cop 5 Trust

xc GOTTESMAN
BAYER
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MEAD
S.F. BAR

Chpt 8

To: Mead File

From: Charles Bourne

Re: Notes of 7/14/97 Call from Bob Bennett (801/572-7612)

Bennett called with comments on my June 18th Chapter 8 review packet to him.

Bennett said that he joined Mead in September 1970, consequently he couldn't really comment on anything pre-1970. He left in 1981 in the revolt with Rubin and others.

Before joining Mead, he had been a lawyer, working at CIA in the Office of the General Counsel. While away for a year's training at MIT, he looked at the LITE system and got interested in legal text searching. When CIA bought one of the General Electric Rapid Scan tape search machines (to search text on magnetic tape), he experimented with that. Then he got a text tape from the LITE activity, and started playing with that for legal text searching.

At this same time, Ed Gottesman was also working at CIA as part of an A.D. Little contract team doing project work there. Gottesman introduced Bennett to Jerry Rubin. And that's how Bennett came to know these people and eventually he asked to join Mead Data Central.

He remembers the old iron works building in Arlington, with the ". . . rat holes and falling metal slabs" that has now been replaced with high-rise buildings.

He confirms the suggestion that Mead didn't really know what they were buying when they bought Data Corporation. Bennett said that after Mead bought Data Corporation, and then took inventory, that's when they found OBAR. Mead bought Data Corporation for other reasons. After they found OBAR, they brought in A.D. Little to look at it. "What is this thing? Is there anything to it?" That's when Jerry Rubin was brought in.

Bennett was brought in as Director of Service Planning and Training. He was responsible for the design of market tests, service definition and design, terminal specifications, and database contracts. He spent a lot of time with the prototype tests in the Ohio law firms. From 1970 to 76, he was Vice President of Marketing and Service Planning. From 1976 to 1980, he was responsible for functional definition and design of LEXIS and NEXIS. Henry Heileson sp? reported to Bennett. From 1980 to 1981, he was Executive Vice President. He left Mead in 1981 after 11 years.

Bennett said that they had reached $65 million in revenues by 1981. They were not profitable until 1977 when they had their first operating profit on an annual basis.

Bennett said that Mark Bayer worked on the non-legal side of the business (EPA, etc.), and that the key team for building and launching LEXIS and NEXIS were Rubin, Bennett,

Gottesman ("he built the first commercial LEXIS"), Fisher ("responsible for licenses"), and Heilison. Bennett hired Fisher in 1971 to 1972.

Bennett gave the following contact information:

- Jerry Rubin (203/618-0323)
  Connecticut

- Ed Gottesman (212/683-3419)
  New York

- Karl Fisher (212/759-4238)
  New York

- Henry Heilison (801/375-4512)
  FOLIO
  Provo, Utah

As a side point, he noted that LITE changed to FLITE with just a name change, adding F for Federal. It was always a batch system. The online system that took over that user community was JURIS.

Bennett took exception to my comment that "LEXIS missed an opportunity by not going after the small law firms." He said that LEXIS would have died if they had. They were charging at the equivalent of $165/hour, and if they couldn't make a go of it with the big law firms that could afford to pay, then it wouldn't have worked with the small law firms. So they went where the money was, to confirm that there was a sufficient market there to permit the business to get started.

At Mead, Bennett later got involved with litigation against the feds ("who wanted to give away the Mead database") and West Publishing.

312/280-1146 (Tel)
312/943-6775 (Fax)

Mark P. Bayer

E-mail:
markbayer@aol.com

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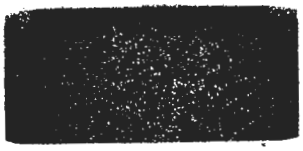
Chicago, Illinois 60614

Chapters 7 8 10



Sweet's Group
McGraw-Hill Information Systems Company

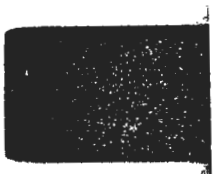
Mark P. Bayer
212/512-4818

10/4/95

Charlie -

Enjoyed our trip down memory lane. Let me know if I can be of assistance in the future. I look forward to receiving a copy of the book.

Carl



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September 3, 1995

Mark Bayer
1631 North Dayton Street
Chicago, IL 60614

Dear Mark:

It was good to talk to you the other day. As I mentioned, now that I've retired from DIALOG, I am able to spend more time working with Trudi Bellardo, formerly of Catholic University and SLA, to write a book for Academic Press on the early (pre-1977) history of the online search services. You may remember that I discussed that topic with you several times in the past..

The Mead and Data Corporation history will be a part of that text, and at this time we are actively reviewing the final text of that story. Because you were so closely involved with the those activities during the pre-1977 time period, we'd appreciate whatever help you can provide with our final reviews. We've gone about as far as we can go from the published material that we've been able to get our hands on, and from earlier information that you've provided. Now we need to have the current draft checked by the people who were on the scene at that time -- to correct the factual mistakes, fill in some of the missing pieces, and to provide additional comments as appropriate. We'd also appreciate any stories or anecdotes that we can repeat for our readers.

With that introduction, I invite you to review and annotate the attached draft text of the Mead, Data Corporation, and related activities for this pre-1977 time period.

You've also been a participant and witness with several other systems, including those of Informtics, Excerpta, and DIA. Consequently, I hope you'll be able to review the corresponding text that is also enclosed.

You'll notice that some of the text is in boldface. That's just a temporary artifice to permit me to keep track of my own text, so that I can keep track of where things came from. You'll also see some notes passed between Trudi and me as part of the dynamic text-building and review process. We want to get your comments early enough in the final drafting stage to permit us to make good use of them.

If you have any questions or comments, please give me a call. Just annotate and return the draft if that's easier for you. And if you see anything else on the outline that you'd like to review, let me know. I look forward to hearing from you.

Best regards,

Chuck

Charles P. Bourne

Enclosure - Chapter 5 Outline, text and supporting citations for Informatics, DIA, EM (10/9/95 edition)
Chapter 6 Outline, text and supporting citations for Informatics, ~~DIA, EM~~ (1/15/95 edition)
Chapter 8 (3/11/95 edition)
Chapter 10 ~~Outline~~, text and supporting citations for Informatics (5/20/95 edition)
Chapter 10 text on Hardware, Communications, and Marketing (5/20/95 edition)

P.S. Could you give me an approximate date for the enclosed announcement of the availability of the Data Central Software? — preceded me,

xc: Trudi Bellardo (letter only) Recon Central@Wright Pat

January 15, 1995

CHAPTER 6

Lockheed DIALOG and Related Systems

1961-1972

Introduction

The First Building Block: MATICO 1961-

(TB to CB: what is the difference between" -" and "+"?)(CB note: In my date notes: none. They both mean that the activity extends beyond the given starting year. If I know that the activity stopped at some subsequent year, I'll use a dash, and try to add an ending date later. All of these date notes only serve the purpose of putting the entries in a progressive date sequence, with the earliest ones first, and I expect to remove them from the final draft.)

Computer Research Laboratory Information Storage and Retrieval Program 1964+

The Online Prototype: CONVERSE/ADA 1964-

QUIKTRAN 1964

DIALOG (early development) 1965+

EXPLICIT/IMPLICIT 1965

LACONIQ Monitor 1966-67+

DIALOG 1966

NASA/RECON 1965-68

NASA

Bunker-Ramo Corporation 1965-67

The Ames Experiment 1966-68

DIALOG/RECON 1968-

Lockheed Personnel Files 1967-68

Criminal Records 1967-69

Criminal Identification Records 1967-68

Parole Reports 1968-69

COSATI Benchmark Demonstration 1968

After installation at Oak Ridge, the DOE/RECON system was maintained and modified by AEC staff and their contractors, and additional databases were added. The AEC staff operated their RECON software in primarily an experimental mode through 1975; this is described in more detail in Chapter 10.

(CB note: CB is trying to obtain a copy of the following publications:

- ***(AEC/RECON Users Manual) LMSC. August 1970.***
- ***N.B. Gove; A.A. Brooks; A.H. Culkowski; C.E. Hammons; G.K. Hauslein. "The AEC/RECON Project at ORNL." Oak Ridge National Laboratory. Oak Ridge, TN. Report No. ORNL-4913. NTIS Report No.: ORNL-4913. November 1973. 97pp. (Cited in NTIS. Trudi and CB tried unsuccessfully to get this report by I-L-L. Not in UC MELVYL system.)***
- ***"(Unknown. Something about the first overseas information retrieval transmission.)" EDP Weekly. 10 August 1970. p. 15. (Incomplete cite given by R.K. Summit. This issue of EDP Weekly is available at UCB Bus/Econ Library as Call# TK7885.A1 C55 Offsite Storage. CB requested via I-L-L from Menlo Park Library, but has been unable to get it.)***

Informatics, Inc. and NASA/RECON

During 1970 the contract between LMSC and NASA ended, and a new NASA contract for maintenance and upgrading of RECON was awarded to Informatics/TISCO. ***(CB note: Contracting for services of this type was typical for NASA--in fact, the entire NASA Scientific and Technical Information Facility (STIF) was under the operation of contractor personnel. Documentation, Inc. had been the first STIF contractor, starting in 1962 when STIF was established. They came to that position with experience in modern information handling techniques, and subsequently operated the automated portion of the STIF facility. By 1968, the successful bidder on the STIF contract was Informatics (who continued as the STIF contractor until 19__ when they were replaced by _____.), who supplied about 200 people to acquire and process all of the technical report material into the system, handle the microform production and document delivery system, prepare and distribute the printed index products, and maintain and operate the STIF computer facility. They even had their own full-time lexicographers to maintain the thesaurus and indexing system--something that most indexing organizations do not have. Early in its corporate history in the 1960's, Informatics sponsored a major symposium on disk files; this***

pioneering effort was followed by their sponsorship of another major symposium in 1965--this time as Online Computing, and with a registration of over 700 attendees. Informatics was a major professional force in online computer systems. At a May 1967 conference, one Informatics staff member even described an online retrieval system that was in the design and development stage at Informatics.[148] (CB note: We need to coordinate this paragraph with the Informatics text of Chapter 5.) With the new contract for maintenance of the NASA/RECON system, they adopted software for file maintenance called STIMS (Scientific and Technical Information Modular System, and they made improvements to increase the flexibility of the RECON software.[149]

(CB note: Informatics staff members who were associated with this early NASA/RECON activity included Larry Stevens and _____. Roger Summit of DIALOG always considered Informatics to be a potential threat to the DIALOG public service, especially because they were so familiar with online software and large database processing, and had started into the online search service business with their own service (as described in Chapter 10).

The online service continued in operation from the computer in Maryland, as NASA/RECON ***(CB note: Its activities in the 1970's is described further in Chapter 10.)***.

In the seventies, slow response time continued to be the most serious problem; in 1975, Pryor claimed an average response time for NASA RECON of 15 seconds and attributed the slowness to the large demands ***(CB note: (24 terminals on leased lines that could be used simultaneously))*** being made on the relatively small IBM 360/50. ***(CB note: He also noted a 92% system availability at that time.) (TB to CB: what does "a 92% availability" mean?--is that good or bad?) (CB note: It's bad by today's standards. It means that only 92% of the scheduled (expected) hours available for searching are actually available for searching; the system is down for some reason. Services today brag of availability rates on the order of 99.96%.)*** The problem could be solved only by a new computer.[150] The service continued nonetheless and today NASA/RECON still operates as a contractor-operated facility for NASA organizations. ***(CB note: Move the 1975 data in the above paragraph to Chapter 10?)***

NASA/RECON software that they started with. The DIALOG software was deposited with COSMIC in 1969 or 1970. I don't know of any modification work on the NASA/RECON software by DOJ programmers. This needs checking.)

In August 1975, Mead Data and Justice were unable to agree on terms for a new contract, so the LEXIS subscription was canceled. Since Federal case law had not been added to JURIS since 1974, the database had little case law. A remedy for the problem was to borrow the case law database on magnetic tape from FLITE (Federal Legal Information Through Electronics), an old Air Force project with a strong Federal file. *(CB note: was FLITE online? Anything more to add about FLITE?)* The newest version of JURIS was expected to be operational by spring 1976.[161]

(CB note: CB is trying to obtain a copy of the following publication:

- *George S. Kondos. "DIALOG: Computer-Assisted Legal Research, On-Line." Law and Computer Technology. 1(11) 8-14. November 1968.) (Cited in ISA as #70-1277. Cited also by Trudi.)*

Library of Congress

The COSATI annual report for 1970 activities noted very briefly that the Library of Congress (presumably the Legislative Reference Service) had begun installing the NASA/RECON system to provide online service to Congressional offices.[162] A similar statement was published by a NASA official in 1971: "The Library of Congress and Federal intelligence agencies are taking steps to establish similar RECON installations."[163] The authors of this text have no further information about this effort. (CB note: Try a call to LC/LRS?))

Informatics and TOXICON

(CB note: This Informatics text needs to be merged or coordinated with other Informatics text in this book (e.g. Chapt. 7, 10).)

The 1960s witnessed a growing alarm that humans and their environment were being assaulted increasingly by the adverse affects of "burgeoning chemical technology which yearly introduces thousands of new and potentially hazardous chemicals into the environment."[164] The literature of the science of toxicology is dispersed over the disciplines of biology, analytical chemistry, biochemistry, pharmacology, and medicine. In June 1966, a panel of the

President's Science Advisory Committee called for a coordinated, computer-based information system for toxicological information that would be accessible and affordable to anyone in government, industry, or academia who legitimately needed such information, including "health professionals working in the areas of environmental pollution, industrial or occupational health and safety, pharmacology, toxicology, medicine, agriculture, and other bioscientific disciplines."[165]

The response to the panel's recommendations was the establishment in ***(CB note: January)*** 1967 of the Toxicology Information Program (TIP) at NLM (not to be confused with Project TIP at MIT--see Chapter 3). ***(CB note: In 1969, TIP concentrated on pesticide toxicology as a first step. In 1970 it expanded its activities to environmental pollutants, drug interactions, and other topics. It also encouraged (in conjunction with BIOSIS), the development of a new computer tape subscription service called Toxitapes for Industrial and Pharmaceutical Toxicology, caused NLM's AIM/TWX database to be expanded by the addition of some 15 journals from the area of clinical toxicology, and developed Health Effects of Environmental Pollutants (a new abstract journal and computer tape service) that was subsequently used with*** Art & Dan ***(Informatics? MDC? Other?) as the basis for the online HEEP database.[166] In 1971, a Toxicology Information Response Center (TIRC) was formed by TIP at the Oak Ridge National Laboratory to perform literature searches and build toxicology databases, and in 1972, TIP initiated TOXICON, a national online interactive toxicology information retrieval system.[167] (TB to CB: This Toxline initiation is also covered below.) This TOXICON system started providing online search service in October 1972. TOXICON was designed by NLM's Toxicology Information Program to make toxicological data available online from remote terminals, using fulltext searching with word proximity retrieval capability and five relevant databases.***

TIP staff ***(CB note: at NLM?) (TB to CB: I don't understand your question--it says above that TIP was established at NLM) (CB note: TIP as a project or an institution was subordinate to NLM, but the offices and facilities might have been located elsewhere. I'm trying to find the foundation for why TIP was so independent of NLM, and not choosing NLM software from the beginning.)*** developed many information services; among them was an online bibliographic and data retrieval system that they initially called TOXICON (TOXicology Information Conversational On-line Network ***(CB note: or TOXicology Information On-line COnversational***

Network))[168],[169]. They *(CB note: I think that there may be a "TIP vs NLM" story here that I want to check with Kissman.)* initiated the online service in October 1972, with the help of an outside contractor, Informatics, Inc. of Rockville, Maryland. *(CB note: The TOXICON service made use of the NASA/STIMS software for file maintenance, the Lockheed-developed NASA/RECON software for online retrieval, the ALPHA timesharing system (proprietary software developed by COMNET of Washington D.C.), and nationwide terminal access via the Tymnet data communications network, which at that time had 41 nodes in the U.S. and one in Paris. The databases initially consisted of: 1) a bibliographic master file of 180,000 records, many with abstracts (all of Toxicology Bibliography, a MeSH-index subset of MEDLARS, the Health Aspects of Pesticides Abstract Bulletin, and the first 12 volumes of Chemical-Biological Activities); 2) fulltext files of articles and reviews (ranging in size from a few pages to a complete book; 3) plans for data files of specific numeric or textual information (which subsequently became available in ____ 19__). The fulltext files were fully word-indexed. The TOXICON online service ran on an IBM 360/65 with an Ampex disc storage device, and with most of the file maintenance processing beyond done at NLM on its IBM 370/155 computer.*

TOXICON was a publicly-available service. Any interested user could enter into a subscription contract with Informatics. The initial hours of availability were normally 8am to 10pm Eastern Time on Mondays through Fridays, and 8am to 6pm on Saturdays. There was a startup fee of $350, and usage fees of $45 per connect hour, and $5 per 1000 lines of offline print; there was no monthly minimum charge.[170] *(CB note: As noted later in Chapter 8, NLM had experimented in 1969 with fulltext searching of a limited collection of toxicological reference material (Epilepsy Abstracts) using the Data Corporation online search system. That demonstration convinced the TIP management staff of the utility of fulltext online searching.*

In early 1971, Mead Corporation (CB note: was it really Mead Corp. at that time?), Informatics, Inc., and Battelle Memorial Institute responded to a request for proposals (CB note: Who issued the RFP? When?) for a fulltext retrieval system; SDC and Lockheed declined to bid. Evaluation of the proposals led to a contract being let to Informatics in March 1971. The system proposed by Informatics was DIALOG's NASA/RECON system (available then in its present form as public domain software) with system enhancements to be made by Informatics to facilitate

fulltext searching. (CB note: How does this relate to: 1) Informatics' earlier maintenance contract for NASA/RECON; 2) RKS' planning to leave Lockheed to join Informatics?). During 1972-73, the RECON and STIMS software was modified by Informatics; additional features were added such as the highlighting (by asterisks or color) of search terms in the output records--seen earlier on the Mead system but not the Lockheed system. The TOXLINE service was publicly announced and demonstrated in April 1972, and service instituted in October 1972.[171] Informatics used a commercial computer service bureau, COMNET, to provide the actual online service, running the STIMS/RECON system on an IBM 360/50 system with IBM 2314 disk drives, and accessed via the Tymshare network.[172]) The director of TOXICON services for Informatics was J. Robert Harcharik. Informatics had acquired the Lockheed RECON software, which was by this time in the public domain, from COSMIC at the University of Georgia. Informatics modified RECON to fit the needs of TOXICON, and operated and maintained RECON for TIP, using STIMS for file building and maintenance (see also earlier description of Informatics, Inc.). ***(CB note: As the prime contractor for TOXICON, Informatics also trained the users, provided customer services support, and billed the users.[173]***

TIP was directed by Henry Marcel Kissman, born in Graz, Austria, whose doctorate was in organic chemistry, and who specialized also in computer sciences and chemical documentation. ***(CB note: Prior to his NLM assignment, he worked on information systems at the U.S. Food and Drug Administration in Washington, DC.)*** Kissman retired from NLM in 1992 after serving as the Head of the Toxicology Information Program from 19__ until that time.

The TOXICON system and database ran on an IBM 360/65 computer ***(CB note: where?)*** that was accessible through TYMSHARE, Inc., a national communications network that supported most terminals that could be connected to a telephone.[174] File maintenance was done on the IBM 370/155 computer at NLM in Bethesda, Maryland. Scientists across the country had access to the service, at the rate of $45 per connect hour, which only partially covered the costs of operating the system.[175]

The TOXICON database contained bibliographic citations (100,000 in 1972) ***(CB note: 180,000)***, the full text of some books, articles and reviews, and such numeric and textual data as animal toxicity studies, adverse drug reports, poisoning cases, effects of environmental

chemicals or pollutants, and chemical identification data. The sources for all these data included the *Toxicity Bibliography*, the *Health Aspects of Pesticides Abstract Bulletin, Abstracts on Health Effects of Environmental Pollutants, Chemical-Biological Activities, International Pharmaceutical Abstracts*, and the *Hayes File on Pesticide Toxicology*, which covered the period 1950-1966.[176] Other sources, including subsets of existing medical and chemical databases, were added later. Because of the great variety of sources and types of data, no controlled vocabulary indexing was done. Instead, searchers could access the records through all words from titles and abstracts, keywords from full text documents, as well as chemical substance names. The challenge, successfully met, was to merge the contents of all the source files into a database that appeared to users as a single file.

The TOXICON system was renamed TOXLINE in 1973 ***(CB note: and shifted from Informatics to NLM (along with a shift from RECON/STIMS software to ELHILL software) in 1974.)***. See Chapter 10 for its continuing development, and for the further activities of Informatics, Inc.

DIALOG (Lockheed Retrieval Service)

The Decision to Start a Commercial Service

By the early 1970s, Roger Summit was becoming frustrated that his bosses at Lockheed required him to work at least half time on other revenue-generating projects besides DIALOG; apparently, they did not believe that an information retrieval service could pay the bills. Summit thought to himself at the time, "If they would just leave me alone, I could make something of this." By 1972, he had made up his mind to leave Lockheed, and he accepted a position as a Vice President of Informatics, Inc. in Washington, DC, ***(CB note: a firm that was already actively involved, as we have seen, in extending and installing DIALOG/RECON software in other organizations, and starting their efforts to provide public online search services such as TOXICON.)*** He sold his sailboat. He painted his house and got it ready to sell. He told his boss his plans. Just before leaving for the east coast, however, he took one last trip to San Francisco with his wife and children. Driving home down the San Francisco Peninsula, he felt sad and depressed--he realized suddenly that he really did

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Charlie -

Enjoyed our trip down memory lane. Let me know if I can be of assistance in the future. I look forward to receiving a copy of the book.

Mark

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MARK BAYER COMMENTS 10/4/95

Informatics, Inc.

Informatics Search Service

We have already met Informatics, Inc. of Rockville, Maryland, briefly, in regard to ***(CB note: NASA/RECON and)*** TOXLINE, and in the story about how Summit was offered a Vice-Presidency there, and accepted it. He backed out, however, after the administration at Lockheed gave him permission to start a commercial online searching service at Lockheed. The fate of the Informatics ***(CB note: and DIALOG)*** service might have been quite different if Summit had taken the position. Instead of DIALOG, Informatics might have been the industry leader in public online services by the end of the seventies. Instead, the directors of Informatics, J. Robert Harcharik, Howard Coleman, and R. Lawrence (Larry) Stevens, set a much more limited goal, that of providing contracted information services for a few government agencies and private companies.

(CB note: As mentioned earlier in Chapter 6, the complete set of RECON retrieval system programs developed by Lockheed for NASA were considered by NASA to be in the public domain, and were therefore deposited (by whom?) in 1969-70? in the COSMIC software depository at the University of Georgia, with copies to be made available to any requestor.) (TB to CB: Details on the COSMIC arrangements are provided earlier in the text (Chapt. 6) and are summarized in the next paragraph--do we want to repeat them here?) (CB note: No need to repeat any of the Chapter 6 text, but I'd keep the following paragraph because it gives some detail that is specific to Informatics.)

In 1971, under the direction of Harcharik, Informatics acquired a copy of the NASA RECON program from COSMIC at the University of Georgia and started modifying it for their own use. Informatics' staff had already developed a database management system called MARK IV, so they named the modified NASA program RECON IV. ***(CB note: Informatics was the NASA/STIF facilities contractor at that time.)***

(CB note: In addition to their work for NASA, Informatics also solicited work from NLM. They were pleased when after some successful experiments with full-text searching with the Mead Data Central system in 1970, NLM initiated a competitive procurement in early 1971 for a full text retrieval system.

Mead Corporation, Informatics, ...and Battelle... responded to the (RFP), but

> ***surprisingly both SDC and Lockheed submitted a no-bid. Evaluation of the proposals led to a contract being let to Informatics, ...in late March of 1971. The system proposed by Informatics was the ...(NASA) version of the STIMS/RECON package with system enhancements to facilitate free text search. During the succeeding year, RECON was modified and the TOXLINE files were built. The TOXLINE service was publicly announced and demonstrated in April of 1972, and service instituted in October of that same year.***[201]

(CB note: Where was the demo in April? Was the software to be run on the NLM-Bethesda computer, or was public service always intended to be run at Informatics?)

In October 1972, because the NLM computer was not large enough ***(CB note: at that time)*** to run TOXLINE, NLM awarded to Informatics a contract ***(CB note: Is this a service contract after an initial development contract?)*** to make available the TOXLINE service on an IBM 360 that was operated by a service bureau called COMNET (Computer Network Corporation). ***(CB note: There is redundancy here with Informatics text earlier in this Chapter and in Chapter 6.)*** Long-distance access was available through TYMNET. Thus began the Informatics search service. ***(CB note: initial caps for Search Service? Or was there another service name?) (TB to CB: I'm not positive, but don't think that "search service" was a formal name.) (CB note: A 1974 press release discussed on the next page in this text used the name Literature Search and Retrieval Service.) (CB note: Was this a publicly available service? Basis for pricing and use?) (CB note: Science Information Association (SIA), who acted as the marketing representative for the Battelle BASIS service, also served as a Marketing representative for the Informatics Toxline service.)***

The CBAC, CA CONDENSATES, ENVIROLINE, and POPLINE databases were added in 1973. ***(CB note: There is some data to suggest that these files went public sometime after 4/74.) (CB note: 1) Was this the first online service use of the CBAC, Enviroline, or Popline databases (CAC had already gone online with SIA and SDC in 1973)? 2) The CBAC and CAC databases, per se, did not go online here. Only selected portions of the CBAC and CA Condensates databases were online, as subsets of the TOXLINE database.) (CB note: The POPLINE database was known then as the POPINFORM database. It was prepared at George Washington University at that time, under the direction of Helen Kolbe, and became POPLINE much later when it became available on the NLM Search Service.)***

Major participants in the initial Informatics search service were Dick Lemon, Howard Coleman, Mike Kelly, and Mark Bayer.)

In January 1974, Informatics offered the CHEMLINE data base, the first chemical dictionary file to be offered publicly, as an adjunct to TOXLINE, to compensate for the diversity of nomenclature in the literature.[202] Informatics lost the TOXLINE contract, however, in April 1974 (see above in the TOXLINE section).[203] The change was not unexpected; from the beginning the contractual arrangement was presumed to be temporary.

(CB note: A policy decision by NLM in December 1973 led to the transfer of TOXLINE operation and service support to NLM. Toxline service was offered from NLM on their SDC-based ELHILL system on April 1, 1974, and discontinued through Informatics on April 25, 1974.[204])

Also in 1974, Equitable Life Insurance Company acquired Informatics, and allowed the search service to use its ***(CB note: "its" = Equitable?)*** in-house computer, to continue its contract work.

Mark Bayer, one of the original customer services representatives at Informatics, had developed a litigation support file, called Genesis, that was tailored for needs of the lawyers representing the large American oil companies.[205] ***(CB note: and this was used as the basis for much of the private file litigation support work done by Informatics in subsequent years.)***

Also in 1974 ***(CB note: A late 1974 Informatics news release noted that "EM and Informatics reached an agreement in principle for Informatics to obtain an exclusive license.") (CB note: Alternate text might be: "A late 1974 (CB note: The date comes from CB's pencilled 11/74 date on an otherwise undated 2-page press release. The date needs confirmation.) Informatics news release announced that Informatics and the Excerpta Medica Foundation had reached agreement in principle for Informatics to obtain an exclusive license to market the Excerpta Medica database in North America, and that Informatics planned to provide access to it on its own interactive Literature Search and Retrieval Service through its Information Systems Company in Rockville, Maryland. At that time, the Informatics service had been providing access to the POPINFORM, TOXLINE, and ENVIRON databases.)***, Informatics began providing online access to the Excerpta Medica database for several large companies such as Procter and Gamble, Squibb, Abbott Laboratories, and others.[206] The database was just beginning to be built up, and initially contained only records

for a six month period (May to October 1974), or about 182,000 records. ***(CB note: Was this the first online use of EM by a public search service?)*** When James Powell and several colleagues at the Upjohn Company in Kalamazoo, Michigan conducted an evaluation study of online use of Excerpta Medica on the Informatics system[207] ***(CB note: in late 1974 and early 1975)*** they awarded high marks to the database for appropriate indexing vocabulary and wide coverage of the drug literature, which resulted in the retrieval of items that could not be found in MEDLINE or TOXLINE. Powell reported that users were not pleased, however, when unfamiliar journal titles appeared in the printouts. He praised Informatics Inc. for allowing online access to the thesaurus, but criticized them for the slowness in computer response time, although the users discovered eventually that response time was much better early in the morning. Another source of user frustration was the communication link between Kalamazoo and the Informatics computer. Many times users had to dial two or three times to establish a connection, and often searches were cut off while in progress. Powell criticized the RECON IV software for allowing only subject access; users wanted to be able to search by authors' names as well, not only to find known citations, but for subject searching also, since "many scientists and physicians associate the names of prominent investigators with certain research areas."[208]

(In 1974, the Informatics online service operated with any of the then-available 10-30 cps "low-level" teleprinter terminals, and was available from 8 a.m. to 10 p.m. throughout the work week.

There has always been considerable overlap in coverage of the MEDLARS and Excerpta Medica databases; in that sense they could be considered competitors. The Excerpta Medica coverage has generally been more current, and with more information (e.g. abstracts) then were provided with the MEDLARS records, and it was stronger in its coverage of the drug literature; in that regard, the Excerpta Medica database could be considered a premium product.[209],[210] However, in 1975 the Informatics service with the Excerpta Medica database priced at $120 per hour had little chance in competing with the NLM Medline service at its subsidized $15 per hour ($8 per hour non-prime time) rate, and Informatics was forced to stop the online Excerpta Medica database service.

Mark Bayer noted later that the Excerpta Medline online access was very limited in scope and capability (e.g. no MeSH terms, and no fulltext searching), was poorly priced (e.g. a large up-front monthly fee), and consequently was not used very much.

By 1976, the Informatics search service was still in operation, but serving primarily private file customers for online service in support of their proprietary objectives such as litigation support.)

(CB note: So what happened to the Informatics online service? What about HAPAB and other databases Mark Bayer talked about?)

(CB note: Outstanding issues:

- *Who was allowed access to the EM, Toxline, and other files? Conditions of access? Was this really a <u>public</u> search service?* No, acad + med
- *How marketed and priced?)*

RADCOL

RADCOL (RADC Automatic Document Classification On-Line) is the name given to an online search system developed by Informatics, Inc. in Rockville, Maryland for the Rome Air Development Center (RADC), Air Force Systems Command, at Griffiss AFB in Rome, New York. Informatics staff members associated with this project included Peter Kurtz, Thomas C. Lowe, and David C. Roberts. The system automatically classified documents based on an analysis of the document text.[211,212,213,214]

(CB note: CB is trying to obtain a copy of the following publications:

- *Thomas C. Lowe; David C. Roberts; Peter Kurtz. "Additional Text Processing for On-Line Retrieval (The RADCOL System). Vol. I." Informatics Inc., Rockville, MD. November 1973. 145 pp. Report Nos. TR-73-1545-1 and RADC-TR-73-337-Vol-1. NTIS Report No. AD-783 201/7WL. (Cited in NTIS publication. CB has citation but no report.)*
- *Peter Kurtz. "Additional Text Processing for On-Line Retrieval (The RADCOL System). Vol. II." Informatics Inc., Rockville, MD. November 1973. 437 pp. Report Nos. TR-73-1545-2 and RADC-TR-73-337-Vol-2. NTIS Report No. AD-783 202/5WL. (Cited in NTIS publication. CB has citation but no report.)*
- *Peter Kurtz. "RADC Automatic Document Classification On-Line (RADCOL). Program Documentation." Informatics, Inc., Rockville, MD. May 1975. 200 pp. Report Nos. TR-75-1594-1 and RADC-TR-75-110-Vol-1. NTIS Report No. AD-A011 922/2WL. (Cited in NTIS publication. CB has citation but no report.)*

197. ***Rushbrook & Lawford.***

198. ***Herron.***

199. ***J.A. Sprowl. "The WESTLAW System--A Different Approach to Computer-Assisted Legal Research." Jurimetrics Journal 16(3) Spring 1976 pp. 142-148.***

200. ***Rushbrook and Lawford.***

201. ***Donald J. Hummel. "A Comparative Report on an On-Line Retrieval Service Employing Two Distinct Software Systems." Journal of Chemical Information & Computer Sciences (15)1. February 1975. pp. 24-27.***

202. Robert J. Schultheisz; Donald F. Walker; Kay L. Kannan, "Design and Implementation of an On-Line Chemical Dictionary (CHEMLINE), Journal of the American Society for Information Science 29(4):173-179, July 1978.

203. NLM News, December 1974; NLM 1974 Report.

204. ***Hummel. 2/75. p. 24.***

205. Bayer interview.

206. Bayer interview.

207. James R. Powell, Jr., "Evaluation of Excerpta Medica On-Line," Special Libraries 67(3):153-157, March 1976.

208. Powell, p. 156.

209. ***Charles P. Bourne. "Overlapping Coverage and Other Points of Comparison with the Excerpta Medica and Medline Online Search Files." in Technology in Support of Library Science and Information Service: With Particular Emphasis on Computer-Assisted Reference Service. Charles P. Bourne. Sarada Ranganathan Lectures 12, 1978. Sarada Ranganathan Endowment for Library Science. Bangalore. India. 1980. pp. 62-76.***

210. ***Bernard Houghton, Victoria A.D. Webster, John Smith. "A Comparison of Excerpta Medica and Medline for the Provision of Drug Information to Health Care Professionals." Proceedings of the Sixth International Online Information Meeting. London 1982. Learned Information. 1982. pp. 115-127.***

211. ***Thomas C. Lowe; David C. Roberts; Peter Kurtz. "Additional Text Processing for On-Line Retrieval (The RADCOL System). Vol. I." Informatics Inc., Rockville, MD. November***

MARK BAYER COMMENTS
10/4/95

Chapter 10

Hardware and Communications of the Seventies

The launching of the online searching services industry in the seventies was fostered both by various enhancements in hardware to improve reliability and performance, enhancements in software to permit time-shared use of the computers, and by cheaper, more accessible long-distance communications that allowed a much wider audience to use online service.

Hardware

The IBM 360 and 370 series of mainframe computers played a central role in the development of large-scale online retrieval systems with multiple databases. Almost all the systems described above, including DIALOG, ORBIT, LEXIS, MEDLINE, SUNY BCN, the Information Bank, and Informatics, ran on models of the IBM 360, and most were upgraded in the early seventies to the even larger IBM 370. Even in Frascati, Italy, ESRO/RECON was running on an IBM 360/50. The only exceptions to the use of IBM mainframes were BASIS, which was installed on a CDC 6400 computer at Battelle and on a Univac 1108 at the National Security Agency, and the DDC system that was run on a Univac 1108.

These larger mainframes with their economies of scale, and with lower cost memory capacity, permitted longer service hours, with fewer limitations on hours of access (called "time windows") to large databases. In January 1974, DIALOG started operating on a full daily schedule, Monday through Friday, for 10.5 hours a day (except for Tuesday which shut down an hour early for preventative maintenance work on the computers) without time windows. ***(CB note: It would be interesting to see a plot of how the number of hours available per week changed over time.)*** Alternate Saturdays were added in 1975. At SDC Search Service, all time windows to accommodate large ORBIT databases were discontinued by August 1976; service was provided there for all files on a 14.5 hour per day basis. For all of the online services throughout this period, however, service hours were shorter than are typical today because of the demands made on the computers to do file maintenance work, preventative maintenance work on the equipment, and because of occasional downtime for replacement or addition of new equipment. ***(CB note: The Battelle BASIS service started in 1971 without ever using time windows.) (TB to CB: So what? They didn't run any very large databases in the beginning.) (CB note: BASIS ran CA and NTIS--both large databases at that time--, but I take your point and will check to compare the file***

sizes.)

(CB note: The variety of terminal equipment available to choose from in the 1960's was severely limited by the reluctance of the U.S. telephone companies to permit any equipment to be connected to their lines that was not manufactured by them (or their affiliates) or approved by them. They simply refused to install, or permit the installation of "foreign" terminal equipment; this had a chilling effect on entrepreneurs or equipment manufacturers with ideas for better terminal equipment. This issue was resolved in 1968 with the Carterfone decision by the U.S. Supreme Court that allowed non-carrier-provided terminal equipment to be attached to U.S. telephone lines.)

Upgraded computer terminals also became available during this ***(CB note: 1970's)*** period. Although most of the larger commercial services supported a variety of types of terminals operating at various transmission rates, many users were moving from typewriter terminals to CRTs, and from slower to faster terminals. Oddly enough, however, the shift to faster CRTs began to reverse in mid-decade with the introduction of inexpensive, portable, and durable 30 cps typewriter terminals. ***(CB note: , and as people wanted to access systems such as NYTIB that were only accessible with expensive high-speed leased lines)*** The CRTs were still considered nice for more permanent installations, but many users appreciated the flexibility and economy of the lightweight portables. Throughout this period some leased-line systems continued in operation for high speed terminals; the trend, however, was mainly toward dial-up access from slower-speed terminals using the telecommunications networks. Not until the early eighties did this trend in terminal equipment change, with the introduction of microcomputers to be used as computer terminals ***(CB note: and the availability of higher speed lines on the data communication networks)***.

Another development that appealed to some ***(CB note: services and)*** user groups was terminals that were customized to a single search service. MDC introduced the first customized terminals in the commercial world, for the use of lawyers. The Information Bank also offered customized terminals, but they were not received as well as the MDC equipment, perhaps because the Information Bank users tended to search other systems as well; the LEXIS searchers were likely to search only LEXIS.

(CB note: Some leased-line systems (e.g. DIALOG private network, Mead, OCLC were in operation

for high speed terminals during most of the time covered in this text.

By the end of 1976...)

Long-distance Communications Networks

A 1971 cost study by DDC showed that it would be less expensive for a large number of users to share an online service than to have a more limited number of users making use of a batch-processed service.[335] The costs would tip in favor of online over batch, however, only when a critical mass of searchers was available to share the costs of the giant mainframe computers and realize the economies of scale. Other than for a few organizations with large numbers of in-house users, the large numbers needed would not have been possible without a major technological breakthrough in long-distance networked communications between users' terminals and the remote mainframe computers.

NLM's experiment with AIM-TWX in 1970 had highlighted the problem of obtaining inexpensive and reliable data transmission for a networked bibliographic retrieval system. The prevailing cost at that time for long-distance telephone calls was about $25 per hour. What was wanted was data transmission at $10 or less per hour. In early 1971, therefore, NLM contracted with the National Bureau of Standards (NBS) to study available communications options. NBS identified several telephone networks that served some specific user populations such as the Federal Telephone Service (FTS) and the ***(CB note: Defense Department's)*** Advanced Research Projects Agency (ARPA) Multi-Computer Network ***(CB note: (otherwise known as ARPANet, the first packet-switched data communications network, which began test operation in 1969))***, and some more general network capabilities such as the Inward Wide Area Telephone Service (INWATS), multiplexor networks, commercial networks, and leased lines. The NBS study results indicated that the least expensive alternative for NLM was to request bids from commercially available data communications services.[336]

From the responses to the resulting request for proposals, NLM selected TYMNET (owned by Tymshare, Inc.) to provide a national data communications network to connect users to the NLM computer, via 40 nodes in major metropolitan areas throughout the United States. ***(CB note: the TYMNET system began operation in 19__.) (TB to CB: My impression, from reading***

systems.) (CB note: EURONET did not become operational until 1978 or later. SCANNET, a data communications network for all Scandinavian countries, was scheduled to become operational in late 1976.)

European searchers did have access to American search services though the TYMNET and TELENET networks, through agreements with the national Post, Telephone and Telegraph (PTT) authoritics. *(CB note: Unfortunately, users in Europe had difficulty getting reliable and error-free use of U.S. online services through the available communications networks in the early 1970's. For example, in the British Library's study of online bibliographic searching by UK libraries during the period October 1974 through February 1975, a total of 357 attempts to use the Lockheed service via four TYMNET centers were totally unsuccessful for 43% of the attempts; and even the 466 attempts from March 1975 through June 1975 were totally unsuccessful for 21% of the attempts.*[338] *U.S. search services had a great advantage over European services because the U.S. phone services permitted DIALOG and the other U.S. services to include the telecommunications charges on the bill sent to the DIALOG customer. Each user of a European search service had to get a separate password and monthly bill from their local PTT.) (TB to CB: When this section is drafted, perhaps it should go in Chapt. 11)*

These North American networks had nodes in major European cities such as Brussels, Frankfurt, Geneva, The Hague, London, Paris, Rome, and Vienna, as well as in other parts of the world such as Hong Kong, Manila, San Juan, and Singapore. American searchers, however, seldom used these networks to access online search services outside of North America.

(CB note: Even with the relatively rapid growth of the online and telecommunications technology,, and the establishment of an online industry in other countries, there were still many countries by the end of 1976 that had never seen an online information retrieval search performed in that country. In 1976, for example, the first online search in the United Arab Republic (Egypt) was done by one of the authors of this text (Bourne) using a very slow five CPS telex terminal to connect to the Lockheed computer in California; it took almost 24 hours of repeated telex dialing just to grab one of the four data communication lines leaving that city. Similarly, the first online bibliographic search in India was not made until 1976, with a leased-line demonstration from the ESA/IRS

computer facility in Europe to Bombay and then Bangalore.)

MDC was a notable exception to the general adoption of commercial communication networks. The customized LEXIS CRT terminals were connected through leased lines that operated at 120 cps, faster than the maximum 30 cps available from the networks in the seventies.[339] ***(CB note: Make the same comments for NYTIB, OCLC, RLIN, and WESTLAW?)*** ***(CB note: In the 1970's, most of the DIALOG traffic was via the TYMNET and TELENET telecommunications networks. However, as a continuation of its early NASA and ERIC contracts, DIALOG operated its own 480 cps network for selected users (e.g. National Agricultural Library) that provided faster transmission speeds than were possible with the commercial data transmission networks. This particular high speed network was subsequently replaced in July 1984 with the initial configuration of DIALOG's own international dialup data communication network, DIALNET, with speeds of 30 and 120 cps.) (TB to CB: Do we want to mention a development--DIALNET--that took place well after 1976?) (CB note: Only briefly, to note the trend to increased speeds, and a connection to the present history.)***

By the end of 1976, a total of 76 U.S. cities, six Canadian cities, and four European cities has access to either a TYMNET or TELENET node, and some cities had a choice of nodes.[340] All of these publicly-available dialup nodes provided service at 30 characters per second; higher speeds were to come later.)

