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Translation

BIOMEDICAL AND PSYCHOSOCIAL PROBLEMS OF SPACE FLIGHT: AN INDEX OF SOVIET AND FOREIGN LITERATURE 1966-1970

Ed. by O.G. Gazenko, et al.

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BIOMEDICAL AND PSYCHOSOCIAL PROBLEMS OF SPACE FLIGHT: AN INDEX OF SOVIET AND FOREIGN LITERATURE 1966-1970

Moscow MEDIKO-BIOLOGICHESKIYE I SOTSIAL'NO-PSIKHOLOGICHESKIYE PROBLEMY KOSMICHESKIKH POLETOV. UKAZATEL' OTECHESTVENNOY I ZARUBEZHNOY LITERATURY. 1966-1970 GG. in Russian 1978 (signed to press 9 Mar 78) pp 4, 8-10, 13-16, 20-23, 27, 32-34, 36, 37-38, 63-65, 136-142, 145-149, 185-205, 279-328, 428-437, 471-518

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ANNOTATION

This bibliography is a collection of Russian and foreign literature published in 1966-1970 on the entire complex of biomedical and psychosocial problems associated with man's conquest of space. This index is broken down into the following sections: General problems; space flights and the prospects of the conquest of space; effects of space flight factors on organisms; psychophysiological problems; the methods of physiological research; life support; cosmonaut training and selection; exobiology.

This index is intended for biologists, physicians, psychologists, economists, sociologists, designer-engineers, and representatives of various associated specialties.

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FROM THE COMPILERS

Deeper research on the laws governing development of nature and society and stronger mutual ties between the social, natural and technical sciences were named among the main tasks of Soviet science in the "Basic Directions for Development of the USSR National Economy in 1976-1980", approved by the 25th CPSU Congress.

The study and conquest of outer space and expansion of research on the use of cosmic resources to study the earth's natural resources, in meteorology, oceanology, navigation and communication, and for other needs of the national economy are stated among the most important directions of scientific research.*

CPSU Central Committee General Secretary Comrade L. I. Brezhnev emphasized in the Accountability Report to the Congress that integrated programs for development of the country's national economy must account for continuous progress not only in Soviet but also in world science and technology, and for the possibilities of economic cooperation with other states. Describing the aspects of foreign economic ties, L. I. Brezhnev noted the urgency of global problems such as the conquest of space, and he emphasized that this problem will have an increasingly more noticeable influence upon the life of each nation and upon the entire system of international relations in the future.**

In this connection, informing scientists and specialists about the Soviet and foreign literature on the most important problems of science and technology, particularly on the biomedical, psychological and social aspects of space flight, acquires special significance.

This index was compiled by colleagues of the USSR State Library imeni V. I. Lenin, the State Central Scientific Mecical Library and the USSR Academy of Sciences Library. It contains information on the Soviet and foreign literature (books, articles in journals and collections, dissertation abstracts, technical reports, patents), published in 1966-1970. Thus this bibliography is a direct continuation

*"Basic Directions for Development of the USSR National Economy in 1976-1980", in "Materialy XXV s"yezda KPSS" [Proceedings of the 25th CPSU Congress], Moscow, Politizdat, 1976, pp 213, 215.
**Brezhnev, L. I. "Report of the CPSU Central Committee and the Party's Current Tasks in Domestic and Foreign Policy", in "Materialy XXV s"yezda KPSS", Moscow, Politizdat, 1976, pp 42, 56.

of the index published in 1972, which embraced the literature of 1961-1965.* In addition to works published in 1966-1970, the present publication also cites some studies conducted in earlier years that for one reason or another had not been included in the previous edition.

The next edition of the index is to include information on the Russian and foreign literature published in 1971-1975.

This bibliography is intended for a broad range of scientists interested in space research: medical specialists, biologists, psychologists, economists, sociologists, lawyers, specialists in physical education and sports, design engineers, librarians and employees of information services.

