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MODERN INFORMATION TECHNOLOGY
IN THE
STATE LEGISLATURES

PREPARED
FOR THE
JOINT COMMITTEE ON CONGRESSIONAL
OPERATIONS
BY THE
AUTOMATED INFORMATION SERVICES SECTION
CONGRESSIONAL RESEARCH SERVICE



JUNE 9, 1972

Printed for the use of the Joint Committee on Congressional Operations

U.S. GOVERNMENT PRINTING OFFICE

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JOINT COMMITTEE ON CONGRESSIONAL OPERATIONS

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(II)

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PREFACE

"Modern Information Technology in the State Legislatures" is one in a series of Joint Committee studies of the information resources available to and required by the legislative branch.

Prepared by the Congressional Research Service, at the Joint Committee's request, it describes the adaptation and use of automatic data processing and related systems techniques to support, at the State level, various legislative functions, activities, and services. A subsequent study will describe current and prospective applications of this technology in the Congress.

State legislatures—like the Congress—have been actively considering and experimenting with modern information technology for less than 10 years. During this time there have been some failures and "false starts," where applications have not met the expectations of the legislators and committees they were designed to serve or proved more costly than was warranted for the services they were to perform. But more often than not experimentation has produced beneficial results, and more than half of the State legislatures now have successfully applied this technology in one or several areas of their operation.

This study identifies alternative paths the States have followed in developing and managing their new information capability. Those legislative applications which have been most fully developed and widely employed are discussed in some detail, in most instances by describing the services and products provided in one State's operating system. The study does not cover applications involving administrative functions such as accounting, payroll, or addressing systems nor the use of computers in redistricting.

Congress' requirements for information systems and services differ from those of the State legislatures, just as these requirements vary from State to State. However, the experience of the State legislatures—the benefits and limitations discovered in their use of this technology—may assist congressional leaders and systems managers in identifying developmental problems and in devising better ways to solve them. This, in turn, may permit a more accurate assessment of what is needed to strengthen the information capability of the Members and committees of Congress.

"Modern Information Technology in the State Legislatures" is based on a telephone survey of systems managers and developers in all 50 States, conducted by the Automated Information Services Section of CRS, visits by CRS staff to selected State legislatures, and supplementary information from previous surveys and other source material.

Representative JACK BROOKS, *Chairman*.

Senator LEE METCALF, *Vice Chairman*.

INTRODUCTION

State legislatures—in concert with other structural and procedural changes—have sought to adapt modern information technology in support of selected legislative activities and services since the early 1960's.

Underlying these innovative efforts is the desire to improve the legislative function and to make better quality decisions on a more timely basis. In this context, all legislatures share a need for—

- Assembly of salient facts and data, independently developed, accurate, as complete as possible, of maximum currency, and readily available for use.
- Access to and an understanding of the executive branch planning, budgeting, and program performance data required for effective review of governmental operations.
- Assistance in analysis of policy problems, which requires the additional capability to assess and apply policy-relevant information.

To improve their effectiveness, legislators and others concerned with the vitality of State legislatures have turned increasingly over the past decade to measures designed to expand their information base. Unlike the situation of years past, State legislators must be knowledgeable about a wide range of problems, many extremely complex, of regional, statewide, and local significance. The brevity of legislative sessions in most States, the large and growing legislative workload, the multiple committee assignments for each legislator, the rapid turnover among members, the limited research support staff and other services available to them in committee or as individual representatives—all have consequences for the legislature's ability to bring organized knowledge to bear on pressing public policy questions.

Thus, the application of modern information technology—including but by no means limited to the use of the computer—has been seen as one among several means to strengthen the legislative function, to expand the legislature's information base and, concurrently, to reduce the time required for members and staff to assess and apply information in making decisions.

To date, more than half of the State legislatures have successfully applied this technology in one or several areas. More than 10 are operating statutory retrieval systems, 25 are reporting bill status, and 12 are using automatic data processing (ADP) techniques in support of bill drafting. Moreover, these and other applications are being developed or considered actively in additional States.

Some State legislatures, however, have initiated and subsequently abandoned efforts toward its application. Oregon, for example, developed comprehensive plans and demonstrated the potential of ADP systems to members but then was constrained by budgetary limitations. Others, such as South Dakota, have had implementing legislation vetoed or otherwise stalled. And there is a group of States where the need has not been clearly justified, in the opinion of the legislators—

examples are Alabama, Alaska, and Arkansas—or only preliminary studies have been authorized.¹

In some instances, particularly early in the decade, applications of ADP and related systems techniques within the legislature were limited largely to efforts related to improving internal bookkeeping (e.g., payroll and inventory control) or State fiscal and budgetary planning. More recently, the primary emphasis has been on development of a legislative information system, through use of ADP, microfilm, and systems analysis.

The first section that follows contains a general review of the conditions under which various types of modern information systems have been developed in the State legislatures, the status of these developments, and some of the requirements—system security, costs, and personnel—which must be considered in successfully applying this technology. The second section contains a more detailed description of the services and products of specific applications which have been most fully developed and widely employed at the State level. A final section summarizes the problems of and prospects for mechanizing legislative support services and activities. The appendix contains a glossary of terms, a brief description of recent efforts to encourage and coordinate ADP applications in the States, and selected references.

In preparing this overview of modern information technology in State legislatures, a questionnaire was developed for use in direct (telephone) interviews with State system managers and developers. These findings were augmented by data collected by The Council of State Governments² and James S. Elkins, Jr., of the University of Georgia (Institute of Government)³ during 1970–71, and earlier surveys which included helpful, but often peripheral or incomplete descriptive material. Finally, pertinent material was obtained from the equipment vendors (e.g., IBM,⁴ RCA)⁵ and systems development firms (e.g., Aspen Systems Corp.,⁶ Data Retrieval Corp. of America)⁷ with experience in servicing the State legislatures.

¹ A useful discussion of the responsibilities and information needs of decisionmakers is contained in Walker, Jack L. *The diffusion of innovations among the American States*. In *Planning and politics: uneasy partnership* (Thad L. Beyle and George T. Lathrop, eds.). New York, The Odyssey Press, 1970, pp. 50–51.

² Two surveys of State legislature use of ADP were conducted for The Council of State Governments in the 1970–71 period. The first, by Leo F. Kennedy, assistant director of research for The Council of State Governments, appeared as *State legislative electronic data processing applications*. Lexington, The Council of State Governments, August 1970. 25 pp. plus tables. The second was prepared by James S. Elkins, Jr., a survey of the use of electronic data processing by State legislatures. Prepared for The Council of State Governments, Lexington, Ky., The Council of State Governments, August 1971. 119 pp.

³ In addition to his 1971 survey for The Council of State Governments, Elkins also prepared a survey of the use of electronic data processing by State legislatures. Athens, Ga., The University of Georgia (Institute of Government), April 1970, 53 pp.

⁴ Information provided by Charles D. Trigg, program administrator for State government, The IBM Corp., both in interviews and telephone conversations.

⁵ Information provided by John J. Murphy, manager of marketing operations, Radio Corp. of America.

⁶ Information provided by Lawrence H. Berul, executive vice president, and Ralph W. Zeigler, customer service representative, Aspen Systems Corp.

⁷ Information provided by James Heller, president, and Max Meinel, sales representative and consultant, Data Retrieval Corp. of America.

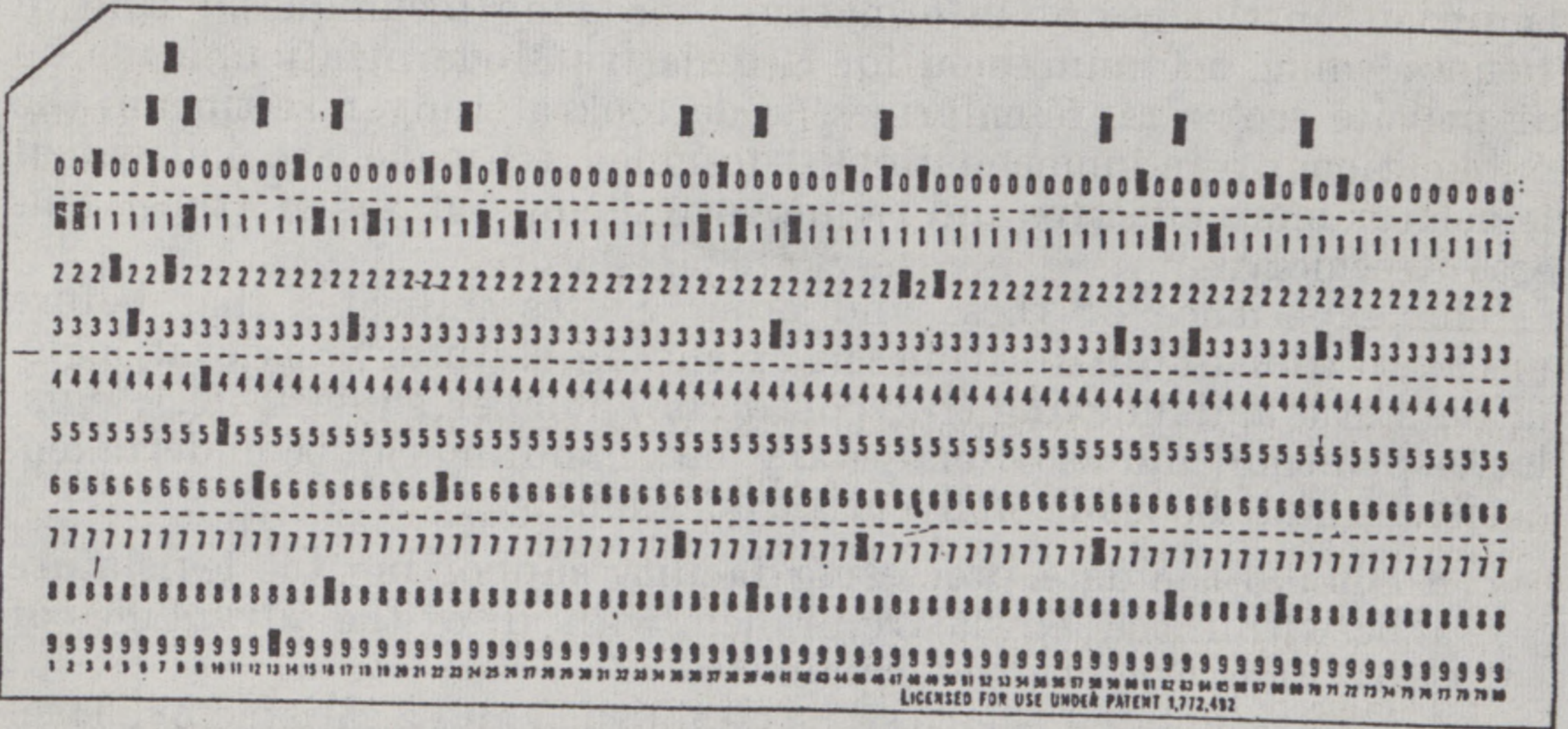
INFORMATION SYSTEMS DEVELOPMENT

Nine legislative applications have been widely employed in the development of computer-supported services by the various States. They are:

- Bill drafting and statutory revision
- Statutory retrieval
- Status of pending legislation
- Legislative histories
- Index of pending legislation
- Digest of bill contents
- Fiscal-budgetary information
- Legislative printing
- Electromechanical voting

In addition, ADP equipment and techniques are being used in the handling of sundry administrative data, such as payroll and personnel records, and such backup areas as member biographical data (see fig. 1 for a 1938 version of this type of mechanized processing),⁸ and

FIGURE 1.—Member biographical data—punched card format, 1938.



COLUMNS	PUNCHED	INDICATING *	COLUMNS	PUNCHED	INDICATING
1-2	11	State No. 11 (Pennsylvania)			
3 4 5 6	0230	Individual 230			tion of district lies within a city of 1,000,000 or more inhabitants ^b
6	x	This man has another card 230b	19	no punch	Column not yet used
7	y	Member of House; x if Senate	20	no punch	Would show official position such as Speaker
7	2	Republican membership	21 22	06	This session marked his sixth in either chamber. An x here would show service was not continuous
8	x	Male	22	no punch	An x here would show service in
8 9	14	Occupation, school teacher			
10	5	Four years in college			
11	no punch	Reason for retirement			
12	x	He served in 1925			
12 13	69	Aged 69 years			

⁸ Fletcher, Mona. The use of mechanical equipment in legislative research. In The Annals of the American Academy of Political and Social Science, vol. 195, January 1938, p. 174 (chart 2).

(3)

committee membership lists. And some States have installed or are developing "audio" systems to permit remote monitoring of floor proceedings or committee action.

OVERSIGHT RESPONSIBILITY

Several types of oversight mechanisms within the State legislatures have been established to provide for orderly development and efficient management of ADP-oriented information systems. In Florida, for example, a Joint Legislative Management Committee was formed in 1964. Comprised of three Senate and three House Members, it meets about four times a year to oversee and direct the computerized activities. New York has created a seven-member Legislative Data Processing Committee, including selected leadership from the Senate and Assembly. This committee, among other powers and duties, is required:⁹

To establish and operate a legislative data processing center incorporating a system or systems which will be capable of storing and retrieving all of the financial, factual, procedural and legal information necessary to serve all of the committees, officers and agencies of the legislature.

Washington has placed its legislative information system under the Permanent Statute Law Committee.¹⁰ In Massachusetts, the legislature in 1965 established a Special Commission on Legislative Procedures which, in turn, commissioned the Massachusetts Taxpayers Foundation to recommend steps for improving legislative procedures, with emphasis on the use of information processing techniques.¹¹ And in Pennsylvania, a Commission for Legislative Modernization, made up of private sector representatives, undertook a study resulting in the publication of recommendations "designed to make the individual legislator more effective and to improve the operations of (the) General Assembly."¹²

The experience of these and other States indicates that before mechanization of bill drafting and amending, statutory retrieval, legislative status and indexing (by sponsor, bill number, subject, etc.), legislative printing, and fiscal-budgetary data handling can be undertaken, decisions must be made on five basic questions:

- Should the data processing facility supporting the legislature be within the legislative branch, with all of the advantages of having a "dedicated" capability?
- Can acceptable priorities be established and a satisfactory level of responsive service be realized if the legislature relies on executive branch facilities?

⁹ Interview with Albert J. Abrams, Secretary of the Senate, Albany, N.Y., Nov. 23, 1970; subsequent information obtained by Congressional Research Service (CRS) survey.

¹⁰ Interview with George Byfield, manager of data processing, Legislative Information System, Olympia, Wash., Jan. 5, 1971. Additional information contained in the booklet, "Data processing endeavors in the automated law search and the legislative areas," prepared by the Legislative Information System under the aegis of the Permanent Statute Law Committee in the State of Washington, Aug. 13, 1971, 27 p.

¹¹ Suggested steps for improving legislative procedures—with emphasis on the use of information processing techniques. Prepared for the use of the Joint Special Committee established to investigate and study present practices of the general court and methods for improvement therein. Boston, Mass. Taxpayers Foundations, December 1966, p. 3.

¹² Toward tomorrow's legislature. The report of the Pennsylvania General Assembly's Commission for Legislative Modernization, Harrisburg, Pa., 1969. Letter of transmittal from the Commission to the Members of the General Assembly (dated January 1969).

- Can the security of legislative information, often of critical importance to the leadership or committees, be guaranteed by the custodians of the data processing facility?
- Is it desirable to contract with outside firms to perform certain tasks rather than maintaining a legislative capability?
- Can an objective determination of legislators' information needs be made—including the crucial decision as to whether a quick-access ("on-line") system is justified—or would a less costly service with a longer turnaround time provide members and committees with the data they need?

Although many of the studies conducted by or for the States have not faced these critical matters directly, the necessity for making these decisions has arisen inexorably. There is a trend over the past few years for the States to prepare long-range plans; Wyoming, Montana, and Idaho reportedly are developing 5-year plans similar to that of Illinois, outlined in figure 2.¹³ Other States have created advisory agencies to coordinate activities, establish standards, and generally serve as a point of contact for those "outside" groups interested in strengthening legislatures.

FIGURE 2.—*Illinois Legislative system—5 year plan.*

Fiscal year 1971:

Investigate drafting packages.

Approval of general recommendation of bill status and bill drafting.

Install bill drafting system.

Plan modification of experimental bill status.

Develop more detail, last 3 years of 5-year plan.

Approval of modification to experimental bill status.

Present 5-year plan—joint committee to review with leadership.

Computerize current status of appropriation by funds and agencies.

Fiscal year 1972:

Perform complete study of legislative reporting.

Expand design of bill status system for remote input and inquiry.

Approval of plan bill status system for remote input and inquiry.

Combine enrolling and engrossing with LRB—handling of amendments.

Creation of a permanent legislative staff position—liaison between the legislature and MID [Management Information Division].

Fiscal year 1973:

Programing for remote terminals—bill status.

Type composition of computer production of statute update for publication.

Type composition or computer production of digest report.

Build direct access files for bill status.

Approval of installation of terminals.

Installation of remote input in House and Senate.

¹³ Recommendation concerning bill status, bill drafting, and the proposed 5-year plan for the members of the Joint Committee on Legislative Information Systems. Management Information Division, Department of Finance, State of Illinois, 1970, p. 13.

Installation of inquiry in eight locations, House and Senate.
Expansion of bill drafting to include appropriation bills, using BOB terminals.

Fiscal year 1974:

Computerized production of Journal and Session Law.
Computerized resequencing of Journal and Session Law and indexing.
Automated update of statutes.
Expansion of member biographical file in system.
Expansion of terminals to Governor, secretary of state, and directors.

Fiscal year 1975:

Design of county affected file.
Message switching designed for House and Senate.
Plan for computerized retrieval and search of case law.
Plan for additional inexpensive terminals on legislators' desks.
Wiring of vote board to computer through terminals.
Complete disk files—member, bill, committee.
Install member terminals.

Assignment of responsibility for and direct control of data processing services varies from State to State, with final determination usually based on nontechnical factors. Georgia, for instance, established a State Computer Service Center in 1966 with "the mission and objective of service outreach to smaller State agencies and commissions which, because of their relative size, are not able to justify economically . . . a data processing facility for themselves."¹⁴ Another prime responsibility of the Center is the design and development of a legislative information system. In Massachusetts, ADP support is furnished by the State Comptroller, while in Florida, the legislature shares with eight other users a "third generation" computer located in a data center in the State capitol. Pennsylvania led in the acquisition of a separate computer for its legislature in 1967, and its Legislative Data Processing Center regularly produces several types of reports and status listings.

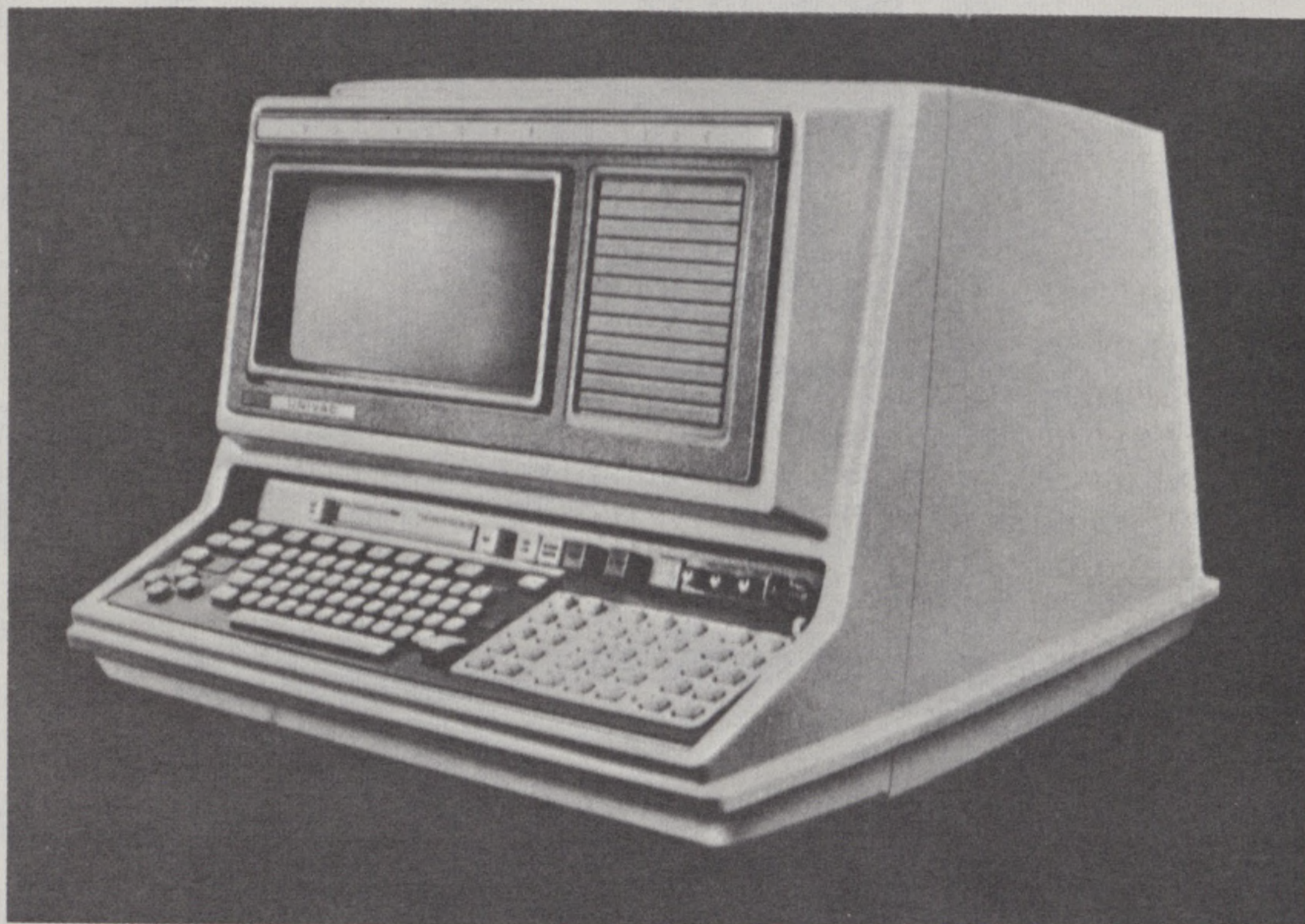
AVAILABILITY OF SERVICE

Since the form of service involving computers and other techniques (i.e., microfilm, photoduplication, communications) can vary according to the need of the individual legislator or committee, several types of printing, display, or other "output" devices have been experimented with and installed. Perhaps the most glamorous device in operation is a vide screen console, which can display narrative or graphic information. In many cases, the legislator can place his in-

¹⁴ Elkins, James S., Jr. A survey of the use of electronic data processing by State legislatures, August 1971, *op. cit.*, p. 46. [Information provided by Frank H. Edwards, Legislative Council.]

quiry directly into the computer via one of these units. A typical CRT (cathode ray tube) or vide screen terminal is shown in figure 3.¹⁵

FIGURE 3.—*The Uniscope 300 Visual Communication Terminal.*



The UNIVAC "Uniscope 300" communication terminal typifies those used to handle key data which then is utilized by State legislators. It displays up to 1,024 characters of information at a time, roughly equivalent to the content of one-half of a printed page.

In some State capitols, vide screen units are used for retrieval and display purposes only, while putting in new information—change in status, amendment to a pending bill or resolution—is handled through a special typewriter terminal, such as the IBM 2741 Communications Terminal shown in figure 4.¹⁶ Florida has chosen to utilize a combination of vide screen and teleprinter devices, 27 in all, providing those responsible for operating the system and the various users with greater flexibility. Two video units are used—one on the floor of the House and the other in the Senate—for entering bill actions as they occur. Similar display terminals are located in the offices of the Governor, Secretary of the Senate, Senate and House lounges and House Rules Room. Send-receive teletypewriters are situated in the Capitol Rotunda, Press-room, Old Senate Chambers, etc. Illustrative of the visually displayed inquiries and answers are the facsimilies reproduced in figure 5, from the North Carolina information system.¹⁷ In each case the first line shown on the screen represents the user's coded instruction (query) displayed back to him for verification.

¹⁵ Illustration contained in Uniscope 300 visual communication terminal. UNIVAC technical bulletin. Philadelphia. Univac Division of Sperry Rand Corp. [no date]. p. 3.

¹⁶ Illustration contained in Communicating power at your fingertips: The new IBM 2741 Communications Terminal. White Plains, N.Y., The IBM Corp., [no date], p. 4.

¹⁷ The North Carolina Legislature bill-history and bill-processing system. IBM application brief. White Plains, N.Y. The IBM Corp., April 1970, p. 7. (Adaptation.)

FIGURE 4.—*The IBM 2741 Communications Terminal.*

The IBM 2741 Communications Terminal is a widely used input and editing device. Printout at the terminal is possible at 148 words per minute. Text processing is possible using the Administrative Terminal System.

FIGURE 5.—*Examples of inquiries and visually displayed answers.*

⌘INQ INTR GREGORYI		
BILLS INTRODUCED BY GREGORY		PAGE 1
* ASTERISK INDICATES THAT TEXT OF ORIGINAL BILL WAS CHANGED BY SOME ACTION		
= EQUAL SIGN INDICATES THAT THE ORIGINAL BILL IS IDENTICAL TO ANOTHER BILL		
BILL NO.	SHORT TITLE	LATEST ACTION ON BILL THROUGH 6/05/69
H.0022	SCOTLAND NECK SCHOOL UNIT	R-3/03 RATIFIED - CHAPTER 31
H.0243	SCOTLAND NECK CEMETARY TRANSFER	H-2/28 REF TO COM ON FINANCE
H.0267*	PEMBROKE STATE UNIVERSITY	R-5/05 RATIFIED - CHAPTER 388
H.0296*	TAX PACKAGE	H-3/10 REF TO COM ON FINANCE
H.0297*	HIGHWAY TAX INCREASES	R-5/27 RATIFIED - CHAPTER 600
H.0483*	STATE AND REGIONAL PLANNING	*H-4/10 RE-REF TO COM ON APPROPN
H.0484*	DEPARTMENT LOCAL AFFAIRS	*H-4/10 RE-REF TO COM ON APPROPN
*** DEPRESS SHIFT AND ENTER KEY FOR NEXT PAGE ⌘P0021		

⌘INQ RATI PUBLICI		
BILLS RATIFIED PUBLIC		PAGE 12
* ASTERISK INDICATES THAT TEXT OF ORIGINAL BILL WAS CHANGED BY SOME ACTION		
= EQUAL SIGN INDICATES THAT THE ORIGINAL BILL IS IDENTICAL TO ANOTHER BILL		
BILL NO.	SHORT TITLE	LATEST ACTION ON BILL THROUGH 6/05/69
H.0267*	PEMBROKE STATE UNIVERSITY	R-5/05 RATIFIED - CHAPTER 388
H.0271*	PROMOTING AGRICULTURAL PRODUCTS	*R-3/24 RATIFIED - CHAPTER 111
H.0294	41ST HOUSE DIST.- NUMBERED SEAT	R-4/07 RATIFIED - CHAPTER 189
H.0297*	HIGHWAY TAX INCREASES	R-5/27 RATIFIED - CHAPTER 600
H.0298	DESIGNATING ARTHRITIS MONTH	R-3/13 RATIFIED - RES.26
H.0306*	LRC HEALTH MANPOWER STUDY	*R-5/07 RATIFIED - RES. 55
H.0308*	ASHEVILLE, WILMINGTON CAMPUSES	*R-4/24 RATIFIED - CHAPTER 297
*** DEPRESS SHIFT AND ENTER KEY FOR NEXT PAGE ⌘P0131		

Information systems featuring terminals are popular with the legislators, because these permit instant access to desired information. In Florida, 27 vide screen (VDI) and typewriter terminals have been placed in those locations where the legislative leadership, members, staff, the Governor and his cabinet, lobbyists, and the general public can use them. The pattern of usage has been carefully monitored, in order to determine where additional equipment is required or if certain units might be better utilized elsewhere.¹⁸ On-line use of the computer is indicated in the following listing, which shows that 18 typewriter units dedicated to handling only inquiries preempt 58 percent of the available computer time. Two similar units in the Document Control office, used for updating, show a 16-percent usage factor, while the seven vide screen units—serving the Governor's office, the Secretary of the Senate, the House and Senate lounges, the House Rules Room, and (one each) the House and Senate Chambers—receive a high (26 percent) level of activity.

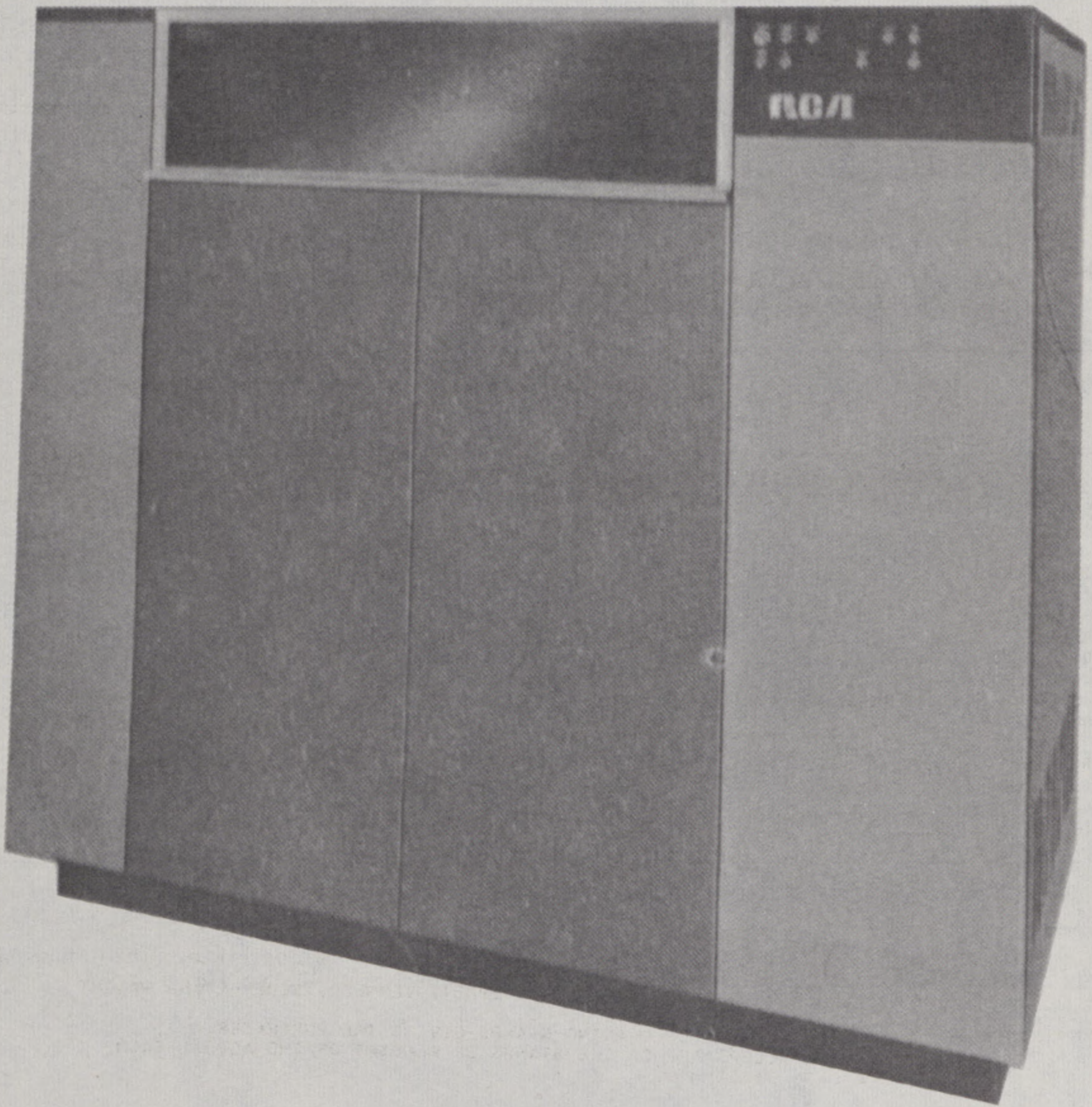
Users	Type of terminal	Number of terminals	Location	Computer time used (percent)	Use
Governor and staff	VDI	1	Governor's office	26	Inquiry and updating.
Secretary of Senate	VDI	1	Secretary's office		
Senate Members	VDI	1	Senate lounge		
Do	VDI	1	Senate chamber		
House Members	VDI	1	House lounge		
Do	VDI	1	House chamber		
Do	VDI	1	House rules room		
Staff	TT	2	Document control	16	Updating.
Public, pages, lobbyists	TT	1	Capitol Rotunda	9	
Members and staff	TT	2	Holland Building	14	Inquiry only.
Secretary of Senate	TT	1	Secretary's office	1	
Senate Members	TT	1	Senate lounge	1	
Do	TT	1	Old Senate chamber	9	
Chief Clerk of House	TT	1	Clerk's office	1	
House Members	TT	1	House lounge	11	
Cabinet Members	TT	9	Cabinet office	9	
Press representatives	TT	1	News service room	3	

Note: VDI=vide screen terminal; TT=typewriter terminal.

¹⁸ State and local government legislative automation application description. Tallahassee, Fla., Information Systems Division, Radio Corp. of America, 1966, sec. III, p. 2.

Augmenting the on-line (terminal) services are such traditional means of presenting retrieved information as line printers (see fig. 6),¹⁹ card readers, and other devices designed to sort, correlate, assemble, or present desired data. In most instances, these machines are lo-

FIGURE 6.—*The RCA 8740 Data Terminal.*



The RCA 8740 Data Terminal produces narrative material at the speed of up to 600 lines per minute.* Even faster models (2,000–2,500 lines per minute) are in production by some manufacturers.

*Upper case print only.

¹⁹ Illustration contained in RCA Series information manual, BF000100, sec. 11 p. 2–95.

cated in a centralized computer facility, but in an increasing number of States provision is being made for locating small printers adjacent to the various types of vide screen units. This minimizes the time required for a legislative officer, member, or staff person to obtain the "hard copy" which may be carried into committee meetings or onto the floor of the chamber. A sample of the printed output available from an offline printer operating in the Iowa legislative system is shown as figure 7.²⁰

FIGURE 7

STATE OF IOWA		PAGE 256
60TH GENERAL ASSEMBLY		
HISTORY OF HOUSE BILLS THROUGH FEBRUARY 28, 1963		
H.F. 173 CONTINUED FROM PRECEDING PAGE		
FEB. 14	PASSED HOUSE. AYES 105, NAYS NONE. H.J. 333.	
FEB. 14	RECEIVED, PASSED ON FILE. S.J. 255.	
FEB. 19	REFERRED TO CITIES AND TOWNS. S.J. 294	
H.F. 174		
BY AGRICULTURE		
RELATING TO CREATING A STATE AGRICULTURAL PRODUCTS UTILIZATION RESEARCH COMMITTEE AND TO PROVIDE FUNDS TO CARRY OUT THE ACT.		
FEB. 6	INTRODUCED, REFERRED TO WAYS AND MEANS. H.J. 219.	
FEB. 19	AMENDMENT FILED. H.J. 413.	
H.F. 175		
BY CONSERVATION		
RELATING TO THE PERSONNEL POWERS OF THE DIRECTOR OF THE STATE CONSERVATION COMMISSION.		
FEB. 6	INTRODUCED, PLACED ON CALENDAR. H.J. 219.	
FEB. 13	PASSED HOUSE. AYES 98, NAYS NONE. H.J. 321.	
FEB. 13	RECEIVED, PASSED ON FILE. S.J. 241.	
FEB. 13	REFERRED TO CONSERVATION. S.J. 245.	
H.F. 176		
BY SHAW, FISCHER OF GRUNDY, NIELSEN OF EMMET, VERMEER, SCHERLE AND WRIGHT		
RELATING TO REGULATION OF TRADING STAMPS—GIVING THE PURCHASER A CHOICE BETWEEN ACCEPTANCE OF THE STAMPS OR RECEIPT OF THE ACTUAL CASH VALUE AS A CASH DISCOUNT.		

There are two major types of printout services possible: The regular, repetitive publication of a given set of facts or figures—Tennessee, for example, produces listings of bills withdrawn, defeated, or rejected, or those signed or vetoed by the Governor—and also the creation of special material which may draw upon one or more files.²¹ Multiple file use is being investigated by several States. Experience derived from existing legislative information systems has indicated the importance of being able to update more than one file as the result of

²⁰ Iowa General Assembly legislative reporting and indexing with the IBM 1401. IBM application brief. White Plains, N.Y., The IBM Corp., [no date], p. 3.

²¹ Study on legislative procedures, facilities, and services (1970). Final report of the Legislative Council Committee. Nashville, State of Tennessee, 1970, p. 16.

a single update (or amendment) entry. Connecticut has developed a relatively sophisticated capability for utilizing nine files in its drafting of bills and the printing of its Journal, Calendar, and Bulletin:²²

- | | |
|----------------------|-----------------------------|
| 1. New Bill File | 6. Bulletin File |
| 2. Summary Bill File | 7. Calendar File |
| 3. Statute File | 8. Journal File |
| 4. Master Bill File | 9. District Legislator File |
| 5. Committee File | |

FILE SECURITY

Certain legislative files may contain information which is considered to be confidential to a committee, a chairman, a member of the chamber leadership group, or an individual legislator. Many questions on control of access have been raised by committees looking into the feasibility of the use of computers in support of legislative functions. Privileged information in machineable form may be susceptible to unauthorized exposure under three conditions:

- First, if the magnetic tape belonging to a committee (or member) is not securely stored, whether in the office safe or in the central facility repository;
- Second, if unauthorized personnel acquire the "address" (a unique set of numbers and/or letters) allowing exploitation via a computer terminal of certain files;
- Third, if unauthorized personnel gain access to the computer room and actually obtain data by mounting the tapes or retrieving data from the disk or drum on-line storage units.

Unintentional disclosure can take place, of course, as the result of operator error or a mistake in a computer program. In the last analysis, however, it is the management effectiveness of the system which will largely determine its security and under what conditions the various users can gain access to privileged information.

