The basic idea underlying all efforts concerning the automation of processing bibliographic data both in the library and documentation fields no doubt goes back to the rationalization of working procedures carried out within an office. In the beginning the publishers of documentation and abstracts information services planned to simplify the compilation of registers, to speed up the work with regard to the technical matter, and to bring about similar facilities from the point of view of business administration. Libraries, too, are first of all interested in simplifying and speeding up the compilation and supplementing of their catalogues. In addition the libraries soon began to pursue the aim of distributing a greater number of catalogues, as it was the case with the ONUL-project in Ontario from the outset. The same also applies to Boca Raton and Regensburg f.i. to mention two early examples developed in the USA and in the Federal Republic of Germany.

This inside argumentation was soon followed by another argument which primarily dealt with the fact that the data now existing in an electronically processed form would easily lend itself to a rationalized exchange of data. As far as the libraries are concerned it was the National Library of Medicine which took the first step although under very unfavourable conditions with regard to the limited compatibility of its magnetic tapes at least in the beginning of the sixties. The report of the American colleagues delivered on the occasion of the IFLA meeting in Toronto in respect of the Shared Cataloguing Program developed by the Library of Congress, must, however, be considered to be the decisive event. Ever since then the possibility of exchanging bibliographic data is discussed by everybody and has given rise to numerous experiments to bring about such an exchange.

In order to systematically discuss the manifold efforts made in this respect it seems appropriate to adopt two classification principles each of which describes different problems. The obvious approach is to differentiate between library and documentation material, and in addition to subdivide into material which is either commercially offered or officially distributed or accessible on account of individual arrangements.

With a view to the second classification principle this shows many differences which are characteristic of a transition period and which explain why the whole system of data exchange is still in the process of being developed. So far only the National Library of Medicine developed a clear system of official distribution by sending its magnetic tapes to one single national centre only with the express demand to collect the relevant national literature and to make it available to the Na-
tional Library of Medicine. For the time being, however, it cannot yet be assumed
that this system has already reached its final stage. The national centres required
for this purpose are in the majority of countries still in the process of being estab-
lished or even have not yet reached beyond the stage of being planned. In spite of
this the National Library of Medicine continues to stick to its basic conception
which includes the idea that further dissemination of information will be carried
out by the national centres. To do so two possibilities are available the functioning
of which need not, however, exclude each other: 1) the dissemination of informa-
tion to other subdivisions, and 2) the dissemination directly to the consumer. At
first sight the second solution seems to be more economical. But the fact should
not be overlooked that in the majority of cases the information itself is of no use
to the user unless it is at the same time connected with the supply of the literature
itself. A documentary system which is not supplemented by a library one will as a
rule turn out to be little effective. These problems, however, refer to automated
documentation services only. As far as the catalogue services are concerned the
libraries are the only or at least the primary final consumers, which means that a
national centre would mainly be used by libraries only. So far national dissemina-
tion centres have not been developed in this field as the number of those interested
in it is still relatively small. On the other hand the British National Bibliography
considers such a system to be the only future chance in case the number of mag-
netic tapes required exceeds the capacity of the data processing equipment of this
institution.

A considerable number of already existing systems concerning magnetic tapes for
use outside the local sphere relies on individual arrangements, even if they often
display some of the properties characteristic of commercial systems. Thus it is
held that f.i. the British National Bibliography will have to convert its system as
soon as the number of those interested increases. The same probably also applies
to the Deutsche Bibliothek (German Library). It is for this reason that the present
utilization of these magnetic tapes by other libraries can still be classed into the
system of individual arrangements intended to further develop the system by ex-
periments. The arrangement between two libraries without any purpose whatsoever
with regard to enlarging or adding new experiences by tests represents a special kind
of the system. Some of these such as f.i. the one between Regensburg and Augsburg
will be discussed separately. It is typical of these systems that they usually give more
help in respect of cooperation than those mentioned at first. They do not only aim
at exchanging data, but likewise at taking over organizational, programming, and
software systems, which means that the receiving library follows as completely as
possible the system of the supplying library. The difficulties arising thereby both
on account of local peculiarities and the machine layout need not be specially
stressed, whereas the chance of speeding up the introduction of electronic data
processing and of taking over stored information no doubt turns out to be advan-
tageous as the transformation of information into machine script costs both a lot
of time and of money.
Considering the commercial systems again two aspects have to be taken into account, i.e. on the one hand the material to be sold, and on the other hand the legal form of the distribution company. As to the first point of view it must be said that the predominant number of companies which commercially offer magnetic tapes with bibliographic information works in the field of documentation. Out of roughly two dozens of undertakings with subscription programmes for such magnetic tapes more than 20 are documentation services and only a few deal with the compilation of material for the alphabetical cataloguing of monographic literature. The majority of the latter do not only offer magnetic tapes, but also programming systems if desired. The fact that these systems are usually committed to a certain type as far as the demand for core stores and the type of data processing equipment are concerned entails that only a small number of clients can make use of this offer. It is for this reason that most firms offer software and hardware separately. As to the prices these documentation tapes are usually very expensive, in any case considerably more expensive than the special documentations in conventional book form which are usually also drawn up by these firms. The cost relation between these two forms, as a rule, exceeds 1:10, in absolute figures the price for one information unit varies between 1/2 and 1$. The high cost is not the only reason why libraries have so far gained little experience with such automatic documentation services. The only university library with comprehensive experiences in electronic documentation is the library of the Royal Institute of Technology Stockholm. However, it produces its own material itself. With the assistance of the Deutsche Forschungsgemeinschaft (German Research Association) Bochum University Library has started an experiment with a SDI-system in the field of anorganic chemistry the annual cost of which as caused by the magnetic tapes amount to ab. 40 000,- DM (for ab. 18 000 titles).

