

# AEROSPACE MEDICINE AND BIOLOGY

# A CONTINUING BIBLIOGRAPHY

WITH INDEXES

(Supplement 168)

**JUNE 1977** 



## **ACCESSION NUMBER RANGES**

Accession numbers cited in this Supplement fall within the following ranges:

STAR (N-10000 Series) N77-17995—N77-19988

IAA (A-10000 Series) A77-22951—A77-26602

This bibliography was prepared by the NASA Scientific and Technical Information Facility operated for the National Aeronautics and Space Administration by Informatics Information Systems Company.

# AEROSPACE MEDICINE AND BIOLOGY

# A CONTINUING BIBLIOGRAPHY WITH INDEXES

(Supplement 168)

A selection of annotated references to unclassified reports and journal articles that were introduced into the NASA scientific and technical information system and announced in May 1977 in

- Scientific and Technical Aerospace Reports (STAR)
- International Aerospace Abstracts (IAA).



NASA SP-7011 and its supplements are available from the National Technical Information Service (NTIS). Questions on the availability of the predecessor publications, Aerospace Medicine and Biology (Volumes I - XI) should be directed to NTIS.

This Supplement is available from the National Technical Information Service (NTIS), Springfield, Virginia 22161, at the price code E02 (\$4.75 domestic; \$9.50 foreign).

## INTRODUCTION

This Supplement to Aerospace Medicine and Biology (NASA SP-7011) lists 229 reports, articles and other documents announced during May 1977 in Scientific and Technical Aerospace Reports (STAR) or in International Aerospace Abstracts (IAA). The first issue of the bibliography was published in July 1964; since that time, monthly supplements have been issued.

In its subject coverage, Aerospace Medicine and Biology concentrates on the biological, physiological, psychological, and environmental effects to which man is subjected during and following simulated or actual flight in the earth's atmosphere or in interplanetary space. References describing similar effects of biological organisms of lower order are also included. Such related topics as sanitary problems, pharmacology, toxicology, safety and survival, life support systems, exobiology, and personnel factors receive appropriate attention. In general, emphasis is placed on applied research, but references to fundamental studies and theoretical principles related to experimental development also qualify for inclusion.

Each entry in the bibliography consists of a bibliographic citation accompanied in most cases by an abstract. The listing of the entries is arranged in two major sections: IAA Entries and STAR Entries, in that order. The citations, and abstracts when available, are reproduced exactly as they appeared originally in IAA or STAR, including the original accession numbers from the respective announcement journals. This procedure, which saves time and money, accounts for the slight variation in citation appearances.

Two indexes -- subject and personal author -- are included.

An annual index will be prepared at the end of the calendar year covering all documents listed in the 1977 Supplements.

### AVAILABILITY OF CITED PUBLICATIONS

#### IAA ENTRIES (A77-10000 Series)

All publications abstracted in this Section are available from the Technical Information Service, American Institute of Aeronautics and Astronautics, Inc. (AIAA), as follows: Paper copies are available at \$5.00 per document up to a maximum of 20 pages. The charge for each additional page is 25 cents. Microfiche (1) are available at the rate of \$1.50 per microfiche for documents identified by the # symbol following the accession number. A number of publications, because of their special characteristics, are available only for reference in the AIAA Technical Information Service Library. Minimum airmail postage to foreign countries is \$1.00. Please refer to the accession number, e.g., (A77-10026), when requesting publications.

#### STAR ENTRIES (N77-10000 Series)

One or more sources from which a document announced in *STAR* is available to the public is ordinarily given on the last line of the citation. The most commonly indicated sources and their acronyms or abbreviations are listed below. If the publication is available from a source other than those listed, the publisher and his address will be displayed on the availability line or in combination with the corporate source line.

Avail: NTIS. Sold by the National Technical Information Service. Prices for hard copy (HC) and microfiche (MF) are indicated by a price code followed by the letters HC or MF in the STAR citation. Price codes are given in the tables on page vii of the current issue of STAR.

Microfiche<sup>(1)</sup> is available regardless of age for those accessions followed by a # symbol.

Initially distributed microfiche under the NTIS SRIM (Selected Research in Microfiche) is available at greatly reduced unit prices. For this service and for information concerning subscription to NASA printed reports, consult the NTIS Subscription Unit.

NOTE ON ORDERING DOCUMENTS: When ordering NASA publications (those followed by the \* symbol), use the N accession number. NASA patent applications (only the specifications are offered) should be ordered by the US-Patent-Appl-SN number. Non-NASA publications (no asterisk) should be ordered by the AD, PB, or other *report* number shown on the last line of the citation, not by the N accession number. It is also advisable to cite the title and other bibliographic identification.

Avail: SOD (or GPO). Sold by the Superintendent of Documents, U.S. Government Printing Office, in hard copy. The current price and order number are given following the availability line. (NTIS will fill microfiche requests, at the standard \$3.00 price, for those documents identified by a # symbol.)

Avail: NASA Public Document Rooms. Documents so indicated may be examined at or purchased from the National Aeronautics and Space Administration, Public Documents Room (Room 126), 600 Independence Ave., S.W., Washington, D.C. 20546, or public document rooms located at each of the NASA research centers, the NASA Space Technology Laboratories, and the NASA Pasadena Office at the Jet Propulsion Laboratory.

<sup>(1)</sup> A microfiche is a transparent sheet of film, 105 by 148 mm in size, containing as many as 60 to 98 pages of information reduced to micro images (not to exceed 26:1 reduction).

- Avail: ERDA Depository Libraries. Organizations in U.S. cities and abroad that maintain collections of Energy Research and Development Administration reports, usually in microfiche form, are listed in Nuclear Science Abstracts. Services available from the ERDA and its depositories are described in a booklet, Science Information Available from the Energy Research and Development Administration (TID-4550), which may be obtained without charge from the ERDA Technical Information Center.
- Avail: Univ. Microfilms. Documents so indicated are dissertations selected from *Dissertation Abstracts* and are sold by University Microfilms as xerographic copy (HC) and microfilm. All requests should cite the author and the Order Number as they appear in the citation
- Avail: USGS. Originals of many reports from the U.S. Geological Survey, which may contain color illustrations, or otherwise may not have the quality of illustrations preserved in the microfiche or facsimile reproduction, may be examined by the public at the libraries of the USGS field offices whose addresses are listed in this introduction. The libraries may be queried concerning the availability of specific documents and the possible utilization of local copying services, such as color reproduction.
- Avail: HMSO. Publications of Her Majesty's Stationery Office are sold in the U.S. by Pendragon House, Inc. (PHI), Redwood City, California. The U.S. price (including a service and mailing charge) is given, or a conversion table may be obtained from PHI.

1. . .

- Avail: BLL (formerly NLL): British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England. Photocopies available from this organization at the price shown. (If none is given, inquiry should be addressed to the BLL.)
- Avail: ZLDI. Sold by the Zentralstelle für Luftfahrtdokumentation und -Information, Munich, Federal Republic of Germany, at the price shown in deutschmarks (DM).
- Avail: Issuing Activity, or Corporate Author, or no indication of availability. Inquiries as to the availability of these documents should be addressed to the organization shown in the citation as the corporate author of the document.
- Avail: U.S. Patent Office. Sold by Commissioner of Patents, U.S. Patent Office, at the standard price of 50 cents each, postage free.
- Other availabilities: If the publication is available from a source other than the above, the publisher and his address will be displayed entirely on the availability line or in combination with the corporate author line.

#### SUBSCRIPTION AVAILABILITY

This publication is available on subscription from the National Technical Information Service (NTIS). The annual subscription rate for the monthly supplements, excluding the annual cumulative index, is \$45.00 domestic; \$75.00 foreign. All questions relating to the subscriptions should be referred to NTIS.

