

Paper H

VINITI

ALL-UNION INSTITUTE FOR SCIENTIFIC AND TECHNICAL INFORMATION DOCUMENTATION IN MANY LANDS 5

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Describes the five kinds of publications of Viniti - Abstracting periodical in 13 series, Express information in 49 series, occasional retrospective bibliography, occasional advances in science series and bilingual technical dictionaries. Describes the organisation of the work and the work flow in Viniti. Gives some reflections on the requirements in the publication work and in the organisation of Insdoc.

0 INTRODUCTION

Documentation has taken great strides in USSR during the last few years. The Presidium of the Academy of Sciences realised the need for exhaustive, expeditious, and pin-pointed documentation to feed the research workers with the information in the different sectors in the wave-front of knowledge, in order to eliminate wastage in research work and to conserve the research potential of the country. Therefore, it established the Viniti (All Union Institute for Scientific & Technical Information) in 1952. Viniti went into service in 1953. The hospitality extended by the Academy of Sciences through the Director of Viniti enabled me to spend about a week in Moscow and study the organisation and working of Viniti, on my way home after attending the 25th Conference of the International Federation for Documentation held in Warsaw during the third week of September 1959. Viniti has a building of its own

in the outskirts of Moscow. Already the building is overcrowded with book stacks, vertical files, and card cabinets. I found work in progress in extending the building. I could not believe at first sight that as many as 1,800 persons were working in that building. The quantity of outturn in published documentation lists and other aids to research workers has been remarkable.

01 Value for India

The immediate reason for my visiting and studying Viniti was the proposal before our Planning Commission for increasing the activity of Insdoc (Indian National Scientific Documentation Centre) during the Third Plan Period. In fact the Working Group of Scientists of the Planning Commission appointed me, in its meeting of March 1959, as a One-Man Committee to put up proposals for enlarging Insdoc so as to make it serve our industries and our fundamental research efficiently, and in adequate measure. My report has recommended a six-fold increase of Insdoc, the development of its library into the National Central Science Library, and correlating its work to other related and necessary but different kinds of informational activities without prejudice to the individuality of each of them. The estimated cost of this plan is Rs 2 crores

for the Third Plan Period. This is made of Rs 50 lakhs for buildings and Rs 30 lakhs for the annual recurring expenses in each of the five years of the Plan Period. In a meeting of the Working Group held in June 1959, the proposals were generally approved. It was felt that it would be helpful if the working of similar National Documentation Centres in other countries could be observed in detail. I had already observed in 1954 the working of the National Documentation Centre in Yugoslavia. My present tour to USA and Europe to take part in two International Conferences on Documentation - one in Cleveland and the other in Warsaw - gave an opportunity to do some more observation. I observed the working of the National Documentation Centres of Poland and USSR. The one in USSR has grown to enormous dimensions. However, the organisation of its work has many elements which will be of value in re-organising the work of our own Insdoc to meet a higher output. It is in this view that I am re-

cording here the information collected during my visit to Viniti in Moscow.

02 Conspectus

The article falls into eight sections. The first five sections deal with the publication work of Viniti. Section 5 is connected with translation activities. Section 6 deals with reproduction and other mechanical activities. Section 7 is on the organisation of the staff and the work-flow. Section 8 is a reflection on what is needed and practicable in the immediate future in India.

1 ABSTRACTING PERIODICAL

The following table shows the gradual increase in the annual turn-over of the abstracting activity of Viniti:

Year	Number of Series in the Abstracting Periodical	Subjects Successively Added to the Abstracting Periodical	Average Number of Entries
1953	4	B Mathematics; B7 Mechanics; B9 Astronomy; E Chemistry	
1954	7	C Physics; G Biology; H Geology together with U Geography	107,890
1955	8	E9G Biochemistry	209,967
1956	12	D Engineering; D66 Electrotechnics; F191 Metallurgy; H and U separated out	391,481
1957	13	H:(C) Geophysics separated out	455,000

By the end of 1957 more than a million entries had been made in all the 13 series of the abstracting periodical.

11 Sample of Details

The table on page 3 gives as a sample the details for each of the 13 series of the abstracting periodical for the year 1958.

