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Experiences with MARC-based Systems at Trinity College, Dublin

Background and Environment

I quote from the Guide to the Library of Trinity College Dublin:

"The Library of Trinity College is the largest research library in Ireland. Since 1801 it has enjoyed the right to claim all British publications under the terms of the British Copyright Act... The Library also receives all Irish publications under the Irish Act. Its bookstock exceeds one million volumes and it has extensive collections of maps and music. It possesses an important collection of manuscripts, including the Book of Kells."

From the original handful of students and scholars who began work in the newly founded college in 1593, Trinity has grown to a student population of nearly 4500, with over 300 teaching staff. The research and teaching needs of the college and the community are served by a system of libraries ranging from the "Old Library" of 1732 — which houses over 80% of the total book stock — through several special libraries — science, medicine, modern languages — to the "New Library" of 1967, which is essentially a research library, and within the year construction of the new Arts Block, housing a separate undergraduate library with a projected collection of 100,000 volumes, will have begun.

The catalogues of the Library have gone through a number of distinct phases. The earliest "proper" catalogue (there are irregular — in both senses of the word — handwritten book lists, mainly lists of accessions, going back to the 17th century) is the printed catalogue published in 1873. This is essentially an author catalogue, though there are some subject entries under the names of persons and places and certain "form" headings, e.g., Baptismus; Ceylon; Magazines; Poemata; Salisburgum, hod. Salzburg.

The printed catalogue was followed by the so-called Accessions Catalogue, an author catalogue along loosely Bodleian lines in that Bodleian Library entries were, apparently, often taken as authority for Trinity ones; this contains records of the Library's acquisitions up to 1963 in the form of printed and stencilled slips pasted into guard books, and generally omits items which appear in the Printed Catalogue. Aside from its rather tenuous Bodleian orientation, this catalogue illustrates through its lack of any recognisable code the parochial attitude toward cataloguing in the Library of Trinity College before 1960, for it was only in that year that the influence of the British National Bibliography became evident in local cataloguing practice.
During the period covered by the Accessions Catalogue a number of separate catalogues was established, entries being made in them on the basis of both the type and format of materials. The distinctions which these catalogues introduced are reflected today in the variety of shelving schemes in use in the Library, and, until the first separate computer-printed catalogue, in the multi-level approach to cataloguing and classification, about which I shall say more below.

In 1963 a third catalogue, on cards, was begun. Its style was basically that of the BNB, whose cards and printed bibliography were used as source copy for the cataloguing of the copyright intake. Local alteration to the data received from BNB served to continue extant practices at Trinity, such as the expansion of certain types of corporate entries by the addition of a place designation, and the reversal of BNB practices regarding pseudonymous authors, where the local entry is under the real name with cross references from the one or more pseudonyms an author has used. This catalogue now contains entries for approximately a quarter of the Library’s non-serial holdings.

Like its predecessors, the card catalogue is mainly an author catalogue: the number of added entries for ancillary authors, illustrators, translators, etc., was kept to a minimum; title entries were consistently generated only for materials allocated to the Biomedical Library; and the majority of books catalogued received only a single entry — the average representation of items in this catalogue is 1.4 entries. Since 1968 the card catalogue has, with minor exceptions, followed the Anglo-American Cataloguing Rules — 1967.

The development of subject approaches to the catalogues has been somewhat unusual, particularly as regards the period of the Accessions Catalogue. The Printed Catalogue contains, as I have said, some entries of the personal-name-as-subject type, some place names, and certain form headings, the latter two groups assuming — as was no doubt reasonable in 1873 — that the user of the catalogue knew Latin. Some time early in this century the Library began a subject catalogue to complement the Accessions Catalogue. The Guide to the Library describes it as follows:

“This alphabetical catalogue of subjects, which is only available on application, covers works indexed under authors in the Library’s Accessions Catalogue. A list of subject headings used is available . . .”

In fact, this catalogue, which consists of thousands of envelopes filled with handwritten, printed and typed slips, and occupies hundreds of feet of drawer space, has never been made public, virtually its sole users being the Readers’ Services section of the Library. It does have a model, the source of which I give in full:

The reasons for this long-distance transplant are, with so much else in the history of our Library and others, lost in a sort of folkloric mist. Significantly, however, entries were still being made in this Secondary Catalogue, as it is known, until at least 1957.