#### ADDRESSES OF ORGANIZATIONS

American Institute of Aeronautics and Astronautics
Technical Information Service
750 Third Ave.
New York, N.Y. 10017

British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England

Commissioner of Patents U.S. Patent Office Washington, D.C. 20231

Energy Research and Development Administration Technical Information Center P.O. Box 62 Oak Ridge, Tennessee 37830

ESA-Space Documentation Service ESRIN Via Galileo Galilei 00044 Frascati (Rome) Italy

Her Majesty's Stationery Office P.O. Box 569, S.E. 1 London, England

NASA Scientific and Technical Information Facility P.O. Box 8757 B. W. I. Airport, Maryland 21240

National Aeronautics and Space
Administration
Scientific and Technical Information
Office (KSI)
Washington, D.C. 20546

National Technical Information Service 5285 Port Royal Road Springfield, Virginia 22161 Pendragon House, Inc. 899 Broadway Avenue Redwood City, California 94063

Superintendent of Documents U.S. Government Printing Office Washington, D.C. 20402

University Microfilms
A Xerox Company
300 North Zeeb Road
Ann Arbor, Michigan 48106

University Microfilms, Ltd. Tylers Green London, England

U.S. Geological Survey 1033 General Services Administration Building Washington, D.C. 20242

U.S. Geological Survey 601 E. Cedar Avenue Flagstaff, Arizona 86002

U.S. Geological Survey 345 Middlefield Road Menlo Park, California 94025

U.S. Geological Survey Bldg. 25, Denver Federal Center Denver, Colorado 80225

Zentralstelle für Luftfahrtdokumentation und -Information 8 München 86 Postfach 880 Federal Republic of Germany

# TABLE OF CONTENTS

		Pa
=	10000)7-10000)	
Subject Index	<u> </u>	
•	ndex	
TYPICAL	CITATION AND ABSTRACT FROM	W STAR
NASA SPONSORED		AVAILABLE OF
DOCUMENT	N77-10799*# Joint Publications Research Service, Arlington,	MICROFICH
NASA ACCESSION NUMBER	Va.	CORPORATI SOURCE
TITLE	ON THE POSSIBLE UNIQUENESS OF INTELLIGENT LIFE IN THE UNIVERSE	1
AUTHOR	I. S. Shklovskiy Washington NASA Oct. 1976 19 p Transl. into ENGLISH of Report PR-262, Academy of Sciences USSR,	PUBLICATIOI DAT
CONTRACT	Inst. of Space Res., Moscow, 1976 p 1-30	AVAILABILIT
OR GRANT	(NASA Order W-13183) (NASA-TT-F-17247) Avail: NTIS HC A02/MF A01 CSCL	SOURC
REPORT Number	The modern conception of an expanding universe rejects theories of cosmic wonders, transformation of matter, or superintelligent cosmic factors as sources of intelligent life on earth. Life emerged on earth and became intelligent as the result of an extremely rare combination of improbable circumstances. The expansion of intelligent life in the universe will be accomplished by the establishment of artificial biospheres orbiting the moon or stationed in galaxcies. Communications between these space colonies will rely on computer technology and radio astronomy:  A.H.	COD
TYPICAL  NASA SPONSORED  DOCUMENT	CITATION AND ABSTRACT FRO	
	A77-10058 * Effects of head-down tilt on fluid and elec-	TITL
NUMBER	trolyte balance. L. Volicer, R. Jean-Charles, and A. V. Chobanian (Boston University, Boston, Mass.). Aviation, Space, and Environ-	AUTHOR
AUTHOR'S	mental Medicine, vol. 47, Oct. 1976, p. 1065-1068. 26 refs. Grants	TITLE O
AFFILIATION —	No. NGR-22-004-021; No. NIH-RR-533.  The metabolic effects of -5 deg tilt were studied in eight normal	PERIODICA
CONTRACT GRANT OR SPONSORSHIP	individuals. Exposure to tilt for 24 hr increased sodium excretion and decreased plasma volume. Plasma renin activity and plasma aldosterone levels were not significantly different from supine values	PUBLICATIO
	during the first 6 hr of tilting, but were increased significantly at the	
	end of the 24-hr tilt period. Creatinine clearance and potassium balance were not affected by the tilt. These findings indicate that	

head-down tilt induces a sodium diuresis and stimulation of the

(Author)

renin-angiotensin-aldosterone system.

# AEROSPACE MEDICINE AND BIOLOGY A Continuing E

A Continuing Bibliography (Suppl. 168)

**JUNE 1977** 

### IAA ENTRIES

A77-23288 The role of brief hypocapnia in the ventilatory response to CO2 with hypoxia. L. C. Ou and S. M. Tenney (Dartmouth College, Hanover, N.H.). Respiration Physiology, vol. 28, Dec. 1976, p. 333-346. 33 refs. Grant No. PHS-HL-02888.

In conscious cats the ventilatory response curve to physiological range of CO2 is displaced upward by hypoxia (about 45 torr), but itrises, either parallel with, or convergent on, the normoxic curve. Thus, a positive interaction of hypoxia and hypercapnic stimuli is not observed under these circumstances. However, if during the hypoxic exposure, hypocapnia is allowed to develop, the subsequently determined CO2 ventilatory response curve will shift to the left, rise steeply, particularly in the early phase, and demonstrate a positive hypoxic-hypercapnic interaction. A demonstrable interactive effect was dependent on a conditioning period of hypocapnia, and this was shown to be associated with an elevated level of lactic acid to a greater degree in cerebral venous blood than in CSF or arterial blood. The interpretation is discussed without reaching a firm conclusion of mechanism, but the results emphasize how a minor change of experimental protocol affects a basic phenomenon in the chemical control of breathing. (Author)

A77-23289 Hypoxia and carbon dioxide as separate and interactive depressants of ventilation. L. C. Ou, S. M. Tenney (Dartmouth College, Hanover, N.H.), and M. J. Miller. *Respiration Physiology*, vol. 28, Dec. 1976, p. 347-358. 25 refs. Grant No. PHS-HL-02888-18.

A77-23290 Visual conspicuity, visual search and fixation tendencies of the eye. F. L. Engel (Eindhoven, Technische Hogeschool, Eindhoven, Netherlands). Vision Research, vol. 17, no. 1, 1977, p. 95-108. 28 refs.

The cumulative probability of target discovery during search has been related experimentally to the relevant 'conspicuity area', the visual field in which the target can be discovered after a single eye fixation. During search, 'non-targets' were found to be fixated spontaneously in proportion to their conspicuity area. Further small spontaneous eye fluctuations are described that occurred, during determination of the conspicuity areas, in the direction of the target discovered. Their occurrence and delay depended on the target eccentricity and the size of the conspicuity area. The results emphasize the relevance of the conspicuity area to research on visual selection. (Author)

A77-23291 Visual echoes - The perception of repetition in quasi-random patterns. C. W. Tyler and J.-J. Chang (Bell Telephone Laboratories, Inc., Murray Hill, N.J.). Vision Research, vol. 17, no. 1, 1977, p. 109-116. 16 refs.

Human visual sensitivity was measured for patterns consisting of a repeated strip of spatial random noise. Sensitivity decreased monotonically with repetition width. The sensitivity function was relatively unaffected by eye movement, image magnification or the relative phases of the repetitive elements. The results conformed well to predictions based on a model of the visual system consisting of multiple bandpass channels tuned to different spatial frequencies in the stimulus array. (Author)

A77-23321 \* Tumor localization and beam monitoring Electrofluorotomography. N. A. Baily, E. C. Lasser, and R. A. Keller (California, University, La Jolla, Calif.). *Medical Physics*, vol. 3, May-June 1976, p. 176-180. 10 refs. Grant No. NGR-05-009-257.

A77-23418 Depression of serotonin clearance by rat lungs during oxygen exposure. E. R. Block and A. B. Fisher (Pennsylvania, University, Philadelphia, Pa.). Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology, vol. 42, Jan. 1977, p. 33-38. 29 refs. Research supported by the U.S. Veterans Administration; Grants No. PHS-HL-15013; No. PHS-HL-15061.

Experiments were conducted to evaluate isolated perfused lungs after exposure of rats to oxygen to determine whether serotonin clearance is altered during the early stages of oxygen poisoning. Since vitamin E deficiency potentiates manifestations of oxygen toxicity in other organs, a comparative study is made for serotonin clearance by lungs from oxygen-exposed normal and vitamin E-deficient rats. Serotonin clearance is calculated from the disappearance rate of C-14-serotonin from the perfusate. It is found that the depression of serotonin clearance by the lungs of oxygen-exposed rats occurs as a result of exposure to hyperoxic environment, the degree of depression being a function of the duration of exposure. Depression of serotonin clearance is greater in vitamin E-deficient than in normal animals. Since this depression in normal animals is observed after only 18 hr of oxygen exposure, it is therefore an early manifestation of pulmonary oxygen poisoning. The most likely mechanism for the depression of serotonin clearance is interference with the transport properties of lung endothelium. S.D.

A77-23419 Arterial lactate responses in dogs made apneic or breathing nitrogen. S. M. Cain (Alabama, University, Medical Center, Birmingham, Ala.). Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology, vol. 42, Jan. 1977, p. 39-43. 15 refs. Grant No. NIH-HL-14693.

Experiments were conducted on ten dogs ranging in weight from 18.8 to 30.5 kg under apnea or nitrogen breathing conditions to determine whether the lactate increase in arterial blood would correspond temporally to other measures of tissue oxygen depletion such as mixed venous PO2 and the calculated changes in oxygen stores. Although both anoxia methods insured nearly instantaneous cessation of oxygen supply from outside the body, apnea left all the oxygen stores intact and available, whereas nitrogen breathing progressively washed out the lung oxygen store first and depleted the total body oxygen stores progressively. Arterial lactate rose sooner

with nitrogen breathing than with apnea, but the mean values for lactate increase for both cases were fitted by a single curvilinear relation with mixed venous PO2. It is shown that the latent period for lactate rise is almost the same as that for the development of tissue hypoxia.

