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his issue of University of Adelaide Library News has turned out to be one mainly of welcomes: to a new University Librarian, to a new library computer system, to a new Subject Librarian, and to some new electronic databases.

I am happy to be able to introduce the University Librarian, Ray Choate, and to welcome him to the Editorial Committee of University of Adelaide Library News. Ray takes a keen interest in publishing (he is Convener of the Australian Library Publishers Society) and one of the initiatives he plans is the establishment of a publishing programme at the University of Adelaide Libraries.

As Stephen Beaumont points out in his article on the implementation of the Dynix Library System, the new University Librarian arrived in January just in time to accept credit for the new system. The processes involved in changing from our in-house developed BIBLION/CIRCON to a commercially-designed system were complex and time-consuming; the ready acceptance by our users of the most visible part of the new system, the online catalogue, is reward enough, I guess, for the System Implementation Team.

Another Stephen, Steve Thomas, our Senior Systems Analyst, describes the technical side of our change of systems and there is yet another Stephen in this issue in the shape of Stephen Cramond whom we welcome as Subject Librarian for Medicine and Dentistry. Stephen Cramond replaces former University of Adelaide Library News Editorial Committee member, Ellen Randua who has taken up the position of Librarian at the Waite Agricultural Research Institute.

A welcome and farewell is in order for Paul Morgan who recently returned to the National Library of Wales after spending six months on exchange in our Acquisitions Department. Paul's impressions of the Barr Smith Library start on page 39.

While the cost of online searching of overseas and local databases remains high, searching them in CD-ROM format remains an attractive alternative. The Library is about to expand this aspect of its service with additional databases and equipment. Read the article on pages 33-38 to find out what will be available.

Some interesting exhibitions are coming to the Ira Raymond Exhibition Room: from 25 June to 27 July we will have the work of Victor Cobb, a pioneer of the art and craft of etching in Australia, while later in the year Frontiers of Chaos is coming to the Barr Smith Library. I am really looking forward to the latter, by all accounts an exciting display of computer graphics illustrating Chaos theory, which is sure to attract wide attention.

And if all this reading matter still is not enough, we offer a short story in this issue, for your amusement.

Alan Keig

June 1990
I was born in Orange, New South Wales, Australia, in September, 1919. My University education began at the University of Melbourne, where I completed a degree in English in 1941. I then spent several months in the United States, working as an editor for the American Library Association in Chicago and the American Library Association in New York. In 1950, I returned to Australia to work as a librarian at the University of Melbourne. I have also held a number of positions as a library officer and as a university librarian at various institutions, including the University of Sydney, the University of Tasmania, and the University of Adelaide. I am currently the University Librarian at the University of Sydney.
Profile... Ray Choate
University Librarian

I was very pleased to be offered, and to accept, the position of University Librarian at The University of Adelaide. It has an excellent reputation as one of the major research libraries in Australia and I am pleased to report that after being here only a few months, both the Library and the University live up to their distinctive reputations. I am proud to be part of this tradition.

Background

I was brought up on a cattle ranch in Wyoming and attended the University of Wyoming, graduating with honours majoring in literature (American, English, German) and minoring in mathematics and education. I received a Fulbright Fellowship to study in Germany (1963-1964) at the Freie Universität Berlin, in West Berlin. Later, I taught English in two West Berlin Gymnasia (High Schools) before returning to graduate study at Columbia University in New York City where I completed a Masters Degree in Librarianship in 1966.

I have worked at the Columbia University Music Library, New York University, the University of Massachusetts (Amherst) and at the American School in The Hague, the Netherlands. In 1970 I moved to La Trobe University as Head of the Reference Division, and subsequently held several positions there including a period as Acting Chief Librarian for a year in 1985. Most recently, I was Deputy University Librarian at La Trobe University responsible for staffing, for co-ordination of user services and collection development, and for the campus libraries at Carlton and Abbotsford which were part of La Trobe University after the amalgamation with the Lincoln Institute of Health Sciences. While at La Trobe University, I was active on the executive of the La Trobe University Staff Association (as Treasurer and as Secretary), the Institute of Latin American Studies, the Institute of Immigration and Ethnic Studies (as Secretary) and the Board of the University Credit Union.
Most of my professional career has been in reference and information services at university research libraries. I have been involved in several professional organizations including the Reference Interest Group, the Art Librarians Society, the University and College Libraries Section of the Library Association of Australia, and the Australasian Urica Users Group. I was instrumental in organizing three national conferences for reference specialists, and have presented papers on information services at several conferences including the Special Libraries Association in New York (1984), and the International Conference on Databases for the Social Sciences and Humanities in Montgomery, Alabama (1987).

One of my special interests is descriptive bibliography; my involvement in university library publishing at La Trobe University includes several publications in its publication series, the most recent being an illustration index to Australian art reproduced in monographs and exhibition catalogues (in press). Pergamon Press published my Guide to Sources of Information on the Arts in Australia, a collection of bibliographic essays. In 1988 I organized and continue to be Convener of the Australian Library Publishers Society (ALPS) which represents over twenty-five libraries and similar organizations which publish commercially; ALPS has migrated with me to the Barr Smith Library. The University of Adelaide Libraries is establishing a publishing programme which we intend will make a major contribution to South Australian descriptive bibliography; the recent publishing efforts of the University Library are a strong base to build on.

My reading interests are quite catholic, as is my collection of books, although I attempt to collect fairly systematically in the area of Australian art, architecture and decorative arts, subjects in which I am doing bibliographic work.

Looking to the future

It is difficult to report specifically on what our future plans will be for the Library, especially when it is such a good one with no obvious and glaring faults requiring correction. It would be much easier to answer if indeed the Library needed a major overhaul. Under the circumstances, I can only note that I trust we will be able to maintain it at least at the same standard it is now.

Collection Development

Naturally, the University is becoming aware, however, of the crisis in all university research collections. The University has an interest in major library information services. And we have been successful, plus an acknowledged need for liaison services, audited over the last few years.

Regarding the decrease of titles received, the University of Adelaide; you will see that the University has a strong collection of books and journals. Research collections are not the same as university collections. The University is collecting in areas of rare books, rare and collectible items, rare tools, rare ephemera, to the test of time. A university library represents the lifelong study of a particular subject, often with a minor focus and in depth.

The concept of a collection development plan is perhaps the most important concept, both in terms of collection management and in terms of retaining the integrity of the collection. The plan also serves as a guide to the library staff, allowing them to focus on the areas that are most important to the user and the academic community.

Co-operative Collection Development

Co-operative collection development is an uncommon form of library cooperation for economic reasons, but there is a lot of discussion about it.
Collections

Naturally, one would like to expand the Library's excellent collections; however, considering the financial pressures on the University and on all universities in Australia, I suspect that we'll consider it a major achievement if we can continue the present acquisition patterns for the collections. The Library receives approximately 7.5% to 8% of the University's recurrent budget, an amount barely adequate to support a major library with its multiplicity of demands for collections and services. At present our collections number just over 1,450,000 volumes, plus an additional 40,000 items in non-book format (music discs and scores, audio-visual material, and similar items).

Regarding subscriptions, it is sad to note how the number of journal titles received has decreased over the past decade at The University of Adelaide; we now receive 12,961 titles compared to 18,655 in 1980, a decrease of nearly one-third. We are unlikely to be able to change the proportion of journals to books because we must continue to provide a strong collection for undergraduate courses and also build on the research collections which we have. One of the special difficulties of a university research collection at a university of medium size such as The University of Adelaide, is that we must maintain such a broad front, collecting in an incredibly wide range of disciplines and materials. Our skills in maintaining these research collections will be put more closely to the test as the University increases the number of graduate students - the likelihood is that each one will have a slightly different research focus and interest.

The concept of what constitutes a collection is also changing, and nowadays a major research library such as ours is expected to collect not only books and serials, but maps, scores, discs, films, and other non-book material. The Library's special collections are impressive and we will continue to build on their present strengths. Information in digital format is becoming more commonplace, and must be collected and made available to users; this also involves educating users to accepting and accessing information in the new format.

Co-operative resources management

Co-operative collection building and resource sharing are not uncommon themes amongst academic librarians, and the current economic climate does much to encourage this. For example, there is a lot of discussion amongst the members of the library profession about a
distributed national collection, but as yet there is little concept of what it actually means in a local context. Insofar as it suggests the entire corpus of library materials, that is, all the collections as now distributed amongst the several libraries in Australia and adding up to a national collection, then we at The University of Adelaide can be said to doing our share, as we are the major research collection in South Australia and one of the largest in the country. If in the future it should mean a co-ordinated attempt to build national collections with a minimum of duplication of research materials, then we will also do the best we can to be part of this network. The saddest thing about any form of co-ordinated collection building, nation-wide, is the paucity (if not absence) of funding from national agencies to subsidize this. If left to our own financial resources, the research libraries of this country are likely to be forced to be parochial and continue to look inward to supporting the research and courses taught on their own campuses.

We are preparing to participate in the national conspectus analysis of library collections which will begin later this year. This will be a nationwide examination of library research collections in several hundred specific categories — we will each survey our own collections using a fairly standardized checklist, and each collection will be given a status from “0” (no collecting activity) to “5” (attempt to collect everything in the discipline in all languages). Most research collections will be at the “3” to “4” status level, and most undergraduate collections will be at about “2”.

In the first instance, we will check only those specific areas which pertain to the University’s research interests; it is our intention to use the exercise not only as a census, but as a means of collection development in order to identify areas where we should endeavour to improve our collection. I expect that our Subject Librarians already have a fair idea of the relative strengths of our holdings, and their experience and expertise will be used to facilitate our involvement in the conspectus and the ensuing collection development.

