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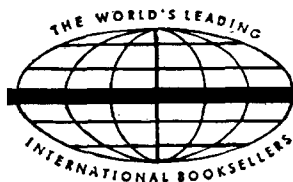
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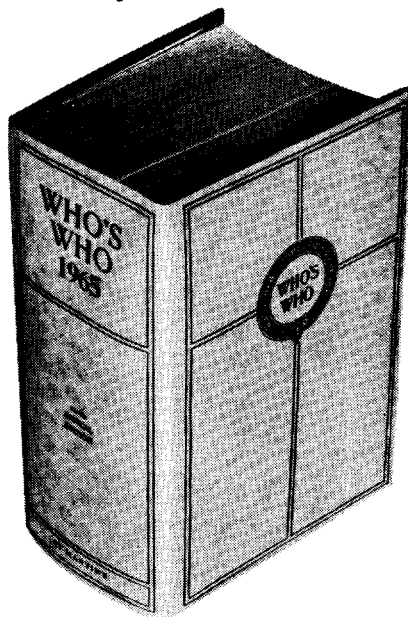
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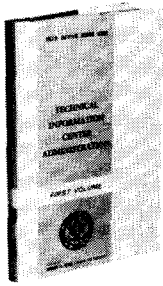
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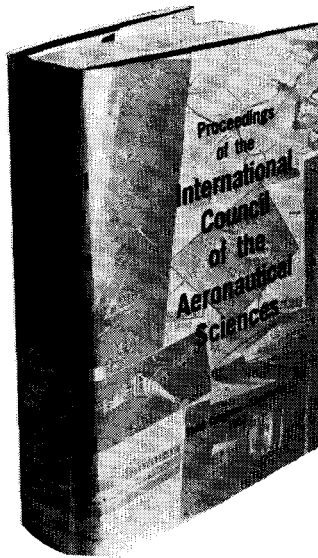


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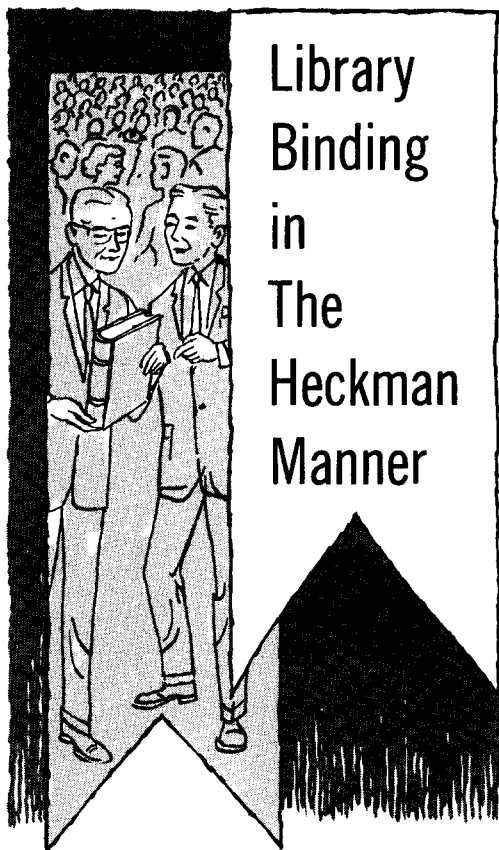
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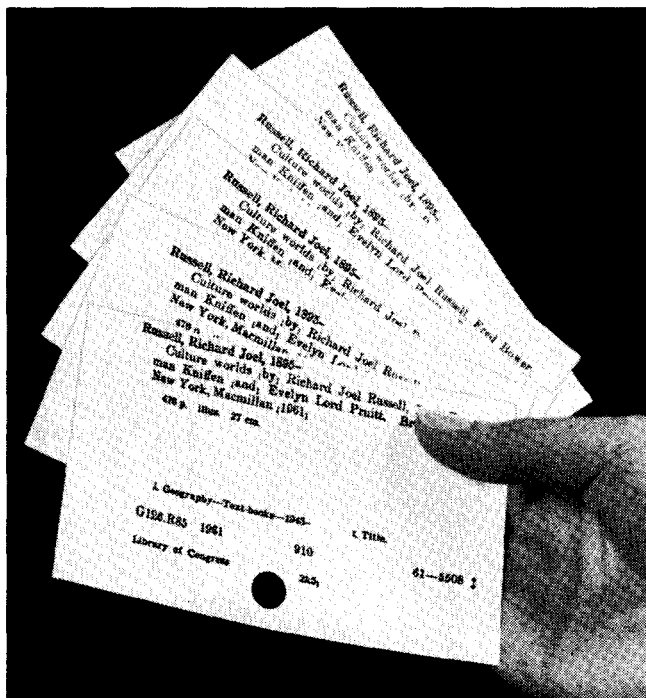
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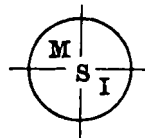
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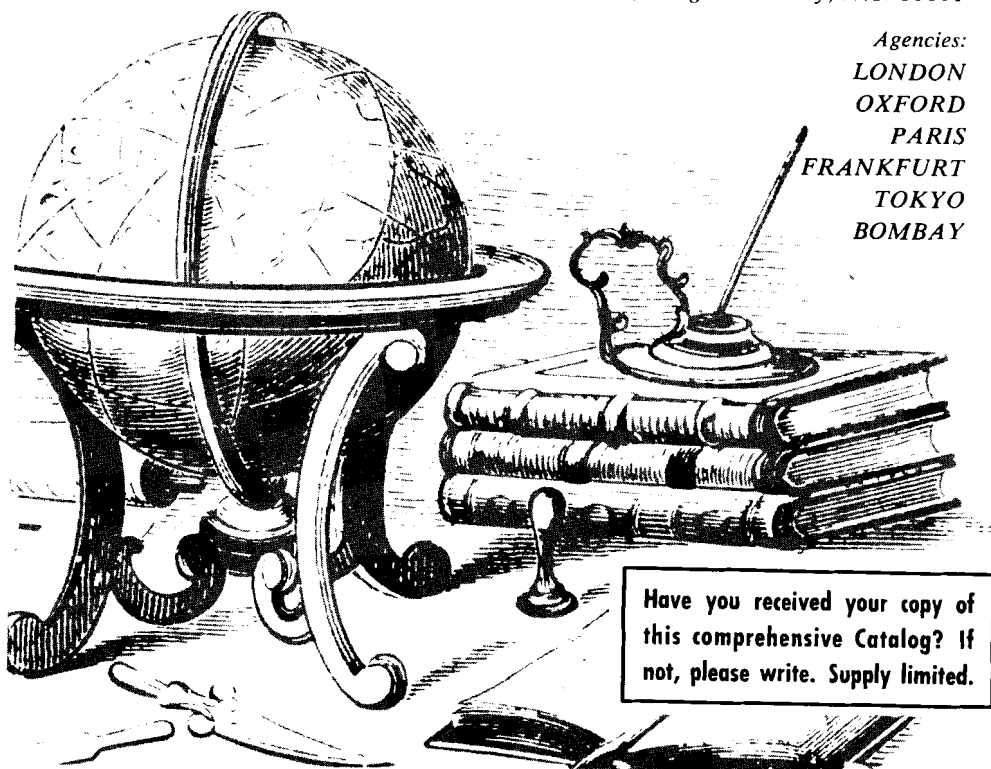
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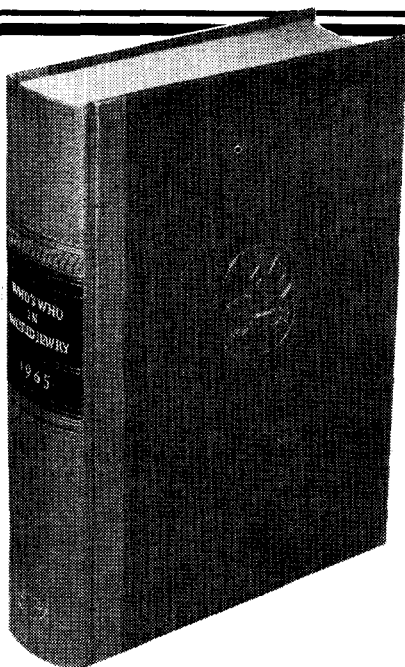
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Why a Metals/Materials Division

THE METALS SECTION of the Science-Technology Division of SLA was formed in 1949 by a small group of librarians then working in metals libraries. The objectives of the Section, as stated in the bylaws, were substantially the same as the Division's are today, i.e., "The objectives of the Division shall be to advance the arts and sciences relating to the collection, organization, and utilization of recorded knowledge in the fields of interest of its members; to advance the standards of its members and the technical library profession; to further the education of its members; to promote acquaintanceship with other members and with allied librarians and technologists; and to broaden the usefulness of the special library profession as exemplified by the Special Libraries Association."

At the annual meeting of SLA in Toronto in 1953, the Metals Section became the Metals Division. From the original small group of metals librarians, the membership of the Division has now grown to over 245 individuals representing libraries in most of the major metallurgical companies as well as allied organizations, governmental libraries, and special collections in universities and public libraries.

Early in its history Section members felt a need for new information in their prime subject area of metallurgy. Thus the idea of an Annual Fall Meeting was born. By having metallurgical papers presented at such a meeting, the papers sponsored by the Division at the Annual Association Convention could be devoted primarily to professional librarianship. One of the main strengths of the Division has been the continuation of the Fall Meetings with threefold benefits: **1)** an opportunity for the technical growth of its members; **2)** an opportunity, in addition to that during the Annual Convention, to exchange shop talk with others working in like organizations; and **3)** an opportunity for the officers of the Division to meet more than once during the year to conduct the Division's business.

Recently the Division has been discussing its own future and the need to reflect in its operating concepts and objectives technological changes. The complexity of interdisciplinary interests makes it impossible for us to maintain a narrow interpretation of metallurgy as the scope of our divisional activities. The subject boundaries are rapidly evaporating and the fringes are mingling together. Many of our member companies are changing their corporate image to cover industrial interests in materials. Thus the Division's deliberations resulted in a desire to encompass similar changes by adoption of a new name. The papers in this issue are designed to explain the reasons for this change and to indicate to the other members of the Association why our membership feels a need for the Metals/Materials Division.

Robert W. Gibson, Jr.
Guest Editor and Chairman, Metals Division, 1958-59



Metals? Materials?

ELSIE RAY



Richard Cassar

DURING THE PAST 15-20 years a multi-based discipline has emerged—one that integrates the concepts of physics, chemistry, metallurgy, and mechanics—one that considers the properties of materials from atomistic, electronic, and structural relationships, rather than from groupings of classes of materials. This new discipline has come to be called materials science. Application of the knowledge of materials science to specific situations is, of course, materials technology.

This change has created a whole new set of problems for the scientist, for the engineer, and for the librarian—problems in perspective, problems in approach, and problems in handling the literature. This is happening at a time when the flood of literature has made keeping aware of the state of affairs in a specialized field an almost superhuman task. As the need has grown for an ever broader perspective, the problem of coping with sheer physical bulk has, on the other hand, accelerated the trend toward specialization.

C. P. Snow is said to have once asked if there were an "awareness as to how big was the beach and how many pebbles were there, how many pebbles had been picked up, and how many were worth picking up." That the Metals Division of SLA has been troubled by how big the beach is and how many pebbles are there is shown by the fact that it has just gone through an intensive soul-searching. It has discussed and weighed for several years the need for and advisability of changing its name and concept. This change has been made, and Metals Division is now officially Metals/Materials Division.

Miss Ray is Librarian of the Anaconda Company, New York City, and is the current Chairman of the Metals/Materials Division. This piece is based on her opening remarks at the 15th Fall Meeting of the Division in Philadelphia, October 22, 1964.

It has been with these thoughts in mind that this program was conceived. In planning it, I did what any librarian would automatically do—I went to the literature.

I discovered that as far back as September 1960, *Materials in Design Engineering* had a whole issue devoted to "The Challenge of the Materials Age." The Metal Show is no longer the Metal Show. It's now the Metals/Materials Show. The Office of Naval Research considered the "science of materials" so important that funds were provided to the Division of Engineering and Industrial Research, National Academy of Sciences—National Research Council, for a detailed study. The report on this work is a 771-page book: *Perspectives in Materials Research* (Washington, D. C.: Office of Naval Research, Department of the Navy. Surveys of Naval Science, No. 10 (ACR-61), Feb. 1963).

For purposes of a simple definition we have been saying that a materials system is a combination of two or more materials to do a job that one by itself cannot do. *Steel Magazine* of October 21, 1963, describes nine ways to make a materials system: cladding, bonding, diffusion, dispersion-strengthening, coating, fiber reinforcing, laminating, powder-compacting, and alloying. Some of these systems are new; some are as old as our knowledge of metals, alloying, for example.

The interdisciplinary aspects of materials science and technology appeared to us as a compounding of a problem that already seemed almost incapable of solution—the information problem. The implications for smaller libraries and information departments are surely great, for larger installations, unimaginable.



This Is The Materials Age

H. R. CLAUSER

MATERIALS HAVE always been vital to man's civilization. Three of man's earliest eras have been called the Stone Age, the Bronze Age, and the Iron Age, because the civilization of each of those periods was almost entirely dependent on the one material after which the era was named. In the twentieth century, materials have again assumed a pre-eminent position. They have perhaps become the most important single factor on which the advance of technology and industry depends. Progress in space, in electronics, in atomic energy is directly linked to the solution of crucial materials problems. Even in many of the less glamorous manufacturing fields, materials are of major importance in the planning, design, and manufacture of products.

For several centuries the "natural" materials and metals and alloys, such as iron, copper, brass, tin, and zinc were sufficient to meet most of man's needs, and engineers were usually content to stay within the property bounds of these existing materials. There were exceptions, of course, but, by and large, materials were adequate for the needs, and emphasis was on their mining, production, and processing rather than their use and improvement. The end of the nineteenth century and the beginning of the current one saw the birth of the new age of materials. Steel became the major material of engineering; aluminum became a commercial metal. Hyatt invented Celluloid, and Baekeland developed Bakelite plastics. Where only routine progress had been made for centuries, new materials began to be developed at an exponential rate. Plastics and rubbers, practically unknown at the beginning of the

century, have increased in variety several hundredfold, and the rate is still increasing. The same is true of ceramic materials.

Even in the metals field, where the rate of development has been slower, hundreds of new alloys are becoming available every year. In Norman Woldman's new edition of *Engineering Alloys*, there are about 35,000 trade named and standard alloys, which is 15,000 more than the previous edition published in 1952. Recently Dr. Herwald, Vice-President at Westinghouse, stated that his company uses 14,000 different materials.

But, paradoxically, even with this wealth of materials, we have grown poor amidst our materials riches. Engineers' imaginations and their new devices have outstripped the capabilities of existing materials. The complexity of products, the competitive market, the flight into space, the development of atomic energy—all these and many other developments—impose upon materials unprecedented demands. The result is that in more and more fields we are critically limited by the materials available to us. Today there is hardly an industry or a plant that is not searching for new or better materials to meet increasingly severe service conditions, to improve product performance, and to lower materials or production costs.

Unified Science and Technology of Materials

The tremendous increase in the number of materials and the demand for even more and better materials are two major characteristics of the new age of materials. But perhaps of more far-reaching significance—certainly for the future—is the emergence of a unified science and technology of materials.

As the Editor of Materials in Design Engineering, the author was well qualified to discuss this topic in the above paper, which was presented at the Fall Meeting of the Metals/Materials Division, Philadelphia, October 22, 1964.

Thus, in both the development and application of materials, a synthesis of great significance is taking place. Traditional boundaries between classes of materials are being swept away. The specialization of the past that erected barriers among engineers and scientists who dealt chiefly with one kind of material is doomed. A more powerful approach is rapidly emerging. It is based on the proven proposition that the same fundamental concepts underlie the behavior of all materials.

Among leaders in the education and technical world, it is widely believed that this movement toward a unified field of engineering materials is the most significant trend in science and engineering today, and that, though it is still in the formative stages, the next quarter century will see it rise to be the dominant discipline in our technology. This new, unified field of materials has become evident at two major levels—at both the science and the engineering levels.

What is meant by the science of materials? An accurate definition for such a young field is difficult to devise, and there is not complete agreement among materials people on what it encompasses. Most often, it is closely identified with solid state physics. However, it involves knowledge from many other disciplines. Dr. W. O. Baker of the Bell Laboratories has characterized materials science as "being constituted of the physics of crystals, mechanics, chemistry, metallurgy and of the many diverse resources of mathematics, statistics (and) electronics."

The principal aim of this new science is to study and explain the behavior of materials in terms of their microscopic or atomistic structure. In contrast, in the old days, the chemist has empirically correlated composition with behavior, and the metallurgist has related gross metallurgical phases to the performance of his metals.

Once the relation of structure to macroscopic or engineering properties is known, we then have the means to control that structure to give the exact performance wanted. The next logical step is to design and produce materials that are tailor-made to meet the requirements of specific products or applications. As Professor Von Hippel of

M.I.T. has said, "Instead of taking prefabricated materials and trying to devise engineering applications consistent with their macroscopic properties, one (will be able to build) materials from atoms and molecules for the purpose at hand."

At the engineering level the new, unified materials technology is evident in the emergence of the relatively new technical discipline of materials engineering. Materials engineering arose as a natural and practical response to the major trends described earlier. Thus, as materials became more and more critical to successful product performance and as the number of available materials grew, the approach to the selection and application of materials has become more rigorous and more sophisticated. Rather than focusing attention primarily on the materials or the forms themselves, materials engineering is end-service oriented.

Thus, the major concern is finding or developing and applying materials with the right combination of properties to meet the service and economic requirements. Hence, the materials engineer's preoccupation with properties and his unconcern with whether the chosen material is a metal, plastic, a combination of these, or green cheese. Hence, also, the material and design engineer's unconcern with whether the material is in the form of a molding, casting, weldment, forging, or a combination of these, as long as it fulfills his requirements.

New Materials Concepts

Out of all of this ferment of innovation, new knowledge, and new demands, it seems to me that there are emerging new attitudes and new ways of thinking about materials that will set the direction and guide the advancing materials science and technology for years to come. One of these concerns our image of materials—the idea of seeing and considering materials as functional and dynamic substances. The other is related to our approach to developing and applying materials—the idea of designing materials.

The modern approach to designing materials to meet specific needs and as end-products is epitomized by composites or materials systems. Of course, composites have been

around for a long time. Clay bricks, reinforced with straw, were used in primitive cultures, and in modern times linoleum, plaster board, asphalt, and concrete have been in wide use for many years, though few of us have looked upon them as composite materials. Composite materials are not new, but awareness of the implications of the concept and the purposeful application of it to designing materials are new.

The second major change in our way of looking at materials concerns the concept of dynamic materials. Materials have been viewed traditionally and habitually as static, inert entities or as just the passive embodiment of parts or products. To put it another way, the predominate image of materials has been that they are "Newtonian" masses, which in themselves do not perform functions but rather it is the part, component, or assembly that accomplishes a given task or performs a given function.

