

BRO-DART INDUSTRIES' EXPERIENCE WITH ELECTRONIC DATA PROCESSING

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The primary objective of Bro-Dart Industries is to serve libraries. As a result of committing the management and creative and financial resources to this objective, Bro-Dart has become the one company directly involved in practically every area of service to all types of libraries—public libraries, school libraries (from elementary through university), and special libraries.

Therefore, because of the similarity of functions and problems and because Bro-Dart is continuously trying to improve its operations as well as to supply and anticipate the needs of its customers, the experience of the company with electronic data processing (EDP)—the successes and the failures, the progress of the system to date, the equipment being used, and future plans—will be described in this report.

A service organization such as Bro-Dart must be able to make intelligent decisions as to how time and resources should be directed, and, therefore, statistics must be developed by products and type of service showing the total activity, requirements, and trends in the library field generally. At the same time, the needs of an individual library must be known and understood. Because Bro-Dart must handle numbers and documents accurately and quickly, it cannot be forgotten that each library reflects the personality of its administration and the special needs and nature of its patrons.

Ten years ago the company had fewer products and was not then engaged in the extensive program of book services it offers today. Reports and statistical analysis were taken from hand posted information summarized manually, but as new products and services were introduced, the manual maintenance of information became more difficult and inadequate. Comparative slowness and an increase in human error in analyzing a much higher volume of documents

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caused the company to investigate the use of electronic data processing. After a careful study, it was concluded that electronic data processing was too costly for the operations of the company at that time, but it was believed that it would ultimately be used. Because the study caused a close examination of existing procedures, many ways were uncovered to cut paper work costs and to get more useful information without installing new equipment. Anticipating the future use of data processing, it was decided to endeavor to gear all systems and procedures as if the installation were already made, a decision that proved rewarding. For instance, although it may have seemed elaborate at the time, a system for numbering all library accounts was devised. This was a first step in coding information. Each number assigned not only indicated the library's own serial number but showed the state in which the library is located, the sales representative serving that library, the type of library, and its parcel post zone. All of this information is important in the day-to-day servicing of library customers. A numbering system of the various products of the company was devised, keeping in mind the kind of reports which Bro-Dart would ultimately want to receive, as well as the limitations and possibilities of data card sorting equipment. Both of these numbering systems have stood the test of time remarkably well.

During 1956 it was finally decided that the company's volume had reached a point where electronic data processing was economically feasible. A local service bureau was first used for punching and tabulating sales analysis information from source documents the company submitted. The key punching by the service bureau was not as accurate as desired, and, therefore, after a couple of months, the company installed its own key punch followed later by the rental of a sorter, a reproducer, and a tabulator after a close and continuous analysis of the service bureau's charges. The IBM Department remained small for its first few years. Payroll was added to its work. Then came accounts receivable. At first, the work done by the data processing equipment was paralleled manually. It soon became clear that the machine could do a better job in this area, and so the conversion was completed. General ledgers, accounts payable, and a cost system followed in 1961 and 1962, some upgrading in type and speed of equipment being required. The installation of an EDP system into the Supply Division was carried out as it should be. A careful feasibility study was made, a definite plan of installation was evolved, and additional procedures were installed on an evolutionary basis. No existing system was abandoned until the system was proved on the EDP equipment. Although it took seven years, it was accomplished with minimal costs and heartaches.

If at all possible an EDP installation should be made in carefully planned steps, and no existing systems and procedures should

be abandoned until such time as the new ones can be proven. This author has never observed an installation where everything immediately started to work, no matter how carefully it was planned. One would think that Bro-Dart having been so successful in its first installation, it would have taken the same approach in other operations, but, unfortunately, this was not the case.

In 1960, Alanar Book Processing Center, the first contract cataloging and processing center and a Bro-Dart subsidiary, was just beginning to stretch in anticipation of its very rapid growth of the past few years. All manufacturers of data processing equipment presented ideas for the use of such equipment in handling all or part of Alanar's operations. But upon close examination, it was quickly learned that library variants multiplied by thousands of libraries were far too extensive for existing equipment at any cost which could be considered by a responsible library service organization. Most people concerned with data processing have had to learn the hard way that the range and variety of materials used by the library is extremely great. There are thousands of sources for books alone. The publishing status of the books and variations in editions and bindings add to the number of units. This is only the beginning, for the number of possible combinations in processing books for a large number of libraries is enormous. Any small grouping of libraries wishing to adopt more or less complete uniformity of cataloging and processing procedures, especially through limiting the vintage of books to be processed, can use data processing equipment to a considerable extent.

