRA should have a foot in both worlds, but should not be so overconcerned either with his prose style or with the technicalities that he forgets a basic principle: his art is a disciplined one that requires him to *comprehend* fully the technical aspects of his job, and then to *communicate* that knowledge to his readers in a clear, unambiguous way. The test given to an SRA must gauge his ability to carry out that dual job.

At present there is a multiple standard. A few aspirants still qualify under the pre-1973 criteria, which require no test; subject to an oral interview are several others who, if they fail, must take the test; and, finally, the majority, who fall under the criteria that

require a test. Because of the foibles of the overall professionalization system, these discrepancies cannot be removed. But the named group is still being tested, as it were, one foot at a time. They are given a problem and are told to write a report to meet certain customer requirements. The result of their work is graded twice -- once for the technical accuracy and once for composition. An aspirant can pass either part and not be required to take it again. Thus it is possible for someone to emphasize the technical portion of the exam, pass it, and fail the composition portion. The same individual, having passed Part I -- the analysis -- could, the next time, write a great composition on "summer camp experiences," thus passing Part II and becoming, *voilà*, an SR professional. The possibility that this can happen should be removed, however remote its statistical chances.

EO 1.4.(c)

(Continued on p. 112) 86-36

NON-NAMES IN THE NEWS

A Judge Rules 'person' Is Non Grata

Ellen Donna Cooperman went to court the other day in an effort to change her name to Cooperperson. She lost.

A State Supreme Court justice ruled that if he granted this request "it would have serious repercussions perhaps throughout the entire country."

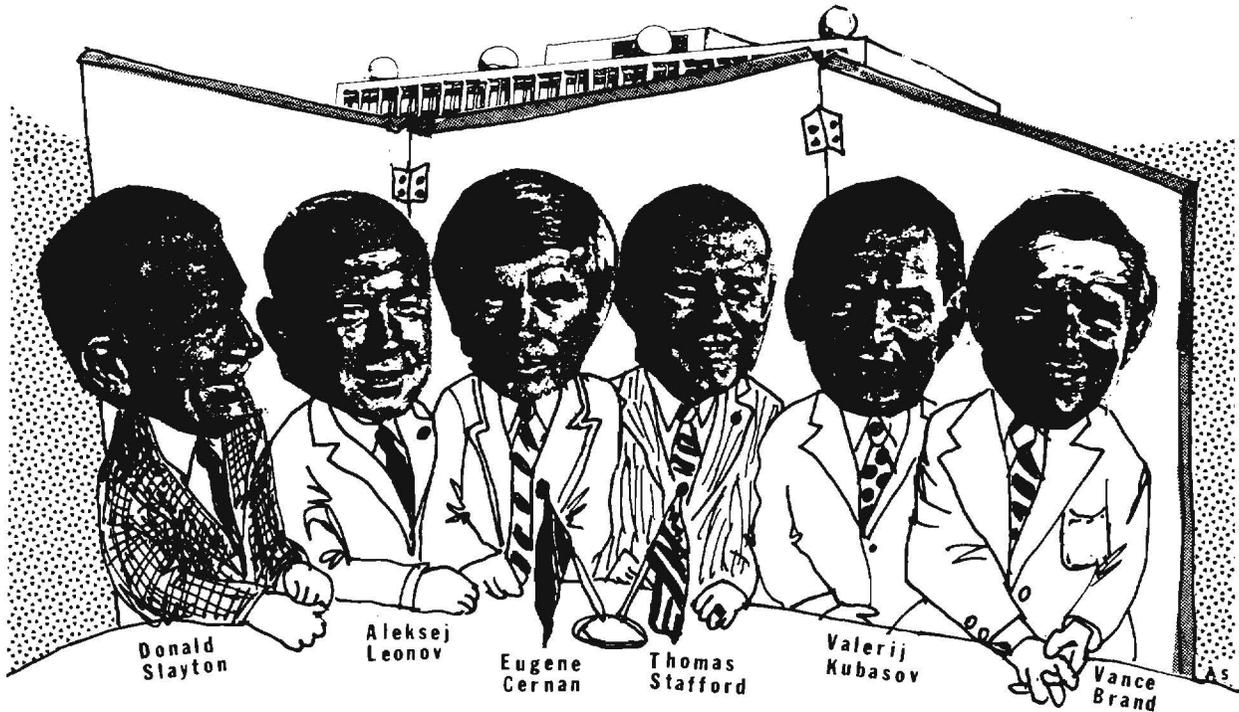
In a decision citing a battery of possible name changes, Justice John F. Scileppi in Suffolk County pointed out, for example, that if this request was granted, someone named Jackson would change the name to Jackchild. A person called Manning would want the name to be Peopling. A woman named Carmen would insist on being called Carperson.

"The possibilities are virtually endless and increasingly inane," wrote Justice Scileppi. "This would truly be in the realm of nonsense."

Name changes are usually routine. Names are changed by the filing of petitions in either Civil Court or State Supreme Court. Applicants must swear that they do not mean to defraud anyone and that the change does not have any other illegal motive. They must also include a birth certificate and a statement of why the request is being made.

Mrs. Cooperman, who lives in Babylon, L.I., and owns a feminist film company, gave as her reason that "she believes deeply in the feminist cause" and that the name Cooperperson "more properly reflects her sense of human equality than does the name Cooperman."

(New York Times, 17 October 1976)



APOLLO-SOYUZ TEST PROJECT: BEHIND-THE-SCENES ACTIVITY

The following article, reprinted from FIELD INFORMATION LETTER 9-76, September 1976, was written by [redacted] of DEFSMAC (Defense Special Missile and Astronautics Center), a joint NSA-DIA activity:

[redacted] **DEFSMAC**

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The Apollo-Soyuz Test Project (ASTP) -- or Soyuz-Apollo Test Flight (SATF) if your vantage point in July 1975 happened to be Moscow -- was probably the high water mark of detente. However, the flight was also remarkable in several other less publicized aspects. First, the fact that the joint mission was ever agreed to was in itself a contradiction to past Soviet policy. The long history of Soviet reticence in discussing any details of their space programs with outsiders would have made such a joint project impossible under any other political climate. Secondly, the project's *raison d'etre* -- development of an international space rescue system -- became pointless even before the mission was flown. Finally, the much publicized aura of cooperation and mutual trust surrounding ASTP was clouded by NASA's uneasiness concerning the Soviets' candor and basic technical capabilities.

[redacted]

Selection of U.S. and Soviet Hardware

The evolution of the ASTP mission profile was also unusual. Initially, it was proposed that the joint flight should involve either a Soviet *Soyuz* crew visit to our Skylab or an Apollo flight crew visit to a Soviet *Salyut* space station. The U.S. Skylab visit was impractical because by 1972, when the joint flight began to be seriously discussed, that mission was too close to launch, and hardware modifications required for a joint mission would have imposed unacceptable delays on the program.

An Apollo visit to a *Salyut* was also discussed, and some Soviet technicians even professed knowledge of a future *Salyut* configuration that would feature multiple docking ports.