With the change to a card catalogue came the change to a true classified catalogue, based on the 16th — later, the 17th — edition of Dewey, and augmented by an alphabetical subject index. But a single sentence in the Guide to the Library speaks volumes: "Less significant Copyright accessions are excluded [from the classified catalogue]." Since the beginning of this year, no new entries have been made in this catalogue, partly as a result of the change — adopted by BNB — from DC-17 to DC-18, but mainly because of an administrative decision to discontinue the use of a numerical classification for any purpose other than open-access shelving, and to replace it with a catalogue arranged by Library of Congress subject headings for current (and re-catalogued) accessions while attempting to get readers to rely generally upon the more comprehensive published subject catalogues available in the library, the thinking behind this decision being that a subject catalogue which is not only limited to a single library (whose collection is heavily biased towards recent British publications) but is highly selective as well, is of minimal use in academic research.

As I have just said, Trinity's collection consists to a considerable degree of relatively recent British publications. Of the roughly 250,000 books represented in the card catalogue, the last 8 years' acquisitions, probably 90% were received under the British Copyright, and even today — or, perhaps, more so today than in earlier years — Trinity is quite markedly the "poor cousin" of the Copyright Libraries, with copyright intake still accounting for some 75% of annual acquisitions.

(Since there are less than 500 titles per year published in Ireland, the Irish Copyright intake is not numerically significant).

In this fact lies part of the unique environment in which we are working, for it means that there is very high correspondence between MARC output (in referring to MARC throughout this paper I mean BNB-MARC) and our total intake, almost certainly higher than most, if not all, other libraries which have attempted to make use of MARC.
Design and Implementation of the Original System

If there were any fundamental concepts which consciously underlay the initiation of library systems development at Trinity College in 1968, they were that the implementation of an integrated computerised system covering most or all aspects of the library’s technical processes and extending beyond these to the provision of various kinds of information services would have a better chance of success if initial effort were focussed on the catalogue — as the central bibliographic tool of the library — rather than on peripheral areas; and that external availability of acceptable bibliographic data for a significant proportion of the intake of our — or any — library was likely to make local manual reprocessing of such data unjustifiable in cost-benefit terms.

An analysis of the Library’s procedures for the processing of copyright accessions was undertaken in mid-1968, with a view toward the utilisation of MARC, and a proposal for a MARC-based system was made to, and accepted by, the Library less than a month before the arrival of the first tape issued by BNB as part of its regular weekly service.

The initial aims of the system, as stated in September, 1968, were:

1. to develop a nuclear system, based on the provision of bibliographic data in machine-readable form by the British National Bibliography, which can be modularly expanded;

2. to provide to cataloguers significantly more information in each item received for cataloguing than is currently available without access to remote files, thereby increasing the efficiency of the cataloguing procedure;

3. to provide the Readers’ Services, Accessions and Book Selection Librarians with lists of the week’s copyright accessions before they are catalogued, so that decisions on book disposition, cataloguing priorities, etc., can be made as soon as possible after books reach the Library;

4. to provide an SDI service to College staff;

5. to reduce the production of catalogue cards to a single step;

6. to produce claims to the Copyright Agent for overdue items expected under Copyright;

7. to provide people immediately concerned with book selection with lists of current publications not due for receipt under the Copyright, i.e., LC-MARC data, as an aid to the Library’s non-copyright acquisitions program and as a first step in the development of an ordering system; and,

8. to generate MARC format records for current non-copyright accessions.

As can readily be inferred from the second point in this list, no attempt was made at this stage radically to alter the manner in which the cataloguing staff, consisting then of nine professionals, dealt with new copyright accessions.
Rather, the general goal of the first phase—leaving aside points (4), (7) and (8)—was to integrate externally-generated MARC data into the current operations of the Library in order to provide a control framework such as had not previously existed for those operations.