Alanar's involvement is much broader in that Alanar has acted to provide professional and clerical manpower for all types of libraries—performing work in accordance with the requirements of those libraries. Recent developments both in low cost custom cataloging through highly sophisticated use of equipment and the kit approach to some areas of cataloging and processing will be described later.

Although serious thought of using data processing equipment for Alanar was set aside in 1960, by 1961 a possible new use in the books area had arisen. In that year the company entered the book distribution field. The deciding factor was interest by the Library of Congress in establishing a program for the supply of LC cards with books. New facilities at Williamsport, Pennsylvania, were established in the summer of 1961, and by the winter of 1961-62 the books with cards program had become a reality. In the beginning, the new company, Bro-Dart Books, had only one customer for its wholesale business—that customer being Alanar. But even at that time Alanar was doing acquisitions, cataloging, and processing for several hundred libraries.

General experience with data processing in the book distributing industry had not been marked with success. On the contrary, there had been many instances where its use had proved disastrous. But in setting up a completely new operation, possible use of data processing equipment offered many attractions. Looking to the future, complete involvement appeared inevitable, and authorities in the field seem agreed that a thorough grounding in tab card operations is a great help in getting ready for a computer. Having decided upon the desirability of installing a tab card system, a program was undertaken to gear an entire organization for a substantial degree of automation. Unlike the company's tab card system in Newark, New Jersey, used primarily for accounting and administrative purposes, the new installation was to serve primarily as a production tool.

Many and long sessions were held with representatives of IBM to develop a tab card system which would provide both the operational and informational controls desired. In broad outline, the system adopted was as follows:

1. A tab card was key punched for the total number of copies of each title to be purchased for stock and/or to meet specific customer orders for titles not stocked or for those ordered in excess of the existing stock balance. Information punched into these cards included author, title, publisher, price, edition, and binding.
2. If perchance the title was not in stock, the original key punched cards were duplicated to create a customer's back order file and were further duplicated to tabulate purchase orders placed with the various publishers and were then held as an open record of books on order.
3. As books were received from publishers, invoices were compared with purchase orders and necessary invoice number and date, together with discount received, were key punched into the tab card previously used to create the purchase order. Such updated cards became an open file of books received.
4. A copy of the receipted card, modified to indicate a quantity of one only, was then prepared and inserted into each copy of a title. Such cards contained all the information required to invoice books shipped to a library customer.
5. Through the merging and tabulation of cards showing quantities of a title on order, received, and shipped—to which was added the cumulative totals of books ordered and shipped—a valuable progress report could be prepared as a guide to acquisitions and as an inventory record.
6. The original order card was used to pick the back order book and then used to collate out the back order cards.

In order to bring together all information relating to a title and to combine it into a single entry, the use of a distinctive number was recommended. Because it was intended to stock the cards with books, using the LC number for this purpose seemed to have merit. But it was soon apparent that: (1) cards for many titles were unavailable and, therefore, numbers were not available; (2) the same LC card set might be supplied for the same title against a number of imprints because the publisher might not have been careful to send their own edition to the Library of Congress; (3) it was discovered that occasionally the same LC number had been inadvertently assigned to two different titles. In short, the LC number would not positively identify the exact title, author, edition, and binding. Although an effort was made to assign temporary numbers in the absence of a proper LC number, the problems were acute; and the number program was abandoned. The result was full reliance on titles, editions, and bindings—the slightest variations in which created unbelievable difficulties in carrying out the original aims of the system. It does not take much to knock a machine system into a cocked hat, and the frustrations faced were at once instructive, tragic, and costly.

The most severe blow of all was the complete miscalculation by the machine experts concerning the ability of the recommended equipment to do the job. The basic equipment in use centered about an IBM 407 printer and a 604 calculator, plus, of course, key punches, sorters, etc. The inability of this equipment to handle the required volume of records led to the abandonment of the acquisition and inventory report and the customer back order file. Great reliance had been placed on this aspect of the system, and new ways and means had to be devised under great pressure to bridge the gap. Many of the solutions to individual problems gave rise to other complications, and the number of different systems being tried and modified led to very complex problems. The unhappiest situation was a sacrifice in service to company customers. Although Bro-Dart had, and has, great faith in the future of electronic data processing, it went swiftly from optimism to despair.

