The documentation service as originally introduced in the National Metallurgical Laboratory, the drawbacks of this system and the details of a revised new approach to documentation which was subsequently evolved are discussed. The procedure followed for the collection, processing and use of the information under the new set-up, comparative advantages of the new approach over the previous method and problems faced in the development of the new system are presented.

Introduction

The importance and appropriateness of documentation and information service was realized in the National Metallurgical Laboratory quite early in its life. Among the various institutions of its kind that came into existence in the wake of national Independence, this was one, whose efforts were very early tested in practice, and on whose skills and ingenuity there has been a growing demand as a very natural direct consequence of the industrial explosion through which post-independence India has been passing. It was found that metallurgical information appearing in the most advanced journals of the West was only partly applicable to its industry and technology, as was also the information obtainable in the books. While the former was far ahead of its requirements, and had little relevance to its present conditions, the latter was not advanced enough for its needs, or did not provide all the answers to the numerous problems of its adaptation to the technological, economic and social environs of this country.

The Emphasis on Purpose

As a result, from the beginning, a search was made for a method which would ensure that documentation service, which alone could bridge the information gap, be selective and purposeful in that it must meet the specific needs of projects in progress. In other words, it must cater to a demand for technological information which the industry waited for translating into practice for the advancement of the country's economy.

In this attempt, there were two difficulties. First, no matter how qualified or perceptive the documentation staff could be, they could not always evaluate or assess the suitability of a particular information to the specific demands of a case. Second, even if, somehow, the necessary items could be selected, there was the difficulty of reaching it to the appropriate persons on account of the production bottlenecks and mechanics of distribution. Because of the system of production in vogue, viz., typescript sheets of foolscap size, only four or five copies could be produced and they could either fail to reach all the scientists who are interested to receive it, or reached them too late in the line of routing to be of much interest or use to them.

It may be argued that this could be solved by the process of making multiple copies through cyclostyling. But, even then, as the matters of interest to a particular division was scattered in a large volume of material going up to over 40 pages, it was not easy for that division to locate the items of interest quickly. It would be no use here to advance the view that they could be taught the classification system, so that they could at least locate their items by following the classified order. But, in a multifaceted close classification, that has to be used in abstracts and documentation services of this type, any reader would be completely lost unless he was trained in librarianship. Besides, there was no way of leaving with them the desired material for reference and use. This difficulty became apparent early in the experimentation with documentation.

Initially, the documentation service in N. M. L. followed the pattern adopted, elsewhere, and had the same limitations of selection, production and utility.
Selection of Items

The material was selected by the library staff from the periodicals received in the Library on the basis of the best judgement that could be formed about the needs of the staff, particularly the research and scientific staff. But as the Library had no living contact with them, it was not possible exactly to foresee their needs. This was also true of the Liaison and Information Division of the Laboratory. It had, no doubt, a much closer contact with the mainstream of industry, but it would seldom think of taking the library into confidence, or use its resources for meeting its requirements or supplementing its solutions to the problems that the industry referred to it. Most of the time, it prepared its answers on the basis of the work done or from the opinions of the specialist in the fields, without considering that the library and its information services could be profitably used to modify or to supplement them, sometimes even radically.

Production Method

The production and presentation was in that usual booklet form, arranged into certain groups. Since it was produced as a typescript, the copies were limited to six at the most and, as such, could not be circulated to all. The documentation slips, on the basis of which it was compiled, were also limited to six copies or even less since, for preservation, they had to be printed on thicker paper. The circulation, thus, was extremely limited. But even if it could be enlarged, the reader sometimes felt that:

1. He had no need for the items included, and missed items that were needed by him;
2. Even if it contained some material which was useful to him, he had to wade through a large volume of useless material to find it.

As such, he felt rather unenthusiastic about this compilation.

Extent of Use

The utility of this project was thus of a very restricted nature. Not so much because of its intrinsic lack of worth, but because of the selection and production methods. Even otherwise, it could not pinpoint the needs of the user and cater to them. This lack of utility was most frustrating, when it was viewed against the tremendous effort spent in this fruitless pursuit.