As an example of what might be accomplished by thinking imaginatively in terms of functional materials, imagine that you are constructing a large office building and would like automatically to control the amount of sunlight admitted by the windows. For the presently used mechanical method for shading the interiors of buildings, thousands of solar-battery-operated aluminum louvers are required, which open and close, depending upon the position of the sun. But shading could be accomplished using a functional material. The material would be light or sun sensitive and would darken under the direct rays of the sun but would become progressively more translucent as the sunlight diminishes. A glass of this type has already been developed by two glass companies, and one of these new glasses is completely reversible and "fatigue proof." This isn't just an inert hunk of material—it is a material that adjusts itself the way we want it to, to a changing service condition or a changing environment.

Out of this metamorphic concept of materials, a whole new and sophisticated area of materials development is emerging. We can foresee materials that will literally improve with age; flooring materials and counter tops that will improve in wear life under traffic

and abrasion; materials that will change in color or texture under given circumstances; materials that will improve in resistance to moisture or weathering upon exposure; and materials that will become more flexible or more rigid, according to our wishes.

Perhaps the most important kind of functional or dynamic materials are those that perform the functions of mechanisms and components and that will transmit and/or transform energy from one form to another. The transistor is the classic example of such a functional material. Currently there is much interest in the so-called molecular electronic materials and thin films, which are really small wafers or blocks of material, composed of several different atomic structures or domains, each of which performs a given function.

Engineering Departments, Societies, and Education

As the critical importance of materials grew and as more and more materials were introduced, it became evident that the dispersed and routine attention generally given to the application of materials was no longer satisfactory. It is now necessary to have a far better working knowledge of materials—their properties, their available forms, their economic factors, their processing characteristics, and their response to the conditions of service. It was this need that brought about the creation of materials engineering departments, whose function encompasses the many activities involved in applying materials in engineering and manufacturing.

Surveys over the past three years show that about 65 per cent of the plants in all segments of product manufacturing now have groups performing the materials engineering function. Twenty years ago only one out of ten manufacturing plants had such a group. At the present rate of growth it can be expected that almost all medium and large size concerns will soon have in their technical organization a group specializing in the development and application of materials.

The rise of materials and process engineering is also having far-reaching effects on technical societies. It has caused entirely

new societies to be formed, such as the Society of Aerospace Material and Process Engineers, and it has caused established societies to reexamine and change their scope and their programs. There are now a dozen or more societies whose scope includes, in one way or another, coverage of engineering materials. For some of them, such as the American Society of Mechanical Engineers, materials are only part of their total scope. For others, such as the American Society for Testing and Materials, materials are their sole concern.

Without going into detail I will enumerate some of the principal changes that have taken place in the societies in recent years. The American Society for Metals program has been broadened both at the national and local meeting level to include some coverage of nonmetallic materials. Another evidence of its broadening interest is its new materials application awards program, which includes nonmetallics as well as metals. The name of the American Society for Testing and Materials publication has been changed from *ASTM Bulletin* to *Materials Research & Standards*. The Society for Nondestructive Testing has recently changed its journal's name to *Materials Evaluation*, and the Society of Corrosion Engineers has changed its journal to *Materials Protection*. The subtitle on *Metal Progress* is now *The Magazine of Materials and Process Engineering*.

In the educational field there also have been significant advances toward the unified or interdisciplinary approach to materials. In 1960 the Advance Research Projects Agency gave long-term contracts to three universities to establish interdisciplinary materials labs. Today there are at least three times that number of schools that have or are establishing materials labs.

In education itself, two broad trends in materials education are taking place. First, more attention is being paid to providing *all* engineering students with a better training in materials application. By training and experience, most engineers have been oriented toward the straight design and the mechanical or electrical aspects of product development and design, but to successfully design most products today, the engineer

must, in many cases, also function as a materials engineer.

Closely related to this trend is the fact that the old materials courses, which were largely limited to metals and included descriptions of open hearth and mill operations, are being abandoned in favor of courses that cover all major groups of materials and their properties, application, and processing.

The second trend is the mounting interest in providing curricula for training materials engineers and scientists. As early as 1952, the University of Michigan introduced a four-year materials engineering curriculum. At Penn State, a materials option in the engineering mechanics program was introduced in 1959. Similarly, Massachusetts Institute of Technology now has a materials option available to metallurgical students. Many other schools are in the midst of curricula studies that will probably lead to changes.

It is obvious that the tremendous increase in the number of materials in the last ten to 20 years has resulted in an equally tremendous outpouring of materials information. Perhaps not quite as obvious is the fact that the interdisciplinary nature of modern materials technology has multiplied the materials information problem many-fold. The materials scientist today must draw upon many different fields of knowledge, and the materials engineer, concerned with the application of materials, should keep himself informed not only on the materials he is used to, but on all classes of materials.

A Materials Advisory Board report indicated that there are 25 technical societies and 14 trade associations, most of which publish at least one technical journal containing materials information. Added to these are the many technical and trade magazines covering specialized areas of materials.

In addition, the new concepts, the new approaches, the new ways of dealing with materials, the new emphasis on performance and application rather than production, and the rise of composite materials all are/or will present problems to those engaged in information services. They are important problems that will require the constant attention of librarians, for the Materials Age will be with us for a long time to come.

The Transition—Metals to Materials

MARGUERITE K. MORAN



THE NAME CHANGE of the SLA Metals Division to Metals/Materials Division reflects a transition that many of its members' organizations have undergone.

M & T Chemicals is a good example of an organization reflecting this new concept in metals, *i.e.*, the materials system. The transition from metals to materials has been a gradual one. Until the late 1940's, the company was almost completely metals-oriented; since that time the trend has been to materials. A brief history of the company will best illustrate this transition.

Late in 1908 the inventors of the chlorine detinning process (recovery of tin from tin-plate scrap) and their associates, with a contract from the American Can Company, formed the Goldschmidt Detinning Company, a United States firm that was the predecessor of Metal and Thermit Corporation. In 1915 Goldschmidt Detinning absorbed the Goldschmidt Thermit Company and thereby became deeply involved in welding and metals. Through the thermit reaction pure metals and alloys were prepared for the steel industry. When the United States declared war on Germany in 1917, arrangements were made to buy the Goldschmidt family's interest, and the name of the company was changed to Metal and Thermit Corporation. In 1962 the name was changed to M & T Chemicals Inc., and the company has since operated as a wholly owned subsidiary of the American Can Company.

During this time, through acquisitions and diversification, the company's interests extended to electroplating, the production of metals and alloys, the recovery of tin from tin-plate scrap, the minerals field (ilmenite and rutile), the welding industry (electric

and thermit), the organic coatings field, and the ceramic and the chemical industries.

The sale of the thermit welding business in 1957 and of the electric arc welding business in 1964, as well as the cessation of metals production, caused a decline in metallurgical activities. The company's interests, however, continue active in the other areas and are vitally enmeshed in the products of metallurgy, inorganic metallic compounds, and organometallic compounds. It is the world's leader in the detinning of tin-plate scrap. The by-products of this process, tin chemicals, were responsible for the company's entry into the chemical and ceramic industries. It was natural, with the knowledge gained in tin chemistry, to extend this interest to other metals. The company now ranks as a major producer of inorganic chemicals for general industrial use, organic chemicals and organometallics for the plastics, textile, agricultural and pharmaceutical fields, inorganic tin and antimony compounds for the ceramic and chemical industries, titanium compounds for the ceramic and pigment industries, zirconium compounds for the foundry and refractory industries, and so on.

This transition has caused radical changes in the Technical Information Center, mainly in its collection and in the methods used for the dissemination and the retrieval of information. The enlarged collection, increased reference and searching services, and establishment of data processing systems has required additional staff and space, with the resultant increase in budget.

The collection until the late 1940's was almost entirely metallurgical. To satisfy the needs of the staff, the Technical Information Center now maintains the basic metallurgical reference tools for knowledge of the metals themselves plus collections in chem-

The author, who is Technical Information Supervisor at M & T Chemicals Inc., in Rahway, New Jersey, reports briefly on the changes in the Technical Information Center when the firm's interests shifted from metallurgy to materials.

istry, chemical engineering, plastics, textiles, ceramics, electrochemistry, mineralogy, agriculture, pharmaceuticals, paints and pigments, and organic finishing. Since the company's chemicals are used in these areas, it is important that employees have reference materials and the most recent literature in them available.

The method for keeping professional employees informed of new developments within their scope of interest underwent a **serious change**. When the main interest was metallurgy, they were alerted to new literature and patents through a library abstract bulletin. The shift to chemicals and materials resulted in such an increase in the volume of references that it was no longer practical or economical to issue this bulletin. The Center now maintains an interest profile for each professional employee. All published material, including periodicals and patent gazettes, is scanned by a member of the TIC for items of interest to the company and its employees. Copies of items are sent promptly to the appropriate employees based on the interest profiles. We find this system prompt, less expensive, and more specifically directed to each employee's interests.

This scanning by the TIC also serves as a source for the ordering and indexing of references for our files.

In indexing of both published and internal research data, we were able before 1950 to use standard library subject headings, with our own dictionary of sub-headings. With the entry into the chemical industry and the use of our compounds in many industries, the variables to be retrieved were too great to use this type of indexing. As a result it has been necessary to set up a special indexing system and mechanize it for speedy retrieval. For example, our research men may wish to know what functional groups in the organometallic compounds put through our screening program make them valuable as stabilizers for polyvinyl chloride or as bactericides. It would be impossible to locate this information in a reasonable time without an adequate retrieval system.

The classification system for indexing internal records was set up to serve the follow-

ing purposes: 1) consolidate company research records, research notebooks, research reports, market development reports, screening tests, analytical reports, etc.; 2) show quickly whether a specific compound or process had been investigated, thus preventing duplication of effort in the laboratory; 3) provide in a minimum time a complete record of all evaluation data on the use of the company's products and competitors' products for various applications; 4) bring out any relationship between chemical structure and activity (biocidal, stabilizer, etc.); 5) easily locate analogous compounds, classes of compounds, or compounds containing specific functional groups, elements, unsaturated linkages, etc.; and 6) locate quickly all outside research contractors to whom a specific chemical had been sent, in what quantities, and, if known, for what purpose.

This information file consists of a 6 $\frac{1}{2}$ x 7 $\frac{1}{2}$ inch Keysort structure card (in the process of mechanization), an IBM card file to record screening data, a 5 x 8 inch reference card, a 3 x 5 inch molecular formula card, and a shipping form. A combination of these furnishes a complete index of company research and development. The structure card is the key to the entire system, since through it the other cards can be located. Every compound made or tested in the laboratories is given a CN (Central Number) and is identified throughout the system by this number. Compounds are coded on the structure card through a modified Wiselogle Code based on the nature and the arrangement of the functional units of which each compound is composed. This structure card enables us to locate quickly a specific compound or a class of compounds.

The output of literature and patent surveys, as well as bibliographies, has increased considerably due to our interest in materials. In line with an advertising and sales campaign conducted recently, TIC prepared a series of bibliographies on the uses of the company's chemicals. Those relating to the use of tin compounds as catalysts and as stabilizers each required a complete volume to record literature and patents published in these areas. This gives some idea of the magnitude of the literature involved.

Metals and Materials Literature In Academic Libraries

JEANNE B. NORTH



SHEER QUANTITY in the technical information explosion has demanded so much attention that the equally phenomenal revolution in content has been overshadowed. And the change in content has been as extensive for the erstwhile "metals" literature as for any other scientific or technical literature. The subject of metals spread sideways to take in metal-like and hybrid materials that were part metal, then flowed indistinguishably into metal substitutes, and thus to all materials. At the same time, the interrelationships of all these materials became of interest, and the subject penetrated deeply into the basic sciences, particularly physics and chemistry.

Librarians in metal-supplying or metal-using organizations have been affected by this broadening of interest with the result that they now have publications in a much wider range of subjects. But these libraries, with all their problems of space and money, are spared one complication of the academic library. The company library and its users are generally a closed system. The librarian acquires literature in the descending order of its importance to the organization's members, to the limit of the budget.

On the other hand, a branch library serving any academic department has a two-fold role—as an adjunct to the teaching function of the department and as a part of the school's total library system. The academic library with the traditional responsibility for metals literature, usually the engineering or metallurgy library, has the responsibility of acquiring the books being used in courses in its department. It also has the responsibility to round out the collection of the whole

school in the subject areas designated as its province, and the converse responsibility, a new one, not to unnecessarily duplicate the holdings of other campus libraries.

Time was when a particular book could be classified, by others as well as catalogers, as a book in the field of physics, or chemistry, or engineering, or metallurgy. Once a list of books requested to be reserved for a course in the aeronautics department was recognizable on aspects of aeronautics, and not on biology or data processing or materials at high and low temperatures. These departmental characteristics have blurred and often disappeared. And in no area of literature is this breakdown of the old guidelines more complete than in the new field of materials science.

Materials are the limiting factors in all technology today, and therefore teaching and research in any field of technology includes work on materials. Study and research on materials have followed separate lines growing out of the needs of each branch of technology, but the lines often cross and the impression is of a network of materials interest imposed on a diagram of the older disciplines. This criss-crossing of subject areas seems certain to affect libraries set up to serve any one subject.

Surveys of Faculty and Librarians

To gather some facts and opinions on how academic librarians have met their campus situations and to obtain some impressions from faculty members of the libraries which serve them, I made two surveys.

One questionnaire was sent to 30 professors of metallurgy or materials science at 21

Mrs. North is Head Librarian of the Engineering Library at Stanford University in California. She served as Chairman of the Metals Division during 1956-57, when she was affiliated with United Aircraft Corporation in Hartford, Connecticut.

schools listed by the United States Office of Education as having doctoral candidates in metallurgy or as having more than 30 undergraduates in that subject. This questionnaire asked about changes in metallurgical and materials science curricula and about the professor's possible changing use of the campus libraries in the past five years. Replies came from 18 of these men.

The second questionnaire was sent to 53 librarians of engineering, metallurgical, or science libraries in 50 schools, including the 21 in which faculty were contacted, the schools represented in SLA Metals/Materials Division, and 16 other schools from the Office of Education list. Replies came from 44 of these librarians, telling something of the materials science literature in their libraries and their policies regarding it.

The questionnaires were not expertly designed nor pretested, and obviously any one faculty member's opinion may not delineate his school's library. A consensus or a spectrum of opinion was what the questionnaires sought to bring out, on each subject, and the answers are probably valid for this use.

Changes in Metals and Materials Science Curricula

Both librarians and faculty were asked if there had been marked changes in curricula for metals and materials science in the past five years. Nineteen schools replied that there had been marked, even revolutionary changes in the curricula; one school reportedly has made great changes in course names while the subject matter remains the same, another school is reported to have retained the course names but drastically altered the content. In 15 schools a new materials laboratory or department has been established recently. Using the shortened form of the school name for brevity, these schools are: Case, Cornell, Illinois, Kansas, Maryland, MIT, Michigan College of M. and T., Northwestern, Penn State, Pennsylvania, UCLA (five new labs), USC, Texas, Virginia, and VPI.

In the majority of schools the subject is regarded as interdepartmental, and courses in materials science have been developed within the established departments. In these

schools courses on materials science are given in three or more of the following departments: ceramics, theoretical and applied mechanics, physics, metallurgy, chemical engineering, nuclear engineering, electrical engineering, aerospace studies, and mechanical engineering. Purdue has established a Materials Science Council to coordinate interdisciplinary projects. Most of the schools that reported no great changes were state universities whose interest has been in mining and extraction rather than in use of metals.

Faculty Use of Campus Libraries

Faculty members were asked which campus libraries they used most five years ago and which at present. A further question asked the reasons for any change, and suggested two: change in field of interest while the library remained the same, and the establishment of a new library. Of the 18 replies, four noted the establishment of new centralized libraries, and four reported use change resulting from the establishment of new department libraries in metallurgy, physics, or engineering. Of the ten others, five indicated there had been no change in their use habits (three had habitually used the physics library more than the engineering library); the other five reported less use of their engineering libraries; and all attributed this change to changes in interests while the libraries remained the same.

In response to the question "Do you find it necessary to use several libraries on your campus regularly in order to see all the books and journals you need?" the answer was "Yes" from the 14 with more than one campus library.

Faculty members were asked whether one of the libraries they use has a collection of technical, governmental, or industrial reports in their fields of interest. Of the 11 who affirmed this, five qualified their answers to indicate lack of complete satisfaction with the size of the collection and its indexing.

Materials Science Librarians, To Be or Not

At this time there seems to be very little demand for establishment of separate libraries of materials science, probably because the

position of materials science in a school is still amorphous. The shrinking importance of metallurgy has been accompanied by the merging of metallurgical collections into the engineering libraries at Case, Kansas, and Lehigh, and of the mines library into engineering at Washington. At USC and Michigan State new engineering libraries have been set up, centralizing the small collections, including metallurgy, but at the same time pulling away some of the collection of the main library.

At RPI the Materials Engineering Department has an 800 volume collection, but the new NASA Materials Research Center there will be adjacent to the General Library and is not expected to need a collection of its own. However, at Illinois the new Materials Research Laboratory being constructed adjacent to the Physics Building and Physics Library is expected to request its own library. At Minnesota, the Mines, Metallurgy, and Chemical Engineering Library has been strengthened to include works on the physics of metals, but other strong science libraries on the campus would seem to indicate an overlapping with the chemistry, geology, math-physics, and engineering libraries.

One portent of future developments is the experience of the MIT Engineering Library, which was requested to create a selective collection on materials science. As plans for the Center for Materials Science developed, the Library has been requested to transfer this collection to the Center.

Another situation that may be a pattern is the construction at Cornell of a new Materials Science Center that will have, not its own library, but the entire former Physics Library and Chemistry Library.

Cataloging of Materials Science Literature

The questionnaire to the librarians took a quick look at cataloging. One question asked about the classification system and whether it was satisfactory. Sixteen libraries reported using Dewey with general satisfaction. Of the 20 now using the Library of Congress system, seven stated they were recataloging from Dewey. Six were using Dewey but dissatisfied, three volunteered they were considering changing to LC. As a clue to inter-

pretation of classification satisfaction and other questions, a list of nine recent books and annual progress series related to materials was included. It may be significant that only four of the 16 libraries satisfied with Dewey had acquired six or more of the nine titles, while ten of the 20 LC users had acquired at least six of the titles.

Subject cataloging was sampled by requesting estimates of the number of cards under each of 13 headings, including *anelasticity*, *cryogenics*, *low temperature research*, *materials*, *polymers*, *rheology*, and *superconductivity*. Two libraries reported cards headed *anelasticity*. In more than half the libraries, the user who seeks under *cryogenics* will be referred to *low temperature research*. He may usually also work back of hundreds of cards on *materials* to find *materials at low temperatures*.