12 Sub-Series

From 1958 the sections of each issue are also brought out as separates in Engineering,

Chemistry, Metallurgy, Biology and Geography. For example the branches of Engineering with such sub-series are:

General problems and machine design;
Machine building technique;
Metrology;
Measuring and control apparatus;
Technique and equipment for casting;
Transport;
Traction; and
Hoisting equipment.

There are similarly six sub-series in Chemistry.

Subject	Periodicity of the Abstracting Periodical	Number of Entries in Each Issue	Sale Price in Roubles	
B	Mathematics	Monthly	800-900	150
B7	Mechanics	-do-	1,300-1,400	173
B9	Astronomy	-do-	700	115
C	Physics	-do-	2,500	360
D	Engineering	Fortnightly	3,500-4,000	734
D66	Electrotechnics	-do-	2,100-2,300	480
E	Chemistry	-do-	3,000	756
E9G	Biochemistry	-do-	1,300	216
F91	Metallurgy	Monthly	2,500	500
G	Biology	Fortnightly	4,500	691
H	Geology	Monthly	1,500	288
H:(C)	Geophysics	-do-	850	115
U	Geography	-do-	2,500	288

On account of the usefulness of the sub-series, Viniti plans to bring out sub-series for some of the remaining abstracting periodicals. Examples of the sub-series currently issued are given on page 63.

13 Nature of Entry

Each entry has either an abstract, or an annotation, or a bare bibliographical description according to the nature of the document described in the entry. An abstracting periodical covers articles in periodicals, reviews and popular works with oblique or non-tell-tale titles, monographs stating new points of view, books of review collating original works, books, reference books, text books, collected works, popular and non-original articles, and orientation articles.

131 Entries with Abstracts

Abstracts are given only for original articles. The average number of words in an abstract is 350; the maximum is 1,000. An abstract brings out briefly the objective, the theoretical basis, the method used, the results, the numerical data of special interest and the author's view of possible applications. Historical information is generally avoided. A measurement is given only in the CGS System, making the conversion wherever necessary.

132 Entries with Annotation

Annotation is given for all non-tell-tale titles, monographs, and reviewing works. The average number of words in an annotation is 120.

133 Bare Entries

Neither abstract nor annotation is given in the case of pedestrian books or articles, reference books, text books and collected works. The entry for any of these has nothing more than the usual bibliographical description.

134 Bibliographical Details

Apart from the nature of the document determining the last section of its entry being an abstract or an annotation, the bibliographical details of its entry depend on the language of the original. Some difference also occurs in the entry of a document embodying a review.

1341 Document in Russian

The sections of the entry of a document in Russian are as follows:

- Section 1 - Title
- Section 2 - Full name of the author, including Entry Element as well as Secondary Element.

Section 3 - 1 For an article, occurrence note with the name of the host periodical in an abbreviated form; and

2 For an independent document, the usual bibliographical information about format, collation, and imprint.

One possible reason for making the title occupy the heading, the section that should have the greatest potency, is that the searcher's first interest is the subject. In Viniti abstracts, classification is superficial. It does not disclose the subject of a document in the full degree of its intension. Naturally, the feature headings cannot be of help. In the circumstances the title has to be used as the only possible carrier of closer indication of the subject.

1342 Document in a Foreign Language

The sections of the entry of a document in a foreign language are as follows:

Section 1 - Russian translation of title

Section 2 - Russian transliteration of the Entry Element alone of the name of the author (surname in a Western name).

Section 3 - Same as for a document in Russian

Section 4 - Title of the document and the full name of the author in the language of the original.

1343 Reviewing Document

The sections of the entry of a document giving a review are as follows:

Part 1 Sections same as for the document reviewed in accordance with the

specification in section 131 or 132 as the case may be.

Part 2 - Section 1 - Occurrence note about the reviewing document.

Section 2 - Name of the author of the review.

The title of the review is not given.

14 Universal Coverage

From the very inception, Viniti planned to make a universal coverage of articles, books, and reviews of all kinds and standards in this manner. All the series of the abstracting periodical taken together cover about 3,000 Soviet periodicals, 11,000 foreign periodicals, and about 4,000 other publications. I was told that they expect to cover 16,000 periodicals by 1960. The publications covered are in 80 different languages including 15 Soviet languages. It is claimed that the experience of Viniti during the last seven years has fully warranted this policy. It is stated that only a documentation list of this omnibus kind can yield exhaustive information to all classes of workers.

