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JOINT INSTITUTE FOR NUCLEAR RESEARCH
PUBLISHING DEPARTMENT

D - 4790

M.M. Lebedenko

DUBNA - AS AN INTERNATIONAL CENTRE
FOR EXCHANGE OF SCIENTIFIC INFORMATION

Presented at the International Symposium
on Handling of Nuclear Information, IAEA,
Vienna, February 16-20, 1970.

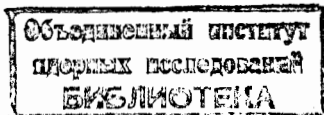
Dubna 1969

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I n t r o d u c t i o n

The Joint Institute for Nuclear Research (JINR) is an international scientific organization set up in 1956 according to the decision of the Government delegations of 12 socialist states. At present the Institute, located in the town of Dubna near Moscow, is one of the largest international research centres comprising the whole scope of scientific interests ranging from theoretical and experimental problems of low energy physics to those of high and superhigh energy physics. The range of scientific interests of the Institute embraces a number of such fields as cybernetics, superlow temperature techniques, high vacuum, radio-frequency engineering and electronics, semiconductor detectors, computer technique, mathematics, physics of radiation protection, the use of accelerators for medical-biological purposes, etc.

Hundreds of physicists, mathematicians, chemists and engineers are working at the Institute. All of them, as a rule, are citizens of the Member States of the Joint Institute for Nuclear Research. A small number of scientists comes to work here, on an exchange basis, from non-member countries. Grant-aided students from developing countries are also working in Dubna.

The Joint Institute maintains close ties with the institutes and laboratories of many countries. Joint experiments are planned and conducted, scientific equipment is created and international symposia, schools and conferences are held in Dubna.

Of course, such a research organization requires a constant influx of scientific information as well as the possibility of publishing the works of the Dubna scientists as quickly as possible in order to bring them to the knowledge of the world scientific community. The Scientific-Technical Library of the Institute working jointly with the Publishing Department serves these purposes.

1. Library*

The Library of the Institute, having two of its branches in the largest laboratories at Dubna, disposes of a book stock of 200 000 units and subscribes to about 600 titles of scientific journals. About 10 000 preprints and reports are received here on an exchange basis.

The bibliographic service of the Library issues annual bibliographic lists of the papers of the JINR scientists as well as three weekly express-bulletins of new acquisition

"Books"

"Articles"

"Preprints".

2. Exchange of Publications

The main task of the Publishing Department, which includes the editorial and printing subdivisions, is to publish the works of the Dubna scientists and to exchange scientific publications.

More than 500 papers, at an average circulation of 500 copies, are issued per year. They are distributed on an exchange basis to the institutes, libraries and scientists of 48 countries of all the continents. As was mentioned above, we receive in response about 10 000 publications.

The most intensive and useful exchange of scientific information exists for many years between Dubna and CERN (Geneva) -

* Information about the Library is given only in connection with its participation in the exchange of scientific information.

a prominent international organization having much in common with our Institute.

Table * gives the number of preprints and reports received by the JINR Library in 1968. Information for 1969 will be presented at the Symposium. It must be taken into consideration that a great number of preprints (more than 5000) is received by the JINR scientists directly on the basis of a personal exchange.

3. Variety of Publications

Major types of the JINR publications are communications and preprints. They are brochures containing the results of completed theoretical and experimental investigations or some methodical and apparatus elaborations. Communication is an initial publication. Preprint is notable for that the same material (sometimes abridged slightly) is submitted to one of the scientific journals.

Unfortunately, the majority of scientific journals have so overwhelmed portfolios that articles are published from six months to a year and a half late. So the JINR preprints are of the same range as communications, i.e. they are edited and printed with the same care. It is given consideration because in some institutes preprints are considered to be "one-day publication", private communications being of no importance as original publications.

The third type of publication is also of an original character. It is the proceedings of the international conferences, symposia and schools held by the JINR. As a rule, these proceedings contain reports, lectures, abstracts and sometimes discussions. Circulation of such proceedings is limited. Therefore they are sent to a more narrow range of recipients. Some copies are sold in the Dubna book-shops. Information prospects of such editions are sent early to all the recipients of the JINR preprints and communications in the Member States.

* See page 6.