That this first step was fairly mundane was due largely to the unwillingness of the cataloguing staff to accept externally-generated bibliographic data, regardless of its physical form, sight unseen. For reasons completely different from those of the cataloguers, the decision to proceed in this way was justified over the next few months as, during the period of the implementation of the system (and, indeed, well into its operational stage) it became increasingly evident that the quality of data distributed in BNB-MARC tapes and the mechanisms for its correction did not justify the basing of an automatic system upon the MARC service as it existed in 1969–70.

Our intention of utilising LC-MARC data was based on the expectation that LC records would be distributed by BNB as an integral part of their weekly service, but this aspect of the initial system was abandoned when it became clear that various operational difficulties had delayed—and ultimately precluded—the sort of combined distribution we had envisioned.

The system which went into operation in November, 1969— with the exception of the SDI service, which began one month later, and which I will describe separately—included all but items (7) and (8) of the list above. A brief outline of its operations follow.

The tape received each week from the BNB is added to a non-cumulated file—i.e., one in which each week’s tape issue is kept separate from all others; this procedure has been found useful because of the occasional need rapidly to reconstruct a particular past MARC issue, usually as a result of local operational difficulties—containing all MARC records received, and then to a file of anticipated receipts, arranged alphabetically by title, and representing books whose arrival in a copyright shipment is expected. Records in this file differ from those originally received from BNB in that, besides their having been translated into EBCDIC from the USASCII code in which they are distributed, and reformatted as IBM O.S. V-format (i.e., variable length, as opposed to the undefined format used on the exchange tapes), the leader has been extended from 24 to 84 bytes by the addition of certain control information, including two fixed-length, fixed-position sorting keys. The size of this file is fairly stable, the number of records averaging 5600–5800 in any given week. From this tape file a list is produced each week for use in the checking-in of copyright shipments.

For reasons of distance, transport and Customs, copyright shipments arrive quite irregularly, but on average something like 600 volumes are received each week. A single shipment is unpacked and the books are arranged on shelves in

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title order. Two people then proceed to compare the shelves to the Matching List, one reading aloud the titles of the books on the shelves, the other checking the list. Matches are noted on the list, which contains the title and SBN (or BNB number if no SBN is present) of each book expected, as well as a current week’s accession number, and when the entire shipment has been processed — this takes two to three hours, as compared to the one to two days required under the previous system — the list is returned to the Computer Laboratory, where the accession number of each received item is keypunched. The accession number is re-allocated each week to all items currently in the anticipated receipts file, and a number becomes fixed only when the item to which it corresponds in a particular week is received; once this happens the number, which indicates the date of the book’s receipt, becomes the permanent control number for that item; although it is occasionally used to complete the identification of items being checked in on the Matching List, the SBN serves no other function in the system except as part of the display in some printouts.

The deck of punched cards representing the week’s receipts is used to strip the corresponding MARC records from the anticipated receipts file. These records are added to a cumulated file of uncatalogued receipts, and are also used to produce three types of printed output — SDI listings, Cataloguing Worksheets, and an Accessions List.

(The foregoing paragraphs describe aspects of the system which are still in operation; much of what follows, however, has been superseded by procedures which will be described further on in this paper.)

For each item received a worksheet, displaying all the bibliographic, and some of the control, data in the MARC record, along with certain locally-generated data, was produced and inserted in the book to serve as source copy for cataloguers in much the same way that the combination of a BNB card and the printed BNB had been used previously. Thus supplied with worksheets, the books were distributed by subject among the cataloguers.

An Accessions List was (and still is) produced in quadruplicate to provide, in classified order, a listing of the week’s copyright intake before the books reach the Catalogue Department, so that, to a considerable extent, decisions on book disposition can be taken before processing has got underway. The Copyright Librarian oversees the consolidation of the annotations made by several recipients of the List.