The compilers do not claim this index to be exhaustive; however, they did attempt to fill in the gaps contained in abstract journals by reviewing a number of periodicals and collections in their entirety, which is especially significant in connection with the absence of special sources providing current bibliographical information and abstracts in this subject area.

Selecting the literature, the compilers laid their greatest emphasis on research conducted in the course of space missions or during preparations for them; somewhat lower emphasis was laid on papers not directly associated with space research but containing information on terrestrial experiments on the biological action of extreme factors in common with space flight factors (hypoxia, hypokinesia, noise, vibration, ionizing radiation, etc.).

The principles of selecting material for this bibliography were partially reconsidered. This was elicited by the appearance, in the second five-year plan of the space age, of research devoted to new aspects of research on outer space, and by the increase in the number of publications on individual issues in this area. In this connection some changes were also made in the list of classification headings of this index. A number of sections have been given new titles. For example:

1.3. Role of Space Research in Development of Biology, Medicine, Psychology and Technological Sciences and in Solving Social and Economic Problems.

2.2. The Prospects for Conquering Space, Changing the Planet's Ecosphere and Transforming Man's Environment.

4.5. Group Psychology. Sociology of Small Groups. Psychological and Biological Compatibility. Speech Communication. Radio Communication.

6.5. Radiation Safety. Effectiveness, Forecasting, Dosimetry.

6.6. Thermal Protection and Its Effectiveness.

Because new disciplines have formed, some literature is now grouped separately in special sections. Literature on space genetics is contained in section 3.3.1;

*Gyurdzhian, A. A. (Editor in Chief), "Mediko-biologicheskiye problemy kosmicheskikh poletov. Ukazatel' otechestvennoy i zarubezhnoy literatury" [Biomedical Problems of Space Flight. Index of Soviet and Foreign Literature]; Compilers: Ye. A. Akhutin, Ye. A. Koltun, M. L. Shvarts, M. E. Ekshteyn; Moscow, Izd-vo "Nauka", 1972, 303 pp.

section 6.3. "Nutrition and Water Supply..." also includes research on the general problems of space gastroenterology; section 6.7. "Microbial Control..." includes research on the general problems of space microbiology and immunology; subsection 3.2.3. "Visible Light, Ultraviolet, and Infrared Radiation..." contains references on cosmonaut visual functions; subsection 3.3.9. "Noise..." contains references on cosmonaut hearing functions; paragraph 3.3.2.4. "Angular Velocity..." deals with the general problems of vestibular physiology. Exobiology was also placed in a special chapter; however, far from all references dealing with this subject were collected together here. In particular, the compilers avoided inclusion of papers dealing with hypothetical areas. The compilers included absolutely no information on research conducted in those directions of space biology that deal with the influence of space factors upon the earth's biosphere, since this literature is only indirectly connected with the biomedical aspects of space flight.

The index reflects literature in all languages using the Cyrillic and Latin alphabet; references in Japanese are treated as in the abstract publications of the All-Union Institute of Scientific and Technical Information.

Books, articles from journals and collections, dissertation abstracts, technical reports and patents falling within the bounds of the adopted subject matter were included. Popular scientific works and short notes contained in journals were selected only when scientific publications on the given question were absent. The compilers were highly selective in their inclusion of patents and technical reports, and in contrast with the previous edition, the latter are contained in the appropriate sections, rather than being appended as a separate list.

The material of this part of the index is classified into eight chapters: 1. General Problems of Space Biology and Medicine. 2. Space Flights and the Prospects for the Conquest of Space. 3. Effects of Space Flight Factors on Organisms. 4. Psychophysiological Problems. 5. Methods of Physiological Research in Space Biology and Medicine. 6. Life Support in Spacecraft and in Extravehicular Conditions. 7. Cosmonaut Selection and Training. 8. Exobiology.