Table
Distribution by countries of scientific
Information received by the JINR in 1968
(number of brochures)

USSR	923	Great Britain	276
Hungary	74	Holland	22
GDR	93	Denmark	184
Poland	227	Israel	82
Roumania	37	India	93
Czechoslovakia	42	Ireland	2
Yugoslavia	83	Italy	822
Australia	25	Canada	100
Austria	10	Norway	9
Belgium	151	Pakistan	19
Brazil	31	USA	1822
Finland	60	Sweden	66
GFR	577	Japan	370
France	577	Other countries	19
Switzerland	19	CERN	1242
		Sum total:	8047

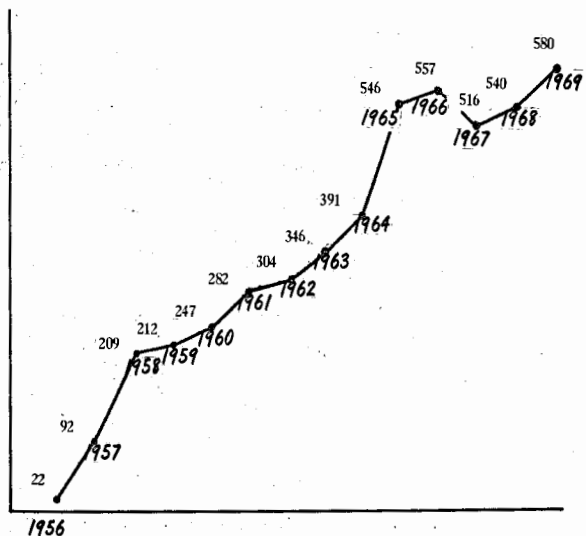


Fig. 1. The number of the Dubna publications increases from year to year.

In a number of cases it is advisable not to print one or another publication in large circulation, but deposit it in the Institute Library. Information about these deposited publications is included in reference-bibliographic lists of the Scientific-Technical Library. As a rule, these are methodical works on design of experimental equipment, separate units of accelerators, etc. Everybody working at Dubna has access to these deposited publications. Microfilms of them can be sent to the institutes of the Member States.

Finally, the so-called internal reports are published at Dubna. As a rule these are preliminary communications about the ideas of a new experiment or about uncompleted works. They are published in small circulations and sent to persons concerned by the authors themselves. Generally, they contain material for further discussion. They are considered to have no value of original publications. Nevertheless, they can be sent for information to the Member States. By separate agreement, on the exchange basis, the internal reports and proceedings of the conferences are sent to CERN.

Thus, the following types of publications are issued at Dubna:

1. JINR Communications;
2. Preprints;
3. Proceedings of the conferences, symposia, seminars and schools;
4. Deposited publications;
5. Internal reports.

4. Subject Categories

During the first years of its activity the Publishing Department of the Joint Institute for Nuclear Research distributed publications to everybody who was included in the Mailing List. In due course this simple system proved to be impossible for realization. It was caused by the expansion of the publication exchange which, in its turn, led to the increase of circulations. At the same time the recipients are not interested in receiving together with the publications,

which are of interest to them, those which are not of great value. It is especially intolerable in our age of "information explosion".

In this connection all the publications were divided into 16 subject categories (their number is not fixed and can be varied, though as it seems to us, it reflects rather completely the subjects of investigations carried out at Dubna).

In fig. 2 a reduced copy of a card with the enumerated subject categories of the JINR publications is shown. Such cards were sent to all our recipients and in accordance with our request were returned with the indications of the subjects of interest to them. Summing up the information from these cards we were able to determine the circulations of our publications on all the categories.

Subject categories, adopted in the JINR, do not correspond to UDC. We consider that our system of classification, having quite another purpose, meets our needs to a greater degree.

Meeting the wishes of the recipients of our publications, we found a great variety of the subject category combinations. It is not difficult to calculate how many different combinations can be composed of 16 figures. A question arose about the most rational way of distribution of publications in order to realize correctly each of the combinations. (In doing so it must be taken into account that there exist about 1500 addressees with their individual wishes).

At first, it was proposed to use a computer for this purpose. The computer with its speed and memory capacity was considered to be the most accurate controller. Later on a simpler way was chosen. Perhaps it would be of use for other institutes, where such a problem arises, to learn about our system.

On the cover of each preprint and communication there is a letter-figure code. In fig. 7 this code is marked in red. (A letter denotes the language the preprint is published in, the next figure is the subject category and the last four-place number is a serial number of the preprint or communication.).

After receiving a card, checked by the addressee, we wrote the numbers of categories which are of interest to him at the end of

Please check and return this card at the earliest possible date if you wish to receive our preprints on an exchange basis.

