Progress Toward a National Serials Data System

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WHERE DO THE responsibilities for the planning, development, and management of a national serials data system lie? With the federal government? If so, through what mechanisms? Will such a national system come about through the voluntary merger of existing local, state and regional systems agreeing to submit themselves to standards and controls in their own interests, or will it require the imposition of an independent authority?

As individual librarians have applied computer technology to serials management within their libraries, and as these libraries have become associated in local, state and regional groupings, major capital investments are being made, and independent management, policy and fiscal entities are being established. Are we on the way to creating a national serials "unsystem" rather than a national system, and when shall we pass the point of no return?

The purpose of this article is to review recent trends in one particular area of computer application and systems development important to libraries, that of serials data, in an effort to find answers to some of these questions. At the outset, I should like to provide a working definition of the words "system" and "network" as I shall use them. A "system" may be defined arbitrarily, as a confederation of interrelated functions under a single control leading to the production of useful products or services. A "system" may arbitrarily be distinguished from a "network" in that the latter lacks a single control function.[1] A "network" consists of independent or quasi-independent functional units, with interrelated functions and services and cooperatively-agreed upon standards, acting in a decentralized but reticulated mode. By this definition, one may refer to a municipal or county library system, while

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an interlinkage regionally of functioning units under multiple juris-
dictions, such as exists for purposes of interlibrary loan, constitutes a
network. As the word is used in this paper, a serials data system would
imply multiple units under some form of common control and pro-
ducing a common product or service. A serials data network, on the
other hand, would imply loosely associated, cooperative functions
and services under independent controls.

It may be arguable whether the functions and services implied by
this paper require a national system, or whether they can be accom-
plished through networking. My *a priori* position is that in order
economically to continue the serials location function performed his-
torically by the published *Union List of Serials*, a system under some
form of centralized management is required. The discussion to follow
will demonstrate this bias.

The Union List of Serials

While systems in other areas (telephone, railroads) have demon-
strated historically a pattern of merger and growth, the evolution of
a national serials data system has demonstrated a reverse situation.
A system assembled by librarians for producing a product (the *Union
List of Serials*) and for providing a national service (location for inter-
library loans) has broken down into a multiplicity of local efforts of
questionable compatibility. While some evidence exists that larger
systems are evolving, doubt remains that a national system can be
reconstituted.

The initial creation by the library community of the first edition
(1927) of the *Union List of Serials* represented a national and even
international integration of local efforts to create a serials location
system. A list of serial titles held by libraries of the Chicago area
(1901) grew through the participation of the John Crerar Library to
a list of 12,000 titles in 1906. In 1916, this Chicago list became the
basis of a North Central Union List which consolidated the holdings
of principal research libraries in the Central States.

After World War I, H. M. Lydenberg, working with an American
Library Association committee, expanded the project still further to
include all major research libraries in the United States. In 1925, that
American Library Association committee agreed to include serial hold-
ings of Canadian libraries. Under ALA sponsorship, the work of pro-
ducing the first edition of the *Union List of Serials* under Winifred
Gregory, as editor, and with H. W. Wilson Company as publisher,

took four years. Funding, estimated at $36,000, was by advance sub-
scription from participating libraries.

The history of the first edition of the *Union List of Serials* demon-
strated merger and integration of effort. Standards governing biblio-
graphic elements were established by committee, and the participants
cooperated voluntarily to produce a product which would function to
provide libraries and their users with two basic services: a) authorita-
tive identification of serial titles and their sponsoring organizations,
and b) location information to facilitate interlibrary loan.

The first edition produced a $10,000 surplus by mid-1930; this was
used to fund two supplements covering serials to 1933. In 1936, the
H. W. Wilson Company proposed a second edition. The American
Library Association created a Committee on the Union List; $48,000
was advanced by the Rockefeller Foundation.

The administrative history of the second edition was less smooth
than in the case of the first edition, but in 1943 a second edition of
the *Union List of Serials* was published. This contained 100,000 titles
in 365 pages and recorded holdings from 650 libraries.