Each of these eight chapters in the bibliography consist of sections, subsections, and paragraphs. Their subordination is designated by a system of numerical indices.

The literature was classified in accordance with the list of classification headings created by scientific consultant A. A. Gyurdzhian and by the authors of this index--Ye. A. Akhutin and Ye. A. Koltun, and approved by the Committee for Bioastronautics of the International Astronautical Federation .

The list of classification headings and system of indices used in this publication are not intended as a substitution for the principles followed in commonly accepted classification systems (Universal Decimal Classification, BBK etc.) to locate and index materials in the appropriate sections; they are, rather, tools adopted exclusively for the convenience of arranging literature consisting predominantly of references dealing with numerous aspects of the subject matter.

References contained in the classification divisions are described in alphabetical order of authors or titles, irrespective of the form of the publication.

Each alphabetical series begins with works published in Russian or in languages of the peoples of the USSR, irrespective of whether they are in their original form or translated; these are followed by works published in foreign languages, including studies by Soviet scientists.

The only exceptions are in section 1.1. "General References", 1.6. "Congresses, Conferences and Symposia", paragraphs 2.1.2.2.-2.1.2.5. "Soviet and American Manned Spaceships" and subsections 2.2.2./2.2.4. "Problems in Development of the Moon, Creation of Orbital Stations, and Interplanetary and Interstellar Flights". Works having philosophical and methodological nature are presented in section 1.1. apart from the general alphabetical listing. The material in section 1.6. is arranged by titles of individual congresses, symposia, conferences, sessions and plenary meetings in the order of their significance, and under each title they are ordered in chronological sequence; in this case the references begin with works and materials, then report theses and abstracts, and finally reports, reviews, and commentaries. References concerning specific conferences are grouped together into sections separated by asterisks. In paragraphs 2.1.2.2.-2.1.2.5. the material is also grouped in chronological order of flights by Soviet and American spaceships. Subsection 2.2.2./2.2.4. is subdivided into three logical units corresponding to the title of this subsection. Each unit is separated from the others by asterisks.

The bibliographic references contained in this edition are given in the language of the original in accordance with the "Unified Rules for Describing Printed Works in Bibliographies and Information Publications" (Moscow, "Kniga", 1970) and the existing GOST [All-Union State Standard].* The compilers also guided themselves by the "Proofreader's and Editor's Reference Book" (Moscow, "Kniga", 1974) in describing the references. Abbreviations used in the bibliographic entries follow GOST recommendations.** Insignificant deviations from these standards are necessitated by the specific features of the material.

This index is partially annotated. References published in Russian are annotated only when it is unclear from the titles that their content corresponds to the subject matter of this index or of a given section. The titles of foreign works are translated into Russian, or they are accompanied by short annotations, though once again only when the titles are insufficiently informative or when justification as to why the given work was placed in the particular section is required.

A large part of the publications contained in this index were examined directly by the compilers. If for some reason works were not examined directly, their descriptions (marked by an asterisk) are not standardized, and they are written out basically in the same format encountered in abstract publications and bibliographies.

Entries do not appear more than once in this index; therefore it makes extensive use of a system of cross-references between sections having similar subject matter as well as between individual works. Information on works having content fitting in two or

*"Description of Printed Works for Bibliographies and Information Publications", GOST 7.1-69, Moscow, 1969.

**"Abbreviations of Russian Words and Phrases in Catalog and Bibliographical References", GOST 7.12-70, Moscow, 1970; "Abbreviations of Words and Phrases in Foreign European Languages in Catalog and Bibliographical References", GOST 7.11-70, Moscow, 1972.

several sections is located in one of the sections, in which references to other sections can be found. These references are located at the start of classification divisions, following their titles.

An appendix to this index provides auxiliary materials--"List of Collections of Papers (Soviet and Foreign) Used in This Bibliography", "List of Serial and Periodical Publications (Soviet and Foreign) Used in This Bibliography" and "Name Index". In addition to complete titles, the list of periodicals also indicates the abbreviations of journals and serial publications adopted for this index; only the full names are given in the list of collections.

