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ON-LINE REAL-TIME ACTIVITIES IN THE DANISH LIBRARY WORLD

by

B. BARNHOLDT

In 1969 I established on behalf of the Danish Library School a series of introductory courses in electronic data processing for librarians and students of library science. Up to now about twenty courses have been arranged, each comprising 60 hours spread over 12 days. An element in these courses is a demonstration of an on-line real-time system called BIBRI (fig.1). The system illustrates how a union holdings list of periodicals could be automated. The data base comprises three files: periodical titles, subject headings (keywords) and library codes. These key items can be accessed via CRT display terminals or typewriter terminals. When subject headings are entered as access points it is possible to link the terms with the Boolean logical connectors "and, not". The library students have opportunities to use the system and get acquainted with the use of such an interactive catalogue system.

The library school version of the system is running on a service bureau installation and at the Copenhagen University Computing Centre. The version to be presented at this meeting is running on the installation at I/S Datacentralen, the computer centre established for handling work for the Danish state.

As already mentioned the library school system is only for educational purposes. The Danish library community, however, is also aiming at an operational system performing all the daily functions based on the handling of bibliographic data. For that reason different project groups have been formed under the auspices of the joint council of Danish research libraries with the intention of developing common standards and systems and taking joint action to mechanise the housekeeping procedures in the Danish research libraries. One of these groups has the objective of establishing an experimental on-line real-time system for circulation control and bibliographic search of the library's own catalogue data. This experimental system is intended to provide the basis for an evaluation of the economic expediency of such a system. Furthermore the system is intended to be developed as a module fitting into a total real-time system, which of course - if economically justified - will be the final goal of our mechanisation efforts. The "on-line real-time group" this spring received financial support for a two years research and development project, which will take place with this library acting as host. The university computer installation (IBM 370/165) on the local campus will be used for running the project.

As some of you know, since the beginning of 1970 this library has produced it's catalogues by means of a computerised system (1), which in 1972 was adopted by the newly established university library in Roskilde, 20 miles west of Copenhagen. Danmarks Tekniske Bibliotek has now in machine-readable form all accessions with year of publication 1968 or later, and these catalogue data will be used as basis for the "literature localisation" system, as we often call it. There follows a brief description of the main features of the system.

Fig.2 shows the outline of the system: database, application programs and the different forms of output representation, while Fig.3 illustrates the intended physical database organisation. In these diagrams Index-files are shown as triangles, Main-files are shown as rectangles, and Structure-files are shown as rhombs.

