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LONDON & NEW YORK

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4-5, FITZROY SQUARE,
LONDON, W.1

Telephone: EUSTon 4455

9687

Aims and Purpose of the Institute

- I. To establish a Translation Panel of competent and highly qualified translators from Russian and other Slavonic languages into English; and to make available the services of the Institute and its Translation Panel to scientists, learned societies, government agencies and industry throughout the world on a non-profit making basis. The Institute shall charge its customers for these services on a co-operative cost-sharing plan.
- II. To encourage, co-ordinate and foster (by the holding of Symposia, for instance) the teaching of Russian at higher seats of learning; and to provide the teaching institutions with the necessary textbooks and tools of learning which will enable non-Russian speaking scientists to acquire quickly a working knowledge of Russian sufficient for them to read Russian scientific literature.
- III. To sponsor and foster research into the organisation of scientific information, mechanical systems for storing and retrieving information, and mechanical translation.
- IV. To assist and advise learned societies and professional bodies on their publication problems with a view to reducing the cost of printing and distribution of their publications in the interests of the wider and more efficient dissemination of scientific information.
- V. To translate and disseminate such of the scientific, technical and medical literature printed in Russian and other Slavonic languages, which, in the opinion of competent scientific advisors, will be of definite benefit and value to scientists not speaking these languages.
- VI. To establish and publish, with the assistance of the appropriate scientific institutions in the U.S.S.R. a series of monographs in the English language reviewing progress in broad areas of Soviet scientific activity.
- VII. A. To publish a journal devoted to reporting translation work done anywhere in the world from Russian and other Slavonic languages into English in the fields of science, technology and medicine in order to prevent duplication.
B. To serve as a forum in which Soviet and non-Russian speaking scientists will be able to discuss problems of common concern—both scientific and administrative.
C. To be a place where people engaged in the teaching of Russian to non-Russian speaking scientists can report on their experience and exchange information which will be of assistance to persons working in this field.
- VIII. To compile and publish specialised dictionaries from and into Russian and the principal Slavonic languages for subjects where such dictionaries are lacking.

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ENCLOSURE

105-25063-148

PERGAMON INSTITUTE

London

New York

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4-5, FITZROY SQUARE,
LONDON, W.1

Telephone: EUSon 4455

London, 18th April, 1957.

Not to be published
prior to 12 p.m. on
24th April, 1957.

ANNOUNCEMENT

Pergamon Institute, a non-profit-making foundation, has recently been formed in New York, and is in course of formation in London, for the purpose of making available to English-speaking scientists, doctors and engineers from all countries that are Members of the United Nations, the results of scientific, technological and medical research and development in the Soviet Union and other countries in the Soviet orbit.

For the Aims and Purpose of the Institute see Attachment A.

Over a hundred scientists of international standing from many countries have given their support and will supervise the affairs of the Institute (see Attachment B for the list of scientists supporting the Institute).

The formation and purpose of the Institute was much influenced by last November's report to the United Kingdom Government by its Advisory Council on Scientific Policy, under the chairmanship of Sir Alexander Todd, F.R.S., which, among other things, analysed the position as follows: " ... There would of course be no problem if Russian were widely read, but our information is that only about 2 per cent. of our working scientists can read Russian, compared with 80 to 90 per cent. who read French, and 60 per cent. German. The first thing to be done, therefore, is to encourage the teaching of Russian as an important modern language in schools and universities The evidence suggests that there must be at least a thousand current Russian scientific and technical periodicals.* Apparently, over 14,000 scientific and technical books were published in Russian in 1954. But at present the British Museum is only receiving about 800 a year, the D.S.I.R. 300, and the 170 libraries referred to (above) have less than 1,000 Evidently therefore this country is only receiving a fraction of the output

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of Russian scientific and technical literature..... It is important that it should be easy to trace any available Russian scientific and technical literature and that the existence of such literature should be widely known. The normal way of achieving this is through scientific abstracts. But, while some Russian journals are already abstracted in Western countries, it seems clear that this service is uneven and inadequate. We therefore regard the development of an effective system of abstracts, or summaries, of Russian scientific and technical journals, as far as possible by expanding the existing services, as an urgent matter. A "Literature Information Unit" might be necessary, to complement the work of the abstracting services by making known what exists, and where..... Careful consideration of the different aspects of the Russian problem is extremely urgent, if we are to keep abreast of this Russian literature, and also if we are to avoid the emergence of a number of partial and unsatisfactory solutions of the type which proves a barrier to subsequent progress."

