The Planning of Libraries for Military Research Establishments

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THE NEED FOR SCIENTIFIC AND TECHNICAL RESEARCH as an adjunct to military activity has long been recognized and implemented. The function of libraries as a vital part of this research is also well established. Less well established are the subtle differences that exist between libraries serving military and those serving nonmilitary research organizations. With the current acceleration of military research both within the government and through government-let contracts, the need for defining and recognizing these differences is becoming increasingly important.

The function of libraries in military research. Libraries may be defined, in general, as organized depositories for published information. In the case of libraries serving military research organizations three additional features must be added to make the definition complete. The first is expedience. Libraries serving military research organizations are required to render more extensive and more rapid service than is usually expected of other libraries. Accordingly, the military research library must be carefully arranged both physically and staffwise. Its layout must be such that the published information it contains can be made available on a moment's notice. The professional staff must be technically trained so as to be able to understand the problems at hand and to ferret out, with dispatch, the information necessary to solve them.

A second characteristic of military research libraries is their tone. Military research is usually conducted on a "task" basis, with definite products or goals in view. For this reason the libraries, as a rule, are "tight" collections, containing a minimum of purely scholarly material and concentrating on recent works that are directly related to the problems at hand.

The third feature that differentiates the military research library from the general run of libraries is security. In addition to books, periodicals, and pamphlets, the library contains specially prepared documents relating directly to the activities of the organization it serves. Many of these documents have security classifications, and hence cannot be circulated or stored in the usual manner.

Related to the matter of security is the fact that classified documents are not catalogued according to standard procedures. Thus, whereas the work of the average library cataloguer is simplified through the use of printed Library of Congress catalogue cards, which analyze literature, suggest subject headings, and furnish complete bibliographic data, the cataloguer of classified material must do his own analyses, classifications, and abstracts.

There is at present a movement in this country to standardize the cataloguing and abstracting of classified literature. Representatives of the National Advisory Committee for Aeronautics, the Atomic Energy Commission, the Navy Research Section of the Library of Congress, and the Central Air Documents Office of the Air Materiel Command are considering methods for bringing about such a standardization. This Group for the Standardization of Information Services has developed a standardized printed card denoting the issuing agency, author, and title, and containing an abstract, with suggested subject headings for indexing and cataloguing.[2]

Physical layout and costs. There are two methods of handling the physical aspects of the security problem in establishing facilities for a military research organization. One possibility is to set up two distinct libraries, or *types* of libraries—one for fundamental research, containing all unclassified literature, and the other containing classified documents. One library would be physically separated from, and administratively independent of, the other. Each would have to be completely staffed and completely indexed. Many military research establishments maintain such a dual library setup.

A second possibility is the establishment of a physically and administratively combined classified and unclassified library, with special precautions to insure availability and circulation of classified materials to authorized personnel only. Recently there has been a trend toward this combined type of literature-handling operation.

The reason for the increasing preference for combined libraries is quite evident. Jorgensen and Carlson (*1*) estimate the basic cost of establishing a technical library serving a staff of 400 people to be $47,500 for books, periodicals, equipment, and supplies, and $25,000–$30,000 for salaries, during the first year of operation. They estimate annual operating costs after the first year to be $8,000 for books, periodicals, equipment, and supplies, and $20,000 for salaries.

[1] Operating under Contract NOrd 7386 with the Bureau of Ordnance, U. S. Navy.

[2] A permanent agency, the Armed Services Technical Information Agency (ASTIA), has been proposed to perpetuate the work of the unofficial Group for the Standardization of Information Services.