Marketing the New Services

When everything was in place--software, hardware, databases, and communications networks, the systems and services still needed to be sold to the potential users. Both for-profit and not-for-profit online searching services used a variety of marketing tools to disseminate the message of the value of online retrieval as well as to educate users about how to take advantage of it. The tools were of two types, printed documentation and personal communication.

Documentation

One form of reaching potential users was through printed advertisements in professional journals. We have seen already examples of how Lockheed and SDC used these media, beginning about 1973. The actual number of ads that appeared was small, and likely did not have much impact on readers who were not otherwise exposed to online services.

On the other hand, printed materials, in the form of manuals, database descriptions, and newsletters, aimed at those who already were subscribers, had a large educational impact. Even these, though, got off to a rough start. For example, in the first issue of DIALOG's newsletter, Chronolog, the prose was clumsy: "Keep in mind that a hierarchy of laxity prevails in full testing qualifications."[341] In addition, the quality of the advice proffered was questionable. For example, "Is truncating good practice? No. Truncating slows down response time and often does not benefit the user."[342] Later that year, the Chronolog searching tip was still simplistic:

> COMMAND STRIPS
>
> Some of our users are not using command strips and committing the command symbols to memory. It is highly recommended, if you are one of these searchers, that you contact our office for a command strip and mount it on your terminal.
>
> You will probably find that you can save time by being able to refer to the strip, especially after being away from your terminal for a few days.[343]

(CB note: Sometimes the user documentation was written to develop or maintain an advantage for the search service rather than provide a service to the user. In the example above, the truncation command usually consumed a great deal more computer resources (CPU and working memory) than a simple term lookup or logical operation, and could have the effect of dragging down system response time for all searchers. It was this kind of resource constraint that inhibited some services from

Search service staffs spent a considerable amount of time in the early years, as now, in communicating with current subscribers and potential users. The representatives maintained exhibit booths at professional conferences, made presentations for professional groups, organized user group meetings, and traveled to user sites to provide training. Whenever possible, they gave live demonstrations of the operating systems in order to show the observers that online retrieval was indeed rapid, flexible, and thorough. One of these observers, Edward Housman, gave an interesting testimonial to the usefulness of the demonstrations in his introduction to a 1973 ARIST chapter:

> This reviewer cannot . . . claim to be exhaustive in covering the 1972 literature. The reviewer has, however, sifted through hundreds of references, discovered by use of the Lockheed DIALOG and IBM STAIRS (Storage and Information Retrieval System) on-line literature search systems during their demonstration at the 1972 ASIS Annual Meeting.[344]

1974 MILESTONES

Mead was the first online search service to designate and equip a room at one of their offices to be a dedicated training facility.

Mead was the first online search service to use a videotape for training.

Another mechanism for educating the public was the formal training session held at the search service offices. MDC was the first, in 1974, to designate and equip a room at one of their offices to be a dedicated training facility, and to establish permanent training rooms in offices around the country.[345] Mead also was the first to use a videotape for training, both to give a quick overview of the service and to fill in when a live demonstration could not be given.[346]

1974 MILESTONE

DIALOG was the first online search service to establish an 800 toll-free telephone number.

Toll-free numbers quickly became an extremely important personal connection between the search services and their clientele. Lockheed established the first 800 number in 1974; SDC ORBIT made a toll-free number available in June 1975. Virtually all the search services followed suit.

Many of the search services identified students as an important target audience. Mead ***(CB note: installed terminals in major law school libraries, starting in 19__, for free online access by law school students and faculty. They also)*** offered free training to law school students while they were summer interns ***(CB note: They were the first of the online services to provide such an extensive subsidy to academic use and the training of professionals entering the labor market.)*** Lockheed ***(CB note: did not follow the free academic service approach taken by Mead, but they instituted their own approach with the (CIP)...)*** was the first to establish a Classroom Instruction Program that gave discounts for online access that was part of classroom instruction in a library school, as well as training manuals designed for graduate students.[347] ***(CB note: As described earlier in the Lockheed section of this chapter, in separate cooperative efforts with the Institute of Library Research (ILR) at the University of California, one of the authors of this text (Bourne), with the assistance of Jo Robinson (now Jo Maxon-Dadd) and Barbara Anderson, prepared CIP and Lab Manuals for both the DIALOG and the ORBIT systems. These instructional materials were tested with Bourne's classes at the UC Berkeley School of Librarianship, and were also tested with Pauline Atherton's classes at Syracuse University. The DIALOG Lab Workbook was initially published by ILR, and subsequently republished in several editions by Lockheed and DIALOG.[348],[349] The ORBIT Lab Workbook was also published by ILR, but SDC decided not to follow that particular approach.[350] This same UC group, as mentioned earlier in the Lockheed section of this chapter also developed the first online training and practice file.)***

From the public's point of view, the first few years of the online industry were an exciting time of constant changes and expansion in hardware, software, and services. When we look behind the scenes in the next chapter, we will feel the same sense of excitement, but with the added dimensions of competition, overwork, and stress on the major players.

(CB note: In this Marketing section, shouldn't something be said about pricing, and how that evolved, and what it looked like at the end of 1976?)

(TB to CB: Perhaps yes, but let's wait until the section on pricing in Chapt. 11 is drafted. You're right that there was two sides to the pricing issue--the public and the proprietary.)

344. Edward M. Housman, "Selective Dissemination of Information," in Carlos A. Cuadra, ed., Annual Review of Information Science and Technology, v. 9. Washington, DC: American Society for Information Science, 1974, p. 221.

345. Bayer interview, p. 19-20.[eliminate page references later]

346. Bayer interview, pp. 19-20.

347. Crawford, p. 36.

348. ***Charles P. Bourne. "DIALOG Lab Workbook: Training Exercises for the Lockheed DIALOG Information Retrieval Service." Institute of Library Research. University of California. Berkeley, CA. October 1976.***

349. ***"DIALOG Lab Workbook: Training Exercises for the Lockheed DIALOG Information Retrieval Service." DIALOG Information Retrieval Service. Third edition. Palo Alto, CA. January 1981. (CB note: Is there a more recent edition to show that it's still being used?)***

350. ***Charles P. Bourne. "ORBIT Lab Workbook: Training Exercises for the System Development Corporation ORBIT System." Institute of Library Research. University of California. Berkeley, CA. June 1977.***

CHARLES BOURNE AND ASSOCIATES
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MENLO PARK, CALIFORNIA 94025
TEL. (415) 322-7101

September 3, 1995

Mark Bayer
1631 North Dayton Street
Chicago, IL 60614

Dear Mark:

It was good to talk to you the other day. As I mentioned, now that I've retired from DIALOG, I am able to spend more time working with Trudi Bellardo, formerly of Catholic University and SLA, to write a book for Academic Press on the early (pre-1977) history of the online search services. You may remember that I discussed that topic with you several times in the past..

The Mead and Data Corporation history will be a part of that text, and at this time we are actively reviewing the final text of that story. Because you were so closely involved with the those activities during the pre-1977 time period, we'd appreciate whatever help you can provide with our final reviews. We've gone about as far as we can go from the published material that we've been able to get our hands on, and from earlier information that you've provided. Now we need to have the current draft checked by the people who were on the scene at that time -- to correct the factual mistakes, fill in some of the missing pieces, and to provide additional comments as appropriate. We'd also appreciate any stories or anecdotes that we can repeat for our readers.

With that introduction, I invite you to review and annotate the attached draft text of the Mead, Data Corporation, and related activities for this pre-1977 time period.

You've also been a participant and witness with several other systems, including those of Informtics, Excerpta, and DIA. Consequently, I hope you'll be able to review the corresponding text that is also enclosed.

You'll notice that some of the text is in boldface. That's just a temporary artifice to permit me to keep track of my own text, so that I can keep track of where things came from. You'll also see some notes passed between Trudi and me as part of the dynamic text-building and review process. We want to get your comments early enough in the final drafting stage to permit us to make good use of them.

If you have any questions or comments, please give me a call. Just annotate and return the draft if that's easier for you. And if you see anything else on the outline that you'd like to review, let me know. I look forward to hearing from you.

Best regards,

Charles P. Bourne

Enclosure - Chapter 5 Outline, text and supporting citations for Informatics, DIA, EM (10/9/95 edition)
Chapter 6 Outline, text and supporting citations for Informatics, ~~DIA, EM~~ (1/15/95 edition)
Chapter 8 (3/11/95 edition)
Chapter 10 ~~Outline~~, text and supporting citations for Informatics (5/20/95 edition)
Chapter 10 text on Hardware, Communications, and Marketing (5/20/95 edition)

P.S. Could you give me an approximate date for the enclosed announcement of the availability of the Data Central Software? — preceded me,

xc: Trudi Bellardo (letter only) Recon Central@wright Pat

ABOUT THE AUTHOR

Mark P. Bayer received a BA degree in mathematics from Hobart College (Geneva, N. Y.) and special training in the Army's Officer Automatic Data Processing Systems course.

Upon separation from the Army, he joined Mead Data Central in 1970 (later Mead Technology Laboratories) as a Marketing Representative. In 1971, he was promoted to General Manager of the Washington Office and was responsible for both the marketing and technical operations.

Mr. Bayer is presently Manager of Data Base Services for the Informatics Information Systems Company, Rockville, Maryland, where is he responsible for operation of ENVIRON Services for the Environmental Protection Agency and other online systems.

An Overview of the Considerations in Selecting an Online Information Retrieval System

MARK P. BAYER

With the great increase in the amount of data produced in all disciplines — be it medical, legal, environmental, technical, etc. — the problem of acquiring relevant information in a timely manner has become quite severe. The vast amount of data that needs to be reviewed in order to make a wise management or technical decision is staggering. Wading through this data might take too long for the timely identification of relevant material. Worse still, the relevant information might never be identified, regardless of how much research time is expended, due to the sheer amount of data needing to be reviewed.

How does one go about alleviating the problems of too much data and too little time to find it? One possible answer is the utilization of an online information storage and retrieval system. Combining the computer's ability to store vast quantities of data and retrieve it rapidly, coupled with sophisticated data communication techniques, allow persons in need of relevant and timely data to meet their requirements.

Who needs an online information retrieval system? This is not necessarily an easy question to answer definitively but there are reasons why an organization would *not* need such a system. If only a small amount of data is necessary for searching, or if slow turnaround of answers is acceptable when you ask a question, an online information retrieval system is not necessary to satisfy your information needs.

xc Informatics EMBASE
DIA NYTIB
Infodata
Mead
Data Corp.
TOXLINE

copy to Trudi

Chapt 5 6 8 ID

To: History File.

From: Charles Bourne

Re: Notes of 4 October 95 call from Mark Bayer (home: 312/642-4442)

Mark called in response to my 3 September 95 letter to him. He'll return the annotated chapters, but gave also me the comments over the phone. His comments should be read alongside the draft text he reviewed.

Chapter 5
Informatics. Mark didn't know when Informatics started. But Bob Harcharik (now a consultant in Washington) would know. Both were there (Rockville, Md.?) when Mark joined Informatics. Mark didn't know if Mark IV ever went online.

DIA. The DIAOLS also used Raytheon CRT terminals.

There was another DIA online system, ANSRS in 1967 after DIAOLS. Mark joined the DIA group in 1967. A person who would know about this was Major Joe Madison (now Joe Madison Associates, 170 Broadway, New York City. 212/988-5862). Gill Bigby also worked with Mark at DIA (current office phone: 202/373-2397; home: 703/751-2037).

The ANSRS system ran on GE-635/645 computers. This was used with overflight reconnaissance data, with descriptions of photos.

Infodata. INQUIRE still exists. Mark worked there for about a year before he joined DIALOG. They were originally in Falls Church, VA and then in Fairfax County, VA. A good person to contact would be Harry Kapowitz, who may still be there. An old friend of Mark, Patsy Reilly of Softworks, Alexandria, VA (800/727-4222, 703/317-8687) would have Kapowitz's current address.

Kapowitz, Ron Furman, Bob Schrier, and Bob Loan (Vice President, Technology) all left Xerox to start Infodata (CB note: relevant to the Syracuse AUDACIOUS story of Chapter 4).

Chapter 6
Informatics. Mark joined Informatics in 1973. Mark suggested we contact Bob Harcharik and J. Rob. (?). One or the other of these people was on the Board of Directors of Varaphone Company in Redwood City (415/591-6500).

(Page 64) Harcharik was associated with Larry Stevens on the early NASA/RECON activity. Harcharik left for MCI after Mark got there.

(Page 69. HEEP). Mark suggests we check this with Art Elias.

(Page 69. TOXICON). This looks correct to him.

(Page 71. Epilepsy Abstracts). This looks correct to him.

(Page 72. TOXICON). Mark didn't know where it ran.

(Page 71. Mead). Mark noted several MDC people that should be contacted: Jerry Rubin, Bob Bennett (in Sandy (Sp?), Utah. 801/572-7612; he also worked for Rubin at Times-Mirror Systems in Los Angeles, and Carl Fisher (at Mead Corporation in New York, 212/759-4286), Hyleson (Vice President, Marketing)

Chapter 8

Data Management Ad. Mark didn't know when or where the Data Central program description was published, and suggested that we ask Giering.

Giering. Mark says that Giering was the initial genius behind the technical part of Data Central. But "He went to MTL. because he was a pain in the ass."

Gorog. Mark suggests that we contact Bill Gorog to review the Data Corporation history. He is now at:

U.S. ORDER (a transaction processor)
Herndon, VA
(703/834-9481)

Vann. Mark suggests that we contact Peter Vann to review the Data Corporation history. He can now be reached at 617/558-4770.

(Page 7). The Data Cells were always crashing.

(Page 10. Service Bureau). Mark worked there. The office was on the 2nd floor, over an iron works (Arlington Iron Works?). The floors jiggled when the stamping machines were working. Bennett can give more information.

(Page 14. Bayer). Mark suggests that he be identified in the text as "an early employee of"

(Page 14. Over the Fence). Mark said that Bennett would be a good person to verify the "over-the-fence" story.

(Page 15. Attribution). Mark said that the quote "...buy one and find out" can be attributed to him.

(Page 17. TIMPS). TIMPS was a precursor to the ENVIRON (Environmental Information Retrieval Online) file. Maybe it didn't start as early as 1966. Ask Giering when the Arlington service bureau started.

(Page 18. PADAT). Ask Rick Caputo about this. He worked for APA at that time. They were selling this service to their print subscribers before they put Psych Info on DIALOG and other commercial online services.

(Page 19. EARS). Lancaster's evaluation study didn't receive much publicity because MDC at that time didn't really care about any market that wasn't directly related to the legal one. They didn't care about NLM. "Who cares?" There was no corporate interest.

(Page 21. HEAP). Try Art Elias and Dwight Tousignout.

(Page 21. ADL). Gottman should be spelled Gottesman.

Litigation Support (Page 92). While working with one of the law firms in Washington, D.C., an oil company in Los Angeles asked for a demo in Los Angeles the next day. Mark hopped a plane, with his Execuport terminal as baggage, and made the presentation. ARCO then became their first major customer of litigation support service. (Side note: ARCO was also one of SDC's first customers.)

EMBASE (Page 93). First public use of EM? Mark says he thinks that it was.

(Page 147). Not "U.S. telephone companies", but AT&T.

MDCI used the desk terminals and the UBIQ terminals. The NYTIB tried to copy the MDCI approach, and also used their own dedicated terminals ("copy cat").

(Page 148). ARPANET was a precursor to Internet.

Chile (Page 150). Summit sent Mark to Chile one time (1978?) for a demo to the equivalent of the Chilean NTIS.

MDC (Page 151). "MDC knew what they wanted, and they spent money that was needed to get there. It's no accident that they became the biggest professional online service."

Teaching (Page 155). In 1977, Mark taught a 1½ day DIALOG class for Pauline Atherton's library school class at Syracuse University. It was filmed with 2 cameras, and edited for use with subsequent classes there. (This may have been a first for teaching with videos in library school.)

NYTIB. Mark's observations: NYTIB was running 3 different retrieval engines for different parts of the service. They tried to replicate LEXIS, and as part of that they developed their own terminals. They wanted to be a proprietary service with some fulltext and some abstracts. Their president, Paul Bertheiume knew what was going on. But when he died suddenly, all of the steam went out of their sails, and they never really got going.

xc: Trudi

Is it fair to say that all other information needs could be satisfied by an online system? The answer is not necessarily "yes," but an online system might be helpful. Let us assume that an organization might need an online information retrieval system. What are some of the initial considerations in the selection of such a system?

One of the most important criteria is the type of data that would be entered into the system for retrieval. There are three general classes of data bases that might be considered: textual or bibliographic; numerical; and, image or picture processing. Due to the nature of this Symposium, this presentation will concentrate primarily on textual or bibliographic data bases.

A second important criterion in initial consideration of an online information retrieval system is the volume of data that will be stored and made available to the user. A very small amount of data might make the use of an online system unnecessary, especially if the data is readily indexed and stored in a manual or batch method of operation. Conversely, large volumes of data that are cumbersome and time-consuming when searched manually or in batch mode, lend themselves more readily to an online information retrieval system.

The content of the data base is another consideration. A simple name and address file could be kept in a card file. However, if the data is more diversified in content and is not easily categorized, an online system could be a valuable aid for searching.

The last of these initial considerations is the need for information to be easily disseminated over a wide geographic area. If a data base is maintained in Los Angeles and a person in New York needs access to that data, a potential problem exists in accommodating his request in a timely manner. However, with the use of available data-communications techniques in conjunction with an online information retrieval system, people in need of access to any central repository of information can search the data base regardless of geographic location.

After review of the initial considerations mentioned above, more detailed examination of a user's information needs is in order. In particular, what form should the textual data take when used with an online information retrieval system?

There are three basic approaches to storage and retrieval of textual data: storage of the full text of the document; use of document abstracting in lieu of the full text; and, most commonly, employment of some form of keyword indexing. Additionally, any combination of these might occur. Regardless of what approach one takes, there always will be a trade-off of cost versus performance.

A full-text system will require the most disk storage capacity with a resulting increase in cost. Even with the cost of storage coming down, this cost could be prohibitive. From a retrieval standpoint, a full-text system usually has relatively slower response times than the other systems.

The greatest advantage of a full-text system, when used correctly, is its ability to yield very comprehensive search results. If the query language used is flexible enough to handle the usage and idiosyncrasies of the English language, then comprehensive and accurate retrievals will result. It should be noted that the imagination of the user can be a limiting factor. Full-text systems require the user to think and formulate the proper search strategies. No one has either abstracted or indexed the data for the user; there has been no intellectual processing superimposed upon that data by another person. Instead, it is up to the user to enter the data base with ideas on how to best achieve the results desired.

An asset of full-text systems, which many times is overlooked, is the cost savings derived from not needing a team of abstractors or indexers. Use of the full text lends itself well to capturing data at the source which is becoming a more common practice.

Let us now examine the abstracting-type system. This is still a textual system but less text is being included for storage and retrieval with a resulting decrease in storage costs. The trade-off here is the potential loss of the comprehensive search capabilities that would be realized when using the full text. Good abstracting can yield a high degree of relevance and accuracy for the end user's search request. The converse is equally true. Poor abstracting is potentially the biggest drawback in using this kind of system. Due to the need to store significantly less data, response times tend to be faster with abstracts than with full text.

The last type of textual system is one which employs a controlled vocabulary or keywords. The need for indexers exists and the inaccuracies that might occur in trying to "pigeonhole" a document into a few limited categories are the biggest drawbacks to a keyword-type system. As trade-offs, significantly less storage and faster response times will be advantages gained. An additional consideration is that a keyword system would need the simplest form of query language in comparison to a full-text or abstracting system.

A brief word about numeric data and its impact on selecting an online information retrieval system. Many online systems allow for storage and retrieval of numeric data. However, if large quantities of numeric data are to be stored or used in a statistical or computational manner, a textual type of online information retrieval system will probably be less efficient than other methods of data processing.

There are many other considerations that should be taken into account when selecting an online information retrieval system. Some

of the more important ones follow.

The user language of an online system should be as simple as possible, having the minimum amount of computer jargon necessary and being as close to English as feasible. It should be simple enough for the novice to achieve respectable results and be sophisticated enough for an experienced user who wants to get into the data quite deeply.

Response time is a consideration that tends to be subjective. One user's patience can be exhausted in a fraction of the time of another. It is important to select a system which is as fast as possible. However, no system can guarantee that responses will always fall within a given number of seconds. It should be noted that people do not like waiting for minutes for a computer to respond; they feel computers should respond immediately. This subjective desire must be tempered by realistic considerations.

An online system should be conversational and terminal oriented. This allows the user to interact directly with the data base and to continually browse through the data and change search strategy as desired. This dynamic capability normally increases the relevance of search results.

Updating of an online information retrieval system, like any information system, is vital. The system should allow for addition or deletion of entire records and changes to existing records. This should be done efficiently without a tremendous cost for each update. However, most bibliographic systems provide for periodic updating which is significantly cheaper than online, real-time updating.

Lastly, an online information retrieval system should be cost effective. The saving of time and the potential increase of relevance and accuracy must be deemed worthwhile when compared to the costs of an online system and the associated required communications. Selection of an online information retrieval system is not a trivial task. However, if one keeps in mind their organization's information needs, and attempts to analyze alternative methods and systems available, an online information retrieval system can be selected that will be most beneficial to fulfilling those needs.

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[redacted]

Reviewed.
For BAYER
w/ his transcript

Mark P. Bayer

...l.com

1631 North Dayton Street
Chicago, Illinois 60614

Ch 0.5

Sweet's Group
McGraw-Hill Information Systems Company

Mark P. Bayer
212/512-4818

10/4/95

Charlie -

Enjoyed our trip down memory lane. Let me know if I can be of assistance in the future. I look forward to receiving a copy of the book.

Mark

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September 3, 1995

Mark Bayer
1631 North Dayton Street
Chicago, IL 60614

Chpt 5

Dear Mark:

It was good to talk to you the other day. As I mentioned, now that I've retired from DIALOG, I am able to spend more time working with Trudi Bellardo, formerly of Catholic University and SLA, to write a book for Academic Press on the early (pre-1977) history of the online search services. You may remember that I discussed that topic with you several times in the past..

The Mead and Data Corporation history will be a part of that text, and at this time we are actively reviewing the final text of that story. Because you were so closely involved with the those activities during the pre-1977 time period, we'd appreciate whatever help you can provide with our final reviews. We've gone about as far as we can go from the published material that we've been able to get our hands on, and from earlier information that you've provided. Now we need to have the current draft checked by the people who were on the scene at that time -- to correct the factual mistakes, fill in some of the missing pieces, and to provide additional comments as appropriate. We'd also appreciate any stories or anecdotes that we can repeat for our readers.

With that introduction, I invite you to review and annotate the attached draft text of the Mead, Data Corporation, and related activities for this pre-1977 time period.

You've also been a participant and witness with several other systems, including those of Informtics, Excerpta, and DIA. Consequently, I hope you'll be able to review the corresponding text that is also enclosed.

You'll notice that some of the text is in boldface. That's just a temporary artifice to permit me to keep track of my own text, so that I can keep track of where things came from. You'll also see some notes passed between Trudi and me as part of the dynamic text-building and review process. We want to get your comments early enough in the final drafting stage to permit us to make good use of them.

If you have any questions or comments, please give me a call. Just annotate and return the draft if that's easier for you. And if you see anything else on the outline that you'd like to review, let me know. I look forward to hearing from you.

Best regards,

Chas

Charles P. Bourne

Enclosure - Chapter 5 Outline, text and supporting citations for Informatics, DIA, EM (10/9/95 edition)
Chapter 6 Outline, text and supporting citations for Informatics, ~~DIA, EM~~ (1/15/95 edition)
Chapter 8 (3/11/95 edition)
Chapter 10 ~~Outline~~, text and supporting citations for Informatics (5/20/95 edition)
Chapter 10 text on Hardware, Communications, and Marketing (5/20/95 edition)

P.S. Could you give me an approximate date for the enclosed announcement of the availability of the Data Central Software? - preceded me,

xc: Trudi Bellardo (letter only) Recon Central@wright Pat

October 9, 1994

CHAPTER 5

Experimental Systems Developed in Non-Academic Laboratories

1965-71

A. Introduction
B. Systems Developed in Non-Academic laboratories:
- System Development Corporation
  - *MADAM 1965-68+*
  - *SURF 1966-67+*
  - CONVERSE 1966-67+
  - *LISTS 1967-70*
- *Stanford Research Institute 1965-71+*
  - *Augmented Human Intellect Program*
- *North American Rockwell Corporation*
  - *ICS 1964-67*
- *General Electric Company*
  - *DEACON 1964-67?*
  - *Valley Forge Library 1964-67+*
- *Informatics 1965+*
- *MITRE Corporation*
  - *ADAM 1965-69+*
  - *AESOP 1965-67+*
  - *SAFARI 1967*
  - *SHOEBOX 1967?*
- *Computer Command and Control Company (CCCC) 1965-68+*
- *Cox Coronary Heart Institute 1966*
- *Defense Intelligence Agency*
  - *DIAOLS 1966+*
- *Control Data Corporation 1966+*
- *U.S. Naval Material Command*
  - *OSIRIS 1966-67*
- *Bunker-Ramo 1967*
- *Computer Corporation of America*
  - *CCA 1967-68+*
- *Patent Office 1967-71+*
  - *Rand System*
  - *In-House System*
- *Oak Ridge National Laboratory 1967+*
- *International Atomic Energy Agency*
  - *GIPSY 1967?*
- *TRW Systems*

Dialog command system

NASA / RECON/STIMS?
remote conde / Sci + Tech Info
mgmt sys

– ANSRS – GE?
Bigby
Joe Madison

Ann + Fitch Caputo
Bob Ogata
Geoff Hapgood
Geo. Plasko
Roger Carlson

Customer Information Control System (CICS) 1970-1971+

C. A Benchmark for the 1960's--The COSATI Demonstrations 1969

D. Summary

Informatics

Starting from its initial beginnings in California after spinning off from _____ in 19__ (early 1960's?), Informatics demonstrated strengths in the design and development of advanced data processing systems. In 1964 it sponsored a major symposium on disc files, and in 1965 it co-sponsored with UCLA a symposium on online computing systems that drew over 700 attendees. It continued its co-sponsorship of professional symposia in date processing into the 1970's, including a 1974 Symposium on Information Systems and Networks. Some indication of its continued participation in online activities is given in this and later chapters.

In 1967, Monroe Novell described an online search system then under development at Informatics. At that time it was still in the design stage, and was being designed for the GE 635 computer series; it hadn't been implemented yet.[25] The authors of this book have no information about further development of this system or its relationship to other Informatics activities such as their proprietary MARK IV database software (First described in 1968?, continued in active use by many organizations for years afterwards), or their other information activities described later in Chapters 6 and 10. The Informatics MARK IV File Management System was an advanced general-purpose software system made available in late 1967? for use in a batch-processing mode with IBM 360 equipment, after having been in development since 1965; its predecessors were the GIRLS, MARK I, MARK II, and MARK III systems.[26]

(CB note: was there ever an online equivalent of the MARK IV system? Mark Bayer (former Informatics staffer) might know.)

(CB note: CB is trying to obtain a copy of the following publication:

- *J.P. Fry et al. "A Survey of Data Management Systems." MITRE Corporation. Washington, D.C. March 7, 1968. 119 pp. Report No. MTR-5036. (Includes a review of MARK IV system. Not in the UC MELVYL system.)*

MITRE Corporation

ADAM

document, almost simultaneously with the abstract, in a form readily transmissible to a remote inquiry station."[37] Talbott apparently was unaware of the SDC SATIRE system in 1962, the SDC MICRO system in 1965 and SDC's COLEX system in 1966 that provided microform storage at the searcher's work station with expanded versions (e.g. abstracts, extracts, tables of contents) of the information that was available online. It appears that (except for some very brief records) these SDC systems did indeed provide additional information that was not available online, but they apparently did not present the microform copy of all of the "original documents" at the searcher's workstation, so in that regard, Cox's approach does appear to have been unique.

A 1970 presentation by authors associated with a different online system included a brief mention of the Cox system, and noted that, "A previous attempt to create a medical file of this type has not progressed beyond the pilot phase."[38] Talbott left the Institute at the end of 1966, and apparently discontinued all work on this system. The system was never used at the Institute after his departure.

Defense Intelligence Agency

DIAOLS

The U.S. DoD Defense Intelligence Agency (DIA) started work in 1966 to develop an online system called DIAOLS (DIA OnLine System). It was a text-oriented system, meant to be run on a GE-635 computer, with access by means of Teletype terminal equipment. Mark Bayer joined this development group in 1967.

(CB note: This is a very skimpy description. I didn't find anything else in the DIALOG files. Where did the Mark Bayer note come from? Who can give us more information? Mark Bayer? Gladys Cotter at NASA-Washington who used to work at DTIC?)

Control Data Corporation

INFOL

As mentioned in the Chapter 4 description of Northwestern University's efforts, the INFOL (INFormation Oriented Language) system was initially developed by the Control Data Corporation (CDC) for their CDC 3600 and 3800 computers. The initial system was a batch search system,

21. ***James A. Craig; Susan C. Berezner; Homer C. Carney; Christopher R. Longyear. "DEACON: Direct English Access and Control." AFIPS Conference Proceedings. Vol. 29. 1966 Fall Joint Computer Conference. Spartan Books. New York, NY. pp. 365-380.***

22. ***Frederick B. Thompson. "English for the Computer." Proceedings of the 1966 AFIPS Fall Joint Computer Conference." Spartan Books. New York, NY. 1966. pp. 349-364.***

23. ***Lawrence I. Chasen. "The Development of Random Access Information Retrieval in the GE/MSD Library and User Interactions." in Information Retrieval--The User's Viewpoint--An Aid to Design. Fourth Annual National Colloquium on Information Retrieval. International Information Incorporated. Philadelphia, PA. 1967. pp. 93-101.***

24. ***Chasen. 1967. p. 100.***

25. ***Monroe Novell. "An Information Retrieval System for the Inexperienced-Experienced User - How a User Would View the System." in "Information Retrieval--The User's Viewpoint--An Aid to Design." Fourth Annual National Colloquium on Information Retrieval. Edited by Albert B. Tonik. International Information Inc. Philadelphia, PA. pp. 61-76.***

26. ***John A. Postley. "The MARK IV System." Datamation 14(1). January 1968. pp. 28-30.***

27. ***Thomas L. Connors. "ADAM--A Generalized Data Management System." AFIPS Conference Proceedings. Spring Joint Computer Conference. Vol. 28. AFIPS. 1966. p. 193-203.***

28. ***Herbert R. Seiden. "A Comparative Analysis of Interactive Information Storage and Retrieval Systems with Implications for BCN Design." System Development Corporation. Santa Monica CA. 12 January 1970. Report No. TM-4421.***

29. ***Edward Bennett; Edward C. Haines; John K. Summers. "AESOP: A Prototype for On-Line User Control of Organizational Data Storage, Retrieval & Processing." AFIPS Conference Proceedings. Vol. 27. 1965 Fall Joint Computer Conference. Pt. 1. pp. 435-455.***

30. ***J. Spiegel; J.K. Summers; E.M. Bennett. "AESOP: A General-Purpose Approach to Real-Time, Direct Access Management Information Systems." MITRE Corporation. Bedford, Mass. June 1966. 31 pp. MITRE Report No. MTP-33. Air Force Report No. ESD-TR-66-289. NTIS Report No. AD-634 371.***

special crypto-secure vault to house the terminal and telecommunications equipment, the Air Force Systems Command used an existing vault for their communications equipment.

The system was declared officially operational on March 31, 1972. By the end of 1976, the DDC bibliographic database consisted of over 750,000 records, and... (no title word search capability until 1979?)...

(CB note: What more do we know about this system? Any more description in the Fong 10/71 review? What happened to this system? Who built it? CB to talk to Len Fisher at Lawrence Livermore Lab who used the system, and talked about it at a 5/75 SLA meeting.)
(CB note: Additional points to be considered:

- *separation of technical document streams into: 1) Unclassified stuff thru NTIS facilities and database; and 2) classified stuff thru this separate facility.*
- *What software and equipment? (restore comments about Univac 1108?) (TB to CB: see below)*
- *named developers? (TB to CB: Not that I could find.)*
- *When did this system incorporate online document ordering?*
- *What became of this system? Is it the current DTIC? What is the current name?*

(CB note: CB is trying to obtain a copy of the following publications:

- *"DDC Remote On-Line Retrieval System Operator's Manual". DDC. Defense Supply Agency. Alexandria, VA. draft edition. November 1969.) (Cite given in Wolfe's 12/70 report. Not in UC MELVYL system.)*
- *"DDC Remote On-Line Retrieval System Operator's Manual." May 1970. Defense Supply Agency. Alexandria, VA. 1970. (DSA DDCM 4185.3 Provisional). (Cite given in JASIS 5-6/71, pg. 152. Not in UC MELVYL system.)*

Excerpta Medica Foundation

In 1969, Peter A. Warren, Pierre J. Vinken, and Frans van der Walle described a database

production system that was then in operation at the Excerpta Medica Foundation in Amsterdam to produce several printed abstract journals (e.g. Excerpta Medica), run an SDI service, and support a computer tape distribution service for the drug literature.[122] *This system also included an extensive capability for handling biomedical terminology, including the development and maintenance of an extensive subject authority file called MALIMET (Master List of Medical Indexing Terms), consisting of about 60,000 preferred terms and almost 500,000 synonyms.*

This system ran on in-house National Cash Register computer equipment (NCR 315-501 RMC central processor with NCR CRAM-5 random access storage units) using the Foundation's own internal software. The authors noted that this total system could be installed by INFONET (Excerpta Medica Foundations's Data Processing Division) both for NCR 315 RMC and IBM 360 series equipment. In that article, the authors also stated that programs were, "...under development for an online, real-time information network and retrieval operations, employing these systems."[123]

(CB note: So what ever happened to plans to implement an online capability? Who else was involved in this online development work? Other papers to review and cite?)

Library of Congress. Congressional Research Service

In 1967, the Congressional Research Service (CRS) of the Library of Congress was using terminal keyboard devices to enter data for the Digest of Public General Bills into a remote computer.[124] *In 1969, they were using 25 typewriter terminals to enter this bibliographic data into their system and retrieve information online from this data entry/text editing system on the basis of subject or author.*[125] *In 1969, they were also considering ways in which other online systems might be used to help them with their task of tracking the thousands of bills presently under consideration by the U.S. Congress. CRS considered and examined several available systems, including NASA/RECON and one other commercial software system. For various reasons, they decided in late 1970 to use an IBM product called CICS (Customer Information Control System) that was already being obtained to support the IBM 1030 terminals in LC's Order Division. CRS decided to use CICS in a pilot project to develop an online access capability for their Bill Digest*

file of about 17,000 bills, using IBM 2260 terminals. In 1971 they did implement a capability for online retrieval by the Bill Number.[126]

Informatics

As an organization, Informatics began its involvement in computer-based information processing in the early 1960's, starting as a commercial systems studies and programming organization in Southern California. It was responsible for the development of some proprietary file management software, Informatics MARK IV, that has been extensively used worldwide since its introduction in the 1960's (1968?). The company co-sponsored a major series of computer industry seminars at UCLA from 1964 (Symposium on Disk Files?) (1966?) through 1974? (Symposium on Information Systems and Networks). They also ran several technical information centers on a contract basis for U.S. federal agencies (e.g. NASA). Several of their specific online activities relevant to this book are described in detail in the chapters where that activity is most relevant. That includes some activities tangential to the Lockheed DIALOG NASA/RECON, and NLM TOXICON search service efforts (Chapter 6), and their own search service (Chapter 10).

Allen-Babcock

VEREAD

The Allen-Babcock Computing Time Sharing Systems in 1969 included the VEREAD retrieval system which allowed online file searching. This system was initially implemented for a document file for a group of engineers. The online record included an indexed bibliographic record and a searchable abstract, as well as pointers to an accompanying copy of the source documents on microfilm cartridges. Model 35 Teletype units were used for terminal equipment.

(CB note: CB is trying to obtain a copy of the following publication:

- *W.H. Minor. "A Practical Approach to Information Retrieval. Datamation 15(9). September 1969. pp. 109-110, 115, 117, 121, 124.)*

Federal Aviation Administration

(CB note: CB is trying to obtain a copy of the following publication:

113. *Wolfe. 12/70. AD-723 214. pg. 16.*

114. *Wolfe. 12/70. AD-723 214. pg. 14.*

115. *Theodore Wolfe. 12/70 report. p. 25.*

116. *"Progress in Scientific and Technical Communications." COSATI Annual Report for 1970. September 1970. COSATI Report No. 71-1. Committee on Scientific and Technical Information of the Federal Council for Science & Technology. Executive Office of the President. Washington, D.C. NTIS Report No. PB-202 448. pp. 8-9.*

117. *Powers. Gaithersburg paper.*

118. *"Progress in Scientific and Technical Communications; COSATI Annual Report 1971." Committee on Scientific and Technical Information of the Federal Council for Science & Technology. Executive Office of the President. Washington, D.C. October 15, 1972. COSATI Report No. 72-2. NTIS Report No. PB-212 500. pp. 24-28.*

119. *Powers, pp. 69-82.*

120. *W.A. Woods. The Defense Documentation Center Natural English Preprocessor. Bolt, Beranek, and Newman, Incorporated. Cambridge, MA. 31 July 1971. 272 p. Report No. BBN-2182. NTIS Report No. AD-727 992.*

121. *Richard K. Bennertz. Development of the Defense Documentation Center Remote On-Line Retrieval System: Past, Present and Future. Defense Documentation Center. Alexandria, VA. March 1971. DDC Report No. DDC-TR-71-2. NTIS Report No. AD-720 900. ERIC Report No. ED-050 799.*

122. *Peter A. Warren; Pierre J. Vinken; Frans van der Walle. "Design and Operation of an Advanced Computer System for the Storage, Retrieval and Dissemination of the World's Biomedical Information." in Proceedings of the 32nd Annual Meeting of the American Society for Information science. Vol. 6. Greenwood Publishing Corp. 1969. pp. 423-429.*

123. *Warren et al. PASIS. 1969. p. 429.*

124. *"Progress of the United States Government in Scientific and Technical Communications. 1967." COSATI Annual Report for 1967. Committee on Scientific and Technical Information of the Federal Council for Science and Technology. Executive Office of the President. Washington, D.C. NTIS Report No. PB-180 867. pg. 69.*

To: History File

From: Charles Bourne

Re: Notes of 4 October 95 call from Mark Bayer (home: 312/642-4442)

Mark called in response to my 3 September 95 letter to him. He'll return the annotated chapters, but gave also me the comments over the phone. His comments should be read alongside the draft text he reviewed.

Chapter 5

Informatics. Mark didn't know when Informatics started. But Bob Harcharik (now a consultant in Washington) would know. Both were there (Rockville, Md.?) when Mark joined Informatics. Mark didn't know if Mark IV ever went online.

DIA. The DIAOLS also used Raytheon CRT terminals.

There was another DIA online system, ANSRS in 1967 after DIAOLS. Mark joined the DIA group in 1967. A person who would know about this was Major Joe Madison (now Joe Madison Associates, 170 Broadway, New York City. 212/988-5862). Gill Bigby also worked with Mark at DIA (current office phone: 202/373-2397; home: 703/751-2037).

The ANSRS system ran on GE-635/645 computers. This was used with overflight reconnaissance data, with descriptions of photos.

Infodata. INQUIRE still exists. Mark worked there for about a year before he joined DIALOG. They were originally in Falls Church, VA and then in Fairfax County, VA. A good person to contact would be Harry Kapowitz, who may still be there. An old friend of Mark, Patsy Reilly of Softworks, Alexandria, VA (800/727-4222, 703/317-8687) would have Kapowitz's current address.

Kapowitz, Ron Furman, Bob Schrier, and Bob Loan (Vice President, Technology) all left Xerox to start Infodata (CB note: relevant to the Syracuse AUDACIOUS story of Chapter 4).

Chapter 6

Informatics. Mark joined Informatics in 1973. Mark suggested we contact Bob Harcharik and J. Rob. (?). One or the other of these people was on the Board of Directors of Varaphone Company in Redwood City (415/591-6500).

(Page 64) Harcharik was associated with Larry Stevens on the early NASA/RECON activity. Harcharik left for MCI after Mark got there.

(Page 69. HEEP). Mark suggests we check this with Art Elias.

(Page 69. TOXICON). This looks correct to him.

(Page 71. Epilepsy Abstracts). This looks correct to him.

(Page 72. TOXICON). Mark didn't know where it ran.

(Page 71. Mead). Mark noted several MDC people that should be contacted: Jerry Rubin, Bob Bennett (in Sandy (Sp?), Utah. 801/572-7612; he also worked for Rubin at Times-Mirror Systems in Los Angeles, and Carl Fisher (at Mead Corporation in New York, 212/759-4286), Hyleson (Vice President, Marketing)

Chapter 8
Data Management Ad. Mark didn't know when or where the Data Central program description was published, and suggested that we ask Giering.

Giering. Mark says that Giering was the initial genius behind the technical part of Data Central. But "He went to MTL. because he was a pain in the ass."

Gorog. Mark suggests that we contact Bill Gorog to review the Data Corporation history. He is now at:

U.S. ORDER (a transaction processor)
Herndon, VA
(703/834-9481)

Vann. Mark suggests that we contact Peter Vann to review the Data Corporation history. He can now be reached at 617/558-4770.

(Page 7). The Data Cells were always crashing.

(Page 10. Service Bureau). Mark worked there. The office was on the 2nd floor, over an iron works (Arlington Iron Works?). The floors jiggled when the stamping machines were working. Bennett can give more information.

(Page 14. Bayer). Mark suggests that he be identified in the text as "an early employee of"

(Page 14. Over the Fence). Mark said that Bennett would be a good person to verify the "over-the-fence" story.

(Page 15. Attribution). Mark said that the quote "...buy one and find out" can be attributed to him.

(Page 17. TIMPS). TIMPS was a precursor to the ENVIRON (Environmental Information Retrieval Online) file. Maybe it didn't start as early as 1966. Ask Giering when the Arlington service bureau started.

(Page 18. PADAT). Ask Rick Caputo about this. He worked for APA at that time. They were selling this service to their print subscribers before they put Psych Info on DIALOG and other commercial online services.

(Page 19. EARS). Lancaster's evaluation study didn't receive much publicity because MDC at that time didn't really care about any market that wasn't directly related to the legal one. They didn't care about NLM. "Who cares?" There was no corporate interest.

(Page 21. HEAP). Try Art Elias and Dwight Tousignout.

(Page 21. ADL). Gottman should be spelled Gottesman.

(Page 22). In-house humor: All of the contract work for the non-legal market was referred to as "illegal" (i.e. "legal" vs. "illegal" instead of "non-legal").