* "... only about 370 different current periodicals are available in this country ..."

The following are the projects which have already been started or are being planned, and some of the services which are available:

1. It is planned to hold a Symposium in 1958 either in Washington or in London, sponsored by the Institute and several interested Universities, to examine the following problems:
 - a. How to assist with the establishment of extra curricula courses for the teaching of Russian in the science, medical and engineering faculties at higher seats of learning in the English-speaking world.
 - b. How to teach the reading of Russian scientific and technical texts to scientists and technologists in the minimum amount of time.
 - c. What tools of learning are required.
2. Discussions are taking place with the relevant authorities in the U.S.S.R. on the commissioning of a series of review volumes, with complete bibliographies, covering broad areas of Russian scientific, medical and technical progress for the period 1920-1956.
3. The Institute now publishes a number of selected Russian journals in complete translation:

Atomnaya Energiya (Atomic Energy)

* Problems of Virology

- * Problems of Hematology and Blood Transfusion
Journal of Microbiology, Epidemiology & Immunobiology
- * Biophysics
- * Journal of Oncology
- * Physiological Journal of the U.S.S.R.
Elektrichestvo (Electricity)
Physics of Metals and Metallography
- † Soviet Journal of Geophysics.

Those journals marked with an asterisk are published by the Institute on the initiative and with the financial support of the United States Department of Health, Education and Welfare, Public Health Service, The National Institutes of Health. The journal marked with a dagger is published in association with the National Geophysical Union with the financial support of the National Science Foundation.

The Institute is in negotiation with Government Departments, learned societies and industrial associations concerning the publication in translation of a further ten Russian journals in the fields of electronics, engineering and agriculture.

4. The Institute now provides a selection of significant papers from Russian medical and biological literature (other than those listed under Point 3 above) which are available to those interested, under the co-operative cost-sharing plan.
5. The following important Russian monographs and books are to be published in English in 1957, including the work of Academician A.N. Semenov, who recently shared the Nobel Award for chemistry with Sir Cyril Hinshelwood, and the classic course of theoretical physics by Academician Landau and his colleague, Professor Lifshitz. Academicians Semenov and Landau and Professor Lifshitz are co-operating with the Institute in bringing their books up to date, by adding a great deal of new and hitherto unpublished research results. It is noteworthy that other Soviet authors, whose monographs, books and articles are being translated by the Institute are also co-operating by bringing their work up to date, checking proofs, making available illustrations etc. This co-operation is most valuable for the work of the Institute. The books being translated are:

Ambartsumian

Theoretical Astrophysics

| | |
|---------------------------------------|---|
| Landau and Lifshitz | Quantum Mechanics Statistical Physics Mechanics of Continuous Media |
| Shklovsky | The Solar Corona |
| Fedoseev | Relay Protection of Power Systems |
| Fock | Theory of Space, Time & Gravitation |
| Vonsovskii & Shur | Ferromagnetism |
| Semenov | Some Problems of Chemical Kinetics and Reactivity |
| Topchiev | Nitration of Hydrocarbons and other Organic Compounds |
| Topchiev, Zavgorodnii and Paushkin | Boron-Fluoride and its Compounds as Catalysts in Organic Chemistry |
| Krasnosel'skii | Topological Methods in the Theory of Non-Linear Integral Equations |
| N. Sissakian | Biochemistry of the Chloroplastes |
| S.G. Mikhlin | Integral Equations and their Applications to Certain Problems in Mechanics, Mathematical Physics and Technology. |

Institute Services:

Available to learned societies, Government departments, trade associations, individual scientists, doctors and engineers.