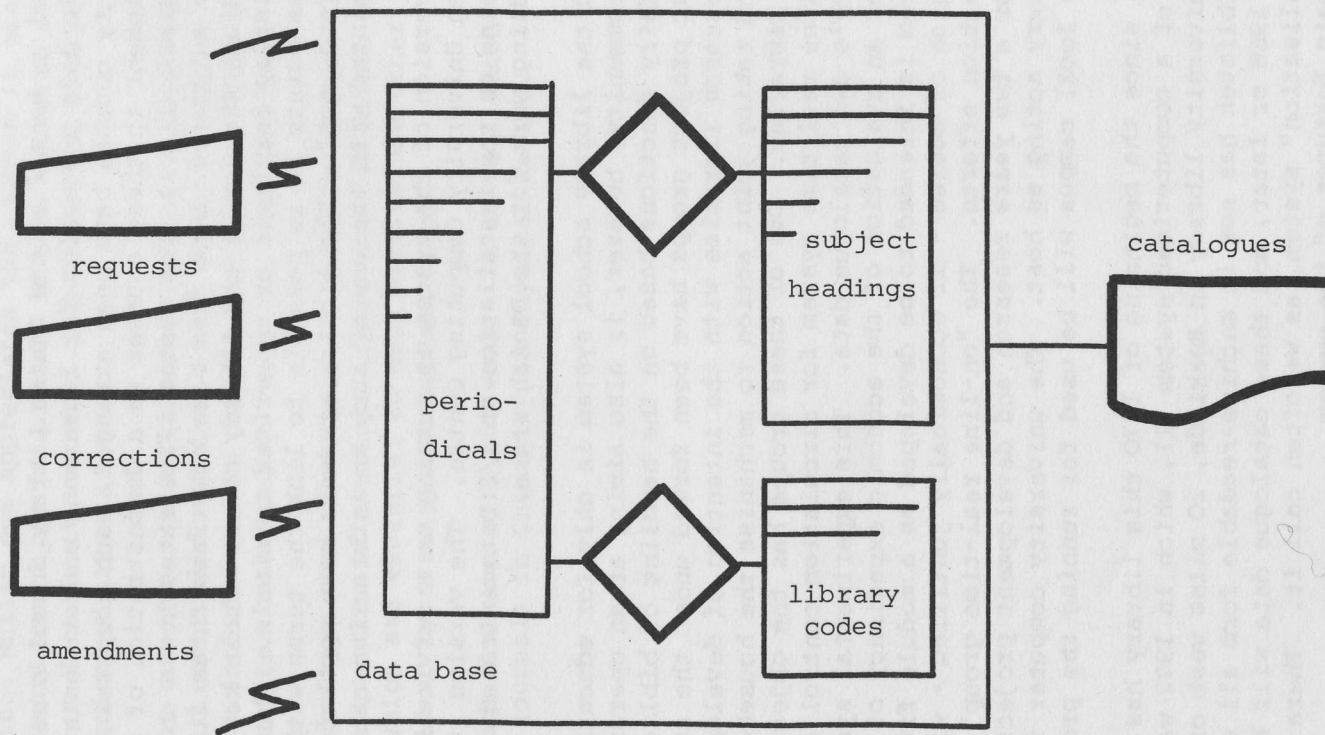


Fig. 1 BIBRI

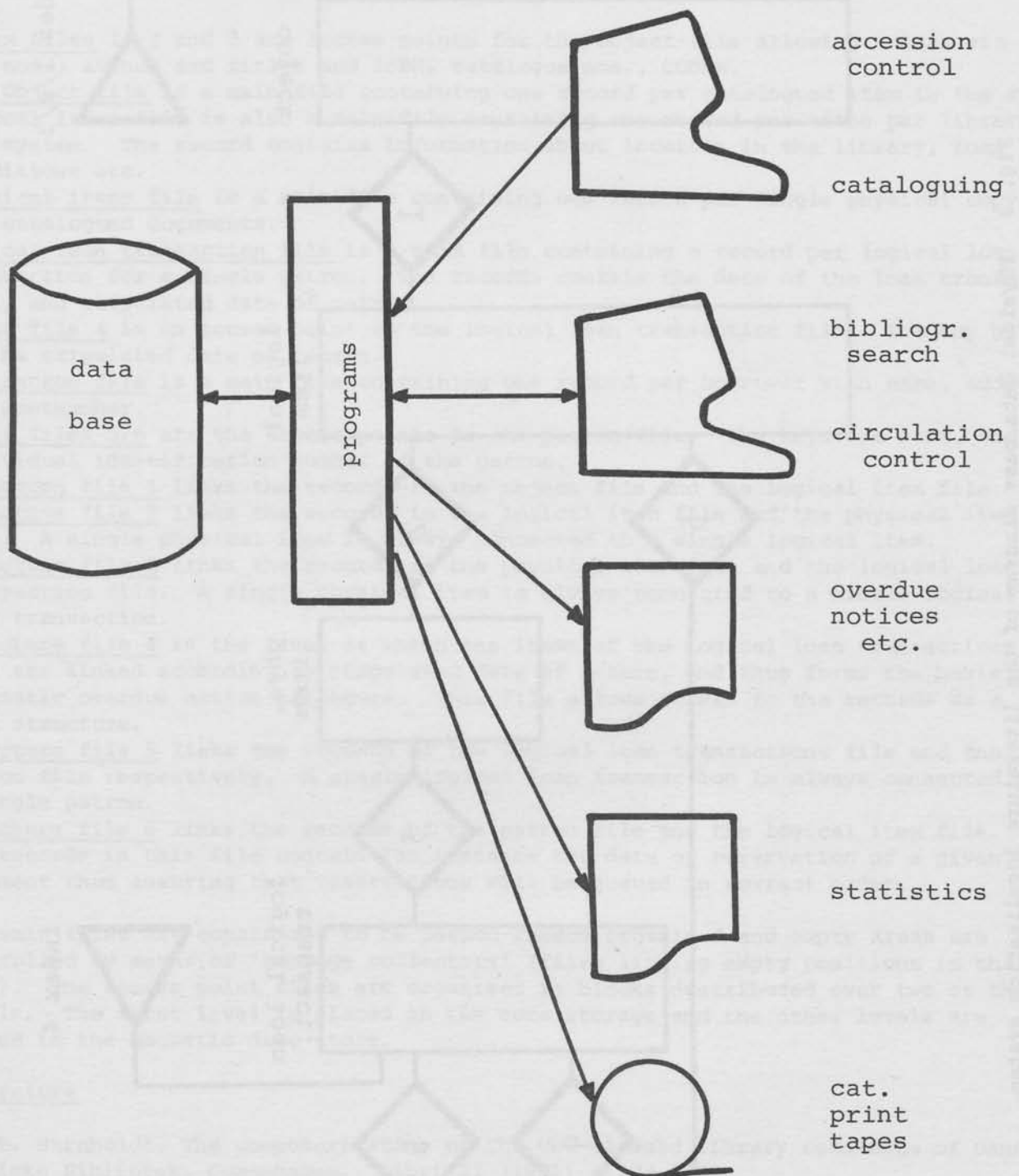


Fig. 2 Literature localisation system for Danish research libraries

index 1/2/3

index 4

index 5/6

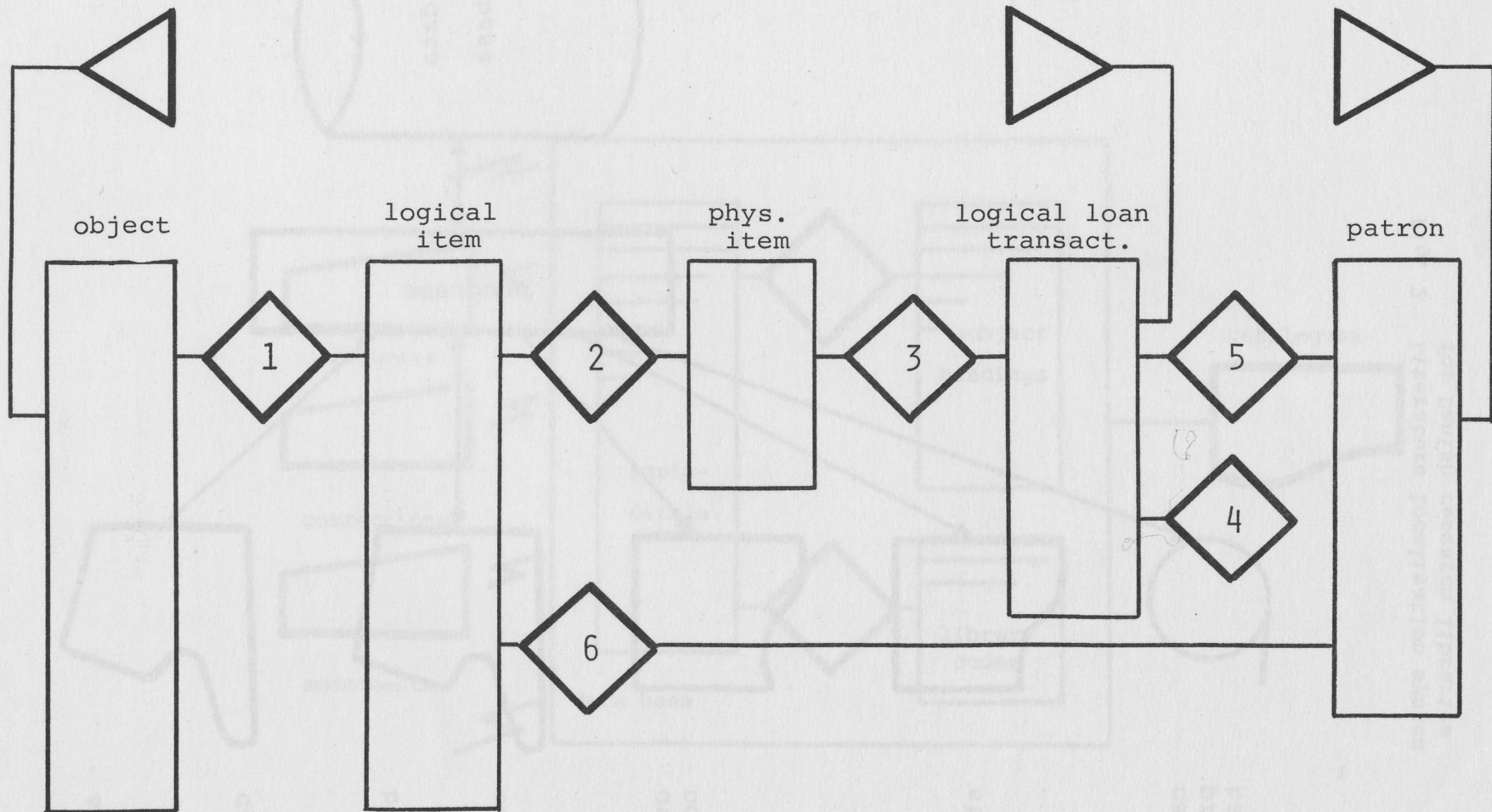


Fig. 3 Physical data base diagram of the literature localisation system.

The physical database diagrams comprises 5 main files, 6 structure files and 6 index or access point files.

Index files 1, 2 and 3 are access points for the object-file allowing access via UDC nos., author and titles and ISBN, catalogue nos., CODEN.

The Object file is a main file containing one record per catalogued item in the system. Logccal items file is also a main file containing one record per title per library in the system. The record contains information about location in the library, loan conditions etc.

Physical items file is a main file containing one record per single physical copy of the catalogued documents.

Logical loan transaction file is a main file containing a record per logical loan transaction for a single patron. The records contain the date of the loan transaction, and stipulated date of return.

Index file 4 is an access point to the logical loan transaction file. The key here is the stipulated date of return.

The patron file is a main file containing one record per borrower with name, address, and postnumber.

Index files 5/6 are the access points to the patron file. The keys are name, and individual identification number of the patron.

Structure file 1 links the records in the object file and the logical item file.

Structure file 2 links the records in the logical item file and the physical item file. A single physical item is always connected to a single logical item.