~~SECRET SPOKE~~

This tack in the negotiations terminated abruptly, however, before it got very serious. We feel it was because the *Salyut* variant of which these technicians had some knowledge was actually the military version, such as the currently orbiting *Salyut-5*. It is readily understandable that a U.S. crew visit to such a station would be unacceptable to the Soviets. The civilian version of *Salyut* carries only a single docking port and would have required a prohibitively extensive modification to accommodate another docked spaceship.

Thus, because of constraints imposed by time, hardware, and military sensitivity, it was agreed that the most practical mission to fly would be one involving only an Apollo and a *Soyuz*.

Soviets' Motivation for Participation

It is no secret that the Soviets have been something less than fully candid on matters concerning their plans and progress in most areas of manned space flight. To deny years of secrecy and obfuscation in order to join openly with the United States in a joint manned mission was undoubtedly the subject of many a heated debate within the Kremlin hierarchy. The early era of detente, however, provided fertile soil in which the seeds of ASTP could germinate. What better way to demonstrate Soviet goodwill than to open the gates of Bajkonur to their U.S. counterparts.

I submit, though, that the Soviets' motivation for participation in the project was grounded on a more basic and politically opportunistic objective.

Laying aside the political motivations, the overt objective behind the joint mission was the development of a common space docking system to enable future astronauts and cosmonauts to visit each other's spaceship both as joint experimenters and, if necessary, emergency rescue teams.

"To develop and test systems for rendezvous and docking of future manned spacecraft and stations that would be suitable for use as a standard international system" -- that was the stated primary objective of the project. Throughout the ASTP preparations, however, the Soviets steadfastly refused to discuss any forthcoming flights where it might be possible to accommodate a docking by a U.S. spaceship. Consequently, the United States dropped its plans to carry the common docking system aboard the Shuttle. It was needless extra weight on a spacecraft already near its maximum payload capacity.

Still the Soviet commitment to ensure the mission's success was impressive. Fifteen months before the scheduled joint flight, they began the first of two unmanned flights of *Soyuz* craft modified specifically for ASTP. Although the flights appeared to encounter no problems, it was not until near the end of 1974 that the Soviets told their American counterparts at NASA that *Kosmos-638* and *672* were indeed ASTP precursors. These were the first

two of six complete *Soyuz* systems the Soviets were to commit to the program.

Soviet Full-Dress Rehearsal

The two unmanned *Kosmos* flights were followed in December 1974 by the six-day *Soyuz-16* flight, a full-dress rehearsal for the joint flight scheduled seven months later. Major Vladimir Dzhaniybekov, an eager and highly skilled cosmonaut trainee and the commander of the second backup crew assigned to ASTP (there were four crews in all), fully expected to make that flight. For reasons unknown, however, the Soviets chose instead to send up the experienced crew of Colonel Anatolij Filipchenko (commander of *Soyuz-7*) and Nikolaj Rukavishnikov (test engineer of *Soyuz-10*). These two veteran cosmonauts had already been designated the first backup crew behind General-Major Aleksey Leonov and Valerij Kubasov.

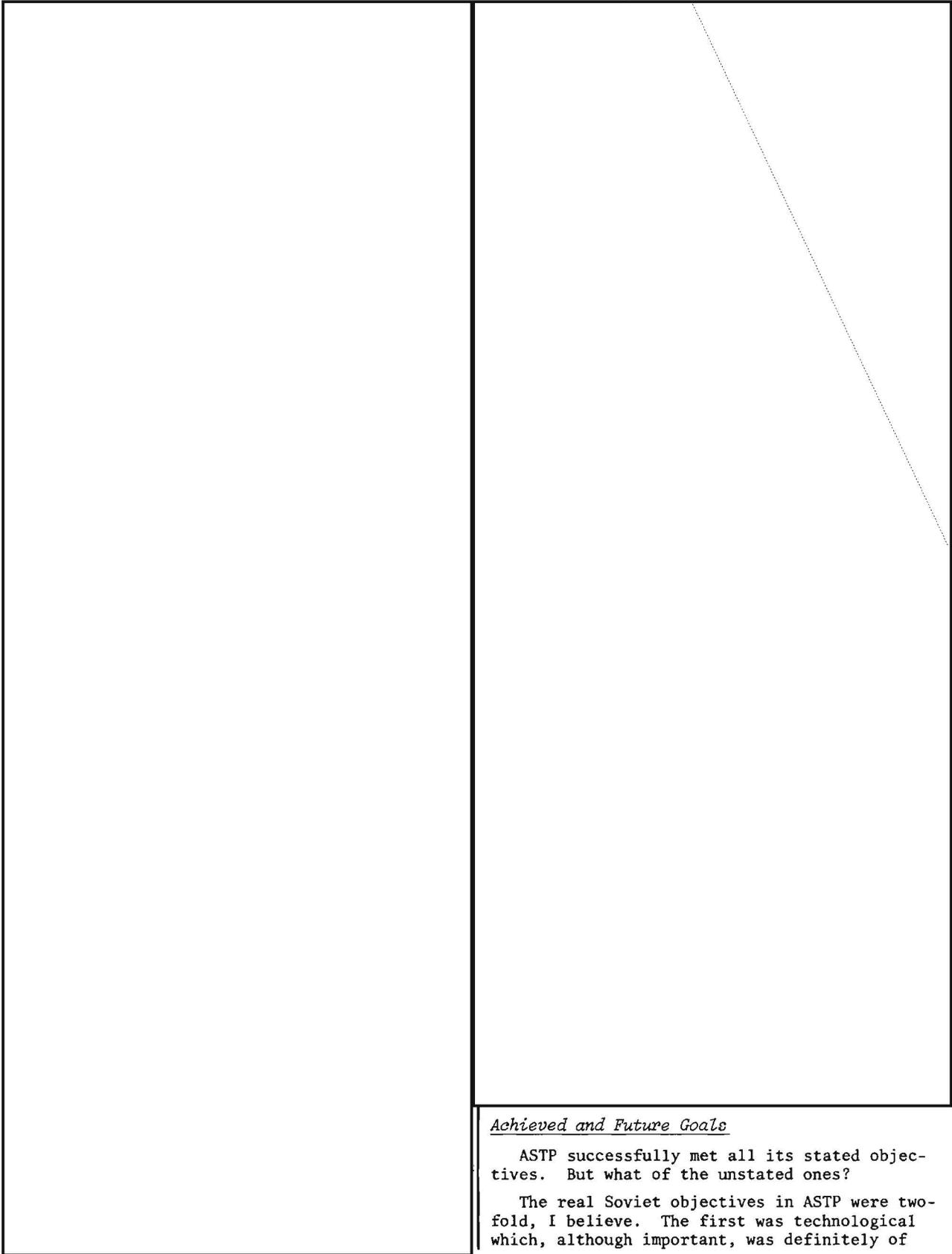
Their rehearsal of the Soviet part of ASTP was nearly flawless, but in deciding to bring back some souvenirs from the flight -- hardware which was to have been jettisoned just prior to re-entry -- the *Soyuz-16* crew made an almost fatal error. The extra weight in the descent module offset the center of gravity to such an extent that the spacecraft's re-entry control systems had difficulty coping with the problem. Extreme buffeting was the result as the craft wobbled into the atmosphere prior to landing. Because of this rookie-like stunt, Filipchenko and Rukavishnikov were visibly out of favor with their Chief of Cosmonaut Training, General-Major Vladimir Shatalov, during a joint crew training session which followed shortly afterwards in Houston.