The biggest weakness in the early months of involvement with the data processing system in books operations was that it was undertaken without the protection of an existing workable system which would have run in parallel until the "bugs" were worked out. As mentioned before, such a parallel system had been available in the company's earlier conversion of its supply operation records and, unquestionably, was responsible for the ease with which the conversion was made. Bro-Dart will never again start up any operation or convert any system and procedure to EDP without having first a system to fall back on, particularly during the early stages of the installation.

Growth of book distribution caused a considerable increase in the tab card equipment required to handle the input of more than forty key punching and verifying units, working on both day and night shifts. As the cost of the card operation approached the cost of a computer, the next step was obvious. An order was placed for an IBM 1440 computer, which would do everything being done by the tabulating card system and also provide for that area of inventory and book order control which had been lost in the early stages of the tab card program. The IBM 1440 series had been announced at a cost which was lower than that of the company's existing card handling equipment.

Experience already gained in data processing had begun to indicate directions to be followed in computer operation. The less had been learned well. There are headaches in launching any large scale data processing program. It was decided to provide for parallel operations of the existing tab card system and any new computer system for as long as it might take to ensure success of the changeover.

A separate department was established and staffed to prepare for the programming job ahead. But first it was given the task of reviewing all of the company's book operations and presenting independent recommendations as to the make and computer configuration best suited to the needs of Bro-Dart, bearing in mind the company's rapid rate of growth. The result of this review was a determination that a computer such as the IBM 1401 or the Honeywell 200 was required and not the IBM 1440. These preliminary investigations took approximately four months, and, in February 1964, the previous order for the IBM 1440 was cancelled and replaced with an IBM 1401 magnetic tape oriented data processing system with a high speed printer. The superior servicing facilities then provided by IBM in the area of the company's operations were an influencing factor in the final decision.

The next logical step in planning for computer installation was the organizing of a Programming Systems Group whose major task was analyzing the various aspects to be brought under computer control, devising the total systems concept, and defining the specific programming jobs. It cannot be overemphasized that a good, comprehensive, and useful systems concept must be delineated, discussed, and approved before any major programming effort is undertaken.

In addition to four full time programmers, more than 1,000 hours of top management time and 10,000 hours of other executive and supervisory time—outside the IBM department—were devoted to preparing for computer installation and operation. Partial operations were planned under three main headings:

1. Inventory control, invoicing, acquisitions, back ordering, and general book handling, etc.
2. General accounting, which had long been handled by data processing equipment at the company executive offices at Newark, New Jersey.
3. Other library services (e.g., preparation of indexes to book catalogs, preparation and up-dating of lists, and simplified ordering and interchange of data where library customers are using data processing equipment).

The IBM 1401 computer was installed in December, 1964. Approximately sixty basic programs are being used for daily operational control, representing some 4,000 hours of programming time. The programs cover order input, book picking, back order control and acquisitions reports, purchase orders, receiving, invoicing, customer reports, and shipping. Some of the programs are highly sophisticated to provide for the great variety of ordering patterns at the disposal of Bro-Dart and Alanar customers. A few of the hundreds of possible variations are cited to suggest the degree of sophistication required in programming.

A series of orders may require separate billings by individual purchase order and/or line item number—a frequent requirement. Cataloging and processing may be separate on the same invoice, on a separate invoice, or combined with the book price. Another alternative has been developed by Bro-Dart to effect a substantial reduction in paper work, namely, the “Intend to Buy” system. Under this system, the company assembles books against a tentative order or listing, submitting what is an invoice in everything but name, on the basis of which the purchasing office issues a confirming order—eliminating partial shipment, open items, etc. The computer must not only recognize and conform to such specifications, but it must keep a record of purchases to make sure that customers’ budgets are not exceeded where these have been advised.

Special services offered in the way of LC card supply, book jacket covers, hard binding or paperbacks, prebinding, etc., must be identified and many variations in edition and binding preference must also be accommodated. A detailed specification must be set up for each library to cover its usual requirements, yet with provision for the library to override general specifications on an individual title basis.

The computer must also maintain a complete inventory record of stock books on hand, as well as those that are on order, whether or not more LC cards are available for that given title. It also must maintain a complete back order file by customer so that as soon as a book that was out of stock is received, it can be shipped to the

proper customer. It, of course, must also carry out the usual accounting functions relating to accounts receivable, accounts payable, payroll, costs, etc.