Peter Vann was a marketing guy. Ralph Welch was _____. Bennett would know about these guys.

(Page 25. Data Central). EPA used it for a number of databases. OHMTADS (Office of Hazardous Materials Technical Assistance Data System) still exists. It is a substance description file, including information on such things as ways to contain spills.

(Page 26. Video Tapes). OBAR staff may have been the first to develop and use video tapes for user instruction purposes. Bob Bennett was the filmed instructor in these mid-70's tapes.

(Page 27. Terminals). They had a terminal that was actually a desk top with a terminal, modem, and printer built right into it. They also used Model 25 Teletypes at 110 baud, and external modems with acoustic couplers.

The UBIQ (ubiquitous) terminals came in the late 1970s.

(Page 28. KWIC). Yes. They were the first with KWIC, by a long time lead over everybody else who did it.

(Page 31. Terminals). For demonstrations, they used to carry around a Model 25 Teletype machine, along with an external modem with an acoustic coupling unit for the telephone headset. They employed a driver just to help carry this equipment up and down the stairs from their 2nd floor Iron Works office, load it into the company station wagon, and help get it out of the car at the demonstration location.

(Page 32. Opening for West). True. The MDC marketing problem discouraged use by small firms. This was a strategic error that allowed a market opening for Westlaw.

(Page 32. Logo). The consulting firm also developed MDC's first logo.

(Page 33. ERIC Bidders). ERIC and other service contracts were "non-legal", therefore no-bid by MDC.

Chapter 10
Informatics (Page 91). This was not a "publicly available service." It was initially available only to academic institutions and medical schools.

Enviroline (Page 91). A story about the life of early marketing people: Helen Kelby, who built POPLINE at G.W. University, once went somewhere in the Pacific like Singapore (12 time zones away) to give a demo. Mark told her before she left, "Call me if you have any trouble." She did, at 1 a.m. Mark's time. Mark fixed the problem, and found it to be a satisfying customer services experience.

Toxline (Page 92). "Lost" contract isn't the right word. "It's going to NLM eventually." The change was not a surprise.

Change Mark's title from "customer service representatives" to "one of the original Informatics search service managers."

Litigation Support (Page 92). While working with one of the law firms in Washington, D.C., an oil company in Los Angeles asked for a demo in Los Angeles the next day. Mark hopped a plane, with his Execuport terminal as baggage, and made the presentation. ARCO then became their first major customer of litigation support service. (Side note: ARCO was also one of SDC's first customers.)

EMBASE (Page 93). First public use of EM? Mark says he thinks that it was.

(Page 147). Not "U.S. telephone companies", but AT&T.

MDCI used the desk terminals and the UBIQ terminals. The NYTIB tried to copy the MDCI approach, and also used their own dedicated terminals ("copy cat").

(Page 148). ARPANET was a precursor to Internet.

Chile (Page 150). Summit sent Mark to Chile one time (1978?) for a demo to the equivalent of the Chilean NTIS.

MDC (Page 151). "MDC knew what they wanted, and they spent money that was needed to get there. It's no accident that they became the biggest professional online service."

Teaching (Page 155). In 1977, Mark taught a 1½ day DIALOG class for Pauline Atherton's library school class at Syracuse University. It was filmed with 2 cameras, and edited for use with subsequent classes there. (This may have been a first for teaching with videos in library school.)

NYTIB. Mark's observations: NYTIB was running 3 different retrieval engines for different parts of the service. They tried to replicate LEXIS, and as part of that they developed their own terminals. They wanted to be a proprietary service with some fulltext and some abstracts. Their president, Paul Bertheiume knew what was going on. But when he died suddenly, all of the steam went out of their sails, and they never really got going.

xc: Trudi

ED138238 IR004584

Science Information Programs: The Argentine Telex Network for Scientific and Technical Information.

National Academy of Sciences, Washington, D.C.

Publ. Date: Aug 76 Note: 133p.

EDRS Price MF-$0.83 HC-$7.35 Plus Postage.

Descriptors: Computers/ Foreign Countries/ Information Dissemination/ *Information Networks/ International Programs/ Job Training/ Management Development/ *On Line Systems/ *Sciences/ *Technology/ *Telecommunication

Identifiers: Argentina

This document reports on two projects jointly sponsored by the National Academy of Science (NAS) (USA) and the Consejo Nacional de Investigaciones Cientificas y Tecnicas (CONICET) (ARGENTINA). The first is the creation of a telex network for scientific libraries and documentation centers in Argentina, designed to improve access to, and delivery of, technical information resources within Argentina as well as from the United States and, eventually, from Europe and other countries in Latin America. The second is the development of a computer-based literature information service to provide academic, governmental, and industrial scientists in Argentina with the benefits of modern information handling methods. Chapter II describes the Telex Network Project in terms of its major components: organization, training program for managers and operators, development of hardware and software, network services, programs for network operators and users, and evaluation. It is supported by a set of appendices which provide detailed information on the organization, operation, and evaluation of the network. Chapter III describes the computer-based literature information service. This project was never fully realized under the joint NAS-CONICET programs. However it did lay the groundwork for Argentina's selection as one of two countries to participate in a UNESCO pilot program to establish national and regional selective dissemination of information services. (WBC)

Mark Bayer used this for a demo

+E BAYER

Chapter 7
10

CHARLES BOURNE AND ASSOCIATES
1619 SANTA CRUZ AVENUE
MENLO PARK, CALIFORNIA 94025
TEL. (415) 322-7101

Ch-5

September 3, 1995

Mark Bayer
1631 North Dayton Street
Chicago, IL 60614

Dear Mark:

It was good to talk to you the other day. As I mentioned, now that I've retired from DIALOG, I am able to spend more time working with Trudi Bellardo, formerly of Catholic University and SLA, to write a book for Academic Press on the early (pre-1977) history of the online search services. You may remember that I discussed that topic with you several times in the past..

The Mead and Data Corporation history will be a part of that text, and at this time we are actively reviewing the final text of that story. Because you were so closely involved with the those activities during the pre-1977 time period, we'd appreciate whatever help you can provide with our final reviews. We've gone about as far as we can go from the published material that we've been able to get our hands on, and from earlier information that you've provided. Now we need to have the current draft checked by the people who were on the scene at that time -- to correct the factual mistakes, fill in some of the missing pieces, and to provide additional comments as appropriate. We'd also appreciate any stories or anecdotes that we can repeat for our readers.

With that introduction, I invite you to review and annotate the attached draft text of the Mead, Data Corporation, and related activities for this pre-1977 time period.

You've also been a participant and witness with several other systems, including those of Informtics, Excerpta, and DIA. Consequently, I hope you'll be able to review the corresponding text that is also enclosed.

You'll notice that some of the text is in boldface. That's just a temporary artifice to permit me to keep track of my own text, so that I can keep track of where things came from. You'll also see some notes passed between Trudi and me as part of the dynamic text-building and review process. We want to get your comments early enough in the final drafting stage to permit us to make good use of them.

If you have any questions or comments, please give me a call. Just annotate and return the draft if that's easier for you. And if you see anything else on the outline that you'd like to review, let me know. I look forward to hearing from you.

Best regards,

Charles P. Bourne

Enclosure - Chapter 5 Outline, text and supporting citations for Informatics, DIA, EM (10/9/95 edition)
Chapter 6 Outline, text and supporting citations for Informatics, DIA, EM (1/15/95 edition)
Chapter 8 (3/11/95 edition)
Chapter 10 Outline, text and supporting citations for Informatics (5/20/95 edition)
Chapter 10 text on Hardware, Communications, and Marketing (5/20/95 edition)

P.S. Could you give me an approximate date for the enclosed announcement of the availability of the Data Central Software?

xc: Trudi Bellardo (letter only)

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MENLO PARK, CALIFORNIA 94025

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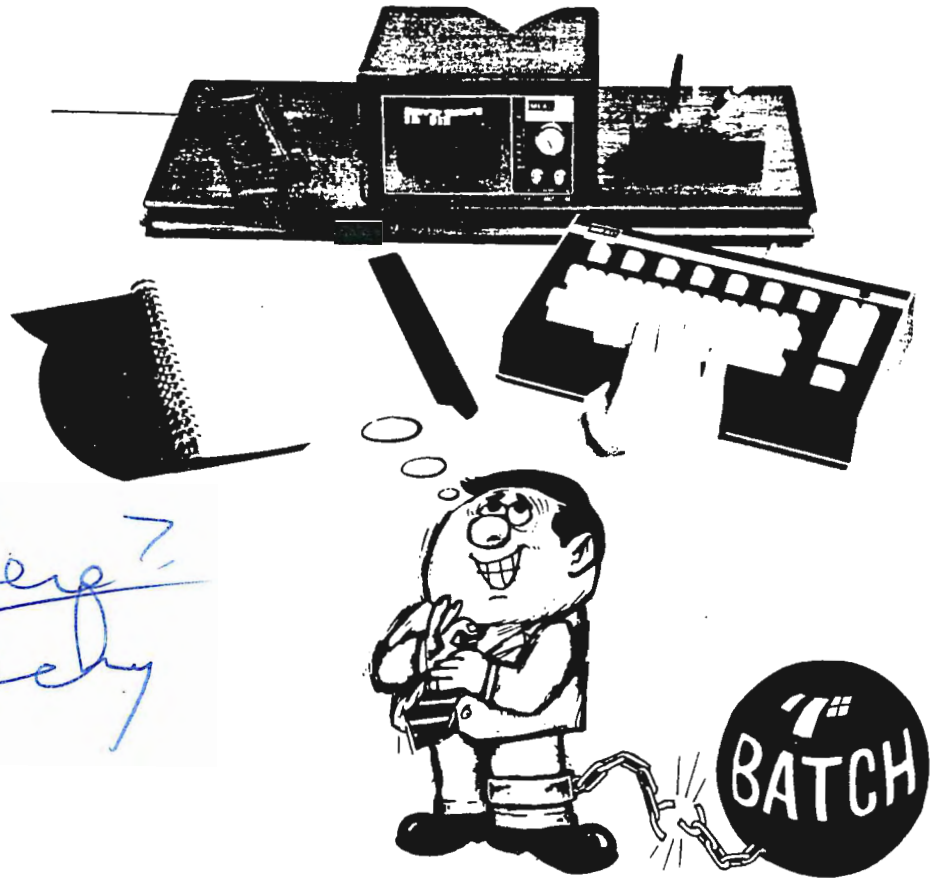
Chapter 10 ~~Outline~~, text and supporting citations for Informatics (5/20/95 edition)
Chapter 10 text on Hardware, Communications, and Marketing (5/20/95 edition)

P.S. Could you give me an approximate date for the enclosed announcement of the availability of the Data Central Software? - preceded me, Recon Central@Wright Pat

xc: Trudi Bellardo (letter only)

the GREAT ESCAPE !



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Mead Technology Laboratories

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Mr. Richard H. Giering . . . . . $1,800.00/MO.
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SCORE III/IV FILE MANAGEMENT/REPORT GENERATOR

The SCORE System is a useful tool that greatly simplifies the preparation of file management and reporting applications. The System accepts non-procedural request forms filled out by the user and generates custom-tailored COBOL which can then be compiled and executed to perform the requested function. User entry capability allows for easy insertion of 'free form' COBOL own code along with user specifications. This permits one step compilation of SCORE generated and user written COBOL statements. Current releases allow for use of standard COBOL Source Statement libraries as data definitions, eliminating the need to redefine data files already in use. Interface to non-standard data bases such as DLI and TOTAL are also available. SCORE on-site training and installation is provided including work shop sessions. The basic features are quickly available to programmers and non-programmers as well. SCORE has been installed in well over three hundred (300) computer facilities and is a member of the ICP Million Dollar Software Club, as well as elected to the Data-Pro Software Products Honor Roll.

IBM 360/370, BURROUGHS B-2500, 3500, 5000, NCR CENTURY, UNIVAC 1106, 1108, 9000, CDC 3000, 6000, HONEYWELL H-200, RCA SPECTRA 70, SIEMENS

Mr. Edward Opengart . . . . . .SCORE III$12,000.00
Programming Methods or LEASE $400.00/MO.
Division GTE SCORE IV $15,000.00
Information Systems, Inc. or LEASE
1301 Avenue of the Americas $480.00/MO.
New York, NY 10019 Tele. 212-489-7200

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INQUIRE

A self-contained, general purpose, information retrieval and data base management system designed to provide those functions normally required for the creation, maintenance, retrieval and administration of data files in a remote terminal, batch, remote batch, or time-sharing environment. Multi-terminal operation is available using TSO or similar OS-based time-sharing systems. INQUIRE is covered by U.S. Patent 3670310. Active INQUIRE applications currently operational include grant management information, bibliographic literature searching, accident data reporting, manpower analysis and reporting, equipment inspection and analysis pharmaceutical patent searching, screening of biological test data, clinical data analysis and reporting, financial analysis and planning, sales reporting, and many others. Retrieval is accomplished using a free-format, English oriented Command language which involves either random or sequential processing of the file. The user identifies the information using full Boolean logical connectors such as AND, OR, AND NOT, and a unique operator, LINK, which insures retrieval based upon commonality of levels of data within repeating groups. Additionally, the searching of text and testing of field values or ranges of values is performed using CONTAINS, EXCLUDES, IS, TO, GT, LT, GE, LE, or EQ. INQUIRE includes a complete report writing capability. Multi-file link (MFL) available for inquery and reporting of up to 31 data bases simultaneously.

IBM 360/370, OS/VS, MVT-MFT, HASP, TSO, IMS/DC, (IMS/DB avail. in 1975), RJE, 1DA device, 130K real. Terminals include 2780, 2741, TTY, 2260, 3270 etc.

Mr. Robert S. Stahl . . . . . MO. RENTAL
Commercial Marketing Manager /LEASE Avail.
or
Mr. Edward H. Carlson
Manager, Government Systems
Infodata Systems Inc.
5205 Leesburg Pike, Suite 701
Falls Church, VA 22041 Tele. 703-578-3430

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TUMS — THE TOTAL UTILITY MAINTENANCE SYSTEM

TUMS is a general purpose data base maintenance utility program containing six basic functions for TOTAL data bases. These are: 1) dumping a TOTAL data set to a backup tape, 2) reloading a TOTAL data set from a backup or source tape, 3) printing a TOTAL data set in vertical hexadecimal-character format (no TOTAL control records, no blank records — just data), 4) building a TOTAL data set from card input, 5) deleting records from a TOTAL data set, and 6) validating a TOTAL data set. TUMS can select TOTAL data according to volume and key values. TUMS can be used for a multiplicity of applications. TUMS gives the Data Base Administrator the ability to create the original data base, add new records, delete old records, backup/recover, generate test data bases from live data, and repair data sets with broken linkages. A very important capability of TUMS is reorganizing TOTAL data bases when changes in device type, record size, block size, new relationships (linkage paths), expanded file size, or new data sets are required. The purpose of TUMS is to eliminate expensive custom written programs. You code only four (4) easy-to-use control cards which contain the same information as you might code in a TOTAL program. No compilation, or linkediting --- all binding is at execution time. The elapsed time from request to guaranteed results is immediate. TUMS is shipped ready-to-catalog with no local customization necessary. It installs in less than five minutes. And you will be able to use it within a 1/2 hour with the users manual.

March 11, 1995

CHAPTER 8

Data Corporation, OBAR, and Mead Data Central

1964-1971(2)

A. Early Conceptualization: ***(CB note: and?)*** the Ohio State Bar Association 1960 67

B. Data Corporation (1964-8/68) and Data Central 1964-71?
   The Recon Central Project 1964-67
   Development of a Commercial Online System: Data Central 1967-68+

C. Ohio Bar Automated Research (OBAR) 1967-71?

D. Mead Data Central, Inc. (MDC) 8/68-69
   The Acquisition of Data Corporation by Mead Corporation 1969
   Continuation of Data Corporation Efforts Under Mead Corporation 1969+
      Data Central Enhancements
      OBAR 1969
      BEER 1968-69
      TIMPS/ENVIRON 1969-73+
      PADAT (Psychological Abstracts--Direct Access Terminal) 1969-
      EARS (Epilepsy Abstracts Retrieval System) 1969-
      The COSATI Film 1968-69
   The A.D. Little Consultation 1969-70

E. The Split of Data Corporation into Mead Data Central and Mead Technology Laboratories 1970-72
   Further Activities of Mead Technology Laboratories 1970+
      SSIE (Smithsonian Science Information Exchange) 1970
      Avionics Central 1970+
      HEW 1971
      Mead Personnel Files 1971
      DATA/CENTRAL System 1970+
      EPA 1971
   Further Development of Mead Data Central and OBAR 1970-72

Early Conceptualization: *(CB note: and?)* the Ohio State Bar Association

Unlike DIALOG, ORBIT, SUNY BCN, or any of the other online information retrieval systems, the LEXIS system in wide use today was not conceived by computer programmers, systems engineers, information retrieval specialists, or librarians. Taking the initiative in the early 1960s was a small band of Ohio State Bar Association lawyers, who felt that a critical need existed in the legal profession for new methods of locating cases, statutes, regulations, articles, and other material relevant to legal research. These were not the only American lawyers concerned about the excessive amount of time and effort required to access legal materials; other state bar associations in the 1960s conducted various investigations. For example, in 1966, on the initiative of the New York State Bar, the New York State Board of Regents chartered the Lawyers' Center for Electronic Legal Research (LCELR) as a nonprofit, educational organization. At about the same time, the Philadelphia Bar and the Missouri Bar each surveyed the research habits of their members, in order to determine how a computer could best assist them. Other bar associations were taking similar actions.[1]

Why were state bar associations taking these initiatives? Mainly because the lawyers viewed the issues at stake as credibility, confidence, and quality control:

> Early in the [Ohio Bar] association's investigation of existing programs and of prospective ones promised by various software companies, it became apparent that a computerized research system would be more likely to be of service to the profession if at least a substantial degree of control were exercised by the organized Bar. In the first place, many lawyers were properly skeptical of computers because they knew that for years the sponsors of some systems had been promising much more than they could perform. It was judged that only the organized Bar could readily regain their confidence.[2]

A bar association represented the interests of the legal profession, and ensured that a computerized research system created to meet their requirements would meet their professional standards of thoroughness, accuracy, and confidentiality.

Even before the lawyers got involved, however, a considerable amount of work had been done on the testing of computer searching and manipulation of text material, including

linguistic analysis, concordance and index building, and file searching. ***(CB note: Experiments within IBM in 1959, for example, demonstrated text searching capability with an IBM 650 computer, although the system limitation to five-character word matches resulted in answers that were difficult to use. Using other systems, and non-English text material, searchers within IBM further demonstrated the technical feasibility of full-text searching.[3] As mentioned in Chapter 5, IBM also explored the feasibility of full-text searching in 1966-67 in their joint experiments with text material from Time-Life publications.)***

John Horty ***(CB note: , an attorney at)*** of the University of Pittsburgh ***(CB note: 's Health Law Center)*** had the original idea for a full-text legal research system, and demonstrated this approach as early as 1960, ***(CB note: using techniques and technical assistance from IBM's Yorktown Heights Research Center, and a full-text database of 2,650 sections of statutes concerning health and hospital law.[4,5,6,7] The early 1960's experiments were supported jointly by IBM and the American Bar Foundation.[8] Horty's fulltext work was also supported by CLR, NIH, U.S. Dept. of Education, the Ford Foundation, and Pittsburgh industry.[9] In 1968, Horty established Aspen Systems Corporation as a commercial enterprise, engaged in computer storage and retrieval of legal data. His fulltext search system became the basis for the Aspensearch text processing system of Aspen Systems Corporation. In 1969, Aspen had created the largest fulltext database ever seen, System 50, the complete text of the U.S. Code and the laws of all 50 states, and by 1972 was providing litigation file support services to many institutions.[10] The Aspen service was also used for fulltext data input operations in the early 1970's, such as the opinions of the courts of New York State.[11] The Aspensearch software was subsequently made available for use in 19__ in an online mode. (CB note: We need to know this date, so that we can determine where best to discuss Aspensearch.)***

Batch searching of full-text legal statutes was in regular production operation in ***(CB note: the early 1960's)*** 1970 with Project LITE ***(CB note: (Legal Information through Electronics))*** of the U.S. Air Force, using the U.S. Code Decisions of the Comptroller General, and other databases.[12] ***(CB note: With contract support from the U.S. Air Force Finance Center from 1963-67, the University of Pittsburgh Health Law Center and the IBM Federal Systems Division developed***

the LITE system for computer-based legal information retrieval, along with the development of several major LITE databases and the LITE organization.[13] John (Jack) L. Garland, who had both a law degree and an MSLS degree, was one of the lead persons on the IBM team; one of his IBM associates was Robert (Bob) Lee Chartrand, who subsequently joined the Library of Congress, received the ASIS Award of Merit in 1985 and retired in 1988 as Senior Specialist in Information Policy and Technology. LITE provided computerized legal research service to the Department of Defense since 1965. From 1967 until early 1970, LITE operations were supported by commercial contractors. In 1972, LITE was operating as a fulltext (over 90 million text words) retrieval system on an IBM 360/65 computer at the Air Force Accounting and Finance Center in Denver, Colorado, with direct access storage devices, performing over 1,000 searches per month, but still operating in a batch mode.[14],[15] The text parsing programs of LITE, however, were used in the JURIS online system described in Chapter 6,[16] and the JURIS staff also converted the U.S. Code database from the LITE system to the JURIS system.[17]

A group of members of the Ohio State Bar, and in particular the Ohio Legal Center Institute, also did some preliminary exploration, during the period 1964-67, of the concept and technology for computer-assisted legal research. In 1965, they heard John Horty speak on this topic at the annual dinner of the Ohio State Bar Foundation. The president of the Ohio Bar for 1965-66, James F. Preston Jr., became determined that his presidency would be remembered for the initiation of a computer-assisted legal research service for Ohio lawyers.) As we shall see, Preston personally was to play a central role in this arena during the next few years.

(CB note: Also in 1965, another key player was introduced to the planning effort. William G. Harrington, an attorney who had earned his J. D. from the Ohio State University College of Law in 1958, became Research and Legislative Counsel to the Ohio Bar in November. In that capacity, Harrington was present for Horty's after dinner speech and learned of Preston's vision and commitment. He volunteered to take charge of the Ohio Bar computer project and immediately began a review of available technology. He went to Pittsburgh to work with Horty's system, and arranged for demonstrations by various technology suppliers. He then set out, with the participation of other Ohio Bar attorneys, to write specifications for a system. Later, Harrington himself judged

those specifications to be among the most important achievements of the Ohio Bar group. The service definition they crafted in 1966 called for a non-indexed, full-text, online interactive computer-assisted legal research service, to search the full text of legal materials, not headnotes or digests--and that is still the core service definition for the LEXIS and WESTLAW services today.[18] This definition discouraged many technology vendors, and reduced to a few the companies offering to build the service. The Ohio group had hoped to be able to improve and expand upon the Horty system, but it became apparent that this could not be done. (TB to CB: why not?--please clarify) (CB note: I don't know.)

Online searching of fulltext information had been demonstrated and reported in 1963 with the SRI system described earlier in Chapter 3, however it seems unlikely that any of the participants in the Ohio stories of this chapter were aware of that activity.

By December 1966, Central Media Bureau, a New York company, appeared to be the only choice, and the lawyers opened negotiations for a contract for the Ohio Bar to fund the software development work for the defined service. The news of the negotiations was important enough for the story to be picked up by the Wall Street Journal, where it caught the eye of William F. Gorog, a businessman and president of Data Corporation of Dayton, Ohio. Gorog immediately called Preston, the Ohio Bar president, just before the contract with Central Media Bureau was signed. Gorog proposed that his company could be of assistance, and invited Harrington to visit the Data Corporation facilities in January 1967, to see a demonstration of their new software that had been demonstrated for the first time only six months earlier. Harrington came away from the presentation convinced that the interactive online system, which was non-indexed and full-text, represented the most advanced and sophisticated retrieval software he had seen. The lawyers immediately suspended negotiations with the New York firm, and that same month in 1967, planned and incorporated the Ohio Bar Automated Research (OBAR) organization, a subsidiary of the Ohio State Bar Association, to manage the computerized research program.) We are getting ahead of ourselves, however--before we introduce OBAR, we must pause to consider the history of Data Corporation.

Data Corporation and Data Central

Also beginning about ***(CB note: in 1964)*** 1964, and also in Ohio, a private computer programming and support company was launching an independent line of development that would culminate several years later in a partnership with the Ohio lawyers to produce a new online system. The seeds of what would evolve into the full-text natural-language LEXIS system of today were planted at that firm, Data Corporation of Dayton, Ohio.

The Recon Central Project

Data Corporation founder William Francis Gorog had been educated at the U.S. Military Academy and Ohio State University. After receiving his master's degree, he began his career as a marketing manager at the Bulova Watch Company. Two years later he moved to Dayton and formed Data Corporation. Under his direction, the company developed an online full-text retrieval system, with internal support as well as external support through a contract with the U.S. Air Force at Wright-Patterson Air Force Base (WPAFB), which was also located in Dayton. We could find only one record of this project in the open literature, a brief mention in a 1974 article footnote.[19] The details of the story were related to us by Richard (Dick) H. Giering, one of the main developers of the initial system.

Giering's story begins ***(CB note: pre-1964)*** with Data Corporation, a Dayton contractor, operating a special library in support of the Reconnaissance Laboratory (Recon Lab) operations at WPAFB, with traditional manual library techniques. The library was called Recon Central***(CB note: Trudi--Why did you change RECON CENTRAL to Recon Central? I think all the source literature and Giering used the full caps version.)***, which should not be confused with NASA RECON (Chapter 6). Data Corporation's contract was expanded in mid-1964 to include a feasibility study of using full-text automation ***(CB note: batch? or online?)*** to aid in the operation of Recon Central. Robert Roalof and Len Crouch, ***(CB note: , Air Force representatives)*** of Recon Lab, and Gorog of Data Corporation were among the

participants in these activities.[20],[21] ***(CB note: We need more info about the kind of things that Data Corp was doing at this time.) (CB note: What an outstanding thing this was for some Air Force official at Dayton to take the initiative to suggest, and to spend money to explore online full-text searching. What could have prompted that move? There's a story there. What's the relationship of the Data Corp. work and support with COLEX and CIRCOL at WPAFB?) (TB to CB: the relationship is touched on the next page.) (CB note: Noted. But I'd like to hear it from some of the participants from that time.)***

The Data Corporation study confirmed the theoretical feasibility of such an approach. In 1965 the contract was expanded to include construction of a breadboard model***(CB note: of an online system?)***; this was the standard way in which the Laboratory worked in developing reconnaissance-oriented hardware. In mid-1966, software was demonstrated at Data Corporation, and the contract scope was further expanded to prepare for on-site feasibility testing. ***(CB note: To put this event into perspective, this mid-1966 online demonstration by Data Corporation took place about a year after the NASA/RECON project had started with Bunker-Ramo (Chapter 6), and about the time that the Bunker-Ramo system was first demonstrated; and before DIALOG had received a contract to install their demonstration terminal at the NASA-Ames facility (Chapter 6), and several months before a contract was awarded to SDC for another online project to begin at Dayton, namely the COLEX effort described earlier in Chapter 7.)*** The computer equipment involved ***(CB note: At Data Corp or at WPAFB?)*** was an IBM 360/40 with an IBM 2321 Data Cell (***(CB note: with access restricted to*** 40 million bytes), two IBM 2311 disks (7 million bytes each), and an online console typewriter. The feasibility model required this fully dedicated computer system to support one terminal and one file; the emphasis was on the demonstration of the retrieval program, not time-sharing. ***(CB note: In late 1966 the feasibility model was completed and feasibility proved. Limited services began as RECON CENTRAL; Planning started for the development of a production system.)***

The first on-site demonstration of the software for Recon Central took place in March 1967 using three separate databases: 1) a file of R & D project description records (DD Form 1498 ***(CB note: described earlier in Chapter 5 as part of the COSATI demonstration project)***.); 2) a

file of textual research reports; and 3) a file of hardware specifications of varying complexity from textual documents through numeric descriptions, and combinations of text and numeric information. The system used an inverted file from both the text and the structured fields, and Boolean logic. This demonstration was limited to the use of a single console typewriter, but soon thereafter ***(CB note: , about the Spring of 1967,)*** the system had the capability to support either the console typewriter or an IBM 1050 hardcopy terminal--but not both simultaneously.

In the spring of 1967, the Recon Central facility used ***(CB note: the RECON CENTRAL system with)*** the ***(CB note: SDC-developed)*** CIRC system (described in Chapter 7) to evaluate and compare full-text searching against searching of assigned keywords. ***(CB note: Where's the source for this statement? This could explain why the funding shifted from RECON to COLEX later in this year (1967).)*** It is clear that the Data Corporation staff and their Air Force sponsors were aware of ***(CB note: the SDC work in time-shared information retrieval systems,)*** and probably familiar with online retrieval systems in general, and likewise, the CIRC, COLEX, and CIRCOL system developers knew about Data Corporation and its work. ***(CB note: We should add more text & examples to show the coupling and awareness of other systems by the various Dayton groups? Any reports?) (TB to CB: I agree--we could at least write a sentence or two about what a hotbed of invention Dayton was during this period. I interviewed Paul Evan Peters and he noted that he was an undergraduate computer science major at the University of Dayton in the early sixties. The UD comp. sci. program was one of only a handful in the country at that time--possible only because of being able to use adjunct faculty from Wright-Pat, NCR, and other local organizations.) (CB note: Why didn't the Air Force choose the Data Corporation system for the COLEX and CIRCOL work or the CIRC software for RECON Central? Who can answer that question?)***

Meanwhile, ***(CB note: In October 1967,)*** the Data Corporation project for Recon Central had run out of ***(CB note: Air Force funding)*** money (which may be related to the Air Force decision at the same time to fund COLEX--see Chapter 7), and WPAFB denied them funding for development of the full ***(CB note: production)*** system capabilities. ***(CB note: What were the planned "full" capabilities? Did the library continue in a conventional manual mode? It***

sounds like the Data Corporation programs were never really used at the library--true?) (CB note: The demonstrated Recon Central capabilities remained in operation with the limited breadboard system.) Not until two years later did Recon Central (by that time called Avionics Central) install Data Corporation software--we shall pick up that story later in this chapter.

Development of a Commercial Online System: Data Central

(CB note: With the termination in October 1967 of Air Force support for the development of a production system, Data Corporation began an in-house development effort to produce a generalized fulltext database management system to be called DATA CENTRAL. This effort was directed by Giering, fully funded by Data Corporation.)

In December 1967, Giering published a report, "Information Processing and the Data Spectrum," on the feasibility of using full-text techniques for all kinds of databases The following spring ***(CB note: Giering's 9/29/83 letter said he was given this responsibility in October 1967; his 5/9/80 letter said he was given the responsibility in spring 1968.)***, he was assigned the responsibility to develop a commercially viable system to process all types of databases, an in-house project to be fully funded by Data Corporation. ***(CB note: At about this place we need some Giering biographical information for his experience up to that time.)*** Later, in the summer ***(CB note: of 1968)***, a time-sharing capability was developed and tested with the Recon Central package. Simultaneously, work continued on the OBAR project. ***(CB note: What is meant by Dick's statement in his 9 May 1980 letter that in the Summer of 1968, for the OBAR project, "Feasibility was determined and funding for the data conversion was sought."?***

Beta testing of the initial production version of the Data Central system began in mid-1968 at Union Carbide, using chemical compound files. This feasibility testing resulted in the purchase of this breadboard model in late 1968 by Union Carbide for installation in their Charleston, West Virginia plant. (CB note: Giering describes this as the first "recursive search fulltext system; Summit subsequently described it as the first "semi-recursive" search fulltext system because it only

narrowed the previous search result, and only a single answer set was retained. Summit also noted that this system had no index display function (e.g. EXPAND), and as he recalls, their first system was non-recursive. These points need further consideration.)

In mid-1968, Data Corporation opened a service bureau in Washington, D.C.--the first fulltext service bureau. It served as the host for several online databases and experiments as described later in this chapter.

In 1968-69?, Mead Technology Laboratories started marketing its fulltext search system software under the name DATA/CENTRAL System. It was packaged for the IBM 360/370 computer systems, and priced at a lease rate of $1800 per month.

In the fall of 1968, the Recon Lab permitted the first public demonstration of the combination of Data Corporation's time-sharing software with the Recon Central ***(CB note: search)*** software. The new***(CB note: commercial)*** system, when completed, was to be called Data Central. It was a generalized information retrieval system with text-searching capabilities and online remote access. The ***(CB note: This)*** first public demonstration of ***(CB note: Version One of the commercial)*** Data Central ***system*** was at the ASIS Annual Meeting in Columbus, Ohio in October 1968, using multiple IBM 1050 terminals and Model 33 Teletypes, and databases of some OBAR legal texts, a demonstration personnel file, and some COSATI-sponsored R&D project descriptions (DD Form 1498). ***(CB note: This was done with IBM Data Cell and/or IBM 2311 disk drives.)*** Giering remembers being in a great rush to get the system operable in order to demonstrate at the ASIS meeting. At that meeting he was able to demonstrate that his system could easily accommodate four terminals and multiple files. This may have been the first public demonstration of an online search system specifically designed for full-text searching--there was no other full-text online search system on the market at that time. ***(CB note: CB to confirm. When did ASPEN go online? Relationship to 1962 SDC-SATIRE and 1963 SRI work?) (TB to CB: If so, should this be a Milestone?) (CB note: We'll know after checking.)*** To process full-text material, the system automatically derived an inverted file, or keyword dictionary, from all words in the database, except for a stop list of common words

deemed to possess no retrieval value. ***(CB note: Stop word lists had been used previously in batch search systems, and in the 1963 SRI online system.))*** Every word in the inverted file, and combinations of them, were searchable.

(CB note: Data Corporation was also active in 1968 with the OBAR activity described in the next section. In October 1968 the initial OBAR database of 3 files consisted of 50 million characters, and it was tested in law firms, using Teletype terminals.

Data Corporation was acquired by Mead Corporation in August 1968, and that story is described later in this chapter.)

Ohio Bar Automated Research (OBAR)

However, at the time ***(CB note: October 1967)*** that the Air Force support was phasing out was when ***(CB note: delete "was when"? or "at"?)*** Data Corporation president Bill Gorog made the overture to the Ohio Bar to demonstrate Data Corporation's software to them and to convince them of the feasibility of using the Recon Central techniques in the full-text search of legal documents. Along with Gorog, Giering and Eugene Bold represented Data Corporation in the discussions, and Harrington and Preston represented the interests of the Ohio Bar. By late 1967, the dialogue ***(CB note: resulted in the decision that the Ohio State Bar Association, via its subsidiary corporation called OBAR, was to provide an online service, and was to contract with Data Corporation to supply the necessary software and database support.)*** All work was to be done under the supervision of the Ohio Bar. Once again, however, we must interrupt the flow of the story to track the activities of the lawyers involved in OBAR--let us step back to the beginning of 1967 for the establishment of OBAR.

(CB note: As mentioned earlier in this chapter,) In January 1967, the Ohio State Bar Association formed a subsidiary nonprofit corporation known as Ohio Bar Automated Research (OBAR), with James Preston as president. Even with its own staff to manage its computerized research program, OBAR remained closely associated with and controlled by the Ohio Bar--the executive vice president of OBAR, William Harrington, was also Research and

Legislative Counsel for the Ohio Bar, ***(CB note: and the trustees of OBAR were the members of the Ohio Bar Executive Committee.)*** In September 1967, after seeing presentations made by a substantial number of computer firms, ***(CB note: It would really be interesting to know who the other bidders were.) (TB to CB: Central Media Bureau?)*** OBAR signed a contract with Data Corporation, represented by Gorog and Giering.[22] Under this contract, Data Corporation was to adapt their full-text information retrieval system to the law. ***(CB note: The modifications deemed necessary to make the software acceptable to OBAR included introducing proximity logic, based on number of words rather than sentences or paragraphs (up until then proximity logic had not been available on the Data Corporation software); changing the stop word list; and extending communication capability so that OBAR was Teletype-compatible, in addition to being compatible to IBM terminals.[23])***

(CB note: The original contract between OBAR and Data Corporation provided that: 1) Data Corporation would modify its retrieval software to make it more suitable for legal research (OBAR would pay a fee for such modifications and would own the exclusive right to use the resulting software for legal research); 2) Data Corporation would convert Ohio case law and statutes into machine readable form for use with the system (OBAR would pay the cost of conversion and own the database); 3) Data Corporation would run the operating system, providing all the necessary hardware, software, communications, and personnel to offer and sustain the service for Ohio lawyers; 4) OBAR would market the service; and 5) sales revenues would be divided between OBAR and Data Corporation.[24])

Debentures of the OBAR corporation were sold to members of the Ohio Bar to raise the funds for the contract.[25] ***(CB note: With the bonds and some additional loans, OBAR raised and committed a total of approximately $250,000 to start the OBAR system and service.)*** In the opinion of OBAR president Preston, Data Corporation probably would have never entered the legal field if it had not been sought out by the Ohio State Bar Association.[26] ***(TB to CB: I'm confused--did not Gorog of Data Corp. seek out OBAR--not the other way around?--I think this sentence needs to be recast, perhaps "never would have entered the legal field if it had not been dropped by the Air Force and been seeking a new application of its retrieval software.") (CB note:***

In his 5/71 "OBAR" paper, Reston said (pg. 190),

> ***...when I speak of the OBAR Program, I am referring to an electronic legal research program, the need for which was recognized by the Ohio State Bar Association, which then sought out and found the Mead Data Central fulltext retrieval system, with Mead Data Central, applied that system for use by lawyers. Mead Data Central would probably never have entered the legal field, except for the Ohio State Bar Association, which had set the basic objectives to be achieved for the legal profession through computerized legal research and then sought out the skills that Mead Data Central had.***

I've lost track of the sources of the previous text that said that "Gorog made the overture to the Ohio Bar...", and the text about the Central Media Bureau. CB needs to check that further.)

The first database for the OBAR system consisted of 50 recent volumes of Ohio Supreme Court Reports. Plans were made to add the full text of all reported Ohio case law, plus the Ohio Revised Code, for a total of at least 450 million characters. The system supported four online devices at that time.[27]

(CB note: Want to say anything here about pricing; Preston 5/71 article that talks about price schedules still being in the experimental stages, but suggests $75/hour?)

From 1967 through 1969, a great deal was accomplished in the development of the new retrieval system. ***(CB note: Preston and Harrington travelled extensively in Ohio, selling the OBAR bonds and encouraging Ohio law firms to become subscribers to the OBAR service.)*** In late 1968, ***(CB note: 1968? Giering's 29 Sep 83 letter says that in mid-1969, "OBAR starts evaluation of full-text legal research with a limited number of TTY terminals in law offices." What is the correct date?)*** the OBAR database was tested in law firms, using Teletype terminals, while Data Corporation continued the development of the commercial system. ***(CB note: Who actually arranged the testing--Data Corp. or OBAR? What can we say about how the OBAR database was constructed?)***

(CB note: In the middle of 1969, an evaluation of the OBAR experiment confirmed that OBAR clearly had demonstrated the feasibility of computer-assisted legal research, although,

> ***the computer system and its communications were unreliable, the search protocol was less than transparent, there was an unacceptable degradation in response time when more than a few lawyers were doing research at the same time, and the data base was too small for much practical research.[28]***

These problems appeared to be solvable and the system could be fully developed, but much more money would be required than OBAR had available or could raise, and probably more than Data Corporation could commit. Thus the stage was set for the beginning of the Mead Corporation participation.)

(CB note: We should make it clear that the Data Corp. system was being operated by OBAR--it wasn't just a software development contract. An abstract of a June 1973 paper by McCabe still talks about the OBAR system without mentioning Mead--maybe we're short-changing the OBAR description and activities from 1967-73, and giving too much credit to Mead.) (TB to CB: on the next page, the contract specified that Data Corp. would run the operating system, not OBAR--or am I not reading it right? As for Mead, they did not get involved until 1969, right?)

Mead Data Central, Inc. (MDC)

The Acquisition of Data Corporation by Mead Corporation

Fortunately for the development of the system, the funding problem was resolved, at least for start-up costs, in 1969 ***(CB note: Rubin, in the ABA 1973 paper said, "In the summer of 1968, the Mead Corporation acquired Data Corporation." Giering's 5/80 letter said that Data Corp. was acquired by Mead in August 1968.)***, when Mead Corporation acquired Data Corporation, and made available a substantial amount of investment capital.[29] ***(CB note: Mead reportedly purchased Data Corporation for $6 million[30]*** Mark Bayer related to us one of several existing legends of how Mead, a Dayton paper manufacturing company, happened to purchase a computer software firm:

> Bill Gorog [president of Data Corporation] made a lot of money and became a wealthy man. His backyard literally backed up over the fence to Jim McSweeney's [president, soon to be chairman, of the Mead Corporation]. They were backyard buddies in a fine neighborhood in Dayton. They got to talking about how Bill Gorog thought that the software could be used beyond this reconnaissance application. And how they had already approached the Ohio Bar and had already formed OBAR. Gorog and McSweeney were just talking about this as business people do, and somewhere along the line McSweeney said, "This is a good idea. We want to do

> something with this." Mead was at the beginning of its diversification phase, and the decision as I understand it (the story could be 95 per cent legend and only 5 per cent fact), was made over their common backyard . . . to develop the OBAR concept with money that McSweeney and Mead Corporation could bring to the party.[31]

Another legend, no better documented, attributes the acquisition of Data Corporation to the notion that Mead executives, in planning for the future of the paper company, were thinking, "Well, do computer companies use paper? Yes. How much do they use? We don't know. Maybe we should buy one and find out."[32] Another perspective on the acquisition came many years later, when ***(CB note: Harrington noted that Mead Corporation***

> ***did not acquire Data Corporation to become a partner in the OBAR experiment, but to acquire other Data Corporation technology more closely related to Mead's traditional lines of business in forest products, paper, and printing. Indeed, it has been said that Mead was not even aware that Data Corporation was committed by contract to an effort to build a computer-assisted legal research service. Nevertheless, Mead rescued the OBAR experiment from imminent financial failure and in time invested the tens of millions of dollars the development of a nationwide system for computer-assisted legal research would require.***[33]

In the months following the acquisition, Data Corporation continued with its projects and ventures as they had before the acquisition,) but the entire enterprise was to change considerably soon.

Continuation of Data Corporation Efforts under Mead Corporation

(CB note: In May 1969, with the urging and encouragement of Bob Landau of the President's Office of Science & Technology, the Data Corporation system was demonstrated in Philadelphia to attendees of the Sixth Annual National Colloquium on Information Retrieval.