Libraries reporting having more than 200 cards in the chosen headings and having most or all of the selected book titles, and yet remaining satisfied with Dewey are: Carnegie Tech, Case, Missouri at Rolla, and VPI, all large centralized libraries. Also content with Dewey are members of such complex library systems as Illinois and Minnesota, each with five science libraries, and Purdue with seven engineering libraries.

Michigan College of M and T reports general satisfaction with LC, though "metallurgy and engineering mechanics complain of being scattered all over." A hypothesis, which may be advanced here, is that medium-sized libraries faced with problems of growth tend to look for solutions in a change of classification scheme, but that large libraries, both centralized and departmentalized, can make Dewey workable.

Faculty Suggestions

A final question to faculty asked for suggested improvements. Many of these are not new nor peculiar to materials libraries, and they may serve to remind us that while we are reaching out to solve new problems, we still have some old desires to satisfy. Such suggestions are:

1. Relatively inexpensive quick retrieval (A. E. Focke, Cincinnati)

2. Air-conditioned libraries and a super-scanning service (A. L. Ruoff, Cornell)
3. A relaxation of library rules (anon.)
4. Adequate Xerox or other reproduction equipment (anon.)
5. Shorten the time journals are at the bindery (R. Maurer, Illinois)
6. Keep library open after regular hours (M. G. Fontana, Ohio State)

Four suggestions of particular relation to the interdisciplinary problems are:

1. Provide a complete list of journals to each department to eliminate unnecessary duplication and time wasted going from one library to another (G. Thomas, California)
2. Catalog books on materials specifically, rather than subjugating under headings for mechanics (L. H. VanVlack, Michigan)
3. Geographical unity of metallurgy and science library collections (C. W. Allen, Notre Dame)
4. If duplication is not possible, keep metallurgy, physics, chemistry, and engineering together in one library (N. M. Lazar, Wayne State)

Summary

From comments received with the replies from librarians, I have chosen some that I believe best summarize the present and future of libraries serving the metals and materials sciences:

"... a proliferation of courses oriented to the traditional engineering disciplines have materialized within the last five years, however an interdisciplinary approach has not... our branch and departmental libraries continue to collect according to their traditional responsibilities." (L. Zweifel, Wisconsin)

"... universities will be witnessing more and more of a tug-of-war between separate materials science programs, of an interdisciplinary nature, and the interests of the traditionally-based departments." (L. Cohan, Brooklyn Polytechnic)

"The problem we face right now is a great number of duplications, especially between Physics-Math Library and Engineering Library." (M. Kabalin, Michigan State)

"We are having the most difficulty with growing subjects, such as solid state physics... collecting is being done by Engineering, Mines, and Physics, scattering the collection all over the campus and causing difficulties in evaluation and use of materials." (C. Clark, Nevada)

"I believe the trend is away from the fragmentation of the sci-tech literature in numerous branches because of the growing interdisciplinary character of the literature. There will probably always be requests from faculty members to set up little special libraries for their exclusive convenience, but librarians should resist these demands, and should strengthen and consolidate the collections for more effective service to all concerned." (J. Tallman, UCLA)

"We... centralized nine branch locations... although many of the faculty protested vehemently... Since the move some of the strongest opponents to the idea of centralization have become our strongest supporters." (K. Fagerhaugh, Carnegie Tech)

I would like to thank all those who answered the questionnaire. In attempting to gather enough data to correlate, I underestimated the generous response, and some of the resulting flood of information now lies unused. If anyone is interested in pursuing a point raised by the questionnaire or in this article, I will be happy to supply further information.

Automation and Cataloging Course

The University of California, Los Angeles, School of Library Service is offering six-week summer session courses on the implications of automation and data processing for cataloging. Visiting Professor Theodore Hines will teach the course for experienced catalogers, covering the historical, theoretical, and practical analysis of cataloging problems raised by the recent changes in the form and production of catalogs. Professor Robert Hayes will teach an introductory course in data processing in the library. Further information may be obtained from the Director of the Summer Session.

KWIC—Software for Automating a Small Metals Research Report Collection

ELEANOR B. GIBSON

THIS YEAR, 1965, is the fiftieth anniversary of Carrier Corporation. In the Logan Lewis Library (named after L. Logan Lewis, one of the founders of Carrier Corporation and retired Vice-President), an experiment in automation might be considered its celebration of the event. A description of the project as it progressed was kept by a traditional librarian, and it is presented here as a sort of "come on in—the mechanization's fine." The prerequisites are a spirit of adventure, determination to advance the effectiveness of the library, and the interest and approval of the management directly concerned (perhaps not in the order listed).

We found that library mechanization for an organization using data processing equipment can be effected with surprising smoothness. (Often these organizations, as Carrier does, provide electronic data processing courses for interested employees.)

A word or two about the library, which was organized in 1942, is appropriate. It is a research collection; a previous mechanization effort was a McBee Keysort serials record developed there in 1956. The subject card catalogs have one aid to manual searching—separation of cards into ten-year categories. This, however, does not make comparison as easy as searching pages of a *Chemical Abstracts Decennial Index* or *Collective Index* or as scanning the keyword-in-context index of *Chemical Titles*.

Miss Gibson served as Chairman of the Metals Division in 1961-62 and at present is hard at work completing the compilation of the second edition of the Division's bibliography, Guide to Metallurgical Information, which the Association will publish. Professionally, she is Librarian of the Logan Lewis Library of the Carrier Research & Development Company, a Division of Carrier Corporation, in Syracuse, New York.

During the past several years descriptions of the KWIC system of indexing have seemed increasingly interesting and practical. At SLA Conventions a number of excellent papers concerning its application have been presented. *Special Libraries* and other professional library journals have explained it. The principle of its simplest form is recording keywords in titles in an IBM system and printing them out in alphabetical sequence in context with the title. It is obvious that the KWIC technique eliminates much hand processing (typing and card filing) and makes searching for internal documents as effective as searching published indexes. A keyword index is used instead of an alphabetical card catalog. IBM documents explaining its principle and application are included in the citations at the end of this article.

For Developing a Pilot Program

1. An experiment in KWIC was recommended.
2. Internal technical reports were chosen for the project. These reports form an invaluable collection of information and are stable: their titles do not change from month to month; they do not merge nor do they multiply and become three of a kind appearing at alternate quarters. They do not have the many other petty problems of serials, and they are the one collection of information for which no published indexing is available.



John W. Diehl

3. The decision was made to include eventually all reports 20 years old or less (1944-), any over 20 years that would possibly be of use in research and all reports on pure science, including properties of materials, development, and design. Scientists on the management level assisted in the work of reviewing each report. (Obsolete reports will always be available on microfilm and through manual catalogs, which will be retained.)

4. Output: we made a list of what we wanted the machine to produce:

- i A list of titles arranged by keywords and additional descriptors (tags, subject headings)
- ii An author index
- iii A complete source list arranged by the Division that produced the report and by report number within the Division

5. Input: a list of ten types of information to be stored in the system was made:

- i Identification of the Division of the Corporation that produced the report. Each Division was assigned a number consecutively, 1, 2, 3 . . .
- ii Report numbers consisting of project (accounting) number, sub-order (accounting) number, an indication if the work was done under more than one sub-order, and individual report number
- iii Last name and initials of each author
- iv Title of the report
- v Keywords
- vi Descriptors (tags, subject headings).

Descriptors in this library are based on the DDC *Thesaurus of ASTIA Descriptors*, and close correlation is maintained with the *Thesaurus of Engineering Terms* published by the Engineers Joint Council. Experience in traditional cataloging has shown that for adequate processing, more descriptors are necessary than would appear as keywords in the title. An important part of this KWIC processing was to be the continued implementation of as many additional terms as considered essential by the information specialist in charge. The procedure of careful review was to remain.

vii Date of the report

viii Microfilm reel number

ix An indication if the report was produced in another Division and was not in this collection

x Security classification

6. Information on the number of copies of the report was not to be entered.

7. With what we wanted clearly set down, it was time to contact the Electronic Data Processing Department of Carrier Air Conditioning Company, the largest operating division of the Corporation, which uses this equipment in many of its activities.

An appointment with the Carrier EDP Manager led to immediate acquaintance with the IBM consultant assigned to Carrier. A consultant, wherever he is assigned, is, no doubt, involved in more than one EDP program, and he may never have had occasion to gain experience in the KWIC application. He will obtain the program from the manufacturer's Application Programming Library. This is "software," one of the many package programs that may be obtained. IBM has set up a general purpose program and furnishes it, upon request, to its computer users. Thus organizations do not have the expense of developing their own programs, which can be very costly, and at the same time, as we found out, these programs can be modified to fit the needs of an individual situation.

A feasibility estimate by EDP is:

Clerical work/M reports	\$275/M
Key punch/M reports	380/M
Load data on magnetic tape, 1/2 hr.	50
Sort data to keyword, 1 hr.	200
Prepare source list, 1/2 hr.	50

8. Published papers indicate that many libraries are doing their own key punching, but we felt that there is something to be said for having it done by an EDP operator who is trained to do this as a specialized job. While waiting for the packaged program, we set up a revised basic typed card. The punch operator could work easier from it than from the former catalog card. This card will be kept as a master record.

9. At the second meeting the consultant had received the program. Our typed card was



News and Notes

SPECIAL LIBRARIES
ASSOCIATION

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The Mid-Winter meetings of the Advisory Council and Board of Directors were attended by 66 Council members, the Board of Directors, Bill M. Woods, Executive Director, and interested members of the Indiana Chapter. During February 11-13 a full schedule of meetings took place at The Marott Hotel, Indianapolis. Chapter Presidents and Division Chairmen met separately for dinner on Thursday evening, and on Friday attendees joined the Indiana Chapter at a reception hosted by the Hanson-Bennett Magazine Agency. Following dinner, Wallace Clayton, Special Assistant to the President of J. Walter Thompson Company, New York office, presented an intriguing talk on "Imagining."

William S. Budington, SLA President, reported to the Board that representatives of the Association will meet with representatives of the Library Services Branch, U. S. Office of Education, to discuss areas of continuing interest to both groups. The Research Committee under the Chairmanship of Dr. Paul Wasserman has been reactivated, and several retired Past-Presidents have accepted the offer of gratis Emeritus membership. He also suggested that an ad hoc committee be appointed to formulate policy regarding official spokesmen for the Association.

Membership reached an all-time high of 6,103 on December 31, 1964. This was 12 more than on the same date in 1963 before the dues increase became effective, and 370 more than at the end of December 1962.

Five recommendations as a result of a study by the Ad Hoc Committee to Study Division and Chapter Allotments, William Beatty, Chairman, were approved: 1) Division allotments be increased from 5% to 10% beginning with the 1965-66 budget; 2) Chapter allotments remain at 15%; 3) the \$150 minimum Division allotment be discontinued; 4) the \$150 minimum Chapter allotment be retained; and 5) the Division Convention allotment be retained.

The Chairman of the Bylaws Committee, Mrs. Margaret Fuller, stated that bylaws have been received from all Divisions, and that 20 Chapter bylaws have been approved while 13 are being reviewed at the present time. Two policy recommendations regarding admissions were approved: 1) individuals holding administrative or professional positions in information centers or companies specializing in systems development, research companies or consulting firms offering services to special libraries and information handling be eligible for Affiliate membership and 2) state and school libraries are not automatically to be considered special libraries.

Anne Nicholson, Convention Chairman, described plans for the forthcoming meeting in Philadelphia. As a result of the "call for papers," six technical papers will be presented at a general session on Monday afternoon, and on Wednesday evening the Liberty Race Track will be the scene of a scholarship and student loan fund raising event.

The Advisory Council, stimulated by the report of the Ad Hoc Committee to Study the Composition of the Advisory Council, discussed its own organization and respon-

sibilities at great length. A consensus taken by the Committee Chairman, Herbert S. White, indicated that members felt that a change in composition would make the Council more effective, and accordingly it was recommended to the Board the next day that the Advisory Council consist of incoming and present Division Chairmen, Chapter Presidents, and incoming Chapter Presidents. Committee Chairmen would no longer be members of the Council. The Board approved the recommendation and instructed the Bylaws Committee to prepare the documentation for the necessary change in the Bylaws, which will be voted upon at the Annual Business Meeting and later by mail ballot. Following this action the Council Chairman, Lorna Daniells, appointed an ad hoc committee to compile a list of responsibilities and areas of activity for the Advisory Council. Efren Gonzalez, Chairman, and his committee consisting of Richard Davis, Robert W. Gibson, Jr., Mrs. Nancy Wright, will present a report at the June 7 meeting of the Council.

At the second Council meeting, Grieg Aspnes, Chairman of the Education Committee, outlined plans for a post-Convention meeting with library school personnel at which the teaching of special librarianship would be considered. Robert Havlick of the Library Services Branch reported on the status of the statistical studies LSB has undertaken, and Virginia Matthews, Deputy Director of National Library Week, and Duane Day, SLA Representative to National Library Week, spoke on plans for the 1965 Week and urged that special librarians reassess the National Library Week programs and potentials. A panel consisting of Katharine L. Kinder, Mrs. Margaret Fuller, Portia Christian, and Bill M. Woods concluded the session with a discussion of membership requirements and admission procedures.

Alice Ball, Chairman of the Governmental Relations Committee, reviewed recent activities involving the Library Services Branch, hearings on the Copyright Law, the ALA Legislative Workshop, and Civil Service standards for librarians. The Board endorsed the Medical Libraries Assistance Act recently submitted to House and Senate Committees (see news item in March *Special Libraries* for details) and hopes to present oral testimony in favor of the bill when committee hearings are held.

The Motion Picture Committee, Efren Gonzalez, Chairman, is planning to prepare a prospectus on the projected special library film to send out to producers, companies, and other possible supporters of the project. Funds will also be sought from the membership.

Following the recommendation of the Public Relations Committee, Marian Lechner, Chairman, the Association has commissioned the L. G. Balfour Company to make silver and gold charm bracelets and tie-tacs featuring the SLA insignia. The jewelry will probably be introduced at the June Convention.

John M. Connor, Librarian, Los Angeles County Medical Association, has accepted the Chairmanship of the 1968 Convention in Los Angeles. Helen J. Waldron, Librarian, RAND Corporation, will represent the Southern California Chapter on the Convention Program Committee. Seven Chapters extended invitations for the 1975 Convention, and that from Connecticut Valley to hold the conference in Hartford was tentatively accepted.

The special library exchange with the Soviet Union, originally scheduled for this spring, will very likely be postponed until fall.

Margaret F. Madden has withdrawn as a nominee for the post of Chairman-Elect of the Advisory Council. The Chairman of the Nominating Committee, Alvina Wassenberg, presented the following candidate as a replacement: MRS. HELEN F. REDMAN, Librarian, Los Alamos Scientific Laboratory, Los Alamos, New Mexico.

The Special Classifications Center has just received a grant of \$11,720 from the National Science Foundation. These funds will enable the Center to expand its collection, extend its lending service, develop a consultation service, initiate a research program, participate in cooperative programs with other groups concerned with classification, and initiate and implement other programs. Upon the recommendation of the Special Classifications Committee, Miss Meredith Wright, Chairman, the Board approved the classification center concepts embodied in the above activities.

The Finance Committee, Janet Bogardus, Chairman, has recommended that the maximum limit on the General Reserve Fund be increased from \$50,000 to \$100,000. This change will be discussed and voted on at the Annual Business Meeting.

The Division Relations Committee is seeking written definitions of the scope of all Divisions' interests, and the Chairman, Dr. F. E. McKenna reported that 10 of the 15 units seem satisfied with their present organization and activities. The largest Division, Science-Technology, is the outstanding exception, and it appears likely that several Sections will petition for Division status during the Philadelphia Convention, with the blessings of the Sci-Tech Advisory Committee, which is urging all Sections to become Divisions. This Committee has also recommended that the Sci-Tech Committee on Government Information Services be transferred to the Association proper, and the Committee on Committees has been instructed to prepare a definition and outline the scope of the new committee.

Boris R. Anzlowar, Manager of Pharmaco-Medical Documentation, Chatham, New Jersey, has been appointed editor of *Unlisted Drugs*, succeeding Winifred Sewell, Special Assistant, Deputy Director, National Library of Medicine, who has served as editor of the Pharmaceutical Section's journal for 13 years. In the contract Mr. Anzlowar agreed to expand his personal coverage of the medical and pharmaceutical literature to another 100 journals. As in the past, Section members will contribute data, and Winifred Sewell will continue as Chairman of the *Unlisted Drugs* Committee. The Association will manage the business affairs of *Unlisted Drugs* as in the past, and all subscriptions and orders for back issues and cumulative indexes should be sent to the Headquarters address. The new editor studied biomedical sciences at the University of Ljubljana, Yugoslavia, and Columbia University, has a fluent knowledge of over a dozen languages, and directs an independent biomedical documentation service, which acts as consultant to pharmaceutical companies, scientific publishers, and government agencies. He is a member of the American Documentation Institute and Medical Library Association as well as SLA.

The Advertising Division's request to change its name to Advertising and Marketing Division has been approved by the Board. The new name more accurately describes the membership and interests of the Division.

Two prints of the recruitment film "Key to a Future" have been purchased by the Association for the use of Chapter Recruitment Committees and others. The prints may be borrowed without charge, except for shipping and insurance. Requests should be addressed to the Association's Public Relations Department and give three alternative dates. A full description of the content may be found in *Special Libraries*, April 1964, page 245, and *Library Journal*, March 15, 1964, page 1206.

The H. W. Wilson Foundation, Inc., has for a number of years supported the SLA Scholarship and Student Loan Fund with gifts of \$2,000; this year the Directors have voted to contribute \$4,000. In making the bequest, Howard Haycraft, President, stated, "It is our hope that even more friends of libraries in the business and organizational world will adopt this practical and effective means of aiding library recruitment in this time which is so crucial for the entire profession."

SLA Sustaining Members

The following organizations are supporting the activities and objectives of the Special Libraries Association by becoming Sustaining Members for 1965. This list includes all applications processed through February 16, 1965.