141 Time Lag

Such an ambitious coverage and the provision of abstracts for the original articles result in a time-lag of about six months. There is no doubt that this is a smaller time-lag than in the case of abstracts published elsewhere in certain subjects.

15 Index

The abstract series of Viniti is rich in the index to the annual volume. It is particularly so for the Chemistry Abstracts. This series had been giving hitherto four indexes - viz.

Author index; Formula index; and
Subject index; Patent index.

It has now added a fifth index - viz. Reaction index. The first volume of this index

will cover the years 1956 to 1959. It is expected to come out in 1960. The number of its entries is estimated to reach 100,000. This is the first time such an index has been published anywhere. In designing the entries for this index, some devices have been forged to represent the ring compounds and the points in the ring which are the seats of reaction.

2 Express Information

The second class of abstracting periodical being published by Viniti is called Express information. As its very title indicates, the object is to minimise the effect, on the progress of research, of the unavoidable time-lag involved in the production of the series of exhaustive abstracting periodicals. In this case, the time-lag is reduced to two weeks at the most. To secure this, the Express information is kept severely selective. It is devoted more to the applied field than to the fundamental sciences. The selection of the articles for Express information is made by the staff of Viniti itself. They base their judgement on the experience they gain about the research work in progress, either through correspondence or through personal contact. Moreover, the articles are selected largely from foreign periodicals. Each entry carries quite a long summary, extending to even four or five pages. It also reproduces the essential drawings, illustrations, and tables found in the original. About five articles are extracted in this way in each issue. There are 48 issues in a year in each of 49 fields of technology. Thus the number of issues in a year is roughly 2,500 and the number of summaries 12,000 in a year. In the earlier years, the publication of Express information was the responsibility of departments belonging to a Ministry. But now they have all been transferred to the care of Viniti.

3 RETROSPECTIVE BIBLIOGRAPHY

Apart from the documentation of nascent thought in the form of abstracting periodicals and expeditious summaries, Viniti produces also retrospective bibliographies from time to time. Such bibliographies are brought out for 5 to 10 subjects in a year. For example, the

bibliography on iron ore covering years 1955-1957 had 4,000 entries in its first edition. The second edition brought up to date has 10,000 entries. The selection of the subjects for such retrospective bibliographies is made in the light of the work in progress in the country.

4 ADVANCES IN SCIENCE SERIES

A fourth bibliographical service being given by Viniti is of the review variety. A specific topic in mathematics, physics, engineering, chemistry, biology, geology or geography is taken up for a volume. The period covered is restricted and defined. The restriction is in regard to the year of commencement, but the end-year is the year of production. To give an example, in 1957 there was a volume in this series on the "Problems and the Theory of Non-linear System of Atomic Adjustment and Control". A second volume was on "Automatic Biological Action of Ionising Radiation". The volumes in this series are occasional and some of the topics to be covered are given on page 64.

5 TRANSLATION

There is considerable translation work done by Viniti. Some of the translation is for incorporation in the publications of Viniti itself. The rest is done on request from institutions or individuals outside the Viniti. The average time taken for the supply of translation to outsiders is about 6 weeks. A quarterly bulletin is issued listing the titles translated. The difficulty of establishing the exact equivalents of technical terms in different languages and of being consistent in their use is well-known. One device employed by Viniti to meet this difficulty is the maintenance of a dictionary of technical terms. This dictionary is continuously growing. It is therefore maintained in cards. Occasionally, Viniti brings out bilingual technical dictionaries. An example of this kind is the "English-Russian and Russian-English Dictionary on Nuclear Physics and Engineering". This was prepared for the Conference on Atomic Energy held in Geneva in 1955.

6 MECHANICAL PROCESSES

Much of the impersonal and routine work is done with mechanical aids. Copying is

largely done photographically. Work is in progress to develop machinery for information retrieval, for abstracting, and for translation.