> ***The system that you will see downstairs this evening, which is run by a company called Data Corporation, is a network which is already operating in the government now, and a group of agencies is experimentally testing the effectiveness of this system.***[34]

Data Central Enhancements

1969 MILESTONE

Data Central was the first online search system to demonstrate full-text online searching with word proximity capability (that is, allowing word sequence and proximity to be part of the search formulation). ***(CB note: Not 1968 Leadermart?)***

Data Central offered a powerful combination of retrieval capabilities. ***(CB note: In the summer of 1969, Version One of the commercial system was demonstrated and used for the legal service from Dayton and for several government service contracts from Data Corporation's data center in Arlington, Virginia. At that time, Mead had an IBM 360 computer at Dayton and in Arlington. Version One included "high speed" (120 cps) black and white CRT terminals from CCI (Computer Communications, Inc.) in addition to a wide variety of other terminal types (e.g. IBM 2740 and IBM 2741 terminals). Boolean searching was available, including the ability to indicate distance search specifications, universal characters and truncated words. The SRI search system design of 1963 (Chap. 3) had proposed a form of proximity searching (e.g. two search terms within the same sentence) but never implemented it; this Data Central system was the first demonstration of what would become an important feature for online search systems. The system also had arithmetic search capabilities (e.g. greater than, less than) on structured fields. Giering described this as the "first real production model."[35] (CB note: Where to put the information that:***

> ***"In Data Central, plural or possessive forms of words containing five or more letters in the singular, and regularly formed, are automatically retrieved when the singular form is entered. Thus, PICTURE will also retrieve items containing PICTURES, PICTURE'S and PICTURES'."***

This came from Lancaster & Fayen. 1973. pg. 38. Is this a Milestone for truncation? Did it do more complex plurals such as GOOSE=GEESE?, or just word stems?)

) The search logic included standard Boolean and arithmetic operators, positional indicators (word distances), and a universal character for truncating word stems. It also could be modified to fit a large number of computer and terminal hardware configurations, and several organizations adapted it to various kinds of applications. For example, a study in 1968, by Union Carbide for the U.S. Atomic Energy Commission, examined alternative means, with

cost estimates, of using the Data Central system to provide remote online access to *Nuclear Science Abstracts*.[36] This study explored the relative costs to provide online access to six selected organizations, with an initial database of one volume of NSA (about 75 million characters), using the computers at the Data Corporation facility or adopting the programs to run on the AEC computers at Oak Ridge. Giering noted that in late 1968, Union Carbide also started feasibility testing of the Data Corporation software with chemical compound files, and subsequently purchased the breadboard model and installed it in their Charleston, West Virginia plant. ***(CB note: How is this related to the subsequent DOE/RECON and the AEC/DOE decision to go with DIALOG in mid-1969 instead of Data Corp. for an online capability?)***

OBAR. ***(CB note: In the Spring of 1969, OBAR began loading additional database material (retrospective legal material.) In February 1970, the OBAR database of about 550 million characters was purchased by MDCI.)***

BEER. In the summer of 1969, ***(CB note: following up on a feasibility study begun in 1968,)*** Data Corporation contracted with ***(CB note: Wright-Patterson AFB)*** to load a database on the Biological Effects from Electromagnetic Radiation (BEER), and to provide online service from Data Corporation's Arlington computer center. BEER had been produced by the U.S. Army's Walter Reed Hospital and had been loaded on the Recon Central system in Dayton. ***(CB note: The BEER database was moved from RECON CENTRAL (under an Air Force Laboratory project) to Data Corporations service bureau in Arlington (under a Walter Reed Army Hospital project.)***

TIMPS/ENVIRON. Also in 1969, the U.S. Federal Water Pollution Control Agency used Data Central ***(CB note: as a service bureau)*** to load the ENVIRON file project descriptions. ***(CB note: on Data Corporation's computer facilities in Washington, D.C.) (CB note: The TIMPS (Technical Information Management and Planning System) file, a precursor of the ENVIRON file, started at Mead in 1966, and ran there until late 1973 when it went to Informatics where it was***

renamed ENVIRON.[37])

PADAT (Psychological Abstracts--Direct Access Terminal). Another important application was for the American Psychological Association, ***(CB note: who contracted with Data Corporation in the summer of 1969, and)*** whose PADAT (*Psychological Abstracts*--Direct Access Terminal) service used Data Central ***(CB note: on an experimental basis)*** in 1971 ***(CB note: Where?)*** to make available online ***(CB note: To whom? For what? For internal use?)*** a file of records, including abstracts, corresponding to *Psychological Abstracts*.[38],[39] ***(CB note: I think the PsycInfo database was built then by Inforonics. I'll check. Lois Granick of PsycInfo could also provide more information. Brandhorst's 1972 ARIST chapter mentions it, but notes that no reports appear to have been published.)***

EARS (Epilepsy Abstracts Retrieval System). In the summer of 1969, ***(CB note: Source of this summer '69 date?)*** the National Institutes of Health awarded to Data Corporation a contract to load the *Epilepsy Abstracts* database. ***(CB note: Online access to some of this data was first demonstrated in May 1969.*** Demonstrations were given in ***(CB note: September)*** 1969 ***(CB note: in San Diego, California)*** at the 7th International Congress of Electroencephalography and Clinical Neurophysiology, using Volume 1 (1,301 abstracts) as a ***(CB note: the EPIL)*** database.[40] ***(CB note: Congress attendees were able to interact personally with the system, using a Teletype or CRT display terminal to the Data Corporation computer facility in Washington, D.C. At this demonstration, it was possible to search on the full text of the complete informative abstract, as well as the article title (English or other language), and indexing terms (primary and secondary).)***[41]

Between April and July 1971, the U.S. National Institute of Neurological Diseases and Stroke (NINDS) supported an experiment in which biomedical practitioners at six U.S. medical centers used the Data Central online system. The experiment used the *Epilepsy Abstracts* database made available in machine-readable form by the Excerpta Medica Foundation as a

byproduct of their publishing operation, and loaded on the Data Central computer facility in Arlington, Virginia. The system acquired the name EARS (Epilepsy Abstracts Retrieval System) for this experiment. Records in this database consisted of the 8,000 citations in the Epilepsy Abstracts database, along with their abstracts and assigned indexing. During this experiment, the database was available for four hours per week (later extended to eight) via Teletype terminals. A total of 47 searches were completed during this experiment (16 different users at 6 separate centers).[42],[43] F. W. Lancaster also conducted a thorough evaluation of EARS.[44] ***(CB note: It is interesting to note that the EARS and AIM/TWX tests, both concerned with online access to medical literature, took place at almost the same time:***

	AIM-TWX	***EARS***
Sponsor	***NLM***	***NIH***
Test period	***Nov/70-Feb/71***	***Apr-Jul/71***
Search system	***SDC***	***Mead--Data Corp.***
Database size (approx. no. of records)	***100,000***	***8,000***
No. Searches evaluated	***48***	***47***
No. Different Searchers		***16***
No. Different Centers		***6***

Although Lancaster conducted both evaluations, which were roughly comparable in scope, the AIM-TWX experiments received much wider publicity and discussion.)

(CB note: There's got to be a story here about lost opportunity for publicity by MDC.)

(CB note: The 1973 Lancaster/Fayen book (pg. 393-398) includes tables and plots of estimated costs for a projected NINDS online retrieval system for neurology. What was this? A continuation of the Data Central service? Did EARS run some more after the April-July 1971 experiment? Is there data here for Chapter 10?)

(CB note: The Lancaster/Rapport/Penry 10/72 article mentions the Data Central "doesn't

care" character. The Porter 1970 PASIS article also mentions a universal character: Sm*th for Smith or Smyth, and implies a 1969 availability. The Troy 12/69 article describes the "universal character" (e.g. tax** retrieves tax, taxes, taxation, taxi, taxicab), and this implies that the feature was operational in 1969 or earlier. Was this a milestone in the truncation or universal character capability?)***

(CB note: CB is trying to obtain a copy of the following publications:

- ***(F.W. Lancaster?) "An Evaluation of EARS (Epilepsy Abstracts Retrieval System) and Factors Governing Its Effectiveness." Illinois University. Urbana. Graduate School of Library Science. Urbana, IL. October 1971. 60 pp. NTIS Report No. PB-218 654/2 (Cited in NTIS publication. Not available from NTIS. CB requested from Menlo Park I-L-L. 4 Aug 94.)***
- ***Kiffin; F.W. Lancaster; J.K. Penry; Richard L. Rapport 2d. "Critical Evaluation of a Computer-Based Medical Literature Search & Retrieval System." Postgraduate Medicine 51(5):47-50. May 1972. (CB requested from Menlo Park I-L-L. 4 Aug 94.)***

The COSATI Film. During the latter half of 1968, staff of the Battelle Memorial Institute filmed a Data Central system demonstration, using the limited breadboard system. In the summer of 1969 ***(CB note: 1969? Where did this sentence come from?)***, Data Central agreed to include that film in COSATI's movie which showed demonstrations of various online search systems available at that time. ***(CB note: add additional clarification of COSATI IST Inventory II and Inventory III work for COSATI. Coordinate with COSATI text in Chapter 5.)***

(CB note: With contract support from COSATI, Data Corporation started loading files in mid-1969 that included: 1) summary data regarding federally-sponsored information sciences R&D projects; 2) bibliographic records from Battelle's Information Research Center; 3) bibliographic records from NBS regarding computer sciences; 4) bibliographic records for all reference sin volumes 1-3 of the ASIS Annual Review of Information Science & Technology; and 5) a 3000-term glossary of information science terms.[45] The contract support for Data Corporation was provided by means of a sub-contract to Information General Corporation who was the contractor responsible

for preparing the database for the COSATI inventory of federally-sponsored information sciences R&D projects; the IGC contract started in August 1968.[46])

(CB is trying to obtain a copy of the following publications:

- ***"COSATI User's Manual". Data Corporation. Nov. 1969? (reportedly in preparation in Nov. 1969 as part of the COSATI subcontract from IGC.)***

(CB note: Outstanding issues:

- ***HEAP (Health Aspects of Pesticides) in collaboration with FDA, an EPA activity: was this a Data Central project? Or was it a Toxline project? Specifics? The 1970 COSATI Annual Report mentions, "...an online whole text system containing 6,000 abstracts from <u>Health Aspects of Pesticides Abstracts Bulletin</u> (1966-71); this file will be made available to multiple users via terminals;...")***

The A.D. Little Consultation

In August 1969, Mead contracted ***(CB note: Giering's 5/80 letter says that <u>Data Corporation</u> contracted with ADL, and that it was in <u>early 1969 (about Feb.)</u>. His 9/83 letter says that the "..feasibility study by (ADL) for Data Corp. begun." Do we have a conflict on date and sponsor?)*** with a major international consulting firm, Arthur D. Little (ADL), for a market research study of the feasibility of a full-text online interactive legal search service. ***(CB note: Mead wanted to know if there was a sufficient market to justify a major investment, how much further development of OBAR would be required to make it marketable, and how much money that development would cost. ADL sent one of its partners, H. Donald Wilson, to Ohio as head of a consulting team. Wilson, a lawyer and former director of the Peace Corps in Ethiopia, brought Edward J. Gottman as a consultant in system design. Later, seeing the need for an actively practicing lawyer on the team, Wilson added Jerome S. Rubin,)*** a physicist and Harvard-trained lawyer. Rubin had practiced international law for 20 years before he entered the information field that year. Rubin was to participate because he had previously represented ADL in legal

matters, and he had an interest in technology. Bill Gorog and Dick Giering represented Data Corporation in the study, ***(CB note: which took six months. In February 1970, the team reported that its market survey indicated that computer-assisted legal research was potentially a profitable business, but making a marketable business on the basis of the OBAR experiment would require extensive redevelopment and a major investment.)*** As Rubin reported in an interview years later:

> When the A. D. Little team returned with a favorable prognosis, the Mead Corporation decided to "roll the dice" and fund the project. Jerry [Rubin] formed a venture management firm with H. Donald Wilson, RW Development Corporation, to run the project on a contract basis. Rubin served as President with Wilson as Vice President. Mead also formed a subsidiary, Mead Data Central, in which Wilson and Rubin held the same titles but in reverse. After one year, Wilson left Mead Data Central (MDC) to pursue other interests in venture management. In an orderly transition, Jerry became President of MDC that same year. Faced with a database in the infant stages of development and a wholly inadequate retrieval system, he brought in a new management team including new technical management and began to build a system.[47]

The system that Rubin built was not fully designed until the fall of 1972 and not actually launched as LEXIS until May 1973. We shall meet LEXIS again in Chapter 10. In the meantime, let us continue to follow the details of the research and development activity at Mead from 1970 to 1972.

The Split of Data Corporation into Mead Data Central and Mead Technology Laboratories

(CB note: In February 1970, following the recommendations of the ADL study team, Mead Corporation separated the legal research applications from all other existing and potential applications, and organized them under a new subsidiary, Mead Data Central, Inc. (MDCI), as a wholly-owned subsidiary to concentrate on computer-assisted legal information retrieval systems and to develop and market a national legal research service.[48],[49] The Information Systems Division of Data Corporation (Richard Giering and P.J. Vann were co-directors of the Division before the spinoff) became the nucleus of Mead Data Central Incorporated. H. Donald Wilson was the first President of MDCI. Vice-Presidents included Dick Giering, P.J. Vann, and R. Welch (all from Data Corporation) and Jerry Rubin. (CB note: When did Bob Bennett come into the picture? Bob

Bennett remained as Executive Vice President of Mead until the 1980's. Jerry Rubin subsequently served as President of Mead until the 1980's. As described by Rubin,

> ***To manage the project, Mead incorporated the Information Systems division of Data Corporation as a wholly-owned subsidiary. The new company, Mead Data Central, Inc. took over the contract with OBAR and the long term dedication to providing an efficient and effective computerized research service to lawyers.[50]***

Many Data Corporation officers and employees were transferred to MDCI, which was headed by Bob Bennett. From that point on, publications and pronouncements by the Mead staff associated with legal information services talked in terms of "The O.B.A.R. system" and "Mead Data Central", but made no mention of Data Corporation or Mead Technology Laboratories.

The other Data Corporation activities were consolidated into a new organization, called Information Systems Division of Data Corporation, headed by Dick Giering, who had been the chief designer of Data Central; this group continued to operate as it had before the MDCI spinoff, developing its own software and information services. (CB note: Add more Giering bio here?) The mission of the new corporation, as described by Giering, was to exploit the new business available because of the existence of the Data Central system.) William K. Thomson, also from Data Corporation, Arthur Dana (a consultant from California), and Edward J. Gottsman (from where?) were other major contributors[51] (TB to CB: to which, MTL or MDC? Perhaps this will be clearer to me after I see Harrington's 1984/85 article)

In September 1971, MDCI made a decision to concentrate its efforts on the selling of legal information, and the MDCI business activity was split. The legal search service remained with MDCI, and the non-legal contracts were returned to Data Corporation. The Data Central system was initially used by both, but during the next 18 months, MDCI developed a completely new system based on the same technology, but directed to the legal profession--at that point, the Data Central system and capabilities became the purview of Data Corporation.

As a result of that September 1971 decision, Rubin became President of MDCI, Wilson became Vice-Chairman of the Board, and Welch resigned in 19__ to _____. Giering and Vann returned to Data Corporation with the non-legal business. Vann subsequently retired in 19__ to _____. From this time on, the Data Central system split into two completely independent paths: 1)

MDCI began the development under Ed Gottsman (based on the Data Central technology at that time) of a system dedicated to legal research and subsequently to be known as LEXIS; and 2) a general purpose system at Data Corporation called Data Central.[52]

In October 1972 or mid-1973, Data Corporation was renamed Mead Technology Laboratories (MTL).) (CB note: Giering's 5/80 letter says 10/72, his 9/83 letter says mid-73. This needs to be resolved.)

Giering continued to work to add capabilities to the Data Central system. In late 1969, Data Central began to support IBM 2740 and 2741 terminals, and CCI display terminals for 120 cps operation. ***(CB note: In the fall 1970, the KWIC (Key Word In Context) release of the Data Central system was introduced. This version of the system allowed the online user to obtain a "personalized abstract" of the documents retrieved. At the same time, the full-text display included the use of color highlighting (KWIC also meant Key Word in Color).)*** These features will be described in more detail later. ***(CB note: Should they be described in the Data Central section instead of the Mead section?) (TB to CB: I don't think I understand this question).***

Further Activities of Mead Technology Laboratories.

SSIE (Smithsonian Science Information Exchange). ***(CB note: In early 1970, staff of the Science Information Exchange at the Smithsonian Institution loaded a database of research project descriptions on the Data Corporation system for use in a controlled experiment of free text versus controlled indexing retrieval of this material. Using a terminal at the Arlington, Virginia office of Data Corporation, this test searching was done in January 1970.***[53]

AVIONICS CENTRAL ***In mid-1970, the Air Force library known as Recon Central was renamed Avionics Central, to match a change in the name of the Air Force Laboratory. Avionics Central contracted with Mead Technology Laboratories in October 1970 to obtain a copy of DATA CENTRAL to replace the limited breadboard system that was supporting RECON CENTRAL. RECON CENTRAL then began dialup service and the support of CRT terminals. Avionics Central used the software at its own facility also to provide "private-file" service to other organizations. The***

first such client was the Remotely Piloted Vehicle Special Projects Office of the USAF Aeronautical Systems Division, with files of reliability forms and trouble reports. Over the next few years, Avionics Central supported additional services such as the following:

- ***USAF Auditor General (AUGEN) staff at Norton AFB, California -- files of reports of audits, audit plans, personnel time studies, etc.***
- ***U.S. Navy Headquarters -- composite file of all Navy regulations***
- ***U.S. DoD Audio-Visual Agency (DAVA) -- files of cross-service inventory of A-V items and equipment, personnel capabilities, facilities, budget***
- ***U.S. Directorate of Personnel (ASD) -- personnel file***
- ***USAF Systems Command Headquarters -- file of project information (MASIS: Management And Scientific Information System)***
- ***U.S. Naval Training Command -- files of lesson plans, personnel (instructor) capabilities***
- ***USAF Electronic Systems Command, Hanscomb Field, Mass. reports of actual preventative maintenance work done.***

HEW. (CB note: In January 1971, a database in support of audio-visual materials was loaded for HEW. (CB note: What more do we know about this, other than the brief note in Giering's 5/80 letter?)

MEAD PERSONNEL FILES. In mid-1971, a database was loaded to support a Mead (the Mead Corporation?) personnel application.) (CB note: What more do we know about this, other than the brief note in Giering's 5/80 letter?)

DATA/CENTRAL System

EPA. The U.S. Environmental Protection Agency used it in 1971 ***(CB note: Where? In what way?)*** for a large database containing legal and management data. ***(CB note: Mark Bayer said the name TIMPS was associated with this project.) (CB note: In an Oct 1971 AEC Forum, Robert Powell said (pg. 42), "We have an on-line system that is presently on-line about 8 hours a day, with***

the software package as well as the time-shared capability provided by Mead Data Corporation.")

Further Development of Mead Data Central and OBAR

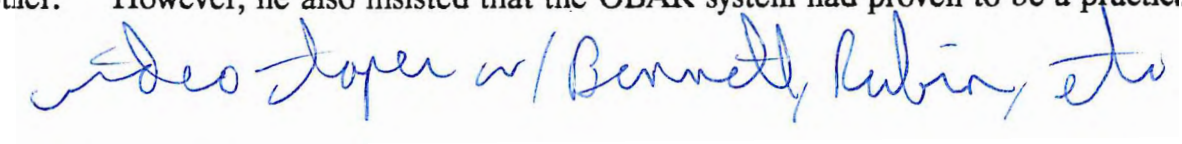
1969 MILESTONES

Using the Data Central system, OBAR was the first large-scale use of online full-text searching. ***(CB note: A tie with LEADER?)***

Using the Data Central system, OBAR was the first large-scale system to operate with full-text statutory and case law.

Beginning in 1969, MDC, through OBAR, offered a limited number of Ohio lawyers a prototype online full-text statutory and case law retrieval system. Harrington wrote in 1970 that the Attorney General of Ohio was the first OBAR subscriber,[54] but years later he contradicted himself, saying that Squire, Sanders and Dempsey had been the first and that the law firm also loaned money to OBAR to support the venture.[55] ***(TB to CB: we can either leave these statements as they are, unreconciled, or try to confirm the truth from some other source) (CB note: Suggest we ask Harrington to review the text.)*** MDC installed remote access teletypewriter terminals in 15 different locations, including private law firms and public law offices. The teletypes communicated directly with the computer over long-distance telephone lines. ***(CB note: What can we say about the computers then being used?)*** At that time the database contained about 200 million characters of text.[56]

In spite of the simplicity of the interface design and the tailoring of the system to lawyers's needs and preferences, it became apparent that lawyers did need one or two days of training. A manual, "Search Instructions for OBAR" was prepared.[57] By late 1970, Harrington reported that the number of installations had grown to 20, but that not all users were enjoying great success with OBAR: "Effective use of the computer requires precision of legal terminology and logical organization of thought. There is definitely a skill to be developed in the use of the computer, and not every lawyer develops it as readily as any other."[58] However, he also insisted that the OBAR system had proven to be a practicable and



workable system that was being used increasingly in law offices in all the major cities of Ohio. In response to the wishes of Ohio lawyers, a complete library of all Ohio primary legal research materials was online, which included the full text of the Ohio constitution and code of statutes plus the full text of all reported decisions of the supreme court, courts of appeals and lower courts of Ohio. ***(CB note: This is what Ohio lawyers wanted at that time.***[59])

Rubin characterized the computerized legal research system that had been developed cooperatively between OBAR and MDC by three important features that in combination distinguished it from any other system offered to the legal profession at that time. These three features were: (1) The system searched the full text of the legal material; there was no indexing, digesting, or other editing or tampering with the original materials; (2) it was a full time-sharing system, which meant that each lawyer could communicate directly with the computer without the intervention of any third party; and (3) the program permitted lawyers to conduct a continuing dialogue with the computer, which allowed them to review legal materials quickly and thoroughly. Furthermore, a lawyer could search

> entirely on the basis of his own judgment as to what materials he wants to see and how he wants them searched, with a high degree of accommodation to his own personal research preferences and habits. The lawyer is not compelled to adapt himself to the computer's method of search; the computer adapts itself to him.[60]

Based on the experience of the first group of users, MDC made a number of modifications during 1970 and 1971, including replacing the slow teletypewriter terminals with CRTs that were 12 times as fast. Rubin noted in a couple of years later that

> The original (1969) MDC-OBAR system was crippled by the teletypewriter terminal, which could type only ten characters a second. Thus the extent to which the lawyer could refine his search request to produce the most relevant cases was limited by the terminal's inability to print out retrieved cases quickly enough for the user to determine relevance. In 1970, MDC remedied the problem by replacing teletypewriter terminals with CRT terminals (accompanied by hard-copy printers), which could display lawyer-system dialogue at a rate of 120 characters a second, or twelve times a fast as before.[61]

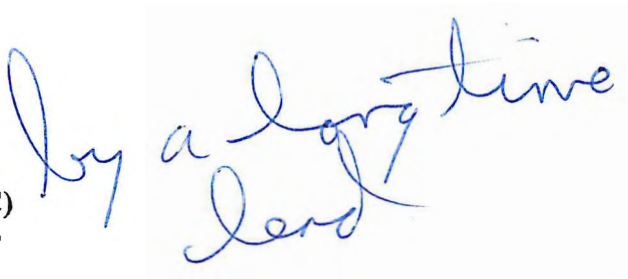
(CB note: The decision to move away from Teletype terminals to display terminals was influenced by a 1970 study by (R.?) Carlisle at Yale of lawyers and law students using the MDC system for full-text retrieval. At that time, there were about 40 law firms in Ohio who all had Teletypes; by

January 1971 they all had CRT terminals.[62])

1970 MILESTONES

Data Central was the first online search system to highlight the terms in the output that caused a record to be retrieved.

Data Central was the first online search system to allow users to generate a key-word-in-context (KWIC) display of a specified number of text words on either side of a search term in the retrieved text.



The introduction of terminals with screens not only made the system faster and easier to use, it also made the KWIC (Key Word In Context) feature feasible. This was a feature that in some way highlighted the words in the source text that caused the item to be retrieved. MDC experimented with a variety of ways to achieve the highlighted effect. For black-and-white terminals, the words could be accented by blinking them, dropping them a little below the level of the others on the line, varying the light intensity, or simply flagging them with an arrow or asterisk.[63]

1970 MILESTONES

Data Central was the first online search system to use a color CRT output device.

Data Central was the first online search system to use color contrast in search output displays to highlight the search term in the retrieved record.

(CB note: The first color terminals were put into use in June 1970.) If a terminal had a color CRT, various colors were used to contrast various parts of the records. ***(CB note: The first color terminals, which used Sony television sets for their screens displayed the legal materials "in gaudy colors--case names in green, citations in yellow, KWIC words in red, ordinary text in white--all on a bright blue background."[64])*** A later terminal that provided four colors for output display showed field designators in green, terms matching the query were in red, 15 significant

words on each side of the term were in yellow, and all other information appeared in blue.[65] This highlighting feature allowed lawyers or their assistants to skim quickly through large amounts of material, print out each place a decision was cited, with the relevant comments on each side, to study later for relevance. The feature had been available on the original Data Central program, but nonetheless the use of it in this context was dubbed "Obarizing."[66]

In the summer of 1969, Version One of the commercial system was demonstrated and used for the legal service from Dayton and for several government service contracts from Data Corporation's data center in Arlington, Virginia. Version One included "high speed" (120 cps) black and white CRT terminals in addition to a wide variety of other terminal types. ***(CB note: reconcile the above paragraph with a nearly identical one earlier in this Chapter.)***

Beginning in the fall of 1970, a version of the Data Central system was introduced that allowed online users to obtain a "personalized abstract" of the documents retrieved--that is, users could generate a key-word-in-context (KWIC) display of a specified number of text words on either side of a search word in a retrieved record. At the same time, the full-text display included the first use of color highlighting (KWIC also meant Key Word in Color).

1970 MILESTONE

MDC was the first online search system to allow searchers to page backward to re-examine previously displayed records. ***(CB note: 1967, or no later than 1971.)***

> The use of CRTs was not the only improvement made at this time:
>
> At the same time, MDC removed most of the computerese from system messages and refined the man-machine interface by adding the ability to skip back and forth from page to page and from case to case, . . . and flexibility in search request modification. These features, which gave computer-assisted research the iterative quality of book research, coupled with the speed and versatility of the CRT terminal, greatly enhanced the MDC system to the point that it was regarded less as an interesting experiment and more as a tool with practical value.[67]
>
> ***(CB note: Giering noted some years later that he recalled attending the AFIPS meeting in***

Palo Alto, California in 1971 where many of the early designers described their systems, and remembered coming away from the meeting feeling terribly happy because his system seemed to be the best of the bunch at that time.[68])

Although the OBAR/MDC system was serving only a few Ohio lawyers in 1970, the executives of OBAR and MDC, including Harrington of OBAR, H. Donald Wilson, president of MDC, Jerry Rubin, vice-president (later president of MDC), and Robert L. Bennett, Director of Training for MDC, all were attorneys and all had expansive visions for the future. They anticipated that ultimately as many as 300 communications terminals might be located in Ohio. They even looked beyond the boundaries of Ohio:

> Negotiations are already well under way with several other state bar associations who wish to establish computerized research systems. As those states build data bases of their state law, the data will be made reciprocally available. It used to seem that this goal was as much as ten years away, but the technology has progressed more rapidly over the past year than anyone anticipated. The day may be near when a lawyer can reach the law of any state or any part of the federal law by using a communications terminal in his office to command a computer.
>
> It was never intended that the O.B.A.R. system should be for Ohio lawyers only. The Ohio State Bar Association committed itself to the initial work of building a system that would be of value to all lawyers. Mead Data Central, Inc. is committed to the building of a national system. Together we look forward to the expansion of the system into all the states.[69]

To assist MDC in expanding the system, OBAR staff fielded hundreds of inquiries, visited many states as well as the meetings of the American Bar Association and received delegations from the bars of many states. ***(CB note: In an early 1972 presentation, Robert J. Asman, President of OBAR, described the OBAR projects and experiences in glowing terms, including such things as OBAR retail search services for institutions that could not justify the establishment of their own terminal facility, and pilot projects with law schools (including assistance in the development of a law school's "OBAR Room")[70] There was brief mention of the agreement between Mead Data Central and OBAR in that presentation, but it was clear that it was the "OBAR Service" that was being promoted and used at that time, and <u>not</u> the "Mead Service". Terminal traces and search products from the OBAR system in 1971 for example said, "YOU ARE NOW IN***

COMMUNICATION WITH (DATA) CENTRAL."; No mention was made of Mead.) Mark Bayer, one of the early employees who conducted demonstrations of the system to lawyers described his experiences as "missionary work":

> We used to carry these big old machines around. . . . We had a Model 25 Teletype machine, a 110 baud external modem, and a rabbit ear modem mounted on a big piece of plywood that we put in the back of a station wagon. We used to take that down with the help of a driver. We had to carry it up and put it up on a desk in a law firm *and*, we had to do something behind the scenes--we had to kick users off the computer system, stop programming and take everything possible out of the foreground, if not the background, and run almost a single-user system to get meaningful, reasonable, response times. We used to plot and scheme like you wouldn't believe, to give a demonstration at a major law firm, to convince them that this was "representative service."[71]

In Chapter 11 we shall meet other early missionaries like Bayer, who were willing to "plot and scheme like you wouldn't believe," in order to convince potential users of the promise of these fledgling services. The missionaries were indispensable agents for achieving the ambitions of the online entrepreneurs.

(CB note: When the Ohio State Bar Association began their investigation of existing programs, they became convinced that the legal profession could best be served if the organized Bar retained substantial control.[72] The Ohio legal fraternity accepted that argument, and worked to make the search service subordinate to the legal profession. Mead inherited that situation when they acquired Data Corporation, and continued to embrace a general philosophy of partnerships with the Bar Associations. Mead Data Central continued that pattern of partnerships when they signed a contract in January 1971 with the New York State Bar Association (NYSBA) which provided for the gradual introduction of MDC service in New York state; under the terms of that agreement, NYSBA would attempt to obtain from the State of New York the right to use the copyrighted legal material, and would sponsor the Mead Data system as the official system of the New York State Bar.[73] As stated in 1972 by James Flavin, state reporter for the State of New York,

> ***We had confidence in the system and the company from the beginning. Nothing has happened since to shake that confidence. Quite the contrary, Mead Data has shown clear indication of its good faith by carrying out the agreement as written, particularly by investing a rather large sum of money.[74]***

Mead continued discussions with other state bar associations in 1972 to arrange for the system's availability under those state bar associations. In 1974 LEXIS was sponsored by the state bar associations of Ohio, New York, Missouri, Texas and Illinois.[75] (CB note: perhaps this text about Mead's approach of partnerships with Bar associations should instead be in a marketing section of Chapter 11.)

During the period 1970-1972, MDC accomplished a lot in marketing the idea of full-text retrieval to lawyers and bar associations outside Ohio, as well as in expanding the database to over 500 million characters, and ironing out some of the technical problems in natural language retrieval. ***(CB note: During this same time period, OBAR as an organization faded from the picture. It sold its proprietary interests and the Ohio database to MDC in return for 10 years of royalty payments, and for all practical purposes it ceased operations in February 1971. After five years of intense involvement, Harrington returned to the private practice of law in Columbus, Ohio in February 1971, but continued as a consultant to Mead Data Central. He subsequently married Diana Fitch McCabe, his assistant in 1970, who published an article in 1971 that was critical of OBAR[76] In that article, she wrote that the OBAR system, instead of meeting the promise that some of the founders had for it; namely that it would give solo or small-firm attorneys as much research power as large firms had (and thus benefit lower-income and middle-class clients)--was instead developing into a service that only large firms could afford. That pattern continued into the late 1970's, with Mead actually discouraging use by smaller law firms.)*** In spite of the great debate raging at the time over indexing by means of the automatic processing of full text versus indexing by means of human assignment of terms from a controlled vocabulary, Mead Data Central continued undeterred in its mission to launch a nationwide legal information research system. ***(CB note: Their revenues reached $2 million in 1972. By the end of 1972, the Ohio marketing test of the second-generation OBAR had been completed, and the system was almost ready for nationwide marketing. But it would need a new name; the new name was LEXIS.***

> ***Although some people assume that the word "LEXIS" means "law information service" ("LEX" for law and "IS" for information service), the name is not an abbreviation or acronym. It originated with a firm of consultants in New York whose business was to***

suggest corporate and business names. Their theory was that names with an x or two in the middle (such as EXXON) were intriguing. Hence, LEXIS.[77])

The story of the transformation of the Data Corporation/MDC activities into the Mead LEXIS service, ***(CB note: and the launch of LEXIS as a public service in April 1973)*** continues in Chapter 10.

Before we say goodbye to OBAR, Data Corporation, and all the individuals who participated in the planning, research, and development work, we should pay tribute to the early users, whose names are nowhere recorded but who also made an invaluable contribution. In 1973, ***(CB note: It was in March 1972. The proceedings were published in 1973.)*** Robert J. Asman of OBAR said it very well:

> The success of this . . . depends upon the patience and endurance of the users. If our subscribers in Ohio survive the barrage of questionnaires, interviews, consultants or experts, if they can sit through our search framing classes, training sessions, meetings, speeches and slide presentations, if they can live with our equipment experimentations and our pricing strategies, and if they can tolerate our incessant curiosity, you have them to thank for being willing to be the most thoroughly dissected live animal in this hemisphere.[78]

We shall meet more the "dissected live animals" in Chapter 11.

(CB note: Outstanding issues:

- ***Was MDC used for EPA's <u>Health Aspects of Pesticides</u> (HEAP) test in 1970? Or was it some other system?***
- ***Need bio information for Giering.***
- ***Is Gorog available to review this text?***
- ***Is Bob Bennett available to review this text?***
- ***Is Jerry Rubin available to review this text?***
- ***Was MDCI or Data Corporation unsuccessful bidders for the ERIC, NTIS, Toxline, and NAL online service contracts?***

(CB note: CB is trying to obtain a copy of the following publications:

- ***Richard H. Giering. "Analysis of Existing & Proposed Data Handling Systems." Data Corporation. Arlington, VA. 23 October 1967. Technical Note No. DTN-67-9. (Cited***

in SDC report. Not in UC Melvyl system.)

- ***Richard H. Giering. "Information Processing and the Data Spectrum." Data Corporation. Arlington, VA. October 1967. 18 pp. Data Corporation Technical Note No. DTN-68-2. (Cited in SDC report, Howerton's pre-print UCRL-73192, and in Geiring's 9/29/83 letter to CB. Not in UC Melvyl system.)***
- ***"An Automated, General-Purpose Information Storage & Retrieval System." Data Corporation. Arlington, VA. 1968. ____ pp. (Cited in SDC report. Not in UC Melvyl system.)***
- ***Noreen O. Welch. "A Survey of Five On-Line Retrieval Systems". MITRE Corporation. Washington, D.C. Operations. August 1968. 53 pp. MTP-322. (Cited in Berul's 1969 ARIST Chapter.)***
- ***"This is Data Central: An Automated General Purpose Information Storage & Retrieval System." Data Corporation. Dayton, Ohio. 1968. 6 p. (Cited in Berul's 1969 ARIST chapter.)***
- ***Richard H. Giering. "This is Data Central (1972 Technical Specifications)" Data Corporation. Dayton, OH. Report No. DTN-72-2. (Cited in Lancaster and Fayen. I.R. Online. 1973. p. 43. Not in UC Melvyl system.)***

References

1. Jerome S. Rubin, "LEXIS Has Made Computer-Assisted Legal Research in the United States a Practical Reality," *Law and Computer Technology* 7(2): 34-50, March-April 1974.

2. William G. Harrington, "Computers and Legal Research," *American Bar Association Journal* 56(2), December 1970, p. 1145.

3. ***Joseph J. Magnino, Jr. "IBM Technical Information Retrieval Center Progress and Plans," in Proceedings of the American Documentation Institute, 29th annual meeting, v. 3. Adrianne Press, 1966, pp. 467-481.***

4. John F. Horty, "Application of Information Retrieval Techniques to Legal Research," Pittsburgh, PA: University of Pittsburgh, November 1, 1960, PB 169 597.

5. ***John F. Horty; Thomas B. Walsh, "Use of Flexowriters to Prepare Large Amounts of Alphabetic Legal Data for Computer Retrieval," in Proceedings of the American Documentation Institute, 26th annual meeting, pt. 2. Washington, DC: American Documentation Institute, 1963, pp. 259-260.***

6. ***John F. Horty, "A Look at Research in Legal Information Retrieval," in Pauline A. Atherton, ed., Classification Research: Proceedings of the 2nd International Study Conference, Elsinore, Denmark, 14-18 September 1964. Copenhagen: Munksgaard, 1965, pp. 382-396.***

7. ***William G. Harrington, "A Brief History of Computer-Assisted Legal Research," Law Library Journal 77(3): 543-556, 1984-85.***

8. ***David T. Link. "Law Searching by Computer." in Automated Law Research. A Collection of Presentations Delivered at the First National Conference on Automated Law Research. American Bar Association. Standing Committee on Law and Technology. 1973. pp. 3-9.***

9. ***William B. Kehl; John F. Horty; Charles R.T. Bacon; David S. Mitchell. "An Information Retrieval Language for Legal Studies." Communications of the ACM 4(9) September 1961. pp. 380-389.***

10. ***Harvey B. Feinman. "Aspen: Organization of Litigation Files." in Automated Law Research. A Collection of Presentations Delivered at the First National Conference on Automated Law Research. American Bar Association. Standing Committee on Law and Technology. 1973. pp. 143-145.***

11. ***James M. Flavin. "Computerized Legal Retrieval in New York." in Automated Law Research. A Collection of Presentations Delivered at the First National Conference on Automated Law Research. American Bar Association. Standing Committee on Law and Technology. 1973. p. 49-53.***

12. ***Rose L. Volino, "LITE in Review--Two Aspects," JAG Law Review 14(1): 25-34, Winter 1972.***

13. ***Stephan E. Furth. "Automated Retrieval of Legal Information: State of the Art." Computers and Automation. 17(12):25-28 (December 1968).***

14. ***William E. McCarthy. "LITE (Legal Information Thru Electronics): A Progress Report." Law Library Journal. 64(2):193-197. May 1971.***

15. ***Carl S. Mallow, Jr. "LITE: Legal Information Through Electronics." in Automated Law Research: A Collection of Presentations Delivered at the First National Conference on Automated Law Research. American Bar Association. Standing Committee on Law and Technology. 1973. pp. 97-102.***

16. ***B.W. Basheer. "JURIS: Justice Retrieval and Inquiry System." in Automated Law Research: A Collection of Presentations Delivered at the First National Conference on Automated Law Research. American Bar Association. Standing Committee on Law and Technology. 1973. pp. 55-65.***

17. ***R. Lawrence Stevens. "Economics of On-Line Information Retrieval." in Interactive Bibliographic Systems. Proceedings of a Forum Held at Gaithersburg, Maryland. October 4-5, 1971. Edited by Madeline B. Henderson. U.S. Atomic Energy Commission. Report CONF-711010. April 1973. pg. 129.***

18. ***Harrington, "Brief."***

19. ***Jerome S. Rubin. "LEXIS Has Made Computer-Assisted Legal Research in the United States a Practical Reality." Law & Computer Technology. 7(2):34-50. March-April 1974.***

20. ***Richard Giering, private communication to C. Bourne, May 9, 1980.***

21. ***Richard Giering, private communication to C. Bourne, September 29, 1983.***

22. Frank J. Troy, "Ohio Bar Automated Research; A Practical System of Computerized Legal Research," *Jurimetrics Journal* 10(2): 62-69, December 1969, p. 63.

23. ***Harrington, "Brief."***

24. ***Harrington, "Brief."***

25. Rubin. ***(CB note: Which one?)***

26. James F. Preston, Jr., "OBAR and Mead Data Central System," *Law Library Journal* 64(2): 190-192, May 1971.

27. Troy.

28. ***Harrington, "Brief."***

29. ***Harrington, "Brief."***

30. ***Jeff Pemberton. "Who Will Buy Mead Data Central... How Much Will They Pay?" Online 18(4):13. July 1994.***

31. Bayer interview.

32. Bayer interview.

33. ***Harrington, "Brief, pp. ??***

34. ***Robert Landau. "On-Line Interactive Information Systems." in Annual National Colloquium on Information Retrieval, Proceedings, 6th. May 8-9, 1969. pp. 359-372. Philadelphia, PA. Medical Documentation Service. The College of Physicians of Philadelphia. Philadelphia, PA. (quote is on pg. 362.)***

35. ***Giering, private communication to C. Bourne,***

36. E. M. Kidd; C. E. Price; S. L. Yount, "Study of the Data Central System for Information Retrieval Applied to *NSA* Data," Oak Ridge, TN: Union Carbide Corporation, Nuclear Division, Computer Technology Center, February 26, 1969, PB 183 450.

37. ***Mark Bayer, private communication with C. Bourne, 1 May 1980.***

38. Lancaster and Fayen, p. 77.

39. Marvin C. Gechman, "Machine-Readable Bibliographic Data Bases," in Carlos A. Cuadra, ed., *Annual Review of Information Science and Technology*, v. 7, Washington, DC: American Society for Information Science, 1972, p. 349.

40. ***Roger J. Porter; J. Kiffin Penry; Joseph F. Caponio, "Epilepsy Abstracts Retrieval Systems (EARS); A New Concept for Medical Literature Storage and Retrieval, Proceedings of the American Society for Information Science, 33rd annual meeting, 1970, pp. 171-172. (CB note: This 1970 conference cite is almost identical to the BMLA journal article that appeared in 1971 (see following cite)).***

41. ***J.K. Penry; J.F. Caponio. "On-Line Full Text Retrieval of Epilepsy Abstracts." Electroencephalography and Clinical Neurophysiology. 27(7). 1969. pg. 734.***

42. Roger J. Porter; J. Kiffin Penry; Joseph F. Caponio, "Epilepsy Abstracts Retrieval Systems (EARS); A New Concept for Medical Literature Storage and Retrieval, *Bulletin of the Medical Library Association* 59(3): 430-432, July 1971.

43. ***Porter, Penry, and Caponio, "Epilepsy," 1970.***

44. F. W. Lancaster; Richard L. Rapport; J. Kiffin Perry, "Evaluating the Effectiveness of an On-Line Natural Language Retrieval System," *Information Storage and Retrieval* 8(5): 223-245, October 1972.