The biggest task which faced Bro-Dart apart from programming, was to input all of the original records. What has been done, in effect, is to assemble in machineable form essential information on titles now in print. At this date the record covers about 140,000 titles with about 25 per cent to go. The problems of input are many, and the decisions are important. There is virtually no limit to the amount of information which it is physically possible to enter on a computer record. But should you decide, as Bro-Dart did, that you are going to use a fixed length record of each entry, a single record twice as long as any other record will double the length of tape required for the whole and correspondingly increase the cost every time the tape is passed through the equipment.

Bro-Dart determined the point at which the record length would accommodate about 95 per cent of all titles in full and then edited the balance within this limit. It so happens that the 5 per cent of extremely long titles includes many which have limited activity.

The title takes more space than any other single item, but the same considerations apply to author, prices, discounts, and dates. Those who have had experience in fitting the information into the 80 columns of a single tab card know how quickly those 80 places are used up. Most entries require a number of cards; and one of the advantages of the computer is that once you have entered the original information, a longer single record can be maintained even though only parts of it are used at any one time.

As already mentioned, the amount of input must be related to the size and, hence, cost of maintaining records. It must also, of course, be related to the many uses of output. If you shorten a little for reasons of operating economy, can you accept the abbreviated title when it is printed on the list or form you have called for?

Errors occur through the slightest programming weakness and although all programs are tested before use, only trial under full operating conditions can demonstrate that they are completely sound. The simplest weakness in a complex computer program can drive you out of your mind, but can be solved with patience and fortitude. The errors which remain are human errors. You may wonder how something can be key punched and verified by machine and still be incorrect. It cannot happen, but it does. Every effort must be made to minimize input errors, for a pure system is a joy. However, we live in a real world, and this means one in which mistakes occur. Errors can and must be corrected. The trick is to watch for and recognize the side effects. The computer may some day learn to think, but there are times when its discretion is very poor.

In reference to input problems, Bro-Dart was not happy with existing data collecting systems and has been involved in the development of an interesting new unit which it calls the "kom-punch." It is believed that this piece of equipment for data collecting may be of great value for book-charging systems.

As mentioned before, Bro-Dart's attempt to use the LC number as an address was not successful. Hundreds of hours were therefore spent developing a code to serve the company's purpose properly because although many long sessions have been held throughout the library field to consider the practicability of a universal computer number, little progress has been made. Many of the problems will be apparent to anyone giving the matter thought. In the absence of such a universal number, it was decided to use a computer assigned number fitting the following pattern. The number, alpha numeric, consists of a maximum of ten positions. The first three or four are letters taken from an established publisher code which will be described later. Here is a typical example: CRN CO 22L. CRN indicates that the title is published by Crown. The next two letters are the first two letters of the title and are used for purposes of rough alphabetical sorting by title (corresponding to the way in which the stocks and files are maintained). The next three positions are for a number (three digits are rarely required). This number is always distinctive for a title of that publisher having the first two letters of the title shown. The last position is a letter which indicates the type of binding (L for library, P for paper, T for trade, etc.). The composition of this number holds considerable importance and, as mentioned before, was most carefully considered. It was chosen in preference to a straight numeric code on the basis of its use in many areas of operations and because after careful testing, it was determined that Bro-Dart personnel made fewer errors when using an alpha numeric code than when using a straight numeric code.

The publisher code developed by Bro-Dart has done an excellent job for the company and for many others. The code has a maximum of four digits—all letters. A publisher such as McGraw Hill is represented by the three letters MCG. The code is designed to use meaningful and easily recognized letters whenever possible, particularly for those publishers most frequently used. The letters MCG indicate that books bearing the McGraw Hill imprint are also obtained from McGraw Hill. Another code, MCGW (this time four letters) is for the Webster Publishing Company. The fact that the first three letters are the code for McGraw Hill indicates that Webster books are obtained through McGraw Hill, and the computer prepares its purchase orders accordingly. RAN is Random House, RANG Bernard Geis, RANK Knopf, RANP Pantheon. All of these are ordered from Random House. Both the company's book stocks and acquisitions

procedures make use of this coding means of dealing with publishing families. The Bro-Dart publisher code now covers over 2,500 publishers, and the list has been made available to many customers at their request.