In theory each cataloguer processes the materials assigned to her in order of receipt, and in practice this is very nearly the case, the former pick-and-choose method having been almost completely abandoned. This has led to a more regular processing sequence and an increase in overall throughput, though the time spent by a cataloguer on a single book once she begins to deal with it did not decrease.
The cataloguing procedure consisted basically of the verification of data on the work sheet, by comparison with various local files, the generation of a verbal "feature" to augment the BNB classification (for those items which were to appear in the classified catalogue), the creation of a shelf mark and the indication of the number and type of cards required for one or more of the Library's twenty public and working catalogues. Alterations to the worksheet data were allowed at the subfield level or above, and included insertion, deletion and replacement of data items. Deletion of entire fields was discouraged, and a facility was provided whereby the display of a particular field could be suppressed without its actual deletion from the MARC record. The amendments were keypunched and used to update the original records, the resulting "catalogued" records being used to produce sets of catalogue cards separated by destination and in rough filing order; these final MARC records then became part of the tape catalogue.

The system described above operated weekly with an acceptable level of teething troubles for approximately five months, at which points the program which applied worksheet amendments to MARC records developed a disinclination to carry out its task. Over the next few months the program was persuaded to yield up a few thousand records, but by October of 1970 its total breakdown could no longer be denied, and a start was made on the writing of a replacement.

At the same time, however, we were discussing a more radical solution to our problems, and by the end of the year work had begun on a revision of the systems, to be phased in gradually through 1971.

Design and Implementation of the Revised System

In March of this year a computer-printed book-form catalogue of the Library's copyright accessions from December, 1969, through December, 1970 was produced, and a xerographically-reduced working copy placed in the Library; a multi-copy public catalogue will be put into use when editing of this "first edition" has been completed, probably in June or July. The new catalogue contains some 88,000 entries for approximately 30,000 titles, each title being represented by as many entries as the MARC record allows, with the exception of classification and Library of Congress subject headings, the former being excluded for reasons mentioned before, and the latter because of the incomplete LCSH coverage in MARC during 1970; entries for records received after 1970 will include LCSH.

The first step in the system's revision, undertaken after — and on the basis of — nearly 30 months' continuous experience of MARC, half of it in a production environment, was to discontinue local reprocessing of MARC records. Although we are still producing worksheets to be inserted in each book, the only emendation which cataloguers are allowed to make is the addition of a
shelf number. As might be expected, the cataloguing backlog, which had been fairly constant over a number of years, virtually disappeared within weeks of the new practice being introduced, and the time spent by professional cataloguers on new copyright materials dropped to less than 10% of what it was before the change.

The new catalogue is based on a modified unit entry concept. The fullest entry for any given work now appears under the work's title, and consists of the uniform, collective and title-page titles, edition statement, imprint, collation, series statement(s), notes, SBN (or BNB number) and shelf number. Additional entries consist of a shortened version of the above — SBN and notes, the latter frequently accounting for a large number of printed lines, are dropped — with a superimposed heading: headings are made for author, short title (where a uniform title is present), series, personal and title subject entries, and "added entries" (i.e., MARC fields 700–730). Cross references are generated when they appear in the record, and duplicate references are suppressed at the page-formatting stage.

Filing is based on sort keys generated according to a set of codes originally developed at the Bodleian Library for use with MARC records, and locally modified to suit the requirements of a very different display environment. MARC designatory entities, that is, unique combinations of tag, indicators and subfield code, are translated into single-letter codes. These codes, which are not necessarily unique themselves, are used in conjunction with text extracted from the fields to be sorted, and with separator codes made up of, in different contexts, the lowest or highest characters in the IBM System/360 collating sequence, to compose the sort keys attached to each catalogue entry image generated.

Updating of the catalogue is to be by page replacement, possibly with brief cumulating supplements to try to minimise the amount of interfiling required while the catalogue is still relatively small (the first edition is roughly 7000 pages long, and the projected raw growth rate from copyright intake is about 150 pages per week).