COST OF APPLICATIONS

Early in any exploration of the potential of automatic data processing this question is raised: "How much will it cost?" Those experienced in building information systems involving computers are cautious about stressing the savings to be achieved, usually concentrating on the higher level of service which may be performed—i.e., better data retrieved selectively, more rapidly, and hopefully with a savings in time which frees professional staff people for other, nonclerical tasks. In Oregon, for example, a survey to determine the role of ADP in bill drafting, printing, and information retrieval indicated a 60-percent saving insofar as the tasks of typing, proofreading, and "ministerial" support were concerned.²³

There have been times when the mere availability of ADP support has allowed a change in handling procedures which led to a significant

²² State of Connecticut legislative information system. Hartford, Conn., [no date]. Part III E on system file description, pp. 1-3.

²³ Electronic data processing and the legislative process. Boston, Legislative Research Bureau memorandum, Apr. 7, 1966, p. 5.

savings. In New York, Secretary of the Senate Albert J. Abrams reported that under a new set of procedures, and based on the use of the computer in storing, modifying, and retrieving key data on pending legislation, 4,050 bills were carried over from the 1969 to the 1970 session, resulting in a saving of nearly \$1 million (at \$12.83 per page) in printing costs alone.²⁴

Precisely how much a State spends for computerized support for its legislature is difficult to ascertain. Figures available sometimes do not include the rental of computers (which may be administered by some other governmental jurisdiction), operating personnel, printing, or the cost of research and development.

Both initial developmental and annual operating costs must be considered in determining whether ADP services are to be undertaken, expanded, or retained. The length of legislative sessions will affect the cost, when this is related to the variety and frequency of services to be rendered. A sampling of reported State costs follows:²⁵

Connecticut.—\$95,000 paid to the IBM Corp, for the development of an automated capability to produce calendars, bulletins, journals, indexes, and other selected information.

Georgia.—\$7,500 initially for a bill drafting system, plus \$1,250 per month for software support (during the first year); permanent use of the system then purchased from the Data Retrieval Corp. of America for \$47,500.

Illinois.—\$50,000 for the establishment of a bill drafting system (including first year operating costs).

Iowa.—\$10,000 for the development of a bill drafting, statutory retrieval, and index system (but this figure does not include computer time, terminal leasing, or statute conversions costs).

Minnesota.—\$150,000 for the first year of operating a bill drafting system, while the statutory retrieval system cost \$68,000.

Mississippi.—\$746,750 for the Lawyers Cooperative Publishing Co. to update and recodify the State's 30-year-old statute system, to result in an ADP-supported capability that will allow selective retrieval of statutes, court decisions, and other legal material, ease bill drafting, and expedite legislative printing.

Nebraska.—\$60,200 for the in-house development of a combination bill drafting and statutory retrieval system.

North Dakota.—\$29,000 to establish a statutory retrieval capability.

Tennessee.—\$21,000 developmental costs (over 2 years), plus an annual expenditure ranging between \$7,400 and \$13,500 for an initial bill preparation and printing system, bill status and indexes, and a statutory retrieval capability.

PERSONNEL REQUIREMENTS

When the application of modern information technology begins in a State, its supporters may tend to lose sight of the broader range of services which must exist to support legislators. Almost all of these

²⁴ Interview with Albert J. Abrams, *op. cit.*

²⁵ Cost information provided in Elkins' survey of the use of electronic data processing by State legislatures, August 1971, *op. cit.*, pp. 29-30, and corroborated (and in a few instances updated) by the CRS survey.

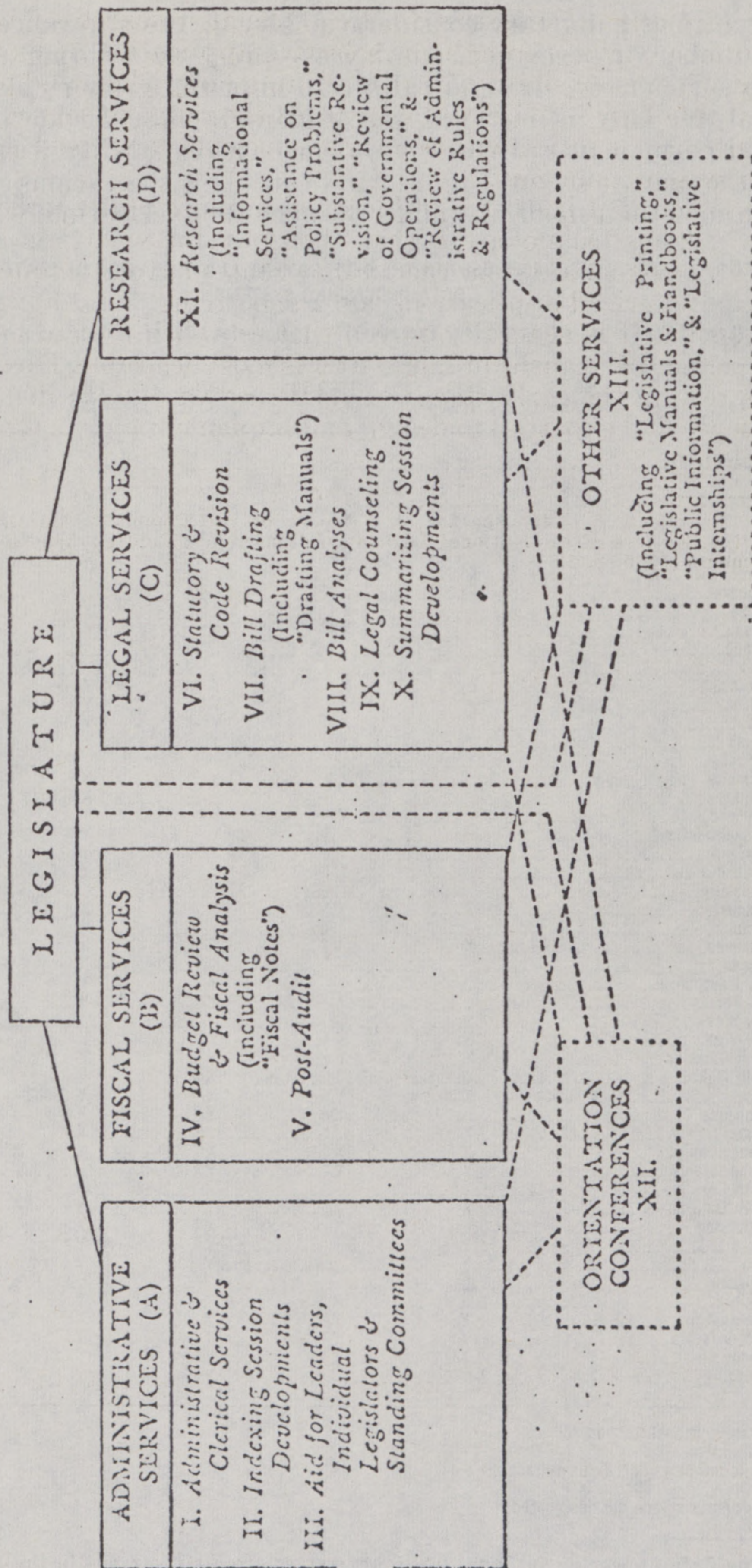
major services—administrative, fiscal, legal, research—might be enhanced to a degree through the selective application of modern technology. The responsibility for determining how, when, and where computer technology is to be applied against the range of services depicted in figure 8 must reside with the legislative overview committee and its chosen system managers.²⁶

One lesson that has been well learned in those States undertaking to utilize systems technology is that “you pay for what you get” where trained personnel are concerned. Some States have attempted to introduce computerized applications “on a shoestring,” and have regretted the decision. It is generally agreed that establishing and maintaining a competent, permanent in-house staff is most desirable. However, most States rely in the early stages of ADP use on outside firms with the experience and expertise to design and implement a priority legislative application.

²⁶ Mr. President . . . Mr. Speaker . . . Report of the Committee on Organization of Legislative Services of the National Legislative Conference. Chicago, The Council of State Governments, 1965, p. 12.

FIGURE 8

OUTLINE CHART OF THE MAJOR AREAS OF LEGISLATIVE SERVICES AND THEIR RELATIONSHIP TO THE LEGISLATURE



Oftentimes budgetary considerations—e.g., the allowance for a certain number of permanent employees—preclude building an in-house group sufficient in size and calibre to meet the growing needs of the legislature. In this instance, the leadership may decide to create a limited permanent cadre and supplement its capability with resources from the private sector. Figure 9 indicates how the various States have determined their mode of staffing over the 1966–71 period.²⁷

FIGURE 9.—STAFFING RESOURCES USED IN THE DEVELOPMENT AND OPERATION OF STATE LEGISLATIVE DATA PROCESSING SYSTEMS

[Legend: X=In-House (Legislative or Executive); Y=In-House and Out-of-House; Z=Out-of-House]

State	1966 Nelson ¹	1968 Nelson ¹	1969–70 CSG	1970 Elkins	1971 CSG	1971–72 CRS
1 Alabama						
2 Alaska						
3 Arizona			Y	Y	Y ²	Y ²
4 Arkansas			X ²			
5 California				X ³		X ^{3 4}
6 Colorado			X ²	X ⁵	Y	Y
7 Connecticut	X	X	Y	Y	Y	Y
8 Delaware	Z		X ²		Y ²	
9 Florida	X		X ⁵	Y	Y	Y ⁴
10 Georgia			X ⁵		Y	
11 Hawaii						Z ⁴
12 Idaho						
13 Illinois		Z	X	Y	Y	Y
14 Indiana		X	Y	Y	Y	Y
15 Iowa		Y	X ²	Y	Y	Y
16 Kansas			Y	Y	Y	
17 Kentucky						
18 Louisiana			X ²		X ²	
19 Maine			Y		X ²	
20 Maryland			Y ²	Y ²	Y	
21 Massachusetts	X			Y	Y ²	Y
22 Michigan			Y	Y	Y	Y
23 Minnesota			Y	Y	Y	Y
24 Mississippi						Z
25 Missouri	Z	Z	X ⁵	X ⁵	X	X ⁵
26 Montana						
27 Nebraska		X			Y	
28 Nevada					X ²	
29 New Hampshire			Y ²	Y	Y	
30 New Jersey			Y	Y ⁵	Y	
31 New Mexico						
32 New York	X	X	X ⁵	Y	Y ⁵	Y ^{4 5}
33 North Carolina		Y	Y ⁵	Y ⁵	Y	Y
34 North Dakota				X ²	Y	
35 Ohio	X	X	Y	Y	Y	Y
36 Oklahoma			Y	Y ³	Y ³	
37 Oregon		X			X ^{3 5}	
38 Pennsylvania		X	X	X	X	X ⁴
39 Rhode Island		Y	Y ²	Y ²		Y ²
40 South Carolina						
41 South Dakota		Z			X ⁵	
42 Tennessee			X	X ⁵	X ⁵	Y
43 Texas	Y	Y		Y ²	Y ³	Y ^{2 3}
44 Utah	X	Y		Y	Y	
45 Vermont						
46 Virginia			X ²	X	Y	
47 Washington		Y	Y	X	X	X ⁴
48 West Virginia		Y	Y ²	Y	Y	
49 Wisconsin	Y	X	Y ²	Y	Y	Y ⁵
50 Wyoming	X			Y	Y	Y

¹ Executive branch response.

² Limited use.

³ Developmental effort (via contract).

⁴ Facility visit.

⁵ Outside assistance not designated.

²⁷ The data appearing in figure 9 were extracted from six surveys in the 1966–72 period, including two conducted for the (Nelson) Special Subcommittee on the Utilization of Scientific Manpower of the Senate Committee on Labor and Public Welfare in 1966 and 1968; the 1970 effort by The Council of State Governments; both of the Elkins' surveys (1970, 1971); and the CRS survey of 1971–72.

STATUS OF SYSTEMS DEVELOPMENT

By late 1971, more than a score of States were operating statutory retrieval systems, 25 had bill status reporting systems (which sometimes also included providing the digests of and indexes to pending legislation), and a dozen were using ADP-supported bill drafting and statutory revision systems. In addition, many other States had these and other applications under development or the subject of serious study, as the table below indicates:

Application	Operating	Under development	Planned
Bill drafting and statutory revision.....	11	6	12
Statutory retrieval.....	25	2	9
Status of pending legislation.....	25	4	6
Fiscal-budgetary information.....	20	3	3
Legislative printing.....	10	7	7
Electromechanical voting.....	35	1	

Figure 10 indicates, State-by-State, the development of legislative information systems. It is based on reports of telephone interviews with system managers and developers (November 1971–January 1972) and survey material obtained from The Council of State Governments.²⁸

²⁸ The data appearing in figure 10 were drawn primarily from CRS visits to State legislative information systems and the telephone survey (November 1971–January 1972); corroboration or augmenting information was limited to the Elkins' survey for The Council of State Governments, *op. cit.*, published August 1971.

Several legislatures have established or are developing "audio" type systems permitting members and other authorized officials to tune in on chamber or committee proceedings. In some instances, members may listen to the debate within their respective chambers from their offices. In addition, the leadership, or such State officials as the Governor, may have the option of listening to the activities of either chamber. And in a few cases, selected committee meetings and hearings are "opened" through this monitoring mechanism. The following listing indicates the status of sound distribution systems in the most active States:

State	System		Floor discussions may be heard from the offices of the—			Alarm system
	Senate	House	Leadership	Governor	Legislator	
New York ¹	S	H	X	X ²	X	X
Massachusetts		H	X	X		X
California ³	S	H	X			
Connecticut	S	H				
Minnesota	S	H	X		X ⁴	
Illinois	S	H	X			
Florida	S	H	X	X		X ²
Michigan	S	H	X	X ²	X ⁵	X ⁵

¹ New system installed in 1972.

² Existence of capability reported by nonofficial source.

³ Committee rooms also have a system.

⁴ Sound distribution units located in selected committee rooms and corridors; used only to announce rollcalls and special meetings.

⁵ House of Representatives only.

These State systems vary considerably in their design and extensiveness. In New York, an "Executone" system is being installed which will allow individual legislators to listen to floor proceedings from the privacy of their own offices. Critical voting sessions will be signaled through an audio-visual notification system, including flashing lights in the halls and elevators, and summoning rings on the members' telephones. The California system not only provides remote access for members to floor discussions and selected committee meetings, but is configured so that additional persons in adjoining rooms may be allowed to "attend" (via sound distribution) special committee occasions.

The Minnesota system, established to offer a listening capability to chamber leadership, allows the Revisor to listen to both chambers. The engrossing clerks are required to monitor the proceedings on a regular basis and must notify the Clerk of the chamber if an amendment is introduced which is inappropriate. Furthermore, House and Senate leadership may speak through the system with selected members on the floor even during chamber proceedings.

Pennsylvania and Tennessee, not listed above, also have operational systems. Pennsylvania's system was installed 5 years ago, providing members with listening posts in their office areas. The Majority Leader, Minority Leader, Secretary of the Senate, and Chief Clerk as well as the Attorney General, Lieutenant Governor, and Governor have access via the system to both chambers. On the other hand, the 20-year-old Tennessee system limits access to legislative proceedings to a few legislative and executive offices.

DATA PROCESSING APPLICATIONS

In the past 10 years, more than half of the State legislatures have successfully applied automatic data processing and related systems techniques to selected information service areas. Of these applications, nine have been developed to a degree warranting detailed consideration here.

Other legislative areas with a potential for utilizing computer technology, but where actual development has been limited, include tying in to existing machineable data bases, access to automated Federal assistance data, preparing State tax distribution and property tax relief projections, correlating educational survey data, school finance simulation, and testing State aid formulas.

Each "developed" application is described below. Emphasis is placed on (1) its role within the legislative context, and (2) the experience various States have had with development criteria, system products, cost factors, commercial support, and user options. In most instances one State with a fully developed subject system will be dealt with in detail, as follows:

<i>Legislative application</i>	<i>Featured State system</i>
Bill drafting and statutory revision-----	Minnesota.
Statutory retrieval-----	Washington.
Status of pending legislation-----	Florida.
Legislative history-----	Florida.
Index of pending legislation-----	Tennessee.
Digest of bill contents-----	Illinois.
Fiscal-budgetary information-----	Various States.
Legislative printing-----	Connecticut.
Electromechanical voting-----	Various States.

BILL DRAFTING AND STATUTORY REVISION

The function of bill drafting is combined in some States with that of the legislative reference service while in others the responsibility may be vested in the office of the attorney general or some other authorized official. The "bill drafting" operation normally refers to the outlining and phrasing of new legislation, its amendment during the course of moving through the legislative process, and the revision of existing statutory material. With the increasing numbers of bills being introduced in many State legislatures, the effectiveness and efficiency of revisory services has been challenged.

As the various States have come to realize the need for better revisory practices, a scrutiny of existing techniques including those encompassing the use of systems technology has been undertaken. In noting the need for a sweeping revision of drafting principles and the use of automatic data processing, the chairman of the National Legis-

lative Conference's Committee on Organization of Legislative Services identified these cardinal purposes of such a procedural reshaping:²⁹

- To determine what statutes are in effect eliminating all obsolete, unconstitutional, and unnecessary sections of the law. A master file of the live law results.
- To organize the live law according to subject matter into a logical classification system consisting of titles, chapters, and sections.
- To restate the law in clear and simple language with uniformity of expression, capitalization, spelling, and punctuation. Redundancies are removed, misspelled words are corrected, ambiguities are resolved, poor grammar is reconstructed. Frequently used and critical terms are defined and consistently employed.
- To establish a numbering system which provides immediate identification and access to the subject matter, and which is sufficiently flexible to accommodate future enactments.

Bill drafting actually takes place at several levels, ranging from a straightforward translation of a legislator's ideas into the detailed phraseology of a bill to the comprehensive treatment of every facet of a proposal based on some general instructions from a member. In addition, the drafter may have to acquire and organize background material (including court decisions, past legislation, and current alternative approaches). And in terms of the logistics of bill preparation or revision, there are the ever-present tasks of accurate typing and proofreading.

When revision of existing statutes or codes is the objective, the nature and severity of the problem varies from State to State. Some States have statutes only in the form of session laws while others have neatly codified laws which minimize the difficulty of revision. Two definitions are desirable at this point:

- "Substantive revision" involves a change in the meaning and effect of the law.
- "Formal revision" is concerned only with the form, arrangement, and expression of the law; a change in the meaning is not involved.

The potential of computer technology when applied to bill drafting or statutory revision was first considered in the early 1960's. By 1971, more than a dozen States had taken positive steps to develop an automated bill drafting system, using either a special typewriter or a video-screen unit for entering, recalling, and storing data. Oregon early experimented with the Administrative Terminal System (ATS) and found that the typewriter insertion of data into the computer was appreciably less time consuming than the traditional manual procedures.³⁰

²⁹ Mr. President . . . Mr. Speaker . . . *op. cit.*, p. 39.

³⁰ Electronic data processing and the legislative process LRB (Boston) memorandum, Apr. 7, 1966, *op. cit.*, p. 6.

Two typographic techniques involving ADP support are used to denote new material being added to or deletions from existing drafts or statutes. First, ultrabold brackets identify material to be deleted and italics (shown here as underscoring) signify new material (fig. 11).³¹

FIGURE 11.—*Bracket-italics revision technique—the State of Minnesota.*

A BILL for an act relating to elections; regulating campaign contributions; prescribing penalties; amending Minnesota Statutes 1969, Section 211.27, Subdivision 1

Be it enacted by the Legislature of the State of Minnesota:

SECTION 1. Minnesota Statutes 1969, Section 211.27, Subdivision 1, is amended to read:

211.27 [CORPORATIONS NOT TO CONTRIBUTE TO POLITICAL CAMPAIGN.] Subdivision 1. ~~No corporation doing business in this state shall~~ Only individual natural persons may pay or contribute, or offer, consent, or agree to pay or contribute, directly or indirectly, any money, property, free service of ~~its officers or~~ employees or thing of value to any political party, organization, committee, or individual for any political purpose whatsoever, or to promote or defeat the candidacy of any person for nomination, election, or appointment to any political office. If any ~~corporation~~ other body shall be convicted of violating any of the provisions of this chapter, it shall be subject to a penalty in the amount not exceeding \$10,000 to be collected as other claims or demands for money are collected; and, if a ~~domestic corporation~~ organized under any state law, in addition to that penalty, it may be dissolved; and, if a foreign or non-resident ~~corporation~~ body, in addition to that penalty, its right to ~~do business~~ operate in this state may be declared forfeited.

SEC. 2. This act is effective July 1, 1971.

The second technique features the use of capitals and “strikeout” type to signify material added or removed. Variations of the second technique are used in North Carolina (fig. 12, using crosshatch strikeovers)³² and Colorado (fig. 13, using hyphen strikeovers).³³ In the beginning, such changes were made only “after hours” by the revisory officials, but increasingly (as in Maryland) the identification of changes occurs during the time of legislative activity, thereby giving the legislative and staff an opportunity to research and analyze amendments as they are introduced.

³¹ A product of the State of Minnesota computerized bill drafting system, illustrating the bracket-italics revision technique.

³² The North Carolina legislature bill-history and bill-processing system, *op. cit.*, p. 15, illustrating the cross-hatch strikeover revision technique.

³³ A product of the State of Colorado computerized bill drafting system, illustrating the hyphen strikeover revision technique.

FIGURE 12.—Crosshatch strikeover revision technique—the State of North Carolina.

NORTH CAROLINA
GENERAL ASSEMBLY
1969 SESSION
HOUSE BILL 978
Second Edition - Engrossed May 28

(Public)

Sponsors: Representative McMichael.

Referred to: Public Utilities.

May 7

1 A BILL TO BE ENTITLED

2 AN ACT TO AMEND G. S. 62-261(7) TO PROVIDE VEHICLE INSPECTION OF

3 MOTOR COMMON CARRIERS OF PROPERTY AND PASSENGERS.

4 The General Assembly of North Carolina do enact:

5 [H-Section 1. G. S. 62-261(7) is hereby amended by

6 striking out the words "in the transportation of passengers", and

7 by inserting in lieu thereof the words "in the transportation of

8 passengers and property"]

9 [H-Section 1. G. S. 62-261(7) is hereby amended by

10 striking cut the word 'passengers' where it appears in lines

11 5,8,11,18,21 and 26 of said subsection (7) and by inserting in

12 lieu thereof the words 'passengers and property'."

13 Sec. 2. All laws and clauses of laws in conflict with

14 the provisions of this Act are hereby repealed.

15 Sec. 3. This Act shall be in full force and effect from

16 and after September 15, 1969.

Example of intermediate copy of a bill in process, showing changed portion (strikeovers) for legislators' review.

FIGURE 13.—Hyphen strikeover revision technique—the State of Colorado.



Senate bill No. 22. By Senators Anderson, Chance, Locke, Noble, Kinnie, and Parker; also Representatives McCormick, Burns, Fentress, Hinman, McNeil, Quinlan, Baer, Bishop, Koster, Showalter, Sonnenberg, Sooter, Strang, Wells and Younglund.

REMOVING TIME LIMITATIONS ON PLANS FOR AUGMENTATION RELATING TO WATER.

Be it enacted by the General Assembly of the State of Colorado:

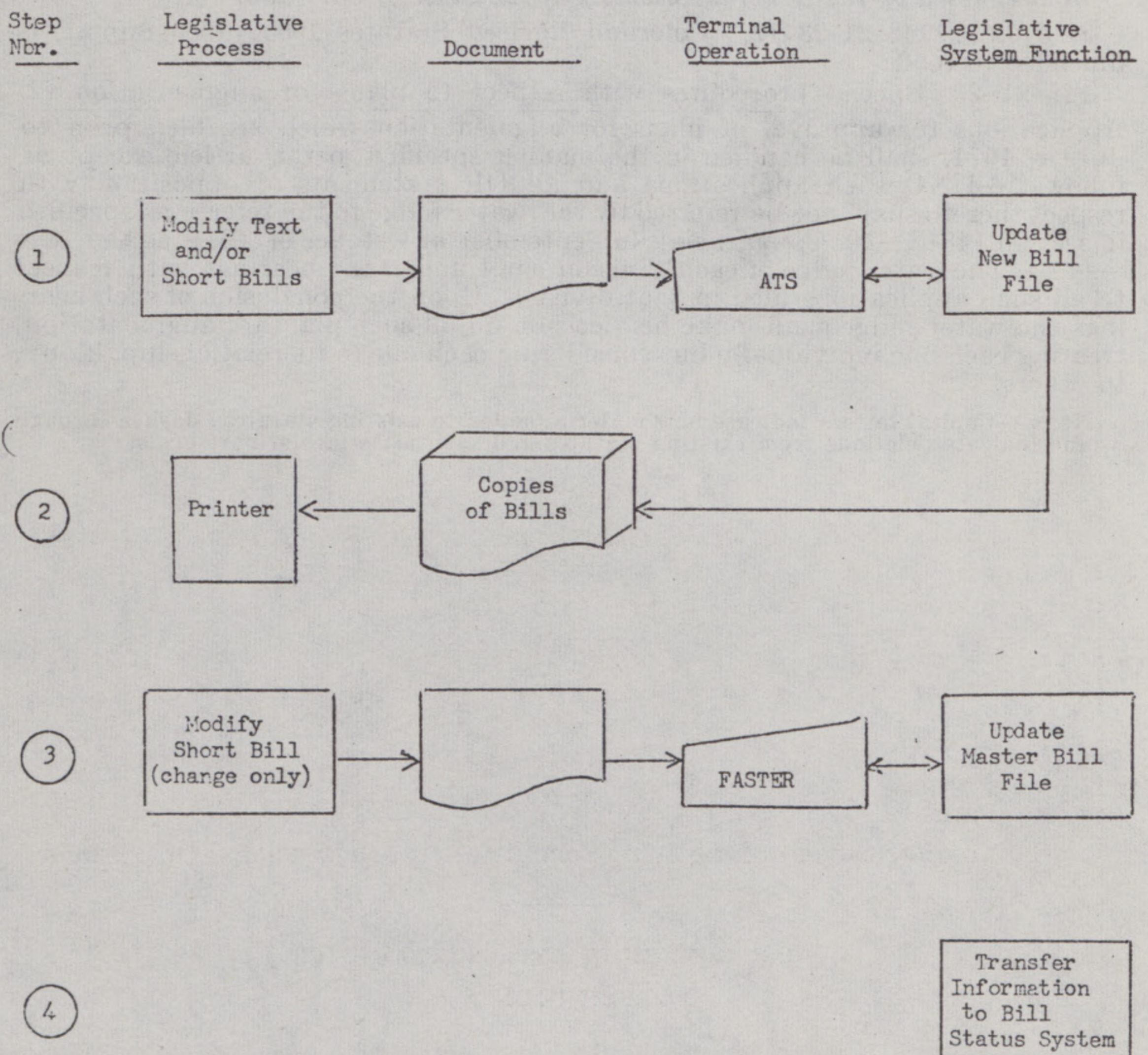
SECTION 1. 148-21-23 (2), Colorado Revised Statutes 1963 (1969 Supp.), is amended to read:

148-21-23. Special procedures with respect to plans for augmentation. (2) Applications for approval of plans for augmentation ~~which are filed prior to July 1, 1971,~~ shall be handled in the manner specified in this article except as follows: ~~All~~ NO such applications and ~~all~~ OR statements of opposition with respect thereto shall ~~not~~ be referred by the water judge to the referee as specified in section 148-21-10. ~~Commencing in September or October of 1971, as the case may be,~~ The water judge of each division shall undertake hearings with respect to all such applications filed in that division. Upon the conclusion of such hearings the water judge shall make his decision on all such plans for augmentation, treating each one individually but considering each one in its relationship, if any, to others.

NOTE.—Capital letters indicate new material added to existing statutes; dashes through words indicate deletions from existing statutes and such material not part of act.

Only quite recently have the States allocated the resources required to install and operate a full-fledged bill drafting system. In 1969, Michigan spent \$74,150 for its initial system, while estimating that the ADP-oriented capability would save an estimated \$80,000 per year.³⁴ Frequently the States availed themselves of existing commercial expertise or already developed software packages. Illinois in 1970 purchased the "ALTER" (Automated Legal Text Entry and Revision) system developed by the Data Retrieval Corp. of America at a cost of \$55,000.³⁵ The same year, Connecticut contracted with IBM for a bill drafting capability based on using "FASTER" software and the Administrative Terminal System. Great care was taken to establish pre-session preparation procedures for use by the Legislative Commissioner's staff, which audits and reviews bills with "favorable reports" from the committees. Figure 14 shows the four steps involved in modifying bills while in the legislative process.³⁶ Corollary to the use of computer technology in bill drafting, in more and more States, is the creation of "form and style" manuals to assist legislators and technicians alike in the proper preparation of new legislation or amendments.

FIGURE 14.—*Modification to bills in progress—the State of Connecticut.*



³⁴ Computer bill drafting. In *Public automation*, vol. 4, No. 7, July 1968, p. 2.

³⁵ Recommendation concerning bill status, bill drafting, and the proposed 5-year plan for the members of the Joint Committee on Legislative Information Systems, *op. cit.*, p. 31 (exhibit I).

³⁶ State of Connecticut legislative information system, *op. cit.*, p. 14.

Minnesota's experience perhaps best illustrates the ways in which a computer-supported bill drafting system can and should function.³⁷ The "QWIK-DRAFT" system was prepared for use in the Revisor of Statutes' office by the Aspen Systems Corp. "Text editing" is performed using vide screen (CRT) units connected 2,000 feet away to an IBM 360 Model 50 computer under the aegis of the Department of Administration. Transmission from the 14 terminals is accomplished by using normal Bell System telephone lines.

A terminal operator may, upon request, retrieve and display on the vide screen textual material previously stored on the basis of an entire document, a statutory section, a subdivision, a line, or a word. Additions, substitutions, and deletions may be keyed into the text by the operator as the appropriate section is displayed on the screen. This technique allows the rapid preparation of selected material by taking over the operation of reformatting the text, in this way relieving the operator of the chores of retyping, proofreading, or cutting and pasting. Hard copy is produced by a high-speed printer (manufactured by Data Products Corp.) located in the Revisor's office.

The initial data base for use by the legislative personnel was the full text of the 1969 Minnesota statutes, comprising 3,605,397 text words. These resided in direct access storage (on a data cell) and were available at all times during the bill drafting process. During the 1971 regular and extra legislative sessions, 5,300 bills were drafted and over 2,000 engrossments—to engross a bill is to copy it and incorporate amendments within its text—were prepared with the aid of the computer. At the high point of session activity, more than 800,000 lines were in direct access storage. Textual material in the computer could be retrieved and printed at the rate of 2,000 words per minute, while each CRT terminal had the capacity to display 3,000 characters. Evaluators of the system reported that to redraft a 150-page bill by computer took 4 hours, as compared to 2 days of typing by traditional methods.

As directed by the Minnesota statutes, section 3.19:³⁸

3.19 All bills, joint resolutions, and legislative acts shall be engrossed or enrolled in the manner provided by the rules of the senate and the house of representatives or the joint rules thereof. In the engrossing or enrolling of bills copying machines and other labor saving devices and equipment shall be used to the greatest extent possible.

With this statutory emphasis, those responsible for managing the legislative information system and the bill drafting service in particular made every possible use of the new computer capability. During the legislative session, all engrossing for both bodies was done by the ADP-supported text editing process. The initially stored bills were retrieved and amendments were incorporated (as in fig. 11). Examples of amendments to the Minnesota statutes (fig. 15)³⁹ and session laws

³⁷ Information obtained from a computerized "info" bulletin, "Minnesota bill drafting," and the 1971 styles and forms for computerized bill drafting and other legislative measures, prepared by the Revisor of Statutes, St. Paul, Minn., 1971, 37 pp.

³⁸ Minnesota statutes, sec. 3.19.

³⁹ A product of the State of Minnesota computerized bill drafting system, as contained in 1971 styles and forms for computerized bill drafting and other legislative measures, *op. cit.*, p. 9.

(fig. 16)⁴⁰ show the products possible by using the new techniques. The new bills and enrollments—to enroll a bill is to copy it as it has been finally passed in the legislature for presentation to the Governor—were then prepared from hard copy printouts.

As a result of using the new bill drafting system, the State legislature was aided in its drafting and amending of legislation from the standpoint of accuracy, cost, and response time. It is reported that as a byproduct of the new system, the 1971 Minnesota session laws will be printed by an ADP-centered photocomposition method.

FIGURE 15.—*The State of Minnesota.*

EXAMPLE—AMENDING MINNESOTA STATUTES

A BILL for an act relating to medical assistance for the needy; amending Minnesota Statutes 1969, Sections 256.81; 256.93, Subdivision 2; repealing Minnesota Statutes 1969, Section 246.25.

Be it enacted by the Legislature of the State of Minnesota:

SECTION 1. Minnesota Statutes 1969, Section 256.81, is amended to read:

256.81 [COUNTY AGENCY, DUTIES.] (1) The county agency ~~may~~ shall keep such records, [etc.].

SEC. 2. Minnesota Statutes 1969, Section 256.93, Subdivision 2, is amended to read:

Subd. 2. [ANNUAL REPORT.] The ~~attorney general~~ commissioner of public welfare shall annually or, [etc.].

SEC. 3. Minnesota Statutes 1969, Section 246.25, is repealed.

* * * * *

FIGURE 16.—*The State of Minnesota.*

EXAMPLE—AMENDING SESSION LAWS

A BILL for an act relating to the city of Ely; providing for the [etc.]; amending Laws 1963, Chapter 180, Section 2, as amended

Be it enacted by the Legislature of the State of Minnesota:

SECTION 1. Laws 1963, Chapter 180, Section 2, as amended by Laws 1965, Chapter 226, Section 1, is amended to read:

SEC. 2. [ELY, CITY OF; TRANSFER OF FUNDS.] This act shall be in full force and effect until June 30, ~~1969~~ 1971.

* * * * *

STATUTORY RETRIEVAL

When legal specialists and computer technologists began to explore the various candidate categories of legal and legislative material which might be better handled with the assistance of a computer, a high priority was assigned to statutory retrieval. A team at the University of Pittsburgh Health Law Center—which later became the Aspen Systems Corp.—started collecting information on health law statutes in a number of States as early as 1956, and by 1960 was probing the known capability of the electronic computer to facilitate searching statutory material.⁴¹ Contractual efforts were undertaken with several States

⁴⁰ *Ibid.*, p. 11.

⁴¹ Recurring contact during the period 1963–72 with John F. Harty, originally the head of the group performing ADP-supported legal information retrieval at the Health Law Center and later founder of Aspen Systems Corp., has allowed an appreciation of the evolution of this type of service. See selected references for articles describing the development of this support capability for the legal profession and legislative bodies.

(e.g., Pennsylvania, New York, New Jersey) resulting in the creation of statutory retrieval systems. In 1967 the Aspen Systems Corp. unveiled its "System 50," which could be used by any governmental or private sector client, featuring the computerized full text retrieval of all 50 States' statutory material.

Gradually the State legislators began to see the value of having their statutory material in computerized form. Amendatory action was expedited, and legislators seeking to introduce legislation which might supersede or modify existing laws could quickly determine the content of extant laws and channel their efforts accordingly. New York took positive action in 1963, with commercial assistance, to convert its statutes (as appearing in *Consolidated McKinney's Laws of New York Annotated*) to machineable form. By 1971, more than a score of States had operating ADP-oriented statutory retrieval systems and another dozen were engaged in preliminary development or long range planning to establish this capability. The emphasis on full text search evolved because of the traditional feeling among lawyers that no one else could satisfactorily index or abstract material for any other person.

The basic premises upon which the full text legal search approach is based are:

- The actual words of legal text (such as statutes) can be organized for computer searching without previous indexing.
- A carefully prepared query against the system will cause the computer to locate and print those selected materials sought by the requester.

Typical of the retrieval statements which may be acted upon by the ADP-centered system is one requiring a search of the Pennsylvania statutes (fig. 17).⁴²

⁴² Searching law by computer: How it works. Pittsburgh, Automated Law Searching, [no date], p. 9.

FIGURE 17

Search Statement

```

*  AUTOMATED LAW SEARCHING
*  SEARCH NO. - 6010 ON PA. STATUTES
*  REQUESTED BY - JOHN F. HORTY
*  SEARCH ANALYST - C.L. MATTERN
*  DATE - JUNE 1, 1967
*  QUESTION - RIGHTS OF PARENTS OF ABANDONED CHILDREN UP
*              FOR ADOPTION
*
*  06/01/67  PA. STATUTES
*
  GROUP 1      OR      AGE
                OR      YEARS
                WORD    &5-5  OVER
                WORD    &5-5  UNDER
                WORD    &5-5  MORE
                WORD    &5-5  LESS
                OR      CHILD
                OR      MINOR
                DOCUMENT ABANDON
                DOCUMENT ABANDONED
                DOCUMENT ABANDONING
                DOCUMENT ABANDONMENT
                DOCUMENT ABANDONS
*
  GROUP 2      OR      PARENT
                OR      PARENTS
                DOCUMENT ADOPT
                DOCUMENT ADOPTION
                DOCUMENT ADOPTING
*
  OUTPUT      PRINT%G□
*  END
*
*  THE NUMBER OF ASTERISKS FOLLOWING ANY DOCUMENT NUMBER
*  INDICATES THE NUMBER OF ADDITIONAL TIMES THE DOCUMENT
*  WAS RETRIEVED BY THIS SEARCH.
*
*  WORDS IN RIGHT MARGIN ARE WORDS THAT FORM THE SEARCH,
*  THEY NEED NOT HAVE CAUSED THE DOCUMENT TO BE RETRIEVED.
*
*  IF REQUESTED, PRINTING IS IN BLOCKS IN ORDER OF REQUEST.
  GROUP 1
  GROUP 2

```

This type of system offers the requester the option of asking for the printing of citations rather than the full text; also, the sequence in which the results are to be printed may be specified. The search results, as they appear in figure 18, indicate the clarity of presentation and degree of utility to the user.⁴³

⁴³ *Ibid.*, p. 11.