61 Mechanical Production

A considerable amount of copying has to be done as part of the routine work of Viniti. One such work is making photostat copies of articles, wherever only one copy of the original periodical is brought or received. This is the only way in which copies of the different articles can be made expeditiously and free from errors and distributed to the sections dealing with their bibliographical description, abstracting, translating, etc. There is also need to make copies of the entry made for each article, marked for inclusion in any of the bibliographical publications. In fact as many as 12 copies of this process slip are found necessary to expedite work and to control accuracy. If an article is marked for abstracting from the angle of several subjects, 12 copies of its process slip have to be made for each of the subjects. Therefore, the process slip of each of the thousands of entries has to be reproduced mechanically. Then comes the supply of photostat copies or microfilm copies of articles on demand to individual institutions or readers. Since 1957, about 400,000 copies have been made.

62 Machinery for Information Retrieval

A research wing is engaged in designing machinery for information retrieval. The work is now only in the pilot stage. This is a matter concerning electronic engineering. While an entry is typed, it is coded for the machine electrically. At present, a machine has been set up for author index and for subject index. The machinery for subject index is now able to search through 400 entries in a minute.

63 Machinery for Translation

The design of machinery for translation is still only in the formative stage. It is difficult to conjecture when it will be ready to be put into service.

7 ORGANISATION

70 Work Flow

The work flow in the publication of the abstracting periodical is given as a sample. The work-flow is along the following departments and their sections in the sequence given. (The function is stated if it is not obvious from the name and the section listed under it).

- 1 Acquisition department
- 2 Systematisation department
- 21 Language group
- 22 Transcription group
- 23 Cataloguing group
- 24 Processing group
- 3 Editorial office (one for each of the 13 subject-areas)
- 31 Distributing group (to distribute documents to sections)
- 32 Editorial group (one for each of the sections in each of the 13 subject areas)
- 33 Part-time abstractors
- 4 Publishing office
- 5 Cross referencing work (at proof stage).

The work-flow is continuously watched and the necessary adjustment is made from time to time, so that there is little hold-up at junction-moments. The staff consists of 1,800 full-time persons and about 20,000 part-time persons. The part-time staff is engaged for abstracting work and translation work. All the other publications are also entrusted to the same staff as the one working on abstracting periodicals.

71 Acquisition Department

The Acquisition Department has a staff of 61. It is entrusted with the task of book-exchange, subscription to periodicals, accessioning of books, and registering of periodicals for being fed into the abstracting periodicals and the other bibliographical publications. The Department buys also the reference books needed by the staff. It is constantly scanning the publishing world in all the countries. At present 93 countries have been brought into its orbit. Exchange is in progress with 1,084 organisations and individuals in 61 countries.

4,392 periodicals are got in exchange. Some are got in duplicate. Thus the total received is 6,276 copies. In exchange work, parity of value is generally maintained. It sends out 3,274 sets of abstracting periodicals and of the other periodicals of the Academy of Sciences. Of course, the Soviet periodicals are received under the Copyright Act. It is also taking steps to compile the "Annotated Handbook of World Periodicals" abstracted by Viniti. A questionnaire has already been sent out to all the concerned parties as a first step in the compilation of the Handbook.

72 Systematisation Department

After registration or accessioning, as the case may be, a document is passed on to the Systematisation Department. Some of the items are marked "Rush". These should naturally be given first preference. About 40% of materials are said to be in the English language. In the English group each person marks about 100 items in a day. In foreign languages other than English, German, French the titles are translated into Russian even before scanning and marking are done.

721 Scanning and Marking

Here they are distributed among different language groups. They scan and mark the articles and the other documents considered to be deserving of inclusion in the abstracting periodicals. Each selected item received is stamped indicating the basic class of the item and the person responsible for the selection. The article may be marked with more than one basic class if warranted.

722 Transcribing and Translating

The items are then passed on to the transcription group. In the case of a document in a language other than Russian, the entry element in the author's name is transliterated and the title is translated.

723 Cataloguing

The documents are moved at this stage to the cataloguing group. This group establishes

the entry for each document. The cataloguing is done by the typist directly from the original. Nobody marks out the bibliographical elements in advance. It is said that this does not involve loss of typing time. After the entry is checked, it is passed on to the copying group.