It is possible to continue almost indefinitely describing the various additional systems, procedures, and unique programs Bro-Dart has been forced to devise just for the book distribution operation. Some of these are unquestionably of interest for a library installation, but others, of course, are not. If any librarian wishes to visit Bro-Dart and explore the computer operations in detail, he will, of course, be welcome. Although the computer has now been in operation for five months, some systems continue to be run on the data card equipment in parallel with the computer; and although this is according to plan and pieces are falling in place nicely, the company is running about sixty days behind schedule as far as the complete computer takeover is concerned.

However, certain uses of the equipment are now being made and obtaining certain results which were not anticipated for many months to come, for example: book catalogs. When interest was first shown by Bro-Dart customers in book catalogs, a survey was made to develop that product which appeared to offer both maximum utility and economy. Most book catalogs produced previously fell under a few broad classifications:

A straight photographic reproduction (usually reduced) of actual catalog cards. An advantage of this system is that it preserves the full depth of the original cataloging. Disadvantages include the need to disturb the catalog periodically for rephotographing, with the added expense involved, the space involved in reproducing the total number of cards in the catalog for each title, and the very considerable cost of paper and printing for multiple entries of the same title which must be printed over and over again.

Another approach has been actually to set in type some or all of the information that appears on the catalog cards. The purpose of this is twofold: first, to obtain the look of a printed book, and secondly to utilize high speed listing equipment such as the List-o-matic camera. This system has all of the disadvantages mentioned above plus higher costs.

Other approaches have used computers or data card systems—some using abbreviated entries, and although this produces a very economical catalog, it lacks depth of cataloging. Others have key punched from the catalog card everything on it and frequently additional information. Although such a catalog does have tremendous depth, its cost is enormous, and its physical size becomes unwieldy.

Bro-Dart has the facilities to produce book catalogs by both reproduction and computer methods. A new type of book catalog has been developed by the company and is a blend of the two systems. It offers flexibility and economy, which will be apparent from a description of the end product. Bro-Dart calls it a Register - Index Catalog. This type of catalog consists of a basic register in which there is a single photographic reproduction of the full entry for each title in the collection. The location of the entry on a specific number or lettered spot on a number page provides a permanent and distinctive index reference to such entry, the combined number of pages, and location. Once cross index cards are set up to carry this distinctive number for an entry in the register, it can be found without ever being reproduced again.

Once the register has been established (including provision of additional copies to cover anticipated increase in use), it is only necessary to prepare new sheets to include additional titles added to the library's holdings. Such sheets serve the double purpose of keeping all those interested in touch with new additions to the collection and updating the register on a continuing basis. The computer index is the ever changing key to the library's holdings. Each entry in the index (whether by subject, title, or author) gives the name of author and title, the call number by which the book can be located on the shelf, and the distinctive number which locates the fully cataloged entry in the register. Since the year of publication is significant in determining whether a particular book is likely to be helpful, this information is also taken from the full catalog information when available and included for each index entry. Inclusion of the year of publication further reduces the need for referring to the full catalog information. Each index entry can also be coded as designated by the library to indicate in which campus library or libraries a title is to be found. If this were to be done for every title, it follows that it would be possible to separate all or part of the catalog index by individual library if there ever arose a reason to do so.

To demonstrate the feasibility and efficiency of such a catalog, Bro-Dart has, to date, produced three of them, one for a junior college district, another for a co-operative public library system, and still another for a government research library. All of the users have agreed that the catalog has been most satisfactory. Additional contracts have been accepted, but the number has been limited during the period of computer takeover. However, the success of the book catalog and other rapidly expanding activities caused Bro-Dart to place an order for an IBM 360 computer for installation in 1966.

The computer undoubtedly can do a number of jobs in the technical processing field. In light of the extensive catalog card stocks which the company maintains—both headed and unheaded—and with extensive facilities for reproduction, it is probable that

Bro-Dart's interest in computer preparation of catalog cards will be of a minor nature. But as mentioned earlier, libraries prepared to accept certain limitations in scope and some variations in the physical form of their processing (e.g., the use of labels) can now make use of data processing. In the role of a manpower service organization, however, Bro-Dart follows a wide range of specifications to meet the requirements of the individual library which uses company services when, as, and if it chooses. Apart from giving opinions where invited to do so, the only way in which Bro-Dart may influence the course taken by its library customers is by the higher charges which go hand-in-hand with exceptional specifications.