FIGURE 18

Search Results

OUTPUT	DOCUMENT NUMBER	WORDS CONTAINED IN SEARCH STATEMENT
ABANDONMENT	1	
ADoption	2	
ADoption	3	
ADoption	4	
ADoption	5	
ADoption	6	
ADoption	7	
ADoption	8	
ADoption	9	
ADoption	10	
ADoption	11	
ADoption	12	
ADoption	13	
ADoption	14	
ADoption	15	
ADoption	16	
ADoption	17	
ADoption	18	
ADoption	19	
ADoption	20	
ADoption	21	
ADoption	22	
ADoption	23	
ADoption	24	
ADoption	25	
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ADoption	88	
ADoption	89	
ADoption	90	
ADoption	91	
ADoption	92	
ADoption	93	
ADoption	94	
ADoption	95	
ADoption	96	
ADoption	97	
ADoption	98	
ADoption	99	
ADoption	100	

BY THE FINDING OF ABANDONMENT IN COURT, THERE SHALL BE EMBODIED IN THE PETITION A STATEMENT SETTING FORTH /1/ THE COURT, TERM AND NUMBER OF SUCH PROCEEDINGS, /2/ THAT SUCH PERSON PROPOSED FOR ADOPTION IS IN THE CUSTODY OF AN APPROVED AGENCY OR INSTITUTION WHOSE CONSENT TO THE ADOPTION IS ATTACHED TO THE PETITION. IN ADDITION SUCH PETITION SHALL EMBODY OR HAVE ATTACHED THERETO THE CONSENTS IN WRITING OF THE PERSON OR PERSONS WHOSE CONSENT TO THE PROPOSED ADOPTION IS NECESSARY AS HEREINAFTER PROVIDED. A BIRTH CERTIFICATE OR CERTIFICATION OF REGISTRATION OF BIRTH OF THE PERSON PROPOSED TO BE ADOPTED SHALL BE ATTACHED TO THE PETITION FOR ADOPTION. IF NO BIRTH CERTIFICATE OR CERTIFICATION OF REGISTRATION OF BIRTH CAN BE OBTAINED IT SHALL BE SO STATED IN THE PETITION, WITH A REQUEST THAT THE COURT, ON THE BASIS OF THE EVIDENCE, SHALL ESTABLISH A DATE AND PLACE OF BIRTH IN THE ADOPTION HEARING. 1925, APRIL 4, P.L. 127, SEC. 1., AS AMENDED 1941, JUNE 5, P.L. 93, NO. 46, SEC. 1., 1941, JULY 2, P.L. 229, SEC. 1., 1947, JUNE 30, P.L. 1180, SEC. 1., 1953, AUG. 26, P.L. 1411, SEC. 1., 1959, DEC. 21, P.L. --, NO. 711, SEC. 1. ADOPTION ACT

PA. STAT. ANN. TIT. 1, SEC. 1.2

WHEN ANY PERSON UNDER THE AGE OF EIGHTEEN YEARS HAS BEEN IN THE CARE OF AN APPROVED INSTITUTION OR AGENCY FOR A MINIMUM PERIOD OF THIRTY /30/ DAYS AND IT APPEARS THAT SUCH PERSON HAS BEEN ABANDONED FOR A PERIOD OF AT LEAST SIX MONTHS, SUCH APPROVED AGENCY OR INSTITUTION MAY PETITION THE COURT, IN THE COUNTY IN WHICH IS LOCATED THAT OFFICE OF THE APPROVED AGENCY OR INSTITUTION HAVING THE CUSTODY OF SUCH PERSON, FOR A FINDING OF ABANDONMENT AND ASKING FOR CUSTODY OF SUCH PERSON.

THE COURT WILL THEREUPON FIX A TIME FOR HEARING, WHICH SHALL BE NOT LESS THAN TEN DAYS AFTER SUCH PRESENTATION. AT LEAST FIVE DAYS- WRITTEN NOTICE SHALL BE GIVEN, BY REGISTERED MAIL, TO THE ALLEGED ABANDONING PARENT OR PARENTS, AT HIS OR THEIR LAST KNOWN ADDRESS. THE HEARING SHALL BE PRIVATE OR IN OPEN COURT, AS THE COURT SHALL DETERMINE. AT SUCH HEARING THE COURT, BY EXAMINATION UNDER OATH OF THE PARTIES INTERESTED IN THE PETITION, SHALL ASCERTAIN THE TRUTH OF THE FACTS SET FORTH IN THE PETITION AND ITS EXECUTION, AND IF SATISFIED AS TO THE TRUTH THEREOF AND THAT THE PETITION SHOULD BE GRANTED, IT SHALL ISSUE ITS DECREE SO FINDING AND DIRECTING A FINDING OF ABANDONMENT, /1/ DECREETING THAT CUSTODY BE GIVEN TO THE APPROVED AGENCY OR INSTITUTION CARING FOR SAID PERSON, AND /2/ AUTHORIZING THE APPROVED AGENCY OR INSTITUTION TO GIVE CONSENT TO THE ADOPTION OF SAID PERSON WITHOUT FURTHER CONSENT OF OR NOTIFICATION TO THE NATURAL PARENT OR PARENTS.

SUCH DECREE, WITH ALL THE TESTIMONY AND ALL OTHER PAPERS PERTAINING TO THE CASE, SHALL BE RECORDED IN SUCH MANNER AS THE COURT SHALL PRESCRIBE AND SHALL BE KEPT IN THE FILES OF THE COURT AS A PERMANENT RECORD THEREOF, AND SHALL BE WITHHELD FROM INSPECTION EXCEPT UPON AN ORDER OF THE COURT UPON CAUSE SHOWN, EXCEPT THAT THE CLERK OF THE COURT MAY TRANSMIT A CERTIFIED COPY OF THE DECREE OF ABANDONMENT, WITHOUT EXPRESS ORDER OF COURT, FOR USE IN ADOPTION PROCEEDINGS IN A COURT OF ANOTHER DISTRICT. 1925, APRIL 4, P.L. 127, SEC. 1.2, ADDED 1953, AUG. 26, P.L. 1411, SEC. 2. ADOPTION ACT

The uses of the statutory retrieval capability are many. In Arizona, upon the occasion of implementing a constitutional amendment, the elective office of the State Auditor was abolished and the position of Auditor General was established. This necessitated the time-consuming preparation of a 300-page bill to make every change from one position title to another; in States such as Pennsylvania, these types of statute modifications have been facilitated by having the computer search the entire text of the statutes, identify each pertinent entry, and print out a listing which may then be alluded to or incorporated into the corrective legislation.

A variety of implementing actions has been taken by the States as they have established a statutory retrieval capability. In Washington the new system was created by the legislature's own staff, using the IBM document processing system (1969).⁴⁴ The system was upgraded beginning in 1970 through the use of two new IBM search systems called "Textpac" and "Inform 360." In addition to accessing the *Revised Code of Washington* (1970), retrieval is now possible from the Washington State and United States Constitutions, the Enabling and Organic Acts, selected (1949-70) formal opinions of the State Attorney General, and 12 volumes of Washington Supreme Court reports. Other State and local governments are encouraged to use the Washington State capability. Charges are nominal, ordinarily ranging between \$10 and \$25 per search, depending upon the computer time required. The system designers have provided for the creation of an "inverse cross-reference table" of each section of the *Revised Code of Washington*. This table graphically indicates *all other sections* of the code in which the section under inquiry is cited. This has proven to be highly useful to members who may be drafting legislative bills since it highlights those existing sections of the code which may be affected by the proposed change. In order to maximize user understanding and employment of the system, the Legislative Information System of the Washington Legislature has prepared a "Search Manual for Automated Law Searches" (1971). Typical of a "Textpac" search against the code is one on the subject of "fire bombs," as shown in figure 19.⁴⁵

One of the strengths of the Washington system is its flexibility in offering the user access to that data. Either a vide screen (IBM model 2260) or special typewriter (IBM model 2741) may be used to enter query statements, and the operator is able to manipulate a set of logic terms in order to pinpoint documents of value. Throughout the instructional material provided the system users—members, legislative and administrative support staffs, and researchers—is an emphasis on the requester exhausting his vocabulary of terms related to the problem:⁴⁶

What are the words or groups of words (concepts) that I must define in order to select the legal materials I am seeking and what are the relationships among these defined words or word groups (concepts)?

⁴⁴ Data processing endeavors in the automated law search and the legislative areas, *op. cit.*, amplified by discussions with Messrs. Byfield and Edward Miller, attorney-information specialist.

⁴⁵ Search manual for automated law searches, prepared by the Legislative Information System under the aegis of the Permanent Statute Law Committee in the State of Washington, July 1, 1971, pp. 58-59.

⁴⁶ *Ibid.*, p. 5.

FIGURE 19

TEXTPAC SEARCH

STATUTES - Revised Code of Wash.

SIGN ON, 09/15/70, 16:36
 liscrecn,lisearch.lisrcw
 CREATING TEXTPAC QUERY FILE

0001 or bomb bombs

BOMB 12 OCCS, 7 DOCS
 BOMBS 7 OCCS, 3 DOCS
 19 OCCS, 8 DOCS WORD LEVEL

0002 adj fire 0001

FIRE 1543 OCCS, 562 DOCS
 6 OCCS, 3 DOCS PHRASE LEVEL

0003 save 0002 browse

ENTER ALL OR ITEM NUMBERS SEPARATED BY COMMAS, OR ENTER EXPLAIN

explain
 1 TITLE 2 CHAPTER 3 CITATION 4 CAPTION 5 TEXT

1,2,5
 ENTER D FOR DISPLAY / OR P FOR PRINT ALL

d
 WAIT AT END OF A DOCUMENT? Y OR N

n
 INT# 2067 DOC# 1

TITLE 9 CRIMES AND PUNISHMENTS

CHAPTER 40 Fire, crimes relating to.

9 40 110 "Fire bombs" Definitions. For the purposes of RCW
 9 40 110 through 9 40 130 unless the context indicates otherwise:

(1) "Disposes of" means to give, give away, loan, offer, offer
 for sale, sell, or transfer.

(2) "Fire bomb" means a breakable container containing a
 flammable liquid with a flash point of 170 degrees Fahrenheit or
 less, having a wick or similar device capable of being ignited.
 However, no device commercially manufactured primarily for the
 purpose of illumination shall be deemed to be a fire bomb for
 purposes of this section. [1969 1st ex_s_ c 79 # 2.]

INT# 2068 DOC# 2

TITLE 9 CRIMES AND PUNISHMENTS

CHAPTER 40 Fire, crimes relating to.

9 40 120 Penalty. Every person who possesses, manufactures, or
 disposes of a fire bomb is guilty of a felony. [1969 1st ex_s_ c 79
 # 3.]

INT# 2069 DOC# 3

TITLE 9 CRIMES AND PUNISHMENTS

CHAPTER 40 Fire, crimes relating to.

9 40 130 Exceptions. RCW 9 40 120 shall not prohibit the
 authorized use or possession of any material, substance, or device
 described therein by a member of the armed forces of the United
 States or by firemen, or peace officers, nor shall these sections
 prohibit the use or possession of any material, substance, or device
 described therein when used solely for scientific research or
 educational purposes or for any lawful purpose. RCW 9 40 120 shall
 not prohibit the manufacture or disposal of a fire bomb for the
 parties or purposes described in this section. [1969 1st ex_s_ c 79
 # 4.]

REQUESTED DOC. BEYOND LIST RANGE. ENTER NEXT REQUEST

textpac

QUERY FILE ALREADY EXISTS

Other examples of statutory retrieval searches, against the Washington revised code,⁴⁷ and the Virginia statutes,⁴⁸ appear as figures 20 and 21.

FIGURE 20.—Request and "Textpac" statutes search—the State of Washington.

AUTOMATED LAW SEARCHES	
SEARCH TOPIC:	Search Number:
All references to "Attorney General"	238
	Date:
	3-17-71
Legal materials searched:	
☒ Revised Code of Washington(RCW) ☐ Washington Administrative Code(WAC) ☐ Attorney General's Opinions(AGO) ☐ Washington Reports(WRS) ☐ Washington Constitution(CON). ☐ U. S. Constitution(CON) ☐ Enabling Act(CON) ☐ Organic Act(CON)	

COMMENT: 363 statutes (Note: only a sample of the output is included in the search manual.)

TEXTTAC SEARCH

STATUTES - Revised Code of Wash.

INT# 27622 DOC# 296
TITLE 79 PUBLIC LANDS
CHAPTER 28 Lieu lands.

79_28_010 Agreements for selection authorized. For the purpose of obtaining from the United States indemnity or lieu lands for such lands granted to the state for common schools, educational, penal, reformatory, charitable, capitol building or other purposes, as have been or may be lost to the state, or the title to or use or possession of which is claimed by the United States or by others claiming by, through or under the United States, by reason of any of the causes entitling the state to select other lands in lieu thereof, the inclusion of the same in any reservation by or under authority of the United States, or any other appropriation or disposition of the same by the United States, whether such lands are now surveyed or unsurveyed, the commissioner of public lands, with the advice and approval of the board of state land commissioners and the attorney general is authorized and empowered to enter into an agreement or agreements, on behalf of the state, with the proper officer or officers of the United States for the relinquishment of any such lands and the selection in lieu thereof, under the provisions of RCW 79_28_010 through 79_28_030, of lands of the United States of equal area and value. [1913 c 102 § 1: RRS § 7824.]

INT# 27365 DOC# 294
TITLE 79 PUBLIC LANDS
CHAPTER 08 General provisions.

79_08_200 Agreements, deeds, etc. The commissioner of public lands shall, with the advice and approval of the attorney general, execute such agreements, writings, or relinquishments and certify to the governor such deeds as are necessary or proper to execute such exchange authorized by RCW 79_08_180 through 79_08_200. [1957 c 290 § 3.]

⁴⁷ *Ibid.*, pp. 65, 66, 70, and 73.

⁴⁸ A legislative information system for the Commonwealth of Virginia. Richmond, Division of Automated Data Processing [1971], p. 15 (exhibit A). Also see Automated data processing in Virginia: A statewide plan for the computer age. Prepared by Touche, Ross, Bailey & Smart. Richmond, Va., Division of Automated Data Processing, 1969, pp. 61-75.

FIGURE 21.—*The State of Virginia.*

MOBILE HOMES AND HOUSE TRAILERS

DOCUMENT NUMBER: 17734 LIST6, LIST2

TEXT:

VA. STATS. TIT. 58, SEC. 58-863

SEC. 58-863. APARTMENT HOUSE, TRAILER CAMP, TRAILER COURT, MARINA OR AIRPORT OPERATORS TO FILE LISTS OF TENANTS.

EVERY PERSON, FIRM OR CORPORATION OPERATING ANY APARTMENT HOUSE OR ANY TRAILER CAMP OR TRAILER COURT OR MARINA OR PRIVATELY OPERATED AIRPORT IN THIS STATE SHALL, ON OR BEFORE FEBRUARY FIRST OF EACH YEAR, UPON REQUEST OF THE COMMISSIONER OF THE REVENUE, FILE WITH THE COMMISSIONER OF THE REVENUE OF THE COUNTY OR CITY IN WHICH SUCH APARTMENT HOUSE, TRAILER CAMP, TRAILER COURT, MARINA OR AIRPORT IS LOCATED A LIST GIVING THE NAME AND ADDRESS OF EVERY TENANT OF SUCH APARTMENT HOUSE, TRAILER CAMP, OR TRAILER COURT, AND THE NAME AND ADDRESS OF EVERY PERSON RENTING SPACE IN A MARINA FOR WATERBORNE CRAFT AND AT A PRIVATELY OPERATED AIRPORT FOR AIRBORNE CRAFT AS OF JANUARY FIRST PRECEDING. THE GOVERNING BODY OF ANY COUNTY ADJOINING A COUNTY HAVING A POPULATION OF MORE THAN ONE THOUSAND PER SQUARE MILE MAY REQUIRE LIKE INFORMATION FROM ANY SUCH PERSON, FIRM OR CORPORATION OPERATING A TRAILER CAMP OR TRAILER COURT OR AN APARTMENT HOUSE HAVING TWO OR MORE APARTMENTS OR LEASING HOUSES FOR RENT AND VIOLATION OF ANY SUCH ORDINANCE REQUIRING THE SAME MAY BE PUNISHED AS HEREINAFTER PROVIDED. ANY PERSON, FIRM OR CORPORATION FAILING TO COMPLY WITH THIS SECTION SHALL BE SUBJECT TO A FINE OF NOT LESS THAN FIVE NOR MORE THAN ONE HUNDRED DOLLARS.

TAXATION - COMMISSIONERS OF THE REVENUE AND RETURNS GENERALLY: PERSONAL PROPERTY BOOKS

HOUSE, TRAILER, CAMP, TRAILER

HOUSE
TRAILER, CAMP, TRAILER

HOUSE, TRAILER, CAMP, TRAILER

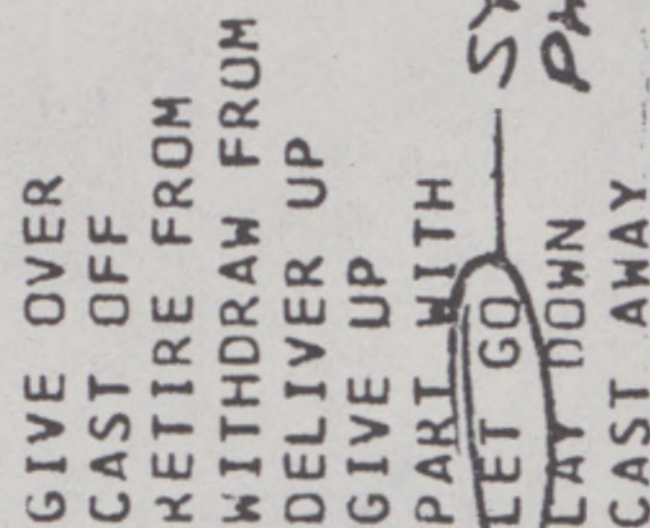
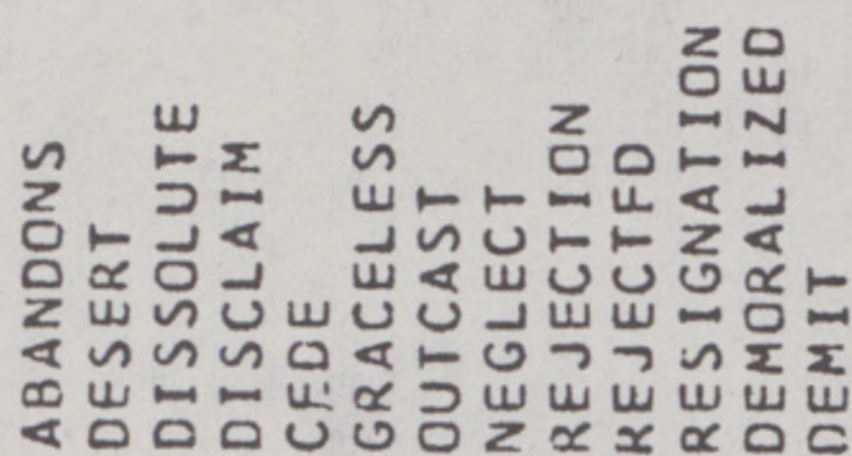
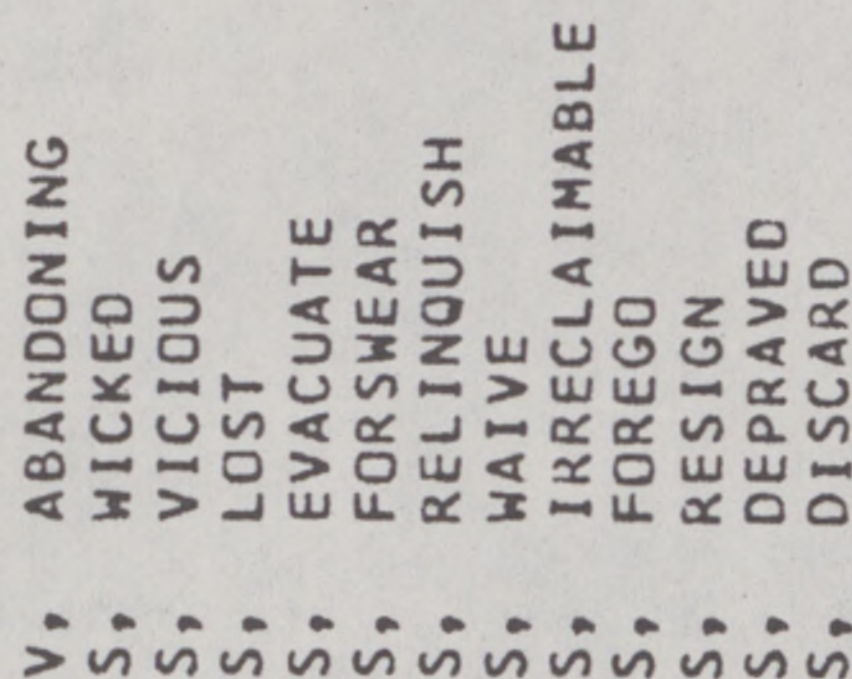
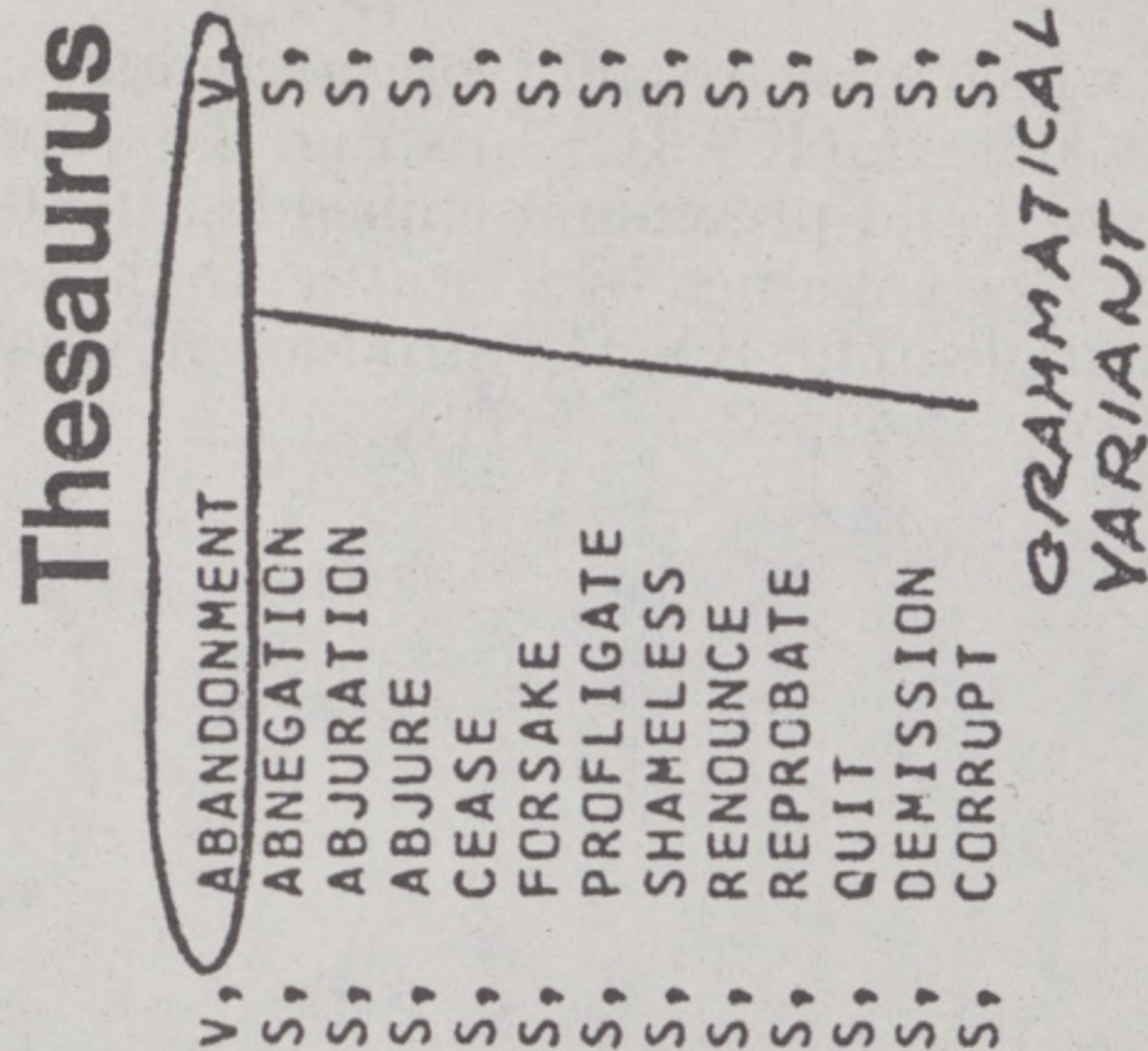
HOUSE, TRAILER, CAMP, TRAILER

TRAILER, CAMP, TRAILER
HOUSE

In developing the full-text search type of statutory retrieval capability, the system designers have attempted to make it as easy as possible for the user clientele. A thesaurus of terms can be prepared by the computer, thereby making available a listing of grammatical variations and synonyms of words which could be included in a search statement. An example of such a thesaurus appears as figure 22.⁴⁹

⁴⁹ Searching law by computer : How it works, *op. cit.*, p. 13.

FIGURE 22



SYNONYM

ROOT WORD

SYNONYMOUS
PHRASE

ABANDON

Another type of product which may result from a computerized search is the "Key Word In Context (KWIC)" listing. This locates every occurrence of a given word and presents it embedded in 60–100 characters of surrounding text, accompanied by a citation to the source document. Figure 23 is an example of a "KWIC" product, in this case prepared by Aspen Systems Corp. group.⁵⁰

⁵⁰ *Ibid.*

FIGURE 23

Key Word in Context

	CITATION	DOCUMENT NUMBER
PA. STAT. ANN. TIT. 15, SEC. 2153	3206	3224
PA. STAT. ANN. TIT. 15, SEC. 2752		4576
PA. STAT. ANN. TIT. 15, SEC. 2752		4685
PA. STAT. ANN. TIT. 15, SEC. 2752		4685
PA. STAT. ANN. TIT. 15, SEC. 2752		4685
PA. STAT. ANN. TIT. 15, SEC. 2752		4689
PA. STAT. ANN. TIT. 15, SEC. 2752		4685
PA. STAT. ANN. TIT. 15, SEC. 2752		4685
PA. STAT. ANN. TIT. 15, SEC. 2752		4685
PA. STAT. ANN. TIT. 15, SEC. 3111		5055
PA. STAT. ANN. TIT. 15, SEC. 3111		5055
PA. STAT. ANN. TIT. 16, SEC. 2421		5566
PA. STAT. ANN. TIT. 16, SEC. 5621		6192
PA. STAT. ANN. TIT. 16, SEC. 12104		7023
PA. STAT. ANN. TIT. 17, SEC. 1589.1		7745
PA. STAT. ANN. TIT. 18, SEC. 4727		8345
PA. STAT. ANN. TIT. 18, SEC. 4727		8345
PA. STAT. ANN. TIT. 20, SEC. 320.93		9196
PA. STAT. ANN. TIT. 20, SEC. 320.10		9244
PA. STAT. ANN. TIT. 24, SEC. 7-708		10348
PA. STAT. ANN. TIT. 26, SEC. 1-410		12066
PA. STAT. ANN. TIT. 32, SEC. 666		13178
PA. STAT. ANN. TIT. 32, SEC. 678.2		13193

OLDERS THE ... SUCH PROPOSED
OFFICE, THE SUBJECT OF SUCH PROPOSED
HAVE BEEN VOTED IN FAVOR OF SUCH AN
S OF TURNPIKE ROAD OR HIGHWAY, SUCH
SIONS OF THIS ACT, AND AFTER SUCH
OVISIONS OF THIS ACT, A SEC. 3111.
RUCEEDING WHEREIN THE FACTS OF SUCH
ASE OF THE DESTRUCTION, VACATION OR
ASE OF THE DESTRUCTION, VACATION OR
CEMNATION OR PURCHASE, TRANSFER OR
NG A PETITION FOR RELINQUISHMENT OR
4727, NEGLECT TO MAINTAIN CHILD,;
SUPPORT OF SUCH CHILD. PROOF OF THE
D ALL TITLE, CORPORATE SEC. 320.932
WITH REGARD TO THE FOLLOWING.* /1/
MINISTRATION OF A TRUST SEC. 7-708.
MINISTRATION OF A TRUST SEC. 1-410.
ON OF A TRUST SEC. 666. RELUCATION,
ROUTES. AGREEMENTS MAY PROVIDE FOR
K SEC. 670--210. RELOCATION, ETC.,
670--210. RELOCATION SEC. 670--605.
UR FEDERAL RESETTLEMENT PROJECT FOR
FIRST SUBMIT SUCH PROPOSED ORDER OF

ABANDONMENT, WHICH.
ABANDONMENT SHALL BE SUCH PORTION OR PORTIONS
ABANDONMENT OF ANY SUCH PORTION OR PORTIONS
ABANDONMENT SHALL THEREBY BE COMPLETED AND A
ABANDONMENT SUCH TURNPIKE ROAD OR HIGHWAY CO
ABANDONMENT OF ROAD OR CANAL BY NON-USE AND
ABANDONMENT MAY BE MATERIAL, AND SHALL BE CO
ABANDONMENT OF ANY SUCH BUILDING WITHIN THE
ABANDONMENT OF ANY SUCH BUILDING WITHIN THE
ABANDONMENT ..
ABANDONMENT
ABANDONMENT OF SUCH CHILD IN DESTITUTE CIRCU
OF PROPERTY
OF PROPERTY, AS IN SECTION 932.,
OF PROPERTY
OF PROPERTY
OF PROJECT
AND VACATION OF ROADS, STREETS,
OF EXISTING ROADS, STREETS, BRID
AS STATE HIGHWAY., VACATION
OF STATE HIGHWAYS IN STATE PARKS
OF SUCH PORTION OF STATE HIGHWAY
TO THE GOVERNOR, AND THAT THE SA

KEY
WORD

CONTEXT

CONTEXT

Although a few State legislative systems now offer on-line access on a full text search basis, as noted in the case of Washington, most have relied on off-line (delayed) retrieval of desired sections or citations to statutory material. In Wisconsin, the legislature uses a highly sophisticated adaptation of the IBM ATS capability called "ALTER" for retrieval purposes. By retrieving from the system known as "SIRS" (Statutory Information Retrieval System), the user may obtain full text, segments, referenced lines, or simply the word desired. The tapes developed for this program also are utilized in the biennial printing of statutes through automated type generation.

Mississippi plans to have a similar multipronged capability. It has contracted with the Lawyers Cooperative Publishing Co.⁵¹ for the 3-year development of a computer-supported system which will:

- Place all sections of the Mississippi Code of 1930 on computer tape, except those subsequently repealed, thereby allowing lawmakers to retrieve these and other legal type data.
- Result in the "rearrangement, regrouping, and reallocation" of the statutory provisions within the present Mississippi Code of 1942, including the grouping of provisions according to a "common subject matter."
- Prepare a new, complete, and comprehensive "general index" of all of the statutory materials in the Mississippi Code of 1972, and of all the provisions of the State and Federal Constitutions.
- Print and bind 2,200 sets of the recodified volumes (20 volumes per set) and the associated "general index."

This system will ease the task of drafting new bills and amendments, and should save legislators and researchers much search time.

Some States still must work with laws which are not codified, as in the case of Pennsylvania. The legislative system managers created a special classification tool, having recognized the need for a "profile" of the State statutes, as well as the importance of having a cross-referencing capability. Today, the statutes are classified by 42 special categories and more than 1,000 subcategories; master noun and chronological indexes also are maintained.⁵²

In this legislative application, heavy reliance has been placed on the use of commercial firms with the proven ability to establish the necessary statutory retrieval system. Aspen Systems Corp., Data Retrieval Corp. of America, and such manufacturing-software firms as the Radio Corp. of America and the IBM Corp., have serviced the States desiring to have an automated statutory retrieval capability. Figure 24 indicates the States receiving assistance from these, and miscellaneous other organizations.⁵³

⁵¹ Contract to publish new Mississippi Code of 1972, signed Oct. 26, 1970, 13 pp. Also see Lawyers Cooperative Publishing Co. data entry and text processing using the System/360 text processor-PAGINATION/360 and Administrative Terminal System (ATS). IBM application brief. White Plains, N.Y., The IBM Corp., May 1971, 13 pp. This information amplified by interview with Eugene de D. LeFevre, manager, Publication, Planning and Development, Lawyers Cooperative Publishing Co., Jan. 17, 1972.

⁵² Interview with Richard E. Campbell, executive director of the Legislative Data Processing Center, Harrisburg, Pa., Nov. 30, 1970; subsequent information obtained during CRS survey.

⁵³ The data appearing in figure 25 were obtained during the CRS 1971-72 survey, and corroborated by information contained in The Council of State Governments' and Elkins' surveys, discussions with commercial and university groups providing such services, and interviews with key legislative information system personnel.

FIGURE 24.—OVERVIEW OF STATE LEGISLATURE USE OF COMMERCIAL AND UNIVERSITY GROUPS

State	Aspen Systems Corp.			Data Retrieval Corp. of America			The IBM ¹ Corp., programming and analysis aid	Other reported external aid
	Bill drft.	Stat. ret.	Bill stat.	Bill drft.	Stat. ret.	Bill stat.		
1. Alabama								
2. Alaska								
3. Arizona		×						
4. Arkansas								
5. California							×	
6. Colorado				×	×		×	
7. Connecticut					×		×	
8. Delaware		×						
9. District of Columbia								
10. Florida					×			RCA.
11. Georgia				×			×	
12. Hawaii		×						University of Hawaii.
13. Idaho								
14. Illinois				×	×		×	
15. Indiana		×					×	
16. Iowa		×						University of Iowa.
17. Kansas		×						
18. Kentucky								
19. Louisiana								Univac.
20. Maine		×					×	
21. Maryland		×					×	
22. Massachusetts		×						
23. Michigan		×						
24. Minnesota	×	×					×	
25. Mississippi							×	Lawyers Co-operative.
26. Missouri								
27. Montana					×			
28. Nebraska								
29. Nevada								
30. New Hampshire								
31. New Jersey		×						
32. New Mexico								
33. New York		×					×	
34. North Carolina		×						
35. North Dakota		×						Arthur Anderson. Mead; BMI. University of Oklahoma.
36. Ohio		×						
37. Oklahoma								
38. Oregon								
39. Pennsylvania		×						
40. Rhode Island		×						
41. South Carolina								
42. South Dakota								
43. Tennessee							×	
44. Texas		×					×	
45. Utah		×					×	
46. Vermont								
47. Virginia		×					×	
48. Washington							×	
49. West Virginia		×						
50. Wisconsin				×	×	×		
51. Wyoming				×	×			

¹ Reported system support, from IBM source.

² Limited (occasional) use.

³ Emphasis is on updating the Hawaii Revised Statutes and publishing the new volume (annually) of the Session Laws of Hawaii.

⁴ Performed by Aspen predecessor group at the Health Law Center, University of Pittsburgh.

The importance of establishing a powerful, reliable search capability has been implied at several points, and its importance within the system context led the late Robert A. Wilson, noted among lawyers concerned with developing helpful ADP systems, to comment that:⁵⁴

The search process is the very heart of any machine retrieval system; in fact, it can be said that if it is efficient, the

⁵⁴ Wilson, Robert A. Computer retrieval in case law. In *Southwestern Law Journal*, vol. 16, No. 3, September 1962, p. 424.

entire system will be successful regardless of the capabilities of the input and output mechanisms. Conversely, if the search process is inefficient, the system will fail no matter how sophisticated the input and output operations or how large the memory capacity of the computer.

Thus, present day computer technology allows, as has been shown, the user of the automated retrieval system to "browse through a file, or penetrate it through the use of indexes, thesauri, KWIC listings, or simply by choosing groups of words of prime personal interest. In the latter situation he may be very precise, asking for "All sections of the State code on 'gun control,' " or he may submit a more sweeping requirement for "All references to 'firearms,' 'weapons,' 'sporting guns,' and 'handguns,' " and those activities associated with the use of guns, such as "hunting" and "self defense."

STATUS OF PENDING LEGISLATION

Quite often when the subject of computerizing legislative processes is raised, reference is made to the antiquated system of doing such things as keeping track of the status of pending legislation. It is in this area, which is amenable to computerization, that a great deal of effort has been expended and some measurable progress has been made.

Equipment manufacturers, software speciality firms, and computer technologists have been able to work with legislative personnel in developing responsive "bill status" systems. In some instances, these are relatively sophisticated, with a network of vide screen terminals by which legislators, or their staff, may obtain virtually instantaneous information about a bill—its sponsors, data of introduction, title, sometimes a précis of its contents, committee to which assigned, and the various milestones denoting its progress through the legislative process.

In planning the North Carolina legislative information system, a series of other vital questions which might be answered by an ADP-supported bill status system were identified:⁵⁵

- What counties are affected by a bill?
- Has a bill been ratified?
- What bills affect an existing law?
- Which bills were introduced by a certain legislator?
- What bills affect a certain county?
- Which statutes are affected by a bill?
- What bills have failed?
- What bills are in what committee?

In order to obtain such information for a bill status file, and keep that file current, it usually is necessary to send a directive from the chamber leadership to the committees and certain personnel (e.g., floor clerks) which will insure the proper degree of cooperation. The importance of establishing complete information on pending legislation, based on the coordinated collection of basic data, must not be underestimated, for the quality of these essential elements of information

⁵⁵ The North Carolina Legislature bill-history and bill-processing system, *op. cit.*, p. 3.

must be maintained. Using data processing equipment to "capture" these data was considered seriously nearly a quarter-century ago. Figure 25 shows a form developed in 1938 to handle 1,165 bills introduced in the Ohio General Assembly.⁵⁶

FIGURE 25.—*Bill status data—punched card form.*

General Assembly	9 1	0 2	Member	0 3	1 4	3 5	Introduced in House or Senate	1 6	Type of Bill	2 7	0 8	3 9						
Senate																		
Date Bill Introduced	2 Mo.	0 Day	7 12	Referred to Committee	No. 0	2 13	2 14	Date Mo. 15	0 Day 16	8 17	Report from Committee	2 Mo.	2 Day 18	2 20	Recommitted	0 Mo.	0 Day 21	0 23
Roll Call																		
Reported Again	0 Mo.	0 Day 24	0 26	No. of Days from Com. Ref. to Final Report	1 27	4 28	Date Mo. 29	2 Day 30	7 31	Yeas 2 32	9 33	Nays 0 34	0 35	1 36	Days from Report to Roll Call	0 37	0 38	5 39
House																		
Date Bill Introduced	2 Mo.	2 Day 40	7 42	Referred to Committee	No. 3	2 43	2 44	Date Mo. 45	2 Day 46	8 47	Report from Committee	3 Mo.	1 Day 48	5 50	Recommitted	0 Mo.	0 Day 51	0 53
Roll Call																		
Reported Again	0 Mo.	0 Day 54	0 56	No. of Days from Com. Ref. to Final Report	1 57	5 58	Date Mo. 59	1 Day 60	6 61	Yeas 1 62	2 63	Nays 0 64	0 65	1 67	Days from Report to Roll Call	0 69	0 70	1 71
Governor's Action																		
Date 3 72	1 73	6 74	Action 1 75	Time from Date Bill Introduced to Gov. Action	1 Mo.	0 Day 76	9 78	Conference Committee & Emergency Clause	1 79	Final Outcome 10 80								

A variation of a record layout used by Florida in 1970 shows the "fields" of data connected with a short title entry and a bill action entry (fig. 26).⁵⁷ In both instances, the number of characters allowable in each field is indicated (e.g., a sponsor's name may not exceed 20 characters).