This effort was completed under the guidance and editorship of USSR State Library imeni V. I. Lenin senior scientist Ye. A. Koltun.

Scientific consultation was provided by International Astronautical Academy active member A. A. Gyurdzhian.

The material was selected for this publication by, in addition to the compilers, USSR Academy of Sciences Library colleague L. N. Korobova.

In addition to the authors, USSR State Library imeni V. I. Lenin senior scientist N. N. Mikhaylova took part in creating the reference system and preparing the manuscript for publication.

The compilers were assisted in preparing this bibliography for publication by M. V. Buyeva, N. M. Ryzhikova, Ye. D. Abrikosova, A. A. Guseva, E. A. Molodtsova, E. A. Panova and L. Yu. Ivanova.

Ye. A. Koltun

1. General Problems of Space Biology and Medicine

1.3. Role of Space Research in Development of Biology, Medicine, Psychology and Technological Sciences and in Solving Social and Economic Problems

See also No 699, 5773, 5828, 5909, 6056, 7060, 7144.

77. Volkov, Yu. N., "Application of the Methods of Space Cardiology in the Clinic, and Some Problems Associated With Clinical-Physiological Evaluation of The Results of Flight Experiments in Space," in "Problemy kosmicheskoy meditsiny" [Problems of Space Medicine], Moscow, 1966, pp 102-103.

78. Letyagina, G. V., "Breathing Helium-Oxygen Mixtures in the Presence of an Obstructed Respiratory Tract," in "Materialy III nauchnoy konferentsii molodykh spetsialistov" [Proceedings of the 3d Scientific Conference of Young Specialists] (Institute of Biomedical Problems), Moscow, 1969, pp 87-88.

Experiments on therapeutic use of helium-oxygen mixtures developed for breathing in space missions.

79. Letyagina, G. V., and Tyurina, R. T., "Breathing a Mixture of Helium and Oxygen in the Presence of Encumbered Pulmonary Air Exchange," in "Vsesoyuznyy simpozium 'Gory i sistema krovi'" [All-Union Symposium "Mountains and the Blood System"], Frunze, 1969, pp 70-72.

Experimental justification of the therapeutic use of helium-oxygen mixtures.

80. Letyagina, G. V., "Effectiveness of Breathing Helium-Oxygen Mixtures in the Presence of an Obstructed Respiratory Tract," abstract of dissertation in pursuit of the academic degree of candidate of medical sciences, Moscow, 1970, 16 pp (Institute of Biomedical Problems). Bibliography: p 16 (3 references).

Use of gas mixtures developed for breathing in space missions to treat some diseases of the respiratory tract. (Experimental justification).

81. Manoylov, V. Ye., "Use of the Instruments of Aerospace Medicine at a Health Resort," in "Ispol'zovaniye metodov i priborov aviatsionnoy meditsiny v usloviyakh kurorta" [Application of the Methods and Instruments of Aviation Medicine at a Health Resort], Groznyy, 1968, p 3-12.

82. Parin, V. V., "Space and Mankind," PRIRODA, No 11, 1967, pp 29-32.

Influence of space research on development of biology and medicine.

83. Parin, V. V., "Use of Quantitative Methods in Medicine and Physiology," in "Matematicheskiye metody analiza serdechnogo ritma" [Mathematical Methods of Cardiac Rhythm Analysis], Moscow, 1968, pp 3-8.

Significance of space medicine to development of quantitative methods.

84. Parin, V. V., and Smirnov, K. V., and Gurovskiy, N. N., "Soviet Public Health and Space Medicine," in "Aviakosmicheskaya meditsina" [Aerospace Medicine], Collection 2, Moscow, 1968, pp 3-8.

85. "Aiding Medical Research," FLIGHT INTERN, Vol 92, No 3054, 1967, p 507.