Following its publication, a long series of discussions, investigations,
and studies were initiated involving the processing department of the
Library of Congress and the Joint Committee on the *Union List of
Serials*. A central theme was the possibility of automating the serial
recording function through the use of punched cards. To the late
Alton H. Keller belongs the credit of first conceiving, in 1948, the
application of automatic data processing to serial records. Keller, in
planning the future of the Library of Congress's serial record, pro-
posed to produce a flexoline file by punched cards, the file to contain
the following bibliographic elements:

a) distinctive title entry,
b) place of publication,
c) beginning and closing date of publication,
d) frequency of issue,
e) Library of Congress numbers for bound issues,
f) division of Library of Congress responsible for custody and serv-
    ice,
g) Library of Congress holdings, and
h) indication of current receipt.

Upon completion of the Library of Congress' flexoline file, some
250,000 serial titles would be recorded. Keller suggested that "by using

these same methods, it should be possible to develop a Union Catalog of Serials on punched cards which would show the serial holdings of the larger American research libraries. This could be kept updated on a continuous basis, and from it, listings of publications and their locations could be prepared by subject, languages, country of publication, date, etc." [2] Subject control would be accomplished through assignment of the Dewey Decimal classification. Keller's proposal, well in advance of its day, even suggests that input from participating libraries be in machine-readable form.

The staff of the Library of Congress reviewed the Keller proposal over the next two years, identifying problem areas such as costs of editing the file, costs to participating libraries, and of course, the time involved in processing a file of an estimated 8 million cards. The Library of Congress staff presented this concept to a meeting of the Joint Committee on the *Union List of Serials* in June, 1952.

The forecasting of cost data benefited from the operating experience of *Serial Titles Newly Received* issued by the Library of Congress (1951-1952) which applied the flexoline-punched card technique proposed by Keller. An initial estimate of $935,539, involving editing, keypunching, publication, and the establishment of subject and country files, was increased to $1,095,682 by January, 1953.

The Keller proposal involved keypunching title and holding information from the *Union List of Serials* (supplemented by other sources), printout for offset publication of a union catalog of periodicals, and the maintenance of auxiliary files by subject (Dewey Decimal) and by country. The resulting files were considered exclusively as the base of a publication system; the objective was to produce a published *Union Catalog* and specialized listings; and the size of the card file precluded any consideration of search.

In the 1950's the Joint Committee on the *Union List of Serials* had three major problems before it: a) What to do about a third edition of the *Union List of Serials?* b) What to do about *Serial Titles Newly Received?* and c) What to do about the Library of Congress's proposal for a permanent *Union Catalog of Periodicals* on punched cards?

It resolved the first by seeking a grant from the Council of Library Resources to produce the third edition, subsequently published in 1966. It resolved the second by persuading the Library of Congress to broaden the base of its publication of *Serial Titles Newly Received* to include titles and holdings of other libraries. In 1953, this resulted in *New Serial Titles*. It resolved the third by seeking a grant from the

Rockefeller Foundation to support a study published in 1957 undei the title, *A Permanent Program for the Union List of Serials.*[3] This report, recommended that a *Union Catalog of Serials*, based on punched cards, should be established in the Library of Congress to provide a basis for publication on national and regional union lists as well as special lists by subject fields and by country of origin. The estimated cost of this project was $2,673,222 of which $975,000 would be used to subsidize reporting by participating libraries. Funding of this magnitude was considered impracticable, and the proposal died. Until 1961, however, the Library of Congress continued to use punched cards in preparing *New Serial Titles*.

What can be learned from the foregoing effort to build a national union list of serials and to maintain it through the application of mechanization? First, it appears that all participants were preoccupied with the objective of a published union list. Little consideration was given to other means of providing the location functions which the publication served, despite the fact that as early as 1946 a proposal had been made that electric accounting machinery could be adapted to perform search functions.[4]

Second, this preoccupation derived in part from the level of data processing technology then available. During the period when the possibility of mechanization was discussed, punch cards represented the technical limits of library applications.

Third, costs and benefits were measured entirely from the point of view of preparing published lists. In the absence of estimates of the functional benefits a system might produce, were it capable otherwise of supporting the location search function, the benefits were underestimated.

Fourth, whereas the Joint Committee on the Union List of Serials and the Library of Congress cooperated successfully in the preparation of the third edition of the *Union List* and in the expansion of *New Serial Titles*, no clear resolution emerged as to the ultimate responsibility of continuing the national effort. The one exception to this was the acceptance of responsibility by the Library of Congress to produce *New Serial Titles* as a mechanism to update continuously the third edition of the *Union List*. It should be noted that this updating was a compromise in that it reported holdings for new titles by a limited number of libraries and did not reflect the changing national picture of retrospective and current holdings of serials across the country.