45. ***"New Storage/Retrieval System Uses Commands in Plain English." Computerworld Vol. 16. 9 April 1969. pg. 145.***

46. ***Charles P. Bourne; Jeanne B. North; Madeleine S. Kasson. "Preparation of 3rd COSATI Inventory of Current R&D in the Information Sciences. Final Technical Report." Information General Corporation. Palo Alto, CA. November 17, 1969. 45 pp. IGC Report No. IGC-PA-69-42.***

47. Dominic Provenzano, "Where are They Now?" *Online* 11(1), January 1987, pp. 41-42.

48. William G. Harrington; H. Donald Wilson; Robert L. Bennett, "The Mead Data Central System of Computerized Legal Research," *Law Library Journal* 64(2): 184-189, May 1971

49. ***Harrington, "Brief," p. 550.***

50. ***Jerome S. Rubin, "LEXIS: An Automated Research System," in Automated Law Research; A Collection of Presentations Delivered at the First National Conference on Automated Law Research. American Bar Association, 1973, pp. 35-42. (Quote is on pg. 36)***

51. ***Harrington, "Brief," p. 551.***

52. ***Giering, private communication with C. Bourne, 29 September 1983.***

53. ***David F. Hersey; Willis R. Foster; Ernest W. Stalder; William T. Carlson, "Comparison of On-Line Retrieval Using Free Text Words and Scientist Indexing," Proceedings of the American Society for Information Science, 33rd annual meeting, v. 7. Washington, DC: American Society for Information Science, 1970, pp. 265-267.***

54. Harrington, "Computers," p. 1148.

55. ***Harrington, "Brief," p. 549.***

56. Rubin. ***(CB note: Which one?)***

57. The manual was reproduced in Lancaster and Fayen, pp. 460-66.

58. Harrington, "Computers," p. 1148.

59. ***William G. Harrington, "What's Happening in Computer-Assisted Legal Research?" American Bar Association Journal 60(2): 924-931, August 1974.***

60. Rubin, p. 1146. ***(CB note: Which one?)***

61. Rubin. ***(CB note: Which one?)***

62. ***"Session IV--User Needs, Feedback, and Training." in Interactive Bibliographic Search: The User/Computer Interface. Edited by Donald E. Walker. Proceedings of a Workshop on "The User Interface for Interactive Searching of Bibliographic Databases" held in Palo Alto, California on 14-15 January 1971. AFIPS Press. 1971. p. 279***

63. Lancaster and Fayen, pp. 32-33.

64. ***Harrington, "Brief," p. 551.***

65. Elizabeth Fong, "A Survey of Selected Document Processing Systems," Washington, DC: National Bureau of Standards, October 1971, p. 9.

66. Preston, p. 191.

67. Rubin, p. 47 (in footnote). ***(CB note: Which one?)***

68. ***Giering, private communication to C. Bourne, 11 June 1983.***

69. Harrington, "Computers," p. 1147, 1148.

70. ***Robert J. Asman, "OBAR: Ohio State Bar Automated Research," in Automated Law Research; A Collection of Presentations Delivered at the First National Conference on Automated Law Research. American Bar Association, 1973, pp.43-47.***

71. Bayer interview.

72. ***Diana Fitch McCabe. "Automated Research: The Ohio Experience." in Computers and the Legal Profession. Special Issue. American Bar Association. Chicago, IL. June 1973. Vol. 2. pp. 15-16.***

73. ***James M. Flavin. "Computerized Legal Retrieval in New York." in Automated Law Research. American Bar Association. Standing Committee on Law and Technology. 1973. pp. 49-53.***

74. ***Flavin. pg. 52.***

75. ***Jerome S. Rubin; Robin L. Woodard. "LEXIS: A Progress Report." Jurimetrics Journal 15(2). Winter 1974. pp. 86-89.***

76. ***Diana Fitch McCabe, "Automated Legal Research," Judicature 54(7):283-289, February 1971. and reprinted in Law and Computer Technology 4(2): 30-37, March-April 1971.***

77. ***William G. Harrington. "A Brief History of Computer-Assisted Legal Research." Law Library Journal. 77(3):543-556. 1984-85. (Quote is on pg. 552.)***

78. Robert J. Asman, "OBAR: Ohio State Bar Automated Research," in *Automated Law Research; A Collection of Presentations Delivered at the First National Conference on Automated Law Research.* American Bar Association, 1973, pp. 43-47.

xc DIALOG
DAY
BAYER
DUERREGAN
NTIS

copy & Transfer

Chapt 6
10

5507 Suffield Court
Columbia, Maryland 21044
September 7, 1995

Dear Charlie:

Sorry to be so long in getting back to you. Your July letter came just as we were getting ready to leave on vacation and it was pushed into a pile, only to re-surface recently.

I can't really add anything about NTIS to this chapter. I've only been there since 1990 myself and there isn't anyone I can think of who would have been there back at the time the NTIS database first went up on Dialog. I don't see any reason to question the facts presented in the Tancredi-Ryerson paper that you cited. What you said certainly gibes with my own recollection from having been in Washington during that period.

I can give you Mel Day's address. Louisa Day's office is just across the hall from my own, so it was easy to get it from her. It is: 4309 Chesapeake St., N.W., Washington, DC 20016-4509. I haven't a clue about Mark Bayer. I haven't even heard his name mentioned since back in the 1970's.

I noted that you had a question to yourself in the Chapter 10 text about the first customer for the regular commercial Lockheed service: General Electric's Atomic Power or Nuclear Power(?). I believe that the Knolls Atomic Power Laboratory is operated by GE in Schenectady, NY. That's probably the one you mean.

That reminds me, I recall that Bill Vaden wrote a history of the Dept. of Energy's (formerly AEC) Office of Scientific and Technical Information about 1992 or 1993. It was published by OSTI as a hard cover book. It most likely would have covered the AEC/RECON online system, which was in operation at that time. While I was at NOAA in 1972, I set up access to AEC/RECON. I think we were the tenth "node" that they had. I don't know whether Knolls was one of the others or not. Unlike their technical reports, I don't think OSTI made that book available via NTIS. You could try contacting Charlie Stuber at OSTI in Oak Ridge, TN to find out how to get it.

Sincerely,

Robert R. Freeman

HEAD TECHNOLOGY LABORATORIES

Through our masking techniques, a single terminal command provides any operator with the information necessary to use any transaction; if that operator and terminal have security clearance. Our Data Base Analyzer allows reporting on any field, or combination of fields, within the system. Demographics and file statistics can now be used for production of marketing or "snapshot" reports. Pre-conversion analysis and model modification for each bank give excellent conversion results. The system interfaces with your present application balance information, on-line or batch, and even non-automated applications may be incorporated with ease. And yes, we can interface KOMPOZIT+ with your present monitor, if you so choose.

IBM 360/370, DOS/OS/VS - BAL, ANSI COBOL
Mr. Jim Greenwood . . . . . PRICE UPON
President REQUEST
Automated Financial Systems, Inc.
One Decker Square, Suite 420
Bala Cynwyd, PA 19004 Tele. 215-667-1000

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VANDEX INFORMATION RETRIEVAL SYSTEM

VANDEX is a compact and powerful data base system for managing large quantities of data and easily retrieving specific data by simple categorical requests. The system contains three principal files — a dictionary file, an inverted file, and a master file, and also the modules to maintain them and retrieve data from them. The system operates on the well-known principles of coordinate indexing as developed by Dr. Calvin Mooers and implemented by Dr. Warheit in the Combined File Search System. Advances in computer technology along with superior computer software have now made it possible to perform the same work at many times greater speed and lower cost. VANDEX can scan millions of documents and find the information in fractions of a second. All three of the files used in this system are maintained on magnetic disks in a randomly accessible mode. This organization permits the loading of a file on an integral number of cylinders with variable size overflow and index areas. The updating operation is very quick and simple. There is no requirement for any order at all in the sequence of the cards in an update job since these are processed on a random basis.

IBM 360, 12K, DOS/OS - COBOL
Mr. John Boulavko . . . . . PRICE UPON
President REQUEST
Vanguard Information Systems, Inc. SALE
P.O. Box 330 or LEASE
Peter Stuyvesant Station
New York, NY 10009 Tele. 212-477-2034
or
256 S. Robertson Boulevard
Beverly Hills, CA 90211 Tele. 213-659-4210

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RAMIS ®

A complete program designed to perform all of the tasks needed to set up and operate an information system from the smallest to very largest. Particular emphasis is given to information systems operated in a time-sharing environment such as TSO or VM-370. RAMIS contains: a) Hierarchical file structures for naturally describing the relationship of data fields. b) A transaction processing language which permits new records to be added or deleted from files and existing records updated, without writing computer programs. c) A powerful report generator which allows a user to summarize and sort data and perform calculations by simply describing what is desired in ordinary English supplemented with some special rules of grammar. No forms or coding sheets are required as all communication to RAMIS is with free-form English sentences. Graphical as well as tabular reports can be produced. d) A RUN EXECUTIVE which permits a designer of an application to catalog not only the often repeated activities but also the logical decisions the system is to make in response to actual operating circumstances, e.g., if too many new records are rejected, then don't print the usual reports but some other diagnostic report. e) A host language interface which permits programs coded in COBOL, FORTRAN or PL-1 to access and change records in a RAMIS data base and effectively integrate the RAMIS files with some ongoing but non-RAMIS system. RAMIS is an ideal system for use by non-EDP personnel in such areas as Personnel, Financial Planning and Market Research. When EDP assistance is available, large and sophisticated systems can be implemented in a fraction of the time it would take to write programs. There are over 400 RAMIS applications, about half of which use communication terminals. Options are available for preparing financial-type reports based on models, e.g., cash flow balance sheets and for using the RAMIS report writer to read IBM/IMS and other special file systems.

IBM 360/370, OS, Batch Version (also VS-1, VS-2), TSO, CP/CMS and VM/370 Conversational Version BAL, FORTRAN
Mr. Gerald Cohen . . . . . $28,000.00 - $55,000.00
MATHEMATICA, Inc. or LEASE
Princeton Station Office Park $840.00/MO.
P.O. Box 2392
Princeton, NJ 08540 Tele. 609-799-2600
Or
Mr. Frank Fish
MATHEMATICA London
Roxburghe House
Regent Street
London W1, England Tele. 629-2822

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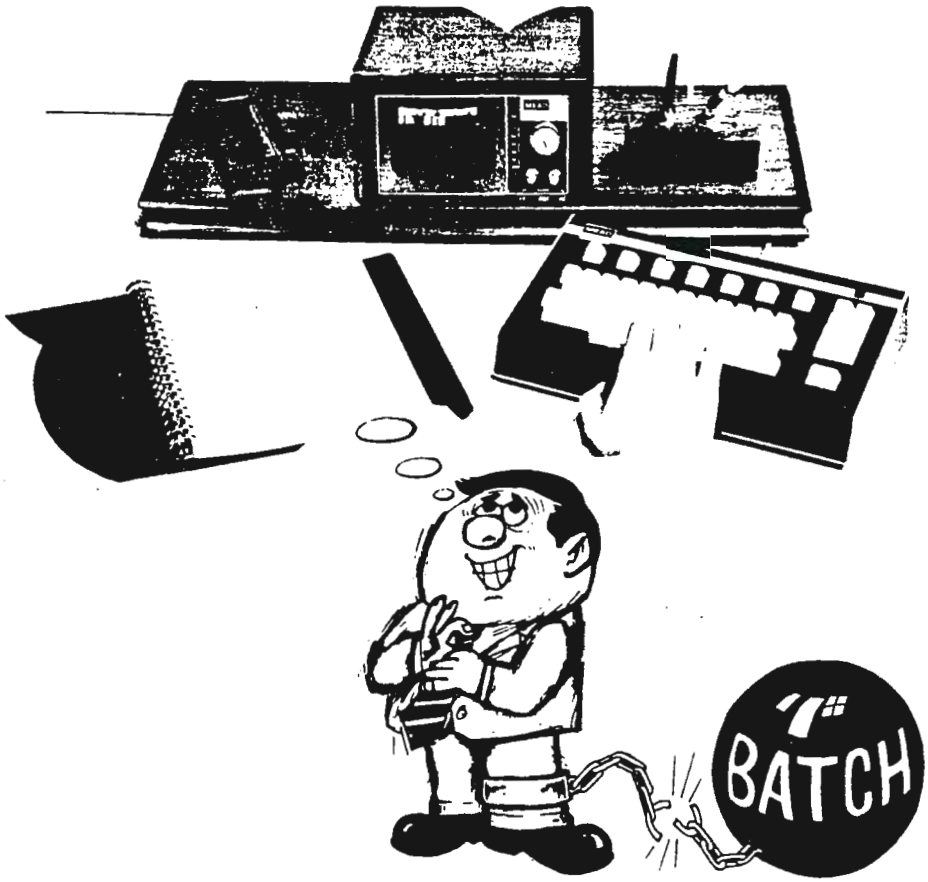
date?

(DATA/CENTRAL) INFORMATION SYSTEM (4 Programs & Subsystems)

(DATA/CENTRAL) is a general purpose terminal oriented flexible information processing research system. With respect to on-line access and display, update, and data base definition, it is a self-contained fully operational system. With respect to extensive complex input (including on-line input and editing) and output formatting, it is a host language extendable system. (DATA/CENTRAL) executes in its roll-out/roll-in virtual environment allowing large numbers of simultaneous terminals without a large core memory requirement. Access is highly interactive command structured and relatively free-form English. All information in the data base is searchable with automatic unit of measure conversion on arithmetic material and automatic keyword conversion on textual material; all textual material is searchable at the word level. The (DATA/CENTRAL) data base definition is an extension of the DBTG definition which allows for, in addition to standard file format description, the establishment of other user oriented

the GREAT ESCAPE !



it's not a dream... it can be reality !

Now you can enjoy the benefits on your computer of the versatile data system called (Data/Central).

Proven—The system has been in operation for over five years. Its customers can attest to its capabilities.

Fast—Its unique inverted file concept (at the word/value level) allows questions to be answered in seconds.

Reliable—It recovers all errors, and only the terminal causing the error is restarted.

Inexpensive—Operating as its own roll-out/roll-in executive allows for large multiterminal operation in only modest amounts of core.

Multipurpose—Indexing on any value and/or word also allows (Data/Central) to process text (both search and retrieval).

Existing Languages—(Data/Central) interfaces to existing languages (including COBOL), so your programmers do not have to learn a new language to generate report programs into the (Data/Central) library.

Use your existing files and start planning your great escape now.

DATA CENTRAL

Contact Dick Giering. . .

Mead Technology Laboratories

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parameters including a fully operational and changeable on-line tutorial for non-ADP users. Multiple tutorials for multiple levels of non-ADP oriented users can be generated with different syntax. Data bases are considered to be made up of up to 256 separate files, all searched separately or by sets of files. Each file may contain up to 60,000 fields. Terminal support includes all IBM hard-copy, teletype and teletype-compatible and color CRT's. Data base definition compilation flexibility allows the external view of the (DATA/CENTRAL) data base to be modified without it being reloaded.

IBM 360/40 & Up, 370/145 & Up, 2311, 2314, 3330, 2321, Core: 100K & Up, OS, DOS, MVT, MFT, VS1, VS2 - Interfaces with any Programming Language, Including COBOL. Its DML is Via CALL.

Mr. Richard H. Giering . . . . . $1,800.00/MO.
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Tele. 513-426-3111 Service Center

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SCORE III/IV FILE MANAGEMENT/REPORT GENERATOR

The SCORE System is a useful tool that greatly simplifies the preparation of file management and reporting applications. The System accepts non-procedural request forms filled out by the user and generates custom-tailored COBOL which can then be compiled and executed to perform the requested function. User entry capability allows for easy insertion of 'free form' COBOL own code along with user specifications. This permits one step compilation of SCORE generated and user written COBOL statements. Current releases allow for use of standard COBOL Source Statement libraries as data definitions, eliminating the need to redefine data files already in use. Interface to non-standard data bases such as DLI and TOTAL are also available. SCORE on-site training and installation is provided including work shop sessions. The basic features are quickly available to programmers and non-programmers as well. SCORE has been installed in well over three hundred (300) computer facilities and is a member of the ICP Million Dollar Software Club, as well as elected to the Data-Pro Software Products Honor Roll.

IBM 360/370, BURROUGHS B-2500, 3500, 5000, NCR CENTURY, UNIVAC 1106, 1108, 9000, CDC 3000, 6000, HONEYWELL H-200, RCA SPECTRA 70, SIEMENS

Mr. Edward Opengart . . . . . .SCORE III$12,000.00
Programming Methods or LEASE $400.00/MO.
Division GTE SCORE IV $15,000.00
Information Systems, Inc. or LEASE
1301 Avenue of the Americas $480.00/MO.
New York, NY 10019 Tele. 212-489-7200

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INQUIRE

A self-contained, general purpose, information retrieval and data base management system designed to provide those functions normally required for the creation, maintenance, retrieval and administration of data files in a remote terminal, batch, remote batch, or time-sharing environment. Multi-terminal operation is available using TSO or similar OS-based time-sharing systems. INQUIRE is covered by U.S. Patent 3670310. Active INQUIRE applications currently operational include grant management information, bibliographic literature searching, accident data reporting, manpower analysis and reporting, equipment inspection and analysis pharmaceutical patent searching, screening of biological test data, clinical data analysis and reporting, financial analysis and planning, sales reporting, and many others. Retrieval is accomplished using a free-format, English oriented Command language which involves either random or sequential processing of the file. The user identifies the information using full Boolean logical connectors such as AND, OR, AND NOT, and a unique operator, LINK, which insures retrieval based upon commonality of levels of data within repeating groups. Additionally, the searching of text and testing of field values or ranges of values is performed using CONTAINS, EXCLUDES, IS, TO, GT, LT, GE, LE, or EQ. INQUIRE includes a complete report writing capability. Multi-file link (MFL) available for inquery and reporting of up to 31 data bases simultaneously.

IBM 360/370, OS/VS, MVT-MFT, HASP, TSO, IMS/DC, (IMS/DB avail. in 1975), RJE, 1DA device, 130K real. Terminals include 2780, 2741, TTY, 2260, 3270 etc.

Mr. Robert S. Stahl . . . . . MO. RENTAL
Commercial Marketing Manager /LEASE Avail.
or
Mr. Edward H. Carlson
Manager, Government Systems
Infodata Systems Inc.
5205 Leesburg Pike, Suite 701
Falls Church, VA 22041 Tele. 703-578-3430

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TUMS – THE TOTAL UTILITY MAINTENANCE SYSTEM

TUMS is a general purpose data base maintenance utility program containing six basic functions for TOTAL data bases. These are: 1) dumping a TOTAL data set to a backup tape, 2) reloading a TOTAL data set from a backup or source tape, 3) printing a TOTAL data set in vertical hexadecimal-character format (no TOTAL control records, no blank records – just data), 4) building a TOTAL data set from card input, 5) deleting records from a TOTAL data set, and 6) validating a TOTAL data set. TUMS can select TOTAL data according to volume and key values. TUMS can be used for a multiplicity of applications. TUMS gives the Data Base Administrator the ability to create the original data base, add new records, delete old records, backup/recover, generate test data bases from live data, and repair data sets with broken linkages. A very important capability of TUMS is reorganizing TOTAL data bases when changes in device type, record size, block size, new relationships (linkage paths), expanded file size, or new data sets are required. The purpose of TUMS is to eliminate expensive custom written programs. You code only four (4) easy-to-use control cards which contain the same information as you might code in a TOTAL program. No compilation, or linkediting --- all binding is at execution time. The elapsed time from request to guaranteed results is immediate. TUMS is shipped ready-to-catalog with no local customization necessary. It installs in less than five minutes. And you will be able to use it within a 1/2 hour with the users manual.

CHARLES BOURNE AND ASSOCIATES
1619 SANTA CRUZ AVENUE
MENLO PARK, CALIFORNIA 94025
TEL. (415) 322-7101

September 3, 1995

Mark Bayer
1631 North Dayton Street
Chicago, IL 60614

Dear Mark:

It was good to talk to you the other day. As I mentioned, now that I've retired from DIALOG, I am able to spend more time working with Trudi Bellardo, formerly of Catholic University and SLA, to write a book for Academic Press on the early (pre-1977) history of the online search services. You may remember that I discussed that topic with you several times in the past..

The Mead and Data Corporation history will be a part of that text, and at this time we are actively reviewing the final text of that story. Because you were so closely involved with the those activities during the pre-1977 time period, we'd appreciate whatever help you can provide with our final reviews. We've gone about as far as we can go from the published material that we've been able to get our hands on, and from earlier information that you've provided. Now we need to have the current draft checked by the people who were on the scene at that time -- to correct the factual mistakes, fill in some of the missing pieces, and to provide additional comments as appropriate. We'd also appreciate any stories or anecdotes that we can repeat for our readers.

With that introduction, I invite you to review and annotate the attached draft text of the Mead, Data Corporation, and related activities for this pre-1977 time period.

You've also been a participant and witness with several other systems, including those of Informtics, Excerpta, and DIA. Consequently, I hope you'll be able to review the corresponding text that is also enclosed.

You'll notice that some of the text is in boldface. That's just a temporary artifice to permit me to keep track of my own text, so that I can keep track of where things came from. You'll also see some notes passed between Trudi and me as part of the dynamic text-building and review process. We want to get your comments early enough in the final drafting stage to permit us to make good use of them.

If you have any questions or comments, please give me a call. Just annotate and return the draft if that's easier for you. And if you see anything else on the outline that you'd like to review, let me know. I look forward to hearing from you.

Best regards,

Charles P. Bourne

Enclosure - Chapter 5 Outline, text and supporting citations for Informatics, DIA, EM (10/9/95 edition)
Chapter 6 Outline, text and supporting citations for Informatics, ~~DIA, EM~~ (1/15/95 edition)
Chapter 8 (3/11/95 edition)
Chapter 10 ~~Outline~~, text and supporting citations for Informatics (5/20/95 edition)
Chapter 10 text on Hardware, Communications, and Marketing (5/20/95 edition)

P.S. Could you give me an approximate date for the enclosed announcement of the availability of the Data Central Software?

xc: Trudi Bellardo (letter only)

To: History File

From: Charles Bourne

Re: Notes of 17 August 95 call from Peggy Fischer (Office: 203/661-2287. Home: 203/661-5625)

Peg called in response to my recent letter to her.

1. Chester (Chet) Lewis. Chet Lewis was John Rothman's boss. Peg knew Lewis well from her time in New York, and feels that he should get more credit for the NYTIB development. When she was working at Time-Life, she felt that there were 3 really large and notable library reference services: 1) N.Y. Times; 2) Time-Life; 2) Congressional Reference Service; Chet was very involved with this activity, and had contacts with Peg of Time-Life and Content Peckham(Sp?) of LC/CRS? at that time.

   Chet retired from NYT and may still be alive. She'll try to find out.

2. John Rothman. Rothman was a funny guy, narrowly focused, almost secretive (in contrast to Lewis who had no secrets, would talk to anybody, and was an affable manager-type. Rothman had terrible problems with his users (the journalists at NYT) trying to get them to use the terminals. (Peggy talked to Rothman during these times, and contrasted it with her success at Time-Life by having the Chairman on her side, and giving frequent briefings.)

3. Peggy Fischer. Peg started INFORM, the first search brokerage firm. She was also involved in the first computer typesetting system. She left Time-Life in 1971.

   Peg will contact the Time-Life Alumni Assoc. to try to locate some other (Salzburger?) people.

4. Mark Bayer. He was suddenly released recently from the phone company (Ameritech?) in Chicago after Peg did some consulting work for him. His home phone number is 312/642-4442. 1631 North Dayton St. Chicago 60614

5. Mel Day. Mel's wife (Louise Day) still works at NTIS. Mel's home address is 4309 Chesapeake Street, N.W., Washington, DC 20016.

6. Bill Clabby. Is at:
   Wall Street Journal
   1 World Financial Center - 17th Floor
   200 Liberty Street
   New York, NY 10281

   work phone: 212/416-2415
   fax: 212/416-2637

7. Dick Giering. He was working about 3 1/2 years ago as head of programming for a CCH project in Chicago, but he's not there now.

8. Larry Berul. Don't know what happened to him (was with AMICUS). He just dropped out of sight.

xc: NYTIB
Mark Bayer
Mel Day
Bill Clabby
Dick Giering
Larry Berul
Trudi Bellardo

To: History File

From: Charles Bourne

Re: Notes of 27 August 95 Call to Mark Bayer (home: 312/642-4442)

I called Mark to get his mailing address:

1631 North Dayton Street
Chicago, IL 60614

I asked if he would be willing to review some draft text, and he said yes, send it along.

After about 6 years at Ameritech, he is "between assignments" and looking for another position.

xc: Trudi Belardo

CHARLES BOURNE AND ASSOCIATES
1619 SANTA CRUZ AVENUE
MENLO PARK, CALIFORNIA 94025

TEL. (415) 322-7101

July 29, 1995

Peggy Fischer
Management Decisions
44 Taconic Road
Greenwich, CT 06830

Dear Peggy:

I hope that you and your new hip are getting along well together. I always thought of you as a very hip person.

On quite a different matter, I'd like to borrow on any good will that I might have left, and ask you to review the enclosed draft text about the early history of the New York Times system. Because you were so much closer to that activity than I was, I'm sure that you'll be able to catch any boo-boos that we've made, and to add any interesting anecdotes that are triggered by your reading.

I look forward to hearing from you.

Best regards,

Charles P. Bourne

Enclosure - NYTIB text and supporting cites from Chapter 10 (5/20/95 edition)
~~Mead and Westlaw text and supporting cites from Chapter 10 (5/20/95 edition)~~

P.S. Do you happen to have a current address for Mark Bayer, Larry Berul, Bill Clabby, Dick Geiring, or Mel Day? Thanks

xc: Trudi Bellardo (letter only)

copy to Frank

re NYTIB
PHOTO-MEM
BAYER
GIERING

To: NYTIB File

From: Charles Bourne

Re: Notes of 12 July 95 Call from Jeff Pemberton

Jeff called to say that he had received my letter, and would be writing some notes in response to it. However, he was getting ready to go on vacation, and wanted to get something to us right away.

1. The very first customer for NYTIB were the federal agencies in Washington: CIA, LC, NSA, DIA, ... The Times believed that their best marketing opportunities to start with would be in Washington, and that's why they set up one of their first marketing offices there. Pemberton has a favorite tale about giving a demo to the Soviet Embassy there, with gibberish on the line because the lines had so many bugs on them.

2. They didn't want to advertise NYTIB in their own newspaper, and they thus missed a major marketing opportunity. They had a corporate culture that said that you were "pure" and didn't brag or call attention to yourself in such ways.

3. Portable terminals cost about $6000 when he first started using them. He didn't know why they didn't use the IBM 2260 displays that the system was designed for. Instead, someone decided that it would be better to have a programmable terminal. They did this with a punched paper tape terminal unit that needed frequent re-starts (for $500 more, you could get an upgrade to a unit with a mag tape cartridge unit).

4. The Photo-Mem unit did get operational, but its reliability ranged from 50-70%. They eventually took the fiche out and put them in card files, and then used a person to pull fiche on demand and load them under a TV scanning camera for the images to be sent to remote viewing terminals.

5. He doesn't have Mark Bayer's address. He thinks he's with Ameritech in Chicago.

6. He said he didn't have an address for Dick Giering. I reminded him that Dick had a recent Letter-to-the-Editor in a recent Online publication, and he said he'd check on it.

CHARLES BOURNE AND ASSOCIATES
1619 SANTA CRUZ AVENUE
MENLO PARK, CALIFORNIA 94025
TEL. (415) 322-7101

July 2, 1995
11

Bob Freeman
5507 Suffield Court
Columbia, MD 21044

Dear Bob:

I'm back with some specific text for you to review about NTIS and NTISearch.

I've sent some additional text to Janice for her to review with her special background and experience, and you are certainly welcome to have a look at that as well.

Do you happen to have a current address for Mel Day? I've had items returned from the addresses I had.

Best regards,

Chas

Charles P. Bourne

Enclosure - NTIS text ("Start of Commercial Service") from Chapter 6 (1/15/95 edition)
NTISearch text from Chapter 10 (5/20/95 edition)

P.S. Do you happen to have a current address for Mark Bayer?

xc: Trudi Bellardo (letter only)

June 10, 1987 87161DIS0001

Charlie Bourne, 3775

Memo to: History File

Subject: Notes of 1980? Conversations with Mark Bayer Regarding MEAD

NAMES

Mark suggested I contact:

1. Bill GOROG (former founder of Data Corp., now on Mead's Board of Directors. He was responsible for Data Corp., and its merger into Mead.
2. Bob BENNETT, Exec. Vice President at the Mead Washington office since 1970 (202/833-9710). Now with Jerry Rubin at Times-Mirror?
3. Dick GEIRING, the technical person behind the LEXIS system.
4. Jerry RUBIN. Former President of Mead. Now at Times-Mirror in L.A.

HISTORY

Mark joined Mead in _____.

OBAR received a contract in 1969, to run for 3 years, to build a database for the Federal Water Pollution Control Agency (FWPCA) associated with illegal water use and federal water pollution. This was the ENVIRON or TIMPS file, a file of descriptions of projects within EPA. The Dept. of Defense was also a participant.

In 1969 Mead had a special project with Walter Reed Army Hospital, run by Mark Grove at Walter Reed, to develop a database concerning the Biological effects of Electromagnetic Radiation (BEER). The project was funded by Wright-Patterson AFB. The file wasn't used much.

In 1970, Data Corp. (founded by Gorog) split into: 1) Mead Data Central (under Bob Bennett) to do legal work; 2) Mead Technology Labs (under Dick Geiring) to do government projects, environmental files, etc. Mead then hired the first President of MDC, Don Watson. Jerry Rubin was his #2 man, as was Bob Bennett.

In 1970 Mead brought up the first online biomedical database -- EARS (Epilepsy Abstract Retrieval System). It was run (?) at NINDS (Nt'l. Inst. Neurological Diseases & Stroke) at NIH. The Project Officer there was Al Wiesberg (301/496-9271).

In 1970 Mead had an IBM 360 at Dayton, and another in Washington, DC.

In 1972, Mead started the LEXIS re-write. At about that time, they also used a multi-color CRT (the first to do so?). They also started to highlight KWIC at that time to show retrieval terms (the first to do so?) Mead also had the longest text record of any search system at that time. They also operated at 1200 baud.

In 1973, with the loss of a procurement to Informatics, Mark went to Informatics. Mead started to concentrate on the legal field from that point on.

In 1978 Mead provided their first newsletter.

In 1980 Mead provided U.K. access, all on 1200 baud lines. They did not have Telenet or Tymnet access then.

CPB:kir

June 26, 1987 87177DIS0001

Charlie Bourne, 3775

Memo to: History File

Subject: Notes of 1 May 80 Talk with Mark Bayer

Inquire
Robert Schreier, Vice President, Infodata Systems, Inc., 5205 Leesburg Pike, Falls Church, VA (703/578-3430) would be a good person to talk to.

Informatics
Frank (?) Gaudette, Vice President for Administration and Finance, was there all the time, and would be a good person to talk to. So would John Rome, Vice President of Litigation Support from 1974 on.

Mark suggested I send a milestone chart to

Richard (Dick) Lemons
Pres., Info. Systems Co.
Informatics, Inc.
6011 Executive Blvd.
Rockville, MD 20852
(301/770-3000)

Mark said that there were 3 early (1973) online products at Informatics:

- ENVIRON (Environmental Information Retrieval Online)
- POPINFORM -- a population file, later changed to POPLINE, and associated with George Washington University. Helen Kolbe & Dr. Phillis Piatrow were the project leaders. Kolbe is now at the John Hopkins School of Public Health (301/955-8200). Something was published by one of these people, and it should be in the Medline file.
- TOXLINE (Mark suggested that I get the information from Henry Kissman at NLM.) These products preceded EXCERPTA online.

Dept. 8

Mead

The TIMPS (Technical Information Management & Planning System) file, a precursor of the ENVIRON file, started at Mead in 1969(?), and ran at Mead until the Summer or Fall of 1973; then it went to Informatics where it was renamed ENVIRON. Dr. David Stephan (Director, EPA's Research, Development, and Demonstration Div.) was involved with this file.

The first file (of what?) was PROJ (= PROJECTS), outlining each current EPA R&D project. Other files then joined in:

- o TADS (Technical Assistance Data System) -- produced by the EPA Division of Oils & Hazardous Materials Spills. It had 100 data fields, and was similar to CHEMNAME, and still exists somewhere today (Battelle?).

- o NOISE POLLUTION -- produced by the Franklin Institute. It went online in 1972.

- o OHMS (Oils & Hazardous Materials Spills). It listed major spills (dates, places, specifics), and went online in 1972.

- o BEER (Biological Effects of Electromagnetic Radiation). This was produced by Walter Reed Army Hospital, under contract to Wright-Patterson AFB; Mark Grove was the Project Monitor.

1970?

Mark said that in 1974(?), the Data Corporation, funded by Bill GOROG?, split into 2 parts:

- o Mead Technology Laboratories (to do government contract work). Dick Geiring worked there.

- o Mead Data Central (legal databases, OBAR project, etc.). Bob Burnett(?) worked there.

Some of this is described in a 1974 UCLA/Informatics Conference (and Proceeding) that was organized by John Sherrod.

CPB:kir

Company Profile

BRS—Prepped for Progress

by Bev Smith

Dr. William F. Marovitz, BRS president, has overseen BRS's growth for the past two years.

Flashback to 1977. A new kid (fresh out of the State University of New York) shows up on the commercial online block to challenge the established leaders. The spunky competitor sets up shop "on a shoestring" with borrowed funds and begins offering first-quality merchandise at cut-rate prices. Start-up collateral is one Chevrolet and 70 potential subscribers. Will the newcomer survive? Stay tuned.

The company monogram is BRS (Bibliographic Retrieval Services). Today, those initials stand solidly between Dialog and SDC as one of the Big Three intermediary online vendors. BRS, true to its founding mandate, still tags prices lower than its rivals. In fact, the firm has become affectionately known in the industry as the "bargain basement" of retrieval services.

"When we started BRS," says cofounder Janet Egeland, "our reason for being was to set low but realistic prices while offering a good quality online retrieval service. Over the years, BRS has stayed pretty close to that original philosophy."

Graduation day

BRS's forerunner was the Biomedical Communication Network, which was operated by Egeland and Ronald Quake for the State University of New York at Albany. SUNY/BCN was actually the first online medical information service in the world when it bowed in 1968. However, by the mid-70s, storm clouds threatened its funding and computer space.

"As our service grew," Egeland explains, "it put a larger and larger strain on the computer system which we shared with the university. We were attracting more users than anyone expected. When SUNY began having budget problems and was looking for ways to save money, it became apparent that our network was in jeopardy.

"At that point, our user advisory board came to us to propose that we make the network a private enterprise in order to keep it running."

The suggestion came as a jolt. Egeland says it was never their intent to launch a private business.

With "absolutely no money," but with a determination to keep the service afloat, the duo devised a pricing plan whereby the medical centers and university libraries that made up their user base would agree to pay an annual subscription fee ($7,500 at that time).

Then, armed with a business prospectus and several signed contracts, Egeland and Quake convinced Schenectady Trust Company to issue them a line of credit. (Quake's car was the collateral.)

All systems go

BRS began full system operation on January 3, 1977, with 10 databases mounted on "borrowed" computer space from Carrier Corporation in Syracuse. By May of that year, SUNY/BCN ceased to exist, and the former SUNY subscribers flocked to BRS.

"In those days, Dialog and SDC were charging nearly twice what the medical centers and libraries were used to paying on SUNY/BCN," Egeland says. "So, part of our commitment was to keep our rates the same as subscribers were paying at the university while offering a service of equally good quality."

Dr. Lloyd Palmer, who worked with Egeland and Quake through BRS's start-up stage and who is now vice president of technical services for the firm, adds, "Our purpose was to open up usage to academic libraries. They were *always* facing budget problems, so our pricing had to be innovative. Our proposal was that the libraries would pay a subscription rate upfront for a precommitted number of online hours per year. That way, they could work the cost of the service into their budgets. We put up the databases we felt would be most useful to them and came in with lower prices. A week before we started up, both Dialog and SDC reduced their prices!"

Nothing succeeds like success

Within three years of its debut, BRS was being wooed by prospective buyers. In September of 1980 the firm was acquired by Thyssen-Bornemisza to become part of the Dutch manufacturing/shipping/technology giant's Information Technology Group (which also includes Predicasts, Capital Services Inc., and Information Handling Services).

"Actually, it was not our intent to sell," Egeland claims. "We were taken by surprise. Even though we had been approached by a lot of people to sell, Thyssen was the one that made us an offer we simply couldn't refuse. We felt that finally here was a company that would continue to meet the needs of our users."

Egeland will not reveal the "unrefusable" purchase price.

After the sale, Ron Quake moved up from president of BRS to manage Thyssen's entire Information Technology Group and has since left to head a software firm. Egeland took over as BRS president for one year and then "retired" to pursue other interests. She is presently a partner in a Schenectady advertising agency, Egeland-Wood Associates.

Looking back on BRS's growth and expansion from an online biomedical specialist to a multi-disciplinary database service, Egeland says, "We made a positive impact on the industry. We were the little guy and the new guy, but we made a great difference. Our software allowed interaction between the user and the system. Ease of use is still a priority. We wanted online to become second nature to the user, and I think we succeeded. BRS appears to be doing well and thriving."

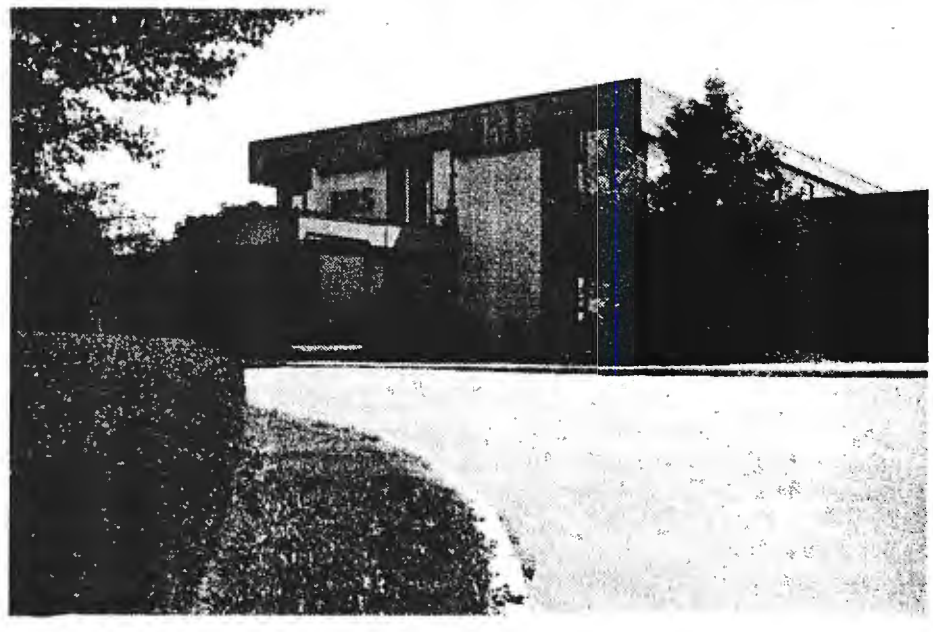
Healthy statistics

BRS's complexion does, indeed, have a healthy glow. The original handful of employees back in 1977 serviced about 70 subscribers with 10 databases on somebody else's computer. Today, the firm's staff numbers over 100. BRS maintains its own mainframe computer facility and headquarters in Latham, New York; has executive offices in New York City; and has a growing training staff based in the Philadelphia area.

Over 10,000 subscribers now logon to the BRS system of more than 80 databases, of which close to a dozen are in full text. The company trains about 200 new users a month (a figure that has doubled since last year) in 15 major cities in the U.S. and Canada.

While BRS's prime subscribers are still medical libraries and Medline is its most-used database by far, the firm has diversified its offerings to straddle the categories of education, chemistry, engineering, and—most recently—business.

In addition to its public files, BRS houses over 50 private databases. The firm also sells its own BRS/Search software in mainframe and micro/mini versions. And, by September, its long-awaited MCI Mail connection should be operational allowing BRS members electronic mail delivery through the MCI network.



BRS has corporate headquarters and its own computer facility in Latham, NY.

In a recent expansion move, BRS linked up with W.B. Saunders to form BRS/Saunders Medical Knowledge Resources. The joint venture gives BRS the exclusive right to electronically distribute W.B. Saunders' print materials to physicians and health professionals

(continued on next page)

BRS—Prepped For Progress

(continued from previous page)

via personal computers. It will also continue to market other medical publishers' data from the service previously known as BRS Colleague. Enthusiasm for the new company is at a high pitch and serious marketing of its Medical Colleague product will begin in September.

"I don't want to be the fourth gas station on an intersection where there are already three people pumping gas."

BRS President Dr. William Marovitz claims Medical Colleague will be "pioneering a technologic frontier" and says, "We expect to benefit tremendously from our association with W.B. Saunders."

Share of the pie

As a privately-held company, BRS's revenue figures are not available. One source did say, however, that the company's growth rate for 1984 is expected to exceed 25 percent.

According to InfoMetric's *Information Market Indicators*, Martha Williams' ongoing survey of electronic information vendors' bills, BRS ranks first in connect hours and second in dollars spent among the academic user group. Overall, when compared to the 15 vendors included in the survey statistics, BRS holds third place in dollars and fourth in usage.

Is the company happy with its market share?

"No, of course not. We want more," says Mark P. Bayer, newly-appointed vice president of marketing. "Realistically, being number one vs. Dialog, for instance, is a long, long way from being possible. But, we would like more and more of the market.

"I see that market coming in two ways," he says. "One, we may eat into the share of our existing competitors. And if we do, that's fine. But the second part is we will hopefully find new markets. My task is to try to bring BRS up to the next notch."

To reach that next notch, BRS plans to aggressively go after the corporate end user market.

"We will be looking to expand the use of our user-friendly interface to allow more BRS databases to be accessed by more people, more times of day," Bayer explains. "One of the things I personally want to do is to make sure corporations know that we have something to offer them. And if we don't have it to offer now, I want to go get it.

"I come from Disclosure so I've had, for the past five years, a real business database bent. There is a lot of money to be made there. I don't want to be the fourth gas station on an intersection where there are already three people pumping gas."

Bayer reveals that although the biggest part of their revenue comes from the daytime professional intermediary, they are definitely restructuring marketing efforts to go after the end user. In order to do so, they will soon be testing a new access strategy not yet tried by other vendors.

From after dark to after all

"We currently have two basic ways

BRS's main lobby and conference rooms in Latham, NY.

says. "The BRS/Search professional intermediary way or the After Dark/Colleague user-friendly interface way. We're going to merge all of this.