- RICHARD ABEL & COMPANY, INCORPORATED
ABBOTT LABORATORIES LIBRARY
AEROJET-GENERAL CORPORATION
AMERICAN CAN COMPANY
AMERICAN CANCER SOCIETY, INCORPORATED
AMERICAN CYANAMID COMPANY
AMERICAN ELECTRIC POWER SERVICE CORPORATION
AMERICAN IRON AND STEEL INSTITUTE
AMERICAN LIBRARY ASSOCIATION
AMERICAN TOBACCO COMPANY
AMPEX CORPORATION
ARGONNE NATIONAL LABORATORY
ATLAS CHEMICAL INDUSTRIES, INCORPORATED
BASIC ECONOMIC APPRAISALS, INCORPORATED
BELL & HOWELL RESEARCH CENTER
BELL TELEPHONE LABORATORIES
BETHLEHEM STEEL COMPANY
BOEING COMPANY
R. R. BOWKER COMPANY
BRIDGEPORT PUBLIC LIBRARY
BUSINESS & PROFESSIONAL WOMEN'S FOUNDATION LIBRARY
CARRIER CORPORATION
CHEMCELL LIMITED
CIBA PHARMACEUTICAL COMPANY
COLORADO STATE UNIVERSITY LIBRARIES
CONSOLIDATION COAL COMPANY
CONTINENTAL CARBON COMPANY
CORNELL UNIVERSITY LIBRARY
CORNING GLASS WORKS
DALLAS PUBLIC LIBRARY
DOW CHEMICAL COMPANY, Golden, Colorado
DOW CHEMICAL LIBRARY, Midland, Michigan
E. I. DU PONT DE NEMOURS & COMPANY
Lavoisier Library
E. I. DU PONT DE NEMOURS & COMPANY
Technical Library
EASTMAN KODAK COMPANY
F. W. FAXON COMPANY, INCORPORATED
FEDERAL RESERVE BANK OF NEW YORK
FIRST NATIONAL BANK OF BOSTON
FIRST NATIONAL BANK OF CHICAGO
FORD MOTOR COMPANY
GENERAL ELECTRIC COMPANY
GENERAL FOODS CORPORATION
GENERAL MOTORS CORPORATION
Public Relations Library
GENERAL MOTORS CORPORATION
Research Laboratories
GLICK BOOKBINDING CORPORATION
B. F. GOODRICH RESEARCH CENTER
HARVARD GRADUATE SCHOOL OF
BUSINESS ADMINISTRATION
HONEYWELL, INCORPORATED
IDAHO STATE UNIVERSITY LIBRARY
INDIANA STATE LIBRARY
JOHNS-MANVILLE RESEARCH AND
ENGINEERING CENTER
WALTER J. JOHNSON, INCORPORATED
KAISER ALUMINUM & CHEMICAL CORPORATION
ELI LILLY AND COMPANY
LOCKHEED MISSILES & SPACE COMPANY
MCGRAW-HILL PUBLISHING COMPANY
INCORPORATED
MARATHON OIL COMPANY
MARQUETTE UNIVERSITY MEMORIAL LIBRARY
MAXWELL SCIENTIFIC INTERNATIONAL
INCORPORATED
MELLON NATIONAL BANK & TRUST COMPANY
MINNESOTA MINING & MANUFACTURING
COMPANY
NATIONAL BANK OF DETROIT
NATIONAL CASH REGISTER COMPANY
NATIONAL LEAD COMPANY
NEW YORK TIMES
NEW YORK PUBLIC LIBRARY
NORTH AMERICAN AVIATION, INCORPORATED
PENNSYLVANIA STATE UNIVERSITY
PEOPLES GAS LIGHT & COKE COMPANY
PITTSBURGH PLATE GLASS COMPANY
Barberton, Ohio
PITTSBURGH PLATE GLASS COMPANY
New Martinsville, West Virginia
PORT OF NEW YORK AUTHORITY
C. W. POST COLLEGE
PRENTICE-HALL, INCORPORATED
PROCTER & GAMBLE COMPANY
PUBLIC SERVICE ELECTRIC & GAS COMPANY
PURE OIL COMPANY
RADIATION, INCORPORATED
RAND CORPORATION
ROCKEFELLER OFFICE LIBRARY
ROHM & HAAS COMPANY
ROYAL BANK OF CANADA
ST. JOHN'S UNIVERSITY LIBRARY
SHAWINIGAN CHEMICALS LIMITED
SHELL DEVELOPMENT COMPANY
SPACE TECHNOLOGY LABORATORIES
INCORPORATED
SQUIBB INSTITUTE FOR MEDICAL RESEARCH
J. W. STACEY, INCORPORATED
STANDARD OIL COMPANY OF CALIFORNIA LIBRARY
STECHERT-HAFNER, INCORPORATED
STERLING-WINTHROP RESEARCH INSTITUTE
SUFFOLK COOPERATIVE LIBRARY SYSTEM
SUN OIL COMPANY
SYSTEM DEVELOPMENT CORPORATION
TECHNICAL BOOK COMPANY
TEXAS GAS TRANSMISSION CORPORATION LIBRARY
J. WALTER THOMPSON COMPANY
TIME INCORPORATED
UNION ELECTRIC COMPANY
UNITED COMMUNITY FUNDS & COUNCILS OF
AMERICA, INCORPORATED
UNITED STATES STEEL CORPORATION
UNIVERSAL OIL PRODUCTS COMPANY
UNIVERSITY OF CONNECTICUT
UNIVERSITY OF MARYLAND
UNIVERSITY OF MINNESOTA LIBRARY
UNIVERSITY OF OKLAHOMA LIBRARY
UNIVERSITY OF TEXAS
UNIVERSITY OF WASHINGTON LIBRARY
WILLIAM JOHN UPJOHN ASSOCIATES
UPJOHN COMPANY
WAYNE STATE UNIVERSITY
H. W. WILSON COMPANY
WORCESTER FREE PUBLIC LIBRARY

satisfactory with a minute change—a period was to be entered after the last descriptor instead of after the title. As many descriptors as needed can be stored for each report. We leave two spaces after the title and between each descriptor.

10. Stop list. Many words in the report titles are not significant as far as searching is concerned. The software provided a list of about 16 articles, prepositions, and adverbs that would be programmed to be rejected as keywords. Upon a little thought it became obvious that, to avoid many useless entries in the print-out, a more adequate list should be prepared. Using the titles as a guide, a 1,400-word stop list was accumulated. This seems to be longer than mentioned in other published papers (300, 400, 600), but it was checked, and it will doubtless cause a better keyword listing. The stop list will be maintained on punched cards.

11. Pilot run. Typed master cards were prepared for 75 reports; and a pilot run was eagerly sent to EDP during what happened to be a very busy period. We waited. And then one day our consultant appeared with a neat stack of IBM punched cards and a long accordion-pleated printout. For the 75 sources there were 83 entries in the author list; on the keyword list 172 entries, which our stop list (not yet in the system) would later eliminate; and 409 useful keywords. These were the beginning of the keyword dictionary.

The author and keyword runs had been made on a 1410 data processing system. The source list information by Division and project number was better programmed separately into a 1401 system.

After the pilot run had been studied from all angles and future satisfaction began to be apparent, a quiet fact emerged. The card catalog, built up painstakingly during many years, would never be the same . . . for at that moment, it once again became true, "The old order changeth, yielding place to new."

Card Format

The key punch operator uses standard IBM 80-column cards. Information is entered as follows:

COLUMN	INFORMATION
77-80	Contains a four-digit identification number
76	Unused in this case; might be the originating department
75	Indicates the class of information entered on the particular punched card, such as author, title, keyword, descriptor, and so on
73-74	For the date of the report the last two digits of the year are sufficient identification
61-72	Used for reference code, which in our case is the complete report number: <ul style="list-style-type: none"> 1 digit Originating Division (expansion to 36 including alphabetical characters) 4 digits Project number (expansion to 9999) 3 digits Sub-order number (expansion to 999) 1 digit To indicate another sub-order involved 3 digits Report number within the project and sub-order (expansion to 999)
—	12 spaces Total
1-60	For punching information indicated by class in column 75, i.e., author, title, descriptors, N (if not in collection), security classification, and microfilm reel number

We had wanted the keyword to appear first on the left side of the column on the print-out but decided to follow the standard in the program—all keywords commence at column 25. This makes it possible to have two print-out columns on a reproduced page.

Since there were only 60 spaces for the keyword index print-out and the keyword had to begin at column 25, we decided to use the permuted title, or "wrap-around" method, wrapping the title on the same line after and before the keyword. This seemed to make more meaning possible.

The total print-out line is a 74 space line.

Summation

To make the best use of the EDP facilities, it is probable that our report information will be machine-updated only semi-annually. However, for current use in the library the basic card will be typed as soon as a report is received and reviewed.

Traditional librarians may be prone to awe and fear of automation; librarians with small collections may think, "There is no need for it here." But where there is serious research, it is probable that it will increase at a lively rate and report collections will follow. This article is a plea for automation while the collection is small.

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AASL-NEA Library Improvement Meeting

The American Association of School Librarians and the National Commission on Teacher Education and Professional Standards of the National Education Association are sponsoring a joint project to stimulate the development of local professional libraries and continuing in-service education of teachers. Plans are first to prepare and publish an annotated list of books, research reports, and other materials for inclusion in a professional library. Later local education associations and local communities on teacher education and professional standards will be urged to establish or improve professional libraries.

* Data Processing Division, White Plains, New York.

Metals/Materials Division's Fall Meetings and Papers

VIRGINIA B. SEIDEL and AUDREY HUNTER

MELLON INSTITUTE in Pittsburgh was the scene of the first Fall Meeting of metals librarians in 1949. All talks at this meeting were given by members of the group, and tours through the Carnegie Library of Pittsburgh and Mellon Institute were arranged. A list of papers presented at this and all subsequent Fall Meetings follows this article.

The next year the Meeting was held in Chicago and was timed purposefully to coincide with that of the American Society for Metals Exposition. The annual Metals Show, which was the popular name for the exposition, was the mecca of every metallurgist and metalworking man. Why not seize this chance to have librarians of metal companies gather at the same time as their bosses? They could look at the Show and increase their comprehension of the metal industry.

At this time metals librarians belonged to a Section of the Science-Technology Division. Their Section was barely three years old when they were encouraged by American Society for Metals to participate in the World Metallurgical Congress and Exposition held in Detroit in the fall of 1951. Through the good offices of Frederica Weitlauf, Librarian of Timken, and Marjorie Hyslop of ASM, Special Libraries Association gained recognition as a participating society in the Congress. ASM provided space at the Exposition for the Section to set up a miniature metals library. The books and periodicals displayed on the stacks were international in scope. Translations of technical

articles and the *ASM-SLA Classification of Metal Literature* were featured. The librarians who serviced the display were astonished at the interest shown by the foreign delegates to the Congress and by the metallurgists who sponsored the Congress. They were busy supplying American information to the foreign delegates, and were consultants on translation procurement to the metallurgists on home ground.

One result of this meeting was the interest in the *ASM-SLA Classification of Metal Literature*. Dr. Antonio Scortechi, a delegate from Milan Technical University, agreed to introduce the classification to European literature on metallurgy. His enthusiasm for establishing an international system was very flattering to both SLA and the ASM.

Encouraged by the success of the Detroit Fall Meeting, plans for Philadelphia at the National Metal Congress the next year were undertaken. It was decided to feature bibliographies as "give-aways" and make the subjects of the bibliographies correspond to the subjects that would be featured by the Congress sessions. In other words, if the metallurgists were having a technical session on high temperature alloys, a bibliography on high temperature alloys would be provided as a give-away at the booth.

Fall Meetings during the years 1954 to 1964 have varied in subject interest as the focus in metallurgy has changed. In Philadelphia in 1960, the Division sponsored an ASM course in metallurgy for metals librarians and for others who might wish to at-



The text was written by Mrs. Seidel (left), who was Chairman of the Metals Section when it was still part of the Science-Technology Division in 1951-52. Miss Hunter (right), compiled the bibliography. Both have been associated with the Library of the International Nickel Company in New York City for some years, although Mrs. Seidel has recently retired as Librarian.



Pan-American Photo Service



Frank J. O'Connor, M.S.

tend. This was very successful and emphasized the "continuing education" aspect of the Fall Meetings. The New York meeting in the fall of 1962 had as a subject Technological Change. The librarian's role was presented as the catalyst between published work and the user. Luther Evans, former Librarian of Congress, moderated the session.

The booth at the Metal Show has become progressively more sophisticated. There are always bibliographies on hand covering subjects of current interest to the metallurgists attending the show. Through years of patiently telling the library story, the materials engineers now know that the booth sells nothing, but offers free bibliographies and helpful information. As a public relations effort for Special Libraries Association and for the Division, the booth represents a successful part of the Fall Meeting programs.

Bibliography of Fall Meeting Papers

October 22-23, 1964, Philadelphia

THE MATERIALS AGE

This is the Materials Age, H. R. Clauser (*Materials in Design Engineering*, published in *Special Libraries*, February 1965)

Numerical Reference Data for Materials, R. Gordon Brunner (ASTM)

Materials Information—Discussion

H. R. Clauser (*Materials in Design Engineering*)
R. Gordon Brunner (ASTM)

Katharine L. Kinder (Johns-Manville Research Center)

T. J. Fitzgerald (Documentation Service, ASM)

Powder Metallurgy: An Early Materials System, A. F. Kravic (International Nickel Co.)

Copper in the Materials Concept, Dr. Charles I. Whitman (International Copper Research Assn.)

Gases in Metals—Interlaboratory Analytical Programs, Virginia M. Horrigan (Anaconda American Brass Co.)

Division members Kay Faber and Audrey Hunter are ready to answer questions in the model metals/materials library at the 1964 Metals/Materials Show. At the left are basic reference books. The man is scanning translations and journals. Free bibliographies prepared by the Division are on the table, where visitors could also examine materials in detail at their leisure.

The Effect of Gas Atmospheres on the Surface Properties of Metals, E. J. Klimek (Roy C. Ingersoll Research Center, Borg-Warner Corp.)

October 24-25, 1963, Cleveland

SPECIFICATIONS

Of Shoes and Ships—and ASTM Standards, J. W. Caum and H. J. Stremba (ASTM)

Industry Standard Specifications for Aerospace Use, D. E. Manning (United Aircraft Corp.)

Government Specifications and Associated Documents for the Metals Library, Margaret P. Haskin (Bureau of Ships)

Specifications in a Metals Library, L. L. Wyman (National Bureau of Standards)

CORROSION SEMINAR

Corrosion Testing in the World of Steel, Jane H. Rigo (American Steel & Wire Div., U.S. Steel)

Some Plant Corrosion Problems—Their Causes and Cures, J. M. Bialosky (Koppers Co., Inc.)

Compatibility Problems in High-Temperature Nuclear Energy Systems, J. H. DeVan (Oak Ridge National Laboratory)

Aqueous Corrosion in Nuclear Reactors, W. E. Berry (Battelle Memorial Institute)

October 31-November 2, 1962, New York

THE DIFFUSION OF TECHNOLOGICAL CHANGE
(Summarized in *Special Libraries*, July-August 1963)

The Process of Technical Change, Dr. Edwin Mansfield (Carnegie Research Project on Technical Change and Economic Growth)

Innovation and Inertia in Industry, R. Ned Landon (General Electric Co.)

The Role of the Literature in the Diffusion of Technological Change, A. W. Knoerr (*Engineering & Mining Journal*)

The Role of the Librarian in the Diffusion of Technological Change, Virginia Seidel (International Nickel Co.)

THE OLD NONFERROUS METALS IN THE NEW AGE
Planning Copper's Future, Dr. Charles H. Moore (International Copper Research Assn.)

Zinc in Modern Living, E. W. Horvick (American Zinc Institute)

What We Are Doing to Meet Today's Demands for Brass Mill Products, Gilbert C. Strubell (Anaconda American Brass Co.)

Space-Age Nonferrous Metals, Stanley B. Roboff
(General Astrometals Corp.)

October 25-27, 1961, Detroit

DEVELOPMENT OF METALS IN AUTOMOBILES

Properties, Microstructure and Processing Variables, Dr. Charles W. Phillips (Ford Motor Co.)

A Metallurgist's View of the Automobile, J. Hols-warth (General Motors Corp.)

Reliable Metals for Reliable Cars, Dr. Robert Smith (AC Spark Plug)

October 20-22, 1960, Philadelphia

JOINING OF METALS

Silver Brazing—When and How, D. C. Herr-schaft (Handy & Harman)

Basic Fundamentals of the (Aircomatic) Inert Gas Shielded Consumable Electrode Process, I. D. Holster (Air Reduction Sales Co.)

Inert Gas Tungsten Welding in Aircraft, Missiles and Industry, H. S. Davis (Air Reduction Sales Co.)

ASM-MEI METALLURGY COURSE

Review of Fundamental Concepts of Metallurgy

Mechanical and Chemical Properties of Metals, Dr. Anton deS. Brasunas (Metals Engineering Institute, ASM)

Alloying and Nonferrous Metals, L. W. Berger (Metals Engineering Institute, ASM)

Fundamentals of Ferrous Metallurgy, J. Parina (ASM)

The Survey of Advancing Frontiers in Metallurgy High Temperature and Space Alloys, Dr. Allen Gray (ASM)

Future Materials and Fabrication Techniques, Ted DuMond (ASM)

Nuclear Metals, Properties and Radiation Damage, E. E. Thum (ASM)

November 4-6, 1959, Chicago

Latest Developments in Packaging Design, J. H. Meyers (Acme Steel Co.)

Strapping Machines in the Packaging Field, H. Con-nell (Acme Steel Co.)

October 30-31, 1958, Cleveland

PHASES OF NASA RESEARCH ON MATERIALS FOR AERONAUTICS AND SPACE

Materials for Propulsion and for Space Vehicles, J. Freche (NASA)

Materials for Nuclear Reactors, G. C. Deutsch (NASA)

Some Problems in Solid State Physics and High Temperature Chemistry, R. A. Lad (NASA)

METALS MEET THE COMPETITION

Aluminum—The Modern Building Material, F. A. Loebach (Kaiser Aluminum & Chemical Sales, Inc.)

MARCH 1965

The Trend to Curtain Walls, I. Grant Clark (Reyn-olds Metals Co.)

Aluminum Foil for Packaging Applications, A. B. McKee (Aluminum Company of America)

Implications of Steel Industry Growth, J. D. Briggs (Bethlehem Steel Co., Inc.)

November 6-8, 1957, Chicago

PROGRESS IN NONFERROUS METALLURGY

Recent Development in Nonferrous Metallurgy, Dr. D. W. Levinson (Armour Research Founda-tion)

The Report and Document Library at Armour Re-search Foundation, Mary Patricia Murray (Ar-mour Research Foundation, published in *Special Libraries*, April 1958)

Design of a Punch Card System As an Example of Literature Research at Armour Research Founda-tion, Ann P. Wennerberg (Armour Research Foundation, published in *Special Libraries*, April 1958)

PROGRESS IN FERROUS METALLURGY

Recent Advances in Ferrous Research, Dr. R. H. Aborn (United States Steel Corp.)

Metallurgy and Physics, Dr. D. S. Lieberman (University of Illinois)

Alloys for High Temperature Applications, M. C. Metzger (Universal-Cyclops Steel Corp.)