**Libraries without walls**

Many years of experience as a reference librarian taught me to consider collections, or information, to be broader than the confines of an individual library. One of the distinct advantages of excellent collections of bibliographies, book catalogues, indexes, and abstracts is that one becomes aware of the existence of material, even if it is not held in one’s own library. This concept is even more relevant, and feasible, today due to advances in information technology. It is relatively easy to tap into the world’s bibliographic resources, or at least to learn of their existence, by the use of electronic clearinghouses. However, we have yet to establish a national information network that would enable the purchase of bibliographic material from abroad for the shrewdly informed researcher.

There has been a vast amount of talk and the formation of various committees, a Bibliographic International, and the like, and there has been some activity. For example, our early efforts to establish a provision of information across the nation to information for the international researcher.

The traditional mechanisms, like the library on campus, could serve as the means to staff in the various libraries of the wealth of information available, without having to abrogate the traditional library as vanguard for research and scholarship. The Barr Report illustrates what could happen since information is there.

There are potential uses for the Libraries in providing access to an information retrieval database, in the study of projects, we have been experimenting with indexing services. In the future, the exercise of collection development by practice, using the University Library; to be continued.

**Librarians**

At the same time, the bibliographic information system has become an important tool for library research. A range of tasks can be handled by Librarians...
the use of online bibliographic searching or CD-ROM searching. Once we have learned that something exists, it is not complicated to use information technology again to help us locate a site or source for the information needed. The greatest handicap is the cost associated with the purchase or use of this technology; it is one more major competitor for the shrinking library dollar, but we ignore it at our peril.

There has been a great change in the means of delivery of information, and the pace of change seems likely to continue at a rapid rate. Bibliographic information in CD-ROM format is now widely accepted and there are significant developments of similar electronic forms, for example, optical disks. These are having a major influence on the provision of information, both in access and ease of use. As providers of information, we need to be aware of technological changes and keep abreast of them in order to give high-level professional assistance to researchers and other users.

The traditional role of the library as the centre for information on a campus, coupled with the experience and expertise of its professional staff in the collection, organization and provision of information, and the wealth of our collections in traditional print formats, assure the Library of having a major and continuing role in this field. Libraries must not abrogate their responsibility; certainly to date they have been in the vanguard of exploring and exploiting the new information technologies. The Barr Smith Library has been an active participant in this arena since information technology began to have an influence in libraries.

There are some exciting prospects for the University of Adelaide Libraries in this area – the techniques exist for utilizing these information technologies in association with our own bibliographic database, the Dynix system. We are making plans for some experimental projects, which may allow users of our system to also interrogate major indexing services through their library-access terminals. If these experiments prove positive and the procedures become standard practice, users will have to develop more sophistication in their use of the Library; this in turn will put additional responsibilities on Subject Librarians when training users in the intricacies of search techniques.

At the same time, the Library must not lose sight of traditional bibliography – the ‘whiz-bang’ marvels of the electronic age do not as yet cover retrospectively the corpus of recorded knowledge, and it is important for the Library to collect research bibliographies in a wide range of topics. In addition, as keepers of recorded knowledge, it behoves Librarians to compile descriptive bibliographies. It is my intention to
encourage library staff to compile such bibliographies; as mentioned earlier we are establishing a Library Publication Committee to publish locally-produced bibliographies. Also, academic staff who have a useful bibliography which they believe is publishable, should contact us about it.

**Online integrated data base**

One of our highest priorities will be to complete the bibliographic database. At the present time, most of the Library’s collections are listed in the database, but unfortunately, about one half of the records (representing approximately 300,000 items) are listed only with brief entries (basically, the author, title, and call number). We are examining various ways to set about upgrading these incomplete records to include full information – it will probably be a lengthy process, but the end result will be a far more usable, viable database. When we reach that stage, the card catalogue will be redundant, and can be dispensed with – in any case it contains no entries after 1983, and as such is also an incomplete record of our extensive holdings. When the database is complete, we can then consider such enhancements as additional keyword search terms, holdings of journal contents, other informational data, etc. We are starting to do feasibility studies on these enhancements now, with the expectation that we can incorporate the viable ones into the database in the fullness of time.

**Strategic plan**

We intend to produce a strategic plan concerning the Library and library services to complement the University’s strategic plan, *The Future Challenge*. While the University’s plan pays homage to the Library as “a state and national asset of great value, reputation and importance”, it is worrying to me that otherwise there is very little mention of the Library and the services we provide as an integral part of the University’s educational process, especially when considering the important function it plays in the teaching and research activities of this University. We trust that our plan, which will attempt to establish priorities for the undertakings mentioned above, will stimulate interest amongst the University community, not only concerning our role but our potential for the future.

I have come to the conclusion that in the near future we will need to:

- to maintain a better working relationship with the wider academic community;
- to co-operate with other libraries, both locally and otherwise, in order to secure more resources;
- to complete the integration of the Library into the University service distribution network;
- to extend our public and information services in the near future;
- to expand our public library services and extend our services to the wider community;
- to continue to develop the range of library services offered to the University community;
- to consider and implement a new seating plan for the library services.

These are some of the main issues Libraries and...
Summary

I have come to the University of Adelaide Libraries at a very interesting time. There are many challenges facing us:

- to maintain the steady growth of the Library’s excellent undergraduate teaching collections and research collections, particularly in times of expansion of the graduate and research sectors of the University and integration of new disciplines due to amalgamations

- to co-operate with other libraries locally and nationally to build better regional and national collections and otherwise share resources to the best advantage. This will involve us in the conspectus, a nation-wide analysis of collection strengths

- to complete the task of upgrading the records in our online integrated bibliographic database, and then to explore means of enhancing the records and the database to make it more useful to the academic community

- to extend the range of information sources, both in traditional and in the newly evolving formats

- to explore and expand the new information technologies, and with and through them to build on the excellent automated system already in operation in our Library

- to continue to educate users to appreciate and to exploit the wide range of information sources available to them

- to develop a Library Strategy Plan, which will structure our task to the objectives listed above, to operate in association with the University’s Strategic Plan, and to assist us in providing the best in library services to the University of Adelaide community.

These are indeed challenging times and the staff of the University Libraries and I are looking forward to meeting them.

Ray Choate
Exhibitions

Etchings of Victor Cobb

Andrew Mackenzie of the Borchardt Library, La Trobe University, is bringing to Adelaide his retrospective exhibition of the works of Victor Ernest Cobb, a pioneer of the art and craft of etching in Australia. Mackenzie is the compiler and editor of *The Etchings, Lecture Notes and Writings of Victor Cobb, 1876-1945* (Pioneer Design Studio, 1987) and is the author of studies of Hans Heysen, Albert Namatjira, Conrad Martens, Julia Ashton and Frederick McCubbin.

The exhibition, which will include some of Cobb’s original etching tools, will be on display in the Ira Raymond Exhibition Room at the Barr Smith Library from 25 June to 27 July.

On Monday 25 June at 6.00pm Andrew Mackenzie will address a meeting of the Friends of the University of Adelaide Libraries and the Friends of the Art Gallery, on Victor Cobb and his work.

During the exhibition Mackenzie’s catalogue, *A Tribute to Victor Cobb, 1876-1945*, will be available.

Victor Cobb working on an etching plate in his studio

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Stephens

The Dynamics of Technical Change at The University of Adelaide Libraries

In January 1984, the University Libraries moved into the new University of Adelaide campus. Gone are the days when a qualified librarian could manage the entire loan and cataloguing process. The transformation of library management has been part of the overall trend towards change in the 1970s. Prior to the move to the new campus in 1978 an operating system was developed which could manage the entire loan and cataloguing process.
Stepping Out

The Dynix Library System at The University of Adelaide

by Stephen Beaumont

In January 1990 the automation of library routines at The University of Adelaide entered a new era. A fundamental change was made with the shift from the use of programs developed in-house to a commercially marketed software system. The University of Adelaide Libraries were among the first university libraries in Australia to go live with in-house systems, and among the last to abandon them (Flinders University Library, which only recently developed its own system, will be the last university library to move to a commercial system later in 1990).

Gone are the days when computing power and in-house computing expertise were the largest problems in library automation; communications and the user interface now loom large in the consciousness of library managers. The purpose of this article is to review briefly the history of library automation at The University of Adelaide, to take stock of the situation in 1990, and to speculate on some trends for the near future.

Small beginnings

The Barr Smith Library employed batch computer systems more than twenty-five years ago, the very first application being the compilation and printing of lists of undergraduate multiple copies in 1964. Further batch systems developed over subsequent years, including the production of lists of journals and the sorting of loan cards. For a number of years the entire loan file was wheeled round once a week to the computer at the (then) Motor Tramways Trust Office so that loan cards could be sorted prior to the preparation and despatch of overdue notices. In November 1978 an online system, CIRCON, was implemented as the means of management of most of the Library’s loans routines. In September 1981 the first public BIBLION terminal was made available for general use, following some years of use of BIBLION by library staff as a means of cataloguing new acquisitions to the collections.
These early online applications used an IBM computer housed within the Library in conjunction with a University Cyber computer for off-line activities. During 1982 a VAX computer was installed in the Library, and BIBLION developed into the Library’s principle catalogue medium.

