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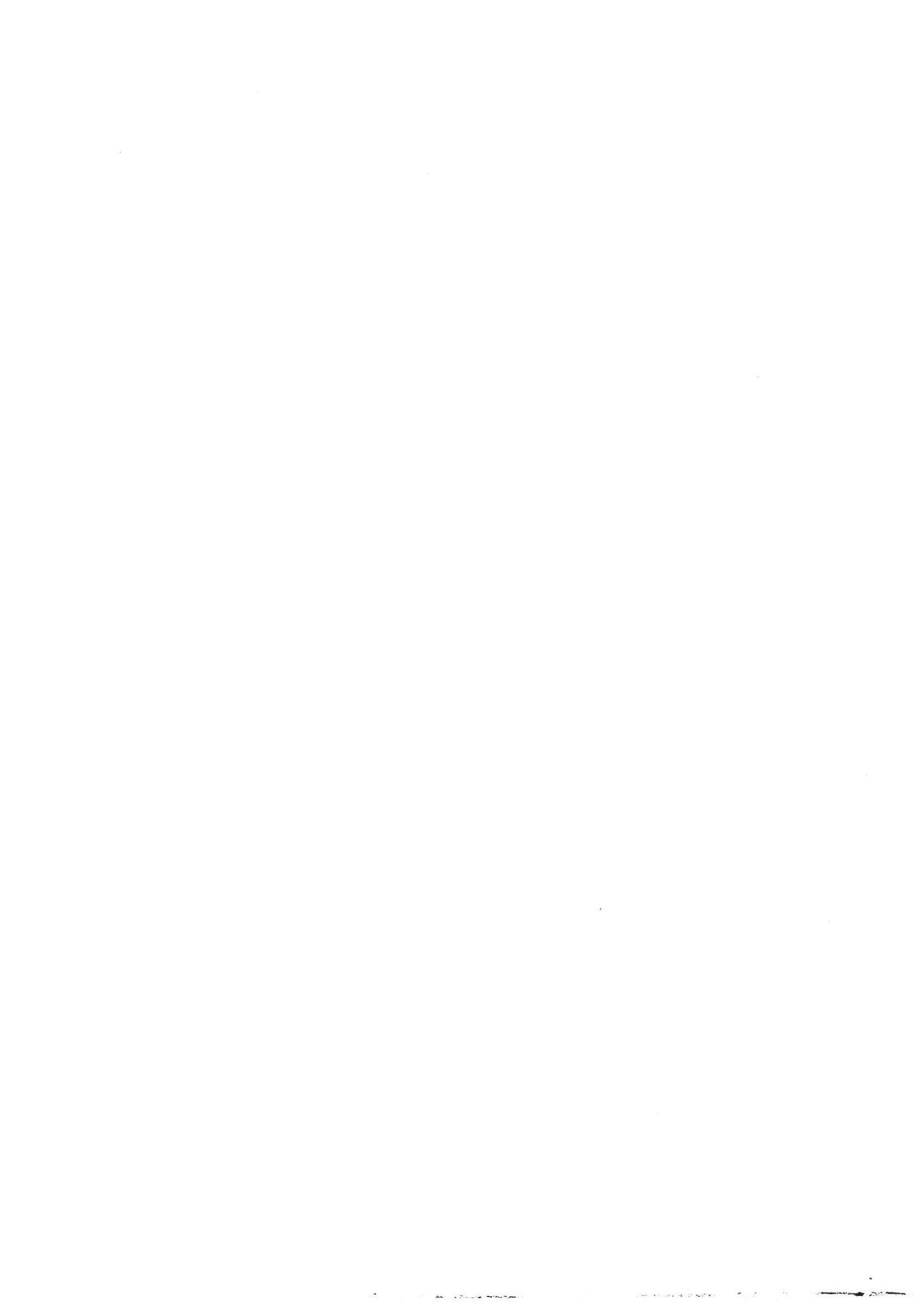
**PRUNING A PERIODICALS COLLECTION
TO IMPROVE QUALITY, REGULATE GROWTH
AND CUT OUT DEAD WOOD**

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Culham and JET Library

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For a report on progress since December 1984 please see page 5



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ABSTRACT

A method of ranking journals by use and by cost-per-article has been devised. The use of this ranking method in the annual periodicals subscription review at the UKAEA Culham Laboratory contributed to an overall cost saving of 8%. The ranked list was also used in revising the journal stock retention schedules.