Correct your address if necessary

- 1. High energy experimental physics
 - 2. High energy theoretical physics
 - 3. Low energy experimental physics
 - 4. Low energy theoretical physics
 - 5. Mathematics
 - 6. Nuclear spectroscopy and radiochemistry
 - 7. Heavy ion physics
 - 8. Cryogenics
 - 9. Accelerators
 - 10. Automatization of data processing
 - 11. Computing mathematics and technique.
 - 12. Chemistry
 - 13. Experimental techniques and methods
 - 14. Solid state physics, Liquides.
 - 15. Experimental physics of nuclear reactions at low energies.
 - 16. Health physics, Shieldings.
- I would prefer to have preprints sent directly to our Preprint Library.

" " _____ 196_____

Fig. 2. The card of the subject categories of the Dubna publications.

his address (see fig.6). The practice proved that these figures do not prevent from delivery of the packets at the right address.

A rather great number of brochures is prepared simultaneously for mailing. They are distributed on a long table in groups corresponding to the subject categories. The workers take a packet with the address and put in brochures of only those categories which are mentioned at the end of address.

So we succeeded in complying with the individual requests of all the recipients of our publications, saving them from superfluous information, and in reducing circulations of our preprints and communications.

Approximately every two years we check our mailing list. The practice shows that the range of interests of scientists undergoes changes: junction of interests (at least methodical) of scientists working in the fields of high and low energy physics is observed; the number of persons dealing with cryogenics (superconducting alloys!), etc., increases. Having received the cards with new indications we make corresponding corrections in the figure-code of the mailing addresses.

Until the present time all the mailing addresses of our recipients were printed on large sheets of paper, where the changes in the addresses were made if any. Before sending a recurrent part of preprints we made xerocopies of mailing lists and then cut them (fig.9). Such a system is rather convenient. However, at present we are going to use addressing machines. The latter are more convenient when making changes in addresses.

5. Functions of the Publishing Department

The main task of the publishing Department is to edit, print and disseminate publications enumerated in Section 3 of the present paper. But it has also other functions, viz.:

- submit the papers of the Institute workers to the editorial boards of the scientific journals;

- to send abstracts, reports and lectures to the international scientific conferences, symposia, seminars and schools,
- to maintain technical service for laboratories (xerocoping, preparation of microfilms, and forms for experimental data processing and binding archives documents, library books, journals, etc.);

6. Publishing Activity

Different ideas exist about the necessity of preliminary editing of preprints. It is known that in some institutes and universities it is considered to be a business of the author who is responsible for its scientific contents and the form of writing.

At our Institute quite another point of view exists, if not to speak about internal reports and deposited publications. We consider it to be irrational to spread information the scientific value of which is unknown. As to the writing it must be of such a form that the reader could easily understand the scientific contents of the publication. We consider that, just as even the greatest actor stands in need of a producer, the most experienced author needs also an editor. At Dubna this problem is especially perceptible because of the international character of the Institute. Some of the authors do not know perfectly those languages the preprints are published in (Russian - about 80%, English - about 20% of all the publications).

Receiving manuscripts. The manuscripts for publication are received from the laboratories of the Institute. The laboratories at Dubna are in effect large modern institutes with their own research fields and with the number of researchers ranging from 400 to 1,000.

It is just in the laboratory where a preliminary check of manuscript is made. First of all the paper is reported at a seminar, where the scientists dealing with this subject discuss the content of the work. Then experienced experts from the scientists of the same laboratory make a conclusion on the advisability and opportuneness of publication and determine its form (see Section 3),.

Editing and Type-Composition. In the Publishing Department the manuscript is received by one of the editors, who will conduct all the process beginning from preliminary reading up to sending to the press.

Some questions arising in a preliminary reading of the manuscript are cleared up together with the author.

Then the manuscript is directed to the composing subdivision (fig. 12). We are used to the system of so-called original-model. The text and formulae are set on white art (chalk surface) paper. As a rule we use Hungarian type-composition machines with plastic carbon ribbon producing saturated black printed impression of letters. They are differential spacing models. Each character of the alphabet is automatically spaced to its individual width. Formulae are set up on the same sheets of paper using Vari-Typer machines. Sometimes we use the IBM-72 machine. However, as to the formulae setting its potentialities are poorer than those of Vari-Typer, while it has the advantage of higher speed of setting. IBM-72 would excel the famous Vari-Typer if the firm produces two or three letter balls for setting formulae.

On the sheets of art paper for setting up original-model a pale blue frame, denoting the margins, is printed. The colour of the frame is chosen so that it is not reproduced on the negatives while photographing.