The Trend Toward Decentralization

Parallel with the effort to produce the *Union List of Serials* as a national location system, ran a tradition dating to the early days of this century of compiling local, regional, and special subject union lists. As early as 1901, the Library of Congress itself, published a union list of periodicals received by sixteen libraries in the District of Columbia.[5]

The appearance of three editions of the *Union List*, each increasing in scope of titles and of library holdings reported, had little effect on the proliferation of such local lists. The second edition of the *Union List* contains, as an appendix, an impressive bibliography of published local and regional union lists as of 1954.

Between 1940 and 1957, twenty-five union list projects were published, four-fifths of them regional or local.[6] Seventeen more were announced or completed by 1962.[7] Freitag, in 1964, updated the bibliography published in the second edition of the *Union Lists of Serials* [8] with a listing including 364 union lists published in the U.S. She reports a hundred new lists known to her office since the publication of the supplement.

The motivations for the production of such local and regional union lists appear to be various. In most instances they reflect a pattern of local library cooperation in the interlibrary loan process. Smaller libraries, excluded from reporting in the national *Union List*, have apparently been strongly motivated to publicize their willingness to share their holdings with their colleagues. In the special library field, for instance, a different category of libraries, industrial and commercial, has been concerned with developing cooperation. Finally, the device of a union list has had an appeal to library systems operating under a single jurisdiction such as a university library complex, both to facilitate reader access to the total library resources of the university and to avoid unintentional duplication in acquisitions. A large number of these local and regional union lists have resulted from the voluntary professional activities of library associations in pursuit of cooperation as a professional goal. Whatever the motivation, the publication of local and regional union lists has been a part of the American library tradition of interlibrary cooperation.

The application of data processing technology to bibliographic information about serials has built on the foundation of these uncoordinated local efforts rather than on the national tradition. It is historic irony that proliferation of local computer applications trod hard on

the heels of the decision to reject data processing technology for the production of a national union list.

Without tracing in detail the history of data processing applications to serials control, it may be noted that the National Reactor Testing Station Technical Library at Idaho Falls, had a union list of periodical holdings of six libraries by 1960. The influence of the Library of the Advanced Systems Development Division, IBM and the IBM-Endicott Library in pioneering applications for serials control, may be noted. As early as 1961, McCann reported on five special libraries which had developed data processing systems for purposes of serial subscription renewals, listing, routing and claiming.[9]

A prototype application which attracted wide attention was at the University of California, San Diego, where a pilot operation was completed in 1962, and a system covering 5,000 titles became operational in 1964.[10] The development of an "anticipated arrival" card as the basis of check-in and claiming, was widely copied in other applications. A primary purpose of the San Diego project was to produce a union list for all campus libraries at the University.

Subsequent applications proliferated in the early 1960's with U. of Illinois (Chicago),[11] the National Science Library of Canada,[12] the School of Medicine at Washington University,[13] Purdue,[14] and many others developing systems independently. As of September 1, 1969, the Information Systems Office, Library of Congress, had a record of 300 American institutions or groups of institutions utilizing data processing equipment for the purpose of serials control. In a large number of these cases, the application was directed toward the production of a published list of serial titles currently received or held by one or more units of a library system.

Purposes common to these pioneer efforts appear to be: 1) to improve the processing of serials (ordering, recording, claiming, binding), and 2) to produce published listings of holdings and locations of one or more library units for staff and patron use. The proliferation of individual systems efforts during these pioneer days may be attributed to two circumstances which may be inferred from published accounts. First, the complexity of serials and their processing have long provided the profession with an intellectual challenge; experimentation with computer technology to solve long-standing problems offered exciting possibilities to the adventurous. Second, this type of application represented to the profession a prime opportunity for learning through doing. The significance of this educational experience should not be discounted.

On the other hand, the proliferation of these independently planned systems has been costly; repetitious conversion and programming could have been avoided if a common data base had been in existence. Further, the emphasis was usually placed on the development of a system to support locally the serials processing function, not the location function.

The decision to include data elements in these serial lists appears to have been arrived at independently. Some conformity has, however, been achieved, first through the influence of prototype systems such as the one at the University of California at San Diego, and second, through financial limitations which reduced the number of elements to a minimum.