INTRODUCTION

For a library in a research organisation, particularly one devoted to science and technology, periodical subscriptions account for the largest portion – often upwards of 75% – of the “book fund”. Figures published by the Library Association⁽¹⁾ show that the average annual cost of a science and technology periodical in 1984 was over £129, an increase of 17% on 1983. In the nuclear science and technology field the average cost was over £273, an increase of 16.2%. At a time of rising costs, fluctuating exchange rates and budget constraints, libraries must redouble their efforts to ensure that they are cost effective.

During 1984 a review of all current periodical subscriptions was undertaken in the Library of Culham Laboratory, part of the UK Atomic Energy Authority. The aim was to ensure that the subscriptions reflected the requirements of the users. This was done by identifying those titles which formed the core of the collection, in order that the non-productive or least cost-effective titles could be identified and considered for cancellation.

Periodicals also take up a large amount of the shelf space. The data gathered in the subscription review proved to be useful in a concurrent project to overhaul the retention periods of all the periodicals held in the Library. This helped to ensure that the most effective use was being made of the shelf space.

BACKGROUND TO THE REVIEWS

Culham Laboratory is the UKAEA's centre for research in nuclear fusion, plasma physics and associated technology. On an adjacent site is the large Euratom fusion project, JET, the Joint European Torus. The Library and Information Unit serves both sites of about 1,400 staff, the largest groups of users being scientists and engineers. The Library is mainly a reference collection, and 92% of the current periodical titles are single copy subscriptions. A survey of some principal features of the Culham and JET Library and Information services carried out early in 1984⁽²⁾ indicated a high level of self-service use particularly of the current literature. Two current awareness services are provided on a weekly basis – a Library Bulletin and a computer-produced Personal Alerting Service. The weekly input is also used to maintain an online database – LIBRIS – now containing nearly 100,000 references which have appeared in the Library Bulletins since 1974.

The *Periodicals Subscription Review* was begun in May 1984, the most important target date being the end of August 1984. This was the date by which the Laboratory's major supplier needed to know the titles to be cancelled for 1985. The periodicals subscribed to for the Library during 1983, including free publications together with new subscriptions started in 1984, were appraised – some 400 titles in all. The calendar year 1983 was chosen because it represented a recent time period for which a substantial body of statistics was available. A smaller secondary exercise was undertaken to consider abstract and indexes, bibliographic tools (e.g. British National Bibliography), and annuals (e.g. Kelly's London Directory).

For the *Retention Periods Review* some 470 titles (including abstracting journals and discontinued titles) held in the Library were considered. The detailed schedule, devised in 1974, setting down retention periods for periodicals no longer clearly reflected the site's changing interests or needs and a programme of revision and weeding was necessary.

THE PERIODICALS SUBSCRIPTION REVIEW

Ranking Journals by Use and by Cost

The first step in carrying out the review was to collect together data on all current periodical subscriptions, including free titles. Fortunately, much of the information was already available on computer print-outs, so it was only necessary to reformat it and collect the statistical evidence. The information required for each title taken in 1983 included the cost, number of copies, number of articles selected for the Library Bulletin/LIBRIS, requests received for those articles, number of issues received, the cost of an article selected for the Bulletin/LIBRIS, and any extra notes.

The sources of statistical data were:

(i) A computer printout of the periodicals held in the Library was already available. This gave information on the cost, copies, holdings and locations. During the first phase this printout was used as the master, to which the rest of the data was added.

(ii) For each journal title, the number of articles added to the Library Bulletin/LIBRIS and the requests received for those articles are recorded on a routine basis; annual totals were therefore easily derived. A cost per article was then calculated.

(iii) For those titles where either the cost per article was high or the figures indicated low productivity, LIBRIS was searched to ascertain performance in other years. This extra data was added to the master title printout as a note.