⁵⁶ Fletcher, *op. cit.*, p. 169 (chart 1).

⁵⁷ State and local government legislative automation application description, *op. cit.*, sec. IV, pp. 1-2.

FIGURE 26.—Short title input—record layout—the State of Florida.

A	B	C	D	E	F
I/P CODE	BILL NO	TYPE BILL	SPONSORS NAME	ADDT'L	SHORT TITLE
2B	8B	1B	20B	1B	400B Max

Bill action input—record layout

A	B	C	D	E	F
I/P CODE	BILL NO	ACT ID	ACTION DATA	ACT SEQ NO	ACT DATE
2B	8B	3B	8B	2B	4B

When printed out for legislator utilization, the information will include the fact that a “committee substitute—House” (CSH) bill resulted, and that various House (H) and Senate (S) actions occurred on certain dates; vote results (yeas-nays) were registered, as were germane journal page citations (“SJ 0429,” for example). Figure 27 represents the computerized printout containing these data fields.⁵⁸

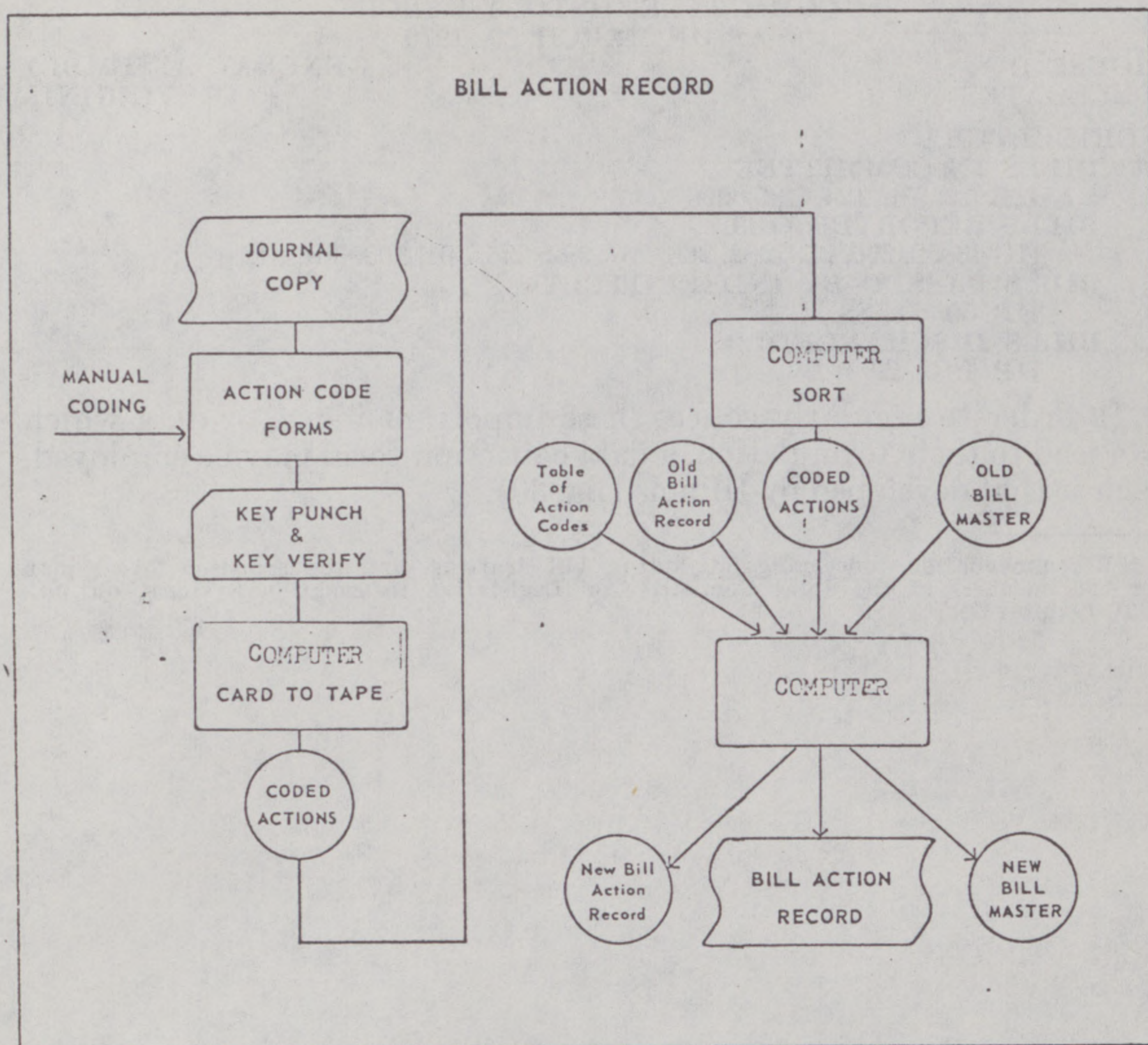
FIGURE 27.—Bill status printout—the State of Florida.

'12 H 63]
CSH 0063
GENERAL BILL
BY AD VALOREM COMM
PROVIDES HOMESTEAD TAXATION EXEMPTION LIEN ON ESTATE OF
NONRESIDENT DECEASED CLAIMANT.]
4/21 H. PASSED AS AMENDED; YEAS 111 NAYS 000. H.J. 0180
4/26 S RECEIVED, REFERRED TO FINANCE & TAXATION
5/15 S RECOMMENDED FAVORABLE WITH AMENDMENTS, PLACED ON
CALENDAR. SJ 0346
5/19 S PASSED AS AMENDED; YEAS 043 NAYS 000. SJ 0429
5/23 H CONCURRED, ORDERED ENGROSSED. HJ 0644
5/25 H SIGNED BY OFFICERS AND PRESENTED TO GOVERNOR. HJ 0715
5/31 H APPROVED BY GOVERNOR 0531]. HJ 0785

Since the floor action can become “hot and heavy” at times during the legislative session, particularly as adjournment draws near, several States have placed terminals in the chamber so that amendments, vote tallies, and last-minute new legislation can be inserted into the computer at once, and immediately thereafter be available for leadership and member review. In the preparation of the bill action record, the computer plays more than one role: it converts the punched card data to magnetic tape, sorts the coded actions, performs the desired “massaging” of the various data, and prints out or displays the information needed by the legislators. This sequential series of actions is depicted in figure 28.⁵⁹

⁵⁸ *Ibid.*, exhibit 3.

⁵⁹ State of Florida legislative automation. RCA EDP report. New York, Radio Corp. of America, 1965, p. 9 (adaptation).

FIGURE 28.—*The State of Florida.*

The Illinois General Assembly uses detailed data collection forms to reflect floor action. Categories of action include first reading, consent calendar, petition to discharge, fiscal note, second reading, motion to reconsider vote amendment, motion to table amendment, etc., etc.

Keeping track of committee activity also is important to all legislators and many other persons inside and outside the legislative branch. First, information is needed *in advance* on all scheduled closed sessions and hearings (or other open meetings). In the General Assembly of Virginia, the current day's "committee schedule" may be obtained on a videoscreen; upon request the committee name, time, date, and meeting place are shown, with public hearings especially signified. A second type of information, retrospective in nature, is represented by the "committee history report" prepared by the Virginia Legislative Information System. Prepared daily as a "batch" report (i.e., in an off-line mode), it lists, as shown in figure 29, such categories as: in committee, reported out, passed by indefinitely, and discharged.⁶⁰

⁶⁰ A legislative information system for the Commonwealth of Virginia, *op. cit.*, p. 8.

FIGURE 29.— *Committee history report—the State of Virginia.*

COMMITTEE HISTORY REPORT AS OF MARCH 20, 1970		GENERAL ASSEMBLY OF VIRGINIA
HOUSE OF DELEGATES		
AGRICULTURE		
BILLS IN COMMITTEE		
HB 12, 76, 124, 139, 299		
BILLS REPORTED OUT		
HB 43, 52, 250, 253, 262, 266, 267, 292, 295, 301, 302, 307, 312		
BILLS PASSED BY INDEFINITELY		
HB 50, 71, 88		
BILLS DISCHARGED		
HB 1, 5, 20		

In order to regularly collect these important items, or data which can lead to their formulation, a data collection form may be employed, such as that developed by Illinois (fig. 30).⁶¹

⁶¹ Recommendation concerning bill status, bill drafting, and the proposed 5-year plan for the members of the Joint Committee on Legislative Information Systems, *op. cit.*, p. 19 (exhibit C).

FIGURE 30

ILLINOIS GENERAL ASSEMBLY
COMMITTEE ACTION REPORT

DATE		(8-11)	(2-3)	HB 01	
PAGE		(13-17)		SB 02	
				HR 03	
HOUSE COMMITTEE				SR 04	
SENATE COMMITTEE				HJR 05	
	(21-33)			*HJR 06	
				SJR 07	

INTERNAL COMMITTEE ACTION:

	Mo.	Day
Set For	810	
Postponed	815	()
Postponed To:	820	
To Sub-Committee	825	
Set in Sub-Committee	830	
Postponed in Sub-Committee To	835	
	(34-36)	(37-49)

COMMITTEE RECOMMENDATIONS:

		Y	N	P
Do Pass	840			
Do Not Pass (Tabled)	845			
Do Pass As Amended	850			
Do Not Pass As Amended (Tabled)	855			
No Recommendation(s) (Tabled)	860			
Do Pass and Be Placed on Consent Calendar	865			
Substitute Bill	870			
Substitute Resolution	875			
That Bill Be Tabled, Pursuant To House Rule 24, (Tabled)	880			
	(34-36)	(37-49)		

Re-Refer To:

Motion By:

Second By:

AMENDMENTS ADOPTED BY THE COMMITTEE:

		Y	N	P
No. 1 Offered By:				
Second By:		Adopted:		
No. 2 Offered By:				
Second By:		Adopted:		
No. 3 Offered By:				
Second By:		Adopted:		
No. 4 Offered By:				
Second By:		Adopted:		
No. 5 Offered By:				
Second By:		Adopted:		
No. 6 Offered By:				
Second By:		Adopted:		

Among the States providing on-line access to bill status information is Massachusetts, where an RCA Spectra 70 computer configuration allows file updating from the legislative chambers, provides on-line access via "Video Data Terminals" and creates printed reports on an overnight basis. New York, with the highest number of bills introduced per session (see fig. 31), also has vide screen stations in the

FIGURE 31.—NUMBER OF BILLS INTRODUCED, BY STATE (25 HIGHEST) 1968-69

Name of State	Number of bills introduced ¹	Total session days ²	Automated bill status system
New York.....	26,054	257L	×
Massachusetts.....	13,470	437C	×
California.....	7,166	277L	-----
Connecticut.....	5,900	147C	×
Minnesota.....	5,776	102L	×
Illinois.....	5,041	117L/99L	×
Florida.....	4,814	60C	×
Michigan.....	4,701	247L/246L	×
New Jersey.....	4,287	59L/61L	-----
Rhode Island.....	3,966	159L	×
Tennessee.....	3,741	75L	×
Louisiana.....	3,397	90L	×
Hawaii.....	3,350	97L	×
Alabama.....	2,787	36L	-----
Wisconsin.....	2,555	360C	×
Texas.....	2,441	140C	×
North Carolina.....	2,347	176L	×
Pennsylvania.....	1,887	159L/145L	×
Washington.....	1,766	60C	×
Georgia.....	1,752	40C	-----
Arizona.....	1,638	163L	-----
Nevada.....	1,595	95C	-----
Indiana.....	1,591	61C	×
Iowa.....	1,577	131C	×
Missouri.....	1,443	190C	×

¹ Does not include special-session bills.

² L denotes legislative days and C calendar days. (Dual figures indicate different Senate and House lengths of session.)

chamber to expedite new action entries.⁶² A new retrieval code now allows legislators to obtain status information on all of the Governor's program bills and those of the executive departments. Legislators in Virginia, like those in Indiana and other States, are offered an option of printout or CRT presentation. The "standard inquiry" display which gives Virginia legislators summary information on a bill is shown as figure 32: Note that the data includes the code titles affected and the fiscal implications (if any).⁶³

⁶² The book of the States, 1970-71, vol. XVIII. Lexington, Ky., The Council of State Governments, 1970, pp. 80-81.

⁶³ A legislative information system for the Commonwealth of Virginia, *op. cit.*, p. 3.

FIGURE 32.—*Standard inquiry—the State of Virginia.*

40/ALL/H/B0008/1

HB 8 PATRON: SCHLITZ

GEN FUND FIRM. \$12,500 YR-1 \$12,500 YR-2

TITLES AFFECTED: 18.1

HOUSE BILL TO CREATE THE EASTERN STATE HOSPITAL
BICENTENNIAL ANNIVERSARY COMMISSION; TO APPROPRIATE FUNDS.

JAN 20 H PRESENTED AND ORDERED PRINTED

JAN 20 H REFERRED TO COMMITTEE ON APPROPRIATIONS

FEB 12 H REPORTED AND READ FIRST TIME WITH
AMENDMENTS

Experience over the years has shown that the need of members and staff for “hard copy” may be satisfied in more than one way. Some information systems now provide for small printers situated next to the display screen located adjacent to a chamber or in a committee room. This is particularly important since members seeking up-to-the-minute information—e.g., the most recent amendment to a bill being debated—may wish to take a copy of the new legislative material with them for further study. A second option involves waiting for a print-out from a high-speed machine located in the computer center or elsewhere remote from the chamber or committee spaces. Figure 33 contains a typical product from the latter type of equipment, in this instance Louisiana’s UNIVAC 494 high-speed printer.⁶⁴

⁶⁴ Legislative automated data system: State of Louisiana. Application profile. UNIVAC State and local government electronic data processing systems and applications. [Philadelphia, Sperry Rand, no date], p. 2 (exhibit 1).

FIGURE 33.—*The State of Louisiana.*

LEGISLATIVE AUTOMATED DATA SYSTEM		
JUNE 19, 1970	SENATE BILLS ACTION REPORT	PAGE 1
SB 1	BY ROBERTSON, L. J. A JOINT RESOLUTION PROPOSING AN AMENDMENT TO ARTICLE IV OF THE CONSTITUTION OF LOUISIANA, BY ADDING THERETO A NEW SECTION TO BE DESIGNATED AS SECTION 18 THEREOF, TO PROVIDE THAT THE LEGISLATURE SHALL HAVE NO AUTHORITY, AT ANY REGULAR OR EXTRAORDINARY SESSION, TO ENACT ANY LAW OR TO ADOPT ANY RESOLUTION WHICH INCREASES, OR THE EFFECT OF WHICH WILL INCREASE, THE SALARIES, FEES AND OTHER EXPENSES OR COST OF GOVERNMENT REQUIRED TO BE PAID BY THE GOVERNING AUTHORITY OF ANY PARISH, MUNICIPALITY OR OTHER	
5/11	INTRODUCED IN THE SENATE, READ FIRST TIME	
5/12	IN FULL. READ SECOND TIME IN FULL AND REFERRED TO COMMITTEE ON FINANCE	
SB 2	BY MCBRIDE, R. F. AN ACT TO AMEND AND REENACT PARAGRAPH (1) OF SECTION 1401 OF TITLE 46, AND TO AMEND AND REENACT SECTION 1404 OF TITLE 46 OF THE LOUISIANA REVISED STATUTES OF 1950, RELATIVE TO CHILD WELFARE AGENCIES.	
5/11	INTRODUCED IN THE SENATE, READ FIRST TIME BY	
5/12	TITLE. READ SECOND TIME BY TITLE AND REFERRED TO COMMITTEE ON HEALTH/WELFARE	
SB 3	BY JACKSON, S. W. A JOINT RESOLUTION PROPOSING AN AMENDMENT TO ARTICLE VIII OF THE LOUISIANA REVISED STATUTES OF 1950 TO PROHIBIT ANY ORGANIZATION, SCHOOL BOARD MEMBER OR OTHER ELECTED OFFICIAL FROM CAMPAIGNING FOR OR AGAINST, SUPPORTING OR OPPOSING, OR ENDORSING ANY CANDIDATE FOR THE SCHOOL BOARD OF ANY PARISH OR CITY; TO PROVIDE PENALTIES, AND TO OTHERWISE PROVIDE WITH RESPECT THERE-	
5/11	INTRODUCED IN THE SENATE, READ FIRST TIME BY	
5/12	TITLE. READ SECOND TIME BY TITLE AND REFERRED TO COMMITTEE ON JUDICIARY B	
6/17	REPORTED WITH AMENDMENTS	
6/17	R. S.	
6/17	READ BY TITLE, AMENDED ENGROSSED AND PASSED TO A THIRD READING.	
6/18	READ IN FULL AND FINALLY PASSED.	
6/18	YEAS 035, NAYS 000, TITLE READ AND ADOPTED.	
6/18	BILL ORDERED TO THE HOUSE.	
6/18	RECEIVED IN THE HOUSE.	
6/19	READ BY TITLE.	
SB 8	BY RANDOLPH, B.L. AN ACT TO AMEND AND REENACT SUBSECTION B OF SECTION 309 OF TITLE	
CONTINUED ON NEXT PAGE		

The overnight printing of status information, a common type of service now offered by many States, may allow the compression of more data into a given space—either through the selection of smaller type size or microminiaturization—and, as in the case of the State of Washington, the issuance of a pocket-sized product (see fig. 34).⁶⁵

⁶⁵ Replica of the status of House bills for Friday, Feb. 10, 1969, State of Washington, House of Representatives.

FIGURE 34

In the
of the State



Legislature
of Washington

STATUS of House Bills

Prepared by Malcolm McBeath, Chief Clerk of the House

FRIDAY, FEBRUARY 10, 1969

23RD LEGISLATIVE DAY

KEY TO SYMBOLS

IN THE NUMBER COLUMN:

- +—Substitute Bill
- a—Bill has been amended
- b—Introduced by request of Legislative Budget Committee
- c—Introduced by request of Legislative Council
- d—Introduced by departmental request
- e—Introduced by executive request
- o—Introduced by request of other interim committee

IN THE STATUS COLUMN:

- *—Status changed by previous days business

NUMBER		SUBJECT	STATUS
2	c	Aircraft owners, operators liability	Judiciary
3	c	Aircraft registration, tax	Ch 9, L 67 Ex
4	c	Aircraft fuel tax, collection, use	Ch 10, L 67 Ex
7		\$20,000,000 Vets' bonus bond referendum	Appropriations
8	ea	Legislative Council Committees, expenses	Passed Legis
9	c	Pay appointees to legislative vacancies	Ch 100, L 67 E
13	ca	Funds for Governor-elect	Rules o
14	c	Compensate crime victims, \$200,000 approp	Rules i
+ 15	oa	Grand Jury powers, duties	Rules 3
17		State college, Clark Co, \$250,000 approp	Higher Educ
18		State sweepstakes commission	Revenue & Tax
19		File will execution notice, co clerk	Judiciary
21		Superior Ct Judge increase, Kitsap Co	Rules 3
22		Crimes, death penalty, life sentence	Rules 3
23		Election posters regulated	State Govt
24		Phenylketonuria at birth, test, control	Health Welf
25	ca	State agencies notify re: fed funds	Rules 3
33		State college, Lewis Co. \$250,000 approp	Higher Educ
34		Legal holiday Sept 9, Leif Ericson day	State Govt
35		Cystic fibrosis study, \$100,000 approp	Health & Welf
39	l	Broadens game fish classification	Rules 3
40	l	Game Comm lands lease	Rules 3
44		Salmon production sta, \$960,000 approp	Appropriations
45	o	LSD use regulated	Health & Welf
46		Fish sold by weight	Nat Resources
47		Permits Sunday liquor sales	Bus & Prof

The Washington legislative information system also is set up to provide each legislator, or other special requesters such as the Governor's office or the Legislative Council, with an individually tailored daily report showing the status of all bills of which he is a sponsor, thus enabling the member to "run his trap line" each morning. An option provides any member with a special list of measures of interest to him such as all pending bills concerned with pollution or education. This is termed a member's "profile of interests."

Universal interest on the part of members in keeping track of their own legislation has caused many States to prepare regular sponsors' summary reports, as illustrated by the Florida Senate version in figure 35.⁶⁶

FIGURE 35.—*Florida State legislative system—Senate sponsors report.*

07/07/67

ASKEW, R. D.—

SB 0009,	SB 0025,	SB 0026,	SB 0027,	SB 0028,
SB 0070,	SB 0076,	SB 0103,	SB 0121,	SB 0157,
SB 0272,	SB 0293,	SB 0297,	SB 0330,	SCR 0374,
SB 0454,	SB 0455,	SB 0480,	SB 0539,	SB 0548,
SB 0696,	SB 0878,	SB 0900,	SB 0964,	SB 0965,
SB 0968,	SB 0969,	SB 0976,	SB 1076,	SB 1091,
SB 1197,	SB 1198,	SB 1230,	SM 1235,	SB 1305,
SCR 1313,	SCR 1314,	SCR 1315,	SB 1316,	SB 1317,
SB 1358,	SCR 1414,	SB 1436,	SCR 1518,	SB 1601,
SB 1651,	SCR 1680,	SCR 1709,	SB 1730,	

BAFALIS, L. A.—

SB 0070,	SB 0121,	SB 0127,	SB 0134,	SR 0183,
SB 0330,	SCR 0374,	SCR 0437,	SB 0453,	SB 0499,
SB 0567,	SB 0592,	SB 0657,	SB 0660,	SB 0678,
SB 0786,	SB 0809,	SB 0905,	SB 0906,	SB 0907,
SB 0976,	SB 1059,	SB 1063,	SB 1091,	SB 1094,
SB 1179,	SB 1198,	SB 1204,	SB 1219,	SB 1230,
SB 1263,	SCR 1311,	SCR 1312,	SCR 1313,	SCR 1314,
SB 1360,	SCR 1362,	SB 1367,	SB 1399,	SB 1410,
SJR 1471,	SB 1487,	SB 1488,	SR 1514,	SB 1543,
SB 1610,	SB 1713,	SB 1730,		

The types of transactions recorded for the changes in a bill's status varies greatly. Some States offer a detailed breakdown of action—Florida maintains 250 transaction elements—while others offer only the major legislative step functions. Also of great usefulness are special listings which alert legislators and administrative staffers. In Virginia, for example, three types of off-line reports are generated:

- The "Approved Report"—lists by bill types within the legislative body all bills which have been approved, with the last action on each bill shown. Bills with emergency clauses are indicated by "E," and an asterisk (*) when amended.
- The "Failed Report"—a similar listing with the same annotations for those bills which have failed.
- The "Passed Bill Status Report"—lists by bill number all bills which have passed the House but not the Senate, and vice versa, all bills passing both houses, and all bills "in conference." Bills which have passed the house of origin, been amended in the other

⁶⁶ State and local government legislative automation application description, *op. cit.*, exhibit C4.

body, but not yet approved in the amended state by the originating body, are listed. The body of origin is indicated by a "C." The bills listed may or may not have final approval.

Another type of useful summary data are aggregate statistics. Illinois publishes such data on bill actions by both chambers, as seen in figure 36.⁶⁷

FIGURE 36.—*The State of Illinois.*

REPORT 08—FINAL STATUS OF BILLS, 1969-70 REGULAR SESSION, JULY 29, 1970

Chamber of origin	House bills	Senate bills	Total
Died in committee.....	231	143	374
Tabled after unfavorable report.....	8	23	31
Recalled from committee and tabled.....	17	0	17
Died on order of 2d reading.....	2	7	9
Died on order of 3d reading.....	24	6	30
Voted down at passage stage.....	18	2	20
Postponed, allowed to die.....	13	3	16
All other reasons.....	3	2	5
Total originating chamber.....	316	186	502
Sent to 2d chamber.....	387	203	590
2d chamber:			
Died in committee.....	110	3	113
Tabled after unfavorable report.....	5	5	10
Recalled from committee and tabled.....	0	0	0
Died on order of 2d reading.....	10	2	12
Died on order of 3d reading.....	10	2	12
Voted down at passage stage.....	0	1	1
Postponed, allowed to die.....	1	1	2
All other reasons.....	1	3	4
Total 2d chamber.....	137	17	154
Grand total, bills introduced.....	673	416	1,089
Failed to obtain concurrence.....	4	1	5
Sent to Governor.....	215	179	394
Vetoed in whole.....	0	0	0
Approved in whole or part.....	18	12	30

When surveyed late in 1971, 25 States reported operating bill status systems, with another four in development. This application of automatic data processing to legislative functioning exceeds many others and reinforces the principle borne out in practice that a State legislature will fund and staff that application which provides a given service more efficiently and effectively. As the membership of a legislature gains confidence in the coverage and timeliness of a bill status system it uses the system. Legislators and their staffs then will have more time available for other pressing commitments.

Florida, already a point of focus in this discussion, has established an excellent bill status system, several facets of which are illustrated in figures 26, 27, 28, 35, and 40.⁶⁸ The State legislature undertook to test

⁶⁷ Recommendation concerning bill status, bill drafting, and the proposed 5-year plan for the members of the Joint Committee on Legislative Information Systems, *op. cit.*, p. 28 (exhibit E-8). Facsimile of actual printout.

⁶⁸ In addition to the documentation cited heretofore, helpful interviews were held with William H. Corbett, Director of Legislative Data Processing, Marvin J. Becker, Chief of the Bureau of Operations, and Mrs. Bunny Van Brunt, Director of Legislative Information Division (Joint Legislative Management Committee), Tallahassee, Fla., Dec. 16, 1970. More recent data from CRS survey.

the application of computerized techniques to its problems in 1965. Three areas of initial emphasis were selected: (1) Bill history listing, (2) subject index, and (3) sponsors report. Analysis and design expertise were provided by Radio Corp. of America (RCA) consultants, and the State's initial financial outlay was limited by using the RCA 301 computer located in the State Revenue Commission. Programs were prepared and tested prior to the start of the 1965 session and modified as necessary, together with the reporting formats to be used by legislative functionaries. In many instances, the greatest obstacle to system implementation was getting Senate and House personnel to agree on the standardization of procedures, but suitable progress was achieved during the 1967 session. The quality of services to the members also was upgraded in 1967 by the introduction of vide screen terminals and hard-copy printouts.

Bill status information presently includes bill number, short title, sponsor(s), companion and identical bills, journal page number (see fig. 27), and up to 250 types of transactions affecting a given bill. Daily updates are prepared on the history of each bill, along with a sponsor list (fig. 35), committee status listing, and subject index. The system was called upon to handle 4,814 bills during the 1969 60-day session, and nearly 6,000 in 1970.

Responsibility for the operation of the legislative information system was assigned by the Joint Legislative Management Committee to the Legislative Computer Services Division (now called the Legislative Information Division). During a given legislative session, eight people collect, transcribe, and retrieve bill-related data; a staff of two functions during the off season.

Programing and analytical support continues to be provided by the State's Division of Electronic Data Processing (Department of General Services). Close coordination is maintained with the director of statutory revision and his 30-man in-session staff, and the Legislative Service Bureau with 75 permanent employees. Supporting the State legislature is an equipment configuration featuring an RCA Spectra 70/45 computer, which services a network of 27 vide screen and special typewriter terminals. Of these, two RCA 70/752 Video Data Terminals are dedicated to entering bill content and status information.

In summary, the value of the computer, to the legislator who needs selected information on the status of pending legislation, lies in the options open to him in searching the file(s) containing such data. He may be very specific, and ask for "the status of all bills introduced by me during the present session" or further stipulate only those bills dealing with selected topics: for example, "all bills and resolutions dealing with conservation, reforestation, water pollution control, or recreation facilities." For another purpose, he may wish to obtain a listing of the "most recent committee or subcommittee actions taken on all joint resolutions."

Sometimes, the member or his staff will want to focus on those bills affecting only his district, or a requirement may arise involving an analysis of the latest form of a bill—that is, how it has been modified in subcommittee, committee, or the chamber—when key actions

(hearings, amendments, etc.) occurred, and how the revised legislation compares to existing law.

LEGISLATIVE HISTORY

Merely defining the term "legislative history" often causes problems, since there is more than one interpretation offered by researchers, legislators, and other governmental figures. Legislative histories may contain at least four major sections, when considered in the comprehensive sense:

- An exposition of the objective of the "history ;"
- A chronology of events related to the focus of the history ;
- An analysis of the issues and events in question ; and
- Interpretive commentary and, possibly, recommendations and conclusions.

Within the context of legislative information systems supported by ADP, however, the definition tends to be rather narrow. For the most part, a legislative history is a chronology of activity during the life of a bill or resolution. The format is much the same as that of a bill status display or printout (see figs. 27, 32, and 33). Illustrative of the display of legislative history information made possible through the use of electronic devices is one reflecting all legislative and executive actions, as shown in figure 37.⁶⁹ While this example from the Pennsylvania State legislature is limited to only 1 year of activity, it contains all of the basic ingredients of the usual ADP-generated legislative history.

⁶⁹ Pennsylvania legislative data processing center : Computer inquiries. [Harrisburg, Pa., 1967], p. 10.

FIGURE 37.—*The State of Pennsylvania.*BILL/RESOLUTION HISTORY DISPLAYDISPLAY EXAMPLE FOR ALL LEGISLATIVE & EXECUTIVE ACTIONS(SENATE JOINT RESOLUTION 2)

REFERRED TO SELECT COMMITTEE ON LEGISLATION, JANUARY 3, 1967
 REPORTED AS COMMITTED, JANUARY 3, 1967
 FIRST READING, JANUARY 3, 1967
 SECOND READING, JANUARY 4, 1967
 THIRD READING AND FINAL PASSAGE, JANUARY 16, 1967 (48-0)

IN THE HOUSE

REFERRED TO APPROPRIATIONS, JANUARY 17, 1967
 REPORTED AS COMMITTED, JANUARY 23, 1967
 FIRST READING, JANUARY 23, 1967
 SECOND READING, JANUARY 24, 1967
 THIRD READING AND FINAL PASSAGE, JANUARY 30, 1967 (203-0)

SIGNED IN SENATE, JANUARY 31, 1967

SIGNED IN HOUSE, JANUARY 30, 1967

IN HANDS OF THE GOVERNOR, JANUARY 31, 1967

LAST DAY FOR ACTION, FEBRUARY 11, 1967

APPROVED BY THE GOVERNOR, FEBRUARY 9, 1967

ACT NO. 1A

It is interesting to note that the managers of some State legislative information systems attempt to provide their clientele with specially formatted, easily readable displays or printouts which require no special glossaries, code books, or language translation aids. Other systems may rely heavily on abbreviations or specialized terms which often require intensive training or reliance on a user's guide if such orientation has not been provided. Connecticut prepares a "Legislative Record Index," for example, which uses a number of (largely) recognizable abbreviations in listing sequentially, and separately, House bills and Senate bills (see fig. 38).⁷⁰ This document also contains public and special acts.

⁷⁰ Replica of a page from the legislative record index, final edition, State of Connecticut, General Assembly, regular session January 1971 and special session June-July-August 1971, p. 1.

FIGURE 38.—*The State of Connecticut.*

SENATE BILLS

SB-1 -by Sen. GUNTHER -21st entitled "An act CONCERNING A CHANGE IN THE RATES IMPOSED BY PUBLIC SERVICE COMPANIES." To closely scrutinize the expenditures, for advertising and public relations, by public service companies.
01-06 REF. COMM. ON BANKS AND REGULATED ACTIVITIES
03-17 PUB. HEAR.

SB-2 -by Sen. GUNTHER -21st entitled "An act CONCERNING THE OFFERING OF INDUCEMENTS BY PUBLIC SERVICE COMPANIES FOR INSTALLATION OF SERVICES." To prohibit public service companies from offering and persons from accepting inducements in the form of valuable consideration or rebates for installation of services of such companies.
01-06 REF. COMM. ON BANKS AND REGULATED ACTIVITIES
03-17 PUB. HEAR.

SB-3 -by Sen. PETRONI -24th and Rep. CAMP -163rd entitled "An act CONCERNING THE DEFINITION OF WATER COMPANY." To bring within the purview of the public utilities commission all companies furnishing water to consumers regardless of the number of consumers supplied.
01-06 REF. COMM. ON BANKS AND REGULATED ACTIVITIES
03-17 PUB. HEAR.

SB-8 -by Sen. SMITH -2nd entitled "An act CONCERNING THE AGE QUALIFICATION FOR ADMISSION AS AN ELECTOR." To lower the age for admission as an elector to eighteen, the present constitutional and statutory requirement of age twenty-one being an invidious discrimination and in derogation of the constitutional rights to equal protection of the laws and to eliminate the literacy requirement which has been struck down by the United States Supreme Court.
01-06 REF. COMM. ON ELECTIONS
02-23 PUB. HEAR.
02-23 CHG. REF. SEN., TO HUMAN RIGHTS AND OPPORTUNITIES
02-24 CHG. REF. HO., TO HUMAN RIGHTS AND OPPORTUNITIES
03-31 PUB. HEAR.

SB-9 -by Sen. PETRONI -24th and Rep. CAMP -163rd entitled "An act CONCERNING ELIGIBILITY AND DATES FOR PRIMARIES." To eliminate the requirement that a primary petition candidate for state or district office have received twenty per cent of the delegate votes in the convention and to require that primaries of all parties be held on the same day.
01-06 REF. COMM. ON ELECTIONS
03-02 PUB. HEAR.
05-24 UNFAV. REP. TAB., SEN.
06-03 UNFAV. REP. REF., TO LC
06-04 RPTD. OUT LC
06-04 FILE NO. 1712

SB-14 -by Sen. GUNTHER -21st entitled "An act CONCERNING THE TAKING OF OYSTERS IN THE HOUSATONIC RIVER." To permit controlled dredging of oysters from the beds in the Housatonic river by regulation of the state and Stratford shellfish commissions as a means of improving the cultivation of oysters in such beds.
01-06 REF. COMM. ON THE ENVIRONMENT
02-11 PUB. HEAR.
04-06 FILED L.C.
04-14 FAV., TAB. FOR CAL., SEN.
04-14 RPTD. OUT LC
04-14 FILE NO. 325
04-15 FILE NO. 325
04-21 SEN. PASSED
04-26 FAV., TAB. FOR CAL., HO.
04-29 HO. PASSED
05-10 TRANS. SEC. STATE, P.A. 155
05-12 SIGN/GOV.

SB-15 -by Sen. GUNTHER -21st and Rep. VIOLETTE -36th entitled "An act CONCERNING STATE PARK, FISHING AND HUNTING PERMITS FOR ELDERLY PERSONS." To authorize the issuance of a permanent permit to residents sixty-five years or over to use the facilities of the state parks and forest without charge and the issuance of a permanent license to hunt, trap or fish, without charge, to all residents sixty-five years or over.
01-06 REF. COMM. ON THE ENVIRONMENT
02-11 PUB. HEAR.

The organization of legislative histories may be focused variously on the bills themselves, the sponsors (as shown earlier), the subject matter, or the scope of committee activity. In New York, a weekly worksheet is computer-produced for each committee chairman—by bill number, title, and sponsor—so that he may use it in scheduling meetings and hearings, or making certain necessary administrative and legislative decisions. In Washington, an ADP printout on “committee document status” reflects those bills in committee or reported out for further action by the legislature (see fig. 39).⁷¹

FIGURE 39

WASHINGTON LEGISLATIVE INFORMATION SYSTEMS—COMMITTEE DOCUMENT
STATUS FOR THE HOUSE STANDING COMMITTEE ON AGRICULTURE

MAY 13, 1969.

BILLS IN COMMITTEE

HB 212 Horse racing, harness races
HB 319 Tree fruit research comm created
HB 790 Animals, research use
SB 595 Irrigation district assessments
SB 609 Horseracing

BILLS OUT OF COMMITTEE

HB 17 Weights and measures
HB 18 Food processing plants
HB 33 Meat inspection act
HB 42 Poultry products act
HB 91 Noxious weed control
HB 96 Horticultural pest control
HB 98 Horticulture district funds
HB 99 Weights, certification
HB 197 Pest control, interstate compact

As was the case in discussing the computerization of bill status information, Florida is exemplary in the preparation of so-called “legislative histories.” During the 1970 legislative session of approximately 60-calendar days, 45 copies of an ADP-generated printout entitled “History of Legislation, 1970 Regular Session, Florida Legislature” were produced at a cost of approximately \$16,500.⁷² This bulky item was printed by offset reproduction and included:

- Chapter Numbers of bills passed
- Last action report
- History of Senate bills
- History of House bills
- Sponsor report
- Subject index

Distribution of a limited number of copies of this document resulted in its being treated as a “prestige” item. As the legislative clientele became more comfortable in using it, and seeing others refer to the contents, a movement developed for its expansion. When the computerization of the system first was being considered, it was necessary to gain agreement from several individuals concerning the terminology ap-

⁷¹ Replica of a computer printout of the Committee document status for May 13, 1969. Prepared by the Washington Legislative Information System for the House Standing Committee on Agriculture.