INTERNATIONAL ASPECTS OF LITERATURE RE-SEARCH

The Technical Library and Information Services for the British Metallurgical Industries, Anthony Post (Iron and Steel Institute, London)

The Centre de Documentation Sidérurique at Paris, Dr. Marc Allard (Institute de Recherches de la Sidérurgie) and Max DuPont (Centre de Documentation Sidérurgie, St.Germain-en-Laye, France)

Documentation and Bibliographic Service of the Aluminium-Industrie-Aktien-Gesellschaft (AIAG), Research Laboratories, Neuhausen am Rheinfall, Switzerland, E. Kocherhans and H. Zoller (Aluminium-Industrie AG, Neuhausen am Rheinfall, Switzerland)

The Importance of Documentation to Metallurgy, F. T. Sisco (Engineering Foundation, U.S.)

October 10-12, 1956, Cleveland

Automation in Literature Research, Allen B. Kent (Western Reserve University)

The Literature of Industrial Power Uses of Atomic Energy, F. E. Croxton and P. Leslie (Goodyear Atomic Corp.)

The Literature of Radiation Effects on Materials, J. B. Dodd (Babcock & Wilcox Co.)

The Literature of Radioactive Testing Techniques, J. M. Daley and Jeanne B. North (United Air-craft)

October 18-21, 1955, Philadelphia

INDEXING SYSTEMS IN INDUSTRIAL LIBRARIES (published in *Special Libraries*, March 1956)

Use of the ASM-SLA System by Industrial Metallurgists, E. C. Wallace (Barber-Colman Co., published in *Special Libraries*, March 1956)

Use of Uniterm-Coordinate Index System in a Large Industrial Concern, R. L. Francisco (General Electric Co., published in *Special Libraries*, March 1956)

Battelle Memorial Institute Subject Index System, R. Gibson (Battelle Memorial Institute)

POWDER METALLURGY

Powder Metallurgy Literature, J. Haime (Fansteel Metallurgical Corp.)

Powder Metallurgy with Especial Reference to the Refractory Metals, H. W. Highriter (Fansteel Metallurgical Corp.)

November 3-5, 1954, Chicago

JOHN CRERAR LIBRARY—ITS COLLECTIONS, SERVICES AND THE ROLE OF THE LIBRARY IN INDUSTRIAL RESEARCH

General Policies and Program, H. H. Henkle (John Crerar Library)

Cataloging and Classification, and the Classified Catalog, Viola Gustafson (John Crerar Library)

Technical Reference Services, Carmen W. Netzorg (John Crerar Library)

Library Research Services, Ann W. Henkle (John Crerar Library)

Photoduplication Service and SLA Translation Pool, W. S. Budington (John Crerar Library)

THE SMALL METALLURGICAL LIBRARY (published in *Special Libraries*, March 1955)

How to Start a Small Metallurgical Library, Marjorie O. Baker (Baker Co., Inc.)

Handling Patents in a Small Technical Library, L. W. Brock (General Tire & Rubber Co.)

The Paradoxical Trade Catalog, W. S. Budington (John Crerar Library)

ECONOMICS AND MARKETING IN THE METALLURGICAL FIELD—SOURCES OF INFORMATION

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EDITOR'S NOTE: A limited quantity of 1964 papers are still available. Copies may be obtained from Elsie Ray, Anaconda Company, 25 Broadway, New York City.



A Selected Bibliography of Metals Library Literature

MOIRA C. JONES

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The Metals/Materials Division and ASM

MARJORIE R. HYSLOP

COOPERATION AND communication between technical and professional societies is a modern-day phenomenon that has evolved only during the past quarter-century. The relationship between Special Libraries Association, specifically the Metals/Materials Division, and the American Society for Metals is a prime example of the benefits to be derived from such communication and cooperation, even when the membership of the two organizations differs considerably in function, interests, and problems. To illustrate this evolution it is appropriate to review briefly some history.

As recently as the 1940's about the only conception ASM had of libraries and library functions was that they were good sources of book and periodical sales, that they were constantly pestering headquarters for missing issues, indexes, and miscellaneous meeting papers and oddities, and that they existed off in some never-never land that had no practical interests for the typical ASM member (who may be called a metallurgist, even though he may be anything from a vice-president in charge of research to a heat treating technician or a salesman).

This at least was the concept of the headquarters staff, and I am sure that this attitude must have rubbed off from the members themselves. Any successful professional or technical society must obviously be in close and harmonious contact with its members, it must know their interests, needs, and pet peeves, and must be aware of related services they receive from other technical

and professional groups. Since ASM has been a reasonably successful technical society over its 50-year history, it must be deduced that the metallurgist of the 1940's was not particularly concerned about libraries and librarians, about the information they stored and handled, or about how he could make use of these facilities.

How and why did this situation change? Two general influences have been at work. First of all, to use the old cliché that nature abhors a vacuum, metallurgists gradually found themselves facing a vacuum as far as scientific and technical information was concerned. It is hardly necessary to belabor this statement—all that need be said is "information explosion." Secondly, metallurgy "came of age" and, again gradually, began to take its place as a respected discipline of its own and not a branch of chemistry with overtones of geology and mechanical engineering.

As a result two things happened. ASM, by some subtle osmosis from its members, became aware that it had a large and unfulfilled responsibility to make information available, not only by means of primary publications and meetings but also by means of secondary services. At the same time, because of the broadening basis and newly acquired dignity of metallurgy as a discipline, members of Special Libraries Association came to realize that the problems of librarians who dealt primarily with this field required a closer fraternization and interchange of experience than was provided by the

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broad structure of the SLA Science-Technology Division.

And so it came to pass that the Metals Section of the Science-Technology Division was formed, and almost simultaneously with the birth of this Section, a close relationship was established with the American Society for Metals. A roster of individuals who were responsible for establishing the relationship between SLA and ASM would not only be inappropriate but also virtually impossible, for the Metals Section was formed in 1948 and the Metals Division established in 1953 as the result of many joint efforts. I ask indulgence, however, to mention one name—the late Frederica Weitlauf, not only because of the part she played from the SLA standpoint but also because, to my certain knowledge, she was the principal agent in drawing SLA and ASM together.

Early ASM-SLA Relationships

Just at the time the Metals Section was formed in 1948, full of spirit and looking for things to do, ASM, in its dawning realization that its members needed help in corraling and controlling their information resources, published a call for methods of classifying metallurgical literature. The Metals Section responded, collected and submitted existing classification schemes, and offered its help. The upshot was the formation of an ASM-sponsored committee to devise and develop a better scheme than any in existence. With the blessings of the officers of SLA, library representatives were included in the committee. The result, in 1950, was the first edition of the *ASM-SLA Metallurgical Literature Classification*—a concrete example of what can be done by combining the skills of the scientist and the engineer with the skills of the information-handling experts.

The other concrete example of cooperation is the participation of the Division in the Metals/Materials Congress and Exposition, sponsored annually by ASM. This is an instance where Division members took a strong initiative and have devoted countless hours to hard work and planning. All that ASM has done is to accord status to the Division as a cooperating society in the

Congress, provide exhibit space at no charge, and include the Division's Fall Meeting schedules in all programs and publicity. SLA alone can evaluate the benefit to its members and the library profession of these fall meetings, but surely no one can question the value of this event in bringing librarians into contact with a broad segment of users of information resources. The benefit to the members of ASM and other cooperating societies in the Congress can be attested by the interest shown on the part of visitors to the SLA booth. In my observation over the 14 years of this cooperation, this interest has been held at a sustained high level. Furthermore, although attendance of metallurgists at the SLA meetings and papers sessions has never been large, the very fact that they are aware of them, and aware of the librarians' interest in their needs, has a definite value, albeit intangible and not amenable to measurement.

Advantages of Cooperation

This leads to a consideration of the more subtle advantages of the ASM-SLA relationships. The bringing together of the librarian and the information user has already been mentioned. They have learned to talk to each other. Librarians are certainly aware of the difficult but all-important problem of understanding the minds of the information user so as to best tailor their services to his real needs.

Speaking from the standpoint of ASM as an entity rather than as a collection of individual metallurgist-members, return again to 1948 when the Metals Section was formed. At that time the *Review of Metal Literature* (the ASM abstracting service) was only four years old. We abstracted metallurgical publications and provided annual indexes of sorts, but we had no idea how well this served the needs of the users or how effective it was. Talking with the librarians, meeting with them, and exchanging experiences actually led us to a much more intimate feel for what was needed—and not only what was needed but the best methods and ways of providing secondary information as against the traditional

ASM function of providing primary publications, forums, and technical sessions.

Springing from the *Review of Metal Literature* have been all the other information retrieval and documentation services provided by ASM—first the ASM-SLA Classification, provisions for organizing files by individuals, photocopy service, and literature searching as provided by the ASM Information Retrieval Program. The significance of this can be brought home by the facts that the Documentation Service is now the largest ASM department in terms of headquarters personnel and space, and that ASM has invested more than a million dollars in developing these services over the past ten years. The effect the SLA Metals/Materials Division has had on the direction and orientation of these services is admittedly intangible, but it is there. Conversely, the effect of ASM's activities on the library profession is also intangible, but it is there.

Perhaps one small evidence of this lies in a phenomenon noted only during the past four years. This is that ASM's negotiations for information retrieval services are carried on not only with the metallurgist, who is the ultimate user of the information, but more and more include the librarian or information department of an organization in the negotiating group. As a specific example, ASM has recently instituted a Joint Industry Research Program, which provides a broad range of information services to a company on a term contract basis. In almost every instance the companies participating in this program have delegated the library as the key intermediary in the transmission of the information from the ASM retrieval service to the ultimate user, and the librarian plays a highly important role in channeling these services to the best advantage of the user.

Possible Future Activities

It is difficult to predict what form future cooperation between ASM and SLA will take. It is hoped that the Fall Meetings during the Metals/Materials Congress and participation in the exposition will be continued.

The other concrete example of cooperation was the *ASM-SLA Metallurgical Literature Classification*. SLA representatives participated not only in the initial development prior to 1950 but in the revision and updating, which resulted in the second edition in 1958. Revision is again needed, and both the Metals/Materials Division and ASM have given thorough consideration to this problem. ASM, however, has decided to take no further action at the present time—not because the *Classification* has outlived its usefulness, but because of a rather complex internal situation involving not only the *Classification* but also the subject index to *Review of Metal Literature* and the controlled vocabulary necessary for the computer retrieval service. Modern developments in information retrieval have made it possible to use a single vocabulary control for all three of these functions, namely, a thesaurus, and ASM is now in the process of developing a "Thesaurus of Metallurgical Terms." A number of librarians have already participated in this development, although not as officially representing SLA. Whether or not an opportunity exists for the Metals/Materials Division to work with ASM in further development of this thesaurus and methods of utilizing it remains to be seen.

Finally, the ASM Industry Research Program is leading to closer liaison with libraries. So much so, indeed, that some steps have already been taken to explore the possible interrelationships of the ASM Information Retrieval Service with contemporary library services. Preliminary discussions of this area of investigation have been held with the Council on Library Resources, although no definite plan of action has yet been formulated.

At any rate, possibilities exist for future cooperation between the two organizations in areas as yet unforeseen. The course of this cooperation will depend almost entirely upon the initiative, foresight, and energy of members of the Metals/Materials Division. If past history is any portent of the future, projects will be developed and opportunities will be seized to the mutual benefit of the metallurgical and library professions.

Canadian Metals/Materials Libraries

ANNA V. BROWN

TO PLACE Canadian metals/materials libraries in national and international perspective, the basic Canadian mineral industry, which contributes so greatly to industrial and economic growth, should be explained.

The history of the Canadian mineral industry spans the period from 1604 to the present, and its interesting and spectacular discoveries are chronicled in the Dominion Bureau of Statistics publication *Mining Events 1604-1956*.¹ Early years of intermittent activity were followed by about 100 years in which production was slow compared to that of the World War II period. The subsequent increased production growth was triggered by the demands made by World War II upon the industry. Production value in 1900 was \$64 million; in 1945 it rose to \$500 million, increased to \$1,000 million in 1950, and reached \$3,000 million in 1963 with an indication of 4.5 per cent in 1964.

Since World War II mineral value has increased from less than 5 per cent to 7 per cent of the gross national product, and since 1950 mineral production value increased three-fold, while the gross national product has increased only 2.4 times. *Mineral Information Bulletin MR75*² states: "In 1963, capital and repair expenditures in mining, non-ferrous smelting and refining, petroleum refining, primary iron and steel, and non-metallic primary processing aggregated 1 billion dollars compared with the all-industry total of 12 billion dollars. This comparison considerably understates mineral industry-generated expenditures inasmuch as all railway expansion, many new townsites particularly in northern Canada, a number of electric power projects and communication systems, and some harbour facilities have been based entirely on mineral developments. Another indicator of the mineral industry's importance to the economy is its contribution to national revenues via federal government in-

come tax. In recent years the mining, non-metallic products, petroleum, metallurgical and metal fabricating industries have accounted for one-fifth of federal income taxes paid by all industries.

"The Canadian mineral industry is strongly export oriented. The value of mineral exports is equivalent to about 60 per cent of the industry's production value, making it the leading export sector in the economy. This position takes on added significance from the fact that the economy as a whole is active in export trade with 15 per cent of the GNP being accounted for by exports compared with 5 per cent or less in the United States. The value of mineral and related product exports increased from one-fifth to one-third the value of total merchandise exports in the period 1950-63."²

In 1963 Canada ranked third in metals production, fifth in non-metals, and ninth in energy resources as measured in terms of production value. It was the seventh largest mineral producer after the United States, Soviet Union, Venezuela, China, West Germany, and Britain. Accounting for about 12 per cent of the world's mine production of non-ferrous metals, 9 per cent of smelter production, and about 2 per cent of world consumption of these metals, Canada's mine production of copper, nickel, lead, zinc, and iron ore is 5, 10, 60, 8, 20, and 4 per cent respectively of world production. Canada also produces 12 per cent of the world's aluminum.

The fourth biannual survey of industrial research expenditure released by the Dominion Bureau of Statistics, November 1963, shows that in 1961 Canadian industry was spending more and more on research and was providing a larger share of the research funds it spent.³ The Consolidated Mining & Smelting Company has constructed, at the 160-acre Ontario Research Centre west of

Miss Brown, who is Chief Librarian of Aluminium Limited, Montreal, has based this presentation on a survey she conducted of Canadian members of the Metals/Materials Division whose libraries are in the provinces of British Columbia, Ontario, and Quebec.

Toronto, the first unit of a \$1.6 million metal products research centre. This unit is a \$860,000 laboratory devoted to research on uses of lead and zinc and methods of manufacture. Laboratories also planned, or under construction, at this Centre include those of The International Nickel Company, which is expanding facilities already operating at Copper Cliff and at Port Colborne, Ontario, The Dunlop Rubber Company, Abitibi Power and Paper Company Limited, Warner-Lambert Pharmaceutical Company, Atomic Energy of Canada Limited, and the Ontario Research Foundation. The Steel Company of Canada Limited is proceeding with a \$2 million centre for pure and applied research on steel production at Burlington, Ontario. Falconbridge Nickel Mines Limited, Thornhill, Ontario, opened a \$1 million laboratory in 1963. Canadian Refractories Limited extended its research laboratory at Marelan, Quebec, to accommodate expansion of a pilot plant and for research on the gunning properties of refractories. British American Oil Company Limited's \$2.4 million petroleum research and development centre adjacent to the Ontario Research Centre was opened recently.³ At Kingston, Ontario, construction is under way on a sizeable extension to Aluminium Laboratories Limited, which will greatly increase its facilities.

Convey and Rabbitts⁴ state that if Canadian industry is to be competitive in the face of rapid technological change, it must know what science and technology can do that is not being done to stimulate the Canadian economy. The problem is to know what knowledge is available, where to obtain it, and how to bring it to the people who will use it. The application of scientific knowledge is essential to scientific technical progress necessary for modern nations to continue industrial growth. Industry calls upon the library to accomplish these tasks.

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Canadian Metals/Materials Division Member Libraries

ALUMINIUM LIMITED LIBRARIES

The following three Aluminium Limited libraries are affiliated with the libraries of Aluminium Laboratories Limited at Arvida, Quebec, and Banbury, England, as well as over 30 other libraries and filing centers in 15 countries. The same system for subject indexing of technical literature is used at all these centers, making it possible for research reports to be catalogued at source. Cataloguing of patents has also been integrated to some extent. It is interesting to note that Mr. L. G. Patrick, the librarian at Aluminium Laboratories Limited, Banbury, is serving his second year as Chairman of Council of Aslib, SLA's British counterpart.

ALUMINUM COMPANY OF CANADA LIMITED

Jeannette Foshay, Librarian
Box 6090, Montreal 3, Quebec

The library of Aluminum Company of Canada, Limited, the principal subsidiary of Aluminium Limited, was established in 1930. While its primary function is to provide library service for the management of the company in Montreal, it also supplies information to its smelters and fabricating, chemical, and hydroelectric plants located in other parts of Canada. It is responsible for the company's vital records, corporate documents, and correspondence files of company officers.

SUBJECTS: Metallurgy, fabrication and applications of aluminum, history of the aluminum industry, business management, economic conditions of North America, industrial relations, employment management, marketing, engineering

PUBLICATIONS: Internal list of additions, list of periodicals

STAFF: 3 librarians, 4 clerks

ALUMINIUM LABORATORIES LIMITED

Mrs. Moira C. Jones, Librarian
P.O. Box 840, Kingston, Ontario

The library was established in 1941 to serve technical personnel at a newly opened laboratory and as a filing centre for company correspondence.

SUBJECTS: Extensive collection of published and unpublished literature in the field of light metals
PUBLICATIONS: Monthly accessions list, monthly annotated list of internal reports, annual list of periodicals received

STAFF: 3 librarians, 3 non-professional assistants

ALUMINIUM LIMITED

Anna V. Brown, Librarian
Box 6090, Montreal 3, Quebec

The Aluminium Limited Group Library was established in 1940 to serve the technical require-

ments of the technical units within the corporate structure and of the non-technical requirements of the management companies. It was formed by merging the technical collection of Aluminium Laboratories Limited, Montreal, with the non-technical collection of the library of Aluminium Secretariat Limited, by which name it was known until 1959, when the present name was assigned to more clearly designate its role. The collection comprises resources required for non-technical and technical administration and management. The library operates a centralized filing centre of corporate documents, correspondence, and technical reports and is responsible for Aluminium Limited records management.

STAFF: 4 librarians, 12 non-professional assistants

ATLAS STEELS COMPANY

Division of Rio Algom Mines Ltd.

John E. Eyd, Librarian

Welland, Ontario

Begun in 1961, this library is still in the process of organization. The international affiliation is Rio-Tinto Zinc Corp., London, England. SUBJECTS: Metallurgy and technology of specialty steel production, especially in the area of stainless, tool, and high speed steels

PUBLICATION: *Atlas Steel News*, an 8-page magazine, mainly an advertising medium to illustrate uses for Atlas products, with a one-page series of articles on some form of fabrication

STAFF: 1 librarian

DEPARTMENT OF MINES & TECHNICAL SURVEY

Marjorie M. Rice, Librarian

Mines Branch Library, Ottawa, Ontario

This library was established in 1913 to serve the federal Department of Mines and the Canadian mineral industry. It contains approximately 69,000 bound volumes. The collection includes all publications of the Mines Branch, Geological Survey of Canada, U.S. Bureau of Mines, U.S. Geological Survey, AIMEE, ASM, and most of ASTM.