The title page is set up using the photo-composition Vari-Typer Headliner machine.

After the original-model is ready it is passed to the editor and his proof-reader. At this stage the figures and tables are mounted and first proof-reading is made.

The mistakes are corrected by the type-setter who made the setting of the paper. They use white correction fluid, covering wrong words, and then they type proper words with the same type-composition machines.

The author is given an opportunity to read his paper once again and correct the mistakes if any (second proof-reading). The editor checks the final version and sometimes even at this stage some mistakes are found.

Justification and preparation of negative. Even right-hand margins can be produced on the Hungarian type-composition machines and Vari-Typer machines used by us. This process is called "justification". But to achieve this, it is necessary to set up twice one and the same page. This operation is too slow and expensive and would delay publication of the papers. We, like publishing departments of our kind, do not make secondary setting. We use quite another technology which is not used in quick polygraphy. We use for this purpose the Optype photo-composition machine (see fig. 13). The Optype machine (firm Bariquand et Marre, France) performs by-the-line photographing of the original-model pages (allowing to squeeze or stretch the lines without changing height of type) in order to have justified right-hand margin (the beginning of a line being stable).

This machine produces negatives, their dimensions being from 1:1 to 75% reduction. Illustrations can be also reproduced on this machine; a special film (Kodak Autoscreen) is used for production of screened negatives, for the text and line drawings we use Φ T-41 film made in the USSR.

The Optype machine, besides reproducing any original copy, corrects typing errors, substituting whole lines for incorrect ones, or changes an ordinary style by italicizing or condensing it (i.e. stretched on vertical or squeezed on horizontal line).

Text of this report is reproduced on the Optype machine. We use it for communications as well as for separate publications such as annual reports of the Institute. Preprints, as a rule, are reproduced by means of ordinary cameras. As a novelty we use an intensive light source - high pressure xenon lamps (fig.14). This device is produced by polygraphy machine-building plant in Odessa. The device produces contrasting light of good colour temperature, satisfying the demands of colour-separation.

Platemaking and printing. Plates are made by the contact negative method using light-sensitive emulsions on the basis of egg-albumin powder and ammonium dichromate. This method is cheaper and simpler as compared with the positive one. At the same time the quality of the masters is quite satisfactory, they endure more than 10 000 prints.

In the near future we are going to test new Czechoslovak made pre-sensitized form-plates "Romalit". We plan to acquire a machine for automatic high-speed platemaking using special photopaper.

In many cases, when it is very important to manufacture masters very quickly, we make them on hydrophilic paper using copying machine Xerox-914. The form dimension is A-4. They are not of high quality but it takes only 9 seconds to make a master entirely ready for printing. The internal reports and proceedings of the conferences are printed by this method. It was a peculiar record when a collection of rapporteurs' talks from Vienna conference on high energy physics (3 volumes of more than 1000 pages each) was issued in four days after the participants returned to Dubna.

Irrespective of the method of platemaking all the materials are printed on Czechoslovak made small-offset machines "Romayor-III". Dimension A-3. These perfect machines have presented themselves in a good light during the long period of working. They are quite

suitable even for colour printing. In the near future we shall purchase more modern machines - "Romayor 312".

We use offset inks produced, in the USSR, GDR and Hungary.

Finishing processes. At this stage our home cutting machines and wire-stitchers БРП-4, МПП-1, БШП -1, as well as Canadian collating and gathering machine Rollomatic are used. Especially I want to note the advisability of using three-knife cutting machines allowing to keep standard size of our publications. In particular, good results gives БОП-3 machine produced in the USSR (see fig.18). All our brochures issued for the last 6 years are of the same size. Last years we constantly use stitchless blocking of brochures (proceedings of the conferences, etc.). We use, as a rule, our native synthetic glue ПФЭ2/10 which gives strong elastic pellicle on the backbone of the book. The number of pages in such a volume is practically infinite. To block simultaneously a great number of books we use pneumatic press (fig.19). Thus, we disprove the widespread opinion that the stitchless method can be applied only at large printing shops having automatized production lines. Use of this method for production of small circulations considerably simplifies and reduces the price of publication of different kinds of collections and raises the quality of books.

To cut paper reels into sheets of necessary format we use cutter ПР-1 (Romensk polygraphy machine-building plant). Reel paper is cheaper and less damaged by transportation. The possibility to vary the sheet dimensions while cutting reduces the percentage of paper waste.