Project-Oriented Documentation

To obviate all these difficulties, a new system of Project-Oriented Documentation (POD) was conceived and put into operation in 1964. This was started in the National Metallurgical Laboratory as a pilot project, under the CSIR. The Indian National Scientific Documentation Centre also was associated with it and took a keen interest in this project, and rendered valuable suggestions and guidance in its successful development. The essential features of the project are:

1. Controlled circulation and decentralized screening by scientists,
2. A new mechanics of production,
3. Decentralized filing and more extensive distribution.

Circulation and Screening of Journals

Circulation

It may not be out of place here to mention some of the problems associated with the circulation of journals among the scientific staff which have been successfully tackled in the course of the development of this system. In the beginning, the circulation of journals proved a great bottleneck, when the routing was from one department to other, the circuit starting with the Library and ending in it. Under this system, divisions down the line received the journal too late, and the Library could never be too sure which division had a journal. They also seldom came back to the Library in time. As such, many items could not be incorporated in the abstracts at the appropriate time.

This problem was solved by changing the routing system and asking each division to return the journals sent to it within 48 hours of receipt, so that (a) the Library could keep track of it and (b) each division got it direct from the Library and returned to it. By this changed procedure, the control over the movement of journals became much more effective.

However, the changed method as well as the former procedure left one problem unsolved,
viz., the loss of journal during circulation, which could occur either in transit or while in use in the receiving division. An adequate yet simple procedure was evolved to prevent such losses in circulation. Individual issue registers containing the following entries are used for this purpose:

1. Date of despatch to the division/section,
2. Code and date of publication of the journal,
3. Signature of receiver,
4. Date of its return to the Library from the receiving division.

The second point needs a little explanation. To avoid writing the long names of the journals each time in the peon book, all journals were given a numerical code number, which roughly followed an alphabetical order. This looked something like, say 648/71/5/27, meaning thereby the issue of 1971, 27th May, of the Journal No. 648. In giving the code number to the journals in the alphabetical order, enough gap was left for future insertion, so that the codes did not have to be revised too frequently, and could acquire some mnemonic value both to the Library and the receiving divisions, thus helping quick references. This procedure has simplified the work considerably, and has ensured a practically faultless circulation system.

Screening by Research Staff

For this purpose, the journals and other periodical literature received in the Library as also patent specifications and reprints are, after 7 days display in the Library, grouped according to the functional divisions of the Laboratory and the arrivals in the relevant group sent to the concerned divisions for circulation. The Laboratory has the following 19 divisions among which the journals are circulated.

1. Director
2. Director's Laboratory
3. Deputy Director
4. Dy. Director's Laboratory
5. Alloy Steel Division
6. Chemistry Division
7. Corrosion Section
8. Creep Laboratory
9. Design & Engg. Section
10. Electrical Section
11. Electronics Section
12. Extractive Metallurgy Division
13. FPT Division
14. Genl. Metallurgy Division
15. Mechanical Testing Division
16. Ore Dressing Division
17. Physical Metallurgy Division
18. Refractory Division

Each division, on receipt of the journals coming to it, is required to go through them and mark the items needed in pencil, mentioning the page numbers of the marked items on the routing slip in pencil, and return the journals back to the Library within 48 hours. In making the selections, they are requested to be wide, yet discriminating. They are told to select items which are of immediate as well as possible future interest—the principal criteria being their applicability or relevance to the assignments given to them. They can select any published item, be it an article, note, book review and even advertisement which may be of some use.

After the journals come back to the Library, the Library Officer goes through them once again and may delete items that are repetitive or add those that have been missed. The repetition comes mostly from those items which simultaneously break out in several journals in the same discipline. It may be an article that has been reprinted in several journals, or a news item or an extract. This is done to avoid unnecessary duplication. In such cases, the original source or the best presentation or production is traced and only this retained in preference to the others. The repetition arises out of the fact that as the Library subscribes to many journals in multiple copies and they go to all the divisions, the same item may often be selected by more than one division.
By this process of screening and selections, three points are ensured:

1. That the screening becomes more exhaustive as the work is divided, only a few journals are handled by a person, each journal going to one specialist mostly. These are normally screened by the second level scientific staff, who are in many cases of a post graduate qualification, such as Sr. Scientific Officer, etc. They are not only fully qualified to be aware of the importance of an information, but being immediately in touch with the scientist in charge, as well as in touch with experimental work, they are well-qualified to make an assessment of the value of the selected item.