SUBJECTS: Mining, mineral processing, fuels and explosives, metallurgy, ceramics, and water resources

STAFF: 4 librarians, 4 clerical assistants

CANADIAN URANIUM RESEARCH FOUNDATION

University of British Columbia

Department of Metallurgy

Mrs. Anne Brearley, Librarian

Vancouver, British Columbia

This library was established in 1947-48 by Mr. L. G. R. Crouch, Professor of mining. It contains a special collection of abstracts and reprints on uranium.

SUBJECTS: Physical and chemical metallurgy and mining

PUBLICATIONS: *Uranium Abstracts 1962-64*, bibliographies, students handbook

STAFF: 1 librarian, 1 secretarial assistant

CONSOLIDATED MINING & SMELTING CO. OF CANADA, LTD. (Cominco)

Mr. F. M. Etheridge, Supervisor of Libraries
Trail, British Columbia

The library was established in 1925, and in 1929 assumed responsibility in the Research and Development Division of Cominco for the operation of the central Technical Library. Cominco's international affiliations are in the United States and in India (under construction).

SUBJECTS: Metallurgy of iron, steel, and non-ferrous metals, pure metals research, organic chemistry, fertilizer manufacturing technology, soils research

PUBLICATIONS: *Current Review of Technical Literature* (bimonthly), *Technical News Letter* (bimonthly)

STAFF: 7

CONSOLIDATED MINING & SMELTING CO. OF CANADA, LTD.

Mr. J. W. Burton, Librarian

630 Dorchester Blvd. West, Montreal 2, Quebec

This library was established in 1952 as part of the Market Research Division.

SUBJECTS: Chemical fertilizers, metals, statistics

STAFF: 2

DOMINION FOUNDRIES AND STEEL LIMITED

Mrs. Mina Guema, Librarian

Box 460, Hamilton, Ontario

The library covers all company activities.

SUBJECTS: Primary production of steel

STAFF: 1½

FALCONBRIDGE NICKEL MINES LIMITED

Mrs. Eileen Neill, Technical Librarian

Box 900, Thornhill, Ontario

This research library was established in 1957 to serve the metallurgical laboratories and other company divisions. One section is devoted to the Research Division Archives. The library participates in interlibrary lending and has reproduction facilities.

SUBJECTS: Metallurgy, mineralogy, analytical chemistry of nickel, copper, cobalt and precious metals; special collection on history of metals and ancient production methods and uses

PUBLICATIONS: *Library Review*

STAFF: Technical librarian, assistant librarian, 2 clerical assistants

HAWKER SIDDELEY CANADA, LTD.

Mrs. M. M. Newns, Librarian

Box 4015, Terminal "A," Toronto, Ontario

Established 1961 to serve 500 engineers. Holdings in 1962 were 8,000 books, 40,000 microfilms, 300 current periodicals, of which 150 are retained, and 450 vertical file drawers.

SUBJECTS: Aircraft, engines, industrial products; special collections of aeronautical periodicals and transactions of scientific societies

STAFF: 4

INTERNATIONAL NICKEL COMPANY OF CANADA
LIMITED

Ken G. Robb, Librarian
Copper Cliff, Ontario

The library commenced as a small collection of technical books and periodicals when the Research Laboratory was established at Copper Cliff in 1937. The first full-time librarian was appointed in 1946, at which time publication of a semi-monthly abstract bulletin for distribution within the company was started. Subsidiary companies are International Nickel Company, Inc., in the United States and International Nickel Company Limited in Great Britain. These companies provide a world-wide system of technical information and sales offices in all major countries of the free world.

SUBJECTS: Extractive metallurgy of nonferrous and precious metals, geology, mining, minerals beneficiation, and various smelting and refining procedures; some transactions and periodicals date back to the 1870's and 1880's

PUBLICATIONS: Semi-monthly bulletin containing 125-200 abstracts of pertinent papers is distributed to about 170 executive and technical employees. Bibliographies and semi-technical articles are prepared from time to time, and editorial assistance is provided to authors of technical papers on company operations.

STAFF: Librarian, assistant, and clerical and stenographic assistance as required

NORANDA RESEARCH CENTRE

Shirley Courtis, Librarian
240 Hymus Blvd., Pointe Claire, Quebec

This library, formed in 1962, moved into the new quarters of the Noranda Group of Companies in 1963.

SUBJECTS: Copper and its alloys, the by-products, gold, silver, selenium, and tellurium

STAFF: 1 librarian, 1 part-time clerical assistant

STEEL COMPANY OF CANADA, LIMITED

Mr. G. F. Powell
Wilcox St., Hamilton, Ontario

Established in 1949 to serve all employees. Resources in 1962 were 3,500 books, 15 films, 360 current periodicals of which 175 retained, and 88 vertical file drawers.

SUBJECT: Steel

STAFF: 2

UNION CARBIDE CANADA LTD.

Mrs. Laura B. Richardson, Librarian
123 Eglinton Ave., East, Toronto 12, Ontario

This reference library was established in 1963 and is an international affiliate of Union Carbide Corporation.

SUBJECTS: Chemicals, plastics, metals

PUBLICATION: Internal accessions list (monthly)

STAFF: 2

Rio Grande's H. W. Wilson Company Chapter Award Entry 1964

PROFESSIONAL and technical societies in the area were sent invitations to the dinner and meeting of the Rio Grande Chapter in February 1964. L. F. Parman, Manager, Technical Libraries Department, Sandia Corporation, spoke on "A Systems Plan for Using the Computer in a Large Technical Library."

On April 24, 1964, a joint meeting of the New Mexico Library Association and the Chapter was held in Santa Fe. To further cooperation and understanding between librarians and their professional users, a panel discussion program was held on "Information and the User." Six technical men representing the American Physical Society, American Chemical Society, the American Society of Mechanical Engineers, and American Documentation Institute were on the

panel. Invitations were sent to scientific organizations in the area, and the audience was composed of professional and technical people as well as librarians. Publication of the discussion proceedings is planned.

A bibliography on ultrasonics, prepared by Florence Macpherson, Sandia Corporation Library, was used as a lecture outline for a course entitled "Introduction to Nondestructive Testing." The course, given in conjunction with the Albuquerque Public School System, was designed to meet the demand for practical and up-to-date information on nondestructive testing methods and presented illustrated lectures emphasizing basic theory and practical applications. Two Chapter members participated in the course along with representatives from industrial plants and technical societies in the area.

This Works For Us . . .

A Library Handbook for Metallurgy Students

Aids to the use of library materials take three main forms. First there is the guide to the services of a specific library, with instructions about where to find materials and how to use the catalogue. Then there is the annotated list of sources of information, exemplified by Elizabeth Tapia's *Guide to Metallurgical Information* (SLA Bibliography No. 3; A Project of the Metals Division, New York: Special Libraries Association, 1961). Finally there is the guide to the literature of a subject that not only lists sources but also demonstrates the search techniques involved in their proper use.

Metallurgy students at the University of British Columbia have formerly had available to them aids of the first and second types. *Know Your Library*, a description of campus library services with instructions for using the card catalogue and periodical indexes, is available to all students without charge. Copies of the *Guide to Metallurgical Information* are available for consultation in both the Main and Metallurgy Libraries, and some students have purchased their own copies. They also receive lectures on proper library use and on searching the metallurgical literature. Nevertheless, the need was felt for some sort of handbook that would give guidance on the use of the metallurgy literature, using specific examples but not seeking to cover the literature exhaustively, and, where necessary, relating to the libraries of the University of British Columbia.

The *Library Handbook for Metallurgy Students* was originally planned mainly for graduate students, but the students who took most interest in it and to whom it should really be dedicated were the final-year students. When they discovered last spring that I was working on it, they continually exhorted me to have copies ready for the end of term. They had suddenly realized that they might soon be working in places where they had poor, inadequate, or even nonexistent library services. What they demanded,

therefore, was a handbook that would not only help them with the literature at the university but might also have to serve as a temporary substitute for a librarian.

The *Handbook* finally took shape as an 18-page multilithed publication, stapled between stiff covers to allow for a certain amount of wear and tear. It is large enough not to be lost easily and thin enough to be punched and filed in a looseleaf binder with other material. Apart from information on reference materials, it includes sections on reports, government publications, statistics, theses, and conference proceedings. The final pages are devoted to the problems of keeping records, obtaining Xerox copies and reprints, interlibrary loan, and current reading.

The temptation to include a large number of examples was resisted in the interests of readability and succinctness. Certain categories of reference books, such as biographical dictionaries, were also deliberately omitted, but students were referred to the *Guide to Metallurgical Information* for more complete information.

The *Handbook* was finally completed before the final-year students left us, and their response to it was enthusiastic. The faculty were also impressed and admitted that their own knowledge of the literature had been extended by it. Other engineering departments have shown an interest, and a companion volume for mechanical engineering students has just been produced.

The cost of production—multilithing, collating, photographic work, stapling, paper—amounted to approximately 21 cents (Canadian) per copy for a run of 150 copies. About four hours of typing time was involved in preparing the stencils. A few spares are available for interested libraries.

ANNE BREARLEY
Department of Metallurgy
University of
British Columbia
Vancouver, B. C., Canada



Planning The New Library: Research Library, Caterpillar Tractor Company Peoria, Illinois

CAROL MULVANEY

CATERPILLAR Tractor Company is a manufacturer of wheel-type and crawler tractors and numerous tools for use with the machine—bulldozer blades, scrapers, rippers, tool bars, and hydraulic controls. Caterpillar also builds other related products: pipelayers, motor graders, wheel tractor-scraper, and an off-highway, rear-dump truck. The Company's diesel engines power its own products, a variety of industrial and marine units, and large highway trucks. In total, there are more than 140 prime products.

The Research Library serves the research and engineering needs of Caterpillar, including United States and foreign plants, with a collection that focuses on materials and metallurgy, mechanical engineering, chemistry, physics, electrical engineering, fuels, and soil mechanics. It is responsible for procuring, indexing, and circulating the technical literature, indexing research reports (department accounts of investigations), and preparing extensive searches in both areas. The semi-monthly *Review of Current Literature*, with its request blank, informs employees of the new acquisitions and articles of interest in the current periodicals.

In January 1958, Caterpillar announced plans for a new Technical Center to be located on a 640-acre site north of Peoria, Illinois. Six buildings were planned to provide ample facilities for Caterpillar's research and development programs. The Research Library was to be located in the third building constructed, the Research Administration building. This building would house the offices of the Director of Research, Associate and Assistant Directors, Staff Engineers, Field Research, Computing Division, Design Division, and Technical Services.

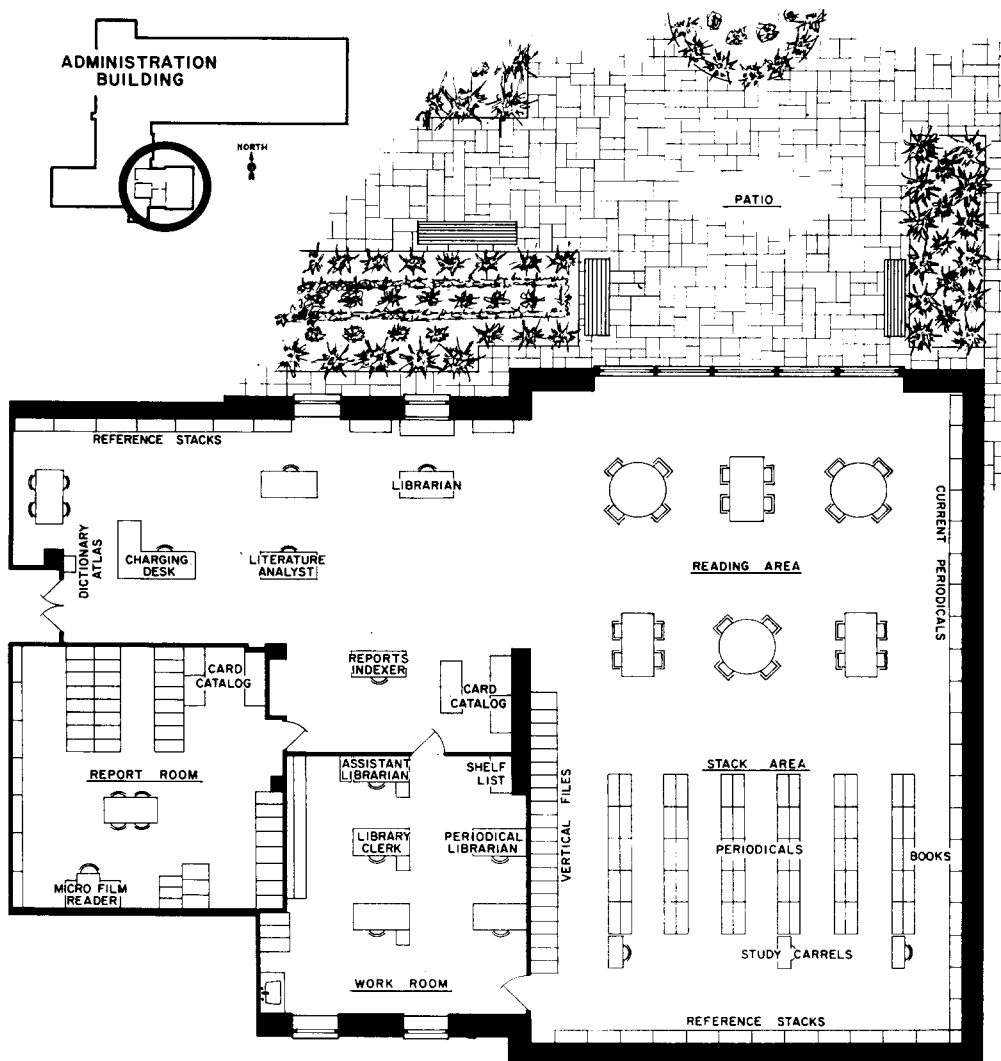
Miss Mulvaney is Research Librarian in Caterpillar Tractor Company's new Technical Center near Peoria.

With this announcement, the library staff immediately started on floor plans in anticipation of the move into its new quarters. Policies and procedures were reviewed from the point of view of service and efficiency in the new facilities. Past "Planning the New Library" articles were studied for plans of comparable facilities. Special libraries were visited and plans discussed with the research engineers who were in contact with the architects. This close cooperation between planners and the library staff has resulted in a library where all areas are efficient and of maximum use to the staff and the users.

The librarian and the literature analyst are located near the entrance. Because most of the indexes, abstracts, and the card catalog are in this area, library users receive immediate assistance. The report indexer's desk is also here, allowing patrons to stop for information before entering the report room, where a reference copy of all research reports is filed. A separate card catalog is maintained for these because of their confidential nature.

Ample windows allow a view of the ever-changing Illinois countryside and contribute to a feeling of spaciousness. Burnt orange doors offer a color spark to the dominant color scheme of mist green. The outside walls are of warm white plaster, with one wall of the workroom utilizing a random Ashler pattern of concrete block. White metal partitions form the walls of the workroom and the report room and offer a perfect background for paintings by employees of Caterpillar. The ceiling is acoustical tile with four feet square recessed lighting fixtures.

The large picture window overlooking the patio, as well as the other windows, have draperies of an off-white loosely woven fabric with splashes of burnt orange, brown, and black. Mist green and brown tweed wool carpeting covers the staff, reading, and stack areas insuring quiet for library users.



Floor Plan of the Research Library, Caterpillar Tractor Company, Peoria, Illinois.

Eight sections of 90-inch metal shelving were purchased a year before the move so that we might test it for durability and the practicality of the height. Since the height did not present a problem, this shelving was approved for installation. Fifteen sections of the 78-inch metal shelving from the old quarters were painted and used in the reference area near the entrance and in the report room. While the present shelving was estimated to be ample for five years, the lighting in the stack area was installed so that four sections could be easily added at the end of each row. Slanted shelves for a part of the

current periodicals form a colorful background for one wall of the reading area.

The wall-hung shelves and counter height cabinets in the work room have proven most helpful in handling the volume of library material. Confining the noise of the typewriters and the phones to this sound-proof room where phones ring and are answered, again contributes to the quiet of the reading area. Solid vinyl tile of beige tones was used for the work room and report room floors.

All the library furniture is mist green metal with plastic laminate tops. The desk chairs are covered with forest green plastic

Original paintings by Company employees hang at the entrance to the library at the right. Overhead recessed lighting and heating and ventilating ducts, large windows, and comfortable surroundings make the library more than just a reading room.



coated cloth, and the reading table chairs with bamboo and ranch tan plastic coated cloth. Although it had been decided that all furniture would be metal, an exception was made in the case of the birch catalog and book trucks.

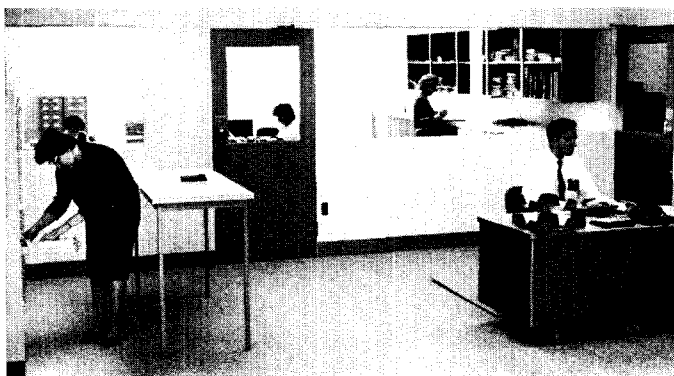
A great deal of planning went into the details of the move into the new quarters. By moving the books and periodicals over one weekend and the remainder of the equipment the following weekend, there was no need for an interruption in service. The assistant librarian moved to the new quarters the same weekend as the books, and with phones connected and inter-plant mail, it was possible to carry on at both locations.

After several trials, it was decided to pack the shelf material in very large cardboard tote boxes. These were built up on pallets so the battery-operated hand trucks could be used to transport them from the library to the truck and then to the new building. By actually measuring the book collection in inches and knowing the size of the new

shelving, charts could be made to show locations of the bound volumes. Some boxes were packed before the final move, but the majority were done after working hours on Friday by Research Services personnel who started the move to the new building Friday night. On Saturday, and again with the assistance of Research Services, the books were vacuumed in the new library as they were unpacked and loaded onto book trucks for shelving. With this help, the entire library staff was free to shelve, and the shelving was completed on Saturday.