The Trend Toward Regionalization

The production of individual lists by individual institutions represents the initial application of data processing to serials control. Over the past few years there has emerged a second level effort to develop statewide or regional serials data systems. While the majority of these state or regional projects are in a planning or a developmental stage, and while a comprehensive listing would be difficult to compile, notes on representative proposed developments may be offered to indicate the trend. Excepted from these examples and deferred for later discussion are instances of serials data systems of national pretension.

Illinois. The Illinois State Library has under development a statewide union list of serials planned to incorporate the holdings reported by approximately thirty small college libraries in the state. A 1965 union list of serials of the University of Illinois Libraries has been used as the basis of the list.

Indiana. An initial project undertaken by the four state university libraries (Indiana University, Ball State University, Indiana State University and Purdue), with funding from Title III of the Library Services and Construction Act, has been expanded to include the holdings of sixty-two public, academic and special libraries of Indiana and the Indiana State Library. This project is conceived of as a statewide serials data bank, capable of association with any national network to be developed.

New York. Two projects of statewide scope are under way. Led by the SUNY Syracuse Biomedical Communications Network Group, sixty library components of the State University of New York (SUNY)

have cooperated to publish a union list recording holdings for 25,000 serial titles.[15] This list includes all subjects except law. The New York State Library has developed plans for a New York State Union List of Serials under the three R's program. This statewide list would build on the base of the SUNY list and would absorb other regional union lists which have been developed in New York State. Its scope in general would be the same as that of the third edition of *Union List of Serials;* it would, in a phased program, cover all the major resource libraries of the state, public and private, and would be designed to support the New York State Interlibrary Loan Program (NYSILL). Plans call for search as well as for publication capabilities.

Ohio. In 1968, Wright State University published a union list of 8,880 titles held by ten university and college libraries and twenty-nine special and public libraries in the Miami Valley of Ohio.[16] In its research and development program designed to increase the availability of library resources for use in the educational programs of Ohio colleges and universities, the Ohio College Library Center has assigned priority to a mechanized shared-cataloging system. It has defined as a later objective, work on a serials control system to be designed to facilitate library control of serials holdings in the state of Ohio.

Oklahoma. A list of current periodicals held by the Oklahoma State University and the University of Oklahoma has served as the basis for a union list of serials, scheduled for publication in 1970, which represent the holdings of sixteen libraries.

Oregon. The nine institutions comprising the Oregon State System of Higher Education have a union list of serials in an early stage of development. The data base and programs for this effort were acquired from the Union Catalog of Medical Periodicals System.

Washington. Under the leadership of the Washington State Library, a three-step serials control system is being planned. The first step envisions a statewide listing of serial titles held by Washington libraries; the second, the development of a serials control system for the Washington State Library and its branches; and the third, the production of a union list of serials with specific holding information for all libraries in the Washington State Library network.

This is by no means a comprehensive list of state or regional projects in the planning or early developmental stage. As representative samples, however, they do indicate a trend toward the development

of larger cooperating units, away from the individual library project.

Several generalized comments, based on personal correspondence with the planners of these statewide or regional systems, may be made:

1. This trend has been abetted by funding from Title III of the Library Services and Construction Act amendments of 1966, which support the cooperative development of interlibrary loan networks.

2. Nearly all these systems express need and desire to be compatible with any national standards and any national system to be established.

3. In the absence to date of national standards (e.g., minimal data elements to be used for purposes of identification and location), reactions vary from deliberate deferral of projects, through cautious step-by-step activity, to a do-it-yourself philosophy. As one librarian states:

> Needless to say, a national serials system would ideally originate from the top and a single data format would be utilized by all the libraries desiring to go into it. . . . Libraries have traditionally developed their own systems without regard to compatibility and interchange for so long that it might be difficult to alter this pattern. Much of the reason for this pattern has been that higher level guidance has been too slow and individual libraries and librarians have been too progressive to wait indefinitely for such assistance.

4. No librarian responsible for the development of these regional systems has proposed a master plan for a national serials system, although several have expressed a hope that their own systems might be considered a prototype for such a plan.

The National Level

Present efforts to achieve a national serials data system owe their impetus not to the library community, but to considerations at the level of governmental science information policy. As it became acquainted with the problem of document location, COSATI identified the need for a national system which would locate serial publications in science and technology.