S.D.

A77-23420 pH effects on lactate and excess lactate in relation to O2 deficit in hypoxic dogs. S. M. Cain (Alabama, University, Medical Center, Birmingham, Ala.). Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology, vol. 42, Jan. 1977, p. 44-49. 21 refs. Grant No. NIH-HL-14693.

A77-23421 Variations in evaporation and body temperatures during sleep in man. R. Henane, A. Buguet, B. Roussel, and J. Bittel (Service de Santé des Armées, Centre de Recherches, Lyons, France). Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology, vol. 42, Jan. 1977, p. 50-55. 26 refs. Research supported by the Direction des Recherches et Moyens d'Essais and Service de Santé des Armées.

A77-23422 Dependency of hypoxic pulmonary vaso-constriction on temperature. J. L. Benumof and E. A. Wahrenbrock (California, University, San Diego, Calif.). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology*, vol. 42, Jan. 1977, p. 56-58. 13 refs. Research supported by the American Society of Anethesiologists; Grant No. PHS-HL-19169.

A77-23423 \* Fluid and electrolyte shifts during bed rest with isometric and isotonic exercise. J. E. Greenleaf, E. M. Bernauer, H. L. Young, J. T. Morse, L. T. Juhos, W. Van Beaumont (NASA, Ames Research Center, Laboratory of Human Environmental Physiology, Moffett Field; California, University, Davis, Calif.), and R. W. Staley. Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology, vol. 42, Jan. 1977, p. 59-66. 36 refs. Grant No. UCD-205.

It is difficult to separate the effects of reduction in hydrostatic pressure from that of reduced energy expenditure when investigating the confinement deconditioning problem. Experiments were conducted on seven healthy young men aged 19-21 yr with the purpose of separating these two factors by using isotonic physical exercise during bed rest to provide a daily energy expenditure greater than normal ambulatory levels. Fluid and electrolyte shifts were measured during three two-week bed rest periods, each of which being separated by a three-week ambulatory recovery period. During two of the three bed rest periods they performed isometric and isotonic exercises to compare their effects on fluid and electrolyte shifts during bed rest. It is shown that during bed rest, preservation of the extracellular volume takes precedence over maintenance of the plasma volume and that this mechanism is independent of the effects of isometric or isotonic exercise.

A77-23424 \* Fluid and electrolyte shifts in women during +Gz acceleration after 15 days' bed rest. J. E. Greenleaf, H. O. Stinnett, G. L. Davis, J. Kollias, and E. M. Bernauer (NASA, Ames Research Center, Laboratory of Human Environmental Physiology, Moffett Field; California, University, Davis, Calif.). Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology, vol. 42, Jan. 1977, p. 67-73. 20 refs. Grant No. NCA2-OR180-506.

Experiments were conducted on twelve women aged 23-34 yr - a bed rest (BR) group of eight subjects and an ambulatory (AMB) group of four subjects - to determine the effect of bed rest on shifts in plasma volume, electrolytes, and erythrocyte volume during +Gz acceleration on a centrifuge. The BR group underwent the +Gz acceleration during a two-week ambulatory control period, after 15 days of a 17-day BR period, and on the third day of ambulatory recovery. The AMB group underwent the same experimental proce-

dures, but continued their normal daily routine during the BR period-without additional prescribed physical exercise. Major conclusions are that (1) the higher the mean control tolerance, the greater the tolerance decline after BR; (2) relative confinement and reduced activity contribute as much to reduction in tolerance as does the horizontal body position during BR; (3) BR deconditioning has no effect on the erythrocyte volume during +3.0 Gz; and (4) about one-half the loss in tolerance after BR can be attributed to plasma volume and electrolyte shifts.

A77-23425 \* Effects of acceleration on thermoregulatory responses of unanesthetized rats. C. A. Fuller, J. M. Horowitz, and B. A. Horwitz (California, University, Davis, Calif.). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology*, vol. 42, Jan. 1977, p. 74-79. 22 refs. Grants No. NGR-05-004-099; No. NGR-05-004-008.

An experimental study was carried out to examine the thermoregulatory responses of rats to step changes in ambient temperature
during centrifugation. Attention is focused on the analysis of
problems as to whether the ability of rats to regulate body
temperature during one hour of cold exposure is altered by
increasing the acceleration field to 2G, whether prior environmental
conditioning can affect the temperature response to the combined
stressors of acceleration and cold, and whether the orientation of the
animal in the acceleration field modifies the temperature response.
The finding that the decline in colonic temperature is accompanied
by parallel changes in hypothalamic and spinal cord temperatures
indicates that the decreasing heat production with increasing heat
loss is an atypical thermoregulatory response of these animals to
cooling. Mechanical forces acting on the brain may underline the
temperature decrease when inverting the animal during acceleration.

A77-23426 Experimental study of convective heat transfer coefficient for the human body in water. C. Boutelier, L. Bougues, and J. Timbal (Centre d'Essais en Vol, Laboratoire de Médecine Aérospatiale, Brétigny-sur-Orge, Essonne, France). Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology, vol. 42, Jan. 1977, p. 93-100. 24 refs. Research supported by the Direction des Recherches et Moyens d'Essais.

A77-23427 Superoxide dismutase /SOD/ activity in hypoxic mammalian systems. J. Liu, L. M. Simon, J. R. Phillips, and E. D. Robin (Stanford University, Stanford; U.S. Veterans Administration Hospital, Palo Alto, Calif.). Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology, vol. 42, Jan. 1977, p. 107-110. 18 refs. Grant No. NIH-OH-00352.

Two mammalian systems are examined with respect to SOD activities as a function of limited oxygen availability. SOD activities are compared in two mammalian cell types (rabbit peritoneal macrophages and alveolar macrophages) with similar cell function but existing under different ambient oxygen tensions. Also, SOD activities are compared in various tissues of hypoxic mice. The results suggest that low oxygen exposure lead to low SOD activity in accordance with a relationship between SOD activity and oxygen ensions. This in turn supports the statement that SOD plays a physiological role in protecting against oxygen-induced free radical damage.

A77-23496 # Radiation risk on earth and in space (Radiatsionnyi risk na zemle i v kosmose). E. E. Kovalev. Moscow, Atomizdat, 1976. 256 p. 111 refs. In Russian.

The work is concerned with the elaboration and application of a new approach to the problem of radiation protection of man in space flights. This approach is based on the use of the concept of permissible risk, which makes it possible to establish unified safety criteria for all space vehicle systems. Such an approach possesses sufficient generality and may be applied in other fields of human

activity associated with the use of ionizing radiation sources. Also discussed are radiation risk for man and physical foundations of protection from charged particles.

S.D.

A77-23500 # Cerebellum and gravity (Mozzhechok i gravitatsiia). A. N. Razumeev and R. A. Grigor'ian. Moscow, Izdatel'stvo Nauka (Problemy Kosmicheskoi Biologii. Volume 29), 1976. 456 p. 774 refs. In Russian.

The work outlines advances in the investigation of the morphology, histochemistry, electrophysiology of the afferent inputs of the cerebellum along with its perception of gravitational impacts. Particular attention is given to the behavior of the cerebellum as a center for the interaction of the gravireceptors of the vestibular and proprioceptive apparatus. Included in the discussion are results of experimental studies on total electrical activity, evoked potentials, impulse activity of various parts of the cerebellum in orthostatic testing, motion sickness, angular acceleration, and related subjects in the rabbit, cat, and monkey. Postural reactions of cerebellum-deprived animals under conditions of short-term weightlessness and natural stimulation of the labyrinth are examined. A hypothesis is advanced that disorder of the integrated role of the cerebellum may be a cause of static discoordination in astronauts in postflight period and of decompensation of vestibular function.

A77-23546 # The pilot and the airplane: Aviation ergonomics (Pilot i samolet: Aviatsionnaia ergonomika). B. P. Bugaev and V. G. Denisov. Moscow, Izdatel'stvo Mashinostroenie, 1976. 112 p. 20 refs. In Russian.

Some aspects of the theory (and practice) of man-machine-environment systems are examined. The principal goals and problems of ergonomics are discussed, along with the methods used in ergonomics. The role of ergonomics in the solution of important problems is illustrated with particular reference to the problem of increasing flight safety. The results of some theoretical and experimental studies of the pilot-aircraft system during landing are reviewed.

A77-23547 # Dynamic control characteristics and brainelectric regulation of the vigilance of man during the performance of control tasks (Dynamisches Regelverhalten und hirnelektrische Vigilanzregulierung des Menschen bei der Durchführung von Regelaufgaben). L. Walz. Berlin, Technische Universität, Fachbereich Verkehrswesen, Dr.-Ing. Dissertation, 1976. 125 p. 38 refs. In German.