"We don't really care if someone drives up to our front door—telecommunications wise—in a Cadillac, Chevy, Chrysler, or Ford. We just want them to be able to gain access to the system for their information needs."

Under BRS's yet-to-be-announced policy change, users logging on before 6 p.m. local time will have the option of entering the system either through BRS/Search with all of its powerful retrieval capabilities or through the easier-to-use but less powerful menu-driven interface.

Unlike BRS/After Dark, which was started in 1982 as a reduced price after-hours feature allowing access to less than 40 databases, the new service (still unnamed but jokingly referred to internally as After All) will provide access to *all* BRS databases during both daytime and evening hours.

"Users of either method of access will pay full daytime rates during the day," Bayer explains. "After 6 p.m., reduced rates will apply for those databases that have off-hour discounts. If the database producer has no after-hours discount, there will be no royalty reduction, but for our portion of the pie, we will reduce prices for after hours connect time. So, after 6 p.m. there will be some rate reduction whether you use the database through the user-friendly interface or the BRS/Search interface.

"This is going to allow us to sell our services daytime, nighttime, all the time," Bayer says. "We hope this will open up an end-user market not just for us, but also for our database producers who would love to see their databases used by more people—the bench chemist, the physicist in the lab, the business person who wants more than a simple videotex vehicle.

"We have a basic service with two methods of access. Your password will allow you into both services. At access time you choose which one you want. The professional librarian will still be able to get the strength and power of BRS/Search to 100 percent of its capabilities. And, the user-friendly interface will open up markets for us that we couldn't reach before."

Toning up training

To open up potential markets even further, Bayer says BRS will be beefing up its training program.

"If you looked at our users from a demographic standpoint," he notes, "you would find that they are concentrated in the Northeast. We need to increase our training and marketing presence around the country. We have just added a person in Dallas and are looking at other offices on the West coast and in the Midwest.

"When I was working for Dialog," Bayer continues, "Roger Summit said 'training rings the cash register.' That is an absolutely accurate statement. Dialog's training has always been quantitatively and qualitatively excellent. I would like to emulate a lot of that success.

"Our training staff is excellent, but in the past it has been spread thin. One of the advantages of being part of the Information Technology Group of Thyssen-Bornemisza is we have some pockets behind us now. They have made available to us extra marketing dollars as an investment in our future. As part of that investment, I want to increase our training staff dramatically."

Does BRS place much emphasis on in-school training programs?

"We are already offering a program at Drexel University in Philadelphia," Bayer says, "where we are providing very inexpensive services as a way for students to learn more about online database retrieval. We are going to look to emulate that program wherever we can. It's been successful from our standpoint and from Drexel's standpoint.

"However, I want to look at all the different areas where we can use the marketing dollars we're being given by our parent to increase usage. So, I may find that I can do better if I can penetrate the corporate world with 'traditional' training than if I were to try to sell at the educational level. But I would not rule anything out. We are very much a for-profit company and we will be market driven."

Still a bargain?

With its continuing expansion and ambitious plans for the future, would BRS prefer to drop its bargain basement image?

"We are still cost competitive," Bayer claims. "When BRS came out of the box, its motto was 'we're cheaper.' That's a fair statement today. Most of our databases, even in the open access rate with no precommitments, are less expensive than our competitors. But we definitely want to go after some markets where cost is not the only concern."

BRS's connect hour rates range from $16 to $35 per hour depending on the subscriber's annual contract for usage. (Open access users pay a $50 annual password fee.) In addition, royalty rates per database run from zero to $70 per hour; online and offline printing from two cents to $1 per record. Telecommunications charges (via Tymnet, Telenet, Uninet, Datapac, or direct dial) tack another $3 to $11 per hour to the bill.

"One of the advantages of being part of Thyssen-Bornemisza is we have some pockets behind us now."

(continued on next page)

Robbie Kolman, manager of customer service, handles a user's request.

A sampling of connect-hour rates, including royalties, from the so-called Big Three vendors shows that BRS has a slight edge:

ABI/Inform: BRS, $51–70; Dialog, $73; SDC, $70.

Compendex: BRS, $66–85; Dialog, $99; SDC, $99.

ERIC: BRS, $16–35; Dialog, $25; SDC, $35.

Inspec: BRS, $59–78; Dialog, $90; SDC, $90.

Management Contents: BRS, $56–75; Dialog, $84; SDC, $80.

Medline: BRS, $19–39; Dialog, $35. (Not available on SDC.)

Bayer sees BRS, and the industry as a whole, moving toward a hit-charge policy based on data actually displayed—especially since the increased use of high-baud equipment is sure to cut into vendors' revenues.

Mark Bayer, vice president, would like to see BRS snare a larger share of the online market.

"The formula for pricing will become more and more hit charge oriented," he says, "and less dependent on connect hour rates. Connect speeds will continue to go up, and if we do not price on hits, it will erode our revenues as well as our database producers' revenues.

"I'd like to simplify our pricing if there's any form of simplification that could be done to make it a little less confusing. That's on my list of futures."

What's next?

As BRS looks to go beyond its traditional medical and academic user base, it is also keeping a keen eye on the new technology of optical laser disks. The firm has developed a prototype videodisc containing the entire text of Grolier's Academic American Encyclopedia. It is presently being demonstrated to database producers, and Bayer estimates that the technology might become available to BRS users sometime in 1985.

"With this technology," Bayer says, "you could put entire databases or significant subsets of very large databases on a disk and be able to retrieve right from that."

Dr. Lloyd Palmer, vice president of technical services, agrees that videodiscs have great market potential.

"We will see people eventually buying their own backfiles," he says, "and hooking into us for the current data. We want to be in the business of selling the data on videodiscs. If we don't, someone else will. We are flexible and quick to respond to our user advisory committee's suggestions. We intend to stay in the forefront of the industry technologically.

"The industry is obviously exploding very fast, and we are working to move with it. By keeping our strategies in place, we feel we can come out of the 80s in a very competitive position."

BRS is no longer the brash new kid on the online block. It has claimed a good-sized portion of the professional intermediary turf and is gearing up to go after the corporate end user.

Although BRS does not intend to shock its academic-type users with "plaid jacket salesmanship," it does aim to become more visible by increasing its marketing oomph. The firm is sharpening its competitive edge for the 80s with some innovative access strategies and breakthrough technologies.

And, yes, it is still a bargain. △

TO: History File (BAYER.HIS)

FROM: Charles Bourne

RE: Notes of 6 May 87 Interview with Mark Bayer
(2 October 90 Edition)

Trudi Bellardo and I interviewed Mark at his McGraw-Hill office in New York, regarding early online activities. The relevant portions of the taped interview are transcribed below.

CB: What I would like to do is try to get the notes a whole lot more complete. Because I have notes of our prior conversation (1 May 80) but I want to make sure that I catch a lot more of the fine detail, and pursue some other things. Let's start with a chronology of your entry into the field and your tours of duty at each of the specific places. Use that as a framework for some more specifics.

MB: My entry into the field commercially,... will do my post-army experience,... was 1970 with Mead Data Central, which officially when I joined was still Data Corporation. I was in their Washington office, what they called the Iron Works on top of literally an iron and steel foundry. And once a day they would cut iron, and the whole building would shake, literally.

CB: You had a good foundation for your career.

MB: (phone ringing) I'm going to end up being interrupted a few times.

MB: I was there from June of '70 to June of '73. The name changed from Data Corporation soon to Mead Data Central when the acquisition was completed. Then from like the Summer of '73 through the beginning of 1975, the very early part of 1975, I was at Informatics and was involved because I was dealing with Toxline when it was still not on the NLM machine. I was running Toxline, etc. And, Art Elias who was there at that time doing Cancer, what became the beginning of Cancerline, etc., I'm not quite sure what that was.

CB: Was it Informatics?

MB: Informatics in Rockville, MD. Then early in '75 through early in '76 I was really outside the mainstream of our business. I was working for Infodata Systems,... the Inquire software package. And I was basically selling software. And I did that for about a year. I really didn't enjoy it and so I left. I literally bumped into Roger (Summit) at Logan airport (Boston) after an ASIS Meeting in, oh I don't know, the Spring

of '76. He asked me if I wanted to open a Chicago office, I said I didn't want to live in Chicago. Then I said goodbye. I later found out that he spoke with Art Elias about a week or two afterwards. Art, of course, had gotten to know me at Informatics. (Roger) Asked if he'd put in a good word for me which Art, of course, regrets to this day, and Roger called back and asked, "Would you like to move to Palo Alto?" I really didn't feel I wanted to move to California, so he said would you like to work in our Washington office. And I said yes to that because I was in Washington.

I started with DIALOG in, like, March of '76, my first 10 weeks were out in California filling the spot before Fran came down from Oregon, Fran Spigai. When Fran got down, I went back to Washington, worked with Rick Caputo. We were in the Lockheed Aircraft Corporate offices at that point in downtown DC on Farragut Square. I was with DIALOG for 3 years till I guess, oh, February of '79, something like that. Yeah, that's right. Then I started with DISCLOSURE in Bethesda, from March of '79 for just about exactly 5 years, March of '84. Then I spent 11 abortive months at BRS. I guess that was like April of '84 till March of '85. Then I consulted from, actually started consulting about May or say maybe June of '85.

CB: It was just last year's (ASIS) meeting (that) you were consulting.

MB: I was just finishing up the consulting then. I consulted primarily for Standard & Poors, obviously part of McGraw-Hill. I consulted for DIALOG, I consulted for ICC, I consulted for McGraw-Hill, Newsnet. I consulted for a lot more people than I ever expected that I was going to consult for. I consulted for that and then finished up and I started here full-time McGraw-Hill a year ago, June of '86 and other than getting soda splashed at me, it has been very fine year. I have never had anyone come into my office and splash soda at me.

CB: Champagne is acceptable but the Sprite is visiting you today.

MB: So that is the chronology.

CB: OK, so there is lots of opportunities there to witness things going on of one kind or another. Lets go back to some early questions, one in my mind that you might have run across the answer for. Why did Mead buy Data Corporation? Why would a paper company want to do something like that?

MB: I can tell you almost exactly, or at least I think I can. Bill Gorog, who is now the Executive Director of the Magazine Publishers Association here in New York, Bill Gorog was the founder of Data Corporation, I think after the Korean War, but I'm not exactly sure. Data Corporation had a long standing

contract with Wright-Patterson AFB. Their contract was,... Data Corporation did a lot of things with reconnaissance photography and other assorted things. And they did a lot of photographic work and some very fine technology. One of the tasks they took on as part of helping Wright-Patterson field, and they did many contracts for Wright-Patterson field as I understand it,... was to develop some software which would allow them to take all the data that was being gathered on the reconnaissance flights and put it into some meaningful form. They developed this software and made it online. Which was, back in the late '60's, still pretty new. They named it RECON Central which was short for Reconnaissance Central. It had nothing to do with Recon (as in NASA-Recon).

What they did was,... Bill Gorog made a lot of money and became a very wealthy man,... his backyard literally backed up over the fence to Jim McSweeney's backyard who was the President, soon to be Chairman, of the Mead Corporation. And they were backyard buddies in a very fine neighborhood in Dayton. And they just got to talking, as I understood it, and the concept of the software had already been thought of by Bill Gorog to be used beyond this reconnaissance application. And they had already approached the Ohio Bar and had already formed OBAR which was an acronym for Ohio Bar Automated Research. And I gather they were just talking about this as business people do, and somewhere along the line McSweeney said, "This is a good idea. We want to do something with this." And Mead, I think, was at the beginning of its diversification phase, and the decision as I understand it to buy Data Corporation, this could be 95% legend and only 5% fact, but the decision as I understand it was basically made over their common backyard or sideyard fence and the decision was to buy Data Corporation. And one of the things they saw as an opportunity was to develop the OBAR concept with the money necessary, which Gorog and Data Corp. couldn't bring to the party, but McSweeney and Mead Corp could bring to the party.

And then Don Wilson had been doing some consulting, I think he was with Arthur D. Little, and he took over the Presidency once they decided to get into this and the acquisition was consummated. Wilson came onboard, and I assume, I don't know if he originally touched base with McSweeney or originally touched base with Gorog or Hal, but he came on in a contractual consultancy mode to be President for a certain startup phase and to staff it. And one of the first, if not <u>the</u> first person he brought on was Jerry Rubin who became his, then VP. And one of the next people he brought on, or Rubin brought on... then Bob Bennett was brought on by Rubin and all of the sudden you had the nucleus of Mead Data Central's management. And when Wilson's contract, and I only recently came to understand that he was under contract as I assume he

was under contract, then Jerry took the top spot, Bob took the 2nd spot, then Ed Gotsman and Carl Fisher came on and you had the group.

CB: Wasn't A.D. Little also involved in a consulting study for the feasibility of OBAR?

MB: Yes, I think they were. And I think that is how Don got in, and got to know them.

CB: The contract may have been with A.D. Little to supply his services for a year?

MB: It could have been. This is where I'm not sure. I'm not sure if it was personal. I don't know if he ever went back to ADL. So he might of resigned from ADL. I'm speculating here. I don't know it all.

CB: Well I'd heard that maybe there may be another fable that the reason for the acquisition was that Mead as a major paper company was saying, "Well, do computer companies use paper? Yes. How much do they use? I don't know. Maybe we should buy one and find out."

MB: Now that makes as much sense as my fable. Now the person who could give you all of this, one of the folks would be a Jerry Rubin, a Bob Bennett or even a Don Wilson. Wilson is right here in Westchester.

CB: OK. Let me pursue that point. With regard to early,... let me skip around a bit back to Infodata Systems and the Inquire package. To pick up a loose thread that I've got. It is my understanding that the roots of these folks go back to Xerox, and that these (people) were programmers at Xerox

MB: Absolutely.

CB: Who had developed search software...

MB: Correct.

CB: Which was used in two places. It was used cooperatively with UMI for the Datrix search service...

MB: That I'm not sure.

CB: And then also with Pauline Atherton (Cochrane) and Bob Freeman for Audacious, another trial online search system for, I think UDC Classification (study) or some other...

MB: I'm not sure of that, but that seems to ring a bell. I mean, I'm talking about a deep recess here. That seems to ring a

bell. And of course, they were up in Rochester and so I think that makes sense. And I think I remember hearing them talking about Bob Freeman, but not Pauline by name. But they may have, but I hadn't met Pauline at that point yet, so the name might not have registered, it might have past by. But they were Xerox folks in Rochester, and then they decided that there was maybe a business opportunity here and they went, and they went off on their own, and they took it.

CB: Was the software then that they were pushing, the Inquire package,... was it selling as a batch service or an online service?

MB: It was always both. Back then it was not yet a full blown DBMS, Charlie, as you would think of as an IMS or an IDMS as a DBMS or even back then Total, which was a big seller. It was closer to Informatics Mark IV product, but a step above Mark IV. I would call it a file manager as opposed to a full blown DBMS.

It went both batch and online. It's online was not quick and superduper. And it wasn't really handling text then. Text was still relatively new. The main applications they built their business on was the pharmaceutical drug information,... toxicity studies, carcinogenic studies, etc. And they were honored by the DIA, the Drug Information Association, as a product-of-the-year or something. Because maybe a dozen if not two dozen of the major drug firms, both U.S. and Europe, were using Inquire. And what they were doing was LD50 studies and other assorted things which I finally understood a little bit about when I went to work for Informatics and did Toxline.

CB: What was the first of the packages that you sold of the Inquire software that you saw...

MB: I was not there when that happened. They got more into the textual and bibliographic world, they enhanced their text retrieval capability significantly after I was gone. When I was there the push was to make it a more of a full-scale DBMS. They saw their competition as Total, which at one point was the DBMS. They saw their competition as IDMS, System 2000, Adabase, and IMS of course. So they started increasing their DBMS capabilities,... they really didn't have much success there. Their file structure didn't lend itself, it had certain advantages and certain disadvantages. I think the disadvantages outweighed true DBMS type of systems.

And then they started realizing that people were using their data to retrieve text. It was almost like the market had put applications on it and all of a sudden they said, and I'm not sure of this exactly, but, "Wow, there is a lot of text retrieval going on" and they recognized that as an

application. So they started changing the architectural direction of the software.

CB: Does the name Noah Prywes mean anything with regard to the Inquire software?

MB: Doesn't ring a bell with me.

CB: I've got a note somewhere that the early Inquire software was based on the threaded lists and other work done...

MB: It is, yes, the software is based on threaded list. It is not an inverted file structure, which has pluses and minuses. And frankly as I understand it, as the databases get bigger, the threaded list concept becomes less efficient, where inverted files the database gets bigger, the inverted concept becomes relatively more efficient. And I gather that, I don't know if Inquire could run DIALOG type of stuff or be a BASIS type of replacement. And so they are multi-faceted in what they do, but they are definitely threaded lists.

CB: Well Inquire is of interest to me because of the early applications with Bob Freeman and with the Datrix (system) because it was in fact used as an online search capability for bibliographic material, and I wanted to go back to the geneology of that.

MB: I do remember that (in) the original online applications that we did, you were basically submitting a batch-type of job. In other words, you would write out an entire Inquire command statement. It would be submitted. It was more of an online batch than a interactive system. Because if you didn't like the result, you had to basically rebuild it and you resubmit the job.

TB: What kind of turnaround time?

MB: Well it depended on the environment you were running, Trudi. They had a service bureau operation then that ran their software for them for their own development and demonstration. I think it was at Boeing Computer Services or one of the big shops in the Washington area. And if you got,... and it was not a busy day, and you got a reasonable shot at the machine, you know they were running 158's and 168's back then, you could get some turnaround. The average thing if I remember,... you'd build the search, which was supposedly English but it sure wasn't. It was much more arcane than even DIALOG and...

TB: Why would you call it online at all?

MB: Because that's the way they were selling it. And if it was internal,... if you had mounted it at a company internally, and it was 3270 hooked up, and they assigned a big enough region to it, you could get reasonable response times.

CB: As a very fast batch.

MB: As probably as a fast batch. Now I may be misspeaking here. I don't know,... I think it was a fast batch but who knows, maybe it was more truly interactive than I'm giving it credit for. But we're talking about 1974-5, that timeframe. I still think it was fast batch. But I'm sure there are one or two people who would love to speak to you about it. Harry Capowitz(Sp?) and Bob Shrier(Sp?) are part of the founding team, and they would be happy to speak to you about it.

CB: But it didn't have set numbers or recursive capability to let you simply...

MB: No, but you know what is interesting about that? When I came onboard, I came onboard after having left Informatics. And Informatics was using the RECON software, so at that point it was still very close in favor of DIALOG. And, one of the things that they wanted that I got involved in as a salesperson was they wrote macros to ape RECON, to build sets, hold sets and allow you to do some Boolean operations against that.

So they actually built some macros and made some things look somewhat like RECON. They felt that might help them in the marketing and getting out into the marketplace. So, they did have the flexibility in the software to build some macros and they were able to make it look very much like RECON.

CB: When you first started with MEAD, what other online search systems do you recall seeing at the time?

MB: To my knowledge, commercially, there were only two, ORBIT and DIALOG. It was Roger (Summit) and Carlos (Cuadra), that was it.

CB: How about non-commercial services? Who do you remember seeing at shows or exhibits or otherwise?

MB: Didn't go to an awful many shows back then. I don't even know what MEDLARS and MEDLINE (NLM) were up to. I was young and wet behind the ears and I'm not sure (that) if I stumbled on something I would have recognized what I was stumbling upon. I really can't say that much registered in my mind at that point other than them. But I have to assume that something was going on at MEDLINE at that point. There was some version

of Elhill's software alive and kicking. Where it was, I wasn't plugged into.

CB: Let's go back to Informatics. Now as I recall (from) some prior discussions, we talked about the BER database (Biological Effects of Radiation) and POPLINE and TOXLINE and HEAP...

MB: And some EPA files. Some of which still exist. The OHMTADS file.

CB: Where does it still exist?

MB: CIS still runs it. That's my very first database. That is my oldest child.

CB: And what does that stand for?

MB: OHMTADS stood for Oil and Hazardous Materials Technical Analysis and Data Service. I'm sure about what OHM stands for I'm not sure about what TAD stands for. There were two main contracts that kept this Informatics Division alive. And this Division was originally started up by Bob Harcharik. If you want to get some real oldtime names in there, Howard Coleman and Larry Stevens.

TB: Do you know how to spell these names.

CB: No.

MB: H a r c h a r i k. He's the President of MCI Mail now. Howard Coleman has since passed away. He passed away when I was at Informatics and was the beginning of my leaving there, his passing away. And Larry Stevens did a lot of the initial work at the Dept. of Justice on JURIS.

CB: Was he also associated with Tymnet or Telenet?

MB: Yes. Harcharik and Stevens, I think, went to Tymnet together. And I lost track of Stevens, and I know Harcharik is Pres. of MCI Mail or was the last time I was aware. Anyway they started up this Division at Informatics. They called it RECON IV to be in tune with MARK IV.

CB: I was going to ask the reason for that name.

MB: RECON IV and MARK IV because MARK IV, of course, was their big file management seller which is what Walt Bauers started the business on.

CB: OK, the Informatics MARK IV.

MB: Informatics MARK IV, thus RECON IV and STIMS IV.

TB: It wasn't any different from RECON?

MB: No. They started making some modifications, Trudi, just like DIALOG started making modifications. But it was vanilla RECON bought from the University of Georgia, it was bought from Cosmic.

CB: Well, in fact, it would have been probably the fourth installation of the DIALOG RECON software.

MB: Maybe that was it.

CB: Because it was ESA and NASA and DIALOG and now maybe this would have been...

MB: It could have been. I never thought of that but it well could have been that. I thought it was MARK IV. It could have been RECON IV. It could have been both, or I guess it could have been neither, which I'm not sure of.

CB: Tell me the story about how they, well I'm interrupting your point about the two...

MB: No, but I forgot what you had asked. You had started me down a track and I forgot where I was.

CB: Two files that kept...

MB: Yeah, two things that kept it (the Division) alive. The two main contracts were... TOXLINE contract which they had for sometime. Because the Medline machine was not big enough to run TOXLINE but it was understood that TOXLINE was there on an intern basis... That eventually it was going to be absorbed back into the NLM.

And then they won the EPA contract which MEAD had. See, I was working for MEAD in the non-legal side of the house, or the "illegal" side of the house as it was always called then. And it was very much a poor sister, a poor relation, to the OBAR project. The thing that kept the MEAD non-legal activities going was the contract worth about 1/4 of a million dollars a year or so, that is what it got up to, to the Environmental Protection Agency. And that is when the EPA built some of its first databases.

Also the BER project was at MEAD. We had a contract with the National Institute of Neurological Disease and Stroke. We had the Epilepsy database at MEAD.

CB: Was that the file that was later provided by Excerpta?

MB: I think so. I think that is the son of, or the grandfather of.

CB: Why was it so difficult to get support for that side of MEAD? It just sounds like a lot of resources were thrown into the Legal Division...

MB: Two or three reasons. The first reason was, I think the legal thing was the market that was looked at as the way to go, and had caught Gorog's enthusiasm, etc. etc. Secondly, when Mead Data Central came into being, all the people who were brought onboard were attorneys. They got the best and brightest. Jerry Rubin, Bob Bennett, etc. Their goal and charter was to build OBAR and make it Lexis. And they did.

We were sort of left to struggle along. On the illegal side of the house, we had no real champion. And I guess I was the champion but I was much too young and inexperienced to amount to much. So what I was doing was sort of floundering along in my own youthful way.

The other thing was... it was government contract in even by a government contract... there was no leverage in that in the long term.

CB: Why didn't Mead put resources into that area instead of requiring a pay-as-you-go?

MB: I think Mead could have been, I believe, this is one man's opinion, I believe that their software was better at that point even at the beginning than anything that Carlos or Roger were doing. And if they had a Roger or Carlos type of visionary on the illegal side, just as they had Rubin and Bennett on the legal side, they could have wrapped everything up from day one. I think they could have had a LEXIS/NEXIS/DIALOG/ORBIT empire and covered the whole waterfront. Now maybe no one organization could have done that. They couldn't have developed two pieces of software, one to handle the bibliographic needs and one to handle the fulltext needs. But I do believe they had superior technical product at that point. And a lot of that goes to Dick Geiring. Dick Geiring was a genius technically. I don't know if Dick was the best businessman and if he fit in that well and make sure that tape doesn't get to the wrong people.

CB: Any time you want (with regard to turning off the tape recorder).

MB: No. And Dick was brilliant.

(TAPE INTERRUPTION AT THIS POINT)

CB: I can understand that.

(TAPE INTERRUPTION AT THIS POINT)

MB: We had CCI, Computer Communications Inc., and we used to...

(END OF TRUDI TAPE 1, SIDE 1)

carry these big old machines around. But we had four-color display. We were showing field names in green, data in blue, KWIC terms in yellow and something else in red. And we were also carrying back in the old Mead Data Central days,...

(START OF TRUDI TAPE 1, SIDE 2)

this was part of the missionary work,... we had a model 25 teletype machine, a 110 baud external modem, of course, a rabbit ear modem, and we had that mounted on a big piece of plywood which we put in the back of a station wagon. And we used to take that down with the help of a driver, and we would have to carry it up and put it up on a desk in a law firm in downtown DC to,... 'cause I was involved in that even though I wasn't fully working there,... to show OBAR.

CB: That is what you needed to do an online demonstration?

MB: Yes, at 110 baud. And, we had something we had to do behind the scenes. We had to take people off,... we had two computer centers, there was a 360 model 50 in Dayton which ran OBAR, all the data cells, and we had a 360-40 backup machine in Arlington with data cells,... one or two disks,... but mostly data cells. All of the linear file was out on data cell, that's for sure, maybe some of the inverted file was in on disk. And we used to kick people off, stop programming and take everything we possibly could out of the foreground if not the background,... I'm not sure they had foregrounds and backgrounds back then,... and ran almost single-user systems to get meaningful... reasonable... response times. We used to plot and scheme like you wouldn't believe, to give a demonstration at a major law firm.

CB: And this, of course, is "representative service".

MB: Of course this is "representative service". Would we mislead you Mr. Customer? No.

CB: Well that is a great story.

MB: That is one of the anecdotal-type stories.

TB: And you don't mind that being published?

MB: Oh no. Not at all. Not at all.

CB: Because you really don't get any appreciation today when you carry around a portable terminal...

MB: You just have a laptop. This thing, this slab, how big is this table, what is this?

CB: 3' x 2'.

MB: This slab was easily 3' x 2' with a Model 25, we had the modem we put under our arm. It was 110 baud and we would run out of paper, we would run out of everything, it was unbelievable. This is what we did.

CB: The teletype...

MB: Model 25 Teletype Corporation, Skokie, IL.

CB: Like a paper towel roller. One continuous non-perforated, non-tractor feed paper.

MB: Exactly, exactly, exactly. The other story I tell was in my Mead days. They came out with the first portable terminal, Computer Transceiver Systems, Inc., the Execuports. These were big 25 lb. in black boxes that you carried, but they were quite a step up! They had a built-in rabbit ears on the side. I think they had gotten up to 300 baud by then. And we used to carry those everywhere. You couldn't check them in the belly of a plane or anything. You had to carry them.

CB: Why couldn't you check them? Because they might be broken?

MB: Oh, very fragile. At that point we had yet to think of building the special silver cases with the molded stuff. So you carried them. I remember one day I flew from Washington to Dayton carrying the machine, then I flew from Dayton to Chicago, and I had to change planes in Chicago and I walked from one end of O'Hare to the other literally, and changed airlines, not just planes. And by the time I got to where I was going that evening, I don't remember where I was going, my arm was so sore I couldn't lift it. I wasn't able to play basketball or tennis for about two weeks. I had just stretched my right arm something fierce. But that was a step up; you could at least carry that one on a plane. You couldn't take the old model 25 TTY and do that. It was real missionary stuff.

CB: There are hairy stories also of early trainers getting chronic tendinitis because of carrying the heavy terminals out to the side so it didn't snag on their stockings or suits or whatever.

MB: Absolutely, absolutely. Look, when the model 745 came out,... see the model 725, the TI-725, competed with this Execuport machine, well when TI came out with the 745, that is when TI just blew them away. Because they had had the size and the weight and all of a sudden you could start seeing those in the airports. I could see where at an earlier point, to effectively demonstrate the older stuff in our industry, as sexist as it might be, you had to be a man. You were talking about huge bulk. It was unbelievable.

CB: You couldn't ship through, you had to physically carry it.

MB: Yeah, you had to physically carry it for long distances. I could see where the extra strength was necessary. Sheer bulk. But I liked that old 725 story, those were fun.

CB: What kinds of problems did you have in communication lines?

MB: Always going down. Everything was direct dial. Surely our demos were direct dial. I think Tymnet was just in existence at that point, but I'm foggy on that. But you were always getting noise on the line.

CB: How about doing demos from hotels or conferences or...

MB: Terrible, terrible. I remember we used to have to go and tell the operator, "Please place this call and immediately key off the line. Get off of the line, I'm going to be talking on a computer." Well, they just didn't understand and many times you would hear them come back in and of course the line would be dropped. And you would call and they would say, "Well sir, I didn't see something on the line." ...or "The line looked busy for so long so I keyed in to check on you. OK?" And you would have to go through it over and over again.

CB: And, "I heard these strange noises on the line and I thought something was wrong."

MB: Yes. And of course, (if) they would key it in just quickly, you might get away with a few garbage characters, but they stayed on there... they were introducing the Break Character. Blew you off. So telecommunications were very iffy and spotty. It was just a zoo.

TB: Did you develop any packaged demonstrations to counteract that?

MB: No, there was nothing really to do in a package sense then, Trudi. I mean, there was no PC concept. You went through certain demos maybe, which you had in your own mind because they were familiar, or you knew customers liked them. But you still had to do them online. Now you might have a paper-based

demonstration where you would show them, "If we did this, you would see that." But that was pretty weak, so you didn't do much of that. You really struggled through, and you lost a lot of people, and you ended up going back to a lot of offices, and you cursed a lot. And that is why you tried to make sure that you were using a direct outside line and that your machine was free.

And you hoped that the data cell didn't pull a strip and strip it. That was the major problem. A data cell is a Rube Goldberg type of device. And what it is is broken into 10 drums within the cell, and within each cell you had strips of Mylar literally hanging down. It was terribly electromechanical with an emphasis on mechanical. It would spin around under an arm to the right drum, it would select the right strip, it would pull the strip out and wrap it around the drum, because back then you didn't have disks--you had drums. And it would make a drum. A data cell, not a good analogy, but somewhat of a good analogy, a data cell was to a large drum what a Bernulli box is today to a hard disk. You make it on the fly if you know what I'm saying. And of course you were wrapping this Mylar at high speeds and you would constantly shred this Mylar. Or the drive would get stuck or the arm would stick it in the wrong place and the whole thing would bomb out. You were constantly,... DASDI (Direct Access Storage Devices) was a pain. And you went down more for lack of data cell reliability than anything else. I would that was far and away the biggest problem. Telecommunications were small in comparison, and <u>it</u> was no bargain.

CB: It (Data Cell) was a problem with DIALOG also. And we were so pleased to finally get rid of the data cell devices and replace them with disks because of the problems.

TB: Do you remember a year on that?

MB: Mead had its last data cells, I believe, in like '72 and they were still on (IBM) 360 hardware of course. The 370 was yet to come out.

CB: They should have shipped those (Data Cells) to the Smithsonian because they are really interesting relics.

MB: Yeah, those truly are. I would think if there is a hardware Hall of Fame, that should be there.

CB: It was electrical/mechanical/pneumatic.

MB: That's right, it was pneumatic because it had to suck the Mylar down till it would fit tight on the drum so the head could come down and read.

CB: It had all the kinds of problems,... things that could go wrong.

MB: Yeah, it was a zoo. It was fun to watch them though. You go in, you give someone a tour of your computer room. Wow.

CB: That was the only thing that was good for field trips because there was a lot of whiz bang.

MB: Yes, yes. The common computers are dull. Everything is locked up and out of sight.

CB: Let me go back to Informatics for a wee bit and lets talk about the...

MB: I know I was telling you about the contracts that kept Informatics alive. Primarily the Environ contract when Mead obviously was not supporting the illegal side of the house, when the EPA contract came up for a bid, Informatics won it. And that's how I ended up going up to Informatics. The EPA put in a good word, said hey, take this guy along and that's how I met Howard Coleman at Informatics.

But the main contracts there were TOXLINE, and ENVIRON, from a dollar standpoint, and they were also running,... we developed POPLINE with Helen Colby at George Washington University. She, and this is a good anecdote, Helen took POPLINE to Singapore to a World Population Conference of some sort, and I gave her my home number.

CB: When was this?

MB: '74. And we had built POPLINE and she went to demonstrate it internationally, and of course it was about 11 hours difference, but I said, if you have any questions, call me. And sure enough, she routed me out of bed one night at like 1:00 in the morning. She was demonstrating and she was having a problem and I made a call or did something and helped her with a search strategy and she got it done. As a matter of fact, this (object) is from Singapore. This is monkeywood from Singapore which Helen gave me.

CB: As thanks for that?

MB: Yeah.

CB: Interesting.

MB: Anyway, but that was the first international use or demonstration that I was personally involved with or aware of in '74 from Singapore. And we were running,... Informatics was running then at...

TB: Was it live then?

MB: It was live and it was running on the Comnet machine. Comnet which is a company in DC, a service bureau in DC, Computer Network Corp., and Comnet was running RECON IV Informatics and we kept it up for Helen.

TB: What was the communications?

MB: Most of it was direct dial.

CB: What kind of terminal equipment was she using for that demo? Was that teletype?

MB: I'm sure it was some 300 baud TTY compatible, but my guess is by then I think she was able to use maybe (TI) 725, which was a 25 lb. device but it was a step up from...

CB: Still better than the conventional telex machine?

MB: Oh yes, yes. No, it wasn't telex. I think she was direct-dialing TTY. I don't think she was telexing.

CB: And the company you mentioned?

MB: COMNET which was short for Computer Network.

CB: It was the service bureau for Informatics until they were bought by Equitable Life Insurance and they used the inhouse service bureau at Equitable.

MB: That sounds right to me.

CB: OK. Let me go over the Informatics and the Excerpta Medica file. How did that come about,... because here is another opportunity for Informatics to be in the commercial public online service with a major medical file. So what was the story from that end? Did Informatics say, "We ought to be in the online business, let's look for files", or did Elsevier come to Informatics and say, "We want to do something?" Where was the driving force behind this deal?

MB: Well, I don't remember a thing about it. I just don't remember a thing about Elsevier. I don't know if it was there during my time stint, or if I just didn't get involved, or just forgot about it. But I can make a supposition--Informatics, basically was a contract shop. They sold time and materials to the government and they sold MARK IV as a product. They wanted contracts. And so my guess is that they were looking, I don't know how it came about, but I never sensed a DIALOG mindset to develop a publicly and commercially available service. But they were satisfying customers on a

contract basis always for some organization that was picking up the freight.

CB: Like Toxline.

MB: Like Toxline or Environ from the EPA.

CB: So they never consciously planned to be a public online service.

MB: Not to my knowledge. I'm pretty sure they never did. But I may be wrong on that. I'm not 100% sure but I'm quite sure.

CB: So you can't really say this was an online service that failed...

MB: No, it was not at all. It was a service that succeeded within its scope.

CB: Yes, it met it's objectives.

MB: It met it's objectives. Because the whole mindset of the Rockville Informatics organization was to sell T&M (Time & Materials) Information Services to the government. Like the NASA/STIF (Scientific & Technical Information Facility). They ran the facility for 15 years! They ran the facility as long as Disclosure ran the SEC stuff, and eventually they gave it to someone else. But they were great government information technology systems builder-type people. They wrote great RFP's or proposals.

TB: There was an article by Henry Kissman in which he talks about...

MB: Yes, I remember Henry. He was responsible for all of Toxline and all that stuff.

TB: He talks about the point in time when TOXLINE was going back to NLM, and he said that one of the reasons was that they could do it for $15 as opposed to $45 that Informatics was charging. Somewhere else in the article he said that was basically a partially subsidized cost recovery price--that $45.

MB: That is true, that is true. It was partially subsidized. Because they maintained the database and paid for some of the,... they paid for certain parts, Trudi, like database maintenance software development and enhancement, etc. So yes, there was an enhancement plus the per connect hour charge.

TB: I was just curious as to whether that $45 just represented that aspect of the cost recovery that they had to recover or if it was a ...

MB: Oh, I'm sure it included some good G&A and profit in there. But exactly how much, etc., I don't know.

TB: You don't know how they arrived at that figure?

MB: No. TOXLINE was running when I came there....

(END OF CB'S TAPE 1 SIDE 1)

MB: ...because I trained a lot of them. We developed a TOXLINE training session which is one of the first things I did. We developed an ENVIRON training session. These people were not necessarily endusers as we would define them today. No, they weren't necessarily MLS types either because that whole schooling and train of thought was not the way it's taught today either. Some librarians, some researcher types. But I wouldn't consider them an enduser or direct consumer of the information as a MEDIS (Mead) was attempting to do, or as (BRS) COLLEAGUE is attempting to do, or the (DIALOG) Medical Connection would attempt to do.

TB: So even if it were a researcher, where maybe one researcher was providing a service...

MB: Yeah, yeah. There were not tons of people. We'd get one or two people from Procter and Gamble, and one or two people from Squibb, and from Upjohn, Abbott Laboratories. There was a gentleman from Abbott Laboratories who was sort of a real proponent of this. I can picture him but I can't... I remember we got up to see him, we taught him and some of his staff,... I cannot remember his name.

CB: Are some of these early searchers still around?

MB: I would think they are.

CB: That you remember the names.

MB: Well the guy from Abbott Labs, I'm struggling with his name, and I cannot come up with it. I do remember there was a woman from Procter and Gamble who,... her maiden name was Christine Colbrook. I know she has since gotten married and I know she stopped searching TOXLINE a lot because she was on her way to Cleveland to learn about Predicasts. She was not a librarian but I think she was in support of a product in P&G and everything is Product Management-driven there. And Chris was telling me that she was using Predicasts a lot. And I know

she was one of Predicasts' first big online users. P&G is probably still a huge Predicast user.

CB: Did Mead have training sessions in those days?

MB: Yes. And they also were the first to use videotape. They videotaped Bob Bennett and Jerry Rubin, and I even did one but I got edited out.

CB: In how to search?

MB: In how to search. They had 15-minute things. You go in, you run a videotape, then they put you onto the terminals. They had the first training rooms. Where they had a bunch of standard Lexis terminals, UBIQ (terminals) I don't think existed at that point. And they would have a rep in there and they would train you.

CB: This would be in Dayton?

MB: No. They had training offices way way back in the '70's. The one at Farragut Square which is where I was hanging out or getting some training back then.

CB: So it would have been before mid-73 anyway.

MB: No, no, no. I don't think the training sessions were in place until Lexis was truly rolled out. And Lexis,... grandfather of Lexis is OBAR,... of today's Lexis. Father of Lexis really didn't come out until about '73. When you had a customized keyboard, function key concept, something that said KWIC, sign-on buttons sign-off buttons, autodial,... they were the first autodialers I ever saw.

CB: I'm trying to pin down the date when there were the first formal training rooms and training sessions.

MB: I will venture a guess that it was '74 or '75. Bob Bennett could confirm.

CB: Do you remember any other search services doing that at that time?

MB: I really hadn't been exposed yet that much to DIALOG. Had never gone through... We did training at Informatics in '74. I know that. But we did it in our conference room. We wheeled a terminal in, or something. And it was very ad hoc. But we did it.

CB: But the idea of a dedicated training facility...

MB: No, the first I ever saw, by years, was Mead. And Lexis had their training facility here in New York in the Pan Am building, and they had one in their building on K Street at Farragut Square in DC. And they basically had them in all their offices. That was part of their concept all along. So I think if you opened an office in Lexis, you had a room which was a training room.

CB: And the use of the training tapes, the videotapes, that may have been a first.

MB: It was to my knowledge. And there was like 4 modules. And Rubin would give the introduction. And it was very good. It was filmed at NBC's studios, I think, here in Rockefeller Center. They actually moved graphics, they actually took a page of law and they showed how they took a sentence or so out of that and then they showed how you would build the inverted file. They would cross out the stop words and then they would move the letters and build the inverted index. It was pretty good stuff and I think it was pretty far ahead of its time. And that way the basic instruction was delivered by the videotape and then the instructor would help people through in the practical application.

CB: Do you remember a date on that? It was while you were there, so it is at least...

MB: No, no, no. This was after I was gone. This was after I had left. I would say it was 75-ish, Charlie.

TB: Do those tapes still exist somewhere?

MB: I would think so. I would be surprised if they ditched them. I would think if nothing else, Bob Bennett would have the tape just because he would want his own tape. I know he and Jerry did modules, I don't know who else did modules.

CB: I'm almost embarrassed to say that 12 years later DIALOG is featuring at its booth downstairs, video training tapes. Or several years past DOE RECON and many years past others. Is that on tape?

MB: We didn't mean it, Roger.

CB: That's interesting.

MB: They were training a lot more people back then, Charlie. Particularly the Summer interns. One of the real success stories of Lexis, I believe, is that back in those mid-70's they realized that they were going to train attorneys left and right. And the summer interns would come in from law school and they would run them through, and that was their peak

training time. They trained thousands of people in each office every summer but those were the people who went out in the later 70's and early 80's and made Lexis. I also, anecdotally,... now this is something that I did do when I was at Mead... George Washington University had one of the first courses in Automated Legal Retrieval, or they did one class on it. And a law school professor by the name of George Custos(Sp?), or something like that, I remember addressing his first year law school on the techniques of legal retrieval, online legal retrieval fulltext, case, etc. etc.

CB: While you were at Mead.

MB: While I was at Mead, so that had to be 72-73.

TB: It wasn't George Condos was it?

MB: No, George Condos was JURIS. No I'm thinking of somebody else at George Washington University. George Condos may remember that guy's name because George was there and George was an old-timer in all of this too. And of course you have all of JURIS going on. And he might remember the name of this guy at George Washington University. But trying to get back to old users, I'm struggling.

CB: Another loose end on Informatics. The software that they bought from Zorba the Greek, the DIALOG RECON software, are they still using that. Did that form the basis of their litigation support.

MB: Absolutely. I can tell you, I know the litigation support system Genesis. I did it. One of the contracts that was sold by a group other than what we call ourselves, Database Services Division, was to the PRG, the Petroleum Research Group. It was the big eight oil companies,... it was the seven sisters,... they called themselves. The seven sister oil companies, the big seven oil companies, in consortium to share certain things that they could without violating anti-trust. One of the things that they did was look at litigation support-type of systems. Their's and other assorted things.