2. Such preliminary screening ensures that only items of actual interest will find its way into the documentation system, thus establishing a firm basis for its utility.

3. The process of screening itself attracts the interest of the scientific staff to the new developments and progress in that area and they get an involvement in the quality of the documentation service, which gradually becomes their own work rather than the Library's. This has a good effect on their use of, and relations with, the Library also.

4. Since every item is screened by a specialist, and selected by him, the documentation staff can also draw upon their help while classifying these items, particularly, when it is beyond the limits of their acquaintance with the subject, or it is a new subject or a very narrow specialization. In such cases, a reference to the screening staff becomes the easiest way of correctly classifying the subject. This can be done by a simple telephone call on the internal telephone. Formerly, such help could be obtained only by sending the papers to the specialist, or even finding who the specialist concerned would be, and requesting him to read the item and give an opinion.

Production and Classification

Editing and Collation

The journals received back after screening are collated and the marked material edited, by deleting portions or marking points of bibliographical importance, so that the typist could type them in the standard format and style and in standard size slips in four to six copies — four for items which are wanted by only one division and six for items where two or three divisions are involved. If required, more copies are also made, but that involves double typing. Such cases are very few. After the slips are typed, they are compared by the staff of the Library. An attempt is being made currently to persuade the screening staff to compare them for accuracy, because where mathematical symbols or scientific jargon is used, the typists or the stenographers may sometimes miss a vital figure or a symbol or misspell a word, completely twisting the meaning or making the abstract useless. For this purpose, the scientists selecting and screening them are being requested to put identifying marks or initials, so that this procedure could be made a regular feature of the documentation process. This will also reduce the load of a brave but foredoomed attempt on the part of the Library to ensure accuracy in the documentation system.

Classification

The classification system follows the modified U.D.C. The subject classification and synthesis is typed on the top right hand corner, about one inch and a half away from the right edge in one or more lines, depending on the length of the notation. Generally, the lineation is according to the component facets of the subject. As already stated, the work of classification is greatly aided by the research staff of the Laboratory.

Production

In this connection, a problem of reproduction that has been besetting the Library may be mentioned for discussion and a solution. The slips for the index file are of a stock which has to be thick enough to afford vertical filing and manipulation. Such thick paper cannot take four or six copies. Even with electric typewriter, because of the thickness of the paper, the fourth or sixth copy becomes
blunt, due to the edges of the sharp type faces travelling through a thick blanket of paper. So, even though the fourth or sixth copy may have a deep carbon impression, the edges of the type become blunt almost to the point of making them solid, or in any case much bolder than they are, so that reading becomes difficult. Cyclostyling also affords no solution, as it has to be done on the standard paper supplied by the manufacturers, which is too thin for vertical filing, and which have to be cut to standard size.

One solution can be to ask the suppliers of cyclostyling paper for a thicker variety, with standard size long perforation at the size limit of the card. Or else, some sort of reproduction process, which must be cheap and which will give good reproduction on any paper, should be used. The use of a Xerox type process with standard size blanks of the appropriate stock of plain paper, would probably be the ideal solution. It is hoped some of the newer methods which have been recently advertised, for instance, Majox by Mcneil & Barry and the one by Advani-Oerlikon, both based on the electrostatic principle developed in the National Physical Laboratory, will be a solution to the problem.

Such a solution will also largely simplify the work of classification. The cards are classified after they are typed. The classification is indicated in pencil in one slip and then typed in the others, since it has not been possible to develop an aesthetic hand-writing of uniform size to accommodate the entire notation. Such typing also involves at least two insertions and much typing work. Even then, the impression is not uniform as the registration of the cards are seldom perfect.

Distribution

The documentation slips are arranged in their classified order and made into sets covering the subjects under a division.