Should the *Soyuz-16* spacecraft not have checked out satisfactorily, the Soviets had yet another precursor ready to repeat the mission. It was never flown and Dzhaniybekov's last chance to fly an ASTP-related flight evaporated¹.

The final two *Soyuz* systems in the group of six that had been built specifically for ASTP were the prime and backup craft that were each on their respective launch pads at Tyuratam on 15 July.

In contrast, the United States had one booster and one spacecraft available for ASTP -- surplus hardware from the curtailed Apollo lunar program.

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Achieved and Future Goals

ASTP successfully met all its stated objectives. But what of the unstated ones?

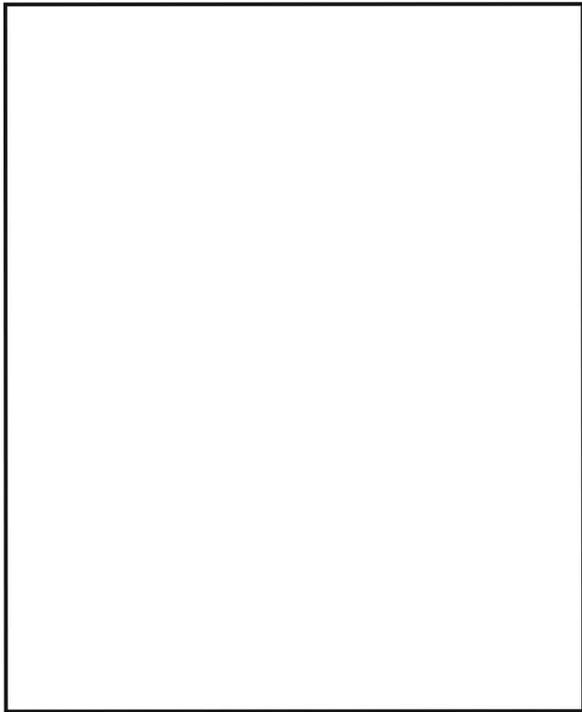
The real Soviet objectives in ASTP were two-fold, I believe. The first was technological which, although important, was definitely of

lesser significance. The prime Soviet motivation for their participation in ASTP was political. The serious and embarrassing setbacks the Soviet Union had suffered during the late 1960s and early 1970s had destroyed their image as the world's leader in cosmonautics. The Apollo program delivered the coup de grace. ASTP was a cheap and spectacular way to return to parity with the United States. At least the Soviets hoped the rest of the world would interpret it that way. The moment the two craft touched on 17 July 1975, the Soviet Union was again technologically equal to the United States. The Soviets played up the mission that way and we did little to dispel the impression.

The current *Salyut-5* space station crews will undoubtedly set endurance records which will stand for at least a decade. And what lies around the corner beyond *Salyut*? The Soviets view manned space flight not only as a spectacular advertisement for their technological prowess, but also as an integral facet of their overall military space systems development. What role or roles do they envisage for the military man in space? What is he doing there now? These are questions of signal importance to the United States and ones which we must continue trying to answer.

~~(SECRET SPOKE)~~

SOLUTION TO LAST MONTH'S
TEXTA "WORD-SEEK" by A754



~~(SECRET CCO)~~

GOOD S.R. TEST

(Continued from p. 8)

The reasons for addressing the testing problem are many, but they can affect the work force as a whole and the truly professional SRA in particular. First, if the criteria were uniformly applied, the certification of professionalization would be more meaningful to the individual. Secondly, it would let the manager know that the SRA professional working for him is not supposed to be a Shakespeare or a Newton, but an analyst who is fully qualified to do his assigned job of SIGINT reporting. Third, it might weed out those who, by chance or design, are attempting to qualify in an area in which they do not belong. And that third point brings us to the fourth and final one: it might make those responsible for the system more responsive to the actual job requirements, thus creating new career fields for attracting those who "aren't really SRAs but don't fit anywhere else."

The last point "closes the circle" by reminding the designers of the professionalization system, as well as its current administrators, that in order to test an individual it is necessary to have a clearly defined goal. In this instance the definition of that goal -- the definition of what an SRA "really is" -- should be based on what an SRA "actually does." Having the test consist of writing a report is a good start, but let's not allow complacency to set in. The present method can be improved. Moreover, the field itself can be refined, for example, by reconsidering which experience factors should be covered in the PQR. SRAs from other parts of the Agency, particularly those outside of Production, might be able to describe the functions they perform, thus widening the scope of the test or giving management sufficient cause to review the field title itself and narrow it. Whatever the outcome, if these matters are considered thoughtfully, the actions that might ensue will surely improve the caliber of the SRA professional and the quality of the intelligence produced by the Agency.