* * *

Using the above technique we print about 250,000 brochures per year. The total period for publication of papers beginning from the date of receiving the manuscript up to the appearance of the preprint or communication varies within a month, depending on the amount of work. However, in particular cases this period is shortened to 24 hours, e.g. when information about the discovery of a new nuclear particle Σ^- or element 104-Kurchatovium were published.

For the period of its activity the Publishing Department has issued about 5000 titles of preprints and communications. This is the contribution of our workers to the joint activity of scientists from many countries working on the problem on peaceful uses of nuclear energy.

The author expresses his gratitude to Dr. N. Queen from Birmingham University for valuable and kind help in preparing the English version of this report.

Received by Publishing Department
on November 11, 1969



Fig. 3. Book-store.



Fig. 4. Reading-hall of the Scientific-Technical Library.



Fig. 5. The exchange secretary of the Publishing Department J. Fingerova (Czechoslovakia) is checking the Mailing Lists.

США, Ок-Ридж
Dr. J.H. Gibbons,
Physics Division
Oak Ridge National Laboratory
P.O. Box X
OAK RIDGE, Tennessee,
USA 37830

1106

3,4,6,7,13,15.

США, Мэдисон
Dr. H.H. Barschall,
Sterling Hall,
University of Wisconsin
Madison,
Wisconsin, 53706
USA

1107

Финляндия, Хельсинки
Suomalainen Tiedeakatemia
Academia Scientiarum Fennica
Snellmanink. 9-11
HELSINKI 17. SUOMI
FINLAND

1205

5,11,12,14,15,16.

Англия, Дергем
Professor A.W. Wolfendale
University of Durham,
Department of Physics,
South Road
DURHAM CITY, ENGLAND

1206

1,13.

Fig. 6. For convenience the subject categories are placed at the end of each address.

ОБЪЕДИНЕННЫЙ
ИНСТИТУТ
ЯДЕРНЫХ
ИССЛЕДОВАНИЙ
Дубна



13 - 4238

А.А. Омельяненко

ЭФФЕКТИВНОЕ $n-\gamma$ РАЗДЕЛЕНИЕ
С КРИСТАЛЛОМ СТИЛЬБЕНА

ЛИТЕРАТУРА И ФОРМАЛИЗМ

1969

СООБЩЕНИЯ
ОБЪЕДИНЕННОГО
ИНСТИТУТА
ЯДЕРНЫХ
ИССЛЕДОВАНИЙ
Дубна



P2 - 4301

Р.П. Заikov

ЛАГРАНЖЕВ ФОРМАЛИЗМ
ДЛЯ ТЕНЗОРНЫХ ПОЛЕЙ
БЕЗ ДОПОЛНИТЕЛЬНЫХ УСЛОВИЙ

ЛИТЕРАТУРА И ФОРМАЛИЗМ

1969

Fig. 7. The covers of the publications issued at Dubna. Each laboratory has its own code-colour. Letter-figure code of each edition indicates the language of the preprint, its subject category and a serial number.