Bro-Dart has recently developed techniques which will make it possible in time to offer much lower processing costs, where the simple label kit technique is acceptable, and yet preserve for the library a high degree of flexibility over the complete area of available in-print publications.

Nothing is less expensive than the printing press when large numbers of items are to be imprinted with the same information. Bro-Dart began two years ago to build a program to lower the cost of a limited range of titles at the elementary level to libraries serving schools and children. This program has matured as the cataloging and processing kits are now being made available. A national library mailing has just been completed of a book kit catalog listing 10,500 titles for which kits will be available for cataloging and processing books going into libraries for the new school year beginning in September. The cost to the library for books ordered from Bro-Dart under this program, with kits applied either by the company or by the library, will be the lowest ever, and yet a high standard is maintained. The book and kit catalog referred to is a product of the computer. The author and title listings include Bro-Dart's computer number for each title. Where clerical help is hard pressed, a library can order the books desired by simply listing the computer numbers or marking them in a copy of the catalog itself.

As many library customers are in or entering the data processing field, there is an increased need to find ways in which further efficiencies can be gained by having the machines talk to one another. There are undoubtedly areas in which this is possible and, while the machines converse, Bro-Dart staff members may have more time to talk to librarians, who are the source of many of the company's ideas.

A problem which has been widely discussed in using computer prepared indexes is the difficulty of following established library filing rules. This problem causes less trouble in book catalogs for relatively small libraries where filing similar to that used in a telephone directory can be tolerated. But in large libraries, the problem assumes greater dimension. In order to determine how best to deal with this important problem, a professional team is now making a

study under sponsorship of the Bro-Dart Foundation, a non-profit organization established by Bro-Dart Industries to support selected projects of wide interest to the library field.

Incidentally, the first project sponsored by the Bro-Dart Foundation was the selection of a school oriented book collection of approximately 5,000 titles plus audio-visual materials. This work was undertaken by an independent professional committee under the chairmanship of Professor Mary Gaver of Rutgers University Graduate School of Library Science. The first phase of this list was published in March, and the total collection will be available shortly. At the request of many specialists in the elementary library field, the book catalog format previously mentioned has been used for this new library tool.

It is said that when one of the first data processing units was made available for public inspection, a request was made by a newsman that the equipment be instructed to add two and two. Many minutes and many chuckles later the equipment responded with the right answer. Adding two and two on a computer is about as silly as driving a carpet tack with a sledge hammer. Yet the foolishness of matching sledge hammer and tack is neither as great nor as frequent as the wasteful use of data processing equipment. During research into Bro-Dart's own equipment needs and procedures, IBM and others gave the names of many firms handling large numbers of items, such as wholesale hardware supply houses, supermarket chains, etc. It was astonishing to learn the number of large and costly installations which were being used but a small fraction of the time. There were two apparent reasons: (1) Management felt it important to get into the act in this day of computers but were either not prepared or shied away from giving the management time and support essential to a successful program or (2) The operation did not require as sophisticated a piece of equipment.

Many library visitors, who come from all over the country to see the company's book operations at Williamsport, have discussed their data processing plans. Many have access to equipment available on university campuses or with associated agencies of local and state governments. Windfalls are always welcome, and, if a move to data processing is in your future, availability of adequate equipment at low cost or no cost is a big help. However, just as you judge the fitness of a book for your library's shelves without first thinking about who is going to pay for it, it is well to make sure that any uses of data processing equipment be efficient in relation to the normal cost of such equipment. In time, even a prorated share of an excessively expensive piece of equipment could be a drain on your budget.

A number of tabulating and computer installations have drawn wide attention among those in the library field interested in the use

of such equipment. Much of the work done at these installations, and a high percentage of the cost involved, must be considered as necessary research and development. And, as is often the case of pioneering work in any field, first results must be most carefully examined to be sure that, at their stage of development, they represent the degree of effectiveness and efficiency which would commend their use to libraries wishing to incorporate such systems as part of their day-to-day operations.

There is little which cannot be achieved if ample resources are available, but, for the long pull, results must justify cost. There is an apparent initial economy in following the pattern of work done by others; but in any comparatively new development, the risk of buying someone else's mistakes (however understandable they may be) must be considered.

Most librarians have devoted their life's work to service by the library. The author's field has been service to the library. Bro-Dart is presently in the midst of a substantial speed-up toward new and greater goals in library service. To the extent that librarians can find help in knowing more about what the company is doing, it is theirs for the asking.