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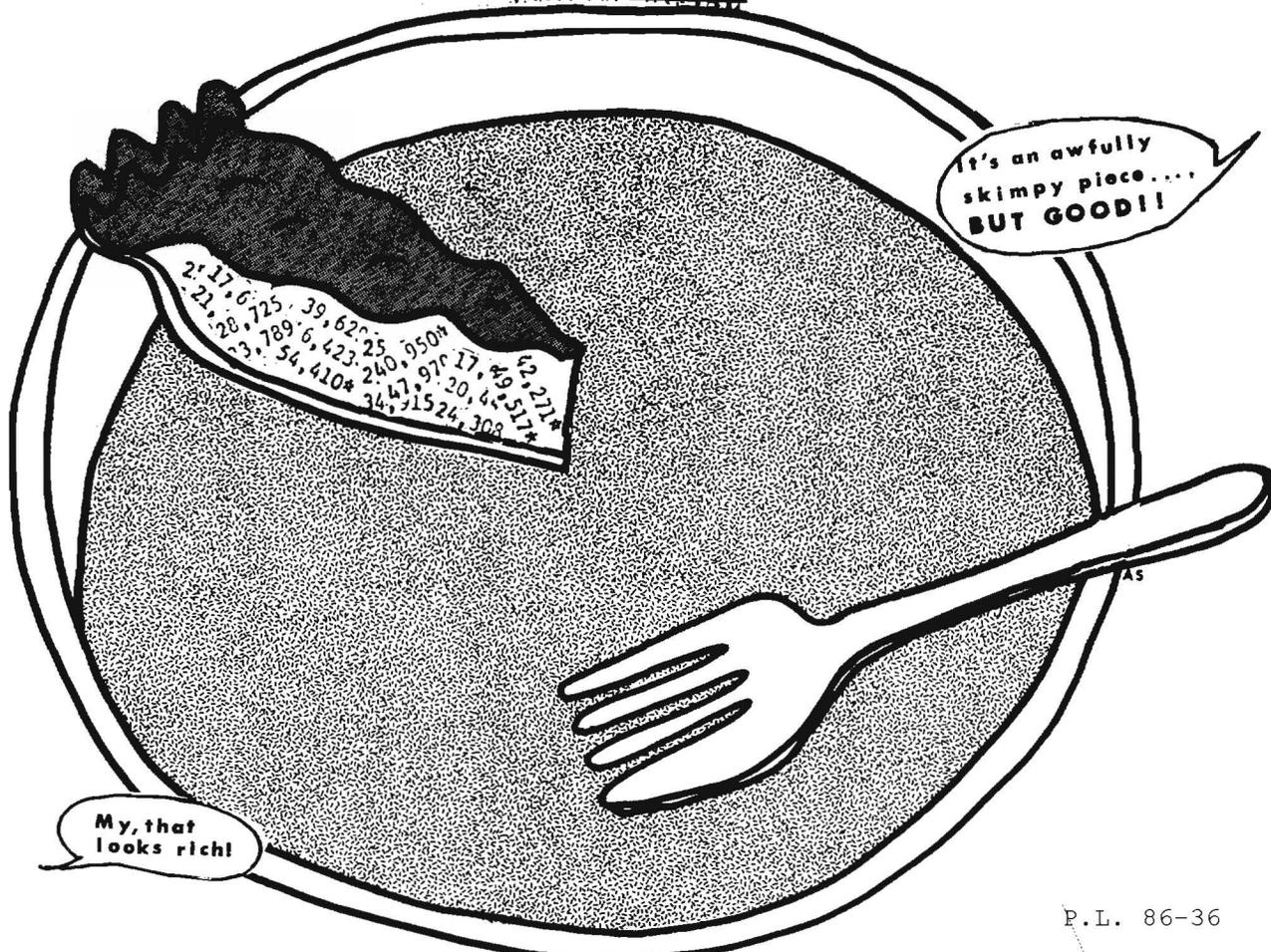
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A few days before this issue of CRYPTOLOG was submitted to the printer, Ms. Bjorklund informed the editor that the SR Panel, in response to comments and recommendations that she and others had submitted to it, had scheduled a special meeting in October. At that meeting the SR Panel (1) canceled the examination that had been scheduled for November, and (2) resolved to devise a new examination as quickly as possible, and then reschedule it.

Ed.

~~(CONFIDENTIAL CCO)~~

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LET'S GIVE LINGUISTS A BIGGER PIECE OF THE PIE!



G5

At the very heart of COMINT exploitation rests the matter of language -- or, rather, foreign languages, since our targets carry on their [redacted] affairs in their own languages. [redacted]



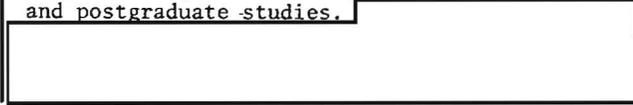
To do these things, the Agency must have trained language personnel.

Training for many, if not most, Agency tasks is a fairly short-time effort. The same does not hold for language tasks. For problems on which I have worked in the past, the desired recruit has an MA and has lived at least one

year in a foreign country in which the foreign language was the means of communication in a foreign socioeconomic culture. But what does an MA imply? For the commonly taught languages that means:

- 3 or 4 years of the language in high school (for my generation it normally meant 4 years of Latin and 3 years of a modern language);
- 4 academic years in college; and
- one or two years of postgraduate language studies.

For the more exotic languages, not normally taught in high schools, the MA means college and postgraduate studies. [redacted]



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he has to master a lot about intelligence, current affairs, the military, shipping, trade, etc., that was not covered in literature and linguistics courses and that involves specialized vocabularies.

Unfortunately, most of our recruits do not have an MA background in language on which to build. Moreover, many recruits have to be taught a new language for Agency targets and will therefore require years before becoming proficient. A rule of thumb in A Group is that it takes some 3 years before a new hire is worthy of the entering pay and is carrying his or her weight. Attaining the minimal level of professionalization -- as attested by NSA's language professionalization process -- takes about 3 years. Attaining journeyman proficiency (and this is as far as many language personnel ever progress) usually takes about 8 years of varied on-the-job experience. True language and target professionalism comes, if ever, some time after the tenth year. And those who reach that level keep on improving with age and experience.

Language is a hard and demanding taskmaster and people who are really competent in language exploitation should be rewarded for their years of industrious application. Unfortunately, many a good person in language -- often before reaching journeyman status -- switches to low-level management or to other fields in which promotions seem to come more rapidly. That switching could be eliminated if status and pay were awarded for technical competence in language processing.

Let's take a look at the NSA language field from the point of view of status and pay. According to the December 1975 issue of *The Quarterly Management Review*, our authorized civilian work force strength was 7762, with 7066 on board; the authorized civilian work force for language was 1007, with 918 assigned; and the authorized strength for professionalized language personnel is 715, with only 381 of those billets filled by professionals (the billets are not necessarily vacant -- they may be filled by individuals who are not yet professionalized). In other words, 12.9 percent of the authorized work force are language personnel. (These statistics, as language people well know, are not valid -- some language personnel, by choice or fiat, went under cover as SRs when the language field became professionalized 5 years earlier than the SR field!)

Professionalization level is at about the GG-9 level for new personnel (of course, we have GG-11s and GG-12s in language slots who reached those grades prior to the introduction of professionalism or through waivers or other methods). Therefore, since we have 715 authorized slots for professionalized language personnel, but only 381 of them are filled by professionals, we have 344 nonprofessionals in professional billets. And since we have 918 language

personnel *in toto* in assigned slots, then 537 of our language personnel are not professionals. What this boils down to is the fact that the 381 professionals should be distributed in GG-9 through GG-18 (yes, GG-18, since the career ladder for the 1200 field goes as high as GG-18 -- on paper, that is).

The grade distribution for the approximately 13 percent of the work force in language billets should logically, as an absolute minimum, reflect the grade distribution of the Agency as a whole. Let's chart that distribution and see what the fair distribution for language personnel should be:

Table 1

If the 381 professional linguists were properly promoted -- on the basis of strict criteria including a consideration of the quality and quantity of output, technical versatility within a single language or adaptability to other languages -- we would see greater stability in the NSA language field, for the following reasons:

- Linguists of all ages would stay in the language field, instead of fleeing the

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technical jobs for management or staff jobs in the hope of getting a promotion;

- Linguists who have made a career in language processing would not jump at the chance to retire at the earliest opportunity, thus taking their hard-earned skills with them;
- The current shortfall of 334 professionalized language personnel could be eliminated fairly rapidly through in-house training and OJT, plus recruitment of college hires with even better qualifications.