Through the early 1980s it became evident that some aspects of the CIRCON loan system, most conspicuously the dependence on 80-column punched cards, would be increasingly difficult and expensive to maintain, and also that establishing a link between the loan system as then designed and the BIBLION catalogue would be impossible to achieve. Accordingly, and encouraged by the knowledge that the Cyber computer was due to be replaced in 1985, a new loan system was designed and written within the Library and came into operation in June 1985. Most conspicuous to users in this change in systems was the introduction of barcodes to lending routines, and the display of loan information on catalogue screens.

The successful BIBLION/CIRCON combination remained the backbone of the Library’s computing systems through the remainder of the 1980s. In 1989 some seventy terminals were linked to the Library’s VAX computer, fulfilling the purposes of catalogue input and public catalogue use in the Barr Smith Library and the Law Library, and loans and Reserve collection processing in the Barr Smith Library. By that time the Library’s VAX computer had reached (some might say exceeded) its limit in terms both of the number of terminals it could serve and the range of library activities it could support.

The need for change

Although many academic libraries purchased commercially-developed automated library systems during the 1980s, the success of the BIBLION/CIRCON combination and the demonstrable shortcomings of many of the commercial offerings made unnecessary an early need for the Barr Smith Library to contemplate such a move. In 1983, prior to the design of the second version of CIRCON, an examination of alternative commercial offerings was undertaken. However, at that time the need existed only for a new loan system, and the Library did not wish to sacrifice its investment in the development of BIBLION. Furthermore, costs and technical problems compounded the perceived shortcomings in software functionality to render a commercial system a poor alternative.

However, by 1986 it was apparent that change was necessary. The continuing expansion of the Library’s database, the wish to automate major areas of library activities, and the receipt of a request from the Institute of Education to expand the Library in the way that was called for by the Institute’s new, powerful and modern buildings, all pointed to the need to install a whole new range of library systems. The need for change which was also recognized by a call for tenders in 1988 led to the development of a new system.

During the late 1980s the market offerings were highly competitive, and the previously dominant commercial contenders were seeking to continue the installed base by offering progressively enhanced versions of systems on existing platforms. By then Barr Smith Library had invested some $2 000 000 in the BIBLION/ CIRCON systems.

A new direction

During 1986 a call for tenders was issued by the Library, and the shortlisted company was asked to prepare an outline for the option of an in-house system. This in-principle acceptance of the number of users and the performance criteria is in line with contractual arrangements.

The decision was taken to install a system offering substantially new features. It was recognized that such a system would be more attractive to users, and that it would be seen as more relevant since its installation.
major areas of library activity, including book acquisition and journals receipt control, the need to extend the system to the Waite Agricultural Institute Library and the Law Library, and the consequent need to expand the number of terminals connected to the Library system, all called for a total review of the Library's computing future. That a more powerful hardware platform was required was manifest, but the more difficult question was, did the need to extend the range of library activities which were automated call for further in-house development or should the Library buy a commercially developed system? In late 1986, with the approval of the University's Executive Committee, a major review of commercial library systems was initiated.

During this review it was discovered that in recent years the commercial offerings had developed a sophistication and flexibility which had not previously been evident. A number of systems appeared to be possible contenders for implementation at the Barr Smith Library as alternatives to continued in-house development. Some of these systems had been installed in large libraries for almost ten years and had undergone progressive extension and enhancement: others were more recent systems or systems developed for libraries different in nature from the Barr Smith Library. The costs of these offerings, including the hardware on which they would be based, ranged from approximately $500 000 to some $2 000 000.

A new direction

During 1987, following a detailed examination of a small number of short-listed commercial offerings, it was decided that one, the Dynix system, was to be preferred above all others, and was to be preferred also against the option of continuing to develop Library computer systems in-house. This in-principle decision was subject to the satisfactory resolution of a number of issues, including a suitable hardware platform, successful performance testing, a suitable price resolution, and a number of other contractual matters.

The decision to move from in-house development to a commercially offered system was taken after extended investigation and consideration. It was recognized that the BIBLION/CIRCON combination was an attractive product which had served the Library and University well since its implementation. The Library had been able to design systems...
specifically to meet its requirements, to take account of the historical peculiarities of some of its practices, and to capitalise on the professional expertise of its staff. The systems were popular with both library staff and library users.

Nevertheless, the costs of in-house development had been high. Most apparent was the employment of four professional programming staff, supported from time to time by technical and clerical staff. Less obvious had been the enormous investment of effort by librarians, working with system staff, on enhancements to the design of the in-house systems. Furthermore, there had been considerable difficulty during the early 1980s in retaining individual professional computing staff for any significant period, and therefore of maintaining continuity of development and expertise over the years.

While the Library had successfully automated its most conspicuous functions, of catalogues and loans, the remaining activities, including book acquisitions, journals receipt control, Reserve collection lending, the automation of demerit points, and the provision of management information, remained very substantial commitments, and it was known that in order to expand the range of automated features a major rewrite of BIBLION/CIRCON would be necessary.

It was recognised that the costs of a commercial system, together with hardware, would be greater than those of the purchase of necessary new hardware alone, but it was anticipated that these costs could be recovered in just two or three years as a consequence of savings in staff time. For example, when a position fell vacant a reduction in the number of professional computing staff from four to three was made; after the initial implementation phase, it was anticipated that the investment of time by librarians in system design would be negligible.

Why Dynix?

The Dynix System was selected for a number of reasons. As a relatively new system it has a flexibility and hospitality to local definition of parameters which is not found in the older systems. Although an American system, the headquarters of Dynix Australia, a separate company rather than a subsidiary of Dynix, is located in Adelaide where a strong development team and support effort is based. Most importantly the software is outstandingly easy to use. The Enquiry Module, the Circulation Module, and the Cataloguing Module all incorporate features which go beyond those which were available in BIBLION, and...
are of direct benefit to users. Some of these features are apparent at present, others will be introduced over forthcoming months.

The selection of Dynix was not made without some apprehension. Dynix Inc, in developing the system, had targeted small and medium size libraries, the majority of which were school and public libraries. When the decision to favour Dynix was taken in late 1987 no other large academic library had purchased the system, and only one Dynix installation existed in Australia – at a small public library in Queensland – which had bought the system direct from the U.S.A. prior to the establishment of Dynix Australia. The libraries of other universities in Australia had bought different systems which had been developed specifically for academic libraries.

So, why did The University of Adelaide select Dynix? The attractions in the main were those described above, and particularly the accessibility of that part of the system with which users most frequently have contact, the catalogue. Having examined other systems, library staff involved in the selection process felt that, after many years of use of BIBLION, library users would feel themselves relatively disadvantaged were the Library to to acquire one of the more established systems. Certainly a safer course of action would have been to buy an older system which was already installed in libraries of comparable size to the Barr Smith Library. However, the friendliness of the user interface, the system-wide integration of the various modules, and the dynamism of both the system and the Dynix company, all pointed towards Dynix. Coincidentally, the system was also more attractive in price than many of its competitors.

Dynix Australia, with its head office in Adelaide, has grown rapidly since its establishment four years ago and now employs thirty-one staff. It has installed systems in 109 libraries in Australia and New Zealand and has recently entered arrangements for the marketing of Dynix from offices in Singapore and Taipei. It markets the Dynix software on a range of hardware platforms, from personal computers to large multi-function mainframes. The computer bought for the Barr Smith Library was the first Dynix Australia installation on a Unix machine.

The demands placed by the Barr Smith Library on Dynix Australia have been numerous, remorseless and exacting, and we are fortunate indeed to have received their tolerant, cheerful, and painstaking cooperation at all times.
A false start

The road to the implementation of Dynix was not easy. Dynix Australia was established in 1986, but at that time the Dynix software was marketed only through a computer hardware vendor, and it was through this vendor that the system was tendered to the Library. The proposed hardware option appeared to be very attractive. An additional processor could be acquired to run the Pick-based Dynix system but using as the main processor the existing VAX computer on which BIBLION had hitherto been based. The cost advantages of this approach were particularly attractive.

Within the University the University Computing Committee had suggested that the Library should subject its preferred choice to full and authentic testing prior to the signing of a contract. Unfortunately a series of difficulties resulted in a delay of one year before the tendered configuration could be tested. When the test did occur, in October 1988, the performance of the co-processor was very disappointing, and was deemed unacceptable by the Library. Accordingly the vendor offered to repeat the performance test running the Dynix software with the Library’s database on a stand-alone processor. The same tests were repeated in February 1989, but again performance was disappointing, and the tendered hardware offered no basis for the projected expansion of the Library’s computing activities. In the light of this, the Library decided to tender its own hardware and software requirements to hardware and software vendors using the Dynix bibliographic management package developed by Dynix Corp., Inc. The package enables the use of microcomputers, which simplified the task of generating test data at which the systems could be simulated and for staff testing.

By August 1988, Computing Services had renewed its contract negotiation with Disc and, in consultation with the University Computing Committee, the Vice-Chancellor and the Vice-Chairman of the Board of Directors, signed a

...performance tests involved large numbers of library staff undertaking thousands of specified transactions on a controlled basis...
In Australia, the new program software was tested and it was encountered in the Library. The additional equipment was examined but using BIBLION and the approach were

A committee had been set up to full and adequately a program tendered in November 1988, activities. Nevertheless, it was possible to hold seminars and demonstrations for university staff and student representatives in conjunction with these tests, to seek their views on the Dynix software, and to have Dynix acting as the Library's catalogue for a number of days through ten public terminals in the Library. Questionnaires were distributed, the responses to which were overwhelmingly favourable.

In the light of this experience the Library suggested that Dynix Australia tender its software directly to the Library and proposed that a number of hardware vendors be invited to nominate and make available hardware platforms on which the Dynix system could be tested for the Library. During 1989 tests were conducted on five types of machine nominated jointly by Dynix Australia and the University.