The collected data was then reformatted into a ranked list in order of decreasing productivity, where productivity was simply taken to be the number of items selected by the Information Service for inclusion in the Bulletin. Individual sub-series, e.g. IEE Proceedings Parts A to I were treated as separate items. Lengthy notes were not added to the ranked list but reference was made to the master printout. An abbreviated version of the ranked list is given in Table I, the holdings and retention data being excluded.

Core journals generally proved to have a cost-per-article in the range < £1 to about £10. The least productive journals were easily identified from the ranked list. For example, the International Journal of Computer and Information Systems has low productivity (col.(c)), no recorded use (col.(e)) and the cost per article is very high; this title was eventually cancelled. However, British Business with similar results was known to contain extremely useful statistical data, and the subscription was renewed.

Analysis of the Data: The Overall Picture

In 1983 381 periodical titles were received and 5,326 periodical articles* were added to the Bulletin/LIBRIS. As can be seen from Fig.1, 50% of the titles contributed 97.2% of the selected articles and only 73% of the titles

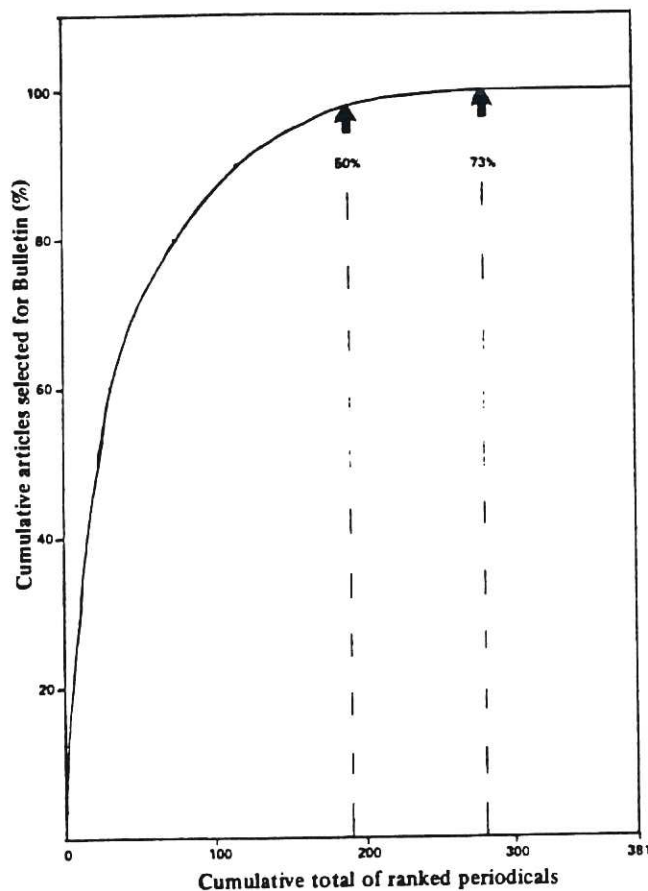


Fig.1 Cumulative plot of articles selected and the periodicals from which they were selected.

Table I Examples from an abbreviated version of the ranked list

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
Rank	Title	No. of Articles in Bulletin	Cum. Total of Articles	No. of Requests	Issues Received	Cost for one sub. scripton	Cost per (selected) Article	No. of subscriptions	Notes
Core Journals (1983)									
1	Physics of Fluids	394	394	150	13	£260	£0.65	2	In Japanese
2	Kakuyugo Kenkyu	211	605	14	24	Free	Free	1	
3	Physica Scripta	158	763	68	19	£271	£1.71	1	
Moderately Productive (1983)									
44	IEEE Trans Nuclear Science	31	3639	17	6	£62	£2	1	
Low Productivity (1983)									
219	Int. J. Computer & Information Systems	2	5252	0	6	£150	£75	1	
No Recorded Loans (1983)									
291	British Business	0	5326	0	50	£70	£70	1	Some self-service use

*The total input to LIBRIS during 1983 was 9,812 items. 4,486 conference papers, reports and books were not, of course, included in the subscription review.