⁷² Interview with Marvin J. Becker, *op. cit.*

plied to the various legislative actions affecting a bill as it proceeded through the two chambers. A standardized set of terms and action codes resulted: Figure 40 contains a partial listing of the "Table of Actions" used by the Florida legislative information system.⁷³

FIGURE 40

1967 FLORIDA LEGISLATIVE SESSION
TABLE OF ACTIONS

<i>Description of action</i>	<i>Action Code</i>
ADOPTED -----	101
ADOPTED AS AMENDED -----	102
AMENDMENT ADOPTED -----	103
AMENDMENT ADOPTED TO STRIKE ENACTING CLAUSE -----	104
AMENDMENT FAILED -----	105
AMENDMENT LAID ON TABLE -----	106
AMENDMENT PENDING -----	107
AMENDMENT RECONSIDERED, ADOPTED -----	108
AMENDMENT RECONSIDERED, FAILED -----	109
AMENDMENT RECONSIDERED, WITHDRAWN -----	110
AMENDMENT TO HOUSE AMENDMENT ADOPTED -----	111
AMENDMENT TO SENATE AMENDMENT ADOPTED -----	112
AMENDMENT TO HOUSE AMENDMENT FAILED -----	113
AMENDMENT TO SENATE AMENDMENT FAILED -----	114
AMENDMENT WITHDRAWN -----	115
AMENDMENTS ADOPTED -----	116
AMENDMENTS FAILED -----	117
AMENDMENTS TO HOUSE AMENDMENTS ADOPTED -----	118
AMENDMENTS TO SENATE AMENDMENTS ADOPTED -----	119
AMENDMENTS TO HOUSE AMENDMENTS FAILED -----	120
AMENDMENTS TO SENATE AMENDMENTS FAILED -----	121
AMENDMENTS WITHDRAWN -----	122
RECOMMENDED FAVORABLE, PLACED ON GENERAL CALENDAR -----	123
COMMITTEE SUBSTITUTE ADOPTED -----	124
COMMITTEE SUBSTITUTE SUBSTITUTED, LAID ON TABLE UNDER RULE -----	125
COMPANION SENATE BILL SUBSTITUTED -----	126
COMPANION HOUSE BILL SUBSTITUTED -----	127
COMPANION OR SIMILAR BILL PASSED -----	128
CONFERENCE COMMITTEE APPOINTED -----	129
CONFERENCE COMMITTEE INSTRUCTED -----	130
CONFERENCE COMMITTEE REPORT ADOPTED -----	131
CONFERENCE COMMITTEE REPORT REJECTED -----	132
CONFERENCE COMMITTEE REQUESTED -----	133

INDEX OF PENDING LEGISLATION

The use of computerized techniques in indexing pending legislation began in Iowa in 1963, with emphasis on relating the bills (by proper coding) to the Senate and House Journals. Figure 41 presents this early effort, containing the short title of the bill, its number, and chief sponsor.⁷⁴

⁷³ State and local government legislative automation application description, *op. cit.*, exhibit B1.

⁷⁴ Iowa General Assembly legislative reporting and indexing with the IBM 1401, *op. cit.*, p. 4.

FIGURE 41

60TH GENERAL ASSEMBLY PAGE 12
 SENATE AND HOUSE BILLS
 SUBJECT INDEX ON FEBRUARY 28, 1963

AGRICULTURE

GENERAL

SECRETARY, CONSTITUTIONAL AMENDMENT, INCREASING TERM TO 4 YEARS.
 S.J.R. 7 PHELPS, ET AL.
 STATE AGRICULTURAL PRODUCTS UTILIZATION RESEARCH COMMITTEE
 ESTABLISHED. H.F. 174, AGRICULTURE 1.
 AGRICULTURAL PRODUCTS UTILIZATION RESEARCH COMMITTEE CREATED,
 \$100,000 APPROPRIATION. S.F. 164, AGRICULTURE.
 MARKETING BOARD MEMBERS, COMPENSATION INCREASE. S.F. 192, DODDS,
 COLEMAN.
 POULTRY BUYER FOR MARKET, LICENSE, SURETY BOND. H.F. 274, WALTER,
 ET AL.
 LIQUID AND GAS FERTILIZERS, SAFETY AND STORAGE REGULATIONS.
 H.F. 297, VERMEER.
 PESTICIDES, DISTRIBUTION, SALES, TRANSPORTATION AND USE,
 REGULATION AND REGISTRATION. S.F. 237, AGRICULTURE.
 UNIFORM STATE SEED LAW, LABELING, TESTING, MUSTARD CLASSED AS
 NOXIOUS. H.F. 317, AGRICULTURE 2 AND HORTICULTURE.
 EGG BUYERS AND DEALERS, LICENSE, SURETY BOND, DISPOSITION OF FEES.
 H.F. 334, WALTER, ET AL.
 APPROPRIATION FOR THE PURCHASE, AND EQUIPMENT OF SPECIAL PURPOSE TRUCK.
 H.F. 351, AGRICULTURE.
 ANHYDROUS AMMONIA FERTILIZER, TRANSPORTATION AND STORAGE.
 S.F. 348, LUCKEN, ET AL - H.F. 411, SMITH OF O-BRIEN, ET AL.
 IMPLEMENT OF HUSBANDRY, CLARIFYING DEFINITION. S.F. 381, HIGHWAYS.

ANIMALS

FEEDER CATTLE EXEMPT FROM TAXATION, S.F. 4, SHOEMAN.
 FEEDER CATTLE, SWINE, POULTRY EXEMPT FROM TAXATION. S.F. 6, ELVERS.
 CATTLE UNDER TWO YEARS EXEMPT FROM PERSONAL PROPERTY TAX. H.F. 12,
 ANDERSON OF RINGGOLD.
 SALE OF CERTAIN LIVESTOCK, DEDUCTIONS IN FORM OF SPECIAL EXCISE TAX,
 PROCEEDS USED TO PROMOTE PRODUCTS. H.F. 40, HAGIE, ET AL - S.F. 41,
 WEARIN, ET AL.
 SHEEP, CONTROL AND ERADICATION OF SCABIES, PROVIDE PENALTY.
 S.F. 86, GETTING, ET AL - H.F. 295, WALTER, ET AL.
 ANIMAL DISEASES, INFECTIOUS, INCLUDE OVINE FOOT ROT. S.F. 87,
 GETTING, ET AL.
 BOVINE, ERADICATION OF BRUCELLOSIS. S.F. 94, AGRICULTURE.
 CATTLE, SWINE, SHEEP EXEMPT FROM TAXATION. H.F. 123, JOHNSON, ET AL.
 LIVESTOCK TAX EXEMPTION, NOT TO EXCEED 100 HEAD. H.F. 184, KNOCK,
 ET AL.
 SWINE, ERADICATION OF BRUCELLOSIS. H.F. 275, HIRSCH, ET AL.
 LIVESTOCK SLAUGHTER, HUMANE METHOD. H.F. 285, RILEY, ELY.
 HOGS, DESTROYED FOR CHOLERA CONTROL, INDEMNITY PAYMENT. H.F. 365,
 WALTER, HIRSCH.
 LIVESTOCK, WRITTEN STATEMENT OF WEIGHT WHEN SELLING. H.F. 416,
 AGRICULTURE 1.
 HOG CHOLERA, INDEMNITY TO OWNERS. S.F. 369, WALKER, ET AL.

After working out the procedural details with the assistance of systems designers and software specialists from the IBM Corp., the system managers made operable a service which reportedly cost \$7,500 during the 1965 session.

Another early developer of computerized indexes was Florida, which established three ways of identifying a bill:

- Using one of 475 major classifications;
- Using one or more "key-word classifications;" and
- Using the actual bill number.

In order to facilitate building and using the subject index, a structured "Subject Index Worksheet" was developed (see fig. 42).⁷⁵

⁷⁵ State and local government legislative automation application description, *op. cit.*, exhibit C-3.

FIGURE 42.—*The State of Florida.*

SUBJECT INDEX WORKSHEET

06910 A	Civil actions and procedures.	
06920 B	Comparative negligence, doctrine established	H424
06930 B	Comparative negligence, motor vehicles	H804
06940 B	Forcible entry and detainer jury trial deleted	H370
06950 B	Garnishment of wages	H347, S989
06960 B	Liability for dog bites	H1726
06970 B	Liability ins. or surety bond in lieu of appeal bond	S1035
06980 B	Liability of parents for damages by minors	H512, S1059
06990 B	Personal injury litigation, liability insurance	H1387
07000 B	Reviser's bill, rules of civil procedure	H548, S441
07010 B	Service of process, attachment to defendant's abode	H2534

As system users suggested various minor modifications to the subject index, a few changes were incorporated in the heirarchical structuring and format. Figure 43 shows the 1967 printed version photographically reduced, while ⁷⁶ figure 44 presents the 1970 computerized printout.⁷⁷

FIGURE 43.—*Subject index report (1967 version)—the State of Florida.*

SUBJECT INDEX REPORT	
ATLANTIC BEACH, CITY OF.	
CITY TAX ASSESSOR.	H1996
ATTORNEY GENERAL.	
ADDITIONAL POWERS.	H46, S456
APPROPRIATIONS, SUPPLEMENTAL	H2458
BILL DRAFTING DUTIES REMOVED	S143
BOND VALIDATION PROCEEDINGS.	H3117
CONSUMER & BUSINESS PROTECTION DIVISION.	S656, H1405, H2104, S1244
CRIMINAL LAW DECISIONS STUDY	H2570
DEPARTMENT OF CRIMINAL JUSTICE CREATED	S443
ENJOINMENT OF PRIVATE INVESTIGATIVE AGENCIES	H526, H473
LEGAL ADVISOR TO STATE AGENCIES.	H1831, H1945, S1163
ORGANIZED CRIME INVESTIGATORS AUTHORIZED	S12, H104
UNFAIR TRADE PRACTICE & CONSUMER PROTECTION.	S1232
ATTORNEYS	
ASST STATE ATTORNEY OFFICE ABOLISHED, RECREATED.	S486, H809
ASST STATE ATTORNEYS, GENERAL ASSIGNMENT	S1137, H2312
CAPITAL CASE DEFENSE COUNSEL COSTS FOR INSOLVENTS.	S638, H2024
EIGHTEENTH JUDICIAL CIRCUIT, ASST STATE ATTYS	S836, H1368
EIGHTH JUDICIAL CIRCUIT, STATE ATTY STENOGRAPHER	H1365, S1024
EIGHTH JUDICIAL CIRCUIT, ADDITIONAL ASST STATE ATTY.	H1364, S1025
FEES, INSURANCE SUITS IN APPELLATE COURTS.	H1154, S1013
FIFTH JUDICIAL CIRCUIT, ADDITIONAL ASST STATE ATTYS.	H1301
LEGAL COUNSEL FOR INSOLVENT MINORS	H983, S748
LEGAL SOCIETIES' REAL PROPERTY, TAX EXEMPTION.	H1165
NINTH JUDICIAL CIRCUIT, ADDITIONAL ASST STATE ATTYS.	S836, H1368
NINTH JUDICIAL CIRCUIT, PUBLIC DEFENDER.	S836, H1368
NINTH JUDICIAL CIRCUIT, STATE ATTORNEY	H2776
PROSECUTING, COMPENSATION IN CERTAIN COUNTIES.	H2116, S1637
PROSECUTING, COUNTY JUDGE'S COURT.	H1657, S1001
PUBLIC DEFENDER, ASSISTANTS IN DIVIDED CIRCUITS.	H1713, S1153
PUBLIC DEFENDER APPOINTMENT FOR ANY MEMBER OF BAR.	H897, S842
PUBLIC DEFENDER TO BE PAID BY STATE ONLY	S418, H1321
PUBLIC DEFENDERS' POWERS, DUTIES, ADMINISTRATION	H489, S532
SIXTH JUDICIAL CIRCUIT, STATE ATTORNEY	H3021, S1682
SOLICITATION PROHIBITION REPEALED.	H2290
STATE ATTORNEYS & ASSTS, DUTIES & SALARIES	S808, H1309
THIRD JUDICIAL CIRCUIT, ADDITIONAL ASST STATE ATTY	H888, S737
AUCTIONS: SEE MERCHANDISING.	
AUDITING DEPARTMENT.	
LEGISLATIVE AUDITING	ESTABLISHED H456, S1180

⁷⁶ Instant legislative information system: Florida pioneers data bank for lawmakers, *op. cit.*, p. 9.

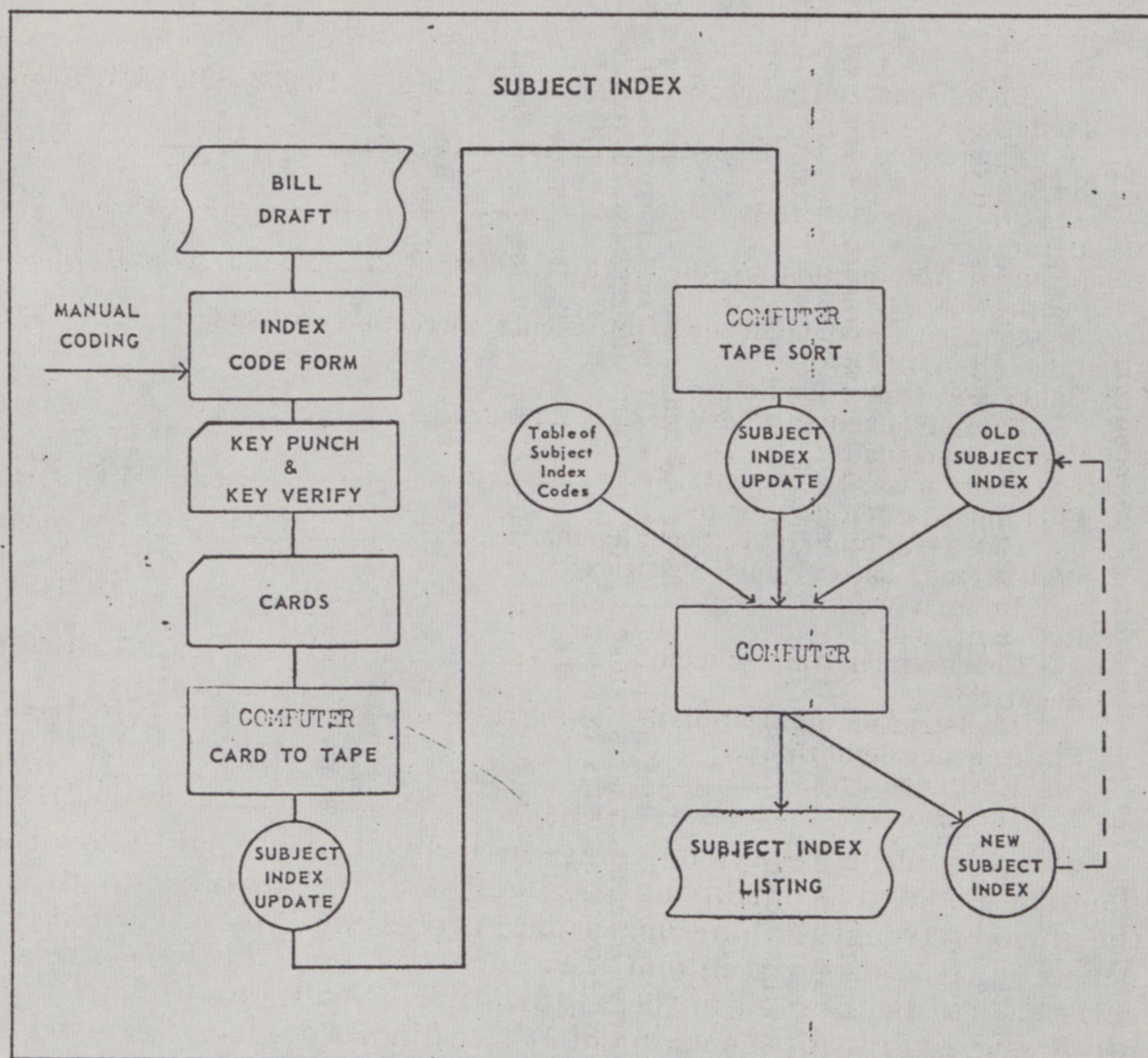
⁷⁷ Replica of a computer printout of the State of Florida subject index report, 1970 version.

FIGURE 44.—*Subject index report (1970 version)—the State of Florida.*

Abortions:	
Legal:	
Definitions and procedures-----	H3052, S21, S617, H3879
Physicians:	
Punishable acts defined-----	S538
Repeal of present laws:	
Statewide referendum-----	S20
Accountants:	
Licensed Accountants, State Board of, created-----	S351, H3530
Public:	
Residence and employer requirements, correction of 1969 law-----	S11
Administration, Board of	
Banks and trust companies:	
Establishment authority-----	H4342
Excess road funds:	
Short term investment-----	H484, S111
Fuel anticipation certificates:	
Full faith and credit, fiscal agent-----	H694
Obligations issued by public entities:	
Interest ceiling proviso-----	H4946
Reconstituted:	
Constitutional amendment-----	H3089
Securities:	
Registration application denial appeal provision deleted---	S778, H4763
State agency definition:	
Exclusion -----	S780
Inclusion -----	S1144, H4896

In developing a subject indexing capability which would allow the file to be updated as quickly as possible, great care was taken to utilize the various strengths of automatic data processing. Not only could the new bills be categorized in more than one way, but additional subject entries could be inserted in the "Table of Subject Index Codes." Figure 45 is a diagram of the main data processing procedures involved in handling the subject index information.⁷⁸

⁷⁸ State of Florida legislative automation, *op. cit.*, p. 7 (adaptation).

FIGURE 45.—*The State of Florida.*

In developing a comprehensive ADP-supported legislative information system, the interrelationships involving the legislative clientele, the man-machine capability, and the actual products (or services) must be redefined and scrutinized at regular intervals. Oftentimes, the initial products of an information system, while seemingly helpful, may prove to be of minimal aid due to the lack of currency, content, or the limitations imposed on the users by myopic indexing. Connecticut has attempted to overcome this last problem by creating three forms of legislative index: by "introducer" (sponsor), as shown in figure 46;⁷⁹ committee matter (fig. 47),⁸⁰ and subject matter (fig. 48).⁸¹ The sequential index by bill category was shown in figure 38.

⁷⁹ Replica of a page section from the legislative index by introducers for Mar. 12, 1971, State of Connecticut, General Assembly, January session 1971, p. 1.

⁸⁰ Replica of a page section from the legislative record index by committee matter. State of Connecticut, General Assembly, regular session, January 1971. Published February 1971, p. 21.

⁸¹ Replica of a page section from the legislative record index by subject matter. State of Connecticut, General Assembly, regular session, January 1971. Published February 1971, p. 3.

FIGURE 46.—Legislative index by introducers (1971)—the State of Connecticut.

SEN. FAULISO 1ST DISTRICT	
COM-8435 -by Rep. COMMITTEE -JUDth entitled 'AN ACT CONCERNING THE DISCHARGE OF MORTGAGES AFTER SEVENTEEN YEARS.	SB-550 -by Sen. FAULISO -1st entitled 'AN ACT CONCERNING THE TRANSFER OF IN REM ACTIONS TO THE SUPERIOR COURT.
COM-8485 -by Rep. COMMITTEE -JUDth entitled 'AN ACT CONCERNING OFFER OF JUDGMENT.	SB-549 -by Sen. FAULISO -1st, Sen. JACKSON -5th and Rep. CARROZZELLA -81st entitled 'AN ACT CONCERNING THE SUFFICIENT ATTESTATION OF WILLS BY TWO WITNESSES.
COM-7656 -by Rep. COMMITTEE -JUDth entitled 'AN ACT CONCERNING PAYMENTS TO STATE TREASURER.	SB-547 -by Sen. FAULISO -1st, Sen. JACKSON -5th and Rep. CARROZZELLA -81st entitled 'AN ACT CONCERNING A BENEFICIARY'S RIGHT TO EXONERATION FROM A SECURITY INTEREST EXISTING AT DEATH.
COM-8445 -by Rep. COMMITTEE -LABth entitled 'AN ACT CONCERNING FIRST AID STATION ON NEW CONSTRUCTION SITE.	SB-45 -by Sen. FAULISO -1st and Rep. BARD -145th entitled 'An act CONCERNING ERASURE OF CERTAIN MISDEMEANOR CONVICTIONS.
	SB-106 -by Sen. FAULISO -1st entitled 'AN ACT CONCERNING PROFESSIONAL BOXING.
	SB-107 -by Sen. FAULISO -1st entitled 'AN ACT CONCERNING DISABILITY COMPENSATION FOR PROSECUTING ATTORNEYS AND STAFF MEMBERS OR EMPLOYEES OF CIRCUIT COURT PROSECUTING ATTORNEY'S OFFICE.
	SB-46 -by Sen. FAULISO -1st and Rep.

FIGURE 47.—Legislative record index by committee matter (1971)—the State of Connecticut.

JUDICIARY		LABOR AND INDUSTRIAL RELATIONS	
SB-1006 -by Sen. MACAULEY -22nd entitled 'AN ACT CONCERNING JUST COMPENSATION.'	SB-1095 -by Sen. JACKSON -5th and Rep. CARROZZELLA -81st entitled 'AN ACT CONCERNING THE OPERATION OF A VEHICLE WHILE THE ABILITY TO SO OPERATE IS IMPAIRED.'	LABOR AND INDUSTRIAL RELATIONS	
SB-1017 -by Sen. DUPONT -29th entitled 'AN ACT CONCERNING NON-EXONERATION OF SPECIFIC DEVISE.'	SB-1096 -by Sen. JACKSON -5th and Rep. CARROZZELLA -81st entitled 'AN ACT CONCERNING IMPLIED CONSENT TO TESTS IN ARRESTS FOR OPERATING A MOTOR VEHICLE UNDER THE INFLUENCE.'	SB-66 -by Sen. GUNTHER -21st entitled 'An act CONCERNING COST-OF-LIVING ADJUSTMENTS TO SURVIVORS ENTITLED TO RECEIVE WORKMEN'S COMPENSATION DEATH BENEFITS.'	
SB-1021 -by Sen. JACKSON -5th entitled 'AN ACT CONCERNING REPORTS BY JUDGE OF PROBATE OF ESTIMATED INCOME DURING FIRST YEAR.'	SB-1097 -by Sen. JACKSON -5th and Rep. CARROZZELLA -81st entitled 'AN ACT CONCERNING THE TAKING OF BLOOD SAMPLES IN CONNECTION WITH FATAL MOTOR VEHICLE ACCIDENTS.'	SB-90 -by Sen. MONDANI -33rd entitled 'An act CONCERNING UNEMPLOYMENT COMPENSATION COVERAGE OF FAMILY MEMBERS.'	
SB-1022 -by Sen. JACKSON -5th, Rep. CARROZZELLA -81st and Rep. CARROZZELLA -81st entitled 'AN ACT CONCERNING STOPPING OF MOTOR VEHICLES AT RAILROAD CROSSINGS.'		SB-128 -by Sen. RIMER -26th and Rep. CLARK -101st entitled 'AN ACT CONCERNING SEASONAL MUNICIPAL EMPLOYEES AND UNEMPLOYMENT COMPENSATION.'	

FIGURE 48.—Legislative record index by subject matter (1971)—the State of Connecticut.

AGING		AIR POLLUTION - POLLUTION	
HB-5944 -by Rep. OLIVER -104th entitled 'AN ACT MAKING AN APPROPRIATION TO THE DEPARTMENT ON AGING.'	HB-5036 -by Rep. COHEN -59th entitled 'An act INCREASING THE APPROPRIATION FOR SOILS MAPPING.'	HB-5006 -by Rep. OLIVER -104th entitled 'An act CONCERNING RELIEF TO TOWNS FOR UNEMPLOYED PERSONS.'	
HJR-35 -by Rep. OLIVER -104th. 'RESOLUTION IMPLEMENTING THE LEGISLATIVE MANDATE FOR THE DEPARTMENT ON AGING.'	HB-5219 -by Sen. MURPHY -19th and Rep. COHEN -59th entitled 'AN ACT MAKING AN APPROPRIATION TO IMPROVE STANDARDS FOR CENTRAL EGG GRADING PLANTS AND STANDARDS TO THE DEPARTMENT OF AGRICULTURE AND NATURAL RESOURCES.'	HB-6032 -by Rep. COHEN -41st entitled 'AN ACT CONCERNING PRESUMPTION OF LEGITIMACY.'	
AGRICULTURE		HB-6378 -by Rep. COHEN -41st entitled 'AN ACT PROVIDING FOR THE CONTINUATION OF COVERAGES OF PHYSICALLY HANDICAPPED AND MENTALLY RETARDED DEPENDENT CHILDREN UNDER INDIVIDUAL AND GROUP HEALTH INSURANCE POLICIES AND NON-PROFIT HOSPITAL AND MEDICAL SERVICE PLAN CONTRACTS.'	
SB-329 -by Sen. RIMER -26th entitled 'AN ACT CONCERNING REQUIREMENTS FOR CLASSIFICATION OF LAND AS FARM LAND.'	HB-5709 -by Rep. CARROZZELLA -81st and Sen. JACKSON -5th entitled 'AN ACT CONCERNING ACQUISITION OF LAND ADJACENT TO HIGHWAY FOR AGRICULTURE AND NATURAL RESOURCES PURPOSES.'	AIR CONDITIONING	
SB-632 -by Sen. CALDWELL -23rd entitled 'AN ACT CONCERNING A TAX EXEMPTION FOR FARMERS.'	HB-6555 -by Rep. BECK -50th entitled 'AN ACT CONCERNING A COMMITTEE ON LAND USE VALUES.'	SB-575 -by Sen. BURKE -3rd entitled 'AN ACT CONCERNING MINIMUM HEALTH STANDARDS FOR STATE EMPLOYEES.'	

Tennessee, which initiated its computer support activities in 1967, first relied upon the data processing division of the Department of Finance and Administration. At the direction of the Tennessee Legislative Council Committee, two top priority projects were undertaken: The production of a daily bill status report and the preparation of a daily subject index.⁸² Eight copies of those cumulative reports were produced by a computer printer. Copies were placed on display in the House and Senate chambers and at other convenient locations in the Capitol Building. At the session's end, the cumulative subject index was used as the basis for the Council's *Unofficial Index of Legislation Introduced, 85th General Assembly, 1967*. Based on the favorable member and staff response, the "unofficial index" was again prepared with the same procedures in 1968, and another report was produced which served to help prepare the sponsor index, conventionally printed as the weekly *Tennessee Legislative Record*.

Beginning with the 1969 session, the weekly sponsor index was added to those products routinely supplied. Every Monday each legislator received an individually bound computer-printed index listing all the measures on which his name appeared as sponsor through the preceding Friday; in addition, a brief description and the last legislative action taken on the bill appeared. The number of copies available for distribution and display was raised to 12. Figure 49 contains a brief portion of a 1971 subject index printout,⁸³ and figure 50 displays a "sponsor listing" from the 87th General Assembly (1971).⁸⁴

FIGURE 49.—SUBJECT INDEX PRINTOUT (1971)—THE STATE OF TENNESSEE

	House bill No.	Senate bill No.
State government—Requires separate bids on mechanical and electrical installations for State construction if amount is over \$200,000.....	1200	1014
State government—Fixes compensation of major State officials and provides for annual adjustment of same. Amends TCA 3-114 through 115, 4-322, 8-101, 8-604, 8-705, 8-2301, 8-2303, 53-102, 54-101.....	1226	-----
State government—Fixes compensation of major State officials and provides for annual adjustment of same. Amends TCA 3-114 through 115, 4-322, 8-101, 8-604, 8-705, 8-2301, 8-2303, 53-102, 54-101.....	1260	1137
Intergovernmental relations—Revises statutes relative to commission on governmental cooperation. Amends TCA 4-1011 through 1010.....	1287	1104

⁸² Study on legislative procedures, facilities, and services (1970), *op. cit.*, pp. 15-21.

⁸³ Replica of a computer printout section from the State of Tennessee subject index, 1971.

⁸⁴ Replica of a computer printout section from the State of Tennessee sponsor listing, 87th General Assembly, 1971.

FIGURE 50.—*The State of Tennessee.*

SPONSOR LISTING—87TH GENERAL ASSEMBLY, JUL 01, 1971

WILDER, JOHN S.

SB 0001 COMP BILL 0001—PRIMARY SPONSOR

STATUTES—STATUTE CODIFICATION

MAR 04 71 PUBLIC CHAPTER NO. 001

SB 0002 COMP BILL 0005

LEGISLATIVE COUNCIL—RELATIVE TO APPOINTMENT OF MEMBERS
OF LEGISLATIVE COUNCIL AND TERMS OF OFFICE OF MEMBERS.
AMENDS TCA 3-401

MAR 17 71 S COMPANION H.R. SUBSTITUTED

Equipment support for the Tennessee legislative information system continues under the aegis of the Division of Accounts and Data Processing in the Department of Finance and Administration. The IBM 360 model 40 computer is accessed by 2260 video display terminals in three locations, and a 1053 printer adjacent to one of the terminals in the Great Hall. Functioning on an unofficial basis, a small *ad hoc* committee composed of representatives from the three branches of government has developed proposals for the further expansion of ADP legislative services, including the full-text entry of legislation into the computer prior to its introduction, storage of the material contained in the *Tennessee Code Annotated*, and the use of typewriter terminals. A three-phase plan of development has been outlined, and is presently being reviewed.

One aspect of maintaining a useful index, regardless of the access options offered, is the reliability of the updating procedures. The three major update functions to be performed by any manual or machine-supported system should result in:

- Revising an existing entry;
- Deleting an existing entry no longer desired; and
- Adding a new entry.

Typical of the index changes required in many legislative publications are those enumerated in figure 51.⁸⁵ Here, the Wisconsin system has the capacity to introduce a new index entry (example 1) and then print it as a "numeric listing output," or shift an entry from one location in the file to another (as itemized in example 2). Each numeric output denotes a page-unit control number which ties it to the specific index document.

⁸⁵ Samples and explanations of data retrieval systems. [Milwaukee, Data Retrieval Corp. of America], June 1971, exhibit IV.

FIGURE 51.—*Create and update index—the State of Wisconsin.*

SAMPLE NUMERIC LISTING OUTPUT

Example 1. Index entry :

ALCOHOL

Wood

Labeling of, 217.430

Example 1. Numeric output :

0217.00-430 ALCOHOL Wood, Labeling of,

Example 2. Index entry :

ALCOHOL

Wood

Labeling of, 217.430 to 217.450

Example 2. Numeric output :

0217.00-430 0217.00-450 ALCOHOL Wood, labeling of,

0217.00-450 0217.00-430 ALCOHOL Wood, Labeling of,

DIGEST OF BILL CONTENTS

The preparation of a digest of a bill or resolution long has been performed by State legislative functionaries, whether clerks, counsels, or special draftsmen. As in the Federal Congress, which has a *Digest of Public General Bills*⁸⁶ regularly prepared for it by the Congressional Research Service of the Library of Congress, the State legislatures rely heavily upon the digest contents to accurately reflect the true meaning and scope of the proposed legislation. In addition to the précis of the bill, such basic elements of information as the sponsor or sponsors, date of introduction, bill number, and committee to which assigned are appended.

Because a given word or phrase in a bill may have more than one meaning when interpreted by various committees within the legislature, their executive branch counterparts, in the light of past legislation, or when compared to pertinent Federal law, considerable care must be taken in the writing of the digest. Indeed, because of the number of bills to be considered in many States, and the sheer bulk and complexity of certain individual pieces of legislation, the digest often is the most heavily used reference to the bill as it progresses through the legislative process.

Iowa early attached great importance to the need for the standardization of words and phrases to describe parliamentary actions and those treating legislative procedures. A "New Action Description File" was prepared and used by the clerks of the Iowa General Assembly, who underline important words and phrases on the pages of the journal. Appropriate codes are assigned to content phrases and action in the margin of the page opposite the bill, joint resolution, or amendment; committee action is designated by code in the inner margin, as shown in figure 52.⁸⁷

⁸⁶ The Congressional Research Service (previously known as the Legislative Reference Service) first began using ATS in 1967 as a means of handling legislation-related data to be published regularly in the semimonthly *Digest of Public General Bills*. Eleven terminals now input the digest and status information, selectively recall it for editing purposes, and print out revised copy. A high-speed printer now is used to prepare final copy which is then put through a photocomposition process at the Government Printing Office.

⁸⁷ Iowa General Assembly legislative reporting and indexing with the IBM 1401, *op. cit.*, p. 7.

FIGURE 52.—Coding of Journal of the House entries—the State of Iowa.

218	JOURNAL OF THE HOUSE	[Feb. 6,	1963]	JOURNAL OF THE HOUSE	219
Naden of Hamilton, from four hundred eighty-nine residents of Hamilton County.				act to amend chapter four hundred eleven (411), Code 1962, relating to retirement systems for policemen and firemen.	350
Nelson of Winnebago, from two hundred ninety-three residents of Winnebago County.				Read first time and placed on the calendar.	
Nielsen of Shelby, from twenty-three residents of Shelby County.				House File 174, by committee on agriculture, a bill for an act to create a state agricultural products utilization research committee and to provide funds to carry out the act.	360
Ossian of Montgomery, from twenty-five residents of Montgomery County.				560 Read first time and referred to committee on ways and means.	
Peterson of Woodbury, from eighty-one residents of Woodbury County.				House File 175, by committee on conservation, a bill for an act relating to the powers of the director of the state conservation commission.	350
Prince of Mahaska, from one thousand nine hundred residents of Mahaska County.				Read first time and placed on the calendar.	
Smith of Dickinson, from one hundred eight residents of Dickinson County.				House File 176, by Shaw, Fischer of Grundy, Nielsen of Emmet, Vermeer, Scherle and Wright, a bill for an act relating to the regulation of trading stamps, and repealing certain statutes relating to gift enterprises.	360
Smith of O'Brien, from ninety-two residents of O'Brien County.				360 Read first time and referred to committee on motor vehicles, commerce and trade.	
Reppert of Polk, from sixty-eight residents of Polk County.				House File 177, by Reppert, Camp, Coffman, Denman, Dietz, Duffy, Kibbie, Knowles, Mensing, Meyers, Miller of Des Moines, Murphy and Murray, a bill for an act providing for the licensing and strict control of the retail sale of products sold by Iowa state liquor stores and designed to eliminate bootlegging from the state of Iowa, and to provide revenue from the sale thereof.	360
Van Nostrand of Pottawattamie, from sixty residents of Pottawattamie County.				470 Read first time and referred to committee on safety and law enforcement.	
Vermeer of Marion, from two hundred thirty-two residents of Marion County.				House File 178, by Nielsen of Shelby, Halling, Briles, Hanson of Mitchell and Busch, a bill for an act relating to bids on secondary road construction work and materials therefor.	360
Walter of Hardin, from sixty-eight residents of Hardin County.				140 Read first time and referred to committee on county and township affairs.	
ADOPTION OF COMMITTEE REPORTS				House File 179, by Carstensen, Camp, Denman and Murphy, a bill for an act to amend section ninety-six point three (96.3), subsections four (4) and five (5), Code 1962, as to the method of determining benefit amount and duration of benefits.	360
The Chief Clerk announced the adoption of reports of committees on House Files 57, 66, 109, 113 and Senate File 94, under Rule 35.				Read first time and referred to committee on social security.	360
SENATE MESSAGE CONSIDERED				560 House File 180, by Reppert and Denman, a bill for an act relating to personal property tax deduction.	
360 Senate File 70, a bill for an act to amend chapter ninety-seven B (97B), Code 1962, relating to the Iowa Public Employees Retirement System.				Read first time and referred to committee on ways and means.	
Read first time and referred to committee on ways and means.					
INTRODUCTION OF BILLS					
350 House File 172, by committee on tax revision, a bill for an act creating the office of state assessor and a state board of review and prescribing their powers and duties.					
Read first time and placed on the calendar.					
House File 173, by committee on cities and towns, a bill for an					

Each item underlined or indicated by code on the pages of the proof journal is then punched into cards, which are "verified"—checked for accuracy—and used either to establish a new entry in the bill record tape file, or update that file.

In Indiana, a digest of each piece of legislation introduced during a session is prepared by the staff of the Legislative Council, under the supervision of the Director of Research. The digest, no more than 320 characters in length, is written on a standard form (reproduced as fig. 53).⁸⁸

⁸⁸ Martin, Robert H. Data processing support request for the legislator information system during the 1969 Indiana General Assembly. Indianapolis, Legislative Council, Apr. 1, 1968. Enclosure 1.

FIGURE 53.—The State of Indiana.

Form LC-1
Ind. Legislative Council

456789

Enclosure 1
LEGISLATION DIGEST INFORMATION WORKSHEET

PREFIX	NUMBER
QB	1390

HOUSE
SPONSORS

NAME	CODE	NAME	CODE
Howard	14	RICKETTS	62

SENATE
SPONSORS

NAME	CODE	NAME	CODE

DIGEST

AMENDS INSURANCE ACT OF 1935, ESTABLISHES
REQUIREMENT THAT NO ONE RISK CAN BE
INSURED FOR MORE THAN 5% OF SURPLUS OF
COMPANY OR HAS CONTINGENT RESERVE OVER
\$400,000 OR HAS A REINSURER WITHIN THE
STATE.

FISCAL IMPACT REPORT NEEDED YES

WRITTEN BY J. Edwards
CODED BY S. V. H.
DATE ENTERED 2/4 DEPRESS FOR END OF MESSAGE

No attempt is made to code the digest information. There is, for each bill introduced, an indication as to whether or not it could have a "fiscal impact" for the State; this is discussed in a later section. The Indiana system offers more than one output alternative. A display capability (five CRT-type 2260 terminals) allows legislative personnel to request a screen presentation of the "Legislation Digest Report" (see fig. 54).⁸⁹ If no information on the requested bill is available, the message "SORRY, THE DIGEST ON THIS LEGISLATION IS NOT ON FILE" will be displayed (or printed).

The optional form of output is a printout from the IBM 1053 printer located in the offices of the Legislative Counsel. Figure 55 presents an example of the printed format of the "Legislation Digest Report."⁹⁰

⁸⁹ *Ibid.*, enclosure 7.

⁹⁰ *Ibid.*, enclosure 8.

FIGURE 54.—*The State of Indiana.*

Display Format for Legislation Digest Report

X-----40 Display Positions-----X

Line
Number

HB 1390A

H.R. SPON: HOWARD, RICKETTS
SEN. SPON:

AMENDS INSURANCE ACT OF 1935. ESTABLISH-
ES REQUIREMENT THAT NO ONE RISK CAN BE
INSURED FOR MORE THAN 5% OF SURPLUS OF
COMPANY OR HAS CONTINGENT RESERVE OVER
\$400,000 OR HAS A REINSURER WITHIN THE
STATE.