The reported investigation had the objective to develop an objective procedure for the measurement of the mental stress to which the driver of a vehicle is subjected. An apparatus for the simulation of driving problems was designed. The simulating device made it possible to present to the subject driving problems of different difficulty levels. The characteristics of the driving problem and its effect on the subject were determined with the aid of an approach involving the simultaneous recording of the EEG and physical-technical test parameters. The results of the investigation show that the EEG in conjunction with an appropriate signal processing method can be used in man-machine control systems as an indicator and monitor of the stress level to which man is subjected.

A77-23550 # Procedural selection, construction, design, and application possibility in the case of a measuring device for the human physiological study of the biomechanics of the lower extremity (Verfahrenstechnische Auswahl, Konstruktion, Aufbau und Anwendlungsmöglichkeit einer Messeinrichtung zur humanphysiologischen Erforschung der Biomechanik der unteren Extermität). H.-R. Beierlein. München, Technische Universität, Fachbereich Maschinenwesen, Dr.-Ing. Dissertation, 1976. 223 p. 153 refs. In German.

A description is presented of an immobile test stand for the time-synchronous measurement of the pressure distribution under the sole of the human foot and the three components of the resultant force. About 40,000 individual silicone rubber pyramids on an area of 400 x 400 mm are used to obtain an indication of the vertical pressure distribution by means of the compressed pyramidal trunk areas. A 35-mm film camera with a speed of 60 images/sec is used to record about 3,000 'pressure points' under the foot. Attention is given to the calibration and testing of the stand, development work regarding a mobile test device, and the design of a mathematical model of the human foot on the basis of the finite element method.

A77-23621 Measuring device for His-bundle analysis at the heart (Messeinrichtung zur His-Bündel-Analyse am Herzen). R. Mauser. *Elektronik*, vol. 26, Feb. 1977, p. 51-54. In German.

A medical introduction to the problem is given and an investigative method developed by Scherlag et al. (1972) is considered. Studies conducted by Scherlag et al. included a derivation of the His-bundle electrogram. His-bundle electrography made it possible to obtain new information concerning the physiology and pathophysiology of the human heart. A description is presented of electronic equipment for His-bundle investigations, taking into account details concerning the electronic circuit and the processing of the signal.

A77-23625 # Visual conspicuity as an external determinant of eye movements and selective attention. F. L. Engel. *Philips Research Reports Supplements*, no. 6, 1976. 92 p. 149 refs.

Results are presented for experimental studies on visual conspicuity regarded as an external involuntary determinant of eye movements and selective attention. Conspicuity area is defined as the retinal field in which the relevant object can be discovered in its background without foreknowledge of its retinal location, during a brief presentation of the stimulus pattern. The size of the conspicuity area is introduced as an experimental measure of visual conspicuity. Visibility and visual conspicuity are shown to be linked by direct attention. The problem of visual conspicuity and selective background interference in eccentric vision is analyzed along with experimental results relating the conspicuity area to the probability of target discovery during a number of search tasks. Implications of new findings are discussed, especially in relation to recent results and theories on human information processing. Organizational principles governing Gestalt perception in eccentric vision is highlighted. S.D.

A77-23768 # Localization of the lactate dehydrogenase /LDH/ and of the acid phosphatase /AP/ in liver cells of embryos and chickens irradiated with gamma rays. B. N. Todorov, O. Poliakova-Kr'steva, P. G. Drianovski, and M. Y. Simeonovska (Veterinary Institute on Contagious and Parasitic Diseases; Bulgarian Academy of Sciences, Central Helminthological Laboratory, Sofia, Bulgaria). Bolgarskaia Akademiia Nauk, Doklady, vol. 29, no. 11, 1976, p. 1689, 1690, 8 refs.

A77-23833 # Rotary motion of the body of an astronaut (O vrashchatel'nom dvizhenii korpusa kosmonavta). Ia. M. Shapiro. Kosmicheskie Issledovaniia, vol. 15, Jan.-Feb. 1977, p. 62-70. In Russian.

In the present paper, the human body is treated as a mechanical system consisting of nine links: the body and four two-link members. The ways in which the attitude of the astronaut's body can be changed by moving the arms and legs under conditions of weightlessness are examined.

A77-24130 Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975. Meeting and Symposium sponsored by COSPAR, International Union of Physiological Sciences, and International Academy of Astronautics. Edited by P. H. A. Sneath (Leicester, University, Leicester, England). Berlin, East Germany, Akademie-Verlag GmbH, 1976. 372 p.

Attention is given to the biomedical results of the Skylab Program, to the effects of gravity on plant and animal physiology, and the effects of space-flight weightlessness on humans. Also considered in detail are radiation biology, gravitational biology, planetary quarantine, and exobiology.

B.J.

Biomedical results of the Skylab Program. E. L. Michel, R. S. Johnston, and L. F. Dietlein (NASA, Johnson Space Center, Houston, Tex.). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975. Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 3-18. 15

Skylab, the fourth in a logical sequence of USA manned space flight projects following Mercury, Gemini and Apollo, presented life scientists with their first opportunity for an in-depth study of man's response to the space environment. Extensive medical investigations were undertaken to increase our understanding of man's adaptation to the space environment and his readaptation to gravity upon return to earth. The flight durations of the three Skylab missions were progressively increased from 28 days to 59 days and, finally, 84 days. The results of these investigations of the various body systems clearly denonstrated that man can adapt to zero gravity and perform useful work during long-duration space flight. However, definite changes (some unexpected) in the vestibular, cardiovascular, musculoskeletal, renal and electrolyte areas were documented. The most significant were: the occurrence of space motion sickness early in the missions; diminished orthostatic tolerance, both in-flight and postflight; moderate losses of calcium, phosphorus and nitrogen; and decreased tolerance for exercise post-flight. The mechanisms responsible for these physiological responses must be understood and, if necessary, effective countermeasures developed before man can endure unlimited exposure to space flight. (Author)

A77-24132 # Considerations of geotropism in plants. H. Kaldewey (Saarland, Universität, Saarbrücken, West Germany). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975. Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 21-36. 71 refs.

A historical review is presented of the development of research on the reaction of plants to gravity. The earliest period, starting about 1700 and characterized by studies of French and British plant physiologists, demonstrated that gravity influenced the growth direction of plant parts. The second period, begun in 1868 by Frank (who coined the term 'geotropism'), was directed by consideration of the physiology of irritability. The elucidation of the stimulusreaction chain and the search for geosensors (statolith starch) dominate this period. In the first part of the 20th century, the third period begins with the lateral auxin distribution theory of Cholodny and Went (1926). Modern critical studies using refined methods are described with attention given to the discovery that there might be different principles of georeactions in unicellular geotropic plant organs, i.e., in roots and shoots.

Hormones and the growth of plants in response to gravity. D. J. Osborne (Cambridge University, Cambridge, England). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975. Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 37-46. 56 refs.

Under conditions of zero gravity, roots and shoots of plants continue to grow in opposite directions and the orientation of laterals with respect to the apex is essentially normal, thus demonstrating the inherent polarity of plant cells and the internal correlative growth regulation that each organ exerts upon its neighbors. The paper discusses the perception of gravity involving statoliths, membranes and 'wound' ethylene, together with the mechanisms by which subsequent growth responses can be mediated by changes in endogeneous hormones. Evidence for how such hormonal changes can lead to modifications of the rate, extent, and reorientation of cell growth is reviewed for several geotropically responding systems.

A77-24134 # The evolutionary role of gravity. N. P. Dubinin and E. N. Vaulina (Akademija Nauk SSSR, Institut Obshchei Genetiki, Moscow, USSR). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975. Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 47-55. 52

Analysis of the part played by gravity in development in the organic world shows that this factor has had an impact on evolution. All terrestrial organisms, including man, have adapted themselves to gravity by developing a number of important features of their composition and functions. Variations of gravitational field in any direction bring about numerous changes in organisms, ranging from metabolism to changes in more conservative systems which also include hereditary structures. Gravitational forces determine the form and the size of organisms, the development of skeletal supporting organs, and energetics. The study of the role of gravity in the variability of the organic world will be of great importance for long-term systems of life support and for work on space orbital stations or at bases on the moon and planets where gravitational forces may differ greatly from those on the earth. (Author)

A77-24135 # Weight and shape. S. J. Gould (Harvard University, Cambridge, Mass.). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975.
Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 57-68. 37

The two major themes of biological scaling theory are examined: (1) that small and large animals live in different adaptive worlds regulated by forces dominant at their size (e.g., surface forces for insects, gravity for large organisms), and (2) that small and large animals have characteristic differences in form and function conditioned by the scaling of surfaces and volumes (e.g., larger animals have relatively smaller brains, thicker legs, lower metabolism, longer life, more convoluted internal surfaces for gas exchange, digestion and circulation). A major issue for space research is the degree of purely genetic determination of adaptation of organic form to body size. If adaptions to large size require the immediate action of gravitational forces, then prolonged weightless flight will provoke reversion by removal of the necessary stimulus.