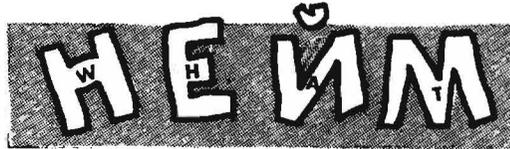
Of course, once all 715 billets are filled with professionals, then the question of promotions would come up again. In that instance Table 1 would have to be revised as follows:

Table 2

--

Inherent in the matter of promotions is the problem of equity. The data reveals that the number of language personnel working as language professionals in the higher grades is out of line to the detriment of language professionals and that a number of promotions are required to achieve job-field parity. And since those jobs are language jobs, the criteria for promotion should and must be based on language skills, competence, and performance -- and not primarily on managerial ability or happenstance, personality traits, or the application of "quotas" having nothing to do with language functions. Quantity of output can easily be tabulated; quality of output is a more difficult problem, but is still amenable to solution. The versatility factor (variety of languages in which there is a demonstrated competency, additional professionalization in other fields, research abilities, etc.) can also be reduced to numerical terms (by a language committee or board) which could be used to multiply the quantity/quality numerical figure (the QQN) -- but that's the subject of another article!

~~(CONFIDENTIAL)~~



(WHAT'S IN A HEЙM?)

R51

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Humorous papers have been written (by people like Mark Twain, who at least was paid for that sort of thing) about alleged translations from language A into language B, followed by another alleged translation (rarely by the same alleged translator) from the language-B version back into language A. Usually the final version in language A will differ, sometimes dramatically, from the original utterance.

The same kind of problem can show up, perhaps in its starkest form, in the *transliteration*, and subsequent retransliteration, of personal names. The problem is no easier if *yet another* transliteration (that is, a *third* version of the name) is involved. Thanks to the "brain drain" (or "melting pot") syndrome, this is probably the most typical case in the treatment of names in English scientific-technical text which has been translated into Russian and is then retranslated back into English.

At issue is an active area in applied mathematics known as the Monte Carlo method. The method (and its name) stemmed from work performed (largely on the atom bomb) at Los Alamos during the 1940s. The ranking Soviet "expert" on the Monte Carlo method, I. Sobol', wrote a book on the subject, an English translation of which (available in the NSA Technical Library) was published by the University of Chicago Press in 1974. The first page of the translation, in a rapid historical sketch, awards the proper credits to "the two American mathematicians S. Ulam and J. Neyman."

Neyman? I thought it was Neumann! Because one approach to the implementation of the Monte Carlo method at Los Alamos was developed, I thought, by S. Ulam (a native Pole) and J. von Neumann (a native Hungarian): But there was also, indeed, a prestigious American mathematician (also of Central European origin) named Jerzy Neyman, whose area of expertise -- statistics -- is highly relevant to the Monte Carlo method. Was "J. Neyman" J. von Neumann or J. Neyman? According to the Russian spelling, it could have been either (strangely, German *eu*, pronounced "oy" as in "boy, and *ei*, pronounced like the "y" in "my," are both transliterated into Cyrillic as ей -- pronounced "ay" as in "bay"!).

(Continued on p. 21)

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GEOGRAPHIC NAMES

Αθήνα

ATHINA
(ATHENS)

東京

TOKYO

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Defense Mapping Agency
Hydrographic Center

تهران

TEHRAN

กรุงเทพฯ

KRUNG THEP
(BANGKOK)

台北

T'AI-PEI

Москва

MOSKVA
(MOSCOW)

Reprinted. in somewhat abridged form,
from Chart N.O. 16 (N.A. - June 1973),
DMAHC, Washington, D.C. 20390

Geographic names are an important part of the information carried on maps and charts, and they are used to identify towns, lakes, rivers, and other geographical features in the same manner as personal names do for people. Everything which is of some importance on the earth's surface has a name. Names are a necessity in communication and the more distinctive a name is, the more effective it is because a name should distinguish the feature to which it belongs from all other things. Several names for the same feature or the same name for many features tends to erase the purpose of a name -- to identify. The ideal situation would be to have each feature with its own distinctive name.

The larger and more varied the name users, the more important it is to achieve some degree of commonality in the spelling of geographic names. Within the U.S. government alone, there are hundreds of people who have a daily need to use both domestic and foreign names.

World War II emphasized, especially to the military, that a geographic name should satisfy two very practical requirements. It should be able to provide positive identification and its spelling should be as uniform as possible.

Military operations are varied and involve the use of many different specialized maps and charts produced by numerous agencies.

Therefore, particularly from a military standpoint, the objective should be to provide as much standard usage as possible and to use policies that will lead to complete standardization.

The need to standardize has been compounded, since World War II, by the increase in the number of maps produced in foreign countries and the comparable increase in the quantity of foreign names used by cartographic agencies in the Federal Government.

Board on Geographic Names

More than 80 years ago, it was recognized that a good deal of confusion existed throughout the United States in the use of names in publications as well as on maps and charts. Each publishing agency had its own individual approach as to what names were used. It was also quite apparent that, without some guidance, these agencies would not change their ways unless some "standard" names were provided and then that these agencies be compelled to use them.

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President Benjamin Harrison, agreeing that some improvement was needed, established the original U.S. Board on Geographic Names in 1890 by Executive Order. The order charged all Departments to refer unsettled name questions to the Board and to accept its decisions. This was the formal beginning of the program in the United States to standardize geographic names on an official basis. Historically, the organization has changed with the times and the people. Until 1943, when it was abolished as an independent agency and placed in the Department of the Interior, this group had ruled on some 20,000 names in the United States but only 2,000 in foreign areas.

The need for foreign names increased tremendously during World War II and it quickly became apparent that we lacked the required information on names for much of the world outside of the United States. In 1943, the Department of the Interior assembled a large staff and began the mass production of standard names to meet the war needs of the armed forces. Millions of names were produced to satisfy the urgent needs of the times and were most useful to a wide range of people throughout the government.

This system of mass production, however, did not result in the required uniformity in foreign name usage and it became apparent, as postwar foreign maps and charts became available, that many of the war-produced names were already obsolete. It therefore became necessary to start anew in many foreign areas and this task was given to the present *Board on Geographic Names (BGN)* which was created by legislative action in 1947. The Public Law states that the Secretary of the Interior conjointly with the Board on Geographic Names will "provide for uniformity in geographic nomenclature throughout the Federal Government" and that the Board shall "formulate principles, policies and procedures to be followed with reference to both domestic and foreign names; and shall decide the standard name for official use."

The present membership of the BGN consists of representatives from 9 Departments and 3 federal agencies. Members are appointed to two-year terms by their respective Departments and are eligible for reappointment. On the average they serve 4 to 5 terms. The present [June 1973] member for the Navy Department is [redacted] Chief, Navigational Information Services Division, Defense Mapping Agency Hydrographic Center (DMAHC), with the author of this paper serving as deputy member.

The BGN normally accepts most foreign names in the form officially used in that country. Features that are common to two or more countries require special treatment. In these cases, the local spelling is approved along with any name that is firmly entrenched in conventional usage. The user must then make a choice where two forms are available but in the interest of standardization, these dual forms are kept to a minimum.

Over the past 25 years, the Board counts among its many accomplishments the development of a well-tested body of policies; approval of over 3,500,000 standard names; development of systems for converting other writing systems into Roman letter forms; and the establishment of a solid base for international cooperation.