1 The first set of all slips, which go to the Library central file, is interfilled with the slips already there.

2 The copies meant for the divisions are grouped together and arranged in the order of classification, bound with clip fasteners, and each division is supplied with one bound and one loose set — the latter for interfiling in the division file.

3 The Director's set is bound with cord as it becomes too thick for the clip fasteners. All sets for the Director are cut to trim the edges to a fine finish.

Review and Evaluation

The system has been operating for over seven years now. Some of the problems that were faced and overcome in course of its operation may be mentioned in brief.

Early in the process, it was found that the readers received the journals at least 10-20 days after they were put in the chain of circulation. The damage due to this delay has been minimized by issuing a title index of new arrivals (Index of Current Titles) every week. This Index keeps the scientists concerned aware of the arrivals and they even mark in their own copy the items that they would like to read/select. This contains only the title and author of the main articles arranged according to the title of the journal. This is produced by cyclostyling and distributed to all senior scientific staff.

This service has been very much appreciated and has added to the utility and improvement of the system.

Author index

A suggestion was received from some of the users to introduce a feature in the system which is in use in many places, viz., an author index to the documentation scheme, to be issued monthly for the items compiled in a month, and accumulated at the end of the year. It was argued that such an index would

1 Help the research workers, who very often refer to published information in terms of their authors;

2 Bring into focus the published work of those whose research and experiments break new grounds or constitute the definitive work in any discipline;

3 Give an idea of the standard of the items abstracted as reflected in the reputation of their authors.
Even while agreeing with the arguments advanced, it was not felt necessary to introduce this feature, because it was found that if the author of a publication was known, it would be easily traced from several other abstracting and indexing systems, such as ISI cards, and this would answer the first two points. As regards the third, though partly true the exercise was found to be too strenuous to be justified by this doubtful standard for assessment. First, many reputable authors' published work, which even though of a first class standard, had no relevance in our context. Second, the authors who were comparatively less known constituted the bulk of the contributors in any month's compilation. This suggestion was, therefore, abandoned.

Merits of the new system

1. Greater use

The new system has found a far greater use than the preceding one. Though no statistics has been maintained, each division consults its index very frequently. They have by now collected a sizeable body of information of direct relevance to their own work, and, for this, has set up their own 'mini-documentation' unit. Their keenness to have it is also apparent from the fact that if a division does not receive its share of the compilation any month when somebody else receives it, they immediately enquire about it. Even otherwise, they enquire about its possible publication date. This shows that there is an expressed demand for it. It was not so with the older system.

In the past, there was no way of knowing even by this indirect method of demand, how much use was made of the system or its utility. This use, as already mentioned has had a multiplier effect. Arousing out of this, scientific staff often want supporting material, particularly in the area of patents, specifications, drawings, etc. which are a direct result of this service.

2. Compilation of bibliography

As a result of the documentation service, the compilation of bibliography has not only become considerably easy, it has also improved in quality and quantity. Even on the narrowest specialization, the Library can now compile a pin-pointed bibliography in any area within the specialization of the Laboratory, in practically no time, covering a wide field of as many as 30-40 items. This service has been universally appreciated not only by the staff of the Laboratory, but by others in the field who have had occasions to draw on its resources.

3. Project planning

Scientists now extensively use the documentation system of the Library while preparing research projects and plans of work to be undertaken. As a result of the use of this documentation system, their plans become much more precise and practical, and literature search, which forms the first step in any research project, now poses no difficulty of search or time as before.

Conclusion

In conclusion, a point about the economics and staffing requirements of this service may be of some interest. The service involves the handling of 600 periodicals of all types in a month running into a total of 900 in terms of single publications. The patents account for approximately another 100 items per month.

The documentation slips number approximately 500 items in any month. The circulation and distribution involve 19 points. The entire work is carried out with a staff of only two people: the author, in addition to her work as in-charge of the NML Library, and one typist. While starting the project, it was thought that a staff of 5 documentalists and 3 stenos would be required for this job. Although this never materialized, the service has been maintained by the dedicated and hard work on the part of the staff concerned, only because it met an expressed demand of the readers. Only librarians will understand the extent to which professional pride and the gratification at having met a felt need of readers will motivate a librarian.

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