Structure file 3 links the records in the physical item file and the logical loan transaction file. A single physical item is always connected to a single logical loan transaction.

Structure file 4 is the level at which the items of the logical loan transactions file are linked according to stipulated date of return, and thus forms the basis of automatic overdue notice procedure. This file allows access to the records as a list structure.

Structure file 5 links the records of the logical loan transactions file and the patron file respectively. A single logical loan transaction is always connected to a single patron.

Structure file 6 links the records of the patron file and the logical item file. The records in this file contain for instance the date of reservation of a given document thus assuring that reservations will be queued in correct order.

The main files are considered to be pseudo-random organised and empty areas are controlled by means of 'garbage collectors' (files listing empty positions in the base). The access point files are organised in blocks distributed over two or three levels. The first level is placed in the core storage and the other levels are placed in the magnetic disc store.

Literature

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SELECTIVE DISSEMINATION OF INFORMATION AND

USER TRAINING IN THE G.D.R.

by

DIETER SCHMIDMAIER

In the G.D.R., the selective dissemination of information is carried out using the storage existing in the central head offices and head offices within the Information System for Science and Technology. In the nationally owned (VEB) Kombinat Robotron, a type project "Employment of Robotron 300 for Information and Documentation" has been gradually developed since January 1st, 1969. It also contains the component complexes of "Selective Dissemination of Information" and "Research" (1). In the meantime, these component complexes have been taken over by numerous institutions. There is positive experience in existence beyond the test stage. The task of libraries and information departments at universities, which has become more extensive since 1969 following a direction of the Minister of Higher and Technical Education, includes the immediate supply of scientific information (2). The university libraries use the above mentioned Robotron project for the SDI of their potential users in

- determining the need for information and the appropriate compilation of all research tasks, scientific projects, and trends
- setting up information plans in accordance with the tasks in teaching and research
- continuously supplying scientists with relevant information.

In this respect, great importance is attached to the cooperation contracts with the storage departments in the G.D.R. and the other socialist countries. In close cooperation with the organisation and computing centre, the library of the Technological University of Dresden is working on a project now in the programming stage. User profile and information source profile are matched as in the project of the nationally owned (VEB) Kombinat Robotron. At the Freiberg Mining Academy, the information departments in the sections elaborate orders which provide for cooperation contracts with the storage working with SDI. Thus the storages are employed to capacity. The university owned publications (research reports, diploma works, dissertations) are adequately prepared for these storages and offered as equivalents.