As far as bibliographic data are concerned there just now exists a number of commercial magnetic tape services such as Messrs. Abel in the USA, Messrs. Whittaker in Great Britain, Messrs. Brinkman in The Netherlands and the Union of Booksellers in the Federal Republic of Germany. In the case of the first service mentioned above this is a by-product of rationalization measures carried out by a great booksellers company with international branches, whereas the remaining companies devoted to automation are first of all designed to serve sales’ organization purposes. This has its effects on the subscription fees. At the same time their tapes show considerable disadvantages as compared with those of undertakings which from the outset started with the distribution of tapes. The data format is still more or less insufficient. Each bibliographic unit can only be grouped under one single classification conception. Other classification aspects are not provided for. It is true that f.i. other authors, editors etc. are listed in the description, but they cannot be retrieved and are thus without use for further grouping. The data of the imprint, too, do not correspond
to the ideas of a librarian. Finally the magnetic tape which Bochum University Library received for test purposes lists monographies of one volume only and with one author name only.

How complicated technological problems from the point of view of cataloguing can be solved is difficult to say on account of the material investigated so far and of the existing system descriptions. The only certain thing is that the scheme underlying the data is incompatible with the MARC-scheme. The advantage of the Abel magnetic tapes results from the fact that first of all the tapes comprise only such literature as is relevant for scientific libraries, whereas in the case of magnetic tapes of national bibliographies 60 – 70 % of the material compiled — in the case of foreign national bibliographies even more than 90 % — are of no importance for the average university library so that the utilization of the magnetic tapes is by no means an optimum one. Thus the Abel tape offers considerably more favourable conditions. Even in the case of a medium sized university library the degree of efficiency should exceed 50 %. The second advantage of the Abel tape refers to the amount of data listed. The magnetic tapes used so far compile the data of one country only whereas Abel comprises the scientifically relevant literature of all countries on earth. The experiences gained by Bochum University Library so far refer to one single test tape only which do not allow to give any details insofar the material offered here will be sufficient for an average university library. The solution to this problem is certainly also dependent on the local and national conditions prevailing in the field of education and can never be of a general nature. But in this respect it can be said that any cataloguing entry existing in electronic form can entail a certain improvement within the library although the marginal problems existing between automated and conventional working methods should not be underestimated.

The chance of such magnetic tapes which in future will be offered by booksellers depend on two prerequisites: first of all on the rationalization of working methods in libraries beyond the simplification of data compiling, and secondly on the extension of the Shared Cataloguing Program of the Library of Congress from a system covering English titles only to a world wide system. There is no doubt as to the fact that the system offered by Abel does not only facilitate the compilation of data, but can help to considerably simplify both the work of the acquisition department and the control and accounting systems by means of an address system which is jointly shared by libraries and suppliers. Inasmuch this system will be better than the well established system of standard book numbers has still to be investigated. The drawback, no doubt, is that with a view to rationalization the library restricts its freedom of disposition when selecting the booksellers. Considering the commercial systems working in the fields of libraries and documentation two groups can be distinguished: on the one hand there are magnetic tapes produces by commercial
undertakings and calculated from a business point of view. On the other hand there are tapes which are produced by offices of the civil service or supported by public means. This second group which with the exception of Abel includes all other suppliers of magnetic tapes for the purpose of cataloguing monographs is for obvious reasons cheaper, because in this case the compilation of magnetic tapes is usually the outcome of working measures taken within the office. The sale is therefore only a side effect which means that only part of the compilation cost is included in the prices. This difference in aims pursued results in quite different prices, although the magnetic tapes of Messrs. Abel more or less display the characteristics of the civil service system as they, too, turn out to be a by-product of rationalization measures within the firm.

But it is not only on account of the prices that the tapes are classed into the two groups outlined above. Another essential criterion is the problem of copyright, i.e. the right to further disseminate the information stored on the tapes. The fact that the compilation of bibliographic data is subject to the law of copyright is to-day no longer disputed by lawyers. Uncertainty, however, exists as to the interpretation of this law in respect of magnetic tapes. To copy a complete bibliography is certainly a violation of the law of copyright. To list titles concerning a certain topic by making use of a bibliography can, on the other hand, hardly be considered to be such a violation. This distinction as clear as it may be in the case of conventional bibliographies cannot simply be conferred to magnetic tapes. In any case the producers of magnetic tapes maintain that the buyer is not allowed to build up a world wide SDI-system with the help of tapes to which he has subscribed, not even if this system is not used commercially. Without attempting to give a final judgement on the legal situation which above all is also dependent on the copyright rules existing in the individual countries the following can be said: the dissemination of electronically stored data is so much easier than that of conventional books that by buying one single magnetic tape essentially more people interested can be supplied than would be possible with books. Thus the danger may arise for a firm which produces commercial documentation tapes that one single client will replace the great number of subscribers who received the conventional documentation service. If, moreover, this client is a public library which distributes the material either free of cost or for a small fee only the documentation undertaking soon loses its economic basis. This explains why these undertakings include into their subscription arrangements passages restricting the dissemination of data. For the time being the libraries find that these restrictions are generously handled as the firms are still very busy getting their tapes introduced on the market. How great the change in future may be cannot yet be anticipated. Just now the German publishers are very much concerned about the copyright problems with regard to electronic data processing. In this respect they often develop farreaching ideas. It must therefore be expected that also in the field of commercial magnetic tapes with bibliographic information further claims will be raised which don't allow an optimum utilization of the tapes.
These problems are not yet relevant with regard to officially produced magnetic tapes. It must, however, be expected that once the experimental stage has come to an end the copyright will be more definitely outlined.