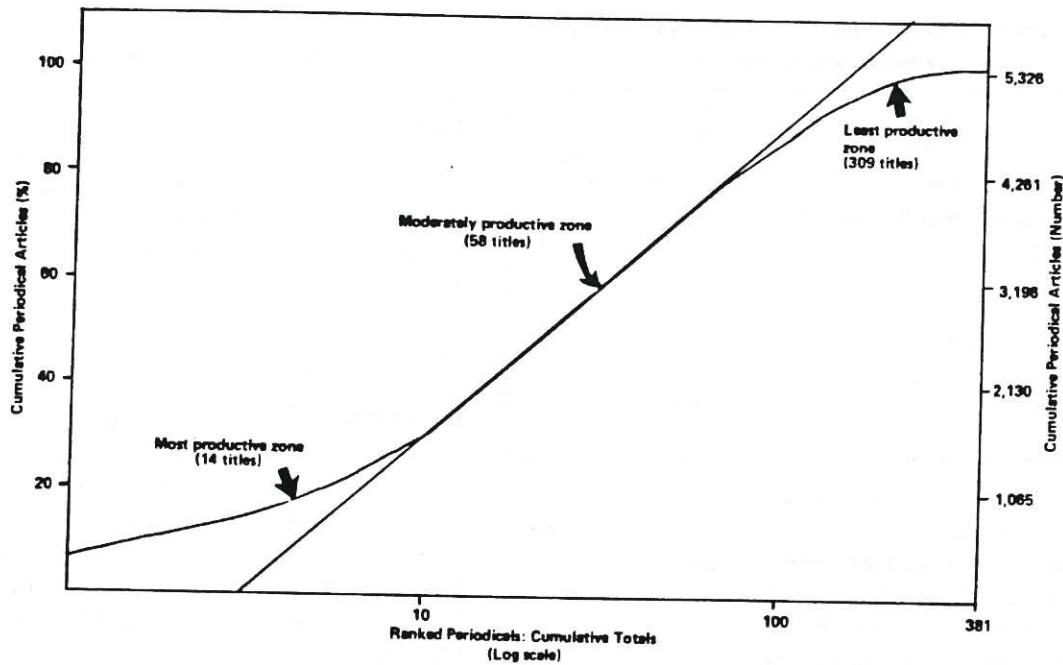


Fig. 2 Bradford-type distribution showing, as expected, three zones of most productive, moderately productive and least productive journals.

contributed any articles to the Bulletin/LIBRIS. A Bradford-type⁽³⁾ distribution (Fig.2) shows more clearly the grouping of periodicals into zones of productivity, details of which are given in Table II.

Table II Zones of the Bradford type distribution

Zone	Titles		References	
	%	(No.)	%	(No.)
Most productive ("core")	4%	(14)	39%	(2,054)
Moderately productive	15%	(58)	41%	(2,195)
Least productive	81%	(309)	20%	(1,077)

A cost approach is shown in Fig.3. Half of the periodical expenditure (excluding extra copies) produced 88% of the references. The other half produced only 12% of references.

Valuable Findings on Some Individual Titles

On an individual title basis there were some interesting results. For example, the very high cost title "Nuclear Instruments and Methods" was ranked amongst the core journals, and the astrophysical periodicals which were expected to be in the least productive zone were in the moderately productive zone, thus justifying the continuation of the subscriptions.

Consulting the Users

Tables I and II and Figs.1, 2 and 3 act as a guide when analysing the data but they do not reflect the whole picture of periodicals use within the Culham and JET Library. One obviously missing element is retrospective use for which no figures are available.