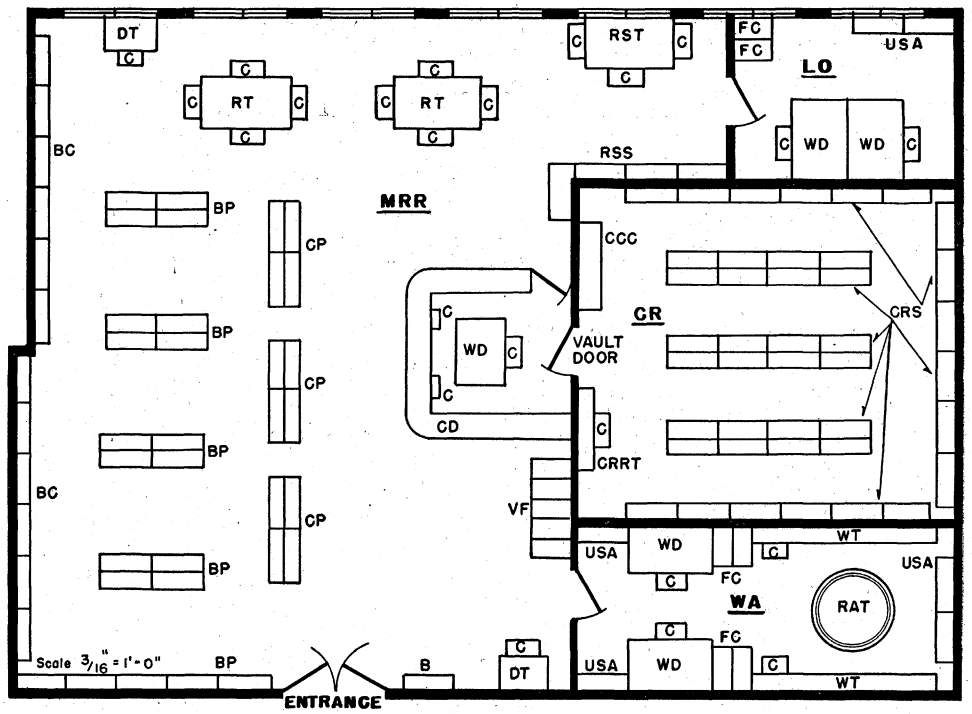

FIG. 1. A combined fundamental research and classified document library. Physical features are as follows: Browsing Collection (*B*); Book Collection (*BC*); Bound Periodical Collection (*BP*); Chairs (*C*); Card Catalogue (*CC*); Classified Card Catalogue (*CCC*); Charge Desk (*CD*); Current Periodical Collection (*CP*); Classified Reports Area (*CR*); Classified Reports Readers' Table (*CRRT*); Classified Reports Shelving (*CRS*); Dictionary Tables (*DT*); Filing Cabinets (*FC*); Librarian's Office (*LO*); Main Reading Room (*MRR*); Revolving Assembly Table (*RAT*); Reference Section (*RSS*); Reference Section Table (*RST*); Readers' Tables (*RT*); Utility Shelving Areas (*USA*); Vertical File (*VF*); Work Area (*WA*); Work Desks (*WD*); Work Tables (*WT*).

Eliminating $41,500 (the estimated cost of books, bound periodicals, and current periodicals) from the basic investment, since most classified literature may be obtained without cost, there remains a required first-year expenditure of $6,000 for equipment and supplies,[3] and $25,000–$30,000 for salaries. Eliminating $7,500 (the cost of new books and yearly periodical subscriptions) from the annual operating costs, we have a total of $25,500 a year needed to operate an independent document library. Thus a military research organization having a total staff of 400 people would be faced with an initial outlay of $97,000–$107,500 and an annual outlay of $53,500 if it chose to maintain separate basic research and classified-document libraries.

Aside from the need for an additional, technically trained abstracter and cataloguer to assist in the slow and difficult process of indexing and abstracting new book, periodical, pamphlet, and classified-document acquisitions, it is entirely possible to operate a combined library of the approximate scope outlined above with the staff required to operate either a classified-document or a basic reference library. This would mean an annual saving of approximately $15,000 in salaries alone.

A combined classified and unclassified library. The illustrated floor plan[4] for a combined basic reference and classified document library (Fig. 1), based on a proposed solution to an actual library problem, is smaller in the scope of its book and periodical collections than the hypothetical library outlined above. Although intended to serve a scientific and technical staff of 300–400, the plan presupposes the proximity of larger, more complete technical reference libraries and a fairly heavy traffic in interlibrary loans. It also assumes a culling policy that will keep the size of the collection reasonably static, and a deposit library for the storage of culled materials. In the absence of adequate neighboring libraries, an active interlibrary loan program, or a culling policy, it would be necessary to enlarge the facilities proportionately.

The floor plan is designed for a collection of 3,100 books, 2,400 bound periodicals, 250 current periodical subscriptions, 2,160 pamphlets, and 57,000 classified documents, with space for approximately 15 readers. Standard library shelving is used for both the classified literature in the vault (*CR*) and the unclassified collection in the main reading room (*MRR*). Besides being neater, the storage of documents on shelves rather than in file cabinets has the double advantage of allowing large numbers of items (approximately 65–80 per linear foot) to be accommodated in a com-

[3] Current price increases in library equipment and supplies may raise this figure considerably.