1. Any person in the above categories wishing to keep informed of what is being published in the U.S.S.R. and other countries in the Soviet orbit may apply to the Institute to receive, free of charge, a monthly contents list in English of all the significant articles and books being currently published in his field of interest in these countries. Persons interested in any article mentioned in these contents lists may order from the Institute a full English translation which will be supplied with a minimum of delay. The charge for such a translation will be on a co-operative cost-sharing basis. This means that the costs will be shared equally with others requesting the article. The costs will be assessed on orders obtained for this translation

over a period of six months, and the charges to recipients of these papers will be made six months after the first request. In any case the maximum charge for these translations shall not exceed £1.10.0. (\$4.00) per thousand Russian words.

2. The Institute will undertake to supply, on request, detailed and exhaustive bibliographical information on work published in the U.S.S.R. and other Soviet orbit countries on all subjects in the field of science, technology and medicine; such services will be quoted for and charged at cost.
3. The Institute will undertake, on request, to evaluate work published in the fields of science, technology and medicine in the U.S.S.R. and other Soviet orbit countries. The Institute will also be able to provide abstracts and resumes of such publications.
4. The Institute will provide, with the co-operation of the respective National Academies of Sciences in the U.S.S.R. and other Soviet orbit countries, to learned societies, Government departments and industrial organizations only, for the purpose of research and reference, books and journals published in the U.S.S.R. and the Soviet orbit countries, including micro-cards and micro-films when available of books and articles published over the past twenty years in these countries, including material published during the 1939-1945 war as far as available.
5. The Institute will undertake the complete translation of selected journals and books if suitably recommended by learned societies, Government departments or trade associations.
6. The Institute can undertake, with the aid of its expert panel of translators, resident all over the world, translation work in all branches of science, technology and medicine from and into any language, including Chinese and Japanese.
7. The Institute will make available to learned societies and individual scientists, doctors and engineers in the U.S.S.R. and the other Soviet orbit countries reciprocal services on the same non-profit making basis in return for their co-operation.

[Redacted] b7c
Liaison
Central Research

RECORDED - 1
EX. - 126
105-10083 -148

BY COURIER SERVICE

95286

Date: June 27, 1957
To: Mr. E. Tomlin Bailey (Orig. & 1)
Director
Office of Security
Department of State
615 2nd Street, N. W.
Washington, D. C.
From: John Edgar Hoover, Director
Federal Bureau of Investigation
Subject: IAN ROBERT MAXWELL, with aliases
REGISTRATION ACT

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DATE 9-21-95 BY SP12 BDT/m

There is enclosed for each recipient of this communication one copy of a letter from the Ferguson Institute dated April 23, 1957, at London, England, addressed to "The President, American Association of Industrial Dentists," signed by I. E. Maxwell, together with a copy of its enclosures which are described therein.

b7c This material was received unsolicited via airtail on April 22, 1957, by [Redacted] and was furnished by [Redacted] to the Buffalo office of this Bureau on June 3, 1957.

b7c The workings which appear on the list of "Members of the Honorary Advisory Council" are those of [Redacted]

BY COURIER SVC
all list
14 JUN 28
Liaison
COMM - FBI

Buffalo (105-0) (Info) (See Note Page 2)
New York (105-7654) (Info)
AAG William F. Tompkins (0-6 Form same date) (Enclosure)

78 JAN 16 1961

Alvan

[Handwritten signatures and initials]

Mr. E. Tomlin Bat

cc - 1 -



61

cc - 1 - Mr. Frederick H. Schmidt
Director of Security
Department of Health, Education and Welfare
Fourth Street and Independence Avenue, S. W.
Washington, D. C.

BY COURIER SERVICE
(Enclosure)

cc - 1 - Dr. A. T. Waterman
Director
National Science Foundation
1520 H Street, N. W.
Washington, D. C.