A77-24136 \* # Gravity and embryonic development. R. S. Young (NASA, Washington, D.C.). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975.

Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 69-75. 25 refs.

The relationship between the developing embryo (both plant and animal) and a gravitational field has long been contemplated. The difficulty in designing critical experiments on the surface of the earth because of its background of 1 g, has been an obstacle to a resolution of the problem. Biological responses to gravity (particularly in plants) are obvious in many cases; however, the influence of gravity as an environmental input to the developing embryo is not as obvious and has proven to be extremely difficult to define. In spite of this, over the years numerous attempts have been made using a variety of embryonic materials to come to grips with the role of gravity in development. Three research tools are available: the centrifuge, the clinostat, and the orbiting spacecraft. Experimental results are now available from all three sources. Some tenuous conclusions are drawn, and an attempt at a unifying theory of gravitational influence on embryonic development is made. (Author)

A77-24137 # Physiological effects of sustained acceleration.
L. H. Vogt (Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt, Institut für Flugmedizin, Bad Godesberg, West Germany). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975.

Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 77-89. 29 refs.

A review is given of the literature concerning the physiological and pathophysiological changes in humans, caused by sustained acceleration. After definition of the acting forces and an introduction into terminology, circulatory and respiratory mechanisms are described which are active under sustained acceleration. The origin of visual disturbances associated with acceleration is discussed. Acceleration tolerance is influenced by magnitude, duration, direction, and rate of application of G-forces together with environmental conditions and the condition of the subject. Acceleration protection may be achieved by technical devices (anti-g suits), voluntary maneuvers and change of posture. (Author)

A77-24138 # Physiological changes associated with long-term increases in acceleration. A. H. Smith (California, University, Davis, Calif.). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology,

Varna, Bulgaria, May 30, 31, 1975. Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 91-100. 67 refs.

The long-term retention of organisms in increased acceleration fields is an experimental approach towards understanding the biological consequences of earth gravity. Such treatment, called chronic acceleration, simulates a change in gravity and requires exposed organisms to adapt physiologically to the new environment. Information from chronic acceleration supplements that from space physiology in understanding gravitational physiology. Many of the responses in long-term exposure to increased acceleration are those which would be anticipated from the imposed symmetrical loading. For example, increased requirements for posture and locomotion induce appropriate changes in musculo-skeletal organs. Displacement of body fluids and increased hydrostatic pressures lead to greater blood volumes and increased tissue hydration. However, there are also specific acceleration effects which cannot be so directly interpreted. Among these are decreases of mature body size and of depot fat, which are proportional in degree to field strength. The role of chronic acceleration research in the development of gravitational biology and its relationship to earth-orbital experiments are considered. The applicability of chronic acceleration studies with human subjects towards planning of deep space exploration is also discussed. (Author)

A77-24139 # Physiological effects induced by antiorthostatic hypokinesia. L. I. Kakurin, M. P. Kuzmin, E. I. Matsnev, and V. M. Mikhailov. In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975.

Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 101-108.

10 refs.

The main purpose of the present investigation was to reproduce some physiological reactions in the sensory system which are similar to those observed during the first day of adaptation to weightlessness. This was achieved by a 5-day bed rest experiment during which the test subjects were kept in the antiorthostatic position at angles of 0, -4, -8, and -12 degrees. Investigations allowed simulation of the acute stage of adaptation to weightlessness and assessment of gravity-induced blood redistribution in the development of the above physiological reactions. (Author)

A77-24140 # The prevention of motion sickness in orbital flight. A. Graybiel (U.S. Naval Aerospace Medical Research Laboratory, Pensacola, Fla.). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975.
Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 109-118.

Motion sickness is discussed with reference to manned space flight programs both NASA (Mercury, Gemini, Apollo Command Module, and Apollo Lunar Landing) and Soviet (Vostok, Voskhod, and Soyuz). A brief definition is given of motion sickness from the points of view of etiology, incidence, symptomatology, and diagnosis. The question is raised whether zero gravity qualifies as a motion environment or whether one is dealing simply with 'symptoms characteristic of motion sickness'. The effectiveness of certain antimotion sickness drugs, including d-amphetamine sulfate, dimenhydrinate, ephedrine sulfate, promethazine hydrochloride, and 1-scopolamine hydrobromide, is discussed.

A77-24141 \* # Mineral and nitrogen metabolic studies on Skylab flights and comparison with effects of earth long-term recumbency. G. D. Whedon, J. Reid (National Institutes of Health, National Institute of Arthritis, Metabolism, and Digestive Diseases, Bethesda, Md.), L. Lutwak (California, University; U.S. Veterans Administration Hospital, Sepulveda, Calif.), P. Rambaut, M. Whittle, C. Leach, and M. Smith (NASA, Johnson Space Center, Biomedical Research Div., Houston, Tex.). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on

Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975.

Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 119-127. 5 refs.

A metabolic study of the effects of space flight on various chemical elements, particularly those with special relevance to the musculo-skeletal system, was carried out on the nine astronauts who participated in the three Skylab flights of 28, 59 and 84 days in 1973-1974. The study required of the cooperating crewmen constant dietary intake, continuous 24-hour urine collections and total fecal collections for 21-31 days before each flight, throughout each flight and for 17-18 days post-flight. Increases in urinary calcium and negative calcium balances during space flight were generally similar to those found in previous immobilization and bedrest studies. The persistence of these alterations in calcium metabolism throughout the flights suggested that calcium losses would continue in weightlessness for a very long time. Significant losses of nitrogen and phosphorus occurred, associated with observed reduction in muscle tissue. Both mineral and muscle losses occurred despite rigorous exercise regimens in flight. It was concluded that unless protective measures can be developed, capable musculo-skeletal function is likely to be impaired in space flights, ultimately to be conducted to Mars, of 1-1/2 to 3 years duration. (Author)

Human tolerance to acceleration after exposure to weightlessness. A. R. Kotovskaia (Institute of Medical and Biological Problems, Moscow, USSR). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975. Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 129-135. 6 refs.

Laboratory tests demonstrated changes in human tolerance to G-x accelerations of varying duration (from 3 to 100 days) and investigated the effectiveness of different countermeasures. A decrease in tolerance to +G-x was on the average -2.0g. Prolonged simulated weightlessness (from 7 to 100 days) caused no further decrease in +G-x tolerance. The tolerance limit to +G-x accelerations following simulated weightlessness (of the above-noted durations) ranged from 9.5 to 13.0g, averaging 11.6 plus or minus 1.6g. Laboratory results are confirmed by data on astronaut tolerance to deceleration during atmospheric reentry.

On the mechanisms of changes in skeletal A77-24143 # muscles in the weightless environment. V. S. Oganov and A. N. Potapov (Academy of Sciences, Institute for Medico-Biological Problems, Moscow, USSR). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975. Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 137-143.

21 refs.

Some characteristics of muscle contraction and mechanical properties of two muscles (M. soleus and M. extensor digitorum longus) in Wistar rats after 22 days of weightlessness have been investigated. On the second day after return to earth, the following changes were evident: slowing of twitch responses of the muscles studied; shortening half tetanic contraction time (defined by point of interactions of the increasing curve with 50% level of the peak value) in soleus; a rise of tension in both muscles as shown by the curve 'length-force'; an increase of twitch/tetanus ratio and fatigability in both muscles. During repeated study of muscle properties, on the 26th day after return to earth, there were no significant changes in values of most of the above mentioned indices except the diminished strength of soleus. (Author)

Results of medical investigations carried out on board the Salyut orbital stations. O. G. Gazenko, N. N. Gurovskii, A. M. Genin, I. I. Brianov, A. V. Eremin, and A. D. Egorov (Institute of Medico-Biological Problems, Moscow, USSR). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975. Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 145-152.

The goals of biomedical investigation carried out on the Salyut stations were: (1) to study the phenomenology and mechanisms of changes of body functions during prolonged weightlessness, (2) to study human responses at an early stage of adaptation to weightlessness, and (3) to assess the effectiveness of countermeasures against: the adverse effects of weightlessness during and after flight. The stations were equipped with the following countermeasure devices: at treadmill for physical exercises, a gravity simulation suit for long, wear, a bicycle ergometer, an anti-G suit, and drugs. The system of medical tests included daily recordings of electrocardiography and respiration, and regular physical examinations.

Spacelab and its utilization for biomedical experiments. G. Seibert (ESA, Neuilly-sur-Seine, Hauts-de-Seine, France). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975. Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 153-162.