Influence of NASA's research on space medicine on the development of clinical medicine.

86. "Another Space Research Bonus. External Monitor Checks Heart Functions," SPACE WORLD, Vol G-6-78, 1970, p 45.

A possibility for clinical application of an instrument developed by NASA for monitoring cardiac activity.

87. "The Anti-G Suit as a Therapeutic Device," AEROSPACE MED., Vol 41, No 8, 1970, p 943-945. Bibliogr.: p 945 (9 ref.). Aut.: R. Pelligra, H. W. Trueblood, R. Mason, A. Chambers, H. C. Vykukal, R. P. Gallant.

Application of anti-G suit for therapeutic purposes.

88. "The Application of the Impedance Pneumograph to Chest Roentgenography. A Useful Med. By-Product of the Space Program," AMER. J. ROENTGENOL., RADIUM THERAPY AND NUCL. MED., Vol 98, No 2, 1966, p 487-491. Bibliogr.: p 491 (12 ref.). Aut.: E. N. Sargent, T. L. Robertson, E. V. Wagoner, B. J. O'Loughlin.

Application of an impedence pneumograph, developed for research in space medicine, to clinical chest roentgenography.

89. Avakian, A. S., "Space Technology in Medicine," N.Y. STATE J. MED., Vol 68, No 17, 1969, pp 2319-2323.

Application of the achievements of space technology in medicine.

90. Benjamin, W. Z., Intaglietta, M., and Slomich, S. J., "The Utilization of Space Technology in the Fight Against Cardiovascular Disease," AIAA PAPER, No 66-951, 1966, pp 1-3.

The possibility for applying highly sensitive space apparatus, intended to measure low-intensity energy, to research on capillary circulation.

91. Bondurant, S., "The Impact of the Space Program on Medical Research and Practice," in "Impact of Space Exploration on Society," Tarzana, 1966, p 161-177.

Effect of the space research program and development of space technology on medical science and practice.

92. Borchers, K. H., Lightfoot, C. S., and Hovey, R. W., "The Translation and Application of Aerospace Management Technology to Socio-Economic Problems," AIAA PAPERS, No 67-834, 1967, pp 1-18. Bibliogr.: pp 17-18 (36 ref.).

Application of aerospace technology to solution of socioeconomic and medical problems.

93. Bowers, G. E., "Experiments in Non-Military Application of the Systems Approach," AIAA PAPER, No 67-858, 1967, pp 1-3.

Experiments on peaceful application of the systems approach developed by aerospace industry, particularly to the planning of a medical center in Canada.

94. *Braun, H. C. W., von., "Ergebnisse der Weltraumfahrt fur Medizin und Gesundheit," UNIVERSITAS, Vol 25, No 5, 1970, pp 465-470.

Ref.: RZH. BIOLOGIYA [REFERATIVNYY ZHURNAL. BIOLOGY], 1970, 12 P916.

Application of the achievements of space missions to development of medicine and public health.

95. *Braun, W., von., "Die Raumfahrt und ihre Auswirkungen auf Forschung und Zivilisation," UNIVERSITAS, Vol 21, No 6, 1966, pp 599-603.

Ref.: RZH. ISSLEDOVANIYE KOSM. PROSTRANSTVA [REFERATIVNYY ZHURNAL. RESEARCH ON OUTER SPACE], 1966, 1.62.4.

Cosmonautics and its influence on science (including medicine) and culture.

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3.3.3.4. Long-Term Weightlessness and Hypogravitation

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3.3.8. Vibration

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See also No 48, 1245, 2464, 2962, 3353, 3425, 4562, 4865, 5256, 5275, 5277, 5293, 5444, 5477, 5478, 5480, 5493, 5500, 5806, 5885, 6963, 7486-7488, 7497, 7638, 7797, 7948, 7956, 7968.

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7.3. Training

7.3.1. General References

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7.3.2. Trainers and Simulators

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