FISCAL NOTE REQUESTED, BUT NOT FILED

1
2
3
4
5
6
7
8
9
10
11
12

FIGURE 55.—*The State of Indiana.*

Printed Format for Legislation Digest Report

X-----80 Print Positions-----X

HB 1390A. PRINTOUT REQUESTED BY: SEN. WILLIAMS
H.R. SPON: HOWARD, RICKETTS SEN.SPON:
AMENDS INSURANCE ACT OF 1935. ESTABLISHES REQUIREMENT THAT NO ONE RISK CAN BE
INSURED FOR MORE THAN 5% OF THE SURPLUS OF COMPANY OR HAS CONTINGENT RESERVE
OVER \$400,000 OR HAS A REINSURER WITHIN THE STATE.

FISCAL NOTE REQUESTED, BUT NOT FILED

Illinois is often pointed to as having one of the most advanced computer-supported systems providing automated bill digests and related information. As a result of developing a 5-year plan (shown in fig. 2) for a legislative information system, the State eventually will have the capability of interlocking certain elements of legislative information; for example, the bill and resolution synopses (or digests) will be prepared, in the future, during the "drafting" of the new legislative proposals. Since the Legislative Reference Bureau's "Digest Report" already had cost \$250,000 in printing fees for the 6-month 1970 session, the Management Information Division of the Department of Finance decided not to produce a weekly bound digest. Computer copies are to be prepared on the day following the last legislative meeting day of the week, and distributed to leadership, the Clerk's, and the Secretary's offices. A bound book at the end of the session containing digest and status information was recommended by the authors of the 1970 report to the Joint Committee on Legislative Information Systems, which was aware that a decision would have to be made as to whether the more economical ADP product should replace the traditional, expensive printed document. The "Bill Digest and Synopsis" report, containing selected data on legislative transactions, appears as figure 56.⁹¹

⁹¹ Recommendation concerning bill status, bill drafting, and the proposed 5-year plan for the members of the Joint Committee on Legislative Information Systems, *op. cit.*, p. 21 (exhibit E-1).

FIGURE 56.—The State of Illinois.

REPORT 01 BILL DIGEST AND SYNOPSIS APR 14 1970 PAGE 5

HB 1175 4 H KLEINE

JUN 06 RECOMMENDED DO PASS 14-0-0

HB 1206 R L THOMPSON

CALDWELL CARTER O G COLLINS DAVIS
APPROPRIATES 10000000 TO SUPERINTENDENT OF PUBLIC INSTRUCTION
TO REIMBURSE LOCAL SCHOOL DISTRICTS FOR PROGRAMS FOR EDUCATIONALLY
DISADVANTAGED CHILDREN

MAR 26 FIRST READING

EDUCATION

MAY 22 SECOND READING
THIRD READING

PASSED 125-12-0

MAY 27 SENATE

SENATE SPONSOR NEWHOUSE

MAY 29 FIRST READING

JUN 02 REFERRED TO COMMITTEE ON ASSIGNMENT
EDUCATION

JUN 10 RECOMMENDED DO PASS 07-3-0

Among the changes recommended for consideration in the 1970 report were:

- Sponsors and same day actions on the same line, if possible.
- Shortened action descriptions with some abbreviations.
- Reduced spacing and more lines per page.
- Extraction of synopsis directly from the drafting system.
- Creation of a sponsor and topic index.

The updating of the bill digest file, to result in a “daily digest update”—with four to six copies distributed to the same recipients as those receiving the weekly “bill digest and synopsis”—also is planned. Cumulative entries for each week will form the basis for the file update. During the 1970 session, the “bill digest update” printout was distributed in the form contained in figure 57.⁹²

⁹² *Ibid.*, p. 24 (exhibit E-4).

FIGURE 57.—*The State of Illinois.*

REPORT 04	BILL	SPONSOR	BILL DIGEST UPDATE	APR 18 1970	PAGE
	HB 0948				
		APR 14	TABLED		
	HB 1595	WM D WALSH			
		APR 14	FIRST READING		
	HB 1595	WM D WALSH			
		APR 14	CONSERVATION		
	HB 2938	CLABAUGH			
		APR 14	THIRD READING		
	HB 2938	CLABAUGH			
		APR 14	PASSED 151-OCO-000		

As noted earlier, legislators are accustomed to referring to the digest of a bill on many occasions. The need for information about the proposed legislation has caused many States to prepare contextual material in the form of a "bill analysis." This varies from State to State, sometimes taking the form of a simple digest or summary statement, or it may offer additional details on the major provisions of the bill. In Ohio, however, a comprehensive treatment includes commentary on every provision of a bill.⁹³ This analysis serves as a reference point for committee use or floor discussion. Needless to say, the need for accuracy in the preparation of the summary data and accompanying discussion places a significant responsibility on those who prepare this analysis. The bill analysis function also becomes critical when legislation is being amended, and members in debate have little time to study in depth the impact of the proposed changes. Not surprisingly, technical conflicts raised by amendments often may be discerned and resolved more easily than policy conflicts. The role of data processing in handling the analytical information, allowing legislators and staff personnel to utilize it through "full text" or index-based searches, is being looked at closely by several States.

Emphasis is often placed upon the current nature of a file concerning legislative information, but the quality of file *completeness* may fall short of expectations. In order to insure the necessary comprehensive coverage of legislative transactions, the Indiana legislative information system issues a "Missing Legislation Digest Report," printed on the IBM 1053 printer-terminal located in the offices of the Legislative Council. This daily product is available by 8 a.m. to the staff and contains entries sequentially arranged by legislation number within legislation prefix (see fig. 58).⁹⁴

FIGURE. 58.—*The State of Indiana.*

JAN. 23, 1969

PAGE 1

MISSING LEGISLATION DIGEST REPORT LISTING
1969 INDIANA GENERAL ASSEMBLY

THE FOLLOWING PIECES OF LEGISLATION HAVE NO DIGESTS
ON FILE:

HB	1102
HB	1204
HB	1256
HB	1346
HCR	9
HJR	22
SB	48
SB	125
SCR	11
SCR	14
SJR	2

In this way, the positive and negative (omission) aspects of providing user service are fulfilled, with an eye to furnishing the managers of the system with indicators of trouble spots, as well as alerting the

⁹³ Mr. President . . . Mr. Speaker . . . *op. cit.*, pp. 46-47.

⁹⁴ Martin, *op. cit.*, enclosure 19.

legislative users to that information *not* on file. This allows corrective action to be initiated without a damaging delay.

FISCAL-BUDGETARY INFORMATION

Several types of information on fiscal-budgetary matters which affect legislative decisionmaking must be available to the leadership, committees, and individual members if they are to carry out their assigned responsibilities. In order to better focus on the information needs of the State legislatures for fiscal and budgetary data, the following discussion is organized into three broad areas: Legislation-oriented information (e.g., status of appropriation bills, fiscal impact of legislation), access to executive branch budgetary data (e.g., revenue and expenditure projections, Federal grants-in-aid information), and special analyses to assist legislators (e.g., statistics on county or municipal expenditures, testing of school aid formulas).

The use of ADP in handling *legislation-oriented information* initially was an outgrowth of the development of bill status systems. In some legislative information systems, the essential information on a bill will denote whether or not it authorizes a new or expanded program, or is simply an appropriation bill. Legislators desiring to learn about a bill's content, status, or modifications may access the computerized file either through a remote terminal or by requesting a printout. In Connecticut, for example, status information on pending legislation is available on-line with those bills containing fiscal sections especially marked for legislator attention and action. The Illinois Legislature, supported by an IBM 370 series computer configuration in the Department of Finance, is provided with a weekly (early in the session) phasing to a daily report on the status of appropriation bills (see fig. 59).⁹⁵ Limited copies are produced for selected legislative personnel and those with the Bureau of the Budget and the Budgetary Commission. In the future, the regular bill status system will be expanded to include an indicator for appropriation bills. Computerization of the Ohio appropriation bill now allows this 2,500-line document to be printed in 4.5 minutes.⁹⁶ Miscellaneous ADP applications involving appropriation bills include the maintenance of a punched card file on past appropriation measures by the Delaware Legislature, and an Arkansas procedure for using the computer in the preparation of salary schedules contained in proposed appropriation bills.⁹⁷

In the Virginia General Assembly, information system users are offered two types of appropriations data. By using the vide screen network, they may receive data in response to an "Appropriation Inquiry," including each appropriations bill by bill type within the legislative body, with asterisks (*) indicating amendments. In addition, a daily "Appropriation Tabulation Report" (fig. 60) is prepared on an overnight basis, listing all bills with fiscal notes by appropriations categories; amounts are shown by year with a biennium total and fiscal note amendments are asterisked.⁹⁸

⁹⁵ Recommendation concerning bill status, bill drafting, and the proposed 5-year plan for the members of the Joint Committee on Legislative Information Systems, *op. cit.*, p. 30 (exhibit G).

⁹⁶ Electronic data processing and the legislative process. LRB (Boston) memorandum, Apr. 7, 1966, *op. cit.*, p. 7.

⁹⁷ Information concerning the various States' use of ADP in handling fiscal-budgetary data has been derived largely from the Elkins (1971) and CRS surveys.

⁹⁸ A legislative information system for the Commonwealth of Virginia, *op. cit.*, p. 11.

FIGURE 59.—STATUS OF APPROPRIATION BILLS, STATE OF ILLINOIS

Agency and fund	Bill No.	Status	Current amount	Budget book recommend	Appropriation last fiscal period	Over-under budget		Over-under last fiscal year	
						Amount	Per-cent	Amount	Per-cent
Conservation:									
General revenue:									
Operations	S. 1163	House appropriated	\$13,657,300	\$14,000,000	\$12,500,000	\$342,700	10.3	\$1,157,300	9
	S. 1159	do	20,000	20,000		0	0	20,000	100
Grants	H. 2421	Senate 1st reading	15,000,000	14,000,000		1,000,000	7.0	15,000,000	100
	H. 2899	do	1,900,000			1,900,000	100.0	1,900,000	100
Capital	H. 1046	House 2d reading	3,000,000			3,000,000	100.0	3,000,000	100
Total fund			33,577,300	28,020,000	12,500,000	5,557,300	19.9	21,077,300	160
Game and fish:									
Operations									
Grants									
Capital									

FIGURE 60.—*Appropriation tabulation report—the State of Virginia.*

SUMMARY OF BILLS CONTAINING APPROPRIATIONS				
FEBRUARY 10, 1970	----- APPROPRIATIONS -----			-----
DESCRIPTION	FIRST YEAR	SECOND YEAR	BIENNIUM TOTAL	STATUS
GEN FUND FIRM:				
* HB 103	10,000	10,000	20,000	APPROVED
HB 201	-0-	5,000	5,000	PASSED H
HJR 12	5,000	-0-	5,000	
SUBTOTAL	15,000	15,000	30,000	
SPEC FUND FIRM:				
SB 106	10,000	10,000	20,000	PASSED H/S
SUBTOTAL	10,000	10,000	20,000	
INCL IN OTHER APP:				
HB 126	10,000	15,000	25,000	APPROVED
SB 105	6,000	6,000	12,000	
SUBTOTAL	16,000	21,000	37,000	
NO APP STATED:				
HB 129				FAILED
SB 105				
SUBTOTAL				
GRAND TOTAL	25,000	25,000	50,000	
EMERGENCY APP:				
HB 107	15,000			
TOTAL	15,000			

Indiana has carefully synchronized its handling of information on legislation with pertinent executive branch groups, resulting in a useful method of pointing up the fiscal impact of any bill on the State. A "Fiscal Impact Report" may be selectively called for, in display or printed form, from the computerized file of fiscal impact information. This file is created from information contained either in the worksheet prepared by the Fiscal and Management Analysis Division of the Legislative Council (shown in fig. 61),⁹⁹ or contained in the "fiscal note" (fig. 62)¹⁰⁰ which identifies the legislation affected and the estimated fiscal effect of the proposal.

⁹⁹ Martin, *op. cit.*, enclosure 2.

¹⁰⁰ *Ibid.*, enclosure 6.

FIGURE 61.—*The State of Indiana.*

Form LC-G
Indiana Legislative Council

FISCAL IMPACT OF LEGISLATION INFORMATION
WORKSHEET

HB 1532

Legislation I.D.

FEB 20

Date Prepared

YEAR & CATEGORY	GENERAL FUND	DEDICATED FUND
	A	B
1- 1969 - 70 FY EXPENSES (1)	1A 20,000	1B 0
1969 - 70 FY REVENUE (2)	2A Unknown	2B 0
2- 1970 - 71 FY EXPENSES (3)	3A 20,000	3B 0
1970 - 71 FY REVENUE (4)	4A Unknown	4B 0
3- TOTAL BIENNIAL EXPENSES (5)	5A 40,000	5B 0
TOTAL BIENNIAL REVENUE (6)	6A Unknown	6B 0

NOTE.—All amounts are to be entered in dollars only. Use complete figures. Indicate negative figures with (—).

FIGURE 62.—*The State of Indiana.*

FISCAL NOTE

Bill No.: S. 20 H—

Date requested : 1/16/67

Date for return : 1/21/67

Type of fund :

Account No. affected :

General Fund
Dedicated Fund
Revolving Fund

Revenue Account No. _____
Appropriation Account _____

ESTIMATED FISCAL EFFECT OF PROPOSAL

	1967-68		1968-69	
	Increase	Decrease	Increase	Decrease
Revenue.....	None	None	None	None
Appropriations:				
Personal service.....	\$19,500		\$22,500	
Other operating.....	8,500		9,100	
Equipment.....	2,500		3,500	
Grants and subsidies.....	1,600		1,800	
Construction.....	None		None	
Total appropriations.....	32,100		36,900	

State in a clear, concise manner what the effect of this measure will be on the immediate and long-range revenues and costs of State government, explaining or qualifying the above estimates and the basis for arriving at them :

The costs listed above are based on estimates of the number of tests which will have to be made (securing samples and performing tests). Equipment and personnel and the supportive services to the positions account for the costs listed.

Agency _____
Jan. 18, 1967.

ROBERT R. FERNEY,
Professor of Sociology.

Fiscal impact information for each piece of legislation may have as many as 12 categories: ¹⁰¹

Fiscal year expenses:

1969-70 General Fund
1969-70 Dedicated Fund
1970-71 General Fund
1970-71 Dedicated Fund
Total General Fund
Total Dedicated Fund

Fiscal year revenue:

1969-70 General Fund
1969-70 Dedicated Fund
1970-71 General Fund
1970-71 Dedicated Fund
Total General Fund
Total Dedicated Fund

Typical of the fiscal impact reports created for legislator review is that, in display format, appearing as figure 63; the amounts are shown in dollars only, but dollar signs are not used. ¹⁰²

FIGURE 63.—*The State of Indiana.*

Display Format for Fiscal Impact Report

X-----40 Display Positions-----X			Line Number
HB 1532A	FISCAL IMPACT REPORT	JAN 23	1
H.R.SPON:	WILLIAMS, EDWARDS		2
SEN.SPON:	ROBINSON, SMITH		3
	GENERAL FUND	DEDICATED FUND	4
69-70 EXP	20,000		5
69-70 REV	UNKNOWN		6
			7
70-71 EXP	20,000		8
70-71 REV	UNKNOWN		9
			10
TOTAL EXP	40,000		11
TOTAL REV	UNKNOWN		12

The printed format, which many Indiana legislators prefer, offering essentially the same information arranged differently, is available to members and staff as an off-line printout.

To make its fiscal impact information coverage as comprehensive as possible, the Indiana system provides for the generation of a "Missing Fiscal Impact Records Report." This is printed on the 1053 printer-terminal at its Legislative Council site prior to 8 a.m. each day during the session. The report, shown as figure 64, lists all legislation for which a fiscal impact report was required, but not submitted to date. ¹⁰³

¹⁰¹ *Ibid.*, pp. 7, 17.

¹⁰² *Ibid.*, enclosure 9.

¹⁰³ *Ibid.*, enclosure 20.

FIGURE 64.—*The State of Indiana.*

JAN. 23, 1969

PAGE 1

MISSING FISCAL IMPACT REPORT LISTING
1969 INDIANA GENERAL ASSEMBLY

THE FOLLOWING PIECES OF LEGISLATION ARE REPORTED TO HAVE A FISCAL IMPACT ON THE STATE. THERE ARE NO FISCAL IMPACT REPORTS ENTERED FOR THE BELOW LEGISLATION.

HB	1206
HB	1340
SB	44
SB	134
SB	234

Yet another type of fiscal impact product produced by the Indiana legislation information system is the "Summary Fiscal Impact Report." Produced daily during the session, this report contains fiscal impact data for each piece of legislation with a fiscal impact recorded, and also sets forth summary totals for expenditures and revenues as reflected (by fiscal year) for all legislation covered by the report. Figure 65 offers a facsimile of the printed Summary Fiscal Impact Report.¹⁰⁴

FIGURE 65.—*The State of Indiana.*

FEB 10, 1969

SUMMARY FISCAL IMPACT REPORT
1969 INDIANA GENERAL ASSEMBLY

PAGE 10

SB 175A	H.R. SPON: EDWARDS, SIMPSON	SEN. SPON: ROBINSON, CLAY
	GENERAL FUND	DEDICATED FUND
69-70 EXP	20,000	69-70 REV UNKNOWN
70-71 EXP	20,000	70-71 REV UNKNOWN
TOTAL EXP	40,000	TOTAL REV UNKNOWN

SB 203A	H.R. SPON: ALLEN, JONES	SEN. SPON: SMITH, HERD
	GENERAL FUND	DEDICATED FUND
69-70 EXP	42,000	69-70 REV
70-71 EXP	55,000	70-71 REV
TOTAL EXP	97,000	TOTAL REV

SB 213A	H.R. SPON: WOODARD, BAY	SEN. SPON: CLEVINGER, KING
	GENERAL FUND	DEDICATED FUND
69-70 EXP	210,000	69-70 REV UNKNOWN
70-71 EXP	251,000	70-71 REV UNKNOWN
TOTAL EXP	461,000	TOTAL REV UNKNOWN

SB 217A	H.R. SPON: BRINKER, BLAKE	SEN. SPON: GLENN, GRAHAM
	GENERAL FUND	DEDICATED FUND
69-70 EXP	23,000	69-70 REV
70-71 EXP	25,000	70-71 REV
TOTAL EXP	48,000	TOTAL REV

SUMMARY TOTALS

69-70 EXP	230,000	65,000	69-70 REV	1,001,011,000
70-71 EXP	271,000	80,000	70-71 REV	5,925,000
TOTAL EXP	501,000	145,000	TOTAL REV	1,006,936,000

¹⁰⁴ *Ibid.*, enclosure 14.

Legislators traditionally have sought *access to information contained within the State's budget*. Such access often has been limited by executive branch managers who believe that such data should be released only when in final form, or when specifically released by the Bureau of the Budget or as directed by the Governor. Increasingly during the past decade there has been a movement in many States to facilitate the transfer of budgetary information, both short term and long range, between the two branches. Some States have looked at the Federal "Planning-Programming-Budgeting System"—commonly known as "PPBS"—and begun exploring its adaptability to their environment and set of problems.¹⁰⁵

Several States now have working arrangements which allow specific committees or members-at-large to learn more about the status of departmental programs and projects as reflected in budgetary documentation. South Dakota, seeking to provide its legislators with such data, has established procedures whereby members are able to draw upon the State Government's computerized "budgetary-accounting system" for information on any agency's expenditures, either by category or as presented in selected totals. In North Dakota, ADP first was used during the 1971 legislative session in the preparation of a budget status report, with this comment from the Legislative Council:¹⁰⁶

Prior to installation of a budget status system, the capability of keeping daily track of the total amount had not been attempted on any manual basis. Certainly, if experience with the bill status system is any guideline, it would have been almost impossible to maintain a budget status system on an up-to-date basis through manual efforts.

In Massachusetts, budgetary information is provided upon demand by the State Comptroller to the House and Senate Committees on Ways and Means, while in Ohio, current budgetary information is channeled from the executive branch to legislators who are members of the Assembly's Finance Committee. The question of who should have access to what fiscal-budgetary data, and at what point in time, is yet to be answered decisively in many States. Not only have there been time-honored constraints on releasing such data, but the capability to provide accurate, current information by those charged with the management of the various agencies and programs often has not existed.

Revenue forecasting, utilizing computers, is on the rise. In Florida, for example, the Department of Revenue provides the legislature with useful data, including available statistics on all taxes and fees collected by or for the State, the amount and cost of collection for each revenue source during the last fiscal year, and the statutory authority and department charged with enforcement. In Georgia, the legislators

¹⁰⁵ The State-local finances project of The George Washington University has prepared several publications on PPBS use at the State-county-city levels; among these are:

Mushkin, Selma J. Planning, programming, budgeting for city, State, county objectives, June 1968, four documents totaling 187 pp.

Mushkin, Selma J., Harry P. Hatry, and Marjorie C. Willcox. Encouraging improved planning in State and local governments (the Federal role), September 1968, 54 pp. plus appendix.

Mushkin, Selma J. and others. Implementing PPB in State, city, and county, a report on the 5-5-5 project, June 1969, 160 pp.

¹⁰⁶ Elkins (1971), *op. cit.*, p. 84 [Remarks of John A. Graham, assistant director, Legislative Council].

are furnished with Department of Revenue information on the percentage of revenue received from each major tax source. Ohio legislators continue to use computer support in projecting highway revenue allocations and the effect of new welfare programs, thus obtaining a dual benefit through the comparison of revenue and expenditure projections. In commenting on this capability, the director of the Ohio Legislative Service Commission noted that:¹⁰⁷

. . . much less information would have been available for research projects without the computer; testing the results of proposed changes in certain tax allocation proposals and in the school foundation law, for example. Without the computer they would have used aggregate estimates and sampling techniques and would have had to do much more statistical-clerical work.

The difficulty of integrating Federal funding (grants-in-aid, loans, contracts) into the State budgetary planning and management cycle grows with each passing year. Sometimes the problem centers on the tardiness of Federal departmental allocations or a decision to parcel out funds on an unsystematic basis; when cost-sharing is involved, the percentage of contribution required of the State may exceed planned levels. In Utah, Federal information is recorded so that all grants are listed, together with the application of such funds, and a report is printed every 2 weeks showing file activity. Also, a file is maintained on State and local government use of Federal funds, thus allowing the legislature to see what portion of the Federal, State, and local moneys are being expended in each county. Wisconsin maintains a financial inventory of municipal units within the State, again providing the State legislators with a picture of what is going on at the district and constituency levels.

Hawaii's emphasis on better resource allocation decisions, both by the legislature and the executive agencies, is reflected in Act 185, "A Bill for an Act Relating to the State Budget" (H.B. No. 1829-70).¹⁰⁸ Drawing upon the best features of other governmental systems which stress the preparation, coordination, and analysis of budgets focusing on State programs and their costs, Hawaii handles program and financial plan data in computerized form, thereby expediting central budget office decisions and providing each program manager with a *current* plan. Since the State's decisionmakers must possess information on 930 programs at all levels, the computer is helpful in preparing cost and personnel data summarizations and aggregate measure-of-effectiveness data. In addition, data processing can help restructure program data according to organizational responsibility lines; more than one major department is involved in 10 of 11 major programs, 25 of 37 level II programs, and 33 of 207 level III programs. The volume of data is high: 15,000 pages of information reflecting 600 program plans for operating departments, plus 330 intermediate level program summaries. And finally, the computerized files are used as the basis for furnishing various quantitative indicators which serve as measures of effectiveness by those tying the plans to governing appropriation amounts.

¹⁰⁷ *Ibid.*, pp. 86-87 [Remarks of David A. Johnston, director, Ohio Legislative Service Commission].

¹⁰⁸ Act 185, Session Laws of Hawaii, June 30, 1970, pp. 382-401.

The preparation of *special analyses* utilizing computerized fiscal-budgetary data, sometimes augmented by demographic statistics, is not of immediately recent origin. Several States report beginning such exercises early in the 1960's. David B. Kret, Arizona Senate Majority Leader, reports that he used a computer to model school finances in 1963:¹⁰⁹

In each instance, the basis for school support funding is really a relatively simple equation. The system seems complex because of the number of different parts of the equations, each of which requires data from each individual school district—attendance figures, property valuation, and such budget divisions as operations, bonded and budgeted capital outlay.

Other States have offered support to the legislative groups responsible for reordering educational finance. Wisconsin's legislative information system now provides a listing of all 435 public school districts by Senate and Assembly districts. Hard copy printouts are given each member of the two chambers showing the dollar amounts provided the school districts with changing school aid formulas. The Wisconsin legislators receive, as well, the dollar amounts for the entire Governor's consolidated budget bill. Minnesota and Pennsylvania also report using computers for determining the fiscal ramifications of established and proposed appropriation and expenditure matters; the latter State system has been required to prepare a 5-year analysis of fiscal essentials.¹¹⁰ Connecticut reports that in striving to achieve a program-performance approach to budgeting, its computer is used increasingly to help analyze the State's budgetary structure in a more effective fashion than ever before. In Kansas, ADP has been used sparingly, but interestingly has been of service in producing test runs of the results of various proposed formulas for the redistribution of funds, such as the fuel tax and school foundation funding.

LEGISLATIVE PRINTING

From the earliest days of the Republic, State legislatures have assiduously recorded, and selectively published, information about those actions and decisions which would be of value to succeeding groups of legislators and of interest to the general public. These have taken the form of journals, bulletins, calendars, and other documentation. For the most part, States have relied upon commercial printers to prepare these documents, although there are those legislatures which operate their own printing facility.

In recent years, with the increased legislative load and the parallel requirement for more rapid access to certain types of information—contents of pending legislation, action on new bills and resolutions, committee deliberations—plus ever-rising printing costs, many legislatures have begun to explore alternative approaches to storing and printing the requisite documentation.

¹⁰⁹ Kret, David B. Legislative involvement and responsibility in the continuing growth and cooperation between State and local governments in the use of data processing systems. A speech before the UNIVAC users group, Phoenix, Ariz., April 19, 1971, p. 3.

¹¹⁰ Information provided by Richard E. Campbell, executive director of the Legislative Data Processing Center, Harrisburg, Pa., during CRS survey, December 1971.

The use of computer support in publishing legislative material has centered about a system where selected information is stored in the computer, either using terminals or by entering blocs of data at the computer site, made available for recall and editing, and then prepared in page form via a terminal or high-speed printer. This final copy is then put through a photocomposition process at a considerable savings to the user. Hawaii, using the services of the Aspen Systems Corp., reports a page cost of \$21, rather than \$36 per page when traditional printing processes are employed.¹¹¹

Another existing computer-centered approach, more expensive but more efficient in turning out large volumes of printed material, which is yet to be adopted by any State legislature, is that in operation at the U.S. Government Printing Office (GPO). The GPO system features the use of a Mergenthaler "Linotron" device, which allows the mounting of magnetic tapes containing substantive information and special computer-instruction markings that "drive" the large printing presses.¹¹² As the costs connected with such a capability are lowered, this approach may well become more feasible for State utilization.

At the present time, almost a dozen States are fully committed to using computer support in the area of legislative printing, and nearly half that number again are developing such a capability. In Oregon, for example, the computer can produce proofs for offset printing of enrolled acts, slip laws, session laws, or compilations of newly enacted laws administered by a State agency. Hawaii, with continuing contractor support, has two types of documentation produced annually as the result of computer processes:

- An additional volume of new laws, as part of the bound series called *Session Laws of Hawaii*; and
- A series of "pocket supplements" for each volume of the *Hawaii Revised Statutes*.

Figure 66 illustrates the form and content of a page from a "pocket supplement."¹¹³ Since this operation in revising statutory material is integrally tied to the updating of a master computer tape, the State pays \$50,000 annually for the entire service.

The preparation and prompt issuance of journals, calendars, and bulletins are very much the concern of those legislators who rely upon their contents as an aid to decisionmaking and future planning. It is in this area that the computer has been very useful. As early as 1965, stenotypists in the Florida Legislature were recording each day's activities in order to prepare complete journals. With the advent of ADP, code clerks were instructed to take the journal pages and reduce the actions to codes which identified each Senator or Representative, each of the 80 committees in both houses, and other significant information. Figure 67 illustrates the actual coding forms.¹¹⁴ After the priority data

¹¹¹ Interview with Lester E. Cingcade, Administrative Director of Courts, and Hidehiko Uyenoyama, Revisor of Statutes, Honolulu, Hawaii, Jan. 8, 1971.

¹¹² Information provided by John J. Boyle, deputy production manager (electronics), Government Printing Office, Washington, D.C.

¹¹³ Replica of a page from a "pocket supplement" to the Hawaii Revised Statutes, 1969 supplement, vol. 3, p. 83.

¹¹⁴ State of Florida legislative automation, *op. cit.*, p. 6.

is coded, it is keypunched and verified, converted via machine from card to magnetic tape form, and made available for a variety of processing functions. Among these is the printing of a final copy of the revised journal content, ready to be inserted in the final publication process. The information on such bills as SB 1072, 1074, and 1075, which appeared with codes notations in figure 67, is shown as printed material in the *Journal of the Senate* (fig. 68).¹¹⁵

¹¹⁵ *Ibid.*, p. 5.

FIGURE 66.—Page from pocket supplement to Hawaii revised statutes—
the State of Hawaii.

TITLE 14. TAXATION

CHAPTER

- 231 ADMINISTRATION OF TAXES
- 232 TAX APPEALS
- 235 INCOME TAX LAW
- 236 INHERITANCE AND ESTATE TAXES LAW
- 237 GENERAL EXCISE TAX LAW
- 238 USE TAX LAW
- 239 PUBLIC SERVICE COMPANY TAX LAW
- 241 TAXATION OF BANKS AND OTHER FINANCIAL CORPORATIONS
- 243 FUEL TAX LAW
- 246 REAL PROPERTY TAX LAW
- 247 CONVEYANCE TAX
- 248 COUNTY BUDGETS; TAX FUNDS
- 249 COUNTY VEHICULAR TAXES
- [255 MULTISTATE TAX COMPACT]

CHAPTER 231

ADMINISTRATION OF TAXES

ADJUSTMENTS AND REFUNDS

SECTION

- 231-23 ADJUSTMENTS AND REFUNDS

ADJUSTMENTS AND REFUNDS

§231-23 Adjustments and refunds. (a) This subsection shall apply to taxes assessed and collected under chapter 246.

- (1) In the event of adjustments on account of duplicate assessments and clerical errors, such as transposition in figures, typographical errors, and errors in calculations, the adjustments may be entered upon the records although the full amount appearing on the records prior to such adjustment has been paid.
- (2) There may be refunded in the manner provided in subsection (d) of this section any amount collected in excess of the amount appearing on the records as adjusted, or any amount constituting a duplication of payment in whole or in part.
- (3) Whenever any real property is deemed by the director of taxation to be exempt from taxation under the provisions of Section 246-39, if there shall have been paid prior to the effective date of such exemp-

FIGURE 67.—*Journal—Related coding forms—the State of Florida.*

[illegible]

FIGURE 68.—*The State of Florida.*

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JOURNAL OF THE SENATE

May 19, 1965

SB 832

The bill was referred to the Committee on Appropriations under the original reference.

The Committee on Water Resources Development and Conservation recommends the following pass:

SB 1011

The bill was referred to the Committee on Judiciary "B" under the original reference.

The Committee on Water Resources Development and Conservation reports the following without recommendation:

SB 828

The bill was referred to the Committee on Judiciary "B" under the original reference.

The Committee on Welfare recommends the following pass:

SB 890

The bill was referred to the Committee on Finance and Taxation under the original reference.

The Committee on Privileges and Elections recommends the following not pass:

SB 167

The bill was laid on the table.

The Committee on Welfare recommends the following not pass:

SB 822

SB 739

The bills were laid on the table.

ENGROSSING REPORT

Your Engrossing Clerk to whom was referred—

SB 40 with 2 amendments SB 639 with 4 amendments
SB 112 with 1 amendment

reports that the House amendments have been incorporated and the bills are returned herewith.

EDWIN G. FRASER
Secretary of the Senate

The bills were ordered enrolled.

INTRODUCTION

By Senator McDonald—

→ SB 1072—A bill to be entitled An act relating to Washington county, hospital trustees; providing that there shall be one (1) trustee selected from each county commission district; providing an effective date.

Was read the first time by title.

Evidence of notice and publication was established by the Senate as to SB 1072.

county, port authority; amending sections 2 and 4 of chapter 63-2030, Laws of Florida; removing the power of eminent domain from port authority; terminating the offices of present port commissioners; transferring all powers and duties to the board of county commissioners; providing an effective date.

Was read the first time by title.

Evidence of notice and publication was established by the Senate as to SB 1073.

On motions of Senator McDonald, the rules were waived by two-thirds vote and SB 1073 was read the second time by title, the third time in full and passed, title as stated. The vote was: Yeas—43. Nays—None.

Mr. President	Daniel	Johns	Roberts
Askew	Davis	Johnson (19th)	Ryan
Barber	Dressler	Johnson (6th)	Spottswood
Barron	Edwards	McCarty	Stratton
Bronson	Friday	McDonald	Tapper
Carlton	Gautier	McLaughlin	Thomas
Carraway	Gibson	Mapoles	Usher
Clarke	Griffin	Mathews	Whitaker
Cleveland	Haverfield	Pearce	Williams
Covington	Henderson	Pope	Young
Cross	Hollahan	Price	

The bill was certified to the House.

By Senator Hollahan—(By Request)—

→ SB 1074—A bill to be entitled An act for the relief of Walter C. Lehmann; appropriating money from the general revenue fund to compensate him for medical bills and other damages.

Was read the first time by title and referred to the Committee on Claims.

By Senator McLaughlin—

→ SB 1075—A bill to be entitled An act relating to Okaloosa county, board of county commissioners; authorizing the board of county commissioners to hold special meetings in the Okaloosa county island authority building; providing an effective date.

Was read the first time by title.

Evidence of notice and publication was established by the Senate as to SB 1075.

On motions of Senator McLaughlin, the rules were waived by two-thirds vote and SB 1075 was read the second time by title, the third time in full and passed, title as stated. The vote was: Yeas—43. Nays—None.

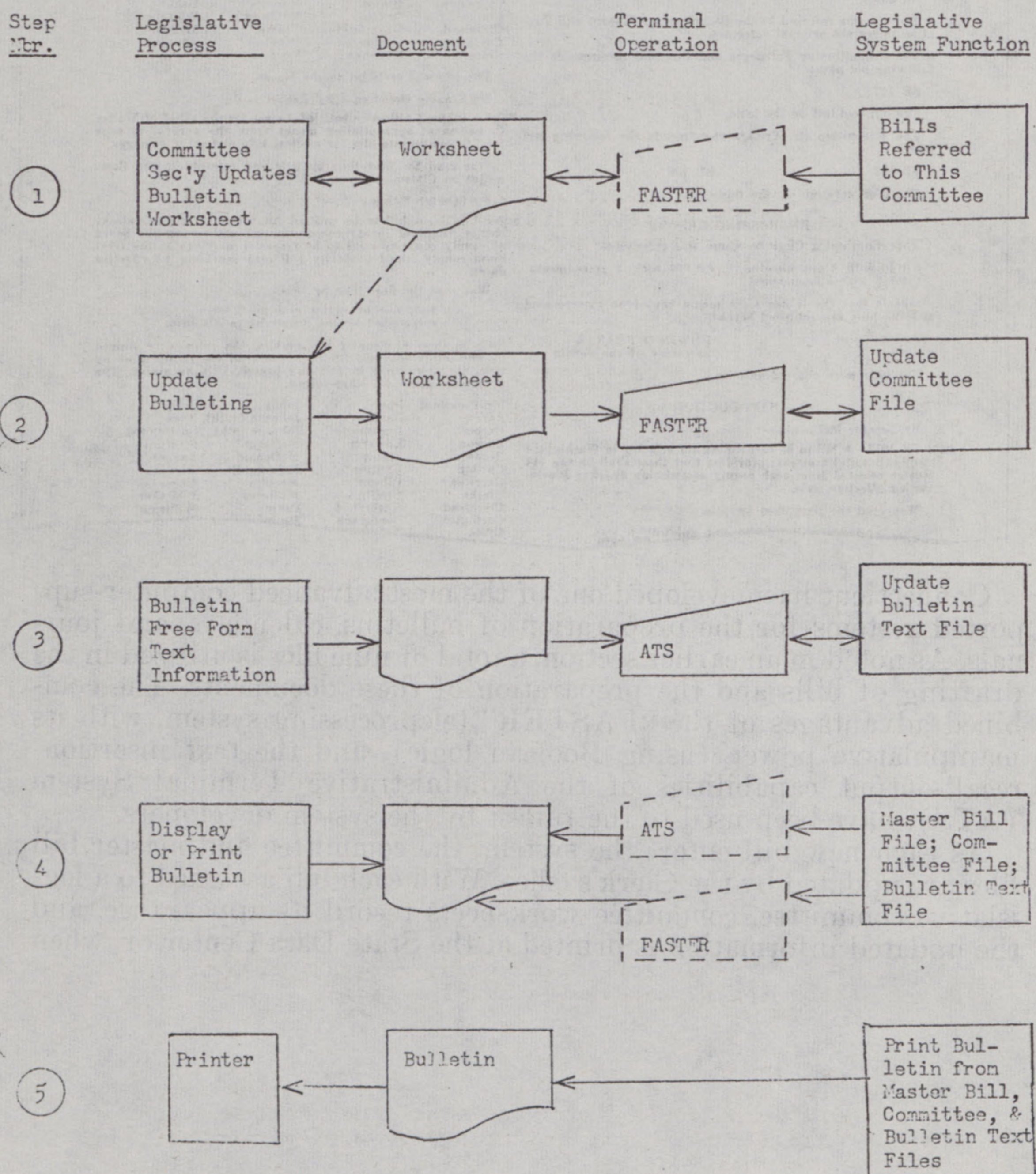
Mr. President	Daniel	Johns	Roberts
Askew	Davis	Johnson (19th)	Ryan
Barber	Dressler	Johnson (6th)	Spottswood
Barron	Edwards	McCarty	Stratton
Bronson	Friday	McDonald	Tapper
Carlton	Gautier	McLaughlin	Thomas
Carraway	Gibson	Mapoles	Usher
Clarke	Griffin	Mathews	Whitaker
Cleveland	Haverfield	Pearce	Williams
Covington	Henderson	Pope	
Cross	Hollahan	Price	

Connecticut has developed one of the most advanced computer-supported systems for the preparation of bulletins, calendars, and journals. As noted in an earlier section, a total of nine files is utilized in the drafting of bills and the preparation of these documents. The combined advantages of the "FASTER" teleprocessing system, with its manipulative power (using Boolean logic), and the text insertion-recall-output capabilities of the Administrative Terminal System (ATS), have been used to the fullest by the system developers.