BY COURIER SERVICE
(Enclosure)

cc - 1 - Atomic Energy Commission

BY COURIER SERVICE
(Enclosure)

NOTE SAC, BUFFALO:

New York is origin in the above-entitled case. Copies of Buffalo letter 6-12-57 and its enclosures were furnished to the New York Office and the legats in London and Ottawa by routing slip 6-19-57. Buffalo letter 6-12-57 was entitled "Pergamon Institute, Internal Security - Miscellaneous."

Office Memorandum • UNITED STATES GOVERNMENT

TO : Mr. R. R. Roach

DATE: July 3, 1957

FROM : Mr. J. M. Fitzgerald *gint*

~~SECRET~~

SUBJECT: IAN ROBERT MAXWELL
INTERNAL SECURITY - R and GE
Bureau file 105-25063

- Tolson _____
- Nichols _____
- Boardman _____
- Belmont _____
- Mason _____
- Mohr _____
- Parsons _____
- Rosen _____
- Tamm _____
- Nease _____
- Winterrowd _____
- Tele. Room _____
- Holloman _____
- Gandy _____

Fitzgerald

An investigation of the captioned individual was closed in April, 1957.

[REDACTED]

5 Copies of investigative reports have been furnished to the Atomic Energy Commission because of Maxwell's interest in atomic energy.

W.C. [unclear]

On July 1, 1957, Mr. C. A. Palazzolo, Chief, Internal Security Branch, Division of Security, Atomic Energy Commission (AEC), furnished the Liaison representative the enclosed pamphlet entitled "The Pergamon Library of Atomic Energy" which is published by Maxwell.

b7c
[REDACTED]

At the same time Palazzolo also furnished a copy of an AEC document entitled "Summary of Association of Ian Maxwell and Pergamon Press With AEC Program Personnel," which is also enclosed. In furnishing this summary, Palazzolo emphasized that he was doing this on a confidential basis. He said the summary and the copy of the above-described publication were being furnished to the Bureau as a matter of information.

ACTION:

For the information of the Espionage Section.

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[REDACTED] *b7c*

Enclosures (2)

JMF:bjt
(6)

EX-131

RECORDED - 91
INDEXED - 91

105-25063-149

16 JUL 8 1957

- 1 - Mr. Branigan
- 1 - Mr. [REDACTED] *b7c*
- 1 - Mr. Bates
- 1 - Liaison Section
- 1 - Mr. Fitzgerald

EX-131

~~SECRET~~

58 JUL 15 1957

XXXXXX
XXXXXX
XXXXXX

FEDERAL BUREAU OF INVESTIGATION
FOIPA
DELETED PAGE INFORMATION SHEET

9 Page(s) withheld entirely at this location in the file. One or more of the following statements, where indicated, explain this deletion.

- Deletions were made pursuant to the exemptions indicated below with no segregable material available for release to you.

Section 552

Section 552a

(b)(1)

(b)(7)(A)

(d)(5)

(b)(2)

(b)(7)(B)

(j)(2)

(b)(3)

(b)(7)(C)

(k)(1)

(b)(7)(D)

(k)(2)

(b)(7)(E)

(k)(3)

(b)(7)(F)

(k)(4)

(b)(4)

(b)(8)

(k)(5)

(b)(5)

(b)(9)

(k)(6)

(b)(6)

(k)(7)

- Information pertained only to a third party with no reference to the subject of your request or the subject of your request is listed in the title only.

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ENERGY

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(Published for the United Kingdom Atomic Energy Authority)

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Although published so soon after the very successful first edition, the second edition has been revised in the light of the Geneva Conference and developments since that time and is virtually a new book. It has been completely re-set, almost all diagrams have been replaced and new diagrams added.

contents

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It presents a vast amount of data in graphical form and is as up-to-date as such a publication can be, with references included to work published in February, 1956. It should be of great value to honours students, research workers, nuclear power engineers, etc.

c o n t e n t s

- 1 The Biological Hazards of Nuclear Radiations.
- 2 Attenuation of Gamma Rays and and High-Energy Electrons.
- 3 Shielding against Neutron Physics
- 4 Neutron Attenuation in Thick Shields.
- 5 Useful Mathematical Formulae.
- 6 The Shielding of Reactors and Radio-active Materials.