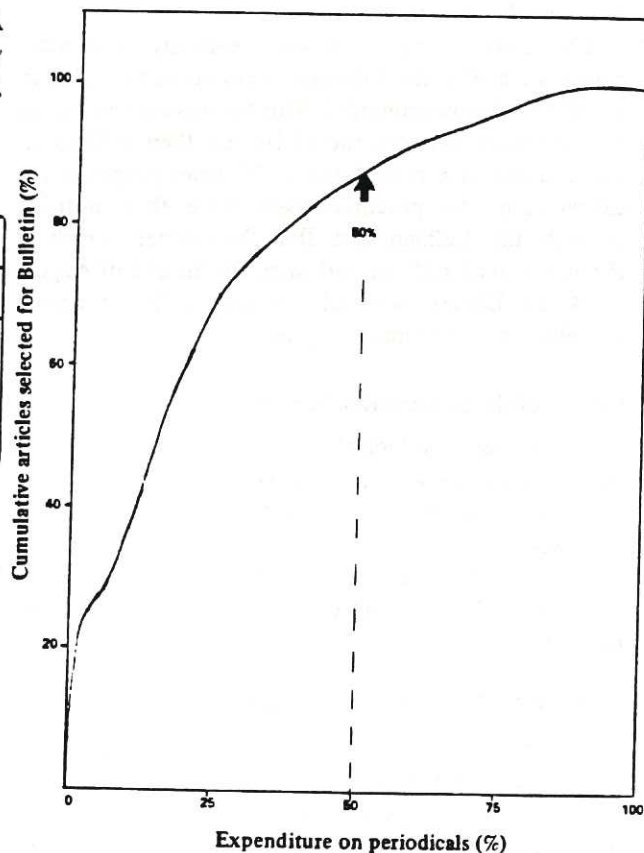


Fig.3 Cumulative articles plotted against expenditure on periodicals.

Another factor was the self-service use by users. However, accepting these short-comings and using the information collected in the ranked list, it was possible to identify those titles requiring more consideration before they were automatically renewed. These titles were grouped into four categories as shown in Table III.

Table III Periodicals for consideration before renewal was sanctioned

Category	Titles	
	%	(No.)
Moderate yield, but particularly expensive per article selected	1%	(14)
Low yield	8%	(29)
Very low yield	12%	(45)
No recorded use	26%	(91)
	47%	(179)

Included in the "very low yield" and "no recorded use" categories were titles such as *New Scientist* and newsheets such as *Laser Report*. This list was not seen as a potential cancellation list but rather as a list of titles to which the question had to be asked 'is there a justifiable reason for taking this title?'

A list of the 179 titles grouped as in Table III was circulated to the Library Liaison Officers (LLO) committee at the end of July 1984, with a paper briefly outlining the objectives of subscription review.

The LLOs co-operated very willingly and after consultation with the Librarian, a proposed cancellation list of 41 titles was compiled. This list was used as a basis for discussion between the LLOs and their colleagues, and resulted in a revised list of 25 titles proposed for cancellation. All potential users were then notified through the *Culham and JET 'Newsletter'* which is circulated to all staff on both sites. By the end of August 1984 the Library was able to send a list of agreed cancellations to the main supplier.

Results of the Subscription Review

Twenty one periodical titles were cancelled and a further two titles were reduced from two copies to one, giving a cost saving of 5.6%. Reductions of the titles in the abstracting and bibliographic tools categories produced further savings. Taking into account all the periodicals, abstracts and bibliographic tools, the overall cost saving was 8%.

THE RETENTION PERIODS REVIEW

The information collected on the ranked list did not reflect retrospective use. However, it highlighted some anomalies, for example, journals in high productivity areas with low retention periods, and at the opposite end of the spectrum news type periodicals – particularly in the computer field – with an infinite retention period. Individual titles were therefore reviewed, using the available data combined with professional judgements, and new retention periods allocated.

Results of the Retention Review

A weeding and reshelving programme based on these revised retention periods was undertaken in early September 1984. This resulted in a more beneficial use

being made of the available open shelf space. Some material was disposed of in order to conform to the new retention periods. Low use material was moved into stack areas.

An annual weeding programme has now been instituted based on the revised retention periods. The retention schedules themselves will be revised with the co-operation of the LLOs, at reasonable intervals, e.g. every two years.

GENERAL DISCUSSION

The Influence of Resource Sharing

A factor to be considered when reviewing a periodical collection is the availability of other resources. On a local level *Culham* co-operates with the libraries of *AERE Harwell* and the *Rutherford Appleton Laboratory*, particularly if the request is urgent. The biggest single backup remains the *British Library Lending Division (BLLD)*.