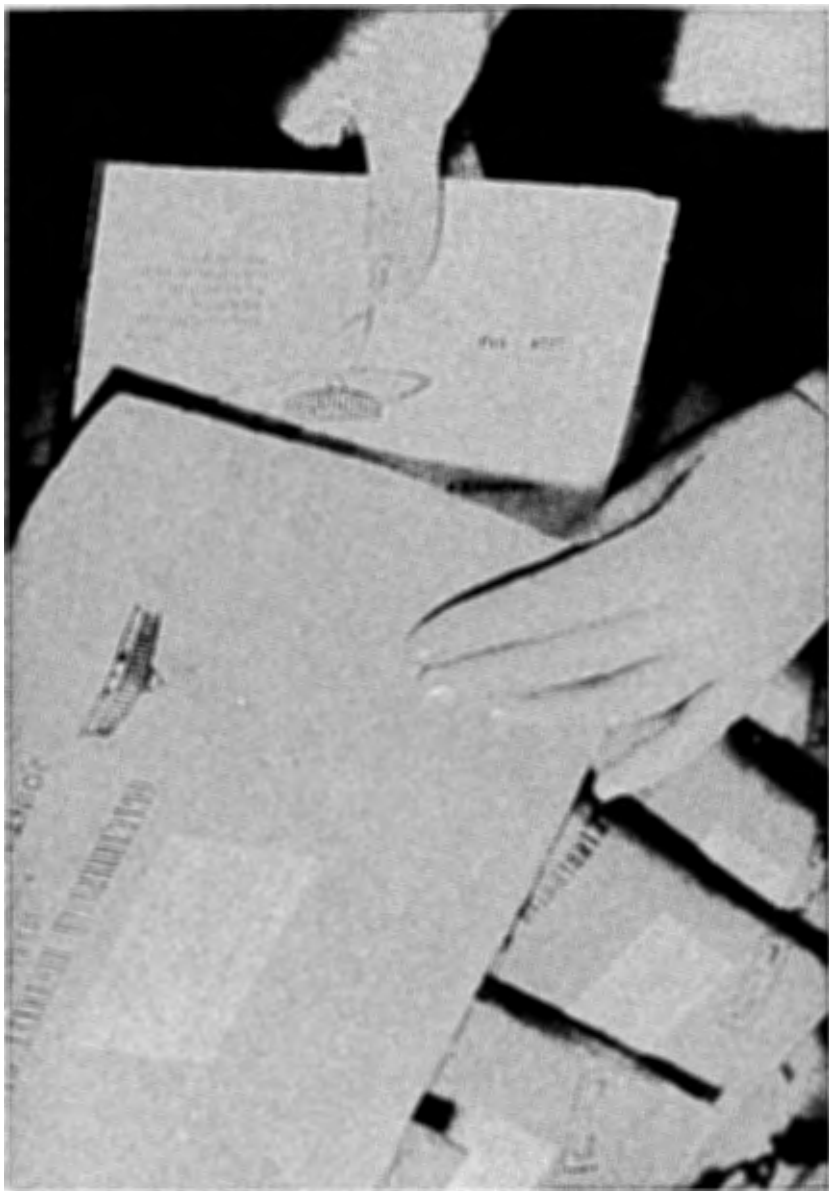


Fig. 8. About 3000 requests for separate publications issued before are received at Dubna annually. A small amount of former publications is stored here.

B 17

<p>США, Ок-Ридж Dr. Robert Silva Oak Ridge Associated Universities P.O. Box 117 Special Training Division Oak Ridge, Tennessee 37830 U.S.A...</p> <p>1514</p> <p>3,4,6,7,9,13.</p>	<p>ФРГ, Гайдельберг Dr. Klaus Bethge II. Physikal. Institut Universität Heidelberg 69 Heidelberg Philosophenweg 12 DBR</p> <p>1520</p> <p>1,2,3,4,5,6,7,8,9,10,11,12,13.</p>
<p>США, Беркли Dr. Torbjorn Sikkeland Building 71 Lawrence Radiation Laboratory Berkeley, Calif. 94720 USA</p> <p>1515</p> <p>3,4,6,7,9,13.</p>	<p>Нидерланды, Утрехт Prof. M.Veltman Instituut voor Theoretische Fysica der Rijksuniversiteit Maliesingel 23 Utrecht, Netherlands</p> <p>1521</p> <p>1,2.</p>
<p>США, Беркли Dr. Matti Nurmia Building 71 Lawrence Radiation Laboratory Berkeley, Calif. 94720 USA</p> <p>1516</p> <p>3,4,6,7,9,12,13.</p>	<p>США, Коннектикут The University of Connecticut Preprint Library Department of Physics Storrs, Connecticut 06268 U-46 USA</p> <p>1522</p> <p>1,2,3,4.</p>
<p>Люксембург Commission des Communautés Européennes CID - Transatom 29, rue Aldringer LUXEMBOURG (Grand Duchy of Luxembourg)</p> <p>1517</p> <p>1-16.</p>	<p>Италия, Болонья Librarian of the International School of Physics "Ettore Majorana" University of Bologna Via Irnerio, 46 40126 BOLOGNA ITALY</p> <p>1523</p> <p>1,2.</p>
<p>Гавай, Гонолулу Prof. San Fu Tuan University of Hawaii Dept. of Physics and Astronomy. Honolulu, 2565 the Mall, HAWAII 96822</p> <p>1518</p> <p>1,2.</p>	<p>США, Лос-Анжелос Dr. R.E.Lingenfelter Institute of Geophysics & Planetary Physics Los Angeles, Calif. 90024 U.S.A.</p> <p>1524</p> <p>1,2,3,4,15.</p>

Fig. 9. One of the numerous mailing lists which is cut on separate addresses before distributing the preprints.



Fig. 10. About 5000 brochures are sent weekly from Dubna to 48 countries.



Fig. 11. Addressing machine producing matrices.