APPENDICES

- I Data useful in shielding calculations.
- II Thermal neutron scattering and absorption cross-sections.
- III Thermal neutron activation cross-sections.

Well illustrated.

To be published May 1957

IRRADIATION TREATMENT OF POLYMERS

By DR. A. CHARLESBY

Although it is only a few years since the discovery that many materials could be improved by subjecting them to radiation, rapid advances have taken place in this new field and commercial applications are already appearing. One of the most promising applications arises in the field of plastics, whose properties can be greatly improved. Many scientific papers and short review articles have been published but so far no comprehensive work has appeared dealing with this subject. This volume, which is the first of a series dealing with radiation effects on materials, covers the changes produced in materials by atomic radiation from reactors, or by electron radiation from high voltage sources. It aims to present present-day knowledge both to scientists and engineers working in the field of nuclear energy and to polymer chemists who may be interested in applying this new technique to the modification of their materials.

After a general introduction into radiation damage to materials, the book deals successively with radiation sources, the interaction of radiation with matter and the general characteristics of polymers. It then gives the mathematical theory of crosslinking and degradation (the two major effects observed) and applies these in a number of specific polymers e.g. polyethylene, rubber, silicones, polymethyl methacrylate, polyisobutene and PTFE. The mechanism of these reactions is briefly reviewed in the light of present day knowledge of radiation chemistry. The book also deals with relevant matters such as polymerisation induced by radiation and grafting.

Irradiation Treatment of Polymers is the first book to be published in this field.

To be published late in 1957

NEUTRON CROSS SECTIONS

By D. J. HUGHES, Brookhaven National Laboratory

This monograph contains the theory necessary to understand the cross sections in the compilation BNL 325 and to use them in calculations of reaction rates, self-absorption, etc., as well as the principles of experimental methods that are used to obtain them. The objective is to aid anyone interested in understanding and in using cross sections intelligently. Many references are made to BNL 325 and in a sense the monograph constitutes a handbook that will increase the utility of BNL 325 greatly.

outline of contents

1. TYPES OF CROSS SECTIONS AND PRINCIPLES OF MEASUREMENT.
Simple definition of cross section, orders of magnitude, importance.
Cross section nomenclature and notation, total, partial, non-elastic, inelastic, coherent and incoherent, capture, activation, fission, etc.
General principles of measurement of the types of cross sections, accuracy attainable.
Use of cross sections in general applications.
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Basic facts of nuclear structure.
Compound nucleus, excitation energy, level spacing.
Statistical nuclear model.
Excited states, widths, disintegration modes.
Quantum mechanical definition of cross sections, phase shifts, amplitudes.
Theory of compound nucleus formation, black nucleus, cloudy crystal ball.
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Total cross sections.
Fission.
Non-elastic scattering, inelastic scattering.
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Single level Breit-Wigner formula (no multi-level formula).
Resonance-potential interference.
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Survey of resonance results—distribution laws of parameters.
Average cross sections— $\Gamma n/D$, potential scattering.
Use of results, theory vs. experiment.
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Averages over Maxwell distribution, f -factors.
 η , ν , α for fissionable materials (near thermal, world's values).
Cold neutrons, lattice vibration scattering, temperature effects.

To be published May, 1957

ATOMIC ENERGY IN ECONOMIC DEVELOPMENT

A discussion held at the 11th Annual Meeting of the Board of Governors of the International Bank for Reconstruction and Development; incorporating a background study made for the International Bank by Corbyn Allardice, et al.