724 Copying Department

The Copying Department makes 12 copies of each entry card by photostat method. The 12 copies are ultimately distributed at the rate of one copy for the language group concerned, one copy for the bibliographical group, three copies for the editorial department to be filed by the host document, by author, and by serial number of the card respectively. One copy is attached to the document itself and it moves with it wherever it goes - to the abstractor, and back to the editorial department until the document is filed along with the photostat copy. One copy is retained in the section of the department sending the document to the abstractor concerned. One copy is pasted on the fresh copy of the abstract to the entry, one is filed in the publishing section; one is filed alphabetically by abstractor's name; one copy goes into the general author index. Since 1954, about 5,000,000 author cards have accumulated.

73 Editorial Office

There is one Editorial Office for each of the 13 subject areas, for which there are abstracting periodicals. The daily collection of documents is distributed among the appropriate editorial offices. There are 207 editors. Three of these know Japanese.

731 Further Distribution

The first work in the Editorial Office is in the hands of its distribution group. Each editorial office has as many distribution groups as the number of sub-divisions into which its subjects are sub-divided for including in the abstracting periodical; for example, the Chemistry Department has 6 sections in charge of subjects such as inorganic chemistry, organic chemistry, physical chemistry, and so on. 120 of the 207 editors work in the Chemistry Department.

732 Sectional Editorial Group

Each section has several sub-divisions. For example, physical chemistry has 13 sub-divisions. The documents received from the distribution group are further distributed among the sub-divisions. The staff of the sub-divisions of a section generally work together in one and the same room. For example, 14 of the editorial staff work in the subdivision of Physical Chemistry. It is in this section that further classification is made. However, the classification is not very minute. In chemistry, for example, the total number of sub-classes is only about 100. After the classification is over, the Head of the Sub-division determines the abstractor to whom the document should be sent.

733 Part-time Abstractor

The part-time abstractor sends back the abstract along with the original within about two weeks. The payment is roughly at the rate of 27 letters for a rouble. The editorial office checks the abstracts and brings them to a prescribed uniform standard.

74 Fair Copying

Each edited abstract is sent along with the original to the Publishing Department. Here its abstract is fair copied and carefully checked. The entries are also finally arranged. Then each entry is given a serial number.

741 Cross References

Before the fresh copy goes to the press, it is circulated to every other Editorial Office to give it an opportunity to note down whether a cross reference is necessary from its own point of view. This work of cross reference is finished in three days. After it is finished, each Editorial Office adds at the appropriate places the necessary cross references. The cross references mention only the serial numbers concerned. I asked whether risk would not be lessened by making an extra copy of the press copy for this circulation work. I was told that till now the incidence of risk had been

very low. When it does occur they are able to replace the fresh copy from the original abstract filed by the Editorial department. In fact the Editorial Department keeps the original and the abstract together in a temporary sequence until the abstracts are printed. After the abstracts are printed, the details of the location of each entry in the abstracting periodical are entered and filed officially.

8 INSDOC AND VINITI

There is a fundamental difference between Insdoc and Viniti. They differ in their objectives. Consequently they differ in their outlook. The difference in the output has led to a difference in the strength of the staff. They differ also in the areas in which they seek to do research. Some of the elements in the organisation of work of Viniti may be of help in improving the organisation of Insdoc.

81 Difference in Objectives

The objective of the abstracts series of the Viniti is in the direction of completeness. It is similar to that of an international abstract. It also covers macro documents or books of all kinds and standards. On the other hand, the Insdoc List has a limited but definite objective. It assumes the availability of international abstracts with their unavoidable time-lag on the one side. On the other hand, it also assumes on local abstracts, severely selective and intimately determined by actual local requirements. It covers only micro documents or articles. The policy laid down by the Technical Subcommittee of Insdoc at its second meeting held on 18 December 1954 on the nature of restriction is given on the next page.