Fig. 12. Type-setting subdivision of the Publishing Department

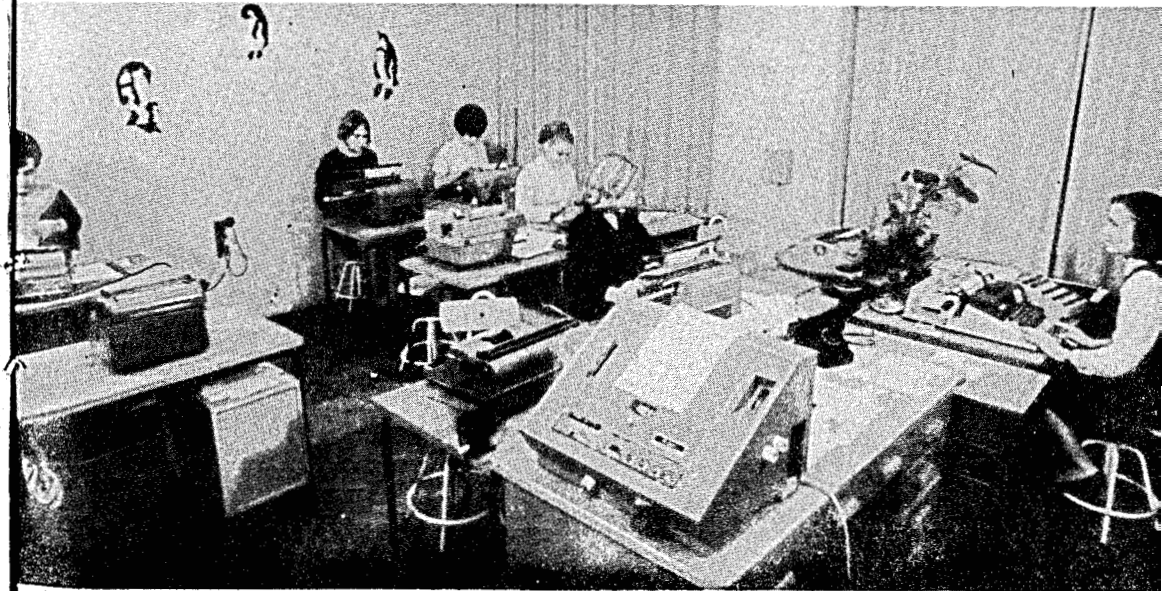




Fig. 13. Photo-composition Optype machine.



Fig. 14. Lighting device with the high pressure xenon lamps .

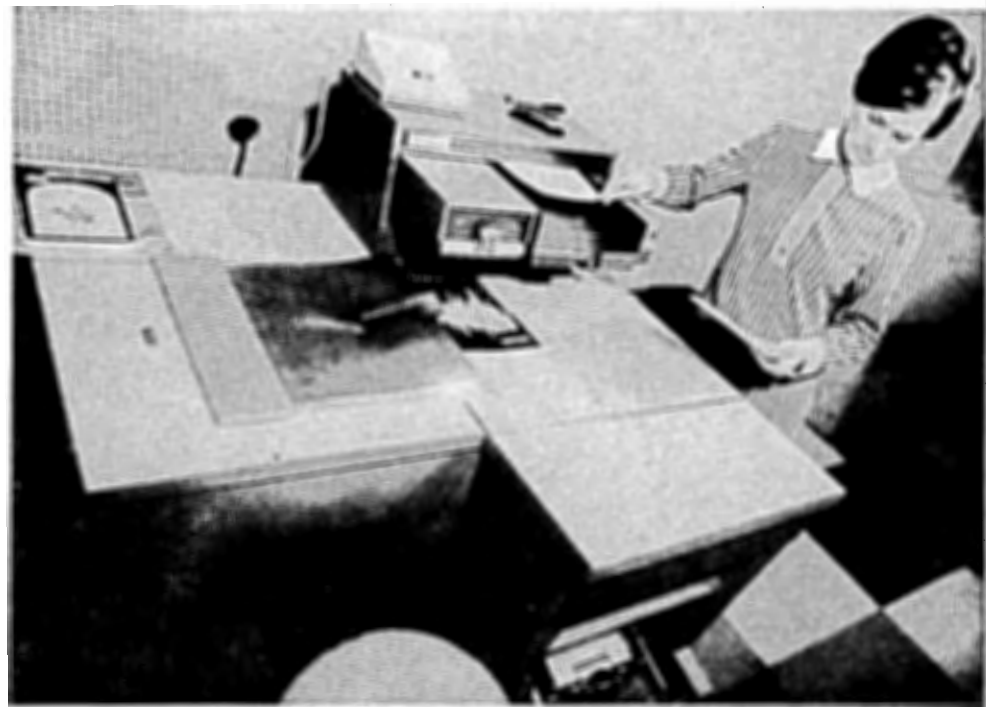


Fig. 15. Using the Xerox-914 machine an offset master can be made in 9 seconds.