Contributors: CORBIN ALLARDICE
EUGENE R. BLACK
SIR JOHN COCKCROFT
W. KENNETH DAVIS
PROFESSOR FRANCIS PERRIN
SIR EDWIN PLOWDEN
ADMIRAL LEWIS L. STRAUSS

From the Introduction by ANTONIO CARRILLO FLORES
*Chairman of the Board of Governors of the International Bank
for Reconstruction and Development*

'This session of the eleventh Annual Meeting of the Bank's Board of Governors will be devoted to an informal panel discussion on the subject of Atomic Energy in Economic Development.

I intend to call upon President Black to describe the discussion this morning, but before doing so, I wish to commend him and his advisers for selecting this important subject, and for obtaining our famous guests to present and discuss it.

We live in the atomic age. On the one hand, we hear of the great benefits that this new technological advance will bring to the world, and on the other hand, we read of the catastrophic destruction that atomic and hydrogen warfare are capable of causing.

We, all of us, hope that the latter will never eventuate. But we must do more than that. We must bend our minds and our energies to the task of bringing the bountiful blessings of atomic energy to mankind everywhere, for by so doing we shall not only effect material progress, but, more important, we shall engender a spirit of mutuality and of trust which will do much to prevent war and, indeed, may abolish that term from the language of man.'

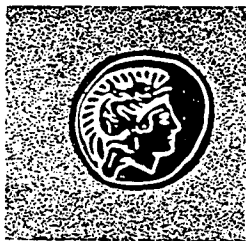
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Edited by D. J. HUGHES
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Edited by Prof. H. HINTENBERGER

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Opening Remarks by *Otto Hahn*.

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III. MASS SPECTROSCOPIC RESULTS

IV. NUCLEAR MASSES FROM NUCLEAR REACTIONS

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IN PREPARATION

DICTIONARY OF PHYSICS

Editor in Chief J. THEWLIS, Harwell

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A. R. MEETHAM, Teddington

The object of this ambitious undertaking is to put the whole of physical knowledge on the bookshelf. It has no counterpart in the English language, and will be entirely new from beginning to end. It is intended to serve all who require easily accessible information on physical and related topics.

It will be written by those scientists on both sides of the Atlantic and in the Commonwealth who are most closely in touch with each branch of pure and applied physics. The articles defining each term will be up to 2,000 words in length and illustrated. They will be arranged alphabetically with a minimum of cross references, each article being complete in itself, although references to related topics will be appended to the articles, with bibliographies designed to guide the reader in pursuit of further knowledge.

The Dictionary of Physics will consist of six volumes but, in association with this work, a multi-language dictionary of physical terms is being prepared which will enable terms in any one of the following languages—English, French, German, Spanish, Russian, Chinese and Japanese—to be found in each of the others. This will be available separately but will also be issued free of charge to purchasers of the Dictionary of Physics. It is planned to make the language dictionary serve also as an index to the main work.

To ensure that the coverage of Physics and related subjects shall be satisfactory the scope of the Dictionary (see next page) has been decided with the help of the following consultant editors:

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DICTIONARY OF PHYSICS (cont.)

Scope of the Dictionary

For convenience in planning, and to provide a framework on which the Dictionary could be erected, Physics and its related subjects have been divided into upwards of sixty sections; and the scope of each has been decided with the help of specialist advisers. The sections are listed below, but, as the Dictionary is arranged alphabetically they do not, of course, appear as sections in the completed work.

| | | |
|--|---|--|
| Acoustics | Electrochemistry | Molecular structure |
| Astronomy | Electromagnetism and electrodynamics | Molecular theory of gases |
| Astrophysics | Electrostatics | Molecular theory of liquids |
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| Cosmic rays | Ionization | Physical metrology |
| Counters and discharge tubes | Isotopes | Positive rays |
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| Dielectrics | Low-temperature physics | Radioactivity |
| Elasticity and strength of materials | Magnetic effects | Reactor physics |
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| | Mechanics of gases | Structure of solids |
| | Mechanics of solids | Thermionics |
| | Mesons | Thermodynamics |
| | Meteorology | X-rays |

Extract from the Editor's Foreword

The preparation of a work of this kind, once the main principles are decided upon, falls into two main stages: the decision as to the scope of the work and the actual writing of the various articles called for. In the first stage we have had the assistance of many specialist advisers in various branches of Physics and related subjects (whose names are listed on the title page) and, in consequence, a comprehensive coverage has been achieved. The second stage has been carried out, in the main by authors recommended by the specialist advisers as authorities in their own particular fields, to ensure, as far as possible, that the articles shall be authoritative and up to date. All articles are initialled, and a list of authors appears in each volume.