I received a call from ARCO, from Atlantic Richfield. They were having a Matt (?) Levoy, George Levoy,... I'm missing names... anyway, I got a call from someone at ARCO in LA that they had heard about this from the PRG which was based in DC, we were doing data conversion for them, and then they recognized that they could put some of this online or something. It was online maybe in a private file mode or something like that. And they said that they wanted a demo to their General Counsel. And I literally picked up an Execuport and was on an 8:00 flight the next morning. I had to connect

in Chicago to get to LA for a 2:00 demonstration in LA at ARCO headquarters. And we demonstrated. I demonstrated the service, and they liked it. And ARCO became the first litigation support customer.

And then others started, MOBIL and EXXON, I know, were not far behind. There were a couple of reasons I left Informatics, but one of them was, the guy who replaced Howard Coleman who, anyway, besides being an absolute crook, for some reason did not want me to be involved in that. And yet I saw that as, "Hey, this is a new and interesting area." And so others got involved in that, and I didn't, and I soon was leaving Informatics anyway and was on my way to Infodata. But Informatics, that was their first contract and that was the first demonstration, and that led to a contract which led to more which led to other 7-sister companies looking at it.

CB: Which turned out to be a major line of business.

MB: Major line of business. And I think that if you looked at it, my guess is everything else is dead. I don't know. But that is the major line of business that came out of that whole RECON IV database services so that would be son of the activity that we started or were involved in back in '73, '74, '75 timeframe.

CB: And that software has continued in place since then.

MB: I assume so, I don't know. I have been so out of touch with that I don't know.

CB: To kind of branch off in a different mode with regard to litigation support, I'd heard, maybe it was fable, that the STAIRS origins goes back to early litigation support within IBM. What do you know of that background?

MB: Well, I don't know a ton about it. But as I understand it, it is true. It was in the early 70's somewhere, and they were being sued by someone, and they developed STAIRS somewhere in Westchester or one of their offices not too far from here to handle their litigation support stuff. And then they made it a programmed product. I don't know what the suit was. I don't know the exact genesis of it, but I'm pretty sure that, I mean, I could add confirmation to the fable that it was in support of some litigation support that they needed.

CB: Could it be CDC (Control Data Corp)?

MB: You know, it could have been the SBC-CDC thing. Yeah, it could have been. That would be the right timeframe also, because we are talking about '73 or so, when CDC was sueing and SBC (Service Bureau Corp.) broke off and became part of

CDC. That would make a lot of sense. My guess is you are asking me leading questions in which you have some idea and it seems to jive.

CB: Yeah, well I'm looking for other names as well, whether there is any tie-in with IBM DOC PROC or any other software..

MB: Yeah, I don't know that much about DOC PROC other than I know it exists.

CB: I'm having a very difficult time finding origin of STAIRS. Finding names.

MB: I would suggest that you get in touch with Ron Quake or Jan Egland, because of the BRS connection.

CB: Yes, I know they picked up,... they used STAIRS.

MB: Yes, but my guess is that they have some of that history in their heads.

CB: OK.

TB: They were using it at SUNY-BCN.

MB: They were using it for some time before BRS, and BRS I remember because I was at DIALOG. They opened their doors in Jan. of '77 and they were talking about themselves in '76. And BCN was using it, so we are back now to '74 at least. I would have to think that Jan (Egland) or Ron (Quake) would know about it or Kay Durkin.

CB: Yes, I'll pursue those. But I had hoped also to try to pursue leads within IBM.

MB: There is a guy at IBM, Scott Casenmier (Kastenmeir?) or Castenmier, who is still a large BRS customer. IBM was one of the first companies to have a direct line into the BRS mainframe, and I think they have had that for years.

(END OF TRUDI TAPE)

There is a strong chance that they have a line to DIALOG too, but ...

CB: They do.

MB: I know that for a while they were the only one with a line into BRS, and Scott Casenmier or Castenmier or something like that and I'm sure anyone at BRS could tell you what his proper name is, and I know he is somewhere up in Westchester, I still think he heads up the IBM Technical Information Center. And

he would know all the history of STAIRS. If you need info on that, I'm sure that Jane Kelly could tell you his name and phone number. Almost anyone at BRS now could do that. Marty Conn, Debbie Hull.

CB: Let's talk about early marketing days of online. There was DIALOG,... and whatever. What were some of the kinds of problems in convincing people that they ought to go online? Who were you marketing to, and what was the approach?

MB: The earliest marketing that I was doing was, of course, with Mead and was obviously, you had just the physical problems of carrying in equipment. People had not seen any of this. It was so abstract. It made no sense at all. They couldn't picture it.

The government marketplace was a little more receptive than the legal marketplace. And people,... there was a young Ph.D. who headed up,... Dave Stephan I think his name was, who was at the EPA who headed up their Research and Development Division, and he was the guy who funded the work that EPA and MEAD were doing. And he liked to experiment. And George,... Lebanese name,... on OHMTADS,... George somebody, he was interested. And they had some money and they were willing to throw it at it and try.

CB: These were the contract deals?

MB: These were the contract deals.

CB: And how about just general service?

MB: Commercial? Well the lawyers were the first commercial people we tried to sell the OBAR concept to. And of course, New York State Law was the second state that was put up.

CB: What was that like? I mean, did you ring doorbells?

MB: We rang doorbells. We usually had no trouble in getting an audience because Jerry Rubin and Bob Bennett and all were very persuasive and they were very credible individuals. But people would come by and the machine would go down, the telecommunications would bomb out. So you had a real credibility problem.

You also didn't have back then a critical mass of law. At that point you had Ohio law, big deal. And then you had New York law. Well that became a big deal but it was still some time in the coming. And back then, the marketing had another twist to it, Charlie, and that was, all the law, all of the case law, was being brought on in a partnering arrangement with the State Bar. So they had to sell the New York State Bar on

doing this. That was the way they got the necessary glow and gloss to it to make it look OK. And it was some time before they could move beyond that.

But I think it was just the physical concerns, the hardware, etc., and that is why they developed their own terminal. What would today be the old standard standup terminal. Because they knew that the old TTY's wouldn't make it. And they built in reliability. I think Rubin invented, etc. et al,... did a great job..., because they recognized what was necessary. It had to be lawyerese and their jargon. It had to be as reliable as could be done back that day, and they worked hard to do it.

And they told me that back when they had a (IBM) 155, they had the single most reliable large mainframe system running that IBM ran anywhere in the nation. People used to bring tours through them. Now they are all AMDAHL stuff. But I mean, they made a real effort in that respect. But the lawyers had trouble with it. In my Informatics days, we were selling very niche-oriented, and it was contract-oriented, so it was different. When I went to work for DIALOG in '76, terminals were better, Tymnet existed. A lot of people were scared of it. I remember an anecdote. I was training at the University of Texas in Dallas. I went down there, was being observed by Tom Crawford.

CB: As a trainee.

MB: I was a trainee trainer. I had just started for DIALOG and it was in my 10-weeks out in California. And I went down there to train. We were training somebody, and Tom Crawford was not one of my favorite people either, but he didn't think highly of me I guess. Was training someone, an older gentlemen who was not a professional librarian, but I guess would be a para-professional, and did a number of things in the reference area and the research area. He got to the keyboard, he was the last one. That was back in the days when you trained 12 people only. We usually had like 3 terminals if we were lucky. He got to the keyboard and he locked up. He physically, his entire body locked up. He was petrified. He couldn't move. He put his hands on the keys and he couldn't move. He was like in shock. And I realized what was going on and I just coaxed him...

TB: So it was a physical reaction.

MB: He physically locked up. Physical reaction. He was petrified and he just didn't move..., he triggered and he just went stiff. I realized what was happening, so what I did is I looked at my watch and said, "Whoa, it's lunch time." This was the mornings first hands on. I said, "It's lunch time."

and then I said, "Whoa, the computer has just gone down," or something and I was able to back him out gracefully without saying, "Hey, why are you there sitting like a stiff?" And he loosened up and we left for lunch and he didn't come back in the afternoon, but I just remember that clearly. I just have a picture of him.

CB: How old was he?

MB: I would say that he was in his 50's.

CB: Did you see that pattern...

MB: At the beginning? Sure, we did see that pattern, you still see it today. I can take you down to two senior executives at the McGraw Hill Publications company. They both have XTs on their desks. They have our Express product which shows quotes and some other broadcast information. But that's it. They have never used it for anything else. One of them has, the other really hasn't. I have installed my mutual funds scoreboard product in Business Week on it. They have both played with it a little because it is so simple to use. They never do any of the other stuff. It's not that they are incapable or scared, there is a big difference here. I once was asking my boss, I said, "Paul why don't you use the other things that are on your menu, on your hard disk menu?" And he says, "I'll ask others to do that stuff, I don't need to do that stuff."

CB: "I don't want to make the investment in time..."

MB: "...in time to use it, I have other things to do." And I can understand that. I would still say that age is a factor, but it drops away of course as the industry, if you consider 1970 the beginning of the commercial part of the industry as we know it. Then it's been 17 years.

CB: A lot of people entered.

MB: Sure. So I mean, the bubbling up has pushed out. But I would say that in those DIALOG days, age was part of it, lack of terminals. You still had reliability problems. The system went down, telecommunications. And people thought it was expensive.

CB: Even at those prices?

MB: Yeah.

CB: What were the other kinds of problems in marketing? People unwilling to pay for an abstract service?

MB: I think question of value received. Why do I need this? I'm used to the print. I have good indices. CA puts out a good index. Biosis puts out a good index. I understand their concept codes. Why do I need such and such, etc. And older people would resist. But there was always someone in an organization who glommed on to it. And I think those people are probably the people who run the information centers today. They saw this as a real ticket to ride. And they rode it. I think you had... It was a matter of building a critical mass and getting some momentum going. And getting enough people trained and then the other side of the marketing issue, of course, were that you didn't have that many databases on. You had primarily your not-for-profit established sci-tech databases.

CB: Any feeling about how many databases you were going to have subsequently?

MB: When I started we were up to 35. I still use the old "we." I started and we were at 35 which was University Microfilms. Back then you knew every database by number. I mean you knew them all. You could teach every database and the nuances of every database. Which was a plus. Now you couldn't. I think you also had to overcome command language and you had to teach Boolean logic. That wasn't easy. But getting onto the database side, no, I don't think I had any idea but I was young then. I guess I didn't look at things very strategically. I didn't understand that there was a strategic view.

CB: Well, there maybe was, but I still hear stories of Roger (Summit) saying, "Well, now we've got 6 files, there is only a couple more, by the time you get 10 that is all you need. That's all there are out there."

MB: I believe that originally, Roger probably didn't realize what was out there. I have no idea if Carlos saw more or less. He was battling his own problems down in Santa Monica. But my guess is that Roger didn't see where this could go. And a lot of what any of us have been doing, he included, was somewhat reactive. It took, you used to have to coerce, cajole, pull teeth, to get someone to consider putting a database up. Databases were not in magnetic form, they were not useable. I would say as much of the marketing was on the database producer side as it was on the other side of getting the customers there and then, when a critical mass started building, if you look at it, the business files have a new critical mass, the sci-tech center of gravity has changed. Your (CB's) center of gravity is different now, Pete's (Pete Rusch) center of gravity is different, Geoff's (Geoff Sharp) center of gravity never existed for a while. I mean, it's just, I think that whole side has changed a lot.

CB: Well, who would have anticipated a Disclosure database.

MB: No one.

CB: So files like that continue to come out of the...

MB: Well, I mean, it's interesting. I think back on Disclosure. I remember that Geoff and I took a long time to put that database up. And that was back when it was Geoff and me. We were doing it. And we had to bend DIALOG to accept tabular information, 3-year balance sheets and income statements. We had to bend DIALOG to accept all that numeric information, all those (index) bins. We were concerned about the inverted file growing too large. We only had 10,000 records, but we had more fields. It was the first 4-page Bluesheet. Which caused a little consternation. We had to bend and push. And I think, I take some pride in the fact that, a) we did it, and b) probably one of the only reasons we got it done as quickly and as well as we did was because I was an ex-DIALOGer. And I understood the concerns that DIALOG had to go through. And I understood the system as well as I did. I'm not sure that a non-DIALOG literate person could have gotten the thing up and going, but we squeezed.

And then if you look at it in a way, Disclosure,... file 100,... if you look below file 100, you don't see the business critical mass. Other than Predicast and ABI. But they were very different than Management Contents. They were different. They were still bibliographic but of different subject matter. It's post-100 that the critical mass and the business area came about. So I guess from that standpoint and in that respect, I personally take satisfaction in feeling that was a major contribution to that whole area.

CB: When you were at DIALOG, what were some of the kind of fun stories of dealing with the other database suppliers and their efforts to try to promote the files or not promote the files.

MB: Not promote the files. I didn't meet much with the database suppliers because of my position in Washington. I mean, I met with them...

CB: You participated in some of the Update meetings.

MB: I participated in the Update meetings. Fun stories with producers...

CB: I'm not suggesting that there are any.

MB: No, I mean, look, I remember the first Update dinners which I played a significant part in. Where we drank a lot and had a good time.

CB: It hasn't changed much.

MB: No, I heard it hasn't. And I think I was responsible for the first toast in the beginning of that particular tradition. But I don't have... I met a lot of the producers, Charlie, but I can't say I had much involvement with them. I was much more teaching. And I think some of the concerns, to get back briefly to that. The teaching side, was... we were always looking for space. I remember we set up "quasi permanent space" at the Key Bridge Marriott. We had phone lines which were brought in which were <u>our</u> phone lines. We had some of the first jacks. We carried the phones over in a suitcase.

CB: (You mean DIALOG) We had the phone company install lines with our numbers in the conference rooms at the Key Bridge Marriott hotel with jacks so that we could pull them out when we didn't use the conference room. And whenever we used that room for training, we brought in the phones and there were phones to your account.

MB: Right, exactly. And I'd get the bills and forward them on to Palo Alto. But that is how we did it. We would carry over the terminals. And we had usually 3 terminals for 12 people and of course the clustering around got to be a bit much. And we'd go upstairs and have lunch up top. But those were back when it was a day and a half. But we taught a lot of people. We trained..., I know when I was putting my resume together in my post-BRS days, I was being told by the out-placement guy, "You got to put quantitative numbers." And I sat down and I figured out I trained 3,000 people in 3 years.

CB: Well, you met your quotas.

MB: I met a lot of "Roger-days". A lot of "Roger Days".

CB: Were you a witness to the New York Times Information Bank activities in those days?

MB: Yes I was. And I saw why it didn't make it.

CB: Why is that?

(TAPE INTERRUPTED AT THIS POINT)

CB: I think we are about through with the ground that we want to cover this time. If you were to recap major contributions of Mead, I think of the things that you have mentioned, it would be fulltext searching, long records, the KWIC and the Hilight and the whole treatment associated with fulltext records.

MB: Right.

CB: Display. The color, the first use of color TV. Maybe even the first use of the CRT display.

MB: Possibly, very possibly.

CB: The first video training tapes.

MB: Yes.

CB: Maybe the first customized terminals.

MB: I think so. At least in the commercial world.

CB: And what else?

TB: Serious effort towards end users?

MB: Yes, I would say their marketing philosophy. End user, vertical market. They truly targeted a marketplace. We are going after attorneys. We are going to get attorneys and we are going to go for the attorneys themselves. Now, even they (Mead) had to eventually realize that law librarians are a group that needed to be served. But I think it was the concept of developing a product that an attorney truly could understand and that's where the customized terminal came in. It needed a customized terminal to make it attorney-proof.

CB: But the targeted end user was not different than NLM aiming at the physician/clinician end user from the beginning.

MB: I don't know that much about Medline's history. But they did an NLM retrieval vehicle. The fact that you had to go and learn so much about MeSH and take so many days.

CB: Only 6 days.

MB: Right. That's right. I was thinking back when it was just 5 days. The fact that you had to, you used a non-customized terminal, you were using generalized software in terminals for specific stuff. I think that if you took the Mead mentality and you put Ruben and Bennett, et al, that mindset, on the Medline problem to end users, clinicians, etc., you would have a very different Medline type of product now. To me Medline is just another bibliographic database with an excellent controlled vocabulary. One of the best controlled vocabularies, but the usage of it is no different than using Biosis or Chemical Abstracts or Psyc Abstracts or...

CB: What was the unique contribution of MEDIS (the Mead service aimed at the medical community)?

MB: Showing that you could take an important periodical of record and put it up and people wanted it.

CB: Market demonstrations.

MB: Yes. Because technically they never did anything and they show that you could have a major asset and do something with it and it makes a lot of money on Nexis now. It's just not on their own service.

TB: Do you happen to know if, in terms of targeting a vertical market, or if they saw reporters as being their major market, or...

MB: I think they saw media as a crew. Like, McGraw Hill would be, or a Time. But I think they also saw, they had a vision that non-media types would use it as a research tool. And I think that's probably the biggest thing. That you could take something like the New York Times, which was a horizontal product, and still go... obviously with more of a business flavor than say a scientific flavor... and make that a value to a broad group of folks as opposed to Lexis which was working on a vertical market. I would say what contributions they made dealt with their marketing of a very unique horizontal product.

CB: What was the contribution of BRS? pre-1976?

MB: They weren't alive pre-1976. BRS came into existence in '76. Contribution of BRS, pre-Thyssen-Bornemisza? Innovative.

CB: How about SUNY/BCN, to go back to them?

MB: I didn't know much about it. Because once again I was not very Medline-oriented. I didn't have to be very SUNY/BCN-oriented. And I was aware of SUNY/BCN as a backup machine and backup facility if there were problems in (NLM) Bethesda. My knowledge of that whole area really only started when BRS came into existence and I was with DIALOG so I had to understand and was aware that there was a competitor, commercial competitor. I was only peripherally aware of SUNY/BCN.

CB: Those are all I've got for today. Any other points or recollections of things we ought to know about?

MB: In that timeframe? No, that would be it. There is time beyond that, but that is obviously a whole nother section of your thought.

CB: That's Book II.

MB: That's Book II. I think there is a significant... I think the late '70s were significant. But obviously you are really talking about up to a certain point.

CB: It's more manageable pre-'75 or pre-'76.

MB: Right.

(END OF CB TAPE 1, SIDE 2)

Notes for 1987 Mark Bayer Interview

Named Persons
Walter (Walt) Bauers
Bob Bennett
Harry Capowitz (Sp?)
Richard (Rick) P. Caputo
Pauline Atherton Cochrane
Christine Colbrook
Helen Colby
Howard Coleman
George Condos
Marty Conn
Carlos Cuadra
George Custos (Sp?)
Kay Durkin
Jan Egland
Arthur (Art) Elias
Carl Fisher
Robert (Bob) Freeman
Richard (Dick) Geiring
Bill Gorog
Ed Gotsman
Bob Harcharik
Debbie Hull
Scott Kastenmeir (Sp?)
Jane Kelly
Henry Kissman
Jim McSweeney
Noah Prywes
Ron Quake
Jerry Rubin
Bob Shrier (Sp?)
Fran Spigai
Dave Stephan
Larry Stevans
Roger K. Summit
Don Wilson

Named Systems/Equipment
Adabase software
Audacious
BRS Colleague
Computer Communications Inc. (CCI) terminals
Computer Transceiver Systems Inc. (Execuport terminal)
Data Cell (IBM)
Datrix
DIALOG
DIALOG Medical Connection
DOC PROC (IBM)
IDMS software
IMS software

Infodata
Informatics Mark IV software
Inquire software
JURIS (Dept. of Justice)
LEXIS terminals
MARK-IV (Informatics)
MEAD Lexis
MEAD MEDIS
OBAR (Ohio Bar Automated Research)
ORBIT
RECON-IV (Informatics)
RECON Central (Reconnaissance Central)
STAIRS (IBM)
STIMS-IV
System 2000 software
Teletype Model 25
TI-725
Total software
Tymnet
UBIQ (Mead) Terminals

Named Databases
BER (Biological Effects of Radiation)
Cancerline
ENVIRON
Epilepsy
HEAP
MEDLARS
Medline
OHMTADS (Oil & Hazardous Materials Technical Analysis & Data Service)
Popline
Predicasts
Toxline

Named Organizations
Arthur D. Little
Atlantic Richfield (ARCO)
Boeing Computer Services
BRS
Computer Network Corp (COMNET)
Control Data Corp. (CDC)
COSMIC
Data Corporation
Datrix
Dept. of Justice
DIALOG
Disclosure
Drug Information Assoc. (DIA)
Elsevier
Environmental Protection Agency (EPA)
European Space Agency

Excerpta Medica
Exxon
George Washington University
IBM Technical Information Center
ICC
Infodata Systems
Informatics
McGraw-Hill
MCI Mail
Mead Corporation
Mead Data Central
Mobil
NASA
National Institute for Neurological Diseases & Stroke
National Library of Medicine (NLM)
Newsnet
Ohio Bar
Petroleum Research Group (PRG)
Predicasts
Procter & Gamble
Securities & Exchange Commission (SEC)
Service Bureau Corp. (SBC)
Standard & Poors
Telenet
Tymnet
University of Georgia
Wright-Patterson AFB
Xerox

Mark Bayer comments 1980?

ONLINE SEARCH SERVICE MILESTONES, 1960 - 1975

(as summarized by Charles Bourne, 21 Mar 1980)

SDC

1960

?/60 demonstration at SDC-Santa Monica of online file searching of full text, including truncation searching; Protosynthex question-answering system did full text searching of of Golden Book Encyclopedia using AN/FSQ-7 or AN/FSQ-32 computers at SDC; hard-wired terminals; SDC-funded project as part of a general series of linguistic studies. This system used an inverted file, for time-shared non-recursive searching with a single file and a single terminal. It did not have a Boolean search capability. This may have been the first demonstration of online, interactive (not remote job entry of a batch search) text searching and online display of retrieved information. However, it is not absolutely clear that this was an interactive process. This may also have been the first demonstration of searching by syntactic analysis. Main participants: Robert F. Simmons, John Olney

LOCKHEED DIALOG AND ITS DERIVATIVES

1961

?/61 First demonstration of Lockheed in-house system for online searching of the Lockheed library catalog file. Main participants: Roger K. Summit,

NLM MEDLINE

MEAD

1961

11/61 Multi-List system report (ref. Gray & Landaxer, 11/61)

OTHER

?/62 Publication of a description of online searching of the Lockheed library catalog (ref. Summit, "MATICO-Machine Applications to Technical Information Center Operations", LMSC-513621).

?/62 Presentation (at IBM Information Retrieval Workshop. San Jose) by Roger Summit of a description of online searching of the Lockheed library catalog (ref. "MATICO-A Computer-Based Reference Retrieval System").

8/62 Presentation by Noah S. Prywes and H. J. Gray at an IFIPS meeting in Munich of a description of the Multi-List system, planned for interactive searching of technical library files and other applications. This work was done at the Moore School of Electrical Engineering, University of Pennsylvania, with support from ONR under contract NOnr 551 (40). Main participants: Noah S. Prywes, H. J. Gray, S. Litwin, W. Landauer, D. Lefkovitz. (ref. Prywes & Gray, 1962).

10/62 Initial pilot operation of an online inventory control system at the U. S. Naval Aviation Supply Office in Philadelphia, with a file of 460,000 inventory records, using an IBM 1401 computer, an IBM 1405 disk, and a CRT terminal. This system was developed at the Moore School of Electrical Engineering, University of Pennsylvania, with support from USN Bureau of Supplies, and ONR, under contract Nonr-551 (40). This system made use of the Multi-List technique of file organization. Main participants: Noah S. Prywes, David Lefkovitz, Barry Zimmerman. (ref. Zimmerman 4/64, Prywes 1965).

9/64 Work continued at SDC-Santa Monica on the development of BOLD (Bibliographic Organization for Library Display) for browsing through magnetic tape files as well as for online searching. This system used a CRT display, light pen, and TTY terminals. The display program was based on an earlier SDC development, VARDIS (Variable Display) that operated on the AN/FSQ-32 computer's time-sharing system. BOLD was not yet fully operational. The VARDIS work was done under ARPA contract SD-97, but the BOLD work was done with SDC support. Main participants: Harold Borko, H.P. Burnaugh, W.H. Moore. (ref. "Research and Technology" 1/65)

11/64 First demonstration of LUCID (Language Used to Communicate Information System Design) Phase I by SDC-Santa Monica on their AN/FSQ-32 computer. This Phase I capability allowed LUCID to accept user-defined data and processes in symbolic form, to load and organize user data automatically, and to permit online query and retrieval from the database by the user. Changes were expected to be made by 2/65 to make LUCID-generated files compatible with the Q-32 disc, and to integrate major LUCID subsystems into time-sharing. It is not clear from the record whether this was interactive searching, or fast batch processing. However, LUCID was used later in 1968 in the COSATI movie as an example of an online interactive search system. This work was done under ARPA contract SD-97. Main participants: E. Franks, P.A. DeSimone. Project monitor: Ivan Sutherland. (ref. "Research and Technology" 1/65)

?/64 Demonstration of CONVERSE, with LMSC in-house library file. Main participants: Roger K. Summit, Oscar Firschein, Daniel C. Drew, Bob Mitchell

10/64 Paper submitted by Drew in 7/65 noted that, "In October 1964, Lockheed...started to experiment with an online reference retrieval system which uses a coordinate search strategy. Installation of the retrieval system was greatly facilitated by the existence of the LMSC online Automatic Data Acquisition (ADA) system which provided the vehicle for this application." (ref. Drew 1/66)

?

?/64 Data Corporation's full text retrieval system developed for the retrieval of Air Force reconnaissance documents. (ref. Rubin 3/74). Main participants: Bill Gorog, Richard H. Giering

I don't know. Bob Bennett or Rubin or Did Giering would. Or Gorog.

?/64 Demonstration of online system at ALA exhibit at New York World's Fair, using UNIVAC 490 and TTY terminals operating thoughout the country on standard dialup lines. A small file was used with multiple terminal access. Main participants: Joseph Becker. (ref. Becker, 10/64).

3/64 Report by Noah S. Prywes discussed real time information retrieval. (ref. Prywes 3/64)

8/64 G. Salton discusses interactive system in ACM Proceedings. 1964.

10/64 MIT information project described at ADI Conference, with mention that interactive searching was then under experimentation. The Project MAC facilities were used (IBM 7094, disc storage, TTY terminals). A file of 35,000 citations from the physics literature was used with this experimental system. Support was provided under NSF grant . Main participants: Mike M. Kessler, E. L. Ivie, William D. Mathews. (ref. Kessler. Proc. ADI, 1964)

?/65 ARPA network used to put together the CIRCOL (Central Information Reference and Control Online) online system with 200,000 references to foreign technology literature. This work was done by SDC-Dayton for the Foreign Technology Division of Wright-Patterson Air Force Base. It started from a batch system CIRC, developed into COLEX, and then into CIRCOL. This system was later named ORBIT. Main participants: Ray P. Barrett, John Scroggins, John Nance, Robert Katter. This date was given in ~~an interview~~ a later news paper by McCarn, and seems to be in conflict with the dates given in various CIRCOL reports by the participants themselves.

?/65 demonstration (late 1965 or early 1966) of BOLD (Bibliographic On-Line Display) on hard-wired CRT, working with AN/FSQ-32V computer at SDC-Santa Monica. BOLD operated also on phone lines with MODEMS, and TTY terminals. An inverted file structure was used with Boolean searching and a file of about 4,000 ASTIA citations. This was a SDC-funded experimental effort. It was one of the first uses of a CRT for online searching. It was also one of the first systems to be able to display an online thesaurus. Retrieved citations could be copied to tape for offline printing. Main participants: Harold Borko, Robert F. Simmons, Howard Burnaugh (programmer). (ref. Burnaugh 4/66, Borko 8/66, Simmons ?/66)

8/65 Paper presented by Harold Borko at International Conference on General Semantics, to describe BOLD. (ref. Borko. SP-2164).

10/65 Howard P. Burnaugh report published by SDC to describe BOLD (ref. Burnaugh. 10/65). This was also presented at 3rd Annual Colloquium on Information Retrieval in May 1966 and printed in those proceedings (ref. Burnaugh.

?/65 IBM 360/30 with 2 IBM disc packs and a Data cell drive were installed to form the support basis of an Information Sciences Laboratory at Lockheed.

5/65 CONVERSE system described in LMSC report and based on a presentation made at the IFIPS Symposium on Library Data Processing of the IFIPS Congress in New York, May 1956. This was the basis for the DIALOG system, and was developed with LMSC support. Main participants: D.L. Drew, Roger K. Summit, R.I.Tanaka, and R.B. Whitely. (ref. Drew. 1965).

6/65 NASA prototype proposal submitted in response to RFP for 2-phase program.

7/65 Paper prepared by Drew et. al. to describe the CONVERSE system in operation at Lockheed noted that,"As far as can be determined, there exists,...just two other on-line retrieval systems..." (the experimental SMART system at Harvard, and Kessler's system at MIT)...,"reported by Kesler and collaborators the same week the Lockheed system was first tested." Kessler's report was given in Oct. 1964 at the ADI annual meeting, so that would coincide with the first testing of the Lockheed CONVERSE system. (ref. Drew et. al. 1/66).

3/65 TIP (Technical Information project) demonstrated at MIT using Project MAC's IBM 7094 and file of 25,000 physics citations. This was an experimental system, and appears to be the first instance of computer searching of the cited references, that is now standard practice for the ISI files. Support was provided by NSF grants. Project MAC had a capacity for 100 TTY terminals at this time, with as many as 30 simultaneous users. Main participants: Mike M. Kessler. (ref. Kessler, 3/65)

?/65 Bunker-Ramo Corp. awarded contract for development and demonstration of online system for NASA file of 200,000 citations. This contract expired in early 1967, no followup work. Main participants: Dennis Sullivan.

6/65 Report by Noah S. Prywes described a realtime retrieval system (ref. Prywes 6/65)

11/65 Publication by Edward Bennett, Edward C. Haines, and John K. Summers, of a description of AESOP, a prototype online data entry & retrieval system, operating on an IBM 7030 at Mitre Corp. There were 4 CRT user stations with keyboards and light pens. (ref. Bennett)

2/67 COLEX (CIRC On-Line Experimentation) system demonstrated, using the SDC/ARPA Time Sharing System (TSS) on the AN/FSQ-32 computer at SDC-Santa Monica. This was an interactive system with inverted files, ranked output, and Boolean logic. The equipment included a disc memory that could store 33 million characters. The system could handle up to 50 simultaneous users, using TTY and phone lines. The database consisted of about 55,000 bibliographic citations. Twelve agencies participated in the COLEX experiment, for an 8-month period starting in January 1967. The online file was available for 4 hours per week. Abstracts for all of the citations in the file were available at the terminals in a Kodak Lodestor microfilm viewer, with the reel/frame number included in the online citation. This was the first instance in which a microform image was made available at a terminal to be addressed by an online search to augment the online information. This work was done under RADC contract F30602-67-C-0076, Project 9117. Main participants: A.W. Baker, J.L. Smith, L. Segala, E. Waller, J.P. Hoffman. Project monitor: Duane L. Stone. (ref. Baker 5/68, Smith 11/68)

1/67 DIALOG/NASA 300,000 Lab

2/67 ONR contract awarded for research study of online displays. Contract N00014-67-C-0374 from 2/67 to 9/69. Main participants: Roger K. Summit. Project monitor: Gordon Goldstein.

3/67 DIALOG demonstrated with the NASA file of 300,000 citations.

4/67 Remote DIALOG CRT terminal installed and operated successfully at Ames Research Center for the first time, to start a daily 2-hour search period to continue for 5 more weeks. This was done with an IBM 2260 keyboard/display device and an IBM 1053 character printer, using a 1200 baud leased line and a Model 202 Dataset. This system used an online thesaurus. The equipment included an IBM 360/30, an IBM 2321 data cell drive with a capacity of 400 million bytes of storage, and 2 IBM 2311 disk drives, each with a capacity of 7.25 million bytes. This was part of the work for contract NASw-1454, and was later extended to 12/68. Main participants: Roger K. Summit. Project monitor: (ref. Summit, 9/67,4/68 and 6/68).

?/67 "In the Fall of 1967, the NLM began to experiment with online bibliographic search services. It first installed and evaluated the online service (ORBIT) for the foreign literature...ORBIT was then used to experiment with a database in neurology." (ref. McCarn 7/73)

?/67 Data Corporation provides RECON/CENTRAL (Reconnaissance Central) service.

Gorog or Giering

?/67 Ohio State Bar Association formed a nonprofit corporation, Ohio Bar Automated Research (OBAR) and then contracted with Data Corporation to build, and provide search service on database of Ohio law text. Main participants: Bill Gorog, James F. Preston, Jr., William G. Harrington, H. Donald Wilson, Robert L. Bennett, Richard H. Giering. (ref. Harrington 12/70, 5/71, Preston 5/71). This was the first extensive use of full text search capability.

Gorog, Bennett or Wilson

6/67 Report by Robert R. Freeman and Pauline A. Atherton at FID Meeting in Rome discussed their plans to do online searching of the U. D. C. subject codes, based on their review of SDC's BOLD, NASA/RECON, and Multi-List. (ref. Freeman & Atherton 9/67).

?/67 First demonstration of prototype of LEADER (Lehigh Automatic Device for Efficient Retrieval) system at Lehigh University using a test file of 1000 documents, programs on a GE225 for the original text analysis, and computers on two timesharing services for the text analysis and retrieval functions. IBM 1050 or 2741 terminals were used at 15 characters/second on dialup lines. This work was based on NSF grant GN-451. Main participants: Donald J. Hillman. (ref. Hillman, 1968).

5/67 Ritvars Bregzis gave a presentation in Philadelphia at the 4th Annual Colloquium on Information Retrieval, to describe the planned pilot project to put the University of Toronto Library catalog online with a system that was being planned at the University of Toronto (ref. Bregzis, 1967).

7/67 As a result of the successful Ames experiment, the DIALOG CRT terminal was moved to NASA Headquarters in Wash. D.C. to provide online service for the next 12 months, on a 3-hour per day basis. The file grew during this 12-month period to 400,000 citations. (ref. Summit. 6/68)

8/67 paper presented by Roger K. Summit at annual ACM meeting in New York noted that the current system used an IBM 360/30 with two IBM 2311 disc packs (7.5 milion bytes each) and an IBM 2321 Data Cell (415 million bytes) for a file of 300,000 NASA citations. (ref. Summit 1967 ACM)

10/67 Conclusion of initial COLEX test period, and beginning of 8-month period of additional testing with an improved system (ref. Smith 11/68)

10/67 Purchase order issued by NASA Ames Lab. for online retrieval service. This is the first multiple-terminal version of DIALOG, with both terminals accessing the NASA file simultaneously. Multiple-terminal version became operational, with terminals at Washington, D.C., Ames, and LMSC.

8/67 Paper submitted by Morris Rubinoff and others to describe an experimental online (but not time-shared) system at the Moore School, University of Pennsylvania that work with TTY terminals and a database of 1500 citations. (ref. Rubinoff 9/68).

10/67 Meister & Sullivan report given at 1967 ADI Meeting and published on evaluation of Bunder-Ramo prototype online system for NASA Langley facility, using Univac 1050 computer in New York, drum storage, and 24 CRT displays (Teleregister Model 203) on 3 leased lines. Data rates were 120 char./sec. This was one of the first surveys of online users (37).

?/68 National Library of Medicine's Online Retrieval of Bibliographic Information Test (NLM/ORBIT) started operation as an experimental system on the AN/FSQ-32 computer at SDC-Santa Monica. The retrieval program was operated on SDC's Time Sharing System (TSS), developed jointly by SDC and ARPA. The database consisted of 10,000 selected citations on neurology. The time-sharing system could handle up to 18 remote users simultaneously, primarily TTY terminals. Retrieval was provided by ranked output rather than by Boolean searching. The work was supported by contract PH-43-68-714. Main participants from the SDC-Falls Church office: J.L. Scroggins, J.K. Mizoue, R.D. Glass. (ref. Scroggins 11/68).

?/68 Report published by SDC-Santa Monica defines ORBIT as On-line Retrieval of Bibliographic Information Time-Shared, and gives initial specifications. (ref. Nance & Lathrop. 1968).

?/68 SDC participates in COSATI movie, using AN/FSQ-7 computer, TTY terminal, and 2 database management systems: 1) SDC's Language for Utility Checkout and Instrumentation Development (LUCID); and 2) SDC's Time-Shared Data Management System (TDMS)

1/68 NLM given access to COLEX as Station #12, the twelfth user. (ref. Smith 11/68)

1968

?/68 NASA contract awarded to Infomatics to futher develop the NASA/RECON system.

contract no.?
start date?
project monitor?
citations?
Dick Lemoyne Pres
Frank
Gaudette - VP

1968

?/68 National Library of Medicine's On-Line Retrieval of Bibliographic Information Test (NLM/ORBIT) started operation as an experimental system on the AN/FSQ-32 computer at SDC-Santa Monica. The retrieval program was operated on SDC's Time Sharing System (TSS), developed jointly by SDC and ARPA. The database consisted of 10,000 selected citations on neurology. The time-sharing system could handle up to 18 remote users simultaneously, primarily TTY terminals. Retrieval was provided by ranked output rather than by Boolean searching. This work was supported by contract PH-43-68-714. Main participants from the SDC-Falls Church office: J.L. Scroggins, J.K. Mizoue, R.D. Glass. (ref. Scroggins 11/68)

1968

?/68 DATA/CENTRAL was first installed by Mead Technology Laboratories in 1968 at Wright-Patterson Air Force Base (and Union Carbide?). (ref. Fife 3/74)

other source citations?
what computer? what characteristics?
Gierig/Gorog

?/68 Data Corp acquired by the Mead Corp. (ref. Rubin 3/74, Harrington 5/71)

Gorog

1968

?/68 IBM's Document Processing System became operational (re Humphrey 9/75).

?/68 RIOT (Retrieval of Information by On-Line Terminal) project a Culham Laboratory, UKAEA, demonstrates online file searching with TTY terminal. Main participants: J. L. Hall, Alan E. Negus, D. J. Dancy. (ref. Hall, 7/72).

4/68 Syracuse University demonstrated their MOLDS (Management On-Line Data System) system with a test file of 10,000 LC MARC-I records, using an IBM 360/50 and an IBM 2260 CRT display. The terminal was hard-wired; only one terminal could be used simultaneously. (An apparent contradiction in the referenced report states that the files were not completed until 6/69). (ref. Atherton & Miller, 6/70).

/68 Report published by Pauline A. Atherton and Robert R. Freeman describes the experimental AUDACIOUS online system and its online thesaurus. This used Xerox software (based on the Multi-List system of Noah Prywes) on an IBM 7044 computer at Xerox headquarters in Rochester, and a test file of citations from Nuclear Science Abstracts. (ref. Freeman 4/68).

2/68 COLEX file of about 218,000 citations was loaded on SDC-Santa Monica's AN/FSQ-32. Even though a second disc was added in January 1968, the file was too large for the available storage. Consequently, the file was split into two parts, with each part made accessible during a different time period. This was the first use of time windows to provide access to a large database collection. The hours of COLEX availability were expanded to a 5-day per week basis. Four user stations changed from a dialup service to a leased line arrangement. This work was done by SDC-Dayton under contract

F30602-68-C-0172, Project 9117. Main participants: J.L. Smith, J.P. Hofmann, J.C. Cornelli. Project monitor: Duane L. Stone. (ref. Smith 11/68)

2/68 Multiple terminal, multiple file version first implemented and demonstrated.

5/68 TDMS (predecessor of CDMS) installed by SDC-Santa Monica (ref. Fife 3/74).

6/68 Demonstration search filmed for COSATI movie.

6/68 Project TIP at MIT used the IBM 7094- CTSS system with a file of 100,000 physics citations and the third revision of a system developed over the prio 6 years. An ~~experimental~~ enhanced version, NEWTIP was being developed. (ref. Licklider 6/68 ck)

11/68 Scroggins report.

6/68 NASA contract awarded for software design and installation to provide NASA-wide online service to a file of 500,000 citations and up to 70 terminals. Contract NASw-1774 from 6/68 to 10/69. Main participants: Roger K. Summit. Project monitor: R. Lawrence Stevens.

7/68 DIALOG demonstration to local chapter meeting of ASIS.

7/68 First operation of GIPSY, developed by University of Oklahoma. (ref. Fife 3/74).

8/68 Welch report of comparison of systems demonstrated in COSAT movie. (ref. Welch 8/68).

10/68 SUNY/BCN became fully operational, using an IBM 360/40, and the following files: MEDLARS (1964-68), NLM Current Catalog (1966-68), and monograph holdings of the 3 SUNY medical libraries, to a network of 9 medical libraries. The modified IBM Document Processing System was used as the search system until 1973 when it was replaced by the IBM STAIRS program. Dedicated phone lines serve 30 char./sec. terminals. Main participants: Irwin Pizer, Jan Egeland, Ronald Quake. (ref. Pizer 4/69).

12/68 HEW/OE contract awarded to provide online retrieval service to ERIC Clearinghouse at Stanford. Contract OEC-9-9-140161-0028 (095) from 2/69 to 8/69. Main participants: Roger K. Summit. Project Monitor: James J. Prevel

12/68 Roger Summit gave talk to IEEE Professional Group on Electronic Computers ("Impact of Terminals on Computer Systems") in conjunction with 1968 Fall Joint Computer Conference.

12/68 MASTER CONTROL, developed by Lawrence Livermore Laboratory of the University of California, first installed (ref. Fife 3/74).

?/69 A 1973 presentation by DiFondi et. al. noted that, "...a decision was made to include an abstract of the document in the computer. At the same time, the IBM Document Processing System, which has text indexing capabilities, was selected for CIRCOL, the online version of CIRC." (ref. DiFondi).

?/69 A report by Scheffler, of an evaluation study of CIRCOL that was made during 7/72 - 8/73, noted that "CIRCOL has been in active use since 1969..." (ref. Scheffler 2/74)

?/69 A survey report noted that CIRCOL started service in "early 1969", and it is "built on IBM's Document Processing System (DPS)". It was originated by the Foreign Technology Div. of the Air Force Systems Command, Wright-Patterson Air Force Base, Ohio. (ref. Fife. 3/74). A later review of CIRCOL noted that "...DPS was intended primarily for batch mode operation. Multi-user access to CIRCOL/DPS is possible only through a "hybrid" system which combines the teleprocessing executive program with the DPS retrieval system. (ref. Scheffler 2/74)

1969

?/69 "In early 1969, computer magnetic tapes containing 12,300 bibliographies and descriptive abstracts from Research in Education and Historical Reports files were loaded onto random-access computer storage devices at the Lockheed computer center". This was the beginning of the effort under OE contract OEC-9-9-140161-0028. (ref. Summit 4/70)

?/69 Online service started for 3 ERIC locations for 7 mo. trial period with 20,000 ERIC citations

?/69 AEC RECON

?/69 NASA/RECON placed into operation

?/69 DIALOG installed on ESA, serving 10 locations

1969

?/69 NLM contracted with SDC for a review of the existing online bibliographic retrieval systems. (ref. McCarn 7/73, Seiden 1970)

TIMPS per phone conversation

1969

?/69 OBAR started the first large scale evaluation of legal retrieval service, with TTY terminals in 15 Ohio lawyers' offices and the computer in Dayton, Ohio. The database was 550 million characters of Ohio law. (ref. Rubin 3/74)

multi-file? paper? Gorog et al

?/69 Mead Data Corporation contracts with Federal Water Pollution Control Agency to load the ENVIRON file of project descriptions.

contract no.? start- and date? who did it? file specifics? when was online service started? reference?