[4] The authors are indebted to Doris Rubenfeld, who prepared the plan.

paratively small floor area and, at the same time, of diffusing the floor load. Pamphlets, special bibliographies, tear sheets, etc., are kept in a vertical file, which consists of five four-drawer file cabinets.

The plan also includes an area (*WA*) for the assembling and distribution of classified documents produced by the organization served by the library. This fundamental publishing activity is fairly common among military research establishments, but it is not an intrinsic part of library activity and might well be made a function of another division of the organization, such as the mailing department.

The estimated initial costs of implementing a library of the size and scope projected are as follows: Books, bound periodicals, and current periodical subscriptions, $41,375; equipment, furniture, and supplies, $9,956; salaries, $27,550. After the first year, operating expenses would be: New books (500 at $5.00), $2,500; periodical subscriptions (250 at $7.50), $1,875; binding (300 volumes at $3.00), $900; supplies, $750; salaries, $23,550.

Staff requirements. Initially, the staff requirements of the combined library would be as follows:

1) A *chief librarian* to administer the whole operation, determine policy, select new acquisitions, and to initiate and supervise literature searches as they are required.
2) An *assistant chief librarian* to administer the business operations of the library, assist in the supervision of the library and its related document-assembling and distribution activity, and to perform literature searches.
3, 4) Two *cataloguer-abstracters.*
5) A *desk attendant* to supervise circulation of the classified and unclassified collections, maintain circulation records, and to answer simple reference questions.
6) A *clerk-typist* to assist the cataloguer-abstractors, and to order and type catalog cards and process books and reports.
7) A second *clerk-typist* to furnish general clerical and stenographic assistance to the professional staff of the library.
8, 9) Two *clerks* to assemble and distribute classified documents and to render general assistance.

At the end of the first year it would probably be possible to operate the library with one less cataloguer-abstracter and one less clerk. In a library operation of this size, interchangeability of personnel is a primary prerequisite. All must be adaptable and thoroughly familiar with the day-to-day activities of the group.

General considerations. In addition to the monetary considerations discussed above, there are two factors to be weighed in deciding on the advisability of a unified library as opposed to separate classified and unclassified libraries. Often, in searching the literature for technical information, it is difficult to predict whether this information will be classified or unclassified. The presence of both collections in a single area, manned by a single staff acquainted with both, makes for a much simpler and more efficient situation than exists where there are two libraries with two staffs in two different parts of the research establishment. On the other hand, in large organizations, where military research is but a minor part of the total activity, the two-library setup is definitely indicated, because only a part of the total staff will have the security clearance necessary to see and use the information contained in classified documents.

Reference

1. JORGENSEN, W. E., and CARLSON, I. G. *Science,* **112**, 736 (1950).

Technical Papers

Technetium in the Sun[1]

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A sufficient quantity of element 43, technetium, has been isolated at Oak Ridge National Laboratory to permit the observation of the first and second spectra of this rare element. The description of these spectra has recently been published by Meggers and Scribner (*1*). It is therefore possible to remove this element from the category "Insufficient Laboratory Data" for identification in the sun (*2*), and to search for the leading lines in the solar spectrum.

In the Tc I spectrum there are three conspicuous low level lines that should be present if this element is represented in the solar spectrum. The *raie ultime* is masked, and the other two lines are absent. Because all strong lines of Tc are widened by hyperfine structure, concentrations less than 10^{-7} cannot be detected spectroscopically. The data for the leading lines are given in Table 1. The laboratory material is arranged in the form adopted by the writer in her *Multiplet Tables* (*3*). If Tc I is present, it is extremely faint—too weak to be detected spectroscopically in view of the unquestionable presence of Cr I at 4297.050 A, which masks the *raie ultime.*

By analogy with related elements in the periodic

[1] The inspiration for this note has come from W. F. Meggers, who generously furnished in advance of publication his manuscripts containing both the description and preliminary analyses of the Tc spectra. H. N. Russell has also taken a keen interest in this question, and estimated a reasonable value of the half-life of a long-lived isotope of Tc. The writer is greatly indebted to both for their very helpful suggestions and cordial collaboration.