As each new bill enters the system, the committee and master bill files are updated by the Clerk's office. With each bill assigned to a legislative committee, committee worksheets record its appearance, and the updated information is printed at the State Data Center or, when

required, via the "FASTER" software on a terminal. The worksheets are used by the committee secretaries to check when and where the committees will meet, and which bills will be considered. The Clerk's office, upon receiving the updated worksheet, can use ATS to enter and modify the "free-form" textual material, thus allowing more flexibility in the format and content of the *Legislative Bulletin*. Corrections and additions may then be made by the Clerk's staff and upon final approval, the Bulletin material can be printed on the high-speed printer and forwarded for photo-offset printing. The major steps in bulletin processing are diagrammed in figure 69.¹¹⁶ and a sample of the *Legislative Bulletin* appears as figure 70.¹¹⁷

FIGURE 69.—The State of Connecticut—Bulletin processing.



¹¹⁶ State of Connecticut legislative information system, *op. cit.*, p. 19.

¹¹⁷ Replica of a page from the Legislative Bulletin, State of Connecticut, No. 40, Tuesday, Mar. 16, 1971. p. 3.

TUESDAY, MARCH 16, 1971

No. 40

State of Connecticut

Legislative Bulletin

HOUSE MEETS

MONDAY, MAR. 15, TUESDAY, MAR. 16, WEDNESDAY, MAR. 17
THURSDAY, MAR. 18, at 1:30 P.M.

- • -

SUGGESTED COMMITTEE ROOM ASSIGNMENTS

APPROPRIATIONS	Room 310
BANKS and REGULATED ACTIVITIES	Room 410
CORRECTIONS, WELFARE and HUMANE INSTITUTIONS	Room 419
EDUCATION	Room 408
ELECTIONS	Room 409
(THE) ENVIRONMENT	Room 415
FINANCE	Room 409A
GENERAL LAW	Room 4 1/2
GOVERNMENT ADMINISTRATION and POLICY	Room 411
HUMAN RIGHTS and OPPORTUNITIES	Room 416
INSURANCE and REAL ESTATE	Room 417
JUDICIARY	3rd floor east
LABOR and INDUSTRIAL RELATIONS	Room 402
LEGISLATIVE MANAGEMENT	Room 314
LIQUOR	Room 417
PUBLIC HEALTH and SAFETY	Room 414
PUBLIC PERSONNEL and MILITARY AFFAIRS	Room 406
RULES	Room 411
STATE and URBAN DEVELOPMENT	Room 102
TRANSPORTATION	Room 418

COMMITTEE ROOMS

Requests for use of Committee Rooms must be cleared through the chairmen of those committees for the remainder of the session.

CAFETERIA

The Cafeteria will be open Monday through Friday. There will be hot meals, sandwiches and beverages.

BULLETIN NOTICES

All notices concerning the time and place of Public Hearings, Executive Sessions and Committee Meetings must be typed on Bulletin Sheets and signed by either the Chairman, Clerk or Secretary of the Committee. Bulletin Sheets are available at the desk in Room 207B.

FIGURE 71

State of Connecticut

House of Representatives

C A L E N D A R

FRIDAY, JUNE 4, 1971

(All matters marked X have been in the files one day.)
 (All matters marked XX are ready for the action of the House.)

<i>Cal. No.</i>	<i>Title</i>	<i>File No.</i>
-----------------	--------------	-----------------

CONSENT CALENDAR

XX1297	Substitute for House Bill No. 5046. AN ACT CONCERNING HOLDING AND SALE OF BONDS OF THE STATE FOR THE PENSION FUND OF THE TEACHERS' RETIREMENT SYSTEM. Favorable report of the Committee on Finance.	1471
XX1300	Substitute for House Bill No. 5157. AN ACT CONCERNING TECHNICAL AMENDMENTS TO THE UNIT OWNERSHIP ACT. Favorable report of the Committee on General Law.	1466
XX1302	House Bill No. 5289. AN ACT CONCERNING THE LICENSING OF PSYCHOLOGISTS AND THE PRACTICE OF PSYCHOLOGY. Favorable report of the Committee on Public Health and Safety.	1502

Preparation of the calendar is a similar process. Entries for this document are made by the Clerk's office via 2740 Communications Terminals using the "FASTER" software; the Calendar, Committee, and Master Bill files are updated. After the editing and review are completed by the Clerk's staff, the Calendar (a page of which is shown as fig. 71)¹¹⁸ is produced on the State Data Center printer and made available for final photo-offset production.

The third major document produced using the coordinated ATS-FASTER computer software is the *Journal of the House*. The first step involves the entering of "free-form" text of content material via the ATS terminals by the Clerk's office. As in the preparation of the Bulletin and Calendar, there is a subfile of "Standard Phrases" which the terminal operator may use in order to reduce repetitive entries. As the format of the Journal is audited via the ATS terminal, the Clerk's staff may also reference information in the master bill file by using the "FASTER" capability. When all requisite information has been entered in the computer system, a Journal worksheet is produced by the State Data Center's printer. This copy is used for final review by the Clerk's office. The Journal then is printed and sent to the printer for photo-offset processing. The resulting product is shown in figure 72.¹¹⁹

¹¹⁸ Replica of a page from the Calendar, State of Connecticut, House of Representatives, Friday, June 4, 1971, p. 1.

¹¹⁹ Replica of a page from the Journal of the House, State of Connecticut, Wednesday, June 30, 1971, p. 1.

FIGURE 72.—*The State of Connecticut.*

JOURNAL OF THE HOUSE

WEDNESDAY, June 30, 1971

The House was called to order at 11:16 o'clock, A.M., the Speaker in the Chair.

The prayer was offered by the Chaplain, Rev. A. Roger Williams of Hartford.

The following is the prayer:

Eternal God, who in infallible wisdom governs the universe; men through the ages have called upon You. Upon whom else can we call? You know our frame. You remember that we are dust. Enable us to do Your work in Your strength for all the people of this state, making their deepest welfare our criterion. Amen.

INTRODUCTION OF BILLS
EMERGENCY CERTIFICATION
HOUSE BILLS

The following House Bills were read the first time and referred to the committees indicated. (Certification signed by the President Pro Tempore of the Senate and Speaker of the House in accordance with Section (15) a and 8 (2) of the Joint Rules and Sections 2-26 and 2-28 of the General Statutes accompanied the bills.):

APPROPRIATIONS

House Bill No. 9508. AN ACT CONCERNING APPROPRIATIONS FOR THE EXPENSES OF THE STATE FOR THE FISCAL PERIOD ENDING JUNE 30, 1971.

FINANCE

House Bill No. 9509. AN ACT CONCERNING THE AUTHORIZATION OF BONDS OF THE STATE FOR CAPITAL IMPROVEMENTS AND OTHER PURPOSES.

While the primary emphasis in using ADP in legislative printing should properly be placed on heightened system delivery of critical documentation, it is an area where cost benefits have been realized. The Iowa Chief Clerk of the House, William R. Kendrick, reports, for example, a financial saving in the preparation and printing of documentation containing a comprehensive bill history, subject index, and bill roster: 400 copies have been produced at a cost of \$1.25 per book.¹²⁰

ELECTROMECHANICAL VOTING

More than 100 years have passed since Thomas A. Edison was granted his first patent for an "Electrographic Vote Recorder." Through the years, many refinements have been introduced. Today the most advanced voting systems are truly "electronic" in nature.¹²¹ But in the beginning, a vote recorder featured a simple switch at each desk which, when moved to the "Yes" or "No" position, energized the legislator's name in either the "Yes" or "No" column of type. A traveling carriage then pressed sensitive paper against the type, and recorded the vote. Subsequent improvements included a key-operated and remotely resettable voting switch (1902), the ability to record present and paired, an indicator board, and a high-speed recording enhancement (1917-19). Two types of equipment became available after World War I:

- The Universal Indicator Co. featured a "photographic record, ammeter totaling" equipment configuration; these devices were successfully installed for rollcall purposes in the House Chambers of Iowa, Louisiana, Texas, and Wisconsin by 1922.
- The (Marshall F.) Thompson Voting Machine Co. offered a "perforated record, commutator totaling" system first demonstrated to the U.S. Congress in 1922, and installed in the Virginia House of Delegates in 1923. Twenty of these devices were installed in State legislatures between 1928 and 1948.

The International Roll-Call Corp. was formed in 1936 and for the first time effectively utilized high-speed electromechanical elements. The first two new units were installed in the Virginia Senate and House of Delegates in 1942. During the postwar period International Roll-Call Corp. systems were placed in use in 22 State legislatures. Today, high-speed electronic circuitry and microelements are utilized which allow vote recording and processing in fractions of a second.

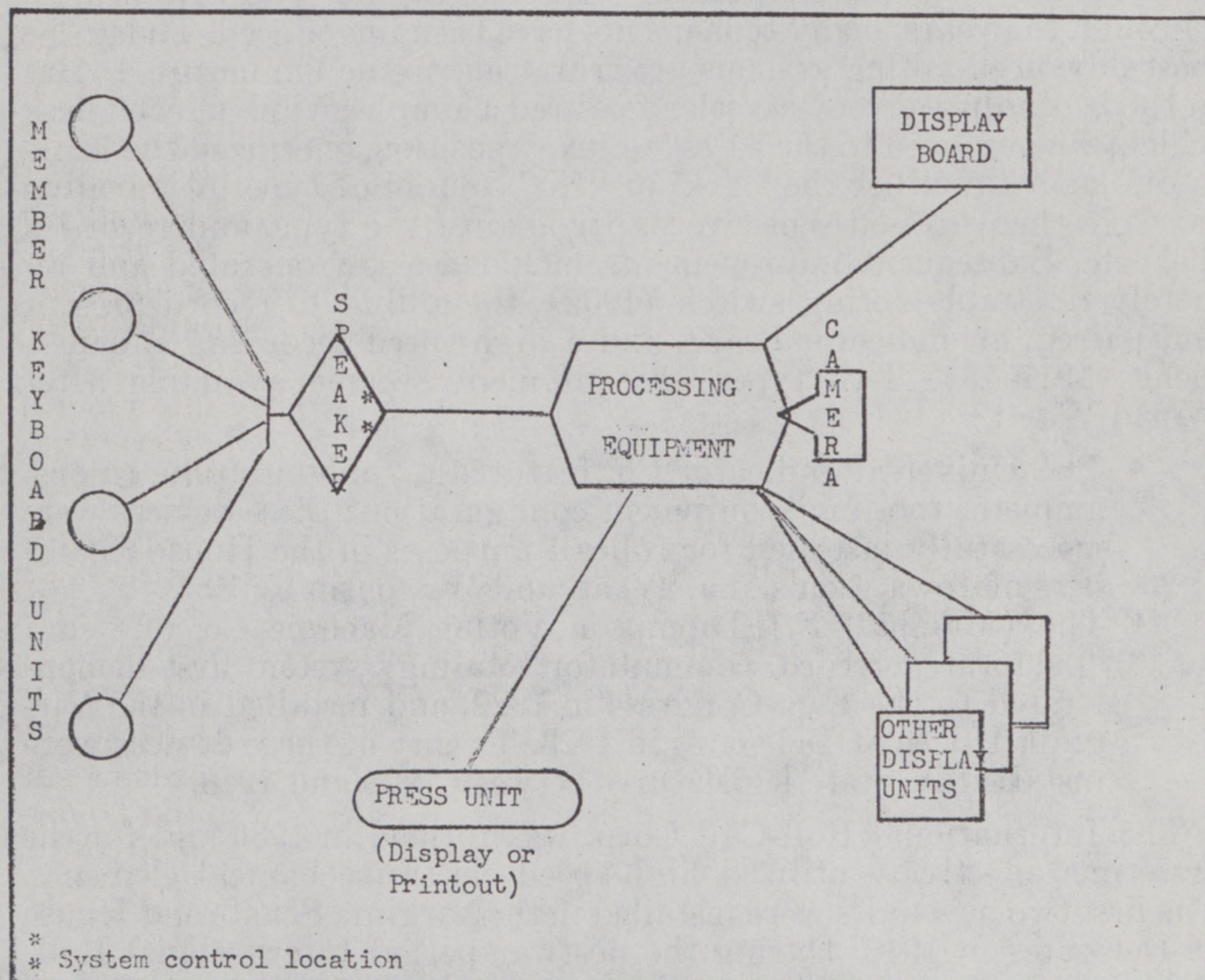
Procedurally, members record their vote preference as the Speaker, who acts as monitor of the legislative procedure, checks to see that the proper display units are "blacked out" (in the case of a closed vote) or activated. Proper functioning of the keyboard units is verified by

¹²⁰ At the present time, four committees of the U.S. House of Representatives are engaged in legislative calendar preparation using ATS and the Library of Congress IBM 370 Model 155 facility: Banking and Currency, Judiciary, Interstate and Foreign Commerce, and Government Operations. Commencing with the 91st Congress (1969), it was found that having IBM 2741 special typewriters in the committee offices allowed more facile handling of calendar information. In each instance, a "feasibility study" of the potential of ADP support for the individual committee, and the subsequent training of staff, was performed by the Automated Information Services Section of the Congressional Research Service.

¹²¹ Historical information contained in a broadside from the International Roll-Call Corp. entitled Bulletin 101, the electrical rollcall is born and (on the reverse side) Bulletin 102, the Thompson rollcall arrives. Richmond [no date], p. 2.

checking a series of flashing lights. Vote or rollcall data is presented on the master display board—sometimes called a “tote board”—which is in full view of all members, and may also appear in printed or display form at various locations: the leadership chambers, Office of the Clerk, and so forth. In many cases, the press gallery is furnished with its own printer or videoscreen. As each transaction is completed, a photographic record of the final tally or listing is made, insuring a complete historical chronicle of the action.¹²² The major elements of a typical State legislature system are diagrammed in figure 73.

FIGURE 73.—*Contemporary State electromechanical voting system.*



While the use of such electromechanical equipment centers on the recording of votes by the chamber, it also may be used upon the decision of the leadership to record election results or to recognize a member who desires to gain the attention of the chair (as in a debate).

Commentary on the performance of the present day equipment has been generally favorable, with the reliability of system performance being stressed (e.g., by Alabama, Connecticut). The element of time saving, often a major reason for introducing this type of system, prompted the Clerk of the House of Representatives of Massachusetts to comment that “It would be impossible to estimate the time saved in

¹²² Electromechanical voting systems also are in use by other nations, such as Sweden and West Germany; the former country's unicameral Riksdag has a highly sophisticated L. M. Ericsson voting system.

recording the votes of the 240 members of the House;"¹²³ and in Washington, a comparison of rollcall activity was made by the Chief Clerk:¹²⁴

A week ago when we started a special session it was necessary to repass 151 bills and retransmit them to the Senate. It took us less than 2 hours to process and record the final vote on all 151 bills, with a membership of 99 in the House.

Our Senate, with a membership of 49, which does not have an electric rollcall machine took 2 days and a portion of a third to pass by oral rollcall an equal number of bills.

The use to which this type of system is put varies widely from State to State. In the Florida House of Representatives, the electrical roll call machine was used 3,067 times during the regular session of 1967, with the comment that "If the names of the 119 House members had been called that number of times, the House surely could not have transacted its business as expeditiously."¹²⁵ In Alaska, with 20 Senate and 40 House members, significant time was reported saved, particularly during the consideration of the daily calendar.

With the introduction of electromechanical equipment, certain rules or procedural changes have been required in some of the State legislatures. In Indiana, where the rules are now under revision, the procedures are as follows:¹²⁶

- Speaker controls the opening and closing of the mechanized voting.
- All members present must vote.
- Each member must vote from his own desk.
- No alteration of the vote may occur after closing.
- Prior to the use of the new system, a member could make a motion to note how he would have voted, if he changed his mind.
- When the machine is not working, the rules of the last (in this case, the 84th) Assembly apply.

The Louisiana chambers, with experience in originally using tabulating and later the more advanced equipment, are highly regulated by the State constitution, which requires that all votes be recorded. Among the procedures governing the use of this equipment are:¹²⁷

- All members not voting are counted as "No" votes.
- Every member must vote unless a conflict has been reported.
- A member may change his vote before the vote is announced. Prior to the new equipment, a vote changed was possible between the time that the last name was called and the announcement of the decision.

¹²³ Comment contained in a letter from Wallace C. Mills, Clerk of the House of Representatives, The Commonwealth of Massachusetts, to William L. Pitts, International Roll-Call Corp., dated Mar. 18, 1969.

¹²⁴ Comment contained in a letter from Malcolm McBeath, Chief Clerk of the House of Representatives, State of Washington, to International Roll-Call Corp., dated Mar. 27, 1969.

¹²⁵ Comment contained in a letter from Ralph D. Turlington, House of Representatives, State of Florida, to William L. Pitts, International Roll-Call Corp., dated Mar. 28, 1969.

¹²⁶ Information provided by Mrs. S. Thuma, Clerk of the House of Representatives, State of Indiana, during CRS survey.

¹²⁷ Information provided by W. Clegg Cole, Clerk of the House of Representatives, State of Louisiana, during CRS survey.

- Upon final passage of a bill, the Speaker announces that the Clerk will open the machine; in 7 seconds the votes are tabulated.

The most important element in any legislature's use of such a system is the attitude of the leadership toward its employment. New York, which had installed the latest type equipment in 1965 at a cost of several hundred thousand dollars, now has had the system removed. While the \$300,000 Assembly system has been plagued with "bugs" and breakdowns, some of which were attributed (in the press) to members who purposely used the wrong voting procedures, other observers placed the blame for member nonacceptance on the limitations imposed by existing rules. The Senate, on the other hand, reportedly had little trouble with the functioning of its leased equipment but found it to be of little real help in a 57-member chamber. Outsiders commenting on the machines' unpopularity pointed out that "the legislative leaders found the devices could impair their efforts to manage the outcome of a close vote."¹²⁸

A survey of the 50 States shows that 36 presently have operating electromechanical voting systems, with several being converted from the older, slower equipment to the more flexible new versions. Figure 74 presents an overview of the State legislature mechanized voting systems, including dates (where available) on original and modified installations.¹²⁹

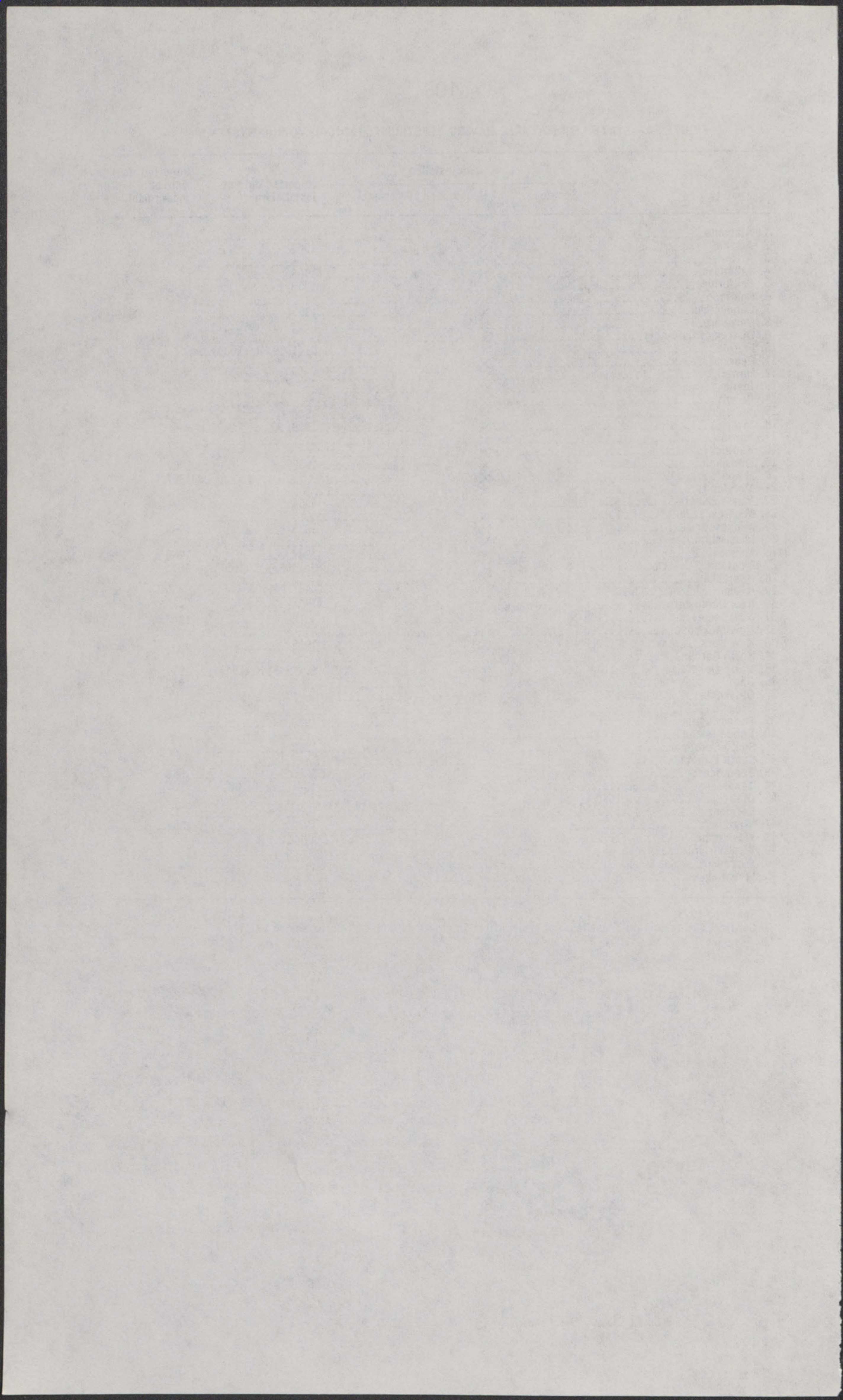
¹²⁸ Legislative computer's sad end: tilt. In the New York Post, Oct. 14, 1971, p. 6. [Article by Charles Dumas, Associated Press writer].

¹²⁹ The data appearing in figure 74 were based primarily on the CRS telephone survey, with corroboration from a current listing provided by the International Roll-Call Corp., and a table on legislative procedure: House and Senate action in *The Book of the States*, *op. cit.*, p. 76.

FIGURE 74.—STATE LEGISLATURES HAVING ELECTROMECHANICAL VOTING SYSTEMS

State	System installed			Reported date of installation	Reported last date of modernization
	Senate	House	Assembly		
1. Alabama		X			
2. Alaska	X	X		1966	
3. Arizona		X			
4. Arkansas		X		1966	
5. California			X	1935	
6. Colorado					
7. Connecticut		X		1955	
8. Delaware					
9. District of Columbia					
10. Florida	X	X		S. (1969) H. (1930)	
11. Georgia		X			
12. Hawaii					
13. Idaho		X			
14. Illinois		X			
15. Indiana	X	X		1940's	H. (1968).
16. Iowa		X		1929	
17. Kansas		X			
18. Kentucky		X			
19. Louisiana	X	X		1932	1967.
20. Maine		X			1967.
21. Maryland	X	X			
22. Massachusetts		X		1964	
23. Michigan		X			
24. Minnesota	X	X		1935	1969.
25. Mississippi		X			
26. Missouri		X		1947	1960's.
27. Montana	X	X		S. (1967) H. (1957)	1971.
28. Nebraska		X			
29. Nevada					
30. New Hampshire					
31. New Jersey	X		X		1948.
32. New Mexico					
33. New York	(1)	(1)		1965	
34. North Carolina					
35. North Dakota	X	X		S. (1949) H. (1947)	1971.
36. Ohio		X			1953.
37. Oklahoma	X	(2)			
38. Oregon					
39. Pennsylvania		X		1960	
40. Rhode Island					
41. South Carolina		X		1968	
42. South Dakota					
43. Tennessee	X	X		1960	1968.
44. Texas		X		1941	
45. Utah					
46. Vermont					
47. Virginia	X	X		1930's	1964.
48. Washington		X		1955	
49. West Virginia		X			
50. Wisconsin			X		
15. Wyoming					

¹ Removed 1971.² Contract authorizing purchase/lease of system from International Roll-Call Corp., signed 1971.



THE TECHNOLOGY IN PERSPECTIVE

The Puritan maximum of "moderation in all things" is considered by many today to be most appropriate where applying modern information technology in the legislative process is concerned. Indeed, it is imperative that a balanced perspective of the role of mechanized services be achieved, for the support provided by the applications discussed above is but one facet of the assistance required by, and available to, State legislatures. On one hand is found the enthusiasm of an experienced advocate of ADP, Senator Earl W. Brydges of New York:¹³⁰

The computer places one of the greatest research tools in history in the hands of legislatures from coast to coast. Because it can do its work quickly, surely and extensively and print laws in quantity, it saves interim committees, research counsel and law revision agencies thousands of man-hours that would be consumed simply in trying to find all laws on a specific topic and reproducing them in quantities for scissoring, pasting and reshuffling. Its importance, however, lies beyond its ability to serve as a legal research assistant. The computer becomes a means of restoring the legislature to its proper equal status with the judicial and executive branches of government. Today and in the future, control over facts—the ability to research in depth and quickly—can gain for legislatures some of the capabilities for leadership they have lost over the years.

Tempering this proponent position are those who insist, rightfully, that any changes in procedures, support services, or legislative products *must* represent an identifiable enhancement in performance and/or a reduction in expenditures. It was pointed out earlier that some States, after studying their requirements for certain types of information, made the decision that using ADP was simply too expensive.

Among the factors which must be weighed when "automating" a given legislative support function is being considered are:

- The volume of information to be acquired, indexed, stored, processed, and made available in display or printed form for use by legislative personnel;
- The existence of effective, established manual procedures for accomplishing the designated task, and whether the introduction of new devices or techniques might be of only marginal value;
- The duration of the legislative sessions, with particular attention to the impact of relatively shorter sessions on the need of legislators for certain information on an urgent basis;

¹³⁰ Brydges, Earl W. The electronic solon. In *National civic review*, July 1965, pp. 351-352.

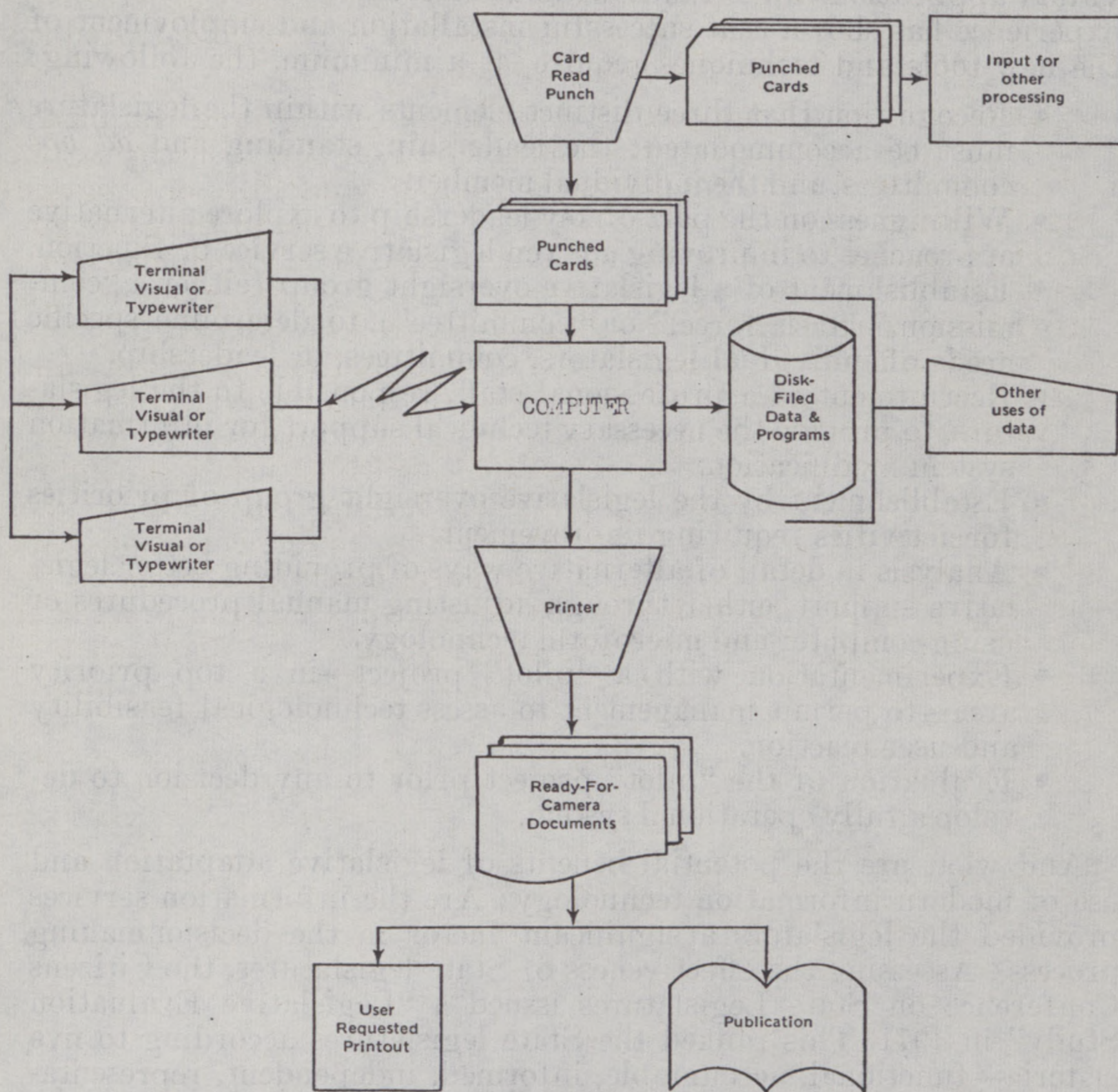
- The degree to which the legislative routine is changed by the introduction of new procedures and machines which will inevitably alter the nature, responsiveness, and actual products of the service provided the legislators.

To reduce costs, by avoiding duplication of staff and equipment, State legislatures have requested and received support from those State executive branch elements possessing computer facilities or programming-analytical personnel. Since the ADP capabilities of the State government usually are under the aegis of an executive branch manager—Louisiana and Mississippi are among the few States where a legislative unit exerts this power—the legislatures are required to justify their requirements for computerized services and vie for priority allocations where the use of the machine configuration is concerned.

Another aspect of “going the computer route” involves the decision of whether to work toward an integrated, multiple service capability, or to add new applications in a piecemeal fashion. Once decided, this will affect all elements of financing, staffing, equipment acquisition, file organization, and the range of products possible. The major elements of an ADP-centered information system which can provide an overall capability for servicing a legislature are diagrammed in figure 75.¹³¹

¹³¹ The Commonwealth of Pennsylvania computerized legislative information processing and retrieval system, *op. cit.*, p. 14.

FIGURE 75.—Typical State legislative ADP-centered information system.



Whatever the level of planning—a total system approach or individual applications undertaken without reference to a master plan—experience has shown that successful installation and employment of the new tools and techniques require, at a minimum, the following:

- Recognition that three distinct elements within the legislature must be accommodated: the leadership, standing and *ad hoc* committees, and the individual members.
- Willingness on the part of key leadership to explore alternative approaches to improving a given legislative service or function.
- Establishment of a legislative oversight group (either a “commission,” “task force,” or “committee”) to determine specific needs of individual legislators, committees, or leadership.
- Recruitment of a professional staff, responsible to the legislature, to provide the necessary technical support for information system modification.
- Establishment by the legislative oversight group of priorities for activities requiring improvement.
- Analysis in detail of alternative ways of providing better legislative support, either through adjusting manual procedures or using computer and microform technology.
- Experimentation with a “pilot” project—in a top priority area—to permit management to assess technological feasibility and user reaction.
- Evaluation of the “pilot” project prior to any decision to develop a fully operational system.

And what are the potential benefits of legislative adaptation and use of modern information technology? Are the information services provided the legislators a significant factor in the decisionmaking process? Assessing the effectiveness of State legislatures, the Citizens Conference on State Legislatures issued a “Legislative Evaluation Study” in 1971. This ranked the State legislatures according to five criteria—functional, accountable, informed, independent, representative—and a final (composite) “overall rank.” Figure 76 presents essential data on the 25 States with the highest overall rank, specifically their “informed” ranking since this relates to the information service aspect, the number of legislators to be assisted, the type of research-library-legislative council capability, and the number of ADP applications reported.¹³² In defining what constitutes an “informed legislature,” the report states that “State legislatures are policymaking institutions whose success depends upon their ability to collect, analyze and use information.”¹³³ Some of the rating factors for this category were:¹³⁴

¹³² Report on an evaluation of the 50 State legislatures. Summary report on the legislative evaluation study, [no place]. The Citizens Conference on State Legislatures, 1971, p. 29. Data on number of legislators and types of legislative service agencies from *The Book of the States*, *op. cit.*, pp. 65, 86–91. Data on use of ADP by States extracted from figure 10.

¹³³ *Ibid.*, p. 22.

¹³⁴ *Ibid.*

FIGURE 76.—STATE LEGISLATURE RANKING, CLIENTELE, RESEARCH SUPPORT, AND ADP APPLICATIONS

Overall rank and State	Informed ranking	Number of legislators			Total	LRB ¹ /Legislative Counsel support	Year established	ADP application ²		
		Senate	House					Op.	U/D	Proj
1 California	2	40	80		120	Legislative Reference Service	1961	2	5	1
2 New York	1	57	150		207	Reference Library		5		
3 Illinois	6	58	177		235	Legislative Reference Bureau	1913	6		
4 Florida	4	48	119		167	do	1949	6	1	
5 Wisconsin	3	33	100		133	do	1901	6		
6 Iowa	5	50	100		150	do	1955	5	1	
7 Hawaii	20	25	51		76	do	1943	2		
8 Michigan	9	38	110		148	do	1941	1	1	1
9 Nebraska	16	(³)	(³)		49	Legislative Counsel	1937	2		
10 Minnesota	13	67	135		202	Legislative Reference Committee	1947	6		
11 New Mexico	28	42	70		112	Legislative Counsel	1951			
12 Alaska	12	20	40		60	do	1953	1		
13 Nevada	19	20	40		60	do	1945	1		
14 Oklahoma	24	48	99		147	Legislative Reference	1917	1		
15 Utah	8	28	69		97	Legislative Counsel	1947	2	1	
16 Ohio	7	33	90		123	Legislative Reference Bureau	1910	6	1	
17 South Dakota	15	35	75		110	Legislative Research	1951	2		
18 Idaho	29	35	70		105	Legislative Counsel	1963	1		
19 Washington	25	49	99		148	do	1947	5	2	
20 Maryland	10	43	142		185	Legislative Reference	1916	1		2
21 Pennsylvania	23	50	203		253	Legislative Reference Bureau	1909	7		
22 North Dakota	17	49	98		147	Legislative Reference Committee	1945	3		1
23 Kansas	14	40	125		165	Legislative Counsel	1933	4		
24 Connecticut	26	36	177		213	Legislative Reference	1907	7		
25 West Virginia	37	34	100		134	Legislative Services	1965	1	3	

¹ Usually is called Legislative Reference Bureau, but may be designated as Legislative Research Committee, Legislative Reference Service, etc.

² Applications noted are listed in figure 10.

³ Unicameral.

- The ability of standing committees to gather and handle difficult information.
- The use of ADP in showing bill status and history.
- The publication and distribution of bill summaries, including the intent of the legislation.
- The preparation of reports of interim activities.
- The authorization for committees to use subpoena power.

Figure 76 clearly reflects the congruity between those State legislatures having a high "informed" ranking and those which have begun to utilize computer technology. Seven of the top 10 in the "overall rank" share these characteristics.

In recapitulating the advantages and disadvantages connected with applying modern information technology, it must once again be emphasized that the effectiveness and responsiveness of the system will ultimately depend on the managerial competence and political sensitivity of those who establish policy and supervise its operation. If the legislators complain that they are not receiving the products which are needed at the time and in the form required, then it is most likely not "the mechanical monster" which is at fault, but those who have designed and "run" the system.

The following pro's and con's for using ADP, while not all-inclusive, reflect the experience and expressed opinions of State-level legislators, support staff, and system technicians.

Advantages

1. High-speed arithmetical processing of selected data.
2. Flexibility in storage of key data: on cards, disk, tape, drum, with possible tie-in to microform.
3. Selective retrieval of narrative or graphic material, in display or printout form at a user (on-line) station or the ADP center.
4. Cost savings, particularly in reducing clerical tasks and preparation of copy for printing.
5. ADP offers capability to "massage" preselected data at various levels of aggregation, and can produce multiple correlative options.
6. Rapid fulfillment of users' requests may allow improved committee and member functioning; also allows iterative "homing in" on a difficult question.

Disadvantages

1. Limitations, at times, on form in which data is stored.
2. Immediate visual access to certain data may be delayed due to retrieval procedures.
3. Retrieval may be constrained due to software limitations, placing an increased burden on the user to think of "proper" key terms.
4. Increased costs for quick-response service may not be justifiable in the light of user needs.
5. "Soft" (inexact) data may be arbitrarily excluded from consideration because of ADP processing limitations.
6. "Instantaneous" access to data may upset the "measured" procedures traditional in many legislatures; electronic voting tends to create similar perturbations.