The types of investigations possible in the orbital laboratory Spacelab are considered. A summary of services available to the Spacelab user is given, in which the load carrying capacity and the characteristics of the main subsystems (e.g., thermal control, environmental control, electrical power and energy as well as data management) are briefly described. Life science investigations may be undertaken for two reasons: firstly, to ensure safety and efficiency, and, secondly, for their scientific interest relating to effects of weightlessness or cosmic radiation. Safety of the crew and their genetic cells in relation to cosmic radiation is considered vital; essential knowledge is also required about the performance of the vestibular balancing mechanism and the related problem of 'stomach awareness'. The effect of zero-gravity on the cardiovascular system is studied, and the effect of circulatory changes in the brain, possible psychological stress and effects on exercise tolerance measured. Due to their rapid reproduction, important information may be gained from microorganisms in respect of mutation rates when exposed to radiation. Plants depend, to some extent, on gravity in germination and growth. Of interest here is the relative importance of gravitational and photonic influences. (Author)

Irradiation of bio-objects aboard the Cosmos 690 biosatellite. lu. A. Akatov, A. N. Gladilkin, I. V. Ignatov, S. B. Kozlova, A. V. Kolodin, R. A. Kuzin, V. I. Popov, L. N. Seliverstov, V. G. Semenov, and M. A. Sychkov (Institute of Medico-Biological Problems, Moscow, USSR). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975; and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975.

Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 165-171.

Animals on the Cosmos 690 were exposed to Cs-137 gammaradiation of 320 curies.. The on-board emitter was a spherical container made of tungsten alloy with a gamma source placed in the center. A special dose filter provided a uniform plus or minus 10% distribution of the dose field. Animal containers were equipped with thermoluminescent dosimeters. Radiation was monitored by an on-board dosimeter and displayed. The emitter was controlled by commands from the ground. On the tenth flight-day, the emitter was turned on and bio-objects were exposed for 34 hours. The dose received by bio-objects located in different areas of the biosatellite varied from 200 to 1000 rad. The flight experiment confirmed entirely the reliability of the radiation system. (Author)

A77-24147 # Investigation of radiation sensitivity in mammals under long duration weightlessness. Iu. G. Grigor'ev, E. A. Il'in, Iu. P. Druzhinin, L. V. Serova, V. I. Popov, A. D. Noskin, R. A. Kuzin, Iu. I. Kondrat'ev, M. P. Kalandarova, and G. N. Podluzhnaia (Institute of Medical and Biological Problems, Moscow, USSR). In:
Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975. Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 173-177.

Preliminary results of the radiobiological experiments carried out on the biosatellite Cosmos 690 with a radiation exposure unit on board are presented. The duration of the satellite flight was 20.5 days. On the tenth day of the flight 35 rats were exposed on board the satellite to 220 or 800 rads of gamma radiation. Comparison of data obtained in test and control groups of animals has shown that under the influence of space flight factors a somewhat more severe radiation injury develops than in on-ground conditions. (Author)

A77-24148 # Effect of irradiation in the space environment on the blood-forming system in rats. M. P. Kalandarova, V. V. Verigo, G. N. Podlyzhnaia, G. P. Rodina, L. V. Serova, and N. A. Chelnaia (Institute of Medico-Biological Problems, Moscow, USSR). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975. Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 179-183.

A special experiment was carried out on board Cosmos 605 in order to study the modifying influence of weightlessness on the radiobiological effect. On the tenth flight day 35 rats were exposed to radiation using an on-board gamma-ray source. They were irradiated for 24 hr at a dose rate of 32 rad/hr with a total dose of 220 plus or minus 25 rads and 800 plus or minus 53 rads. On the 1st and 26th postflight days hemopoiesis in bone marrow determined from myelograms and the total count of myelo-karyocytes was examined and the blood composition was analyzed. The total count of thymocytes and spleenocytes was measured in the thymus and spleen. Identical measurements were made in the control animals exposed to radiation on earth. Hematological findings indicate an enhancement of the radiobiological effect in the rats irradiated in space flight.

A77-24149 # Biochemical changes in rats flown on board the Cosmos 690 biosatellite. I. Ahlers, E. Misurova, M. Praslicka (Univerzita Pavla Josefa Safarika, Kosice, Czechoslovakia), and R. A. Tigranian (Ministerstvo Zdravookhraneniia SSSR, Institut Mediko-Biologicheskikh Problem, Moscow, USSR). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975.

Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 185-188. 6 refs.

Results are presented for biochemical analyses of male Wistar rats flown 21 days aboard the Cosmos 690 biosatellite. The objective was to assess the effect of prolonged weightlessness combined with ionizing radiation. The animals were exposed to 24-hr radiation on the 10th flight day, some being exposed to a dose of 220 rad and the rest to a dose of 800 rad. Biochemical analyses were performed on the 1st and 26th postflight days, and the results were compared with the data obtained from two control groups. The biochemical analyses concerned the blood, bone marrow, skeletal muscles, myocardium, liver, spleen, adrenal glands, brain, spinal cord, and white and brown fatty tissue. The changes were an increase in the level of total cholesterol, glucose, urea and corticosterone in the blood plasma; an increase in the concentration of triglycerides in the plasma, liver and bone marrow; a decrease in the DNA and RNA content in the spleen and bone marrow; and potassium depletion and sodium enhancement in the soleus muscle. However, the parameters measured returned to normal on the 26th postflight day. S.D.

A77-24150 # Study of the biochemical indicators of chronic irradiation in rats. L. D. Szabo, A. B. Benko, L. Gyenge, and T. Predmerszky (Orszagos Sugarbiologiai es Sugaregeszsegugyi Kutato Intezet, Budapest, Hungary). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975.

Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 189-193. 10 refs.

Daily urinary excretion of pseudouridine, creatinine and creatine of chronically irradiated Wistar rats was estimated. The irradiation conditions were: Co-60 gamma source, dose-rate 10 rad/day, total dose 200, 400 and 600 rad. Control groups were kept under similar conditions. Urine samples were taken three times after the end of the irradiation period, It was found that (1) pseudouridine excretion seems more suitable for indicating radiation damage than the creatine/creatinine ratio in chronic irradiation of rats; (2) there are significant changes in dose dependence of pseudouridine excretion in the post-irradiation period, and (3) a new method for pseudouridine estimation gives closely similar data to those of earlier investigations. (Author)

A77-24151 # Pioneer 10 and 11 Jovian encounters - Radiation dose and biological lethality. M. W. Miller, G. E. Kaufman, and H. D. Maillie (Rochester, University, Rochester, N.Y.). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975.

Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 195-199. 16 refs. ERDA-supported research.

In their recent Jupiter flybys Pioneer 10 and Pioneer 11 passed through a belt of intense particulate radiation. For Pioneer 10 the radiation dose on the craft's outer surface was at least 500,000 rads from electrons plus 1,000,000 rads from protons; the radiation dose inside the craft (0.3 cm aluminum) was approximately 450,000 rads. For Pioneer 11 the surface dose was at least 130,000 rads from electrons plus 300,000 rads fron protons; the interior radiation dose was approximately 120,000 rads. Significant survival of microbial spores would be possible at these calculated doses; however, even the interior dose of Pioneer 11 would be lethal to man and most multicellular biological organisms. (Author)

A77-24152 # Cytogenetic analysis of seeds of Crepis capillaris /L/ Wallr. exposed on board the earth artificial satellite Cosmos 613. E. N. Vaulina, L. N. Kostina, and A. L. Mashinskii (Akademiia Nauk SSSR, Institut Obshchei Genatiki, Moscow, USSR). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975.

Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 201-204. 7 refs.

Results are presented for a study regarding the effect of space flight factors on air-dry seeds of Crepis capillaris (L) Wallr. and on radiation injury of seeds exposed to gamma radiation (3 krad, 525 rad/min) before and after the flight on the satellite Cosmos 613. Space flight factors induced little increase (which was statistically insignificant) in the rate of chromosome aberrations in cells of the root meristem of Crepis capillaris sprouts, but they enhanced the effect of preliminary irradiation of seeds and decreased their radiosensitivity. Modification of radiation damage was statistically significant. (Author)

A77-24153 # Role of Cerenkov radiation in the eye-flashes observed by Apollo astronauts, P. J. McNulty, V. P. Pease (Clarkson College of Technology, Potsdam, N.Y.), and V. P. Bond (Brookhaven National Laboratory, Upton, N.Y.). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on

Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975.
Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 205-217. 19 refs. ERDA-sponsored research.

Visual phenomena in the form of colorless flashes of light were observed by astronauts in deep space when their eyes were closed and adapted to darkness. We describe in this paper laboratory experiments and calculations which indicate that many of these flashes are the result of visible light generated within the astronauts' eyeball in the form of Cerenkov radiation when a relativistic HZE particle traverses it. The sensitivity to Cerenkov radiation measured for three subjects exposed to pulses of pions and muons and the visual phenomena observed were found to be consistent with the reports of flashes observed at rates as high as 2 per minute on Apollo missions 11 through 17. (Author)

A77-24154 # Study with a multi-threshold HZE-particle dosimeter using plastic detectors. R. Beaujean, W. Enge, W. Herrmann, and K.-P. Bartholomä (Kiel, Neue Universität, Kiel, West Germany). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975.