The System Development Corporation's *National Document-Handling Systems in Science and Technology* proposed that the federal government assume responsibility for assuring the existence in the U.S. of at least one accessible copy of each significant publication in

science and technology. It noted that this responsibility extended to the holdings of private and university libraries, that a "national union listing and an indexing of document holdings of major libraries" was required, and further that "among the most serious needs that are not now being fulfilled within the library community today is that of maintaining a union list of serials." [17]

COSATI discussions about the need for a union list system to aid in locating serials in science and technology led to a National Science Foundation (NSF) contract with Information Dynamics Corporation (IDC) to study the feasibility of a union list in machine-readable form. [18]

The IDC study, while concentrating more on the feasibility of alternate routes to building a large national data base than on the organization and performance characteristics of a location system, concluded that the mechanization of a union list of serials in science and technology was economically feasible.

Despite the strong program interests of the National Science Foundation and the Council on Library Resources, both of whom were well-disposed to funding further work toward a national serials data system, a two-year period of inaction followed. Ultimately, the Joint Committee on the Union List of Serials established a subcommittee to draft a developmental proposal, and Dr. F. H. Wagman, its chairman and concurrently chairman of an American Research Libraries Ad Hoc Committee, reported in January, 1967, at a meeting on the Joint Committee on the outlines of a three-phase proposal for a National Serials Data Program to be centered in the Library of Congress.

The National Library of Medicine and the National Agricultural Library expressed strong interest in contributing both to the support and to the conduct of the program. As a result, the proposal became absorbed in the more comprehensive plans of the three national libraries to coordinate the mechanization of their bibliographic processing functions. A public announcement of this cooperative effort was made in July, 1967, and a Task Force was appointed to implement specific projects, including the serials data program. Composite funding from the National Science Foundation, the Council on Library Resources, the National Library of Medicine, the National Agricultural Library and the Library of Congress was arranged for the first phase. To the Library of Congress was assigned responsibility as executive agent.

The Information Systems Office of the Library of Congress em-

ployed Thomas Nelson Associates to survey libraries to assist in a determination of the relative utility of 278 bibliographic data elements relating to serial publications. Based on sampling the frequency of consultation of these elements, estimates were made of the magnitude of the file maintenance requirements. The information was consolidated and reported to the Joint Committee and the directors of the three national libraries.

Noting that the selection of data elements represented multiple functions (identification and location, the processing of serials, and the study of the intrinsic characteristics of serials as a form), the three directors decided to limit the second phase of the project in two ways: by placing major emphasis on bibliographic elements required for identification and for holdings information, and by limiting the field to serial publications in science and technology.

Responsibility for the second phase, or pilot project was assigned to the National Agricultural Library. The National Agricultural Library has contracted with the Association of Research Libraries to provide a project leader and staff, and the pilot project started in July, 1969. The Task Force of the three national libraries continues to have an advisory role.

Much basic fact finding was accomplished during the first phase. The exploration of desirable data elements led to the development of a MARC format for serial publications,[19] and many problems were identified and resolved. Still lacking in this effort, however, is a simple, standardized format for the identification and location functions performed historically by the *Union List of Serials*. It is to be hoped that the pilot project will stabilize this format, thereby establishing a model to which the developing local and regional systems can conform.

Still lacking also is an adequate conceptualization of a search service system to provide nationally for the location function historically performed by the *Union List of Serials*.[20] Attention has consistently been focused on the development of systems to produce printed products, rather than on systems to facilitate the search of files to provide holdings information on specific titles. There is need to create models of various configurations of local, regional, and national serials data files in order to design an optimum system to provide a national search and location function.

The National Serials Data Program undertaken by the three national libraries, while representing a lineal descendant of the *Union*

List of Serials, is but one of three developmental serials systems invit-
ing participation at the national level. The other two are *ACCESS,*
developed by Chemical Abstracts Service, and the *Union Catalog of
Medical Periodicals,* developed by the Medical Library Center of
New York.

ACCESS

Since 1922, the most widely used list of serials in a broad subject
field has been the quinquennial list of periodicals abstracted by *Chem-
ical Abstracts.* In October 1969, the Chemical Abstracts Service pub-
lished *ACCESS* from a computerized data base. *ACCESS* is a vastly
expanded version of this established service which was initially de-
signed to help chemists locate within libraries the full text of the
papers covered by *Chemical Abstracts.*

The first edition of *ACCESS* contains over 16,000 entries for serials
and 4,500 entries for monographs, in addition to a number of chemi-
cal journals which pre-existed *Chemical Abstracts.*[21] Holdings data,
totalling some 727,000 locations, have been supplied by 325 libraries
in the United States, and seventy-four libraries in twenty-eight other
countries.