Treatment of Names in the Naval Oceanographic Office

The legislative act of 1947 which established the Board on Geographic Names made it obligatory on all federal agencies to adhere to the Board's policies concerning geographic name usage. The Defense Mapping Agency Hydrographic Center has tried to comply with that obligation by editing all names on new or first editions of nautical charts and publications. The purpose of this program is to establish uniformity in the spelling of names, not only within DMAHC, but with other military users of foreign names throughout the government. Even though the navigational chart itself is a highly specialized type, it cannot stand by itself or make its own rules for the spelling of names. It is only one of a variety of charts produced by U. S. government agencies. All features that are common to these various products must be coordinated fully if they are to serve their purpose to the military.

Local Spellings

Users of nautical charts and publications have certainly recognized some of the changes that have taken place in the spelling of names used in our products issued since 1950. They have noticed that a point in France that had previously been called *Black Point* is now labeled *Pointe Noire*; that the Norwegian cape that once was called *North Cape* is now *Nordkapp*; that *Cape Farewell*, Greenland's southernmost tip, has become *Kap Farvel*; *Genoa* is *Genova*; and *Gulf of Naples* is *Golfo di Napoli*.

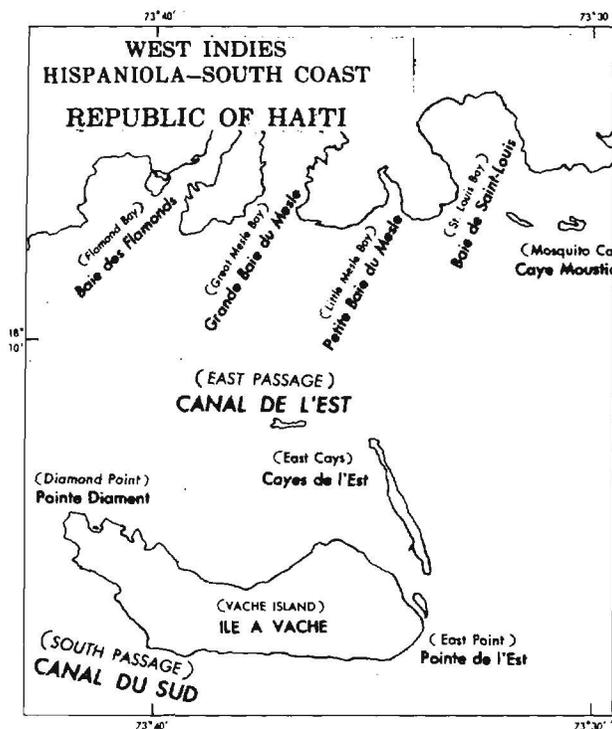
Local spellings are, basically, a movement from names that had been assigned English spellings by our early seafarers and explorers to the name now used officially in the area in which the feature occurs.

Policy requires that features that lie entirely within a single sovereign jurisdiction will be spelled as the local official sources spell them, including all diacritical marks. This means that all features lying within Spain or any of her possessions will be named as Spanish official sources spell them.

This usage of local spellings is not unique to DMAHC, but rather is the practice of all United States Government mapping and charting agencies and, in fact, followed by many non-government map makers. Our participation in this program accomplishes two things: 1) it ensures DMAHC's compliance with a basic policy of the Board on Geographic Names, and 2) it contributes to overall uniform treatment of names within the Department of Defense.

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Section of H.O. Chart 2654 (Reduced), showing former names in parentheses.

In many foreign names, however, the descriptive term is spelled in a way that is unfamiliar. How many English readers can see names such as *Punta San Marcos*, *Akra Letrá*, *Mys Navarin*, and *Cap Dra* and readily understand the type of feature to which these names apply? All of them contain words (*Punta*, *Akra*, *Mys*, and *Cap*) which have the English meaning of cape or point and, standing alone, have no obvious meaning to us.

In order to make these terms more meaningful, a glossary is prepared and carried on our charts. A glossary, in this case, is a tabular listing of foreign descriptive terms used on that particular chart with their equivalent meanings in English.

English	Arabic	Japanese	Indonesian	Spanish
Cape	Ra's	Hana	Tandjung	Cabo
Bay	Khawr	Wan	Teluk	Bahía
Island	Jazirat	Shima	Pulau	Isla
Mountain	Jabal	San	Bukit	Monte
Strait	Báb	Kaikyō	Selat	Estrecho
Gulf	Khalij	Gaiwan	Teluk	Golfo
Lake	Buhayrah	Ko	Danau	Lago
Shoal	Ruqq	Iwa	Beting	Bajo

Glossary of English geographic terms with their equivalents in other languages

The spelling of a foreign name as used locally provides only one spelling for the user which, in most cases, is usable to people outside the area. If standardization in the spelling of foreign geographic names is one of our major objectives for military use, then one spelling is preferable to a choice of spellings. This eliminates making a choice of one of the multiple forms available for a feature and delegates these variant spellings to a secondary position. For example, if *Iō Jima* is the official form, then the use of *Iwo Jima*, *Naka Iwa*, *Sulphur Island*, and *Iwo Shima* (all of these have been used for this one island) would be limited to parenthetical usage.

By using local spellings, words and symbols new to the English language are introduced, which require some explanation.

Glossary

Practically all names for natural (physical) features include a descriptive part (generic) that tells what the feature is. In English geographic names, of course, descriptive words are easily recognized -- *Lake Erie*, *Rocky Mountains*, and *Hudson Bay*. In fact, we have accepted and become accustomed to many foreign terms in some other names that are in common usage -- *Fuji Yama*, *Rio Grande*, and *Loch Lomond*. These examples all contain foreign words (*Yama*, *Rio*, *Loch*) and none of these cause us any difficulty.

Diacritical Marks

Diacritical marks are common to many foreign names but are not required in the English language. A diacritical mark (often called an accent mark) can be defined as a modifying mark near or through a letter which indicates a value different from an unmarked letter. These marks form an integral part of a foreign name and are

Arabic	Ā		Ḥ	Ḥ		
Danish	Ǽ	Æ				Ø
French	À	Â	Ç	É	È	Ê
German	Ä	••			Ö	Ü
Persian	Ā	Á		Ẓ	Ẓ	Ẓ
Polish	Ą		Ł			Ż
Spanish	Á			Ñ	Ó	
Turkish	Â		Ç	İ	Î	Ş

A few examples of diacritics (some as normally occurring in languages with Roman alphabets, and others as occurring in transliterations from non-Roman alphabets). (Danish Æ is a "ligature.")

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necessary if the name is to be linguistically correct.

Århus, München, İstanbul, Kólpos Irakllou, and *Mogambique* are examples of names using diacritics.

As stated earlier, policy requires that we include these marks in the spelling of foreign names. It is our duty, therefore, to reproduce local names with as much fidelity as is allowed by the equipment available to the printer.

Romanization

The use of local forms in countries where the Roman alphabet is used presents no problem, for we can copy names directly from their maps and charts. But, what of areas where other than our Roman alphabet is used? How do we copy from Japanese, Russian or Greek sources? Geographic names, from these non-Roman areas, are of no use to us unless they can be written in our own familiar letters. These languages that use other writing systems must be reduced to our writing system and procedures had to be approved for getting this done.