Germany, Akademie-Verlag GmbH, 1976, p. 219-224. 7 refs. Research supported by the Deutsche Forschungsgemeinschaft.

During the Apollo 16 and 17 missions two units of the Biostack experiment were exposed to cosmic radiation. In this experiment plastic detector sheets were used for recording and tracing the highly ionizing high-energy (HZE) heavy ions. In some of these sheets the integral energy loss spectrum was measured. The measurements were performed in two different cellulose nitrate materials and in Lexan polycarbonate under 4 g per sq cm and 20 g per sq cm absorber thickness. The individual materials have different energy loss thresholds for the registration of heavy ions. The measured number of particles per sq cm with restricted energy loss REL greater than REL(0) is shown to obey a power law. Calculations shown that more than 70% of the fluence in the measured REL region is coming from particles with Z no less than 20. (Author)

A77-24155 # Lesional effects of primary cosmic heavy ions on rat brain. A. Pfister (Hôpital Necker, Paris, France), C. Nogues (Centre de Recherche de Médicine Aéronautique, Laboratoire d'Histologie, Paris, France), and R. Kaiser (CNRS, Centre de Recherches Nucléaires de Strasbourg, Strasbourg, France). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975. Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 225-230. 9 refs.

Heavy ions were detected with nuclear emulsions plates fixed on the skulls of 20 rats which were exposed to cosmic rays at an altitude of 32,000 meters. Eight cases are described of correlations between ions tracks and brain lesions. The passage of heavy ions seems to cause functional rather than destructive alterations in the cells. The metabolic disturbances give a dark aspect to the neurons. The lesions generally appear in wide areas around the track and this fact suggests a physiopathological phenomenon of amplification. An evaluation of this biological hazard during flights of long duration at high altitude will be possible when the mechanism of action of heavy ions on nervous tissue is better known, and particularly if experiments carried out in accelerators confirm the small number of results obtained in flight. (Author)

A77-24156 # The Biostack as an approach to high LET research. H. Bücker, R. Facius, and M. Schäfer (Frankfurt, Universität, Frankfurt am Main, West Germany). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology; Varna, Bulgaria, May 30, 31, 1975.

Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 233-239. 15 refs.

By simple geometric and dosimetric arguments the advantage of an experimental approach to high LET radiation research is demonstrated. The Biostack is capable of recording individual hits of heavy ions on single biological targets. This improved method is compared with the common experimental methods for studying biological effects with high LET radiation and is suggested as a methodological improvement in fundamental research. (Author)

A77-24158 # Influence of heavy ions on the transforming activity of DNA. M. I. Minkova, T. P. Pantev (Academy of Medicine, Sofia, Bulgaria), and N. I. Ryzhov (Institute of Medico-Biological Problems, Moscow, USSR). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975.
Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 247-250. 9

Changes in functional activity following treatment of DNA with heavy ions were analyzed by transformation assay. Biological response to exposure to charged particles, B-10, C-12, and Ne-22, was evaluated by the extent of inactivation of ability of DNA to transfer the genetic marker of tryptophane independence. The possibility of protecting the biological activity of DNA was studied using a conventional protective substance, cysteamine hydrochloride, or the preparation cytriphos. Dried samples of donor DNA isolated from a Bacillus subtilis prototroph strain were exposed to doses of 50 krad to 1 Mrad. For the three types of charged particles used, dose response of the inactivation process was defined by an exponential function. Comparison of response curves for the three types of radiation showed the effect to be dependent on LET, being highest for B-10 and lowest for Ne-22. In all three cases, addition of a protective substance failed to produce any change in the biological effect observed. (Author)

A77-24160 # Amino acid spectrum of human blood plasma during space flight and in antiorthostatic hypokinesia. A. S. Ushakov and T. F. Vlasova (Institute of Medico-Biological Problems, Moscow, USSR). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaría, May 30, 31, 1975. Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 257-262. 13 refs.

The paper summarizes results of experiments on the influence of space flight and antiorthostatic hypokinesia on the amino acids spectrum of human blood plasma. Our findings give evidence for: (1) a specific norm of the content of free amino acids in plasma during training and (2) consistent changes of plasma aminograms during space flight related to its duration and to individual features of cosmonauts. The content of free amino acids in the plasma of bed-rested subjects varied phasically and tended to increase practically at every experimental stage. The paper discusses the findings and possible mechanisms of the detected changes. (Author)

A77-24161 # Space flight effect upon the bioenergetics of the skeletal muscles in rats. E. S. Mailian and E. A. Kovalenko (Institute for Medico-Biological Problems, Moscow, USSR). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975.

Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 263-267. 21 refs.

A77-24162 \* # Body composition changes in men and women after 2-3 weeks of bed rest. N. Pace, A. M. Kodama, B. W.

ţ

Grunbaum, D. F. Rahlmann (California, University, Berkeley, Calif.), D. C. Price (NASA, Ames Research Center, Moffett Field, Calif.), and B. D. Newsom (NASA, Ames Research Center, Moffett Field, Calif.). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975.

Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 269-274. 8 refs. Grant No. NGR-05-003-470.

Several parameters of body composition were measured in eight men before and after 14 days of continuous recumbency, and in eight women before and after 17 days of recumbency. The parameters measured included body weight, body water, body potassium, plasma volume, and plasma protein concentrations. From these, values were derived for body fat content, lean body mass, body mass, and circulating plasma proteins. In general, the men and women responded similarly to continuous recumbency. Characteristically, there was significant reduction of plasma volume and body potassium in both groups. The women showed a significant reduction in circulating plasma-protein, entirely in the albumin fraction; a similar change was observed in the men. The women, but not the men, showed a significant increase in circulating fibrinogen. Both men and women lost body cell mass, while body fat content remained the same or tended to increase slightly. It is expected that similar changes would occur in weightlessness. It is further concluded that women should tolerate the weightlessness of space flight physiologically as well as men.

A77-24163 # Antiorthostatic test as a model to study antigravity mechanisms of the cardiovascular system. Kh. Kh. Iarullin, T. D. Vasil'eva, and D. A. Alekseev (Institute of Biomedical Problems, Moscow, USSR). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975.

Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 275-280. 13 refs.

The paper describes rheographic investigations of regional haemodynamics (brain, lungs, liver and limbs) during antiorthostatic exposures of varying intensity (-15, -30, -45 deg; times of exposure 20, 40 and 60 min). Results show that the pattern and time of the function of compensatory mechanisms preventing excessive vascular compliance under the influence of the hydrostatic blood column depend on the magnitude and length of antiorthostatic state, because prolonged venous congestion results not only in congestive circulatory hypoxia but also in arterial hypoxia due to compensatory limitation of arterial inflow. (Author)

A77-24164 # Metabolic processes in hypokinetic and rehabilitated men. V. P. Bychkov and M. V. Markarian (Institute of Biomedical Problems, Moscow, USSR). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975.

Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 281-284. 12 refs.

Experiments were conducted on eight male subjects aged 26-40 yr and subjected to -4 deg antiorthostatic hypokinesia during a 49-day period of bed rest to assess the effect of prolonged antiorthostatic hypokinesia on the protein and lipid metabolism, glucose control, and assimilation of major nutrients. Emphasis is placed on the possibility of correcting resultant metabolic changes by a rational diet program. The 49-day test period was preceded by a 12-day control period and followed by a 30-day rehabilitation period. Reduction of anabolic processes under prolonged negative hypokinesia was revealed. Rehabilitation by dietary measures (increase of proteins, polyunsaturated fatty acids, and some minerals in the diet) resulted in a rapid recovery of some parameters of protein metabolism. A tentative one-day diet is included.

A77-24165 # Effect of antiorthostatic bed rest on the human body. T. N. Krupina, B. M. Fedorov, L. M. Filatova, N. I. Tsyganova, and E. I. Matsnev (Institute of Biomedical Problems, Moscow, USSR). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30. 31, 1975. Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 285-287.

Head-down (-4 deg) bedrest brings about a more rapid development of changes in hemodynamics, fluid displacement and nervous tone than traditional recumbent bed rest. Changes occurring during head-down hypokinesia have much in common with the changes typical of real weightlessness. They are characterized by phasic changes in the vascular tone. Under these conditions changes in the tone and perfusion of the brain are important for the functional state of the vestibular apparatus. (Author)

A77-24166 # Deconditioning during prolonged immersion and possible countermeasures. E. B. Shulzhenko, I. F. Vil-Viliams, M. A. Khudiakova, and A. I. Grigor'ev (Institute of Medico-Biological Problems, Moscow, USSR). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975.
Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 289-294.