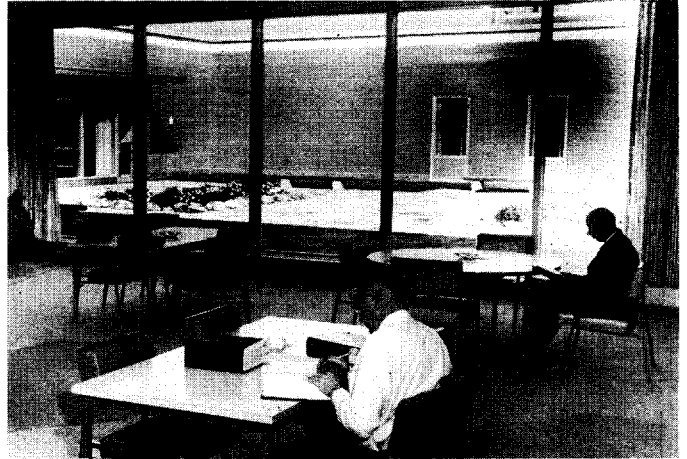
The stacks were then covered with large plastic sheets so the books would be protected while the carpeting was being laid the following week. New furniture was brought in and drapes installed, all in readiness for the arrival of the remaining equipment on Saturday.

The material in the vertical files was moved in the files, with each file numbered and a corresponding number on the floor plan to show the location for the movers.



Librarians have plenty of quiet and efficient space for behind-the-scenes duties (rear). Report Indexer is at right. Note high table near card catalog for convenience of individual tray users.

Not distracting to these reading area users are the almost wall-to-wall window, colorful patio and garden, and brilliant sunshine.



The shifting of the vertical file material and the card catalog and shelflist had also been charted in advance, so these were easily accomplished during the work week. This careful planning allowed us to continue our operations without interruption.

It is a pleasure to be in our new quarters—to have material in one (formerly in far flung storage areas) and the correct place—to have ample room in which to work—to be surrounded by beautiful new equipment.

VITAL STATISTICS FOR THE CATERPILLAR TRACTOR COMPANY RESEARCH LIBRARY

Total square foot area	4,710
Staff	6
Professional	4
Nonprofessional	2
Employees served at location	600
Services extended to other areas	Company wide
Average number of users per day (including telephone)	75
Books and bound periodicals	8,416
Current periodical subscriptions	365
Vertical file drawers	295
Date of completion	November 1963
Planned by librarians and architects	
Special facilities: Microfilm reader; use of Computing Division equipment; use of Xerox 914 Copier in Technical Services Division	

CLR GRANTS FOR INDEXING AND ACQUISITIONS

The University of New South Wales, Australia, received a \$7,500 grant for an indexing study by John Metcalfe, Director of the University's Graduate School of Librarianship. The study, which is expected to be completed in a year, will be concerned with alphabetical subject indexing, especially in relation to relative indexing classifications. The Association for Asian Studies at the University of Michigan received a \$10,000

CLR grant to continue aid in the development of the Chinese Materials and Research Aids Service Center, which began operation in Taipei, Taiwan, last fall. The Center will secure scarce Chinese-language materials, encourage republication in Taiwan of out-of-print books, prepare bibliographical and research aids, and provide information on what is available on the local book market.

Appraisals of "Objectives and Standards for Special Libraries"

IN DECEMBER 1964 the Association published "Objectives and Standards for Special Libraries" in *Special Libraries* and as a separate. To ensure that all who are—or should be—concerned with the development of special libraries and information centers are informed about the Standards, copies are being distributed to a wide variety of organizations and individuals. Any reader who would like an extra copy for himself or his management, need only request one from Association Headquarters.

It is hoped that the Standards will be discussed and constructively criticized as this will help the Professional Standards Committee make future revisions more useful and meaningful. With this in mind, a number of library consultants, a library school dean and professor, an administrator in industry, a library specialist in the United States Office of Education, and practicing special librarians were asked to submit their frank opinions about the Standards. Their unexpurgated remarks follow; further comments will be welcomed as "Letters to the Editor."

MY COMMENTS ARE of a general nature and are not directed towards specific sections of the Standards. Analyzing them in detail would take more space than is allotted to me. On the whole, I believe these Standards to be a valuable contribution to the library profession. However, there are areas that could be improved, in my opinion.

The document lists generalizations, which would be appropriate in any text on library administration, but they are vague and are given in "wordy" terms. I would like to have more clear, concise, and crisp writing. Basic to and prior to the writing of standards is an understanding of the functions of a library and the resources it needs to perform its role. After a pattern of good library service is defined, criteria are established by which its quality may be measured. Then comes the writing of standards. I would set up certain rules for the document including the following: 1) Guiding principles basic to the establishment of library services should be established; these should be followed by specific objectives and standards that may be applied to the measurement and achievement of these principles. 2) Standards usually define minimum adequacy of library facilities and list essential elements in the library's program. Statements of objectives should also include standards of quality to be achieved.

Due to the variety of types of special libraries and to the lack of widely accepted standards, it is difficult to develop reliable systems of measurement for them. Yet, there are certain areas common to all libraries that could be measured, and it seems practical to try to set up research studies for the purpose of establishing these measuring instruments. Perhaps libraries falling into the same general groups, such as petroleum or engineering, could work together for standards for their particular types of libraries. Out of this would probably develop norms that would be applicable in a wide cross section of different libraries.

Standards of service and how nearly they have been achieved are the important criteria for determining financial needs. Management needs specific proof, not vague generalizations, for library budget increases. In my opinion the present Standards will not be effective with management for increased library support. On the other hand, I believe special librarians will find them very helpful.

An enormous task has been accomplished in the development of these Standards; they are a fine contribution to the library profession. I would like to see them in operation for several years, but I hope a committee will begin immediately to review and refine them and, within a period of three to five

years, I hope they will be re-evaluated, revised, and re-issued.

MARTHA BOAZ, Dean
School of Library Science
University of Southern California
Los Angeles, California

AT THE RISK of being a wet blanket, I do not feel a professional association like SLA should establish the criteria (or standards) to be applied by companies or other organizations in the maintenance of one of their internal departments. However valuable and useful this document may be as a **guide** for management and special librarians, it should be consulted as a "recommended practices" manual rather than as "standards."

If we as an Association accept the statement that "To meet minimum standards . . . the special library must have at least one professionally qualified librarian and one clerical worker," we are, in effect, denying special library status to the one-man operation. There are 217 of these (more than 20 per cent of those reporting) listed in the tenth edition of *Special Libraries of Greater New York*. Although there may be many of these that should be considered "substandard," there are many others that do provide more than adequately all the services for which they were established. If we categorically insist they are substandard, must we not also insist that their administrators are not eligible for Active or Associate membership in the Association? The New York Chapter has three highly competent and interested members of its Advisory Council right now in such situations.

I realize this particular "standard" might be modified, but my point is that a professional society, while maintaining high standards for membership, should not place itself in the position of telling management how to manage. There is a great deal of helpful and worthwhile information in this document, but it should be released under a title such as "Handbook for Special Library Administration" or "Manual of Recommended Practices" rather than as "Objectives and Standards for Special Libraries."

KIRK CABEEN, Assistant to the Director
Engineering Societies Library, New York

EVERY SPECIAL librarian who, at the request of his management, has had to define the purpose and functions of his library should welcome this clear, well-organized expression of objectives and standards. Those of us who, in the past, have groped for words to explain the essential ingredients of a good company library can now, thanks to the efforts of several SLA members, refer to what I believe will prove a very useful guide.

This is not to say these Standards are a panacea or an end in themselves. I look upon them more as guidelines or a checklist of the essential elements by which to measure a special library, either old or new.

On asking other technical librarians in my area to comment, their response was that these standards would be helpful in serving as reference points, particularly in dealing with laymen, and that some of the statements are definitive and strong enough to carry weight, while others are worded generally and are not standards in the true sense of the word.

W. Roy Holleman suggested the following changes in the text:

1. Under *II: Staff*, 5., delete "all." Some staff members are trained or supervised by other staff members.
2. Under *The Translator*, place a period after "material." Sometimes material is translated from English into a foreign language.
3. Under *The Abstractor*, place a period after "reports." No need to limit the purposes for which abstracts are made.
4. Under *IV: Services*, in heading to second paragraph, omit the word "promptly"; also, same page, in the heading "The Special Library Provides Prompt Translation Service," omit "Prompt" and add "When Needed."
5. Top of page 677, under heading "An Effective System . . .," delete last paragraph beginning, "Many organizations pay for employees' memberships. . . ." Some companies might rely on this method as a source for subscriptions, and such an arrangement makes the library a secondary recipient and jeopardizes availability of journals.

The editor of the *Library Journal* has recently (January 15, 1965, p. 209) labeled these Standards "so general as to be meaningless platitudes." He also doubts if they are worth the effort that went into their development. I think *LJ*'s editor has missed the whole point of the five-year task.

The intent of these *Objectives and Standards*, as I see it, is to lay the groundwork with the formulation of general policies and goals applicable to all special libraries. In my opinion, a further step would be the development, by the SLA Divisions, of supplementary standards directly applicable to libraries of organizations engaged in similar fields of endeavor, where requirements might exist that are important to the successful operation of such libraries.

LOUIS CANTER, Manager
Library and Information Services
General Dynamics/Astronautics
San Diego, California
Consultant Officer, San Diego Chapter

THE PROFESSIONAL Standards Committee is to be commended on a fine job of collecting and organizing an over-all statement concerning special libraries and special librarianship. As objectives, these are worthwhile aims. As standards, they should be flexible enough to encompass both very small libraries and those in favorable geographic locations.

According to the Standards, in order to be a special library, a collection of information sources must have a professional librarian and a clerical person. The Standards do not, however, define the size of the collection. Small companies, or those in the process of organizing their information materials, usually have a small collection and do not feel the need for two people to administer it. Only as the collection and its value grow does this need become evident.

Space is at a premium in libraries in metropolitan areas such as New York City. Here "potentially useful materials to meet anticipated information requirements" are expensive duplications of resources readily available from the many academic, public, and research libraries in the immediate vicinity.

Would it be possible, therefore, to make some provision for the many libraries in organizations finding it neither necessary nor possible at the present stage of their development to maintain these Standards.

C. ALICE RANKIN, Librarian
NOPCO Chemical Company
Newark, New Jersey
Consultant Officer, New Jersey Chapter

WHILE GREATER progress is being made in library development than in any comparable period in American library history, the demands upon libraries are increasing rapidly both in number and in complexity. To provide effective programs of library service today requires constant reevaluation and planning. This process in turn benefits immeasurably by the availability of sound, nationally accepted standards such as those formulated in *Objectives and Standards for Special Libraries*. So far as can be ascertained, this document meets three criteria essential to its purpose:

1. It is a clear formulation of a set of working principles and procedures, which represent both consensus of the membership of the Special Libraries Association and findings of inquiries conducted by responsible Association leaders.
2. It provides guidance without regimentation.
3. It achieves a balance between qualitative principle and the specificity needed for implementation of standards.

By developing each standard from a major principle, SLA has succeeded in producing standards that are qualitative rather than quantitative in character. As President Budington indicates in the Preface to the Standards, every such document needs constant study and revision to keep it up to date. In some areas of endeavor, major reviews are conducted at five- or ten-year intervals. By being qualitative and emphasizing principle and perspective, the Standards avoid the pitfall of translating principle into specific measurements, which could not succeed in being appropriate in terms of all types of special libraries. The specifications supplied

in the Appendix are helpful in the process of translating standards into a working library program. No doubt this kind of information will be developed further as an important aspect of the Standards maintenance and development.

One of the commendable elements under *Staff* is the emphasis on the importance of continuing education and professional growth. This is a responsible recognition of a need that will increase rather than decrease and that directly influences staff effectiveness.

The *Objectives and Standards* promises to be a workable document and a landmark in special library development. For management, librarians, and library school faculty and students, this important document achieves a unified sense of direction by treating the six components—objectives, staff, collection, services, physical facilities, and budget—within a clearcut rationale. The resultant perspective is invaluable in a world in which disparate fragmentation is far easier than cohesive endeavor.

SARAH R. REED
Library Education Specialist
U. S. Office of Education
Washington, D. C.

IT IS A privilege to write a few words about the *Objectives and Standards for Special Libraries* recently adopted by the Special Libraries Association. As a scientist and administrative director of a large research laboratory, I have a deep appreciation of the importance of information services to the research effort. The collection of materials we call a library is of no value to an organization unless it is used effectively. It cannot be used effectively without a well-trained staff willing to make use of its knowledge and training for the benefit of others. It is here that I believe the value of the *Objectives and Standards for Special Libraries* will benefit both the profession and the institution being served.

Through long schooling, every educated person has made use of the library to gain the knowledge he has and therefore may consider himself an expert in its use. The tremendous increase, however, in the information that is available has made it necessary

for people to specialize in their fields to be effective. The library can no longer be an assigned responsibility of the boss' secretary but is an important staff function, which must be properly established and staffed with experts. Some may feel that the *Objectives and Standards* are described in too great detail, but it is my opinion that this has to be done to acquaint people of different backgrounds with the qualifications of an effective special library and its staff. In my opinion these *Objectives and Standards* are well written and can be used very effectively in establishing relationships with other functions in a research laboratory.

For these *Objectives and Standards* to become meaningful, both management and members of the library profession must work together to see that they are maintained at a high level of performance. Only by maintaining high standards can the library profession obtain the status it deserves.

GEORGE L. ROYER, Administrative Director
Stamford Research Laboratories
American Cyanamid Company
Stamford, Connecticut

MY COMMENTS on *Objectives and Standards* are based upon experience gained: 1) in a special library situation for a quarter century, 2) as one whose advice was sought informally by persons responsible for library operation in organizations unrelated to my own, 3) as a visitor to dozens of special libraries in both an SLA official capacity as well as in an unofficial one, and 4) as a result of consultant activities over the past five years.

At the outset the Committee on Professional Standards faced the formidable task of reconciling diverse viewpoints due to the "variable parameters" mentioned in the Preface. To have gained a consensus of opinion is, in itself, a considerable achievement. Reduction to writing called for patience and a genuine understanding of actual problems encountered in special libraries—libraries that do not, as a rule, function as independent units but rather at the will of management in organization wherein libraries are informational service units.

Objectives are goals, and goals, once reached, can be heightened both in individual library situations or on an association-wide basis. They are not inflexible and in no way will they impede progress. To accent the positive, goals when combined with standards can be used to advantage as measuring sticks for some libraries that may not yet have attained the criteria outlined. For others, they may represent values that should never be sacrificed in reorganization moves that so often take place. For the few libraries where progress extends beyond the objectives and standards outlined in the document, there is a considerable obligation for leadership in helping others to achieve professional advancement.

When the document undergoes revision some of the comments below may merit consideration; two are general and the others are specific:

1. The present format is not likely to impress either the student or management—a distinctive cover would aid in its identification.
2. Although main sections are numbered, referral to subsections would be facilitated if labelled with lower case letters.
3. Under Section III, Collection—Acquisition Policy, the word “published” should be changed to “pertinent” or “needed”; no special librarian can review “all announcements and listings,” even as homework.
4. Since the Preface is a necessary part of the document, the statement “. . . specific quantitative measures, if followed, give automatic excellence” might be changed. Rather than discount the human element, it would be wise to end the sentence with the word “measures.”
5. Under Section IV, Services, appears the statement, “The total service program is a dynamic one.” Refer then to “The special library serves all who have appropriate needs. . . .” These two sentences should be underlined to insure against complete insularity of the library if it is attached to one single component of an organization such as R&D, as is often the case. There may be instances when the employee of another divi-

sion, *e.g.* public relations or sales, has the opportunity to aid a potential customer if he can secure information quickly or even a bibliography. Because of staff, space, or other limitations, there may be a library policy to serve only the parent component rather than the entire organization. Refusal of help to others on the same payroll has a frustrating effect. Existence of other libraries in the same organization, as well as organizational status, are related questions—questions that usually arise at some point in consultation work.

It is wise that quantitative standards are avoided. The Committee attained excellent results in integrating standards with SLA membership qualifications. The contents are well organized and clearly stated, and congratulations are due the Committee and Professor Leonard. The publication of this document, which sets forth principles, policies, and practice, is both an accomplishment and another bench-mark toward developing the profession.

MRS. IRENE M. STRIEBY, Retired Librarian
Eli Lilly and Co., Indianapolis
Consultant Officer, Indiana Chapter

I HAVE been through the Objectives and Standards for Special Libraries and think it is quite a sound first draft. There are some who may quibble about the generality of the statements, but with special libraries varying to such a degree that they do, it is quite impossible to have a set of standards that are quantitative. I would think that the future might well bring standards that are developed for types of special libraries, *e.g.*, medical libraries in universities, law libraries, business libraries, bank libraries, engineering libraries, etc. The development of the Standards as presented should give impetus to the more directed standards for types of libraries.

Insofar as possible, the Standards should include any formulae or specific data that are available, such as those that are now given for stack, shelf, space, illumination, etc. I think the SLA is on the right track.

MAURICE F. TAUBER, Professor
School of Library Service
Columbia University, New York

STOP! READ! START NLW Activities!

3M Technical Library

THE 3M Technical Library in St. Paul, Minnesota, announced the 1964 NLW in many different ways.

In addition to distributing the commercial posters and bookmarks, we also handed out bookmarks listing the bestsellers from our library bulletin and the leaflet, "Welcome to the 3M Technical Library."

One week before NLW, a list was circulated to the personnel in Central Research informing them that the reference librarian would discuss the booklet "A Guide to the Searching Facilities at Central Research Library." A supplement—"Service Is Our Most Important Product"—was also compiled. Forty-five technical personnel attended the talk.

In a conference with the editor of the company internal newspaper an illustrated feature story about the library was arranged.

ANITA FAVERO, Librarian

Minnesota Chapter Activities

DETERMINED to be good citizens in the professional library community, the Minnesota Chapter worked with four other library organizations in the promotion of NLW—Minnesota Library Association, College Library Association, Catholic Library Association, and the Association of State Libraries. The Chapter was represented on the Minnesota Steering Committee for National Library Week for the first time, and through the efforts of the representative, special libraries were included in the Governor's NLW proclamation. Also for the first time, special libraries were included as a category in the Committee's competition for an outstanding promotion by an individual library during NLW. Twelve members entered this contest.

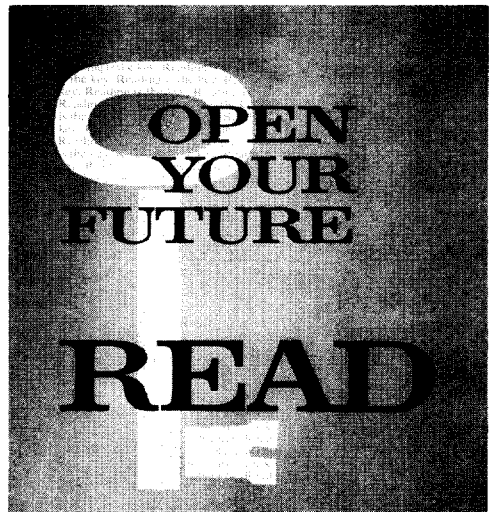
One member obtained the use of a large (12 foot) outside display window in the Northwestern National Bank for two weeks. An attractive display combining the NLW theme and the "Putting Knowledge to Work" slogan was assembled, featuring a

list of Twin Cities companies having libraries, a map showing their location, a man and woman mannequin representing librarian and patron, and many eye-catching books selected for their appeal to the businessman. The location of the window in the heart of the business district was ideal for this type of promotion as thousands of Upper Midwest businessmen pass it every day. In addition, a member firm supplied two large NLW displays for the Twin Cities International Airport.