Unlike the previous performance tests, which had involved large numbers of library staff undertaking thousands of specified transactions on a controlled basis, by mid-1989 it was possible to test the machines tendered by the five invited vendors using a simulation package developed by Dynix Inc. This sophisticated package employed a number of microcomputers each of which simulated the activities of up to twenty-four terminals. It was possible to define all transactions which would be directed at the processors over periods of time, and involving the Library's full bibliographic database. The complexity of the transactions, the intervals at which they were sent to the processors, and the number of terminals simulated were under the Library's control, and members of the library staff together with representatives from the University Computing Services monitored all the tests that were conducted. During each test vendors were invited to vary the hardware configuration, for example, by adding more memory or processor boards, and library staff were able to change various parameters so that a number of tests, involving differing loads, could be executed.

By August 1989 it was possible to recommend to the University Computing Committee that the University should undertake detailed contract negotiations with Dynix Australia for the Dynix software and with Disc Computer Systems for an Encore Multimax computer running the Universe applications environment software. On 12 September 1989 the Vice-Chancellor signed contracts with both companies.
Implementation

The Encore Multimax computer was installed in the University Computing Services in late September 1989. During November the Dynix software was loaded on to the machine, and during November and December the Library's database was converted into Dynix format, indexes were built, and the Library's specific parameters for screen displays, loan periods, catalogue formats, borrower types, and numerous other variables were all built into the system. On 2 January 1990 cataloguers in the Barr Smith Library catalogued the first books on to the Dynix system. Two weeks later Library users found that overnight the Library had switched its catalogue display from BIBLION to Dynix, and one week after that books were lent through Dynix rather than through CIRCON. Towards the end of January the process of identifying books to be placed in the Reserve collection and the adjustment of their details in the catalogue was also conducted through Dynix. At the end of January the plug was pulled on the library's VAX computer and BIBLION and CIRCON became history.

The indications are that the reception of Dynix by library users has been painless and, in some cases, even subliminal. It has been the experience of librarians over many years that almost any change, regardless of its nature, brings with it adverse public reaction; the quiet acceptance of the public face of Dynix is interpreted as an outstanding vote of confidence in the system.

Library staff, on the other hand, have had many pangs at the loss of the BIBLION/CIRCON systems, which had been designed and developed with such care and dedication. While a change from BIBLION/CIRCON was generally understood to be inevitable, a sense of loss nevertheless exists. Computer systems now pervade almost every area of Library activity.

The reception of Dynix by library users has been painless and, in some cases, even subliminal.

The challenge of adjustments to the new system has been considerable and, through the early months of 1990, has placed heavy demands on Library staff. The reaction to this challenge has been very positive and the most difficult months of the implementation have now passed. Having overcome this initial phase, library staff are now able to contemplate the future and the prospect of capitalizing on the additional functionality which Dynix offers.

By May 1990 ninety terminals had been connected to the Dynix Library system, twenty more than had been connected to BIBLION/CIRCON six months earlier, and the Barr Smith Library's capacity of 90,000 is expected to offer wider access to the library catalogue.

The future

Library staff, on the other hand, are looking forward to greater efficiency and ease of use. New systems are already on the horizon. Australia, through the HELP project, has installed two terminals at its network centre in Sydney. HEPLink, a number of students taking a course in the Law as a second major subject, is in hand and is expected to be completed by Easter from these terminals.

Currently the library's staff are advising HELP students in the compilation of reports is already underway. The expected outcome of the project is already expected to be a considerable improvement over the previous version, which was prepared in March 1991. Detailed specifications for HELP have now been completed, and the terminals are due to go into service in April 1991. The network center now has a number of terminals which are already in use, and it is hoped that the network will expand in the coming months. The wish of the students is that they will be able to access all the terminals on the network, and all the resources available from these terminals, without any need for physical access to the library.

From the perspective of library staff, processing is now

18
months earlier. Most of the extra terminals are for public access within the Barr Smith, Law and Waite Institute Libraries. In addition, the capacity of the Encore Multimax computer has permitted the Library to offer wider network and modem access to remote users of the library catalogue.

The future

Library staff members are currently engaged, together with Dynix Australia, on the close specification of a number of enhancements to our installation. The ability to supersede locally created brief catalogue records with full records derived from the Australian Bibliographic Network is now in place, and the retrospective upgrading of a large number of bibliographic records is under way. The training of staff from the Law and Waite Institute libraries in the operation of the loan system is in hand, and it is hoped that the introduction of automated lending from these libraries will occur in the near future.

Currently the production of notices, such as overdue notices and notices advising readers of books awaiting collection, and of internal library reports is relatively crude; improvements are being made and it is anticipated that before the end of 1990 significant changes will have been made. In the first half of 1990 library users have had a free ride in regard to demerit points for late return of loan items; no longer is this to be the case. Very shortly the fines function of the Dynix system will be replaced by a demerit points system designed on the basis of specifications prepared in the Barr Smith Library. The new demerit points system will be a considerable improvement over the routines which previously applied in CIRCON.

A number of major changes will be made later in 1990, extending into 1991. Detailed specifications of the methods by which the Library buys books, details of our book funds, our sources of supply, the frequency with which we wish to claim non-delivered items, and so on, have been given to Dynix, and the first books the Library will ever have acquired through an automated system should be ordered in mid-year. By the end of 1990 it is hoped that the Acquisition module of Dynix will be in full operation and all the Library's new orders will be processed through the system; it is expected that the outstanding orders from our manual files will be retrospectively added to Dynix as the last element of this process.

From the point of view of the Barr Smith Library, the Dynix module for processing items to be added to the Reserve collection has been the
weakest feature. Dynix has acknowledged that the Reserve routines have been designed with small libraries in mind. On their own initiative Dynix Inc., in large measure as a consequence of the comments of the Barr Smith Library, has undertaken a full revision of this Reserve module. The Library has given to Dynix the specifications of how it wishes to see a Reserve module operate and it is hoped that this new function will be in place before the end of 1990.

The task of ordering journals and receiving their numerous parts is amongst the most labour-intensive in any large library; these routines have hitherto been entirely manual at the Barr Smith Library. Towards the end of 1990 it is expected that the first journals will be ordered through a Dynix module. The set-up process for this module is complex since it depends on being able to predict the date of receipt of each part or issue and to predict the frequency at which non-delivery notices are sent to suppliers. When indexes, special issues, title pages, as well as normal issues are taken into account, the entry of these predictive data is a formidable task. It is hoped that, following a trial period with a small number of subscriptions in 1990, a progressive build-up in 1991 will allow the Library full journals receipt control through the Dynix system by the end of 1991.

System updates

Like most commercial systems enhancements and improvements to the software are continually under way. In the case of Dynix these are batched, and new releases are issued from time to time. The Library will postpone until December its adoption of the latest Dynix release; however, at that time several new features will become available, including enhancements to catalogue enquiry. Examples include the ability to refine searches by, say, date of publication, and the ability to 'book' in advance items required from the Reserve collection.

The mergers with Roseworthy College, and probably, the South Australian College of Advanced Education City site, add another interesting dimension to the implementation of Dynix. Planning is currently under way for the incorporation of the bibliographic databases of these Colleges into that of the University. An upgrading of hardware, the purchase of peripheral devices, and the extension of the licenses for the use of the software are just some of the costs which will be encountered.

A number of smaller developments, including developments to extend access to the Dynix database to all staff members, is planned. These include further access to information related to book status, call numbers, and other search and retrieval functions.

As machine-readable systems continue to lower barriers, the Library sees new possibilities, such as Index Maker II, as a means of helping users be able to locate specific items. Research also continues to search for alternatives offered in other systems. At the moment, most held in the Library are in Dynix format; major problems are encountered when CD-ROMs are incompatible with the Library's prospect of decentralizing and serving a large, local population. Purchase and subscription costs are a major concern.

Credits

Most library collections require a substantial amount of work, and it is to the dedicated and tireless efforts of the staff that credit be given. In particular, the effort of Library Assistant Susan McCutcheon and successor Jane Smith, and the outstanding support and able leadership of Librarian, Chris Bower, are acknowledged. Thanks are due to Dynix at The University of New South Wales for their support and service.
A number of forthcoming developments will significantly extend access to bibliographic information through library systems. The first, the Australian Academic and Research Network, which will serve as a communication system between Australian tertiary institutions, with C.S.I.R.O., and with a number of other major institutions in Australia (including the National Library of Australia), and with links to similar networks in the United States and Europe, will open an enormous range of possibilities. Access to the catalogues and to bibliographic databases in other institutions will be possible from terminals within the Library and, indeed, to network users generally. For libraries this may herald new possibilities in collection rationalisation, with a consequent increased dependence on interlibrary loan services. It is possible that in future public access terminals in the Library will include menus offering direct access to the catalogues of other selected libraries.

As machine processing power and mass storage cease to be financial barriers, the prospect of mounting externally-developed databases, such as Index Medicus, on local systems becomes more realistic. Not only will users be able to search the catalogue for journal titles, they will be able to search also the contexts of those journals. At this stage such access is offered in three ways, by printed indexes and abstracting publications held in the reference collections of many libraries, by dial-up access to major remote databases, and, in the last year or so, by subscriptions to CD-ROM services. While each of these will continue to play its part, the prospect of mounting many of these indexing and abstracting services on a large, local computer is no longer fanciful, and beyond that the subscription to full text services can also realistically be contemplated.