When reviewing the periodical subscriptions *renewals* the availability of other resources was an important but not a major influencing factor. This attitude does not appear to be an unusual one. A study undertaken by *Woodward*⁽⁴⁾ in 1977 suggested that only 3% of requests received by the *BLLD* were for journals that used to be taken by the borrowing library but were not now being acquired. A later study by the *Centre for Library and Information Management*, and reported by *Gilder*⁽⁵⁾, indicated that between 1980 and March 1983 the importance of inter library loans as an influencing factor on subscriptions declined.

However, when developing the *retention* policies of periodicals in the *Culham and JET Library* the availability of other resources was considered to be a very important factor.

Ranking Techniques

A variety of different ranking techniques have been examined over the past fifty years as aids to journal selection. These have included ranking by citations, by use and value judgements, and by journal size or productivity. The pros and cons of these techniques have been discussed by *Singleton*⁽⁶⁾, and *Dhawan et al*⁽⁷⁾ amongst others.

More sophisticated approaches have been developed to try to overcome the problems associated with ranking. *Kraft and Polacsek*⁽⁸⁾ and *Peters*⁽⁹⁾ have provided practical models to evaluate 'journal worth'. *Robertson and Hensman*⁽¹⁰⁾ have modified the productivity approach to include cost effectiveness. However, *Singleton* concluded that the best approach remains a user survey. Two examples have been documented by *Edwards*⁽¹¹⁾ and *Harvey and Murray*⁽¹²⁾. Multivariate regression analysis has been used by *Bennion*⁽¹⁶⁾.

A productivity ranking technique was adopted for the *Culham and JET library* review as being the most practical and valuable approach, bearing in mind the time and staff availability constraints. However, in order

to overcome some of the recognised problems, it was expanded to include "use" factors, costs, and the number of separate issues being evaluated. This data provided the basis on which professional judgements could be made and user reaction gained.

Future Developments

The factors which affect the increased cost of periodicals have been itemised by Saxenna and Khare⁽¹³⁾. The main features are (i) the rapid advance in science and technology, resulting in the growth in the number of periodicals, as well as an increase in their size, (ii) the steadily increasing cost of production, and (iii) the fluctuating exchange rates of foreign currencies. These uncertainties affecting costs are unlikely to stabilise in the foreseeable future.

The rising cost of periodicals coupled with budget constraints means that more than ever before library managements will have to develop cost effective periodical policies. This will call for more accurate predictions on future costs to be made for budgetary purposes, and better techniques for collecting data on periodical collections. On the accounting side there have been some developments in recent years. One example is ACQUIFILE⁽¹⁴⁾ a computerised technique to aid subscription budgeting and reviews. Computer periodical control systems have also been developed, such as Blackwell's Perline which maintains some management information, i.e. past and present subscription rates⁽¹⁵⁾.

The Culham and JET Library is aiming at improved data collection techniques. The possibility of using existing computer Bulletin programs, to collect the statistical evidence and produce a ranked list, is being investigated for 1985 input. Word processors are also being used to produce listings with title, subscription and holding information. By combining these two approaches it is hoped to reduce the staff effort and time required for the next review in 1986.

CONCLUSIONS

The periodicals review was a time-consuming exercise but it proved to be a worthwhile one. As well as a very real and valuable immediate overall cost saving of 8%, a

framework was also devised for routine reviews in the future, and an improved periodical stock control policy was formulated.

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Since this paper was completed in December 1984 considerable progress has been made in improving the computerised housekeeping and subscription lists. Using STATUS a JOURNALS database has been developed containing information on (a) the Culham Library's holdings; (b) subscriptions for Culham's Library and Divisions, and for JET; (c) administrative details such as supplier, frequency, country of origin, number of articles in LIBRIS in a specified year and number of known requests. It therefore, will be possible in future, using the JOURNALS database to produce a computerised ranked list of periodicals, the aim being to reduce the staff effort and time required for future reviews.