This is the system as it operates today. In briefest outline, it indicates those materials which are expected under copyright and provides a means for their formal accessioning; gives various members of the Library staff a preview of the week's copyright acquisitions; notifies SDI users of the receipt of books in their particular areas of interest; and generates catalogue entries and maintains an up-to-date catalogue. It has human interfaces at only two major points, requires less than two hours' data preparation per week, and has reduced by not less than 80% the overall manual effort involved in the processing of some three-quarters of the Library's current intake.
As I said before, we are phasing in revisions to the system throughout this year. Our first priority is to reduce the number of major catalogues in use — the new printed catalogue brings this to four — and integrate our non-copyright accesses into the new system, initially at least at the final output stage. In order to do this we will shortly begin generating MARC format records for all current materials not covered by MARC; as our cataloguers now have 18 months’ experience with — or, exposure to — MARC coding, we do not envision any serious difficulties in implementing this procedure, and the programming for the local input system is nearly complete. We expect also to begin, before the end of the year, the conversion of the card catalogue, a project which will result in its elimination over the next few years, as the converted records will become part of the machine-readable and -printed catalogue. Present considerations include the possibility of on-line data input and editing, but however attractive this may appear to us, those who control our finances will probably have the last word. In the absence of such a system — and, at any rate, during the early months of the project — conversion will be card-based, using pre-printed cataloguing work-sheets which have been filled up by cataloguers as source copy for keypunching. Our experience suggests that the data preparation staff of the Computer Laboratory can handle something like 500 records weekly, but with correction procedures we would expect to operate with a fortnightly production cycle; it is impossible to say at present what volume of records the cataloguers will generate per unit of time.

Partly to simplify our multiple shelf-numbering system, and partly to reduce still further the amount of manual attention required for the copyright intake, we are implementing a new disposition scheme which involves the automatic generation of shelf-marks for copyright receipts, with a facility for manual override and with an indication of materials certain (or likely) to require special treatment; the shelf-marks and annotations will appear on the Accessions List. The basic numbering system will consist of the 18th edition Dewey number, truncated in some cases, with a Cutter-type author for disambiguation within classes. This will be generated for all materials which are neither paperback, fiction, juvenile, nor serials (within a local definition of serials). This last group consists of yearbooks, directories, some multi-volume works, etc., all of which are recognisable as such from data in the MARC record. These materials are recorded in separate files, and in order to effect the desired consolidation of records it will be necessary to annotate (automatically) the Accessions List entries for them. Fiction (paperback and hardback are shelved separately to achieve compact storage), paperback non-fiction and materials designated for children in the MARC record are all shelved in separate running sequences (lest this appear even stranger than it is in reality, I should say that very little of the Library’s collection is placed on open access shelving, and a classified arrangement is used for probably only 60,000 volumes at present; with the exception of the planned Undergraduate Library, space restrictions make it
unlikely that this practice will be significantly altered — indeed, we are looking forward to the provision of off-site storage as a means to remove some of the older materials from our shelved-by-size stacks so that we can resume the "sizing" of current unclassified books), and these sequences will be maintained, and new numbers generated, automatically. An attempt will also be made to indicate, within some probability threshold, items suspected of appearing in the official List of Prohibited Publications. This is necessary because we receive, under copyright, books whose importation is banned by the Irish government, and do not make public catalogue entries for them, their use by readers being at the discretion of the Librarian. The uncertainty in automatically recognising them arises from the bibliographic imprecision of the official List, and there are further complications of timeliness, updating the authority file of prohibited books, and keeping up with the expiration of the ban on particular items.

The people who use the Accessions List will be able to alter the computer-assigned shelf marks if they feel this is necessary. Any altered shelf marks will be applied to the appropriate records, and a list will be produced to serve as an authority for the label typists. The MARC records will then be used to produce SDI listings, and to update the printed and machine-readable catalogues.

The SDI System

The SDI service was initiated primarily, it must be said, as a public relations front for the rest of our work in library computer applications. Trinity is by no means unique in having a highly unequal distribution of visible wealth among its various departments, and as the start of library systems development coincided with the inauguration of a new computer laboratory involving considerable capital expense — the development of library systems was a major justification for that expense — it was felt that a public face was desirable for work which would, by its nature, be essentially invisible to those outside the Library. An SDI service provided a means of giving College staff, in particular, a sense of personal involvement in the ongoing project, and however cynical the first sentence above may sound, this has, to a gratifying extent, been the case.