The educational institutions mentioned in the law on the uniform socialist educational system of the G.D.R. (3) prepare the user or future user of libraries or information departments for an occupation in the socialist society and provide him with knowledge, abilities, and skills for this purpose. Within the framework of the general subject education, knowledge of the library system and scientific information is also imparted. In addition to this, however, the user must also become acquainted with new forms of information services. The structure of information services must not become a matter of "professionals" alone, but has to be fully explained in considerable detail to the user and at the right time.

SDI is a personal information service. It is (4) a 'mechanised system for selectively bringing published papers or their titles to the user, based on a comparison of their subject content with the user profile. It is an information service functioning according to user profiles, which relieves the user of selection from the mass of published information and regularly presents indices of documents corresponding to the user's requirements, which have a high probability of interest to the subscriber. A decisive prerequisite for efficient and directed supply of information by SDI is the exact elaboration of the user profile. For this purpose the user must submit and modify his profile at regular intervals during the dissemination of information. This is the basis for computer matching of stored profiles against titles, descriptors, or notations of information sources.

The staff of libraries and information departments on the one hand and the various users on the other cooperate in SDI and its preparation. The greater the user's willingness to cooperate and the greater his knowledge in the field of library science and information, the better he will understand the nature of SDI. Hence the profile will be more exact and the information losses smaller. The user can only be supplied with an SDI service after verbal communication of his needs to the library or information department. SDI presupposes - as no other information service before - the user's active engagement.

In the G.D.R. the basis for providing knowledge of library science and informatics is the uniform socialist educational system. The correct use of libraries and information departments cannot be imparted early enough since it is a significant component of scientific working. In the second, fifth, and eighth class library instructional visits are compulsory: these take place after the first instruction in reading, before the beginning of instruction in special subject rooms, and during preparation for future polytechnic instruction or professional employment. Experiments have shown that in the 9th or 10th class special series of lectures about the library system and scientific information are of great use. With these experiments, the first lectures imparted knowledge of the following fields:

1. Productive force of 'science' in socialist society
2. Laws of the development of science and scientific information
3. The relations between socialist production and scientific information
4. The tasks of scientific information.

These general introductions were followed by a systematic preparation for scientific work and guidance to library and information departments with regard to utilising literature efficiently:

1. The different phases of scientific work
2. The various kinds of information sources
3. Information sources in individual work (learning, scientific style, independent work with books, reading and utilising literature, appropriate shaping of scientific works) as well as in libraries and information departments
4. The most important storage methods for scientific information in individual work as well as in libraries and information departments
5. Research and means of research
6. Tasks, services, and the profit of libraries and information departments
7. The main channels of scientific information from producers to users.

The experiments ended with a first introduction to information research systems. The basic terms and the results of retrospective, selective, and current information were explained, with numerous examples. Here the pupil also received his first insight into SDI.

General introductions in the secondary schools are continued in greater detail at the technical schools and universities, for there the former pupil is actively confronted with information services for the first time because he passes through a great productive phase during his studies and participates in experiments and literary discussions. At technical schools and universities, knowledge of the principles of scientific work is put into practice (6). At the beginning of his studies the student is involved in absorbing, collecting, arranging, and digesting information on the subject. As the student progresses in the scientific discipline which he has chosen he needs extensive instruction on the following problems:

1. The function and the tasks of the library system and scientific information
2. The need for information and its satisfaction
3. The structure of the departments of the library system and scientific information
4. Specific subject information sources
5. The exploitation of the content of information sources, information research methods and research practice as well as mechanised and automated storing of research and supply of documents.

In this field, much experience has been gathered in the U.S.S.R. and the other socialist countries. It has been described in many publications (7).

With this knowledge, systematically acquired by lectures and seminars in the several disciplines and integrated within them the student possesses the necessary equipment for giving the library, or information department concerned with SDI, pertinent information on his interests. Among other things, SDI demands extensive knowledge of ascertaining the user requirements, employing thesauri, science classification, applications of electronic data processing, and microfilm technique, which can only be learned by practical training, examples, and by one's own active contribution to information/documentation.