Fourteen healthy male subjects covered with a highly-elastic waterproof cloth were exposed to 13-day water immersion up to the neck. They were divided into two equal groups. The first (control) group was exposed to immersion alone and the second (experimental) group was exposed daily to accelerations of 0.6-2 Gz for 60-90 min during the last 6 days of immersion. Before and after immersion all the subjects were exposed to +3 Gz for 5 min. The experiments show that the use of dry immersion allows experimentation during prolonged immersion without concomitant complications. Variations in the physiological parameters (cardiovascular system, fluid-electrolyte balance, blood coagulation system) point to the preventive effect of periodic accelerations during 13-day immersion. (Author)

A77-24167 # Study of space perception functioning during simulation of certain space flight factors. I. Ia. Iakovleva, B. B. Bokhov, and L. N. Kornilova (Institute of Biological Problems, Moscow, USSR). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975. Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 295-300.

The results are reported of spatial perception function studies in 130 healthy males of 17-35 years of age and in 33 people with complete or partial inhibition of the function of the labyrinth (deaf-mutes). The comparative magnitudes of gravitational vertical perception impairments were studied during vestibular stimulation (Coriolis and linear acceleration), as well as during clino-orthostatic and antiorthostatic hypokinesia. Hypokinesia to a certain extent permitted the simulation of the blood redistribution in weightlessness. The ability of the subjects to determine the subjective visual vertical was used as the test criterion. The experiments have shown that the magnitude of the observed changes in the human sensory area depends on the physical properties of the vestibular stimulus, on the angle of inclination of the head of the bed during hypokinesia and on the duration of bed rest, but not necessarily on the level of vestibular tolerance. Possible mechanisms of impairment of perception in the space flight environment are discussed. Examinations of spatial perception function are useful during selection procedures for astronauts and airmen. (Author)

A77-24168 # Cardiac output during physical exercises following real and simulated space flight. B. S. Katkovskii and lu. D.

Pomiotov (Institute of Medico-Biological Problems, Moscow, USSR). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975. Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 301-305. 28 refs.

During moderate physical work (after 5 min) the cardiac stroke volume in the cosmonauts who made 2-8-day flights in the Soyuz spacecraft was lower and the pulse rate was higher than the pre-flight level. By the end of the 49-day bed-rest experiment the stroke volume during physical exercises (after 5 min) was lower than at the 5th min of the pre-test period in both the supine and sitting positions. The cosmonauts performed physical exercises in the sitting position. Therefore, it can be assumed that the major factor changing cardiac output may be the effect of the earth's gravity against the background of decreased orthostatic tolerance. Results of simulated experiments give evidence that in both cases one of the major factors responsible for changes in the cardiac output was a decline in the contractile capacity of the myocardium. (Author)

Renal osmoregulatory function during simu-A77-24169 # lated space flight. G. I. Kozyrevskaia, A. I. Grigor'ev, and lu. V. Natochin (Institute for Medico-Biological Problems, Moscow, USSR). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975. Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 307-311. 5 refs.

Experiments are described on the dynamics of the renal excretion of water and electrolytes, osmotically active substances and osmotically free water during bed rest. In short-term experiments (up to 10-14 days) renal changes are mainly associated with haemodynamic disturbances and fluid redistribution, whereas in longer duration experiments (up to 50 days) they are brought about by metabolic changes.

Characteristics of postural self-regulation in A77-24170 # complex spatial environments and after-effects of weightlessness. V. I. Miasnikov, O. P. Kozerenko, and N. M. Rudometkin (Institute of Medico-Biological Problems, Moscow, USSR). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975.

A77-24171 # Hypergravitation and sympatho-adrenergic reactivity. P. Groza, R. Carmaciu, E. Nicolescu, S. Cananau, R. Vrancianu, and D. Bobic (Academia Romana, Institutul de Fiziologie Normala si Patologica, Bucharest, Rumania). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975. Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 319-324, 11 refs.

The sympatho-adrenergic reaction of the organism subjected to hypergravitation was investigated in rats exposed to +6 Gz. The electro- and cardiotachograms recorded telemetrically were correlated with the adrenal catecholamine content. The determinations were made in controls and in rats treated with hexamethonium and atropine administered separately or together. Hexamethonium lowered the resting heart rate, attenuated the initial bradycardia and reduced the consecutive tachycardia. Hexamethonium stored the catecholamines in the adrenals as a result of their increased concentration. Atropin brought about resting tachycardia, elimination of bradycardia from the very beginning of centrifugation and a more accentuated tachycardia. Atropin and hexamethonium administered together diminished the response to acceleration. (Author)

A77-24172 # A study of the cumulative effects of repeated exposures to radial accelerations. T. N. Krupina, G. P. Mikhailovskii, A. la. Tizul, M. P. Kuzmin, N. I. Tsyganova, and E. B. Shulzhenko (Institute for Medico-Biological Problems, Moscow, USSR). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, Berlin, East Germany, Akademie-31. 1975. Verlag GmbH, 1976, p. 325-327. 6 refs.

After exposure to transverse accelerations of 4-10g changes in the vascular system of the eye and immunobiological resistance of the body persisted from 5 to 15 days. The data give evidence that the state of retinal vessels is the most informative index of the cumulative effect on the body and its recovery.

A77-24173 # Heat exchange between the organism and environment under conditions of weightlessness - Methodical approach. L. Novak (Ceskoslovenska Akademia Vied, Biofyzikalni Ustay, Brno, Czechoslovakia). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975.

Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 330-333, 5 refs.

The spontaneous streaming of air around surfaces of warm bodies conditioned by gravitation is missing in the weightless condition. This implies a change in the thickness of the surface air layer and its interference with the heat output of an organism. The paper describes the use of an electric dynamic katathermometer

(EDK) for automatic and continuous scanning of heat output and presents results of measuring basic characteristics of the surface layer under defined laboratory conditions, and their relation to heat output. (Author)

A77-24174 # Effect of extreme factors on micro-organisms used for the control of the effectiveness of sterilization. V. I. Vashkov, G. V. Scheglova, N. V. Ramkova, E. S. Zavolnaia, K. O. Fedorova, and E. K. Skvortsova (All-Union Scientific Research Institute for Disinfection and Sterilization, Moscow, USSR). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, Berlin, East Germany, Akademie-31. 1975. Verlag GmbH, 1976, p. 337-339.

Survival of microorganisms used for control of sterilization procedures was studied under conditions simulating the Martian environment (daily temperature change from +20 to -20 C in 99,98% CO2 + 0.02% air at 0.13 times 10 to the minus 6th N per sq cm pressure, with ultraviolet radiation spanning the whole range of the solar spectrum 300-350 MkW per sq cm). The test organisms were four strains of Bacillus subtilis and one strain of Bacillus anthracoides, and were inoculated onto four materials, smooth metal, porous plastic, multilayer composition material and powdered limonite. Some organisms survived on all materials, the longest survival being on the limonite. The resistance of the survivors to disinfectants was the same as that of the original cultures. (Author)

A77-24175 # On methods of detection of extraterrestrial life. A. A. Imshenetskii, M. D. Evdokimova, and G. G. Sotnikov (Akademiia Nauk SSSR, Institut Mikrobiologii, Moscow, USSR), In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975. Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 345-349.

New methods have been developed for detecting microbial growth from the microflora of desert soils. The first is a polarimetric method in which the fall in optical activity due to assimilation of D-glucose is followed. Detectable changes with desert soils were seen in a few hours, and the method can be employed with small amounts of material. The second method is the release of heat from metabolizable substrates as measured by a microcalorimeter. In the presence of glucose a characteristic response from desert soils was found within 24 hours. (Author)

A77-24176 \* # Performance of fungi in low temperature and hypersaline environments. S. M. Siegel and T. W. Speitel (Hawaii, University, Honolulu, Hawaii). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975.

Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 351-354. 5 refs. Grant No. NGL-12-001-042.

A77-24177 # Effect of space factors on Escherichia coli B/r cells. H. Bücker, R. Facius, G. Reitz, C. Thomas, and H. Wollenhaupt (Frankfurt, Universität, Frankfurt am Main, West Germany). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975.

Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 355-358, 5 refs.

Inactivation of stationary phase cells of Escherichia coli B/r cells subjected to vacuum treatment is reviewed. UV irradiated E. Coli B/r cells exhibit increased UV sensitivity. Results are presented for an investigation directed to determine whether DNA-protein crosslinks are preferentially formed in a vacuum and to assess their importance. It is found that the amount of DNA that becomes crosslinked to proteins increases when stationary phase cells of E. Coli B/r cells are irradiated in high vacuum. To determine the amino acid residues capable of crosslinking with nucleic acids, the protein part of the crosslinked product was hydrolyzed with pronase E, the nucleic acids were isolated both from the pronase E and the hydrolysis products, and the nucleic acids were then hydrolyzed in hydrochloric acid. It is found that almost all amino acid residues in proteins are able to crosslink with nucleic acids. The sensitivity of the cells to X-ray radiation is also discussed.

A77-24178 # On micro-organisms of the stratosphere. A. A. Imshenetskii, S. V. Lysenko, G. A