We are currently serving a user population of 238 people, roughly 85% of whom are on the academic or administrative staff of the college, the remainder consisting mainly of researchers at semi-state organisations and members of government departments. The service operates weekly as a by-product of the regular copyright accessions and cataloguing system, and thus provides users with notification of the arrival of copyright books of interest to them before the books reach the stage of public availability. An SDI recipient who wishes to see an
item on his list immediately can request priority processing of it, in which case it is normally available to him within 24 hours, and frequently on the same day as the request.

The system is based on interest profiles obtained from intending users and consisting, in the first instance, of very brief natural language descriptions of areas of interest. These descriptions are treated as if they were books requiring classification, and are translated into one or more pairs of DC-18 numbers, each pair comprising a range of values, i.e., a lower and upper bound — the two possibly, though infrequently, identical — which will result in a "hit" when they bracket the classification number of a book in the current week's file. An attempt is made, during the classification of profile terms, to compensate for the common disparity between the preferred order of Dewey and the dependency relations inherent in the requests, by providing however many pairs of DC numbers seem necessary to encompass the stated subject. Thus while books on English palaeography will be retrieved by a single classification pair, and ecology by two, a request for medieval history required 33 pairs, and one for "anything about China" is essentially beyond the system's competence.

Obviously, the Decimal classification was not designed for this sort of application. So long as a request can be made to conform to the restrictions of DC — some general requests such as Biology or Theology, and some highly specific ones, such as Aegean Archaeology or Biometrics, are particularly easy to deal with — we appear to be able to operate at a very high recall level, though in some cases, where an individual has several highly general terms in his profile, as much as 15% of the weekly file's contents may be retrieved. On the other hand, of course, a small number of requests are both so specific and so specialised that in the 18 months of the service's operation they have not resulted in a single hit.

We have not attempted to assess the precision of the system, partly because we have been very lax in soliciting feedback, but mainly because the concept of precision in a retrieval system whose requests are not time-bound does not seem to me to be particularly meaningful. What we know of our users so far is that none has asked to be removed from the system, that a fair number interact with the person in charge of profile maintenance to have their profiles altered, that many people do request materials shortly after their appearance on an SDI list, and that numerous personal reference files are being built out of citations culled from SDI listings, as each hit is represented by a full unit entry.

The service will shortly become more personalised when we allow users to specify by SBN individual books of whose arrival in the library they wish to be notified when those books are not necessarily within the scope of their profiles. We also expect to provide a similar service based on LC-MARC data, in the hope that requests for current book purchases will to some extent be
supplied to the Library using information from the SDI Lists, so that records in the LC file can be moved to the main anticipated receipts file when items are ordered, with the processing of the received items then becoming part of the general system.

Observations on the System’s Operation

It became evident very early on that there were two special circumstances contributing to the validity of our approach to MARC-based systems, while at the same time decreasing the likelihood that any system we developed would be applicable in another environment. In two words, these are coverage and timeliness.

I have already mentioned the high correlation between our intake and the contents of BNB-MARC. Not only is this higher than would be found in other University libraries, but it is also, by reason of our relative penury, far higher than the other Copyright Libraries, in none of which does the Copyright constitute the percentage of total intake that it does in Trinity. Moreover, while other libraries both in England and America have found that MARC records are frequently received after the books to which they correspond have gone through the complete local processing system, we are normally four — and occasionally as many as seven — weeks ahead of book receipts in our Anticipated Receipts file; again, we are unique in this even among the Copyright Libraries.

These physical aspects of the environment in which we have been working, coupled with a forward-looking library administration, are therefore quite conducive to the development of systems offering a high return on investment, that is, providing at a relatively small cost a significant reduction in manual — largely professional — effort in a major technical processing area, coupled with a real and visible increase in services. But an administration committed to the constructive exploitation of data processing to improve the efficiency of library operations and prepared to press on in the face of temporary setbacks (prepared, I should add, to accept that such setbacks are not unlikely), and friendly circumstances do not by themselves make a system, particularly one which impinges on the self-image of those who must interface directly with it.