?/69 Mead Data Corporation contracts with Walter Reed Hospital to load a database on the biological effects of electromagnetic spectrum.

details? reference?

Database was BEER - Biological Effects of Electromagnetic Radiation. Contract done at Walter Reed but let by Wright-Pat. Project monitor was Mark Grove at Walter Reed. Never was used much.

?/69 INTREX being developed.

?/69 IBM STAIRS announced.

?/69 Experimental online system demonstrated at Queen's University of Belfast, with two bibliographic files of about 1,000 records each, and using a online thesaurus. This work was supported in part by OSTI. Main participants: M. Carville, L. D. Higgins, Francis J. Smith. (ref. Carville, 12/71).

?/69 The BROWSER system is developed and tested by IBM Federal Systems Div. in Gaithersburg, Md., with several files of abstracts, and IBM 2260 CRT displays. This work was done under contracts Nonr-4456(00) and N00014-70-C-0297 of the Office of Naval Research. Main participants: John H. Williams, Jr., Mathew P. Perriens (ref. Williams 9/69, 9/71).

?/69 First installation of MARS VI in "late 1969" by Control Data Corp. (ref. Fife 3/74).

evaluation study of CIRCOL that was made during 4/70-7/71, noted that "At one time processing of requests was carried out using an IBM 7094 in a batch mode. Later CIRCOL processing was conducted using an IBM 360/65 computer with manually indexed files and IBM Document Processing System (DPS) software." This report also noted that during this study period, the file grew from 365,000 citations to 533,000 citations. The online system provided free text searching of abstracts for 168,000 records added to the file during the study period. Both TTY and IBM 2741 terminals were used. (ref. King 1/72).

?/69 Contract 100/69/G(HQ) awarded by European Space Research Organization (ESRO) to install and maintain RECON online retrieval system on an IBM 360/365 in Darmstadt, Germany. Main participants: Roger K. Summit. Project monitor: N. Isotta.

3/69 ERIC Clearinghouse at Stanford sent out invitation letters to come and see DIALOG demonstrated with an ERIC file of 415,000 citations, 3 days per week, using an IBM 2260 CRT display. This was part of the work on contract OEC-9-9-140161-0028. (ref. Summit. 4/70)

2/69 publication by E.M. Kidd et al reports results of study of possible use of Data Central System for online access to Nuclear Science Abstracts for AEC. (ref. Kidd 2/69)

?/69 Development began on the LEADERMART system. (ref. Marron 6/73).

?/69 First installation of INQUIRE, developed by Infodata Systems, Inc. (ref. Fife 3/74).

1/69 Stanford SPIRES (Stanford Physics Information Retrieval System) prototype system started limited public service 1 3/4 hours/day, 5 days/week for searching the SLAC preprint collection, recent issues of Nuclear Science Abstracts, and other files. It utilized the IBM 360/67 at Stanford. Main participants: Edwin B. Parker, Richard Bielsker, James Marsheck, William E. Riddle. Support was provided by NSF grants GN-600 and GN-742 (ref. Parker 1/69).

Bob Schreier
VP 703-578-3430

4/69 First installation off DS/3, developed by SDC-Santa Monica (ref. Fife 3/74).

4/69 Paper presetented by Martin noted that the interim ESRO/RECON system was expected to go live sometime in June 1969, using an IBM 360/65 at Darmstadt, with remote terminals in Paris, Noordwijk, and Darmstadt. A footnote in the Sept 1969 publication of this talk noted that initial acceptance trials had been completed, and the system was operational with a CRT terminal in Paris, and that other terminals were expected to be operational in July 1969. (ref. Martin. 1969)

4/69 NASA report published ("Remote Information Retrieval Facility")

7/69 A report published by Dovel of SDC-Falls Church noted that, "A case in point is the DIA-sponsored experiment allowing analysts throughout the intelligence community direct access to a CIRC-like data base through remote teletype consoles. (COLEX) proved successful and resulted in DIA approval to go operational with the CIRC On-Line (CIRCOL) retrieval system." (ref. Dovel 10/69).

7/69 SDC-Santa Monica provides first service with CDMS system (an outgrowth of TDMS) for CIA and National Military Command Support Center, using the ARPA network and an IBM 360/50, with IBM 2741 and TTY terminals at 10, 15, and 30 char./sec. (ref. Fife 3/74).

10/69 A report published by Dovel of SDC-Falls Church to describe a thesaurus development effort done for the CIRC system noted that for their project, "TDMS was chosen over the . . . (ORBIT) system only because the up-date capability of ORBIT was not complete at the time of the study." (ref. Dovel 10/69).

7/69 Office of Education's San Francisco office sent out invitation letters to see ERIC on DIALOG with 25,000 citations (ref. Summit 4/70)

8/69 ESRO-1st European online A&S demo.

9/69 paper presented by N.E.C. Isotta noted that the NASA/RECON system has been installed and is operational between Paris and the ESRO computer in Darmstadt. (ref. Isotta. 1969)

10/69 working on AEC contract AT(04-3)-808 to provide AEC with the RECON system, using Nuclear Science Abstracts as the database. Contract period?

9/69 First demonstration of prototype RIQS, developed by Northwestern Univ. (ref. Fife 3/74).

10/69 SUNY/BCN charged $5000/yr. for each terminal, including IBM 2740 terminal rental, line charge, and computer time. Service is available for 6½ hours/day, 5 days/week (32½ hours/week) (ref. Bridegam & Meyerhoff 4/70).

11/69 Report of a working experimental system at the Queen's University of Belfast, meant to serve the Science Library at Queen's University. The system used the ICL 1900 computer. Acknowledgement was made of the ORBIT, INTREX and SPIRES systems, and the work of M. Rubinoff. (ref. Higgins & Smith 11/69).

1970

?/70 Effort started at SDC-Santa Monica to recode the Dayton ORBIT into PL-1. This new system was called ORBIT-2. Main participants: Carlos A. Cuadra, Don Blankenship, Bob Burkett, Robert C. Katter.

?/70 ORBIT-III, developed by SDC-Santa Monica, first installed. (ref. Fife 3/74).

1/70 publication of results of SDC survey of online systems as part of the background studies for NLM planning of the Biomedical Communciations Network; 26 operational general purpose online systems were identified. NLM Contract NIH-69-71. Main participants: Herbert R. Seiden, Donald Blankenship, Robert V. Katter. (ref. Seiden. 1/70).

1970

?/70 DIALOG installed on NASA computer in College Park, Maryland as NASA/RECON, serving 24 NASA facilities with NASA file of 700,000 citations using an IBM 360/50 with Data Cells and disks, and leased lines operating at 2400 bits/second. This system used an online thesaurus display.

?/70 DIALOG installed on AEC computer at Oak Ridge as AEC/RECON, working with Nuclear Science Abstracts file.

1970

1/70 Publication of results of SDC survey of online systems as part of the background studies for NLM planning of the Biomedical Communications Network; 26 operational general purpose online system were identified. NLM Contract NIH-69-71. Main participants: Herbert R. Seiden, Donald Blankenship, Robert V. Katter. (ref. Seiden 1/70)

1970

?/70 Mead Data Central, Inc. formed as a subsidiary of the Mead Corp. to provide legal information retrieval services. (ref. Harrington 5/71, Rubin 3/74). Don Wilson hired as President. Gerry Rubin subsequently joined as Vice President, and Bob Bennett joined later.

?/70 TTY terminals used with dialup lines in 20 law offices, and these are being replaced by 120 char./sec. special purpose CRT terminals. The database contained only the law of Ohio (Ohio case law, Ohio statutes and constitution). (ref. Rubin 3/74, Harrington 12/70, 8/74)

Data Corp founded by Corog - split: Mead Data Central - Lexis Mead Technology Laboratories - govt. - ENVIRON, etc. Gibing

1970

?/70 Stanford SPIRES-1 put into regular use at SLAC with physics preprint file of 18,000 citations.

?/70 UKAEA Culham Laboratory examined full text retrieval, and the searching of statute law. (ref. Hall 7/71)

4/70 Demonstration of a pilot system at the UKAEA Culham Laboratory, using a KDF9 computer, TTY and CRT terminals, and a test file of 750 references. Main participants: Alan E. Negus. (ref. Negus 3/71).

4/70 Presentation made at ACS meeting to describe CIDS, an experimental online chemical structure search system developed at University of Pennsylvania with support by US Army. Edgewood Arsenal contract DAAA-15-69-C-0140. A PDP-8 and IBM 7040 computer were used, with TTY and CRT terminals, and an IBM 1301 disc. Main participants: Ruth V. Powers, Helen N. Hill, Clarence T. Van Meter, and David Lefkovitz. (ref. Powers 2/71).

5/70 AIM/TWX (Abridged Index Medicus/TWX) put into operation to serve 30 terminals on a 4 hours per day basis, with a file of 130,000 citations, using SDC's IBM 360/67. This was ORBIT-2C (the ORBIT system modified for NLM use), also called ELHILL, that had an online MeSH thesaurus and other special features. TTY terminals were used to start with, but were replaced, starting in Feb. 1972, with TYMSHARE connections. The system started with 4 users, but later averaged 7 simultaneous users. Main participants: Robert V. Katter, Carlos A. Cuadra. Project Monitor: Davis B. McCarn. (ref. Cuadra 3/71; Katter & McCarn 1971; McCarn 4/73).

6/70 Publication by I.Steinacker in Nachrickten Dokum. describes ESRO/RECON. (ref. RECON-REmote CONsole, a New Documentation System in Europe).

7/70 First successful overseas test with Nuclear Science Abstracts databases to Europe (Paris) from DIALOG computer in Palo Alto.

7/70 Demonstrations of ERIC database at the National Education Association annual meeting in San Francisco, using 202D1 Data Set.

6/70 AIM/TWX (Abridged Index Medicus/Teletypewriter Exchange Network), an experimental service, put into operation to serve 30 terminals on a 4 hour per day basis, Monday thru Friday (20 hours/week) with a file of 100,000 citations, using SDC's IBM 360/67 in Santa Monica. This was ORBIT-2C (the ORBIT system modified for NLM use), also called ELHiLL, that had an online MeSH thesaurus and other special features. TWX and direct dial telephone IBM 2741 terminals were used to start with, but were replaced starting in ???? with TYMESHARE connections.

There was no charge for the computer service, but the users paid for the terminals and communications costs. The system averaged 7 simultaneous users. Main participants: Robert V. Katter, Carlos A. Cuadra. Project monitor: Davis B. McCarn. (ref. Katter 1971 and McCarn 1971)

3/74).

5/70 Report published to describe ELMS (Experimental Library Management System) developed by IBM's Advanced Systems Development Division in Los Gatos. This system supported most library operations, and indexed a retrieval system to search the library catalog and in-process files. It was implemented on an IBM 360/50, working with a database of 14,000 records, and serving as the working system for the technical library of the IBM Los Gatos Laboratory. Four terminals were used with the system. Main participants: R. W. Alexander, R. W. Harvey, and Caryl McAllister. (ref. Alexander & Harvey, 5/70, McAllister dissertation).

5/70 ELMS (Experimental Library Management System), developed by IBM Advanced Systems Development Division, starts regular operation at the IBM Advanced Systems Development Division Library at Los Gatos. Designed to work with an IBM 360/40 and IBM 2260 or 2741 terminals. The system presentl works with 4 terminals and a file of 14,000 records. Main participants: Robert W.

Alexander, Caryl McAllister, R. W. Harvey. (ref. Winik; McCallister & Bell 3/71; Alexander 5/70)

7/70 Battele BASIS-70 starts service with 33 databases at Battelle, using CDC 6400. It is also installed at National Security Agency on Univac 1108. (ref. Fife 3/74).

of a Remote-Console Information Retrieval System (NASA/RECON)") noted that the present configuration of NASA/RECON was declared in July 1970 to be fully operational.

8/70 User Manual published for AEC/DIALOG system. TID-25730

11/70 ESRO contract awarded.

11/70 Lancaster's AIM/TWX evaluation study started test searches, and continued through Feb. 1971. (ref. Lancaster 2/72).

11/70 AEC contract to install RECON at Oak Ridge is extended.

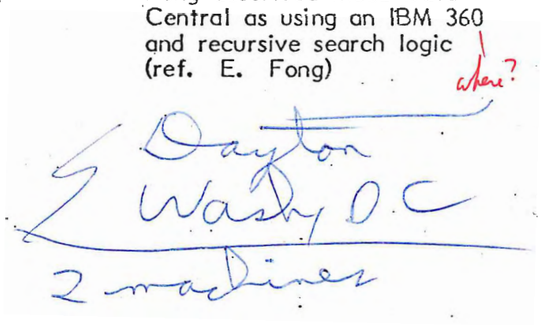
10/70 Syracuse University starts experimental operation of SUPARS (Syracuse University Psychological Abstracts Retrieval Service) using its IBM 360/50 and a database of 35,000 records from Psychological Abstracts. This was part of a study to evaluate automatic indexing. The Document Processing System (DPS) was the search system being studied. Up to 20 terminals (IBM 2741) ~~will be~~ were available to search the file during its 5 hours/day, 5 days/week availability. Main participants: Pauline A. Atherton, Kenneth H. Cook, E. Frierson, Jeffrey Katzer. (ref. Cook 1970).

12/70 Review publication by E. Fong described CIRCOL status at end of 1970 as having 500,000 records online with an IBM 360 computer, IBM 2740 or 2741 terminals, TTY, with Dataphone models 33 and 35, IBM 2314 disk. Search response time averages 45 seconds. (ref. Fong).

12/70 Review publication by E. Fong describes NASA/RECON at this time as using an IBM 360/50 with disk and data cells to support 25 CRT terminals. An online thesaurus is used. There are 750,000 records in the file.

12/70 Demonstration given at White House Conference on Children, using an ERIC file of 55,000 citations, and CRT terminal.

12/70 Review publication by E. Fong described Mead Data Central as using an IBM 360 and recursive search logic (ref. E. Fong)



12/70 Review publication by E. Fong describes NYT Information Bank as being programmed by IBM Federal System Division, but is not expected to be operational until the first half of 1971. (ref. Fong).

1971

?/71 TYMSHARE connection made.

1/71 Publication of system design requirements for CIRC-II, to be operated on the IBM 360/65 at FTD, with TTY terminals, with operation to begin in about 2 years. (ref. "Central Information...").

1971

1/71 Regular DIALOG service started in LMSC Technical Library, with NASA/STAR and AEC Nuclear Science Abstracts file. Other databases are planned including CA Condensates, Pandex, DDC TAB, and others.

1/71 Presentation by Roger K. Summit at an AFIPS Workshop noted that the NASA/RECON system is in daily operation on a NASA computer servicing 23 terminals located in NASA facilities in the U.S. This presentation also noted that the ESRO system presently supports terminals in several European countries from a central computer facility in Germany. (ref. Summit. AFIPS 1971).

1971

?/71 Contract awarded by NLM to SDC - Santa Monica to begin development of MEDLARS-2, including the retrieval system later to be called ELHILL-2. The ELHILL-2 retrieval programs were expected to be able to provide responsive access to 40 or more simultaneous users. Main participants: Robert V. Katter, Robert Burket. Project monitor: Davis B. McCarn. (ref. Katter & Pearson. 6/75, McCarn 12/71)

?/71 AIM/TWX now averaging about 7 simultaneous users (ref. Katter 1971)

1/71 Presentation by Robert V. Katter, and David B. McCarn "AIM-TWX: An Experimental Online Bibliographic Retrieval System" published later by AFIPS Press

?/71 LEADERMART, based on the LEADER system, becomes operational at Lehigh University, using a CDC-6400 and a billion character disc at Lehigh University, and three major databases: CA Condensates, COMPENDEX, and LC MARC-2. This is done with NSF support on NSF grants GN-845 and GN-42271. Main participants: Donald J. Hillman. (ref. Marron 6/73, Hillman 11/73, 1974).

?/71 MASTER CONTROL system developed at the University of California, Lawrence Livermore Laboratory, started to be used for regular library service on a CDC-6600. (ref. Buginas 1/73).

?/71 Informatics acquired a copy of the NASA/RECON program and starts modifying it for their own use.

?/71 RIQS (Remote Information Query System) becomes operational on a CDC 6400 at Northwestern University. This was based on experience with the earlier INFOL and TRIAL batch systems, and received support under AFOSR contract AFOSR-68-1598. An earlier version of RIQS was named RIMS, but had the name changed to RIQS because of a conflict with an existing trademark. Main participants: Donald Dillamon, Robert Chalise, B. Mittman. (ref. Mittman, 3/73).

2/71 Battelle doing cost tradeoff studies of file loading costs and user charging schemes.

3/71 Start of [illegible] by Lehigh University. (ref. Fife 3/74).

4/71 NBS completes study of data communication alternatives for MEDLINE, and concluded that the least expensive approach is to use the commercial data communications services. An RFP was subsequently issued, and a proposal was received from Western Union and from Tymshare Corporation. Network lines were subsequently selected from both networks (DATACOM lines from Western Union would link Denver, Cincinnati, and Atlanta to Bethesda; the TYMSHARE network would serve 20 U.S. cities). (ref. McCarn 4/73)

4/71 Demonstration of an experimental system developed by the University of Newcastlye upon Tyne to work with the MEDLARS database. An IBM 2741 terminal was used with dialup lines to the IBM 360/67 at Newcastle. This work was done with an OSTI grant. (ref. "Computer Terminal at the NLL" and "Dialogue" 10/71).

7/71 Prototype testing of RIOT system at Culham, using KDF9 computer and CRT terminals. (ref. Hall. 7/71, 7/72).

9/71 SUNY/BCN had 27 terminals, operating at 10 characters/second. The system planned an augmented thesaurus so that a term entered by a searcher would be automatically converted to the proper MeSH thesaurus term; this was programmed, but not implemented. (ref. Pizer 1971

10/71 NLM initiated MEDLINE. (ref. McCarn & Leiter. 7/73).

11/71 Contract NIH 71-4728 awarded by NLM to SDC-Santa Monica to begin development of MEDLARS-2, including the retrieval system which incorporated the existing ORBIT system, and was later to be called ELHILL-2. Main participants for retrieval system: Carlos A. Cuadra, Robert V. Katter, Robert Burket, Donald Blankenship, Dave Kenton, Karl M. Pearson, Jr. Project Monitor: Davis B. McCarn. (ref. Katter & Pearson. 6/75).

10/71 MEDLINE (MEDLARS ON-LINE) began operation as a free service with over 400,000 citations, with 25 participating institutions using NLM's IBM 370/155 computer and the ELHILL-2 program developed by SDC. This was in parallel with the AIM/TWX service running on the SDC computer. (ref. NLM News. 5/75; McCarn. Science 7/73; McCarn 7/73; McCarn 7/73)

12/71 SUNY and AIM/TWX combined had 85 institutional users (ref. McCarn 1974)

12/71 MEDLINE's Phase I network began operation, providing leased 300 word/minute lines to 10 cities (ref. McCarn 7/73)

10/71 Paper by J.H. Williams describes the experimental BROWSER system, working with IBM 2260 CRT terminals and several databases. (ref. Williams 10/71).

1972

?/72 ORBIT-2 demonstrated.

1972

?/72 Dept. of Justice puts a small file of case abstracts on the NASA/RECON system as part of the preliminary studies that led to the development of JURIS (Justice Retrieval and Inquiry System). (ref. Hambleton 5/76)

1/72 Computer service subcontractor (TRW) for DIALOG Washington network area quit the service bureau business. It was replaced by Boeing Computer Services.

1972

?/72 TYMSHARE node established in Europe, permitting regular MEDLINE searching from Europe. (ref. McCarn 7/73)

2/72 Publication by F. Wilfred Lancaster, of the results of the evaluation of online searching in MEDLARS (AIM/TWX) by biomedical practitioners (ref. Lancaster ED-062 989)

2/72 NLM connects to TYMNET, with access to 30 U.S. cities at $5.00/hr. State University of New York (SUNY) also connected to TYMNET to provide backup capability. This was the first online service to make use of a data communication network. (ref. McCarn 1974; McCarn 7/73)

7/72 Karolinska Institute in Stockholm starts MEDLINE service on their IBM 360/75 with 15 terminals at 300 characters/~~min~~ sec., in Scandinavia and Finland for 10 hours per week. (ref. Falkenberg)

1972

?/72 Start of regular public service on the LEXIS system. This was the first public search service to provide a full text searching capability.

?/72 First use of color CRT ~~dialup~~ by any public search service.

?/72 First online use of KWIC index, video contrast, or other highlighting scheme to show which terms caused the retrieval of the displayed record.

1200 baud

1972

?/72 QUERY UPDATE-Version 1, developed by CDC, first installed in "late 1972". (ref. Fife 3/74).

?/72 Battelle started a broad marketing effort for general online search services.

?/72 SPIRES-2 put into operation. Main participants: Ed Parker, Thomas H. Martin.

2/72 Paper published by W. Herman to describe STAIRS "STAIRS: New Software for Computerized Documentation" in Nachr. Dokum.

3/72 DDC system declared operational at Defense Documentation Center, using a Univac 1108 computer, 13 CRT terminals, and a database of 700,000 report citations. (ref. Powers 4/73)

7/72 First installation of STAIRS, developed by IBM-White Plains (ref. Fife 3/74).

8/72 Search service offered on MEDLINE file to members of Pharmaceutical Manufacturers Assoc. (if was their copy of the MEDLINE file).

8/72 PIRETS service initiated at Univ. Pittsburgh. (ref. Fife 3/74).

9/72 MEDLINE now serving an average of 25 simultaneous users, and sometimes reaching their maximum of 50 simultaneous users (ref. McCarn 7/73)

copy to explain start of service 10/72

9/72 SDILINE added as the second database.

10/72 MEDLINE supporting an average of 25 simultaneous users, and providing service to over 120 institutions for 43 hours/week. Service was provided through a data communications network with access to 40 cities. Claimed to be the first generally accessible online interactive information service. (McCarn & Leiter. 7/73).

10/72 TOXLINE service started on Informatics/RECON. (ref. Kissman).

10/72 ESRO demonstration at 1975-? ASIS Annual Meeting in Washington, using computer in Darmstadt, and the following files: NASA, COMPENDEX, INIS, METADEX, NTIS and Electronics Components. (ref. Tocatlian).

10/72 TOXLINE service made available on Informatics /RECON as a result of an NLM contract with Informatics. This was done on an IBM 360, with TYMNET access. (ref. NLM 1973 Annual Report, Kissman 1975.)

10/72 MEDLINE supported an average of 25 simultaneous users, 43 hours per week. The data communication network provides access from 40 U.S. cities. Over 120 institutions with over 200 terminals used the service. (ref. McCarn 7/73)

10/72 TOXLINE service made available on Informatics, with their Informatics RECON-IV system as a result of an NLM contract with Informatics. This was done on a service bureau's IBM 360, with TYMNET access (ref. NLM 1973 Annual Report, Kissman 1975). This was the first operation of the Informatics search service. Main participants: Dick Lemon, Howard Coleman, Mike Kelly, Mark Bayer.

?/72 NASA/RECON software installed in Justice Dept. computer facility, using a test terminal, to start the beginning of JURIS (Justice Retrieval and Inquiry System). (ref. Kondos).

11/72 First installation of IMS/360 Version 2 with IQF (Information Management System with Interactive Query Facility), developed by IBM-White Plains. (ref. Fife 3/74).

12/72 AIM/TWX became MEDLINE, using an adapted version of ORBIT (ref. Katter & Pearson 6/75).

12/72 AIM/TWX service terminated (ref. NLM 1973 Annual Report)

12/72 STAIRS (Storage and Information Retrieval System) installed at SUNY/BCN to replace IBM's Document Processing System. (ref. Humphrey 9/75).

12/72 SDC Search Service established as an operational entity, with Carlos A. Cuadra as manager.

12/72 NYT Information Bank demonstrated first remote terminal, with experiment at Univ. of Pittsburgh.

1973

?/73 CA COND database made available on SDC ORBIT.

1/73 SDC Search Service issues its first publicity.

1973

1/73 Calspan.

1973

?/73 SUNY connected to TYMNET to allow access to MEDLINE file from 50 U.S. cities, at a rate of $5.00/hr. (ref. McCarn 1974)

1973

?/73 MEDDOC, an in-house system at Eli Lilly & Co., is used for bibliographic searching of medical literature, using an IBM 370 and a CRT terminal. (ref. Markowitz. 1973).

part of TOXLINE

?/73 Informatics search service offers TOXLINE, CBAC, CA COND., ENVIRON, and POPLINE.

used REGION IV

1/73 Battelle (thru Science Information Associates) offers service on full NTIS file and sample CA COND file.

2/73 NLM starts joint service with SUNY to obtain backup access to the SUNY MEDLINE file of 1.7 million citations from Index Medicus from 1964 to date, running on an IBM 370/155. this was expected to give NLM the capacity to reach an estimated 250 subscribers, and to handle more of them online simultaneously. MEDLINE by itself had 50 input lines, but by Feb. 1973 when the combined network went into operation, it had 90 input lines. (ref. Advanced Technology Libraries. 2/73)

2/73 NYT Information Bank started providing online service to its first paying customer.

known as POPINFORM then Population Information Geo. Wash Univ. Project officer Helen Kolbe. Now at Johns Hopkins Univ — 301-955-8200. Became POPLINE and later then it became part of Medline.

3/73 ESRO computer facility moved from Darmstadt to Frascati, Italy. IBM 360/50 installed with Data Cells and disk storage. (ref. Isotta, 1975).

3/73 SUNY/BCN changed to IBM STAIRS software.

5/73 DIALOG provided these files: NTIS, ERIC, PANDEX, Exceptional Children Abstracts, AIM/ARM, and TRANSDEX, accessible by 240 char/sec. leased lines, and 10, 30 or 120 char./sec. dialup telephone or TWX. (ref. Donati, 3/73).

5/73 DS/3 service started by SDC-Santa Monica. (ref. Fife 3/74).

5/73 First issue of DIALOG Chronolog Newsletter

5/73 DIALOG connects to TYMSHARE network with access to about 50 U.S. cities, and Paris, London, and Brussels, at data rates of 10, 15 or 30 char./sec.

4/73 "NLM's MEDLINE--which now serves 177 users--can only handle 50 requests simultaneously." (ref. "SUNY Operates" 4/73)

6/73 TOXLINE on Informatics had 35 subscribers (ref. NLM 1973 Annual Report)

6/73 There ~~are~~ were 163 operational MEDLINE units in the U.S., in addition to those at NLM, plus 10 in Canada and 3 in Europe (ref. Rogers 7/74)

6/73 At the end of the fiscal year some 180 institutions had terminals to access MEDLINE. MEDLINE provided 70 hours per week service to 450,000 citations, through a data communications network with access from 50 cities. (ref. NLM 1973 Annual Report)

4/73 Battelle offers service on CA COND, TOXLINE, NTIS; COMPENDEX is being considered. TYMSHARE now available.

8/73 CIRCOL database contained, 850,000 citations, (ref. Schaffler 2/74), and was still using the IBM DPS search system, operating on an IBM 360/65 at the Foreign Technology Div., Wright-Patterson Air Force Base.

7/73 ESRO reported to have a total of 1.35 million references online. (ref. Tocatlian).

10/73 DIALOG still operating on split shift, Monday through Friday, 41 1/4 hours/week. Files available are ERIC, NTIS, Psych Abs, AGRICOLA, Pendex/Transdex, INSPEC, ABI/INFORM. (ref. 10/73 Chronolog).

7/73 MEDLINE now used by over 120 institutions with terminals. (ref. McCarn 7/73)

8/73 MEDLINE establishes first user charges: $6/connect hour and $.10/offline page (ref. NLM News. 5/75)

9/73 MEDLINE includes 509,396 citations and is available on a 5-day a week basis, with 8 hours/day from the NLM computer and 9/hours/day from the SUNY computer (ref. Rogers 7/74)

11/73 NLM replaces its IBM 370/155 with an IBM 370/158 (ref. NLM News 12/73)

8/73 Database now includes 550 million characters of Ohio law, 475 million characters of New York law, and 600 million characters of Federal tax law. By 12/73, it was scheduled to include another 120 million characters for all of the U.S. Code, and 100 million characters of the U.S. Reports (Supreme Court cases from 1938 to date); this would bring the LEXIS file to a total of 2 billion characters of text. (ref. ?

10/73 SUNY/BCN adds the ERIC file.

?/74 First overseas demonstrations of ORBIT using SDC-Santa Monica computer.

3/74 Demonstration of ORBIT by Carlos Cuadra at Information Industry Assoc. meeting in Wash. DC .

1974

1/74 DIALOG Files available for searching include ERIC, CEC, Pandex, NTIS, AGRICOLA Psych Abs, INSPEC, ABI/INFORM. Test files of Engineering Index and Predicasts are loaded. New Data Cell installed.

1/74 DIALOG starts operating on full daily schedule, Monday through Friday, 56½ hours/week.

/74 JURIS terminals presently installed only in pilot locations. (ref. Kondos).

3/74 DIALOG now providing service to over 200 terminal installations. Engineering Index and Predicasts available for public use. Service now operating from an IBM 360/50.

3/74 Contract awarded to Lockheed by NSF to study feasibility of online service in public libraries.

1974

1/74 Report at ARL meeting noted that MEDLINE had provided service to 250 institutions in the continental U.S. Establishment of an interface with ARPA network and a commercial communication network, allowed MEDLINE access from Hawaii, Alaska, and Western Europe.

3/74 MEDLINE has more than 200 user institutions (ref. Kissman 1975)

1974

?/74 Informatics acquired by Equitable Life Insurance Co., installs its own computer facility for its search service, and provides its first litigation support file.

Dick Lenore

1/74 Battelle (thru SIA) still marketing service on NTIS (200,000 records from 1970+), CA COND (1 mill. records from 1970+) and TOXLINE (280,000 records). TYMSHARE access to 35 cities.

1/74 CHEMLINE dictionary first made available on Informatics STAIRS/RECON system, as an adjunct to TOXLINE. (ref. Schultheis 7/78).

3/74 SUNY/BCN adds the Psych Abs. file.

3/74 CAN/OLE (Canadian On-Line Enquiry) starts public service, with access to 5 databases (ref. Peel 1977)

3/74 paper represented by ... Pryor states that NASA/RECON contains over 1.0 million citations in 23 files. It uses an IBM 360/50 for 57.5 hours per week, serving 24 terminals on leased lines at 300 char. per second. (ref. Pryor).

4/74 DIALOG starts SDI service.

4/74 TOXLINE moved from Informatics to NLM's IBM 370/158 (ref. NLM News 12/47; NLM 1974 Annual Report)

5/74 Six Data Cells installed at Lockheed, bringing total DIALOG direct access storage capacity to 3 billion bytes. Chemical Abstracts test file loaded.

6/74 JURIS system is operating with 6 terminals (ref. Hambleton 5/76)

6/74 MEDLINE installed at NLM under ELHILL-3, the MEDLARS-2 retrieval program. (ref. NLM 1974 Annual Report)

6/74 CA Condensates now available for public searching on DIALOG.

7/74 Seventh Data Cell installed on DIALOG.

7/74 A 7/74 paper by Frank Roger noted that SUNY now conne 25 institutions. (ref. Rogers 7/74).

7/74 Beginning of JURIS evaluation study (ref. Hambleton5/76)

7/74 First public operation of the Electronic Maildrop (R), the first online ordering service used with a search service. It became operational with the ISI SCISEARCH file and their Original Article Tear Sheet (OATS) service. This was the first operation of an online ordering service from the search services. (ref. SDC Search Service News 5/74).

7/74 New JURIS software expected to be completed, to enable expansion to 100 terminals (ref. Kondos 1/74)

8/74 TWX access added to DIALOG for 10 char./sec. access. (ref. 8/74 Chronolog).

8/74 Database now includes Ohio law, New York Law, Federal general library, Federal Tax library, Federal securities library (ref. Harrington 8/74)

8/74 First DIALOG User Group meeting held in Wash. DC with over 100 users. Notice given that DIALOG would change to an IBM 360/65 in the Fall. (ref. Fed. of Info. Users) — other notes suggested that this was actually the first such meeting.

8/74 Upgraded version of DIALOG installed at the ESRO facility in Frascati, Italy by DIALOG staff.

9/74 SSCI now available for public searching.

10/74 SDC completes the work on NLM contract NIH 71-4728 to develop the MEDLARS-2 system. The system was in operation at NLM on an IBM 370/158, serving as many as 50 terminals simultaneously. (ref. Katter & Pearson 6/75).

11/74 Paper presented by Isotta noted that there were now 27 operational terminals, using 2400 baud leased lines, and 3.4 million references in 16 files on an IBM 360/50. A dialup capability was recently introduced in the Rome area. (ref. Isotta. 1975).

11/74 Paper by Kollenback noted that ESA/RECON had 24 CRT terminals operating on dedicated lines at 30 char./sec. speeds (ref. Kolienback)

11/74 Paper presented by Hjerppe noted that there were almost 3.5 million references available on ESRO/RECON in 11 files, including CA Condensates, NASA, NSA, Metadex, Compendex, NTIS, and Electronic Components.

12/74 DIALOG now available Monday through Friday for 58 hours/week. (ref. 12/74 Chronolog)

1975

?/75 First public operation of the Electronic Maildrop (R), the first online ordering service used with a search service.

1/75 NLM completed acceptance testing of SDC's MEDLARS-2 software, installed on NLM's IBM 370/158. This "...includes ELHILL-3, the software which has been operating MEDLINE for several months." (ref. NLM News. 2/75).

3/75 NLM announced availability of MEDLINE service from their own facility to any interested industrial customer. This was expected to move about 110 SDC users to NLM.

4/75 ORBIT given "Product of the Year" Award by Information Industries Association.

5/75 SDC filed petition no. 164-75 in the U.S. Court of Claims, charging NLM with breach of contract for contract NIH 71-4724.

1975

3/75 DIALOG now available Monday through Friday, and alternate Saturdays, for 68 hours/week. (ref. 1/75 Chronolog).

3/75 Search Save feature available on DIALOG. (ref. 3/75 Chronolog).

4/75 DIALOG given Product of the Year award by Information Industries Association.

5/75 BIOSIS, EIS Plants, ISMEC now available for public searching on DIALOG.

5/75 JURIS year-long evaluation study completed. (ref. Hambleton 5/76).

5/75 Second Annual DIALOG Users Workshop held in Palo Alto, CA. (ref. 7/75 Chronolog).

1975

?/75 NLM connects to Telenet network.

?/75 ELHILL-3 installed in Australia in Australian Dept. of Health.

1/75 NLM completes acceptance testing of MEDLARS-2 software developed by SDC and installed on the IBM 370/158 at NLM. MEDLARS-2 includes ELHILL-3, the software for MEDLINE. (ref. NLM News. 2/75)

2/75 MEDLINE user charges raised to $8.00 /connect hour (NLM News. 5/75)

6/75 Publication by Robert V. Katter and Karl M. Pearson, noted that MEDLARS-2 incorporated the results of the experimental AIM/TWX service. (ref. Katter & Pearson)

1975

?/75 STAIRS/VS in operation at the Central Institute for Scientific and Technical Information in Sofia Bulgaria (publication by V M. Pulev et. al. in July 1978 IBM Nachrichten.

?/75 Informatics provides search service on Excerpta Medica using RECON-IV.

limited in scope. Either no MESH terms or full-text. Never much used. Poorly priced. Large up-front monthly fee.

6/75 BIOSIS installed STAIRS for inhouse searching.

7/75 Paper presented by Roger Summit "History and Future of Online Information Retrieval Service" at 5th Cranfield Conference in England.

7/75 DIALOG now available 73 hours/week. (ref. 7/75 Chronolog).

10/75 DIALOG now available 82 hours/week. (ref. 10/75 Chronolog).

10/75 DIALOG's Classroom Instruction Program initiated for Saturday-only use at reduced rate on selected files.

10/75 Several additional files made available for public use on DIALOG: Foundations Directory, Foundation Grants, Oceanic Abstracts, MGA, Science Citation Index.

10/75 DIALOG's DIALIST microfiche term frequency listing produced and made available.

11/75 DSS (DIALOG Statistical Service) computational service made available.

7/75 MEDLINE charging structure changed to $15/connect hour during prime time, and $8/connect hour during non-prime time (ref. NLM News. 5/75)

7/75 SDC raises legal challenge to NLM service (ref. NLM News. 7/75)

10/75 Computer system in use was an IBM 370/155 with 2 million char. of storage, and 5 billion characters of disc storage, operating in Dayton, Ohio. CRT terminals were used with leased lines, at speeds of 120 characters per second. The system could accomodate 200 simultaneous users at that time. (ref. Abramowitz 1975)

– when did it first start 1200 baud service?
Bennett

11/75 CAN/OLE had 15 university subscribers (ref. Peel 1977).

12/75 Search service still operating with time windows for various databases. (ref. SDC Search Service News. 12/75).

12/75 The last of the Data Cells arrived for DIALOG service.

?/75 DIALOG adds Telenet service.

1976

2/76 Telenet access added to SDC search service (ref. SDC Search Service News. 2/76).

1976

2/76 DIALOG now available 83 hours/week. (ref.2/76 Chronolog).

1976

7/76 Martin Cummings notes in a presentation at the ALA Conference that MEDLINE now served 500 institutions. (ref. Cummings. 7/76)

1976

?/76 Paper published by James R. Powell, "Evaluation of Excerpta Medica On-Line" in Special Libraries, discusses the file as loaded on the Informatics online system.

6/76 Toll-free number first made available for SDC Search Service. (ref. SDC Search Service News 5/76).

5/76 DIALOG starts TELEX access. (ref. 5/76 Chronolog).

12/76 The number of institutions in the network is now over 600 (NLM News. 12/76)

9/76 ESRIN/RECON demonstration in Bombay, India.

8/76 Time-windows discontinued for all SDC Search Service files. Service was provided for all files on a 14½ hour/day basis (?hours/week). (ref. SDC Search Service News 7/76).

1977

?/77 MEDLINE installed on British Library BLAISE system.

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Mark Bayer 6 May 87

Mead
Information
DIALOG
BRS
McGraw Hill

Chronology of employer:
When started in info bus.?
IBM's Doc Proc 1968+
earliest forms of online? Videotex?

was Information Type to be a public online service like SDC and ORBIT?

What was the story of ENVIRONET or Information (was this first "commercial" public file for them?)
& NSF influence — Why was it stopped?
.. .. .. Information acquisition of NASA/RECON software from COSMIC
(why marked RECON-4?)

What were the marketing innovations & pricing surprises in online?
(e.g. annual subscription sales, 50% cut to 25 from print, discounts)

What were problems & means of training & marketing in early days
(e.g. was it a long tough sell to attach a library?)
was it always selling to librarians?

What were the innovations in training? (e.g. final classroom w/ terminals)

What services started, & subsequently stopped (e.g. Battelle, LEXDOCUMENT, Information-1)

How did Data Central Corp happen & get acquired by Mead?

What prompted the split of Mead Data Central with the 2 groups
LEXIS –
Court Service – Data Gaining (looking at LC catalog work?)

IBM's Doc Proc System (1968+) used at SUNY/BCN before STAIRS

origin of STAIRS? (1967?)

origin of IBM BROWSER? (1971+)

anything about PRADAT (Project Hi Droid Access Terminal) on Mead – 1969+

NYT defaults?

Major contributions of DIALOG, Mead, etc?

June 26, 1987 87177DIS0001

Charlie Bourne, 3775

Memo to: History File

Subject: Notes of 1 May 80 Talk with Mark Bayer

Inquire
Robert Schreier, Vice President, Infodata Systems, Inc. Pike, Falls Church, VA (703/578-3430) would be a good to.

2 copies
fr Mark Bayer

Informatics
Frank (?) Gaudette, Vice President for Administration a there all the time, and would be a good person to talk John Rome, Vice President of Litigation Support from 1974 on.

Mark suggested I send a milestone chart to

Richard (Dick) Lemons
Pres., Info. Systems Co.
Informatics, Inc.
6011 Executive Blvd.
Rockville, MD 20852
(301/770-3000)

Mark said that there were 3 early (1973) online products at Informatics:

- ENVIRON (Environmental Information Retrieval Online)
- POPINFORM -- a population file, later changed to POPLINE, and associated with George Washington University. Helen Kolbe & Dr. Phillis Piatrow were the project leaders. Kolbe is now at the John Hopkins School of Public Health (301/955-8200). Something was published by one of these people, and it should be in the Medline file.
- TOXLINE (Mark suggested that I get the information from Henry Kissman at NLM.) These products preceded EXCERPTA online.

Mead

The TIMPS (Technical Information Management & Planning System) file, a precursor of the ENVIRON file, started at Mead in 1969(?), and ran at Mead until the Summer or Fall of 1973; then it went to Informatics where it was renamed ENVIRON. Dr. David Stephan (Director, EPA's Research, Development, and Demonstration Div.) was involved with this file.

The first file (of what?) was PROJ (= PROJECTS), outlining each current EPA R&D project. Other files then joined in:

- o TADS (Technical Assistance Data System) -- produced by the EPA Division of Oils & Hazardous Materials Spills. It had 100 data fields, and was similar to CHEMNAME, and still exists somewhere today (Battelle?).

- o NOISE POLLUTION -- produced by the Franklin Institute. It went online in 1972.

- o OHMS (Oils & Hazardous Materials Spills). It listed major spills (dates, places, specifics), and went online in 1972.

- o BEER (Biological Effects of Electromagnetic Radiation). This was produced by Walter Reed Army Hospital, under contract to Wright-Patterson AFB; Mark Grove was the Project Monitor.

Mark said that in 1974(?), the Data Corporation, funded by Bill GOROG, split into 2 parts:

- o Mead Technology Laboratories (to do government contract work). Dick Geiring worked there.

- o Mead Data Central (legal databases, OBAR project, etc.). Bob Burnett(?) worked there.

Some of this is described in a 1974 UCLA/Informatics Conference (and Proceeding) that was organized by John Sherrod.

CPB:kir