Credits

Most library staff have been involved in the Dynix Project to some extent, and it is to them that primary credit for its smooth implementation must be given. University Librarian to 1987, Eric Wainwright, and his successor Acting University Librarian, Patrick Condon, provided support and leadership during the process. Our new University Librarian, Ray Choate, arrived in January in time to accept the credit for Dynix at The University of Adelaide, to but be absolved of all blame. The support and encouragement of Professor Bob Warner and Mr Euan
Semple, successive Chairman of the University Computing Committee, was at all times forthcoming. Peter Nissen, the Director of the University Computing Services, and his staff, gave invaluable assistance. The concern on the part of Dynix Australia to ensure a successful implementation has already been referred to, and the continuing goodwill of our library users has been a great encouragement.

Conclusion

The BIBLION/CIRCON combination has been a hard act to follow. Inevitably, as a commercially-developed system, Dynix will never be as appropriate to our local situation as would a domestically-tailored system, and the Library must strike a balance between having modifications made to the software, which may be difficult and expensive to maintain, and retaining the standard product with both gaps, and features that are irrelevant to our particular application. Nevertheless, as the full potential of the Dynix software is exploited over forthcoming months and years, the Library and its users should benefit from a greater range of functionality than has ever previously been possible. It is of course for the users, both library staff and our public, to judge the merits and demerits of the new system; the Library will continually be interested to receive their comments on this major venture.*

FRIENDS OF THE LIBRARIES
OF THE UNIVERSITY OF ADELAIDE

The Friends of the Special Collections was formed in 1985 with the object of promoting the Special Collections area of the Barr Smith Library. Recently the Friends resolved to expand the role of the society to include support for all the collections of the University of Adelaide Libraries, and their name has changed accordingly. Membership of the Friends of the Libraries of The University of Adelaide is open to all who are interested in preserving and strengthening the collections of the University of Adelaide Libraries. Talks and exhibitions are organized for the Friends throughout the year.

Membership fees for 1990: Individual—$15  Family—$25  Student—$7

Non-University Friends who enrol as external members of the Barr Smith Library will have their membership fee deducted from the external borrower's fee. Applications should be forwarded with the appropriate fee to the Secretary, Friends of the Libraries of The University of Adelaide, Barr Smith Library, GPO Box 498, Adelaide 5001.

Miss Cosgrove

Her appearance was elegant. "How long have you been here?"
"At least six months," she said.
"Mmmm," she said to herself. "I must have the library now.
"Of course, Mr. Semple," she said to him.
"No, no, not yet. You have been here for a while. Miss Cosgrove," she said to herself. "I must find some time to see her."
Julie, as she was called, was a secretary. She was one of the five helpers who worked at the library desk. She was losing her glasses and her voice at the same time.
Miss Cosgrove's hands crossed the table. She looked to be the time. "One minute, please," she said. "I must finish this building," she thought to herself.
She unlocked her desk and unpacked her things. The woman who had been waiting at 12 o'clock arrived. She noticed the hotel sign and continued to open the door.

* First page of a letter from a friend.
Miss Cosgrave was the perfect applicant. She had worked as an assistant librarian in large provincial libraries, and her references spoke of her conscientiousness and devotion to duty. Her appearance before the town council was brief. “How long will you need?” asked the chairman of the council. “At least six months,” said Miss Cosgrave. “Mmmm,” said the chairman of the council. “We were rather hoping to have the library open in time for the agricultural show.” “Of course,” murmured Miss Cosgrave, “if you want a job half done...” “No, no, my dear,” said the chairman of the council quickly. “Take all the time you need.”

Miss Cosgrave rented a small cottage next door to the town butcher, who was a second cousin by marriage, and hired the butcher’s daughter, Julie, as her assistant.

The two women began work together the following Monday and walked the five hundred yards to the new library building in the high street. By the time they arrived, Miss Cosgrave was panting. She took off her glasses and wiped them. “Wait here just a moment, Julie,” she said. Miss Cosgrave, old, tiny, thin, her hair tightly bound in a severe bun, crossed the road and stared hard at the small single-storey building soon to be the town’s first full-time library. She stared at it for fully two minutes, then she re-crossed the road and squeezed Julie’s arm. “This building,” she said, “will soon be the finest small library in the state.”

She unlocked the door, and for the rest of the day the two women unpacked books, stamped them, and prepared filing cards. The women rapidly established a routine. They began work at nine o’clock and worked steadily for a little over an hour when the lad from the hotel across the street brought a tray of tea and some biscuits, compliments of the council. Each morning, too, a council worker called to open crates and move shelves and furniture. The women worked

through till one o'clock when they unpacked their sandwiches. Julie usually went window shopping with a friend from the bank or read the paper for an hour. Miss Cosgrave worked through, stamping and filing and eating her sandwiches in almost one continuous, fluid movement.

Miss Cosgrave was bright and talkative most times: at others quiet and almost morose. Julie enjoyed working with her. “You know, Julie,” said Miss Cosgrave, “a library is the most exciting place in the world in which to work. Here we are, working among the greatest writers, the most advanced thinkers, the greatest scientists. They are all here,” and she waved her arm in the direction of the untidy piles of books stacked on shelves and counters and on the floor.

The filing system began to take shape. “The finest thing about a library is its system,” said Miss Cosgrave. “In a library a place for everything, and everything for a place. Remember, Julie, the books are only as good as the system.”

She began to play little games with Julie, “Now, Julie, where would you find Nietzsche’s ‘Thus Spake Zarathustra’? Yes, German. Philosophy. Good girl, good girl. You’re learning. Remember Julie, a place for everything and everything for a place.”

Miss Cosgrave was well-read. She had read Dante’s ‘Inferno’ in Italian as a ten-year-old. “It loses its quality in the translation,” she said. “Zola, Kant, Ionesco, Sartre — you must really read them in the original.” She sighed. “It’s a pitty we can’t get the originals. Ah well, I doubt if many people would read them. But they would look nice on the shelves, wouldn’t they? We would also have to adapt the filing system. That would be fun,” and her eyes lit up at the thought.

Miss Cosgrave spent a week drawing up two lists of books. The first she headed: “Fiction books which may reasonably be considered by some to be non-fiction”, and the second: “Non-fiction books which may reasonably be considered by some to be fiction.” “You know,” she said to Julie in excitement after she had completed the lists, “I think we are the first library in the state to have devised such a system. I recommended it at my last library but the silly man in charge had no imagination. None. He failed to appreciate the ambiguity of some titles and authors. Remember, Julie, a place for everything and everything for a place — but where is that place, eh? Fiction or non-fiction, eh?” She laughed, her laugh high-pitched and merry. “Funny things, books, aren’t they? No system is easy, is it?”

“Certainly not,” said Julie, who had developed an affection for the old lady and liked to please her.
"Remember, Julie, the books are only as good as the system. The system is all important. You can have a hundred thousand books, a million books, ten million books — all quite worthless without a system. Now, Julie, where would you look for William Faulkner’s ‘The Sound and the Fury’?"

"That’s simple. Fiction under F."

"Good girl. Now say someone comes in and wants a book by an Australian playwright, but the customer can’t think of the name?"

"Australian plays, contemporary writers," said Julie. "There’s a list on the flyleaf of section 32 in the index."

"Julie, my love, we’ll make a librarian of you yet." She hugged the young girl and they waltzed around the books on the floor. Julie broke away, embarrassed, but Miss Cosgrave carried on dancing.

She suddenly stopped, puffing, her tiny, bony frame exhausted as much with emotion as with the cavoring. ‘Remember, Julie, a place for everything, and everything for a place. Remember that and you can’t go wrong.’

The day of the opening gradually approached. Miss Cosgrave gave a newspaper interview and told the town reporter the range and quantity of books, how a book could be reserved from other libraries, hours of opening, and other details.

The women worked hard and fast. The day before opening day could well have been a holiday since the library was finished. All the reference cards were stacked; all the books neatly in place.

"Why don’t you take a break?" Julie asked Miss Cosgrave.

"Take a break, dear? Why, if I were to take a break I would take it here, in the library. And that is where I am, isn’t it?"

Miss Cosgrave seemed less talkative. Her mood was pensive.

"You know, my dear, things happen in the big cities and the big nations of the world. But things happen here, too, right here, in these four walls, which are much more exciting. Why, look at them — books on every conceivable subject, architecture to zoology. The greatest minds of mankind are here, around us, talking to us, and all we have to do to hear them is to take them down from their shelves and listen to them. But they would be nothing without us, eh? We made the system, didn’t we? We put them in their places, their right places. If they were in their wrong places they would all be entirely valueless, wouldn’t they? The artistic mind is not usually a systematic mind. It needs people like you and me, dear, to tame the artistic mind, to put the artist where he or she can be found. If you think about it, the artist must be subservient to the system.
The system is everything, isn’t it?”
“It must be, when you put it like that,” said Julie.
“Take a long look at it”, said Miss Cosgrave. “Isn’t it a perfect library? For perhaps the only time in its existence, it is now perfect. Everything in its place, and a place for everything.”
The next day the chairman of the council opened the library and paid tribute to the work of Miss Cosgrave. Miss Cosgrave flushed and blinked, the ceremony ended, and a queue formed at the counter. Soon the library was quite crowded. Some people took books and put them back in the wrong place; others put the reference index cards in the wrong file; others questioned Miss Cosgrave and Julie about the locations of books; some sat and read magazines; one man objected to the “No smoking” sign; others objected to the joining fee; some took out the maximum number of books. At teatime Miss Cosgrave said: “Julie, I have a bit of a headache. Could you take care of things? I’ll take a little rest in my office.”
Miss Cosgrave did not come back and Julie was run off her feet until she closed the doors for lunch. She went to the office she shared with Miss Cosgrave. Miss Cosgrave looked up. Her glasses lay on the table in front of her, and her eyes were red. She spoke quietly. “How many books have gone?” she asked.
“One hundred and forty,” said Julie. “Isn’t it terrific?”
Julie put her arm round the old lady. “What is it Miss Cosgrave?” she asked. “Dozens of people have been through this morning. The library is as perfect as you always said it would be. The reference system is working perfectly.”
Miss Cosgrave looked up through tear-stained eyes, her mouth bowed in prostrate anger. “No,” she said, and every muscle of her body seized as if ready to snap. “Yesterday our library was perfect. Not today.”
Her mood changed quite abruptly and she look calmly, if absently, at the young woman. “You know Julie,” she said, “the only thing that disturbs a perfect library is people. Why do people have to borrow books?”