82 Difference in Periodicals Covered

Viniti already covers 11,000 periodicals. Its policy is to increase its number still further. On the other hand, Insdoc covers only 500 periodicals. No doubt its intention is to increase the number, but the increase may be said to be at snail's pace. One reason for this small number

Criteria	Inclusion	Rejection
Standard	Research articles Fundamental articles	Review articles Popular articles Notes Letters to editor (due to lack of space)
Utility	Descriptive articles with theoretical contribution Applied articles of interest to Indian scientists or to Indian industries	Articles not of likely interest to Indian scientists or to Indian industries

is the attempt to eliminate time lag, by securing microfilm copies of the contents pages by air mail in advance of the receipt of the periodicals covered, all of which come by surface mail. The acquisition of even the microfilm copies of the contents pages by airmail involves much cost. It may be remarked here that the Japanese Institute of Scientific and Technical Information gets the periodicals themselves by airmail. Viniti tries to cut down time lag considerably in its series Express information. In this series it covers only a small number of periodicals. The objective also is considerably restricted. Indeed, it is more closely linked to actual requirements than that of Insdoc.

83 Difference in Subjects Covered

The abstracts series has not yet begun to cover Agriculture, Animal Husbandary and Medicine. But our comparison should really be with the Express information. In comparing it with the Insdoc List a fundamental difference appears. Viniti attempts to eliminate time lag only in the case of technical subjects of industrial importance. It makes the fundamental sciences have time lag. Insdoc, on the other hand, attempts to eliminate time lag more in the case of fundamental sciences than in technical subjects of industrial importance. In its attempt to eliminate time lag, Insdoc gives weightage to fundamental sciences than to applied sciences. Can this be due to lack of development of industrial research in India? One other recent decision should also be considered in this connection. There is a propo-

sal to enlarge the information service of Insdoc on the applied side in collaboration with the National Productivity Council of India. The Committee which went into this question decided that the new periodicals to be covered by this arrangement can be allowed to suffer time lag and that there was no need at present to incur expenditure on getting microfilm copies of the contents pages of applied periodicals by air mail. Though I was chairman of that committee, I now wonder whether this decision is sound. The decision was guided by something subconscious rather than by an explicit conscious discussion of the pros and cons by the Committee. I even begin to feel whether the benefit of the appetising quality of the advance Insdoc List should not be extended with advantage to the field of applied research. The National Productivity Council is the body competent to decide the issue.

84 Difference in Financial Support

A glaring difference between Viniti and Insdoc is in respect of financial support. Viniti's finance is able to maintain a staff of 1,800 and to produce 100,000 pages of abstracts and bibliographies in a year. Insdoc, though started a little earlier than Viniti, is producing only 2,000 pages a year, and it has only a staff of 60 engaged on work similar to that of Viniti and includes in addition the staff for printing work. The lack of adequate financial support to Insdoc is traceable to inadequate awareness of the value of documentation in the research needed for increasing productivity in industrial enter-

prises and public administration. However, I look forward to better financial support in the Third Plan Period.

85 Difference in the Organisation of Classification Work

Classification is not done by Viniti to as much depth as by Insdoc. Even in this restricted depth of classification, Viniti gets the classification of an article done by different persons to carry it to different degrees of intension. On the other hand, Insdoc makes one and the same person carry out the classification to the fullest degree of intension intended. It occurs to me that this involves a proper rationalisation of classification work. This recognises the different levels of intellectual capacity needed for different depths in classification. Job evaluation distinguishes between manual, semi-intellectual, and intellectual work. It is necessary to carry job evaluation further so as to distinguish different strata of intellectual work in classification. I had done it to some extent in organising the work in the Madras University Library. But this has been unconsciously done. It was only while observing the work in Viniti that it came to conscious level. Moreover, it becomes considerably significant only in depth classification of micro-documents or articles. I now feel that the classification in our Bibliography of scientific publications in South and South East Asia can be carried to greater depths, if the work is rationalised along these lines.

86 Difference in Acquisition Policy

The Head of the Acquisition Department of Viniti told me that their endeavour is to get as many foreign periodicals as possible on exchange basis. In fact she had a long list of Indian periodicals in her hand which she

wanted to get on exchange basis. Why is this exchange idea so much in the top of their mind? Presumably it is due to difficulty in currency exchange. We are also very much in a similar plight. It occurs to me that Insdoc should adopt a vigorous drive for exchange of periodicals, whether published by Insdoc or by other Indian agencies, public or private.