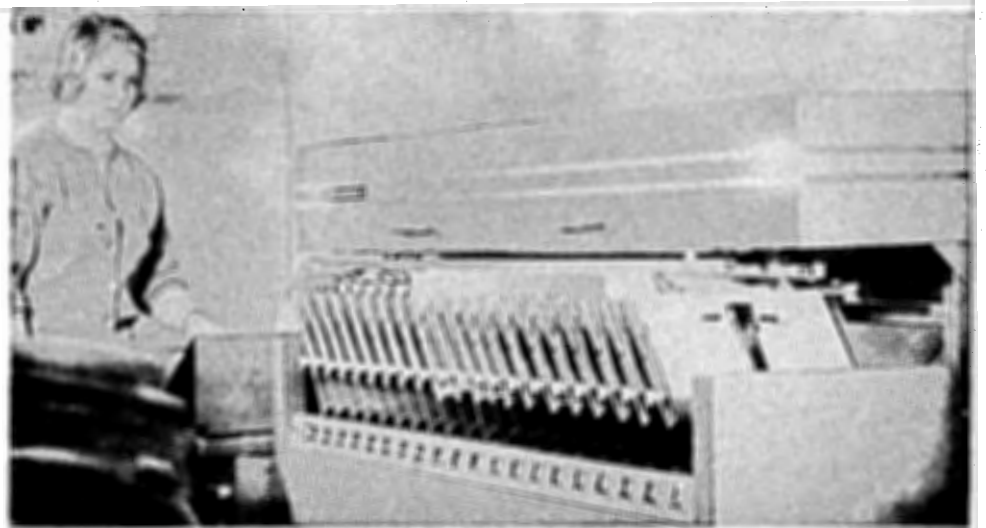


Fig. 16. Collecting and gathering machine speeds up considerably completing of brochures.



Fig. 17. In the printing subdivision .

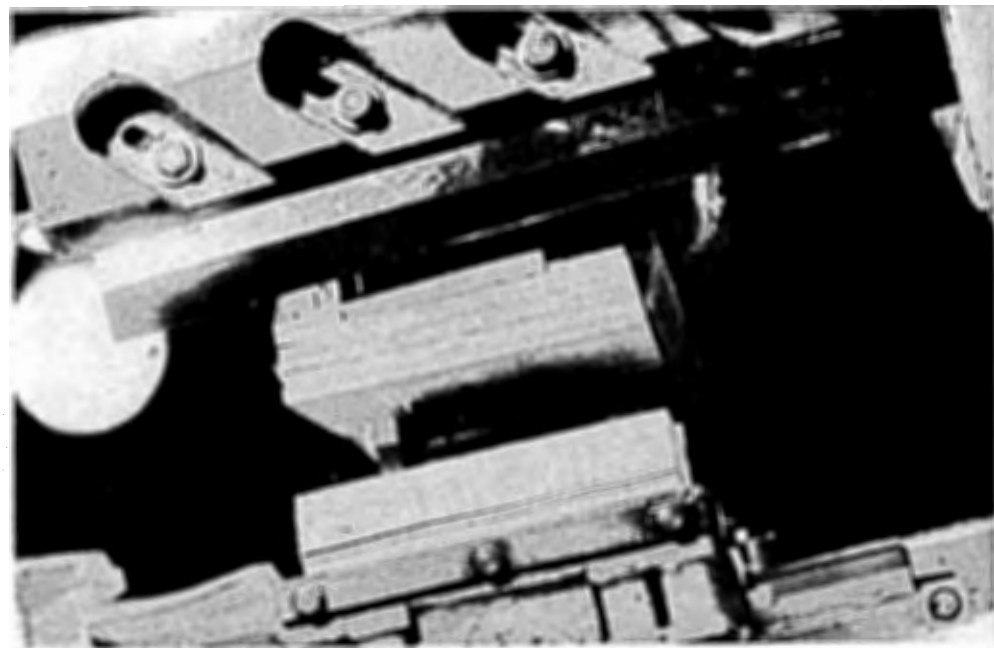


Fig. 18. Three-knife cutting machine allowing to keep standard size of our publications for many years.



Fig. 19. Pneumatic press used for stitchless blocking of the great number of books.▶