In July a major review was made for suitable replacement of the computer that controlled library administration. A powerful computer was identified, sufficiently powerful for the software, which was Unix compatible, and allowed us...

The usual problem with the existing automation is that it is over-loaded, poorly designed, and the library staff has not gained a unique experience from the automation. The system is working perfectly.

A great deal of time will be spent in relation to the specification of the computer in order to understand the knowledge of the library staff. It is important for performance. The advantages and disadvantages of the various systems are...

At the same time, the staff will be required to assess our existing automation and purchase the other...

* See Stephen...
** It is miles...
perhaps even...
From BIBLION to Dynix

by Stephen Thomas

In July of 1986, the Barr Smith Library decided to investigate the purchase of a turnkey library system. There followed a long process, described elsewhere in this issue,* culminating in the implementation of the Dynix system at the start of 1990.**

A major reason for the long lead-time to implementation was the search for suitable hardware: the first computers tested were simply not powerful enough. A problem here was that the Dynix system required the computer to run the Pick operating system, and we could not find sufficiently powerful computers that ran Pick, to suit our budget. A breakthrough occurred in early 1989 with the appearance of the Universe software, which allows a Pick application (such as Dynix) to run on a Unix computer. This greatly increased our hardware options and allowed us to find a more powerful computer and stay within budget.

The usual implementation of the Dynix system is in libraries with no existing automated systems. The hardware is installed, the software loaded, parameters defined, staff trained, Dynix staff depart. In a small library this can all take place within a week. We were somewhat unique experience for Dynix, because of our long experience with library automation, the size of our database and the complexity of our requirements.

A great deal of initial effort was required to define our requirements in relation to the Dynix system. As is always the case with requirements specifications, these changed frequently in the light of our increased knowledge of the system. Much was learned during the early performance testing; many hours were spent discussing the pros and cons of various aspects of the system.

At the same time, it was necessary to define the details for conversion of our existing data files into the Dynix formats. Prior to our decision to purchase the Dynix system, we had gone through an extensive period of

* See Stephen Beaumont’s article Stepping out which starts on page 9.
** It is mildly interesting that the Library’s previous system began life in 1980: perhaps each new decade requires a new system?
testing, which the University Computing Committee had decreed should involve the use of our complete database. This required us to go through the process of converting our bibliographic database and setting up many of the Dynix system parameters for the performance testing, so that we had already covered a great deal of ground in relation to data conversion well before the actual implementation process began.

Hardware Installation

The computer hardware chosen for our new system is an Encore Multimax 520, with 48 Megabytes of memory and over 3 Gigabytes of disk storage. All terminals are connected via Annex terminal servers. The computer was installed at the end of September 1989. Since it had been pre-configured at the supplier’s offices, installation meant only that it should be placed in the University computer room, connected to the campus network, and turned on.

Software Installation

The computer has no tape drive attached. This meant that, because the Dynix software arrived on magnetic tape, it was necessary to copy the software from the tape to another computer on the network, then copy the resulting file to the library computer, then convince the system that the software file on disk was in fact on tape. This proved to be a minor hurdle; the manual was explicit on how this could be done, but finding the relevant part of the manual required some effort.

Size of database

The data from the existing systems consisted of a large number of separate files. Fortunately, only a subset of these files needed to be converted; the remainder could then be constructed by Dynix. The most important, and largest, file was the BIBLION MARC file, containing details of 560 000 title records and 810 000 holdings. We also needed to convert our existing Borrower file (18 000 records) and our loans file. Since the conversion was to be done during the long vacation, this last file was much smaller than usual: about 10 000 records.

In each case, the raw data from each file (the data without the index), were transferred from our VAX to the Encore. Since both computers were on the same network, this proved to be very easy: instead of copying

the files to the disk, we used a file transfer program, which took only a few minutes, and being of course a local network, in fact, we split the file into two halves, and transferred it at a time. It took just a few minutes, and it was done.

Once transferred, the conversion process continued.

Bibliography

The transfer of data and the conversion process was begun, written in a VAX Fortran program that did this program automatically the task. The MARC data were transferred into Dynix BIBLION in a series of steps, until a final stage of verification of the data. After that, the process of building the database was given to the library staff.

Most indices were imported was the General Catalogue File. The initial database was set up on the computer, and the index was constructed by Dynix. We then convince Dynix to import the total bibliographic data, but built without space reserved for the room.

Loans system

Before the loans system could needed to be constructed, Departmental library's has arrived for the category for...
the files to tape, then copying from tape to the new machine, we simply used a file transfer utility (ftp) to copy the files across the network. This took only a few minutes for the smaller files. The MARC file however, being of considerable size (over 300 Megabytes), took rather longer. In fact, we split the file into a number of smaller files, to be transferred one at a time. Even so, the transfer of each component took more than thirty minutes, and occasionally failed due to the extent of network traffic.

Once transferred, each file needed to be processed by specially written conversion programs, to load the data into Dynix files.

**Bibliographic data conversion**

The transfer of our BIBLION MARC file was the most complex of the conversion tasks. Fortunately, a conversion program had already been written in order to create a test database for the performance testing and this program needed only minor changes before it could be used for the task. The process actually required several steps. First our BIBLION data were converted to MARC format. Then a holdings file was constructed from the holdings information in the MARC record. The MARC data were then 'mapped' to bibliographic fields, creating the Dynix 'BIB' file and extracting the data used from the MARC record. As a final step, we commenced the most time-consuming part of the process, the building of index files.

Most indices required between one and two days to build. The worst case was the General Keywords index, which caused a great deal of trouble. The initial attempt failed after five days because a power-cut shut down the computer. We then estimated that, using the existing method, this index was going to take more than two weeks to build! We were able to convince Dynix that a revised method should be used, and this reduced the total build time to under five days. However, the index was still not built without trauma: the first attempt failed when we ran out of disk space, requiring us to re-arrange files on the disks to make sufficient room.

**Loans system**

Before the Circulation module could 'go live', several sets of parameters needed to be set up. We required tables of job categories, courses and Departments which would be used in Dynix to determine the borrowing category for each library user. We first had all tables sent (via the
network) from the University’s Registry computer to the Library VAX. They were then copied from the VAX to a Macintosh, where they were inserted into an Excel spreadsheet, extraneous data were removed, and borrower category and statistical class were inserted for each code. The completed tables were then copied from the Macintosh to the Encore, and loaded into the relevant Dynix tables.

Loans being a key element of library operations, it was necessary to have a sudden cut-over from the old system to the new; there was no way to run parallel systems for any length of time. The change-over was originally scheduled to happen over the Christmas break, but due to the inevitable delays, finally occurred on the evening of Friday 12 January. On that day, as soon as the Library closed for the evening at 5pm, we transferred Borrower and Loan files from our VAX to the Encore. Dynix then ran conversion programs to create the relevant Dynix files. The Borrower file conversion was the simplest, the only complication being a translation of borrower categories. The Loans file conversion was more complex in that it affected more files in Dynix: loans and holds had to be created and linked to both borrower and holdings records. Even so, the whole process took only four hours.

Reserve collection

The Reserve system was the most difficult to deal with. The data in the existing system were felt to be too corrupt to be worth keeping, especially given that the status of all items in the collection needed to be reviewed before the start of Semester I, 1990. Accordingly, it was decided that we would simply record on Dynix the status of items known to be in Reserve. All items were in effect recorded against a single dummy requester record. A complication in this strategy was that most of our Reserve pamphlets did not have a barcode recorded in BIBLION, and it was the barcode that we needed to identify them in Dynix. A special effort was mounted in the last months of 1989 to barcode all Reserve pamphlets.

Conclusion

The process of implementing the new system has been long and at times arduous. We have of course learned a great deal about the system along the way, much of it unfortunately ‘after the fact’. There have been numbers of unforeseen problems, the result of oversight, ignorance or misunderstanding. Some problems were solved before we began live use of the system; others only came to light afterwards. What seems to work...
in demonstration and test can often, it seems, come unstuck when the pressure of real data and real use is applied!

It is now five months since we switched to Dynix. Some minor difficulties remain, but the majority of problems have all been solved in one way or another (fixed, deferred or by change of requirements). Dynix have been helpful above and beyond the call of purchase contracts, and I should like to take this opportunity to thank them for all their efforts in getting the system up and running. We now have a system that more than adequately replaces the old, providing additional features, better performance and the capacity to grow with our needs into the new decade.

### User Services – Profiles

**Stephen Cramond**

Stephen Cramond is the newest member of the subject specialist team, and has assumed responsibility for the areas of Medicine and Dentistry.