Advantages

7. Decisionmakers are more easily provided with critical data which may be presented in various "sets" (combinations).

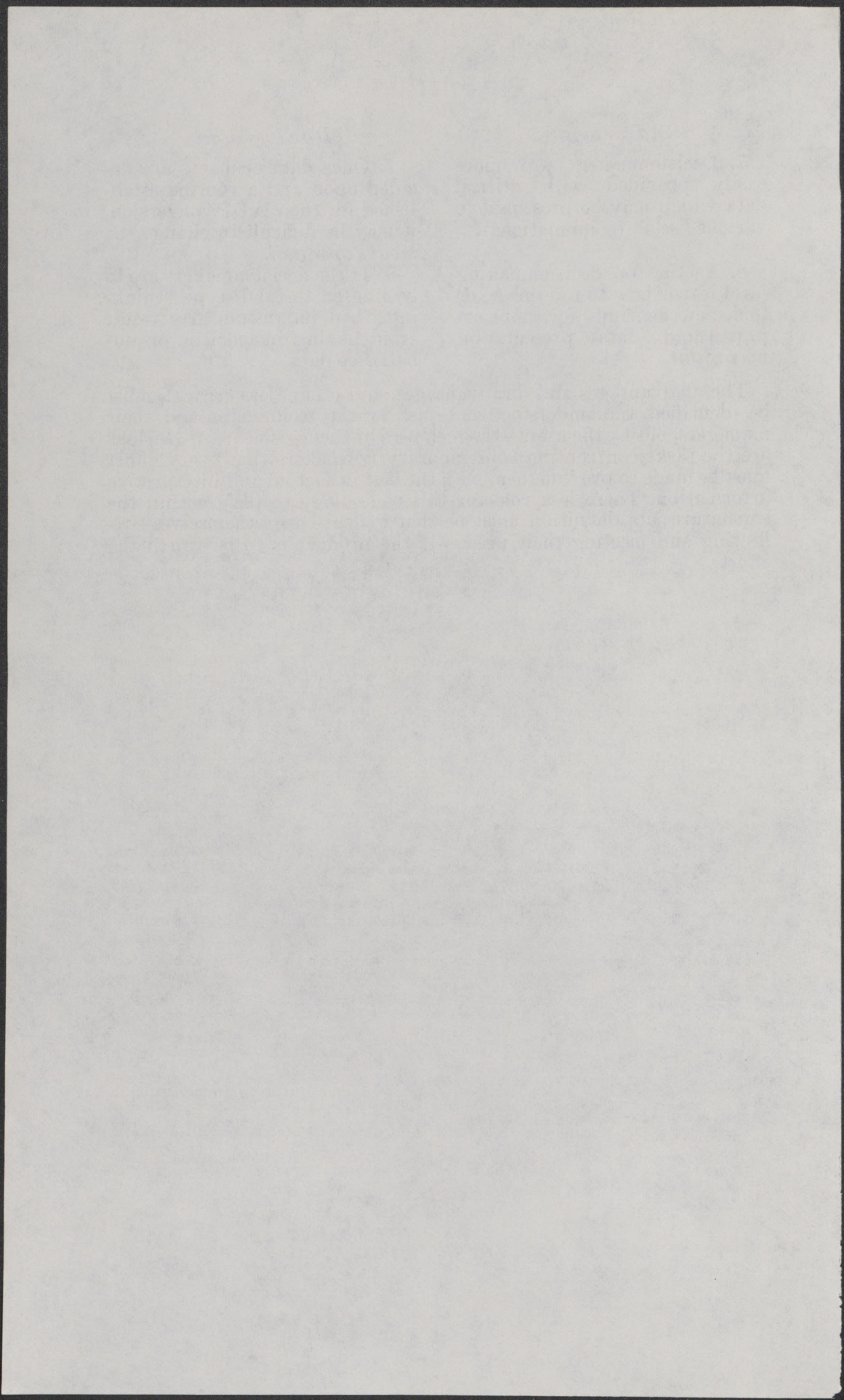
8. As the top decisionmaking level learns how to use the ADP tool, new demands for more sophisticated data presentation may result.

These advantages and disadvantages, and others less critical, must be identified and understood not just by the technicians and their managers, but by the users—the members of the legislature. So serious are the tasks confronting contemporary lawmakers that every effort must be made to provide them with the best in factual and interpretive information. There is a role for this technology to play within the legislature; its definition must be that of legislators themselves—reflecting and meeting their needs—if the product is to be worth the effort.

Disadvantages

7. Once data elements are decided upon and a routine established for their ADP conversion, it may be difficult to change the *modus operandi*.

8. If the decisionmakers are to be limited to ADP-type "thinking," bad judgments may result from having insufficient or imbalanced data.



APPENDIXES

APPENDIX A

COORDINATION OF STATE GOVERNMENTAL ADP APPLICATIONS: 1947-1972

Efforts to modernize and revitalize State governments, and legislatures in particular, have taken several forms. More than 35 States have established Departments of Administration,¹ 20 States reported Governor's recommendations which would streamline various operations through the use of better management practices (including innovative technology),² and in several States task forces were appointed to recommend ways by which improved State functioning could be attained. An example of this was the 1968 report of the Committee on State Planning in New York, called "Relevance, Reliance, and Realism."³ Another such project resulted in the publication of *Storm Over the States*, by former North Carolina Gov. Terry Sanford.⁴ Even as the legislators, in their oversight role, moved to upgrade the quality of State administration and program effectiveness, they began to perceive how and where the "new" man-machine procedures and techniques might benefit them in their own environment. No State has ever spent more than one percent (1%) of its budget on "support, maintenance, and operation of the legislature,"⁵ so there was often resistance to any change involving the expenditure of additional funds.

The importance of equipping the State legislatures so that they could carry out their decisionmaking roles—policy formulation, review of governmental operations, responsiveness to constituent needs—has been recognized in many quarters. For instance, Larry Margolis, Executive Director of the Citizens Conference on State Legislatures, recently urged:⁶

. . . equipping them with the competence to meet problems of our society at the level at which they arise and providing them with the capacity to deal authoritatively with these problems, rather than working in fits and starts and through last-minute crash programs too late to catch up with the crisis.⁷

Three major areas now command the attention of those organizations, both public and private, which seek to improve the effectiveness of State legislatures: providing the full complement of legislative services (e.g., professional staff, research, library); developing the types of information services made possible by using computers, systems analysis, modeling, etc.; and fostering information

¹ Modernizing State government, a statement on national policy by the Research and Policy Committee of the Committee for Economic Development. New York, Committee for Economic Development, July 1967, pp. 59-60.

² State executive reorganization 1967-69. RM-437. Lexington, Ky., The Council of State Governments, October 1969, p. 2. Also see Robert L. Chartrand's *The Governor and the new systems technology*, in *The American Governor in behavioral perspective* (Thad L. Beyle and J. Oliver Williams, eds.), New York, Harper & Row, 1972, pp. 205-216.

³ Relevance, reliance, and realism. 1968 report of the Committee on State Planning. The National Governor's Conference, July 22, 1968, 17 pp.

⁴ Sanford, Terry. *Storm over the States*. New York, McGraw-Hill Book Co., 1967, 218 pp.

⁵ Rosenthal, Alan. The scope of legislative reform, an introduction. In *Strengthening the States: Essays on legislative reform* (Donald G. Herzberg and Alan Rosenthal, eds.), Garden City, N.Y., Doubleday & Co., 1971, p. 34.

⁶ Margolis, Larry. Revitalizing State legislatures. In *Strengthening the States*, *op. cit.*, p. 27.

⁷ Illustrative of the "after the fact" inquiry to a major problem, due to insufficient current information, was the "Medicaid fiasco" in New York State. See *Modernizing State Government*, *op. cit.*, p. 42.

exchange as a desirable outgrowth of Federal-State government cooperation and interstate activity.

The focus on the need for a careful scrutiny of all *legislative support functions* was initiated in 1947, when the Council of State Governments called a conference of legislative service agencies.⁸ A general awareness of the "information problem" evolved and in 1954 a new committee of the now-named National Legislative Conference was created on indexing, numbering, and the classification of statutes and codes. Following the formation, 3 years later, of a Committee on Federal-State Relations, the group began to look at the application of ADP to various aspects of legislative operations. Initial discussions (in 1965) eventually led to the creation of a Committee on EDP and Legislative Usage in 1969, with four task forces assigned to examine:⁹

- Legislative applications of computers;
- Coordination of State and local government data processing;
- Controls and regulations in the EDP industry; and
- Protection of personal privacy.

By this time, 31 States had named "legislative EDP coordinators," who could respond to questions from their own legislators and from their counterparts in other States. Throughout this 25-year period the National Legislative Conference, working closely with other organizations, has taken positive steps to improve all types of legislative assistance. Its Committee on the Organization of Legislative Services continues to listen to the problems of the Legislative Councils and Legislative Reference Bureaus, so that corrective action may be taken.¹⁰

An organization chartered to concentrate on the establishment and operation of *information services* is the newly formed (1969) National Association for State Information Systems (NASIS).¹¹ Succeeding the Council of State Governments' Committee on Information Systems, it has been open to legislative, judicial, and executive membership, and already is recognized as a useful coordination mechanism in an area of growing complexity. With varied interest and responsibilities exerted through conferences, training sessions, publications, and active committees, several other organizations now provide State legislatures with much needed support: the American Legislators Association, with an operating Interstate Reference Bureau;¹² the Citizens Conference on State Legislatures, which organizes and assists citizen commissions in working with State legislatures to develop programs of modernization and improvement;¹³ the National Conference of State Legislative Leaders;¹⁴ the National Municipal League;¹⁵ and the American Assembly.

The difficulty of bringing about *information exchange* on any sort of organized basis has stimulated groups at the Federal level, as well as many others (including those named above), to make recommendations in specific subject-oriented areas and also work toward a resolution of the larger problem. An Intergovernmental Task Force on Information Systems was arranged by the U.S. Bureau of the Budget, the Council of State Governments, the National Association of Counties, the National League of Cities, the U.S. Conference of Mayors, the International City Managers' Association, and the Advisory Commission on Intergovernmental Relations, with the two-fold purpose of (1) identifying "impediments to attaining an effective flow of information within and among governments," and (2) recommending "actions that could be taken at the Federal, State, and local levels of government."¹⁶ Also working to improve inter-

⁸ National legislative conference—historical sketch, 1947–68. Atlanta, The Council of State Governments, June 3, 1968. p. 4.

⁹ Kret, *op. cit.*, p. 1.

¹⁰ Wahlke, John C. Organization and procedure. In *State legislatures in American politics* (Alexander Heard, ed.), Englewood Cliffs, N.J., Prentice-Hall, 1966. pp. 144–145.

¹¹ Kret, *op. cit.*, pp. 7–8. Also see 1970 NASIS report: information systems technology in State government. Developed by the State of Illinois and The National Association for State Information Systems. Lexington, Ky., December 1970. 72 pp.

¹² Zeller, Belle, ed. *American State legislatures*. Report of the Committee on American Legislatures, American Political Science Association, New York, Thomas Y. Crowell Co., 1954. p. 142.

¹³ See, for example, Margolis, *op. cit.*, pp. 29–30.

¹⁴ Heard, Alexander. Reform: limits and opportunities. In *State legislatures in American politics*, *op. cit.*, p. 158.

¹⁵ *Ibid.*, pp. 158–159. Also see Zeller, *op. cit.*, p. 10, and George S. Blair's *American legislatures: Structure and process*. New York, Harper & Row, 1967. pp. 151–152.

¹⁶ The dynamics of information flow. Recommendations to improve the flow of information within and among Federal, State, and local governments. A report by the Intergovernmental Task Force on Information Systems. [Washington, D.C.] April 1968. Foreword.

change, the U.S. Bureau of the Budget (now the Office of Management and Budget) published its "Circular A-90" on "Cooperating with State and local governments to coordinate and improve information systems."¹⁷ The three elements featured in this document were consultations, grants-in-aid, and the need for compatibility.

The universities, colleges, and foundations studying the roles of our State legislatures is large, and the various centers for study and individual scholars are too numerous to name. One establishment meriting mention and serving as an example of the best application of talent to the problem is the Eagleton Institute of Politics at Rutgers University. Through its Center for State Legislative Research and Service, studies have been conducted at the behest of seven legislatures, a volume called *Strengthening the States* has been published, and during the period 1966-70, Institute conferences were held with more than 200 legislators from 49 States in attendance.¹⁸

One means of keeping track of State legislature use of systems analysis and computer technology has been through surveys. Several of these were undertaken between 1965 and the present, allowing those responsible for better information services or information exchange to have some idea of what is transpiring at the State level. Surveys providing information on State legislature use of systems analysis and computer technology or related data attesting to State government employment of ADP and other "innovative" approaches to problem solving (e.g., PPBS) include:

- 1965 The Council of State Governments and the Public Administration Service.¹⁹
- 1966 The Special Subcommittee on the Utilization of Scientific Manpower of the Senate Committee on Labor and Public Welfare (Chairman: Senator Gaylord Nelson).²⁰
- 1966-67 The Council of State Governments and The Public Administration Service.²¹
- 1968 The Special Subcommittee on the Utilization of Scientific Manpower of the Senate Committee on Labor and Public Welfare (to obtain comparative data).²²
- 1968 The State-Local Finances Project of The George Washington University.²³
- 1969-70 The Council of State Governments.²⁴
- 1970 The Institute of Government of The University of Georgia (James S. Elkins, Jr.).²⁵
- 1971 The Council of State Governments (prepared by James S. Elkins, Jr.).²⁶

¹⁷ Circular No. A-90, to the heads of executive departments and establishments. Washington, D.C., Executive Office of the President, Bureau of the Budget, Sept. 21, 1968. 6 pp.

¹⁸ Herzberg, *op. cit.*, pp. ix-x (Preface).

¹⁹ The Council of State Governments and Public Administration Service. Automated data processing in State Government: Status, problems, and prospects, 1965. Chicago, Public Administration Service, 1965. 40 pp.

²⁰ Chartrand, Robert L. Systems technology applied to social and community problems. New York, Spartan Books, 1971. pp. 183-192.

²¹ The Council of State Governments and Public Administration Service. Automation in State government 1966-67: A second report on status and trends. Chicago, Public Administration Service, 1967. 38 pp. plus appendixes.

²² Chartrand, Systems technology applied to social and community problems, *op. cit.*, pp. 159-192.

²³ Mushkin, Selma J. and others. Implementing PPB in State, city, and county, a report on the 5-5-5 project, *op. cit.*, pp. 131-145.

²⁴ Kennedy, Leo F., *op. cit.*

²⁵ Elkins (1970), *op. cit.*

²⁶ Elkins (1971), *op. cit.*

APPENDIX B

GLOSSARY OF TERMS

The purpose of this glossary is to provide a basis of definition for selected terms in the areas of systems analysis and design, operations research, and automatic data processing. Many of these definitions originally were contained in the "Datamation ADP Glossary,"¹ *More About Computers*,² and other miscellaneous sources. Excluded from this selection are terms with esoteric meanings, terms reflecting complexities or details of an operation or mechanisms, and others whose usage is so common as to render their repetition here unnecessary.

Address

1. An identification, represented by a name, label, or number, for a register or location in storage. Addresses are also a part of an instruction word along with commands, tags, and other symbols.

2. The part of an instruction which specifies an operand for the instruction.

Administrative terminal system (ATS)

Those control and functional programs providing a capability for: remote entry and processing of text and data files, storing any existing test formats, production or output from rough draft input with page headings and footings, page numbering and justification, intermixing of free-form and fixed-format information, time sharing by multiple users, and provision for remote or centralized printed, punched card, or magnetic tape output. Utilizes the 2741 Communications Terminal.

Alphabetic-numeric

The characters which include letters of the alphabet, numerals, and other symbols such as punctuation or mathematical symbols.

ALTER (automated legal text entry and revision)

A computerized text entry, retrieval, and revision system, offering the capability to retrieve, correct or delete, or add new material without completely retyping. Operated with System 360 configurations using on-line typewriters as input devices.

Analysis, numerical

The study of methods of obtaining useful quantitative solutions to mathematical problems, regardless of whether an analytic solution exists or not, and the study of the errors and bounds on errors in obtaining such solutions.

Analysis, systems

The examination of an activity, procedure, method, technique, or a business to determine what must be accomplished and how the necessary operations may best be accomplished.

Analyst

A person skilled in the definition of and the development of techniques for the solving of a problem; especially those techniques for solutions on a computer.

Application

The system or problem to which a computer is applied. Reference is often made to an application as being either of the computational type, wherein arithmetic computations predominate, or of the data processing type, wherein data handling operations predominate.

¹ Datamation ADP glossary. Published by F. D. Thompson Publications, Inc., Los Angeles, Calif. (no date). 62 pp.

² More about computers, Washington, D.C., The IBM Corp., 1969, pp. 42-50.

Automation, source data

The many methods of recording information in coded forms on paper tapes, punched cards, or tags that can be used over and over again to produce many other records without rewriting. Synonymous with SDA.

Boolean algebra

An algebra named for George Boole (1815-64), Boolean algebra is similar in form to ordinary algebra but deals with logical relationships rather than quantifiable relationships.

Calculator

1. A device that performs primarily arithmetic operations based upon data and instructions inserted manually or contained on punch cards. It is sometimes used interchangeably with computer.

2. A computer.

Card, eighty (80) column

A punch card with 80 vertical columns representing 80 characters. Each column is divided into two sections, one with character positions labeled zero through nine, and the other labeled eleven (11) and twelve (12). The 11 and 12 positions are also referred to as the *X* and *Y* zone punches, respectively. Related to (card, punch).

Card, punch

A heavy stiff paper of constant size and shape, suitable for punching in a pattern that has meaning, and for being handled mechanically. The punched holes are sensed electrically by wire brushes, mechanically by metal fingers, or photoelectrically by photocells. Related to (card, 80 column).

Center, Data Processing

A computer installation providing data processing service for others, sometimes called customers, on a reimbursable or nonreimbursable basis.

Character

1. One symbol of a set of elementary symbols such as those corresponding to the keys on a typewriter. The symbols usually include the decimal digits 0 through 9, the letters A through Z, punctuation marks, operation symbols, and any other single symbols which a computer may read, store, or write.

2. The electrical, magnetic, or mechanical profile used to represent a character in a computer, and its various storage and peripheral devices. A character may be represented by a group of other elementary marks, such as bits or pulses.

Chart, flow

A graphic representation of the major steps of work in process. The illustrative symbols may represent documents, machines, or actions taken during the process. The area of concentration is on where or who does what rather than how it is to be done. Synonymous with process chart and flow diagram.

Collate

To merge two or more ordered sets of data or cards, in order to produce one or more ordered sets which still reflect the original ordering relations. The collation process is the merging of two sequences of cards, each ordered on some mutual key, into a single sequence ordered on the mutual key.

Computer

A device capable of accepting information, applying prescribed processes to the information, and supplying the results of these processes. It usually consists of input and output devices, storage, arithmetic, and logical units, and a control unit.

Conversion

1. The process of changing information from one form of representation to another; such as, from the language of one type of machine to that of another or from magnetic tape to the printed page. Synonymous with data conversion.

2. The process of changing from one data processing method to another, or from one type of equipment to another; for example, conversion from punch card equipment to magnetic tape equipment.

Data

A general term used to denote any or all facts, numbers, letters, and symbols, or facts that refer to or describe an object, idea, condition, situation, or other factors. It connotes basic elements of information which can be processed or produced by a computer. Sometimes data is considered to be expressible only in numerical form, but information is not so limited. Related to (information).

Data cell (drive)

A random-access device that can store millions of alpha-numeric characters of decimal digits. Multiple drives, providing a storage capacity of billions of characters of information, can be linked to the computer system.

Definition, problem

The art of compiling logic in the form of general flow charts and logic diagrams which clearly explain and present the problem to the programmer in such a way that all requirements involved in the run are presented.

Descriptor

An elementary term, word, or simple phrase used to identify a subject, concept, or idea.

Disk, magnetic

A storage device on which information is recorded on the magnetizable surface of a rotating disk. A magnetic disk storage system is an array of such devices, with associated reading and writing heads which are mounted on movable arms.

Document

The group of techniques necessary for the orderly presentation, organization, communication of recorded specialized knowledge, in order to maintain a complete record of reasons for changes in variables. Documentation is necessary not so much to give maximum utility as to give an unquestionable historical reference record.

Drum, magnetic

A cylinder having a surface coating of magnetic material, which stores binary information by the orientation of magnetic dipoles near or on its surface. Since the drum is rotated at a uniform rate, the information stored is available periodically as a given portion of the surface moves past one or more flux detecting devices called heads located near the surface of the drum.

Edit

To rearrange data or information. Editing may involve the deletion of unwanted data, the selection of pertinent data, the application of format techniques, the insertion of symbols such as page numbers and typewriter characters, the application of standard processes such as zero suppression, and the testing of data for reasonableness and proper range. Editing may sometimes be distinguished between input edit (rearrangement of source data) and output edit (preparation of table formats).

Equipment, automatic data processing

1. A machine, or group of interconnected machines, consisting of input, storage, computing, control, and output devices, which uses electronic circuitry in the main computing element to perform arithmetic and/or logical operations automatically by means of internally stored or externally controlled programmed instructions. Synonymous with (equipment, electronic data processing).

2. The data processing equipment which directly supports or services the central computer operation. Clarified by (equipment, peripheral).

Equipment, input

1. The equipment used for transferring data and instructions into an automatic data processing system.

2. The equipment by which an operator transcribes original data and instructions to a medium that may be used in an automatic data processing system.

Equipment, off-line

The peripheral equipment or devices not in direct communication with the central processing unit of a computer. Synonymous with auxiliary equipment.

Equipment, on-line

Descriptive of a system and of the peripheral equipment or devices in a system in which the operation of such equipment is under control of the central processing unit, and in which information reflecting current activity is introduced into the data processing system as soon as it occurs. Thus, directly in-line with the main flow of transaction processing. Synonymous with in-line processing, and on-line processing.

Equipment, output

The equipment used for transferring information out of a computer.

Equipment, peripheral

The auxiliary machines which may be placed under the control of the central computer. Examples of this are card readers, card punches, magnetic tape feeds and high-speed printers. Peripheral equipment may be used on-line or off-line depending upon computer design, job requirements and economics. Clarified by equipment, automatic data processing and by equipment off-line.

Equipment, tabulating

The machines and equipment using punch cards. The group of equipment is called tabulating equipment because the main function of installations of punch card machines for some 20 years before the first automatic digital computer was to produce tabulations of information resulting from sorting, listing, selecting, and totaling data on punch cards. This class of equipment is commonly called PCM or tab equipment. Clarified by (tabulator).

Evaluation, performance

The analysis in terms of initial objectives and estimates, and usually made on-site, of accomplishments using an automatic data processing system, to provide information on operating experience and to identify corrective actions required if any.

FASTER

A generalized teleprocessing system that allows retrieval, modification, addition and deletion of records on data files, data manipulation (including Boolean logic capability), formatting of single or multiple segment responses to selected terminals, message switching, the recording of audit data on a system logging device, and a comprehensive and flexible high level ("macro") language. Both typewriter and vide screen terminals are used in the input-output operations.

Field, fixed

A given field on punch cards or a given number of holes along the edge of an edge punched card, set aside for the recording of a given type or classification of information.

File

An organized collection of information directed toward some purpose. The records in a file may or may not be sequenced according to a key contained in each record.

File maintenance

The processing of information in a file to keep it up to date.

Format

The predetermined arrangement of characters, fields, lines, page numbers, and punctuation marks, usually on a single sheet or in a file. This refers to input, output, and files.

FORTRAN

A programming language designed for problems which can be expressed in algebraic notation, allowing for exponentiation and up to three subscripts. The Fortran compiler is a routine for a given machine which accepts a program written in Fortran source language and produces a machine language routine object program. Fortran II added considerably to the power of the original language by giving it the ability to define and use almost unlimited hierarchies of subroutines, all sharing a common storage region if desired. Later improvements have added the ability to use Boolean expressions, and some capabilities for inserting symbolic machine language sequences within a source program.

Hard copy

A printed copy of machine output, e.g., printed reports, listings, documents, etc.

Hardware

The physical equipment or devices forming a computer and peripheral equipment. Contrasted with (software).

Index, word

An index based on the selection of words as used in a document, without giving thought to synonyms and more generic concepts related to the term selected.

Information

A collection of facts or other data especially as derived from the processing of data. Related to (data).

Input

1. Information or data transferred or to be transferred from an external storage medium into the internal storage of the computer.
2. Describing the routines which direct input as defined in (1) or the devices from which such information is available to the computer.
3. The device or collective set of devices necessary for input as defined in (1).

Input-output

A general term for the equipment used to communicate with a computer and the data involved in the communication. Synonymous with I/O.

Inquiry

A request for information from storage, e.g., a request for the number of bills or resolutions concerned with solid waste disposal.

Instruction

1. A set of characters which defines an operation together with one or more addresses, or no address, and which as a unit, causes the computer to perform the operation on the indicated quantities. The term instruction is preferable to the terms command and order; command is reserved for a specific portion of the instruction word; that is, the part which specifies the operation which is to be performed, order is reserved for the ordering of the characters, implying sequence, or the order of the interpolation, or the order of the differential equation.
2. The operation or command to be executed by a computer, together with associated addresses, tags, and indices.

Interface

A common boundary between automatic data processing systems or parts of a single system.

I/O

The abbreviation for input/output. Synonymous with (input-output).

Key

1. A group of characters which identifies or is part of a record or item, thus any entry in a record or item can be used as a key for collating or sorting purposes.
2. A marked lever manually operated for copying a character; for example, a typewriter, paper tape perforator, card punch, manual keyboard, digitizer or manual word generator.
3. A lever or switch on a computer console for the purpose of manually altering computer action.

Keypunch

1. A special device to record information in cards or tape by punching holes in the cards or tape to represent letters, digits, and special characters.
2. To operate a device for punching holes in cards or tape.

Key-verify

To use the punchcard machine known as a verifier, which has a keyboard, to make sure that the information supposed to be punched in a punchcard has actually been properly punched. The machine signals when the punched hole and the depressed key disagree.

Language

A system for representing and communicating information or data between people, or between people and machines. Such a system consists of a carefully defined set of characters and rules for combining them into larger units, such as words or expressions, and rules for word arrangement or usage to achieve specific meanings.

Language, algorithmic

An arithmetic language by which numerical procedures may be precisely presented to a computer in a standard form. The language is intended not only as a means of directly presenting any numerical procedure to any suitable computer for which a compiler exists, but also as a means of communicating numerical procedures among individuals. The language itself is the result of international cooperation to obtain a standardized algorithmic language. The International Algebraic Language is the forerunner of ALGOL.

Language, machine oriented

1. A language designed for interpretation and use by a machine without translation.

2. A system for expressing information which is intelligible to a specific machine; for example, a computer or class of computers. Such a language may include instructions which define and direct machine operations, and information to be recorded by or acted upon by these machine operations.

3. The set of instructions expressed in the number system basic to a computer, together with symbolic operation codes with absolute addresses, relative addresses, or symbolic addresses. Clarified by (language).

Library

1. A collection of information available to a computer, usually on magnetic tapes.

2. A file of magnetic tapes.

Logic

1. The science dealing with the criteria or formal principles of reasoning and thought.

2. The systematic scheme which defines the interactions of signals in the design of an automatic data processing system.

3. The basic principles and application of truth tables and interconnection between logical elements required for arithmetic computation in an automatic data processing system.

Model, mathematical

The general characterization of a process, object, or concept, in terms of mathematics, which enables the relatively simple manipulation of variables to be accomplished in order to determine how the process, object, or concept would behave in different situations.

Operation, real time

The use of the computer as an element of a processing system in which the times of occurrence of data transmission are controlled by other portions of the system, or by physical events outside the system, and cannot be modified for convenience in computer programming. Such an operation either proceeds at the same speed as the events being simulated or at a sufficient speed to analyze or control external events happening concurrently.

Operations research

The use of analytic methods adopted from mathematics for solving operational problems. The objective is to provide management with a more logical basis for making sound predictions and decisions. Among the common scientific techniques used in operations research are the following: linear programming, probability theory, information theory, game theory, monte carlo method, and queuing theory. Synonymous with O.R.

Output

1. The final results after data is processed in a computer.

2. The device or set of devices used for taking data out of a computer system and presenting them to the user in the form he desires.

Plotter

A visual display or board in which a dependent variable is graphed by an automatically controlled pen or pencil as a function of one or more variables.

Printer, high-speed

A printer which operates at a speed more compatible with the speed of computation and data processing so that it may operate on-line. At the present time a printer operating at a speed of 250 lines per minute, 100 characters per line is considered high-speed. Synonymous with HSP.

Process

A general term covering such terms as assemble, compile, generate, interpret, and compute.

Processing, automatic data

Data processing performed by a system of electronic or electrical machines so interconnected and interacting as to reduce to a minimum the need for human assistance or intervention. Synonymous with ADP and related to (system, automatic data processing).

Processing, batch

A technique by which items to be processed must be coded and collected into groups prior to processing.

Processing, data

1. The preparation of source media which contain data or basic elements of information, and the handling of such data according to precise rules of procedure to accomplish such operations as classifying, sorting, calculating, summarizing, and recording.

2. The production of records and reports.

Processing, electronic data

Data processing performed largely by electronic equipment. Synonymous with (EDP) and related to (processing, automatic data).

Processor

1. A generic term which includes assembly, compiling, and generation.

2. A shorter term for automatic data processor or arithmetic unit.

Program

1. The complete plan for the solution of a problem, more specifically the complete sequence of machine instructions and routines necessary to solve a problem.

2. To plan the procedures for solving a problem. This may involve, among other things, the analysis of the problem, preparation of a flow diagram, preparing details, testing, and developing subroutines, allocation of storage locations, specification of input and output formats, and the incorporation of a computer run into a complete data processing system.

Programmer

A person who prepares problem solving procedures and flow charts and who may also write and debug routines.

Punch card

A machine which punches cards in designated locations to store data which can be conveyed to other machines or devices by reading or sensing the holes. Synonymous with (card punch unit).

QWIK-DRAFT

An automated "text-editing" system utilizing CRT terminals; text material may be retrieved and altered on the basis of an entire document or some subset, and then output in visual or printed form.

Record

1. A group of related facts or fields of information treated as a unit, thus a listing of information, usually in printed or printable form.

2. To put data into a storage device.

REDIST

A program taking input data on census unit population, geographical center coordinates, and other factual data, computing squared distances between the census units and trial district centers, recombining split census units so each unit is assigned to only one district, computing moment of inertia and population center of gravity and total moment of inertia for all districts.

Requirements, information

The actual or anticipated questions which may be posed to an information system.

Retrieval, information

The recovering of desired information or data from a collection of documents or other graphic records.

Scan

To examine every reference or every entry in a file routinely as a part of a retrieval scheme; occasionally, to collate.

Simulation

1. The representation of physical systems and phenomena by computers, models, or other equipment; e.g., an imitative type of data processing in which an automatic computer is used as a model of some entity; for example, a "legislative tracking" process. Information enters the computer to represent the factors entering the real process, the computer produces information that represents the results of the process, and the processing done by the computer represents the process itself.

Simulator

1. A computer or model which represents a system or phenomenon and which mirrors or maps the effects of various changes in the original, enabling the original to be studied, analyzed, and understood by means of the behavior of the model.

2. A program or routine corresponding to a mathematical model or representing a physical model.

3. A routine which is executed by one computer but which imitates the operations of another computer.

SIRS (statutory information retrieval system)

A full text information retrieval system, allowing users to frame queries in near English form, searches full text and provides output in the form of citations, referenced lines, segments or text, or full text. Operates on third generation IBM and RCA equipment.

Software

1. The collection of man-written solutions and specific instructions needed to solve problems with a computer.

2. All documents needed to guide the operation of a computer, e.g., manuals, programs, flowcharts, etc.

Sort

To arrange items of information according to rules dependent upon a key or field contained in the items or records; for example, to digital sort is to sort first the keys on the least significant digit, and to resort on each higher order digit until the items are sorted on the most significant digit.

Station, inquiry

The remote terminal device from which an inquiry into computing or data processing equipment is made.

Storage

1. The term preferred for memory.

2. Pertaining to a device in which data can be stored and from which it can be obtained at a later time. The means of storing data may be chemical, electrical, or mechanical.

3. A device consisting of electronic, electrostatic, electrical, hardware, or other elements into which data may be entered, and from which data may be obtained as desired.

4. The erasable storage in any given computer.

Storage, random access

A storage technique in which the time required to obtain information is independent of the location of the information most recently obtained. This strict definition must be qualified by the observation that we usually mean relatively random. Thus, magnetic drums are relatively nonrandom access when compared to magnetic cores for main storage, but are relatively random access when compared to magnetic tapes for file storage.

System

An assembly of procedures, processes, methods, routines or techniques united by some form of regulated interaction to form an organized whole.

System, automatic data processing

The term descriptive of an interacting assembly of procedures, processes, methods, personnel, and automatic data processing equipment to perform a complex series of data processing operations.

System, information

The network of all communication methods with an organization. Information may be derived from many sources other than a data processing unit, such as by telephone, by contact with other people, or by studying an operation.

System, information retrieval

A system for locating and selecting, on demand, certain documents, or other graphic records relevant to a given information requirement from a file of such material. Examples of information retrieval systems are classification, indexing, and machine searching systems.

System, management information

A communications process in which data are recorded and processed for operational purposes. The problems are isolated for higher level decisionmaking and information is fed back to top management to reflect the progress or lack of progress made in achieving major objectives.

Tabulator

A machine which reads information from one medium; for example, cards, paper tape, and magnetic tape and produces lists, tables, and totals on separate forms or continuous paper. Clarified by (equipment, tabulating).

Tape, magnetic

A tape or ribbon of any material impregnated or coated with magnetic or other material on which information may be placed in the form of magnetically polarized spots.

Teleprocessing

An IBM registered term denoting systems that transmit data from one point to another in the course of processing.

Terminal unit

A device, such as a key-driven or visual display terminal, which can be connected to a computer over a communications circuit and which may be used for either input or output from a location either near or far removed from the computer.

TEXTPAC

A terminal-oriented information retrieval system, functioning with the IBM Interactive Applications Supervisor (IAS), allowing users to enter query statements and receive responses using CRT or typewriter terminals.

Time-sharing

The use of a device for two or more purposes during the same overall time interval, accomplished by interspersing component actions in time.

Tube, cathode ray (CRT)

1. An electronic vacuum tube containing a screen on which information may be stored by means of a multigrid modulated beam of electrons from the thermionic emitter storage effected by means of charged or uncharged spots.

2. A storage tube.

3. An oscilloscope tube.

4. A picture tube.

Word

An ordered set of characters which occupies one storage location and is treated by the computer circuits as a unit and transferred by the computer circuits as a unit and transferred as such. Ordinarily a word is treated by the control unit as an instruction, and by the arithmetic unit as a quantity. Word lengths may be fixed or variable depending on the particular computer.

APPENDIX C

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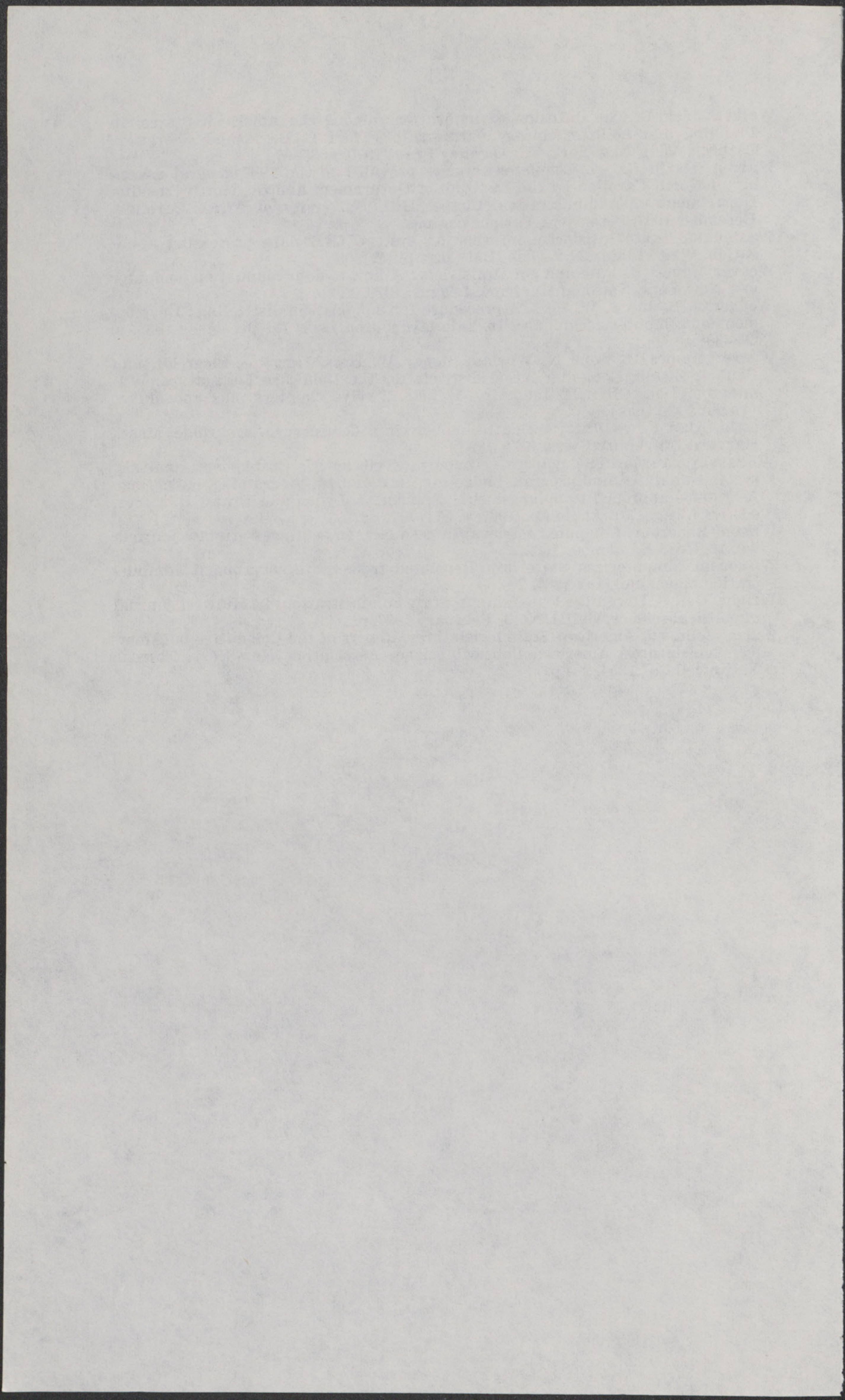
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