The bibliographic data elements average twenty-four for serial
entries and twenty-five for the non-serials. Of interest to librarians is
the fact that entry both by direct title in the original language of pub-
lication and by ALA cataloging rules are included in the elements
for serials. The data base used to produce *ACCESS* will be used to
produce quarterly supplements and subsequent editions of the pub-
lished list and will also be searchable, so that lists of journals by lan-
guage, country of publication, frequency of publication, type of jour-
nal, and other parameters can be produced.

ACCESS represents a significantly large data base in the scientific
and technical serials universe. Comparison studies between *ACCESS*
and the lists of serials covered by nine other indexing and abstracting
services in science and technology have shown that *ACCESS* includes
from 29 percent (agriculture) to 82 percent (nuclear sciences) of the
serials processed by other services.

Union Catalog of Medical Periodicals

As in the case of *ACCESS,* the *Union Catalog of Medical Periodi-
cals (UCMP),* developed by the Medical Library Center of New York,
covers the serial literature of a broad subject area in science and tech-

nology. Unlike *ACCESS*, it is an open-ended system, capable of expansion and use at multiple locations, rather than a centralized operation under single management.[22]

With a data base of approximately 15,000 titles in the medical and paramedical sciences, a limited number of bibliographic elements (nine), a thoroughly tested package of computer programs, the *UCMP* owes its strength to its simplicity and wide availability. Any library or group of libraries may acquire the serials data base stripped of holdings information, post additional holdings data, and add titles, and create its own internal or regional union list of serials.

The national use of the *UCMP* format and programs has grown rapidly over the past few years. Starting in 1967 with a group of eighteen medical libraries on Long Island, the system has expanded both geographically and in its subject coverage. Nine principal medical libraries of Virginia, North and South Carolina and Kentucky (the VINSCKY group) were followed by twenty-two Texas health science libraries in producing *UCMP*-based regional union lists. Rutgers University in 1968-69 broadened the *UCMP* data base to develop a university-wide union list of serial holdings, and together with the New Jersey State Library has proposed the use of the format for a statewide list. Eight medical school libraries in Missouri, Kansas, Nebraska, Colorado and Utah have used it to produce a union list of medical serials for the Central States Regional Medical Library Group, and as mentioned earlier, the format has also been proposed for statewide use in Oregon.

The *UCMP* system has obvious appeal in that it is simple, easy to implement and operate. It is modest in cost, and it works—at least for the purpose of producing published lists.

Discussion

In these early years of computer application to serials, the following trends can be noted:

1. Concurrent with the abandonment of the Keller proposal to base a national union list of serials on a punched card file, individual library applications began to proliferate.

2. The local applications are now being superseded by statewide and regional systems.

3. No national system with the same universality as the *Union List of Serials* has yet emerged. Three systems of national potential are under development in areas of science and technology.

This situation raises a number of questions for the library profession and, even more importantly, for library users. The first question is: Do we want a national system for purposes of locating serials holdings? Some confusion of priorities exists between local systems to facilitate the processing of serials in individual libraries, and regional and national systems created to satisfy location requirements.

If the profession agrees on assigning priority to a location function, should this function be accomplished by publication as heretofore? If so, should the concept of a comprehensive national union list of serials be revived, or should we depend on multiple local and regional published union lists?

Is it feasible to design a location system which would depend on search of machine-readable files rather than on published products to accomplish the location function? How can we find out? Who would design, develop, and manage such a system? Could it be used to produce multiple published union lists, as well as to provide search services? What other benefits could such a system provide?

Finally, to return to the questions raised in the opening paragraph, where does the responsibility for leadership lie? in the library profession, through the Joint Committee on the Union List of Serials or the Association of Research Libraries? in the federal government, through the Library of Congress, the three national libraries task force, or through the Office of Education?

If a national serials data system for location purposes is to emerge in the foreseeable future, these are all questions which call for earnest consideration and prompt answers. Otherwise we shall be burdened for years to come with fragmentary and partially compatible bits and pieces of an uneconomical network, frustrating to use and entrenched in practice. So far our approach to this question has been the reverse of that recommended by a former Librarian of Congress, Luther H. Evans, that "the matter [of union lists] should be dealt with first on a national basis before remnants of the task are left for regional solutions." [23]

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