Another member arranged to have a five-minute television film produced by WCCO-TV. The show was filmed in eight special libraries and showed the librarians and various phases of their work. It was combined with live interviews with two special librarians who pointed out the vital role librarians play in their companies and mentioned career opportunities in the field.

A SLA member firm was responsible for having 11 copies of the NLW 20-second spot radio announcements made and distributed to all wide-coverage radio stations in the area. Said Alice Brunat, Executive Director of National Library Week in Minnesota in her report to the National Library Week Steering Committee, "The Minnesota Chapter of Special Libraries cooperated 100 per cent. . . ."

This year, Ford Motor Company, Detroit, Michigan, will contribute the \$100 prize money awarded to the Chapters of the winners of the SLA National Library Week Publicity Award.



Have You Heard . . .

Medical Library Assistance Act

An amendment to the Public Health Service Act known as the Medical Library Assistance Act of 1965 was simultaneously introduced in the House of Representatives (H.R. 3142) and the Senate (S. 597) on January 19. The Act, which will expand the duties of the Board of Regents of the National Library of Medicine and the Surgeon General will, in general, "provide a program of grants to assist in meeting the need for adequate medical library services and facilities." The program, as outlined in the bill, will 1) assist in the construction of new, and the renovation, expansion, or rehabilitation, of existing medical library facilities; 2) help train medical librarians and other information specialists in the health sciences; 3) award special fellowships to physicians and scientists for the compilation of existing, and the creation of additional publications to facilitate the distribution and utilization of knowledge and information in the health sciences; 4) aid in research and investigations in medical library science and in the development of new techniques, systems, and equipment for information storage and retrieval; 5) help improve and expand the basic resources of medical libraries and related facilities; 6) aid in the development of a national system of regional medical libraries each of which would supplement the services of other medical libraries within the region served by it; and 7) provide financial support to biomedical scientific publications.

ASAE Information Service

The American Society of Association Executives is replacing its Reference Library with an Information Service Department, under a Director of Information, to handle member requests for information. SLA professional consultants are helping to modernize the Information Service, which has the goal of providing answers within 48 hours. Eventually a computerized department will be established, but it will begin by using copying machines and microfilm units.

Federal Research Dissemination

The Institute of Applied Technology, National Bureau of Standards, has developed a cooperative program with state universities, commerce and development agencies, and similar organizations in which they will act as distributors of informational materials supplied by IAT and also keep IAT informed as to what type of technology can be used most effectively by firms in their areas. The two types of informational materials available from IAT are the Fast Announcement Service to inform industry promptly of new government R&D reports and a package program for retrospective presentation, which consists of reports, bibliographies, and price lists on a specific subject. Both services can also be obtained from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151.

Members in the News

MRS. ELIZABETH R. CASELLAS, former Head Librarian, Stewart, Dougall & Associates, New York City, has been appointed Assistant Professor of Library Studies at the University of Hawaii Graduate School of Library Studies.

MRS. HELEN F. REDMAN, Librarian, Los Alamos Scientific Laboratory, New Mexico, is in charge of the Atomic Energy Commission's Technical Information Center at the "Atoms in Action" exhibit in San Salvador, El Salvador, from February 23-March 22, 1965.

CHARLES H. STEVENS, former Documentation Officer at Massachusetts Institute of Technology's Lincoln Laboratory, has assumed new duties on MIT's Project INTREX in Cambridge.

In Memoriam

ELEANOR V. WRIGHT, Engineering Librarian and staff member of Chrysler Corporation, Detroit, since 1934, died recently. She served SLA as Second Vice-President in 1951-52 and Secretary, 1956-57, was President of the Michigan Chapter for two terms, and was a founder and Chairman of the Engineering Section.

Off the Press . . .

Book Review

PARAMETERS OF INFORMATION SCIENCE: Proceedings of the American Documentation Institute, vol. 1. *Arthur W. Elias*, ed., Washington, D. C.: Spartan Books, Inc., 1964. vi, 519 p. \$15.75 (L. C. 64-8303).

Proceedings of a meeting often reflect the personality of the issuing society. Much of the youthful nature of ADI (and of documentation science in general) is visible in this volume, which is the first in a series intended to supplement the ADI's journal, *American Documentation*.

In few of the true, mature sciences would one find proceedings containing so many papers dealing with plans or preliminary findings, but in the documentation field this current information is vital to many. Moreover, readers of proceedings are usually aware that these volumes lack the unity and organization of reference books. In this case indeed, the proceedings were basically pre-prints; they were distributed at the start of the 1964 ADI meeting. The timing (speed) required for such publication undoubtedly accounts for many of the volume's crudities and in no real way keeps the volume from having considerable state-of-the-art value. In addition, the book has reference merit that will persist for at least a few years.

The 78 papers are grouped under eight categories: "Information in Decision Procedures," "Educational and Professional Aspects of Information Science," "Information and Data Centers and Services," "Human Factors and Communication Environments," "Documentation Storage and Display and Online Machine Mediation in Time-Sharing," "Realization of Associative Memory Device(s) and Techniques," "Analysis, Indexing, and Correlation of Information," and "Symbolization and Transformation of Information."

Special librarians will readily note the underlying emphasis on the use of computers, but they should not be deceived into believing that there is little basic information presented on information organization. Moreover, such special-library stalwarts as Ralph Shaw ("What Is Central in Central Services?") and Susan Artandi ("Investigation of Systems for the Intellectual Organization of Information") hold their own with computer-use "engineers" such as M. M. Kessler, and sophisticates will be enthralled by "An Imaginary Panel Discussion About Indexing," authored by Claire K. Schultz. Moreover, the librarian's operational needs are occasionally touched on, as in B. E. Lamkins' "Integrated Library Management Systems Concept."

Dyed-in-the-wool documentalists, of course, will find much more that is pertinent to their work. So

much, indeed, that singling out specific papers would give an unbalanced picture. L. B. Heilprin's introduction ("Welcome to the ADI Meeting") points out, also, that each section of the book contains a "tutorial" or review paper. Most of these are quite good, although by no means extensive.

The book itself, printed from cold type, is unusually readable, except for the occasional (incredible) use of microprinted illustrations. It is a "must" volume for documentalists and for all special librarians who are intent on keeping up with the birth and adolescence of techniques that they will want to apply or adapt tomorrow—or even today.

B. H. WEIL, Head
Information Processing Section
Technical Information Division
Esso Research and Engineering Company
Linden, New Jersey

NSF Brochures on Grants and Information

Improving the Dissemination of Scientific Information (NSF-64-22), and *Grants for Scientific Research* (NSF-63-27), published by the National Science Foundation, Washington, D. C., describe NSF's interests and activities in both areas. NSF-64-22 indicates the recent reorganization of the Office of Science Information Service, its objectives, studies, programs, and publications. The *Grants* brochure lists the procedures to follow in submitting applications for the support of scientific projects and tells how these grants are administered. Copies of the brochures are available from OSIS.

SLA Authors

DIVETT, Robert T. Mechanization in a New Medical School Library. I. Acquisitions and Cataloging. *Bulletin of the Medical Library Association*, vol. 53, no. 1, January 1965, p. 15-25.

DOWNES, Robert B., co-author. Professional Duties in University Libraries. *College and Research Libraries*, vol. 26, no. 1, January 1965, p. 30-9.

FORMAN, Sidney. A Librarian's Participation in the Conference on the African University and National Educational Development. *College and Research Libraries*, vol. 26, no. 1, January 1965, p. 49+.

LOWRIE, Jean. Fitting the Program to the Problem. *ALA Bulletin*, vol. 59, no. 1, January 1965, p. 49-53.

PIZER, Irwin H. Medical Aspects of the Westward Migrations, 1830-60. *Bulletin of the Medical Library Association*, vol. 53, no. 1, January 1965, p. 1-13.

Price for Boston Union List

The price for the fifth edition of the *Union List of Serial Holdings in Forty-Three Libraries*, published by the Science Technology Group of the Boston Chapter of SLA, is \$15. Checks, made payable to the Science-Technology Division of SLA (Boston Group), should accompany the order and be sent to Alice G. Anderson, Boston Post Road, Wayland, Massachusetts 01778.

New Serials

ARMS CONTROL & DISARMAMENT is a quarterly bibliography with abstracts and annotations published by the Library of Congress. Trade books, selected world-wide government publications, publications of national and international organizations, and 1,000 periodicals are covered, and there is an author index. All materials are in English, and translations are included. Volume one, Winter 1964-65, is available for 55 cents from the Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402. Subscriptions are \$2 a year; \$2.50 for foreign.

LASER FOCUS, published by International Data Corporation, 355 Walnut Street, Newtonville, Massachusetts 02160, is a semi-monthly report on laser research, development, manufacture, and application. In addition to articles, the journal includes a comments section, new products, and current literature. A yearly subscription is \$36; six-months, \$19; and two years, \$70. Editorial material is prepared by Teknics, Inc., a firm specializing in analyzing developments in advanced technologies.

WHO'S DOING WHAT IN BIOMEDICINE will appear monthly in issues of about 100 pages and will consist of a list of sources, a subject index, project title index, alphabetical index to investigators, and an investigator-location index. The subject and investigator indexes will be cumulated. Published by the Center for Information Resources, Inc., a subsidiary of Herner and Company, the journal is essentially a guide to people and their research projects, grants, contracts, and meetings. Annual subscription rates are \$130 for profit-making concerns, \$115 for unaffiliated individuals, and \$100 for nonprofit groups. For mailing outside North America, add \$5.

WORLD CALENDAR OF FORTHCOMING MEETINGS, published by The Iron and Steel Institute, 4 Grosvenor Gardens, London, S.W. 1, is a bimonthly journal containing information covering a two-year period about meetings throughout the world concerned with all aspects of metallurgy. The date, location, theme or title, organizing body, registration, languages used, available published proceedings, and other details will be listed, the entries appearing in chronological order. Short title, place, and organizing body indexes are included. Subscriptions may be ordered from the publisher for £5.5s.

MARCH 1965

RECENT REFERENCES

Prepared by JOHN R. SHEPLEY

Bibliographic Tools

BAKER LIBRARY, HARVARD UNIVERSITY GRADUATE SCHOOL OF BUSINESS ADMINISTRATION. *Statistical and Review Issues of Trade and Business Periodicals*. Boston: 1964. 20 p. pap. \$1.

Third revision of a list originally compiled by Donald T. Clark and published in *Special Libraries*, November 1945. Includes special statistical and annual review numbers, as well as issues containing statistics on specific subjects. No directories, buyers' guides, or similar annual issues unless they include industry statistics.

BOGER, Lorise C., comp. *Newspapers in the West Virginia University Library*. Morgantown, W. Va.: West Virginia University Library, 1964. v, 129 p. spiral binding. Apply.

West Virginia newspapers (647 titles), plus out-of-state and foreign papers—842 titles in all. Includes those on microfilm and those held as originals. Title and chronological indexes.

INTERNATIONAL ATOMIC ENERGY AGENCY. *Capture Reactions* (Bibliographic Series No. 12). Vienna: 1964. 136 p. pap. \$3. (Distr. by National Agency for International Publications, Inc., 317 East 34th St., New York, N. Y.)

A continuation of *Photonuclear Reactions* (IAEA Bibliography No. 10). Contains 697 references covering the period January 1948 to August 1963. Material is classified in seven chapters according to reactions and within each reaction according to the periodic chart of the atoms and then by author. Abstracts given when available. Subject and author indexes.

Information Handling Techniques

BAR-HILLEL, Yehoshua. *Language and Information: Selected Essays on Their Theory and Application*. Reading, Mass.: Addison-Wesley Publishing Co., and Jerusalem, Israel: Jerusalem Academic Press, 1964. x, 388 p. \$12.50.

Essays written over the past 15 years in five general areas: theoretical aspects of language, algebraic linguistics, machine translation, semantic information, and mechanization of information retrieval. Bibliography of references; name and subject indexes.

HOLMES, EMORY H. *The Information Center: Some Selected Examples (AD 606174D)*. Springfield, Va.: OTS, U.S. Dept. of Commerce, 1964. 32 p. pap. \$2.

Discusses the development of information centers in contrast to traditional libraries and gives reasons for the failure of the latter to meet the special information needs of scientists and technicians. Describes four selected operational information centers (DDC, Title Insurance and Trust Co., Smith, Kline and French Laboratories, Douglas Aircraft), each an illustration of certain system design problems to be considered when setting up an information center.

Directories

AMERICAN COUNCIL OF INDEPENDENT LABORATORIES, INC. *Directory: A Guide to the Leading Independent Testing, Research and Inspection Laboratories of America*, 9th ed. Washington, D. C.: 1026 17th St. N. W., 1964. x, 118 p. pap. Apply.

Describes organization, services, etc., of individual ACIL member laboratories and provides a geographical index and index of services.

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CATALOGER—Science background preferred. Lehigh University. Department well organized with adequate clerical assistance. Library has newly established Center for the Information Sciences. Bethlehem, Pa., 90 miles from New York City, 50 miles from Philadelphia. James D. Mack, Librarian.

FISHERIES AND OCEANOGRAPHY SCIENCE LIBRARIAN—U.S. Bureau of Commercial Fisheries, Auke Bay Biological Laboratory, Auke Bay, Alaska. Complete charge of technical library serving the research staff at the Auke Bay Laboratory and a number of field stations throughout Alaska. Responsibility for coordinating with other libraries in Alaska. GS-9 or GS-11, \$9,025-\$10,812 starting salaries, which includes Alaska Cost-of-Living Allowance. Transportation provided by government to Alaska for employee and family, plus household goods, with work agreement of at least 12 months.

LIBRARIAN—Part-time or full-time, New York City, non-profit organization. Some background in psychology, psychic research, and related areas helpful but not essential. Salary open. Write Box C 9.

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LIBRARIAN REFERENCE—For organization serving aerospace industry on nationwide basis. Busy, service-oriented operation. Must handle own correspondence, telephone inquiries. Technical experience essential. Send complete resume, including salary information to Box C 5.

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POSITIONS WANTED

LIBRARIAN—Man, B.S., M.A.L.S. Varied experience in technical and academic libraries including indexing, abstracting, and report writing, seeks challenging and responsible position. Midwest preferred. Write Box B 138.

TECHNICAL LIBRARIAN—Woman. Seven years experience in all phases of library operations, industrial and college, including information retrieval techniques. Fluent French. Interested in maintaining or setting up a technical library. District of Columbia and Southwest preferred. E. Nisbet, 1600 South Joyce Street, C-1406, Arlington, Virginia. Area code 202, 522-0163.

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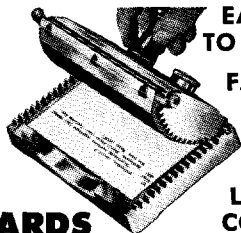
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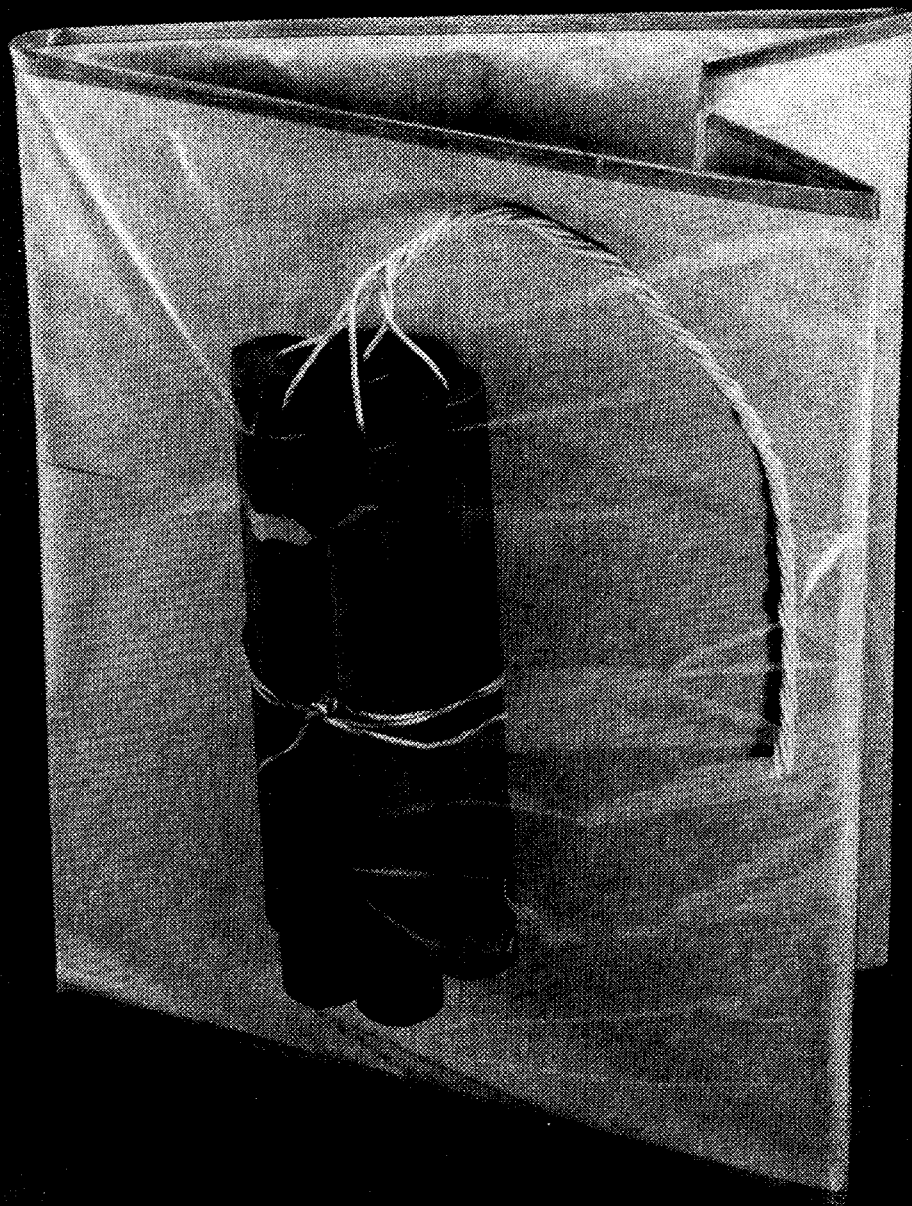
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