Whatever I, as a systems analyst, may think of it, the verification and emenda-
tion of BNB cards or computer-produced worksheets by our cataloguers was considered by them as a professional activity, and certainly we were paying salaries commensurate with that view. The prospect of dealing with computer-produced data, which was first formally presented to the technical processing staff in June, 1969, aroused considerable hostility among the cataloguers, the main point of their displeasure being that the necessity for them to become familiar with MARC coding practice and to apply rather rigid editing stand-
ards in dealing with the worksheets was "not a librarian's job". Yet no one resigned, the required familiarity was, for the most part, quickly achieved, and the work went on; more recent developments, in which the facility for editing MARC data was removed, provoked discontent along similar lines.

I am quite willing to accept that this dissatisfaction might well have been minimised, and perhaps avoided altogether, if the Library staff at the level of direct interface with the system had been made to feel that they were part of its development, and were in a position to shape its final form by application of their particular experience. Having said this, I am not at all sure how to accomplish it; all I can say is that it is very prominent in our thinking as we continue our work.

There is another aspect to this, one which leads me to propose an axiom:

Where a system produces data which were previously not available, it also produces a more or less real need for those data; that is, the system appears to generate, among its users, expectations commensurate with the users' understanding of its capabilities.

It took very few instances of "finger trouble" at the operating end of the system to demonstrate the truth of this axiom. The non-appearance on Monday morning of the four copies of the Accessions List generates considerable activity including phone calls, memoranda, pointed comments in senior staff meetings and, naturally, snide remarks. The same is true of the SDI lists (displeasure is here also voiced from within the Library, as production delays are rarely long enough to become apparent to SDI users), despite the non-essential character of both these products, for so long as the Matching List and worksheets are produced the system can continue to function.

Through all this, we are clearly having some effect on people's attitudes, in addition to the tangible effect of freeing eleven professional librarians from the mundane task of repeating other librarians' work, so that they can begin the much needed job of bringing the catalogue up to modern cataloguing standards, and preparing it for conversion to machine-readable form; we have obtained a measure of acceptance, however grudging, for the concept of centralised, machine-readable cataloguing, and for the continuing place of the computer in our Library; and we have made at least some members of the College staff feel, probably for the first time, that the Library is trying to do something for them personally.

Appendix — Configuration and Programming

The College Computer Laboratory presently operates an IBM System/360 Model 44, with 192K bytes of core storage; 360 Operating System is in use, generally with PCP (Primary Control Program), though MFT-II is gradually
being phased in. Peripherals available to the Library system include, in addi-
tion to card handling equipment, two tape drives, four 2311 disc drives (7.25
million bytes each), and a 600 line-per-minute printer; when the Library’s
upper/lower-case print chain is in use, the printing speed is reduced to a
maximum of 275 lpm.

The Library system consists of eight major program suites, and its operation
requires an average of 4.2 hours of computer time each week, much of which
is taken up by printing, as outputs of up to 25000 lines per week are quite
normal. The introduction of a weekly updating procedure for the printed
catalogue will increase these figures, but as MFT is brought into more regular
use much of the printing can be relegated to the background of operations.

Approximately 32 man-months went into the design and implementation of
the system’s first phase, and probably two-thirds of this was spent in pro-
gramming. The “house language” in the Computer Laboratory is PL/1, but as
we were the first large-scale users of PL/1 in Ireland, and as neither we nor
our local IBM people had any experience of it, learning and application pro-
ceeded in parallel, and programming was therefore more protracted than might
otherwise have been expected. In the original system some 10% of the programs
were in Assembler, for reasons having nothing to do with PL/1’s applicability
to our work. These programs have now been replaced, so that the entire system
is presently written in PL/1.
Discussion

Mr. Tucker explained the experiences with the MARC based system at Trinity College and the problems encountered there. Mr. Coward was convinced that every country has its own unique MARC problems, but what he was really interested in was how many records can the Trinity College directly take over from the BNB tapes. Mr. Tucker replied that about 20,000 entries could easily be taken over. Mr. van Wesemael wanted to know whether they are also doing a recataloguing process. To which Mr. Tucker answered no, since in the filing procedures their rules are somewhat different than the BNB rules. Mr. Nowak asked if they have titles for one work, do they file the proper title or the uniform title. Mr. Tucker said that they are doing both and that they can add a short title too. Mr. Rather believes that if they file according to the main full entry, then they will receive more information which was approved by Mr. Tucker.