The Board on Geographic Names, in standardizing the names for features in these parts of the world where non-Roman writing systems are used, employs Romanization systems to produce consistent results.

By Romanization we mean any method of transferring names from one language to another, in which each particular letter or graphic sign in the original language is consistently represented by one and the same letter or combination of letters in the second language.

There are upwards of 23 Romanization systems currently approved by the Board on Geographic Names. Most of these systems approved by the Board have also been agreed to by the Permanent Committee on Geographical Names for British official use.

<u>English</u>	<u>Arabic</u>	<u>Bulgarian</u>	<u>Hebrew</u>	<u>Laotian</u>
B	ب	Б	ב	ບ
D	د	Д	ד	ດ
F	ف	Ф	פ	ຝ
K	ك	К	כ	ກ
L	ل	Л	ל	ລ
R	ر	Р	ר	ຣ
S	س	С	ס	ສ
T	ت	Т	ת	ຮ

Roman alphabet letters with corresponding non-Roman symbols

Conventional Names

We have discussed, in general terms, how the bulk of our names are treated. There is a group that remains, however, that uses what we call *conventional* spellings. A conventional name is one that enjoys widespread usage by readers of English and is commonly applied to a geographic feature.

Names for international features will carry BGN-approved conventional forms. An international feature is one that is common to two or more sovereign nations or one that extends beyond a national jurisdiction.

Included in this category are international water bodies, high seas and subordinate parts, and passages which can be used by all ships without any national restriction. The commonly accepted names *Mediterranean Sea, English Channel, Sea of Japan,* and *Mozambique Channel* are preferable to any one of the numerous local spellings available from countries bordering on these features.

Names for those physical features which coincide with or cross international boundaries also demand conventional usage. Before the *Danube River* reaches the Black Sea it flows through or forms the boundary between several countries. None of the local names available can be given preference and the English spelling is used -- *Danube* (with a local spelling in parentheses, if needed). Likewise, *Caspian Sea, Sahara,* and *Pyrenees* are also examples of physical features that form or cross international boundaries.

Conventional usage is also preferred for countries. *Suomi* has no serious objection to our calling her *Finland,* nor does *Ellas* or *Italia* for our usage of *Greece* and *Italy.* Nor do we really concern ourselves that the French call us *Etats-Unis d'Amérique,* or that the Swedes call us *Förenta Staterna.*

The BGN has approved, for most countries, both a long and short conventional spelling, for country names -- *Australia* or *Commonwealth of Australia* and *Norway* or *Kingdom of Norway.* With few practical exceptions, the *short forms* (*Australia* and *Norway*) will be used on our products. Where no short form exists, as in the cases of *Dominican Republic* and *Central African Republic,* then the long form must serve for all purposes.

Summary

In review, names currently used on nautical charts and publications are the result of specific policies and are treated according to the following rules:

- Names for geographic-features lying entirely under one sovereign jurisdiction will take the spelling used by the local authority -- *Venezia* (*Venice*), *Islas Canarias* (*Canary Islands*).
- All names for features in countries using the Roman alphabet will be accepted in the

unaltered form, including accent and diacritical marks -- *København (Copenhagen), Gdańsk (Danzig)*.

- Names for features in countries not using the Roman alphabet will be written in Roman letters through the use of an approved Romanization system.
- All descriptive terms used in a foreign language shall remain in that form and shall not be translated -- *Cabo not cape, Bahta not bay, Ostrov not island*.
- Names for international features, extensive geographic names, oceans and their international parts, and countries will be in the conventional English usage -- *Sea of Japan, Brahmaputra River, Andes*.
- If names for undersea features that lie beyond territorial limits contain any descriptive part, that part will be translated and spelled in the English form -- *Ryofu Seamount not Ryofu Kaizan, La Chapelle Bank not Hauf-fond de La Chapelle*.

Note: Dual names may be carried in cases where an additional spelling in parentheses would be helpful to the user.

It is apparent, however, that complete standardization on our products will not be accomplished quickly. It may, in fact, be a very slow process.

There are good reasons for this lag. It must be remembered that geographic name usage is dynamic, ever-changing, especially during the period of world nationalism and nation-building. New nations are born and the inhabitants want their place names to reflect this changed status. With the realization of this situation, coupled with the fact that a relatively small number of new and first editions of charts and publications are issued each year, one can see the deterrents to immediate standardization. Some charts do reflect a reasonable amount of consistency because of a special effort (all charts in the area having been processed at the same time) or because they cover areas of political stability. Progress is being made and, hopefully, our goal for standard pelling of names will be attained.

International Standardization

As the globe gets figuratively smaller, more and more names that have had different spellings come into more common use. There are thousands of names for geographic features throughout the world that are not always spelled the same way. The use of numerous languages, dialects, and writing systems results in many of these differences although others are the result of a lack of uniform treatment at the national level. Effective communication calls for an effective means of identifying places. The lack of order in the spelling of names can be considered as a contributing factor to any problem that has developed in worldwide communication.

Very few international rules for the treatment of names have been approved and implemented. Basically, some countries, and in many cases each agency within a country, have attempted to apply their own rules for the application of names outside their immediate area of interest. The problem, simply stated, is to apply some policy whereby a chart maker in Washington and one in Oslo will be able to arrive at a common name used to identify a specific geographic entity so that the navigator using either chart will have the same name for each feature and will not be confused by different spellings.

The Board on Geographic Names has always sought the advice and cooperation of foreign governments and of people living abroad who may have an interest in geographic names. Many foreign governments have also established a national names authority and others are in the process of doing so. Correspondence between these groups and the results of some of the Board's work has been influenced by these inter-governmental discussions. For example, the first conference of the BGN with its British counterpart, the *Permanent Committee on Geographic Names (PCGN)*, was held in 1947 at which agreement was sought and reached on a Romanization system for the Russian language. This proved to be the beginning of a fruitful series of conferences which have resulted in a common United States/United Kingdom approach to the treatment of geographic names for many areas.

Numerous other international organizations have recognized and taken some action to reduce the discrepancies that exist in the spelling of names. As long as 100 years ago, the *International Geographic Union* became aware of this problem and since that time many additional technical and professional organizations have expressed concern. The interest expressed through some of these groups to the United Nations resulted in a proposed program for name standardization. A favorable response by UN members to the proposed program, plus the work of some dedicated scholars who realized the practical importance of such a program, led to the first UN conference at Geneva in 1947 and the second at London in 1972.

Fifty to sixty countries and 12 international organizations have sent representatives and observers to the Conference. The delegates, most of whom exhibited a high degree of technical competence, discussed at length the many aspects in the treatment of names and expressed a sincere interest in solving these problems.

The purpose of this first international Conference was to place some emphasis on the problems common to all countries, to understand those problems unique to individual countries, to consider why there is disagreement, and what can be done about it.

The accomplishments of this Conference included a common understanding of the problem, awareness of the points of agreement, the de-

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velopment of a spirit of cooperation, and the formation of machinery to promote international cooperation. Recommendations included the holding of regional meetings, the convening of a second conference and the formation of a permanent group of experts to provide continuity and carry on the momentum achieved at Geneva.