87 Difference in Area for Research in Documentation

Viniti uses only broad classification. It has not begun to exploit the full possibilities of classification in exact, exhaustive and expeditious information retrieval. Therefore, I could not see any evidence of research either in classification or in the associated cataloguing technique of chain procedure. Its research is turned on machinery for information retrieval. However the important fact here is that Viniti recognises the need for research in some form of documentation technique. Insdoc is for exploiting classification and chain procedure to the fullest extent possible. It has the advantage of some productive methods of research in classification and cataloguing having been initiated in India. Further pursuit of this research has to depend essentially on work such as that of Insdoc. Indeed Insdoc is virtually the laboratory that is required for the pursuit of that research. What is more important is the first beneficiary of the results of that research will be the Insdoc itself. It is high time that Insdoc establishes a research wing for this purpose. It already has a medium for the communication of the results of research in the Annals of library science which it publishes. This medium and the solution of new problems brought forth during the day to day work of Insdoc could be integrated.

SUB-SERIES OF ABSTRACTING PERIODICALS

Abstracting Periodical	Sub-Series	No. of issues per year
Astronomy and Geodesy	Astronomy Geodesy	12
Physics	General problems, theoretical physics, nuclear physics Nuclear and molecular physics, physics of solid state, electricity Electronics, radio physics, acoustics Optics	12
Mechanical Engineering	General problems of mechanical engineering, machine design, technology of machinery, treatment of metal cutting Technology and equipment of punching and pressing, rolling-mill equipment Technology and equipment of foundry production Automatic machines control, measuring technique Fine mechanics and optics Power plants Railway moving stock Shipbuilding Automobiles, motion traction Aeroplanes, helicopters, jet propulsion technique Hoisting machines, pipe transportation Machines and equipment for textile mills, light and printing industries, medical and municipal equipment Machines and equipment for foodstuff industry, trade and packing equipment Agricultural, tractor and road construction machines, and equipment for mining of natural resources Equipment for chemical and oil refining industries and for plastics production, pumps and compressors	24
Electro-technics	General electrotechnics Electric power Electrification, electrical machines and apparatus Automatics and telemechanics Electronics and its applications Radio engineering and electrical communications	24
Chemistry	General problems, physical chemistry, inorganic chemistry, geochemistry, analytical chemistry, equipment of laboratories Organic chemistry General problems of chemical technology, technology of inorganic substances Technology of organic substances Chemistry and technology of high molecular compounds	24
Metallurgy	Heating in metallurgy, control and automation of metallurgical production Production of steel and cast iron production of non-ferrous and rare metals	12

	Plastic, thermal and chemico-thermal treatment of metals	
	Welding	
	Metallography	
Geology	General geology	12
	Stratigraphy and palaeontology, geochemistry, mineralogy, petrology	
	Natural resources	
	Engineering geology, hydrogeology	

TOPICS FOR ADVANCES
IN SCIENCE SERIES

Some of the topics to be covered in this series are given below:

Mathematics

Elliptical differential equations with two variables
Equations with degenerating boundaries
Structural theory of switch-over systems
Theory of probability.

Physics

Antiferromagnetism and the ferrites
Low temperature physics
Physics of crystal plasticity
Physics of dielectrics
Physics of super-high pressures

Chemistry

Chemical processing of hydrocarbons
Chemistry and technology of macro molecular compounds
Chemistry of oil and gas
Physical chemical analysis
Theory of radical polymerization
Use of bivalent chromium compounds in analytical chemistry

Metallurgy

Chemistry of titanium metallography
Equilibrium diagrams for metallic systems
High temperature research methods for metals and alloys
Powder metallurgy
Progress in flotation

Biology

Cultivation and utilisation of algae
Problems in virology
Progress in endocrinology
Progress in parasitology
Psychopharmacology
Radiation genetics
Theoretical principles of live-stock breeding

Geology

Formation of oil deposits
Galium
Geochemistry of rare and scattered elements in the earth's crust
Geological summary of the quaternary deposits of Africa
Recent work on stratigraphy of Japan
Scandium
Thallium
Titanium and the titanium ore resources of capitalist countries
Uranium resources.