He joined us last month after seven years on the other side of Frome Road as Librarian at the Institute of Medical and Veterinary Science. He therefore brings to this position a long experience with the familiar tools of information storage and retrieval in the biomedical field, like Medline, and with some of the less familiar ones, like the weekly floppy disk service, Reference Update (which beat Current Contents to the punch in providing a current awareness service aimed at the PC market) and companion reference file management programs such as Reference Manager and Papyrus.

Stephen’s previous experience was as a librarian at the South Australian Housing Trust from 1978 to 1982. Here he developed an early familiarity and interest in online information retrieval, and in the development of information services to researchers.

An Honours graduate in Economic History, Steve has trodden the familiar path of the generalist librarian, selflessly shunning the academic enthusiasms of his undergraduate days and specializing in subject areas far removed from his first interests.
An area often at the cutting edge of developments in information technology, Medicine has been a particularly exciting and rewarding subject for him to pursue.

The recent cooperative development between the Institute of Medical and Veterinary Science, the Royal Adelaide Hospital and the University, in the building of the Hanson Centre for Cancer Research, has given Stephen the opportunity to travel to the United States and the United Kingdom in recent months to look at and report on library services attached to leading Cancer Research Centres such as Sloan-Kettering in New York, and the Imperial Cancer Research Fund in London, and to inspect the outstanding medical library services at the Johns Hopkins and Georgetown Universities.

Stephen's experience at both the South Australian Housing Trust and the Institute of Medical and Veterinary Science have given him a keen awareness of the needs of Faculty engaged in research. He would like to use and build on that experience in the Barr Smith, while at the same time learning and developing his skills in the vital areas of bibliographic education and instruction for undergraduate students.

When he isn't working at the Barr Smith Library, Stephen can be found at home gardening or cooking to support his pregnant wife (he hopes she'll get a chance to read this biography). He'd really much rather be out playing tennis or sailing as once he used to, but impending fatherhood is contriving to restrict his sporting endeavours in favour of the more pressing, but very welcome, demands of family nest building. 

New CD-ROM

We have published a new CD-ROM, Australian Information

This datafile includes:

APAIS (Australian Academic Press Index)
CINCH (Clearing House Index of Academic Books)
AEI (Australian Educational Index)
ARCH (Australian Research Council Index)
ASCIS (Australian Scholarly Communication System)
AUSPON (Australian Government Publications Online)
EDLINE (Electronic Directory of Australian Libraries)
FAMILY (Families of Australian Journals)
IRAB (Index to Research Articles in the Biological Sciences)
LEISURE (Leisure Index)
WESTDOC (West Australian Index to Documentaries)

Update of...
Library expands CD-ROM information service

by Alan Keig

The Library is about to expand the range of databases it offers in CD-ROM (compact disk) format and plans to introduce other databases that may be searched by using dedicated microcomputers. The four services that we presently offer, Social Sciences Index, Business Periodicals Index, Dissertation Abstracts Online, and CData 86 (Supermap) are all in regular use in the area behind the Information Desk; the new services and associated equipment should be available there by the start of Semester II.

New CD-ROM databases

We have purchased, or have on order, the following:

Austrom (Australian Social Science & Education Information on CD-ROM).

This database includes the following:
APAIS (Australian Public Affairs Information Service
CINCH (Australian Criminology Database)
AEI (Australian Education Index)
ARCH (Australian Architecture Database
ASCIS (Curriculum Resources Abstracts
AUSPORT (Australian Sport Database)
EDLINE
FAMILY (Australian Family & Society Abstracts)
IRAB (Index to Reviews of Australian Books)
LEISURE
WESTDOC

Update disks will be issued three times a year.
Science Citation Index 1989 +

Types of records included are the same as those in the printed and online versions; the database may be searched by title words, authors, cited authors, journal titles or author addresses. Title word searching is better than in the printed version because you are not limited to the primary and co-terms, but may use additional terms to refine the search.

The most exciting feature of the CD-ROM product, that is not available in the printed or online versions, is the ability to search for related records, records that have references in common. A record may have up to twenty related records and each of those in turn may have its own related records. In fact, it is possible to move down through as many as five levels of relatedness.

The service comprehensively indexes 3 200 science journals.

We will receive quarterly cumulative update disks by airmail.

Social Sciences Citation Index 1990 +

Similar to Science Citation Index. Comprehensive indexing of 1 400 social science journals plus selective indexing of Science Citation Index journals. 125 000 source records per year.

We will receive quarterly cumulative updates by airmail.

Additional disks are available covering Science Citation Index 1980-1988 and Social Sciences Citation Index 1986-1989. The Library is considering the purchase of this retrospective coverage from Literary Equipment funds; if you are interesting in supporting this proposal, please advise Mrs. M. Robinson, Collection Development Librarian.

There are plans to publish a third title, Arts & Humanities Citation Index, in CD-ROM format; we will look into the possibility of subscribing to this service when more details are announced.
British Library General Catalogue of Printed Books to 1975

The CD-ROM version of the printed edition of the British Museum Catalogue it contains entries for all pre-1975 imprints acquired and catalogued by what is now the British Library prior to 1976, and all pre-1971 imprints acquired and catalogued before the end of 1982. Almost every book published in the United Kingdom during this period is represented. The catalogue gives particulars of the largest number of pre-1914 imprints seen in any single library collection, including substantial foreign collections. Major languages represented are English (53%), French (14%), German (6%), Slavonic and East European (4%), and Spanish and Portuguese (4%).

The number of entries is approximately 5.7 million. Main subjects covered are literature (20%), theology (14%), history and technology (20%), social sciences and law (15%), and biography (6%).

A detailed manual is available for use in conjunction with this database.

Bibliographie Nationale Française depuis 1975 sur CD-ROM.

The first publication in any form of the cumulated French National Bibliography since 1975, it contains more than 390 000 records of all titles received by the Bibliothèque Nationale through legal deposit since 1975. Records are taken from the Bibliographie de la France (BGF) and its supplement, Publications Officielles, and, for new titles not yet listed in the BGF, legal deposit records.

Nineteen search indexes provide access by any element in a record, including author, corporate author, title, subject, keyword, series, publisher, publication year, place of publication, ISBN, language, and combinations of these and other elements. Users also have a choice of fifteen browsable indexes.

Clear on-screen instructions guide the user at every stage and a help function is always available. Menus and help messages may be displayed in either English or French. A detailed user manual is also supplied.

A new disk is issued quarterly cumulating the complete file back to 1975.

Contains over 500,000 records of the Deutsche Bibliothek from January 1986 to the present day. Eighteen search indexes provide access by any element in a record, including author, corporate author, title, subject, keyword, series, publisher, publication year, place of publication, ISBN, type of document, and combinations of these and other elements. Users also have a choice of ten browsable indexes. Clear on-screen instructions guide the user at every stage and a help function is always available. Menus and help messages may be displayed in either English, German or French. A detailed user manual in German and English is also supplied.

A new disk is issued three times a year cumulating the complete file back to January 1986.

Australia On Disc 3

This third edition is a set of disks that contain the largest, most complete listing of businesses and residents with telephones in all major metropolitan and most country areas of Australia. The data may be searched in a variety of combinations and the results may be printed out or downloaded to your floppy disk for further manipulation by database or word processing packages.

Australia On Disc 3 is a joint venture of United Directory Systems and Read Only Memory Pty. Ltd. and is updated annually.

Medline

We will be acquiring this database in CD-ROM format in the near future, but at the time of writing we have not made a final decision on which of the several available versions we will purchase.
In addition to the above new CD-ROM services, we will be installing microcomputers with hard disk memory to run the following databases:

**Current Contents on Diskette: Life Sciences (CCOD/LS).**

From July 1990 onwards we will have the last three or four months (depending on disk capacity) searchable online. The latest twelve months of the paper copy will continue to be available on Level 3 North (we get a substantial discount on the CD-ROM version as subscribers to the printed version).

This journal current awareness service covers articles recently published on a topic or by an author in the fields of biochemistry, endocrinology, genetics, physiology, molecular biology, neurosciences, and related areas.

The journal coverage is identical to the printed version (some 1 200 journals are covered and around 231 000 journal and book articles are listed each year) but the computer searchable version permits detailed search strategies to be set up and run against each weekly issue, as well as allowing extensive browsing of the data. Search results can be produced in hard copy or downloaded to your floppy disk for subsequent manipulation with word processing or database programs.

**The Medieval and Early Modern Data Bank (MEMDB)**

MEMDB is a computer-based resource project established at Rutgers University, with offices in Europe at the Rijksuniversiteit Leiden and the Universitaire Faculteiten Sint-Aloysius, Brussels. The project is co-sponsored by the Research Libraries Group, Inc. (RLG). The aim of the MEMDB is to provide scholars with an electronic reference library of information concerning the medieval and early modern periods of Western history, circa AD 800-1800. The master data set consists of 13 254 medieval currency exchange quotations compiled by Dr. Peter Spufford of the University of Cambridge for his *Handbook of Medieval Exchange* (Royal Historical Society, 1986). These quotations range in date from AD 1106 to 1509, and cover all of Europe, Byzantium, the Levant, and North Africa.

Output is to printer or search results may be downloaded to your own floppy disk.
Data conversion service

Most database services allow you to download the results of your search to a floppy disk, in MS-DOS format, for adding to your personal information files and subsequent manipulation by database or word processing programs. If you would prefer the output in Macintosh format, the Library will be happy to do the conversion for you.

Demonstrations

Ninette Ellis will be running demonstration sessions of the CD-ROM versions of Social Sciences Index or Business Periodicals Index every Thursday between 3.00 and 4.00, starting in early July. If you would like to join one of these sessions please book at the Information Desk.