It was also recognized at Geneva that before much progress can be made at the international level, each country must first standardize its own names. The establishment of a national names authority and the publication of its own names in official standard form are basic to national standardization. Then, assuming that the approved names would be spelled as used locally, these official names would provide standard spellings for use by other countries using the same writing system and would establish an excellent base to proceed on to international standardization.

One of the international organizations in which DMAHC is an active participant is the *International Hydrographic Bureau (IHB)*. The IHB, with headquarters in Monaco, is composed of member states representing hydrographic offices throughout the world. Its purpose is to promote the navigational safety of the mariner. Its member states have recognized and reaped the benefits of the standardization of information carried on charts and publications. The IHB has also recognized, since its beginning in 1921, the advantages of a uniform treatment of names on these hydrographic products. The recommendation was made in 1947 that *consideration be given to the adoption of a uniform policy for the handling of names on nautical charts and publications*. Members voted approval of a series of recommended procedures for the spelling of geographic names on charts and publications that covered both domestic and foreign coasts. The gradual implementation of these procedures by the now 42 member states would contribute greatly to international standardization. The continuing interest of the IHB bodes well for the program and the publication of any international charts could provide an excellent vehicle for a concentrated effort in that direction.

The interest and cooperation shown by the IHB and other scientific and technical groups is proof that a practical worldwide program exists and that there is a dedicated nucleus of people interested in a solution. International interest has been generated as a result of the UN conferences and other work being done by the IHB and other organizations. Greater interest and participation will quicken the solution to many problems and hasten the day when standard spellings may be used for many geographic names throughout the world.

Letter to the Editor

To the Editor, CRYPTOLOG:

Well, the inevitable has happened. Personal to "Annoyed": Thank you for your letter. As has been pointed out several times in CRYPTOLOG (see reprinted reminder below), we can print anonymous contributions or those with a pseudonym, but only if the identity of the writer is known to the editor. If you prefer, you may identify yourself to the Publisher, Mr. Lutwiniak. But, in either case, please do identify yourself so that we can print your letter -- we get so few, we like to print all of them. Ed.



Want anonymity? A thoughtful piece on a subject of interest to many readers will be considered for anonymous publication, if the writer requests it. (The writer must, however, identify himself to the editor in an accompanying note or by a personal call.) Needless to say, personal or trivial complaints will not be considered.

Respectfully,
"Annoyed"

НЕЙМ (Continued from p. 15)

It took me some 15 minutes of research in the NSA Technical Library (which, good as it is, probably is less adequate than that of the University of Chicago) to prove to my satisfaction that Нейман-Улам does indeed refer to the (von) Neumann-Ulam method.

For what it's worth, the *mathematics* in the Sobol' translation is quite adequate -- it's only that the three translators were just less than adequate in their handling of such mundane matters of fact as the correct identification of a human being. There's probably a moral somewhere in there.

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Where's the Index?

If you're looking for the Cumulative Index that has traditionally (that is, for the past two years) appeared in the December issue, don't you remember that the Index is being printed separately from now on? The September 1976 issue of CRYPTOLOG, p. 2, included an order blank for ordering a copy of the 1974-1976 Cumulative Index. In case you missed it, here it is again:

TO: P1, CRYPTOLOG

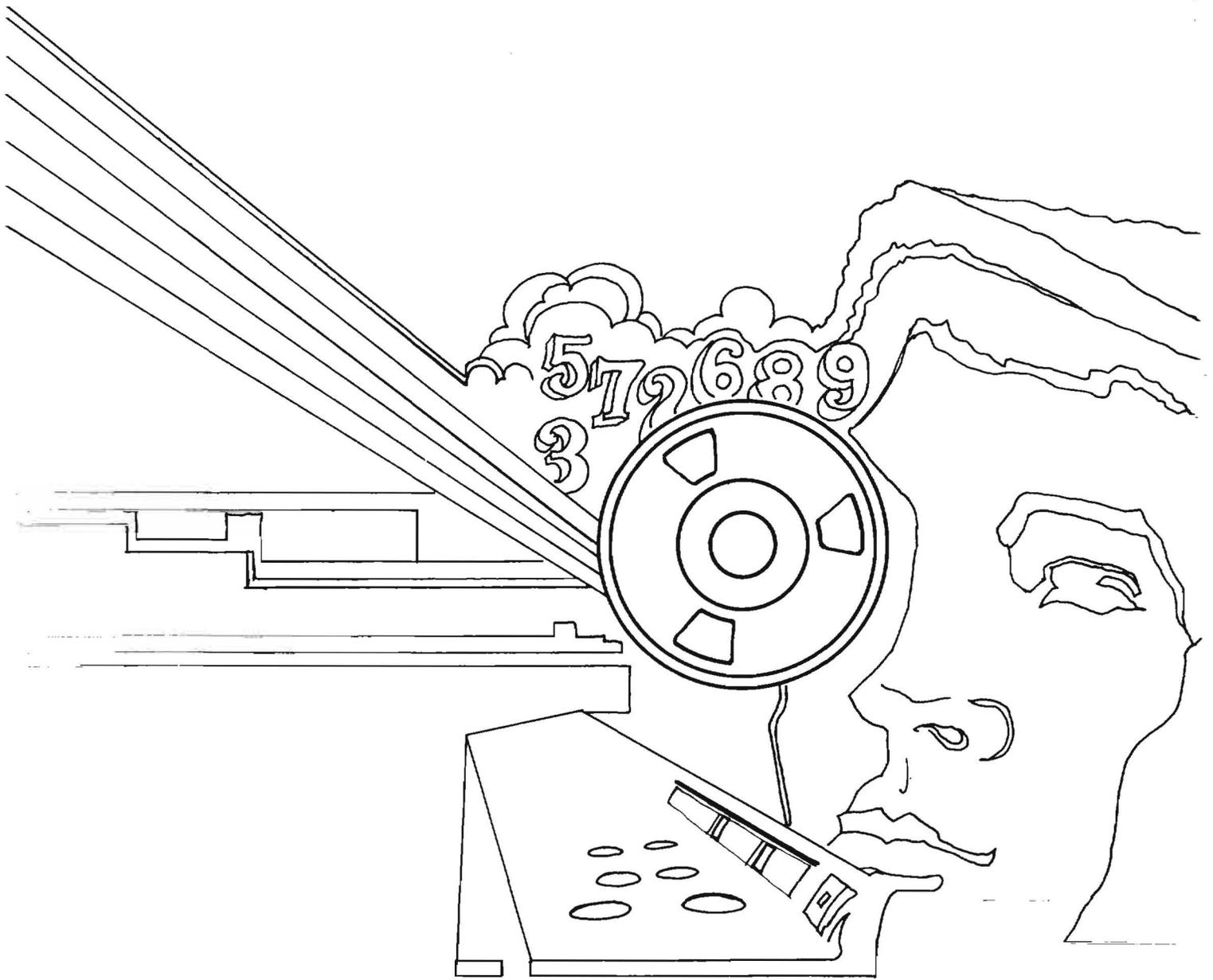
Please send _____ copy/copies of the CRYPTOLOG Index to:

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