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- 6) Rationell studieren. 2nd ed. Berlin 1972. 73p - An excellent introduction to the methods and techniques of scientific working for students of the universities of the G.D.R.
- 7) Michajlov, A.I., R.S. Giljarevskij: Information und Dokumentation. Einführungslehrgang. T. 1.2. Berlin 1971-72. - The typical example of the directed introduction of broad user circles to scientific information.

DISCUSSION

R.G. RHODES: It was mentioned that schoolchildren are given instruction in Library use in the 2nd, 5th and 8th classes. To what age group do these classes correspond?

D. SCHMIDMAIER: The children would be about 9, 11 and 14 years old.

B. HISINGER: Would the speaker please say how many lectures on the use of information are given per year per user at the tertiary level?

D. SCHMIDMAIER: At the beginning of their studies students receive 10 lectures on general topics. Later they receive another course of 10 lectures specifically related to their field of study. It is important that specialists in the disciplines take part in this course as well as library staff.

I. BERG HANSEN: What kind of SDI services are introduced to the students during information courses?

D. SCHMIDMAIER: Students only receive a general introduction to SDI. It is felt that this will give the basic background which the graduate can apply to the SDI situation he finds when he enters employment.

I.V. BRUZA: Is the work done by students in the documentation course subject to examination and how many hours are given to it during the whole curriculum?

D. SCHMIDMAIER: There is no formal examination but the work done by the student is taken into account at the end of his studies. Overall 20 hours are allotted to documentation work.

A.J. EVANS: One can raise the question as to whether it is possible to teach SDI effectively without giving students some practical insight into its applications. At Loughborough third and fourth year students may have projects involving a deep literature search where SDI would be useful. It is, however, doubtful whether libraries can afford the cost of providing services for students.

D. SCHMIDMAIER: It is usual in the engineering disciplines for work on the Master's theses to be carried out while in industry. Here financial support is available for any SDI required and the student learns about services related to his own subject.

M. SKALIKS: Dr. Schmidmaier implies that the user of SDI must grow into an information specialist. Surely it is the task of the information officer to be aware of the problems of the scientist so that losses of information are minimal?

D. SCHMIDMAIER: Both these things can happen at once. The information officer must be able to understand the user but on the other hand the scientist also requires to understand something of the system in use. Many research workers find it difficult to accept, in the right way, the information provided. Both sides require specific training.

R.A. WALL: Reference has been made by Dr. Schmidmaier to the need for involving the professors in the instruction of users. However, professors and indeed all teaching staff vary considerably in their familiarity with the literature and attitude to library usage. What steps are taken to educate the teaching staff in library use and secure their co-operation?

D. SCHMIDMAIER: During vacations several Ministries arrange courses in often including the use of libraries and information departments, for all teaching personnel; attendance at these is obligatory.

B. HISINGER: It would be interesting to know what type of computer is used in connection with SDI services.

D. SCHMIDMAIER: ROBOTRON, MINSK and URAL computers are used.

V. WEHEFRITZ: Dr. Schmidmaier's paper says that university-owned publications such as research reports are stored in the computer. How are other publications put into the data base?

D. SCHMIDMAIER: At present the DDR is using 2nd generation computers which are not compatible with those in East or West European countries. For this reason data bases are limited. Computers of the 3rd generation will shortly come into use.

I. BERG HANSEN: Are the data bases in the DDR used by industry as well as the Universities and is payment made for SDI services?

D. SCHMIDMAIER: Most users of data bases come from industry and payment is made for the services. It is impossible to say precisely how the Universities meet the costs they incur. An Information Science data base is available at the Berlin Central Institute for Information and Documentation and with this service there is a charge of 0.5 Mark per hit.

H. SKOV: Developments in the computer field have followed different paths in the Eastern Block compared with W. Europe and the United States. The Eastern Block have developed computerisation by letting people work with old machines and hence they have developed excellent software. Is it possible that a combination of this software with the sophisticated Western (US) hardware could present a potential danger or challenge to the Western world?

D. SCHMIDMAIER: I am afraid it is not possible to offer an opinion on this point.

A.J. EVANS: I have discussed Mr. Skov's point with Russian information scientists. It seems that the highly developed hardware available for the space programme is simply not obtainable 'lower down the line' for information science purposes.