Networking

Future considerations include the possibility of making databases available to users outside the Library buildings by means of networking, but we will first need to investigate the implications from the point of view of copyright, and licensing agreements with software suppliers.

If you have any comments about the CD-ROM database service, or would like to recommend the purchase of a particular title, we'd be glad to hear from you.

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My Life as an Interlibrary Loan

Six Months on Exchange at the Barr Smith Library

On 21 October 1989 I arrived at Adelaide Airport, and two days later turned up for work at the Barr Smith Library as Deputy Acquisition Librarian for six months. It was surprising how much of a culture-shock I experienced that Autumn which turned into a Spring. So much was different: not only climate, as I expected, but the language too, and the incredible (to British eyes) cleanliness and brightness of the city (and why was everybody so bloody cheerful all the time?) Already by Christmas though — sitting in my peaceful hotel bedroom at Yulara, watching news of revolution in Romania and Germany, of terrible storms and rioting in the UK — Europe seemed far, far away. Returning to Adelaide and work after the vacation, it was North Terrace and the University which then seemed more familiar than those tempestuous images. April seemed to arrive in no time, and with it, time for Autumn to turn back into a Northern Spring for me. This is a record of my impressions from these six busy months at the Barr Smith.

... there are libraries, and libraries

The Barr Smith Library was a shock to me in more ways than one. I had never worked in a university library before (as a staff member, that is*), and had spent the last eight years at the National Library...
of Wales: an autonomous research library with no students, no faculty, no off-site loans, and a closed-access bookstack where material was shelved in accession order. All British publications arrive free-of-charge under copyright legislation, so most of my time, as an acquisition librarian, was spent selecting antiquarian and overseas books to fill out our collections (now approaching four million volumes). Savage staff cuts during the nineteen-eighties (a 20% reduction in personnel from 1979 to 1989) meant that there was often little or no clerical assistance, and professional staff often had to open boxes and stamp books themselves because there was literally no else to do it!

The Barr Smith Library was a different world. The levels of staffing and resources seemed almost extravagant! The pace of life was just as hectic, however, – driven, as I soon discovered, by the vastly different level of use in a university library. I soon adapted, I hope, but one thing took longer than anything else to sink in: Dewey Decimal Classification. I had only ever used Library of Congress Classification before, and this was obviously hard-wired into my brain. I spent weeks mentally translating classmarks from one system to the other (like a tourist stumbling around with a phrase-book) before learning to think solely in DDC like a normal Adelaidean.

... so that's what a routing-slip looks like!

Working in the Acquisition Department provided me with a number of new experiences: a busy open-plan office (after years of sharing a small, quiet room with one colleague and a secretary), no telephone of my own (a strangely disturbing feeling!), not having selection as a main part of my duties, and – oddest of all – a manual ordering system. After five years of using the URICA Acquisition Module, it really struck me how much automation of processing I had come to take for granted. It was a very useful and educational experience to re-learn all the old manual procedures, and be reminded of how meticulous one had to be with cards and slips – all eight per order!

The more I learnt, the more I became impressed with the volume of work processed each week – books and journals – with great cheerfulness and attention to detail. Unfortunately the Dynix Acquisition Module had not been installed by the time I left, but I did have the opportunity to take a look at the Module on a test account and make some useful notes. (The National Library of Wales is currently looking for a replacement system to be in place by 1992.)
...just what is a library technician?

A number of organizational differences between Barr Smith Library and United Kingdom academic libraries was evident. One was the subsumption of Acquisitions and Cataloguing within a Technical Services Division. The increasing use of externally-derived records for cataloguing purposes, together with the automation of acquisition work (and the consequent need for clean records from the earliest stages of ordering), means that these areas are drawing together anyway — common management seems not only sensible but inevitable for British libraries in the near future too. I was much impressed by the level and quality of BSL cataloguing (especially for serials which often receive such cursory attention), and the old card catalogue itself quite moved this old cataloguer's heart: it still really is a superlative information retrieval system!

Another novelty was the concept of library technician — utterly unknown in the UK. The nearest equivalent I could imagine was the old-style Library Association Associate qualification-by-exam, rendered effectively redundant when we succeeded in making librarianship a graduate profession. I remain undecided about its worth on the whole, and the time and expense involved in training towards it (as were a number of people doing the course that I spoke to), but there is no doubt the post has a crucial place in the present organizational structure at the Barr Smith Library.

...where are the paper bags?

I was glad to have the opportunity to work on the Information Desk at the Barr Smith Library — doing five sessions per week during the early part of Semester I. Reference work has always been a regular part of my duties: an enjoyable change from the less-sociable acquisitions work. I welcomed this chance to get to know some of the Level 3 staff too, as well as the actual users of the Library.

A request for the location of paper bags in the B.S.L. did fox me though, and it was only after several minutes that I remembered the Australian tendency to soften consonantal sounds: a very patient engineering student wanted paperbacks, i.e., some light fiction for the weekend.
and finally...

It was astonishing how rapidly the six months went by, especially after February, and it seemed strange to leave just as I had got into my stride. From my point of view, the exchange was very worthwhile, and I hope my opposite number, Chris Smith, will be able to say the same of his period at the National Library of Wales*. Being thrown into a quite different professional environment on the other side of the world is a challenging but refreshing and educational experience; it blows away the cobwebs and encourages one to look at one's work with new eyes.

There are not just two parties to an exchange, however, but four: it is the two host institutions which enable the whole thing to take place, and take the biggest risk: trusting professional responsibilities to an almost totally unknown person. I am happy to record my gratitude to the Barr Smith Library, therefore, for giving me this trust.

Now for next year, the University of Tahiti, I think... ✽

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After receiving his master's degree for a study of Vladimir Nabokov's *Lolita*, Paul Morgan joined the staff of the National Library of Wales where he has been an acquisitions librarian since 1982. In addition to his responsibilities for purchasing and collection development, Paul was heavily involved in the implementation of the URICA system at the National Library of Wales. In 1985 Paul began work on a study of the English novelist Richard Hughes (author of *The Fox in the Attic*) and for this was awarded a doctorate by the University of Wales a few days before he left for Adelaide.

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*We will publish a report by Chris Smith on his experiences at the National Library of Wales, in the next issue — *Editor.*
Exhibitions

Chaos in the Barr Smith Library

by Alan Keig

No, we haven’t decided to change our classification scheme or shelve bound volumes of journals separately from books – what we are doing is providing the venue for an exciting exhibition called *Frontiers of Chaos*. It will open in the Ira Raymond Exhibition Room in the entrance of the Barr Smith Library on 17 September and will remain here until 12 October. Admission will be free.

*Frontiers of Chaos* is the work of Professors Heinz-Otto Peitgen and P.H. Richter at the Center for Complex Dynamics, University of Bremen, and has been sponsored for worldwide exhibition by the Goethe Institute. Its visit to Adelaide has been supported by a grant from the University of Adelaide Foundation, following several years of negotiation with the Goethe Institute by Professor Ren Potts of our Department of Applied Mathematics.

What is Chaos?

According to the very informative exhibition catalogue prepared by Professors Peitgen and Richter:

*Frontiers of Chaos* allows us simultaneous views of two new frontiers. The first is the recently explored boundary between determinism and apparent chaos in physical systems. The mathematical description of that boundary and of related theoretical systems provides the subject matter of the pictures in the exhibition. The second, at the level of the pictures themselves rather than what they depict, is a newly created area of overlap between the normally distant domains of pure mathematics and the visual arts.

You can experience *Frontiers of Chaos* simply as a stunning exhibition of colourful computer graphics, but the underlying theory is no less stunning. The seemingly endless variety and intricacy of the shapes derive from some of the simplest mathematical formulas. For those interested in the Chaos theory aspects of the exhibition Professor Potts is
arranging a series of lectures on Chaos and Fractals. Dr. Tony Roberts will be presenting a series of lunch-time talks aimed at a scientific audience while Professor Potts will present lectures to Mathematics teachers, especially those wishing to bring groups of students to the exhibition.

There will also be talks in the Ira Raymond Exhibition Room on Chaos theory as it impinges on various disciplines such as architecture, geography, psychology, medicine, and computer science, by experts in these fields, and possibly a public lecture if Professor Potts can find a large enough venue.

It is not necessary to have any knowledge of mathematics to enjoy the coloured three-dimensional pictures of imaginary landscapes that have been created by the number-crunching ability of modern computers. In addition to the coloured pictures the exhibition will feature backlit slide boxes and two video displays. In addition staff of the Apple Consortium at The University of Adelaide plan to instal an eight Megabyte Mac II computer and colour monitor, running special software that will enable visitors to Frontiers of Chaos to create their own versions of Chaos theory images.

Want to know more?

If you want to explore further the concept of Chaos theory you should read The Beauty of Fractals: Images of Complex Dynamical Systems by the creators of the exhibition, Professors H.-O. Peitgen and P.H. Richter, which contains reproductions of many of the pictures that will be on show, or The Science of Fractal Images, edited by H.-O. Peitgen and Dietmar Saupe. For a more popular account you might like to read Chaos: Making a New Science by James Gleick. Copies of all three books are in the Barr Smith Library.

I'd like to thank John Edge, Editor of Lumen, Ian Florance of the Apple Consortium, and Mick Draper, Subject Librarian for Mathematics and Computer Science, for providing information which helped in the preparation of this article.
Our cover


The exhibition Frontiers of Chaos, which is a collection of coloured photographs of similar images, is coming to the Ira Raymond Exhibition Room at the Barr Smith Library in September – see the article Chaos in the Barr Smith Library on pages 43 to 44.