In 1922 GLAZEBROOK wrote: 'It is clear that, with so large a range of subjects, any individual worker will, probably, be concerned mainly with one branch, and, with this in

DICTIONARY OF PHYSICS (cont.)

mind, the volumes have been arranged, as far as possible, into subjects.' This type of arrangement has not been adopted in the present Dictionary for, as we have already said, the increasing compass of modern Physics has been accompanied by a corresponding unification within Physics and the subjects bordering on it. The result is that no worker can now afford to ignore other branches of Physics if he is to understand his own branch adequately. No attempt has been made, therefore, to segregate subjects in different volumes. Indeed the overlapping that would occur between such volumes would prohibit such a procedure; and the Dictionary has, in consequence, been arranged in a strictly alphabetical form. Nevertheless the order of words is such that, where possible, terms related to some main topic are listed together. For example the various types of nuclear reactor are listed as special examples of the term *Nuclear reactor*. Thus we have *Nuclear reactor, breeder type*; *Nuclear reactor, thermal type*; and so on. The principles followed are set out in more detail in the 'Notes for the reader' that will be found at the beginning of each volume.

It is to be expected that many of those who wish to consult the Dictionary will be busy people who will not have the time or inclination to read an exhaustive account of all the various aspects of a subject in order to find the topic of interest. Indeed, many of them, being anxious to clear up some one particular point, will be well acquainted with the bulk of the material that would be contained in such an account. On the other hand there will be others, less knowledgeable or with more time, who wish to become familiar with a subject in all its ramifications. In order to cater for both extremes, recourse has been had to a type of 'unit construction'. With a few exceptions no article is longer than 2,000 words, and many are much shorter. Each is self-contained, but, to permit the reader to follow a subject as far as he wishes, cross-references to related articles are appended where necessary (but not scattered throughout the text—a practice which is distracting and breaks the even flow of thought). Bibliographies are also provided to enable him to pursue his studies further.

* * * * *

No dictionary of physics has appeared in English since the Dictionary of Applied Physics edited by Sir RICHARD GLAZEBROOK, which was published in 1922-23. The appearance of the present Dictionary, then, would seem timely, although it may be as well to say at once that this work is in no way a modern version of 'Glazebrook'. Many fundamental advances in Physics have been made since 1922 and the impact, for example, of wave-mechanics and of modern developments of the quantum theory could not even have been foreseen at that time. With these advances has come, inevitably it would seem, an ever-growing tendency towards specialization. At the same time, modern physical ideas, paradoxically enough, have achieved a remarkable degree of unification, not only of Physics itself, but of many branches of Science that at one time might well have been considered to be almost unrelated. For example, we now take it for granted that Physics forms the basis of much of Chemistry and Metallurgy. Physics is also being applied more and more to the study of living matter. The present Dictionary aims, therefore, at covering not only Physics proper but also to a greater or lesser extent such subjects as Mathematics, Astronomy, Aerodynamics, Hydraulics, Geophysics, Metrology, Physical Metallurgy, Radiation Chemistry, Physical Chemistry, Structural Chemistry, Crystallography, Medical Physics, Biophysics, and Photography. It should be useful not only to physicists (and would-be physicists) but to those who are concerned with any of the many branches of Science mentioned or implied above, which have a physical basis.

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contents

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FORTY-EIGHT

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| 4 Geometrical Theory of Optical Imaging | 14 Introduction to Crystal Optics. |
| 5 Geometrical Theory of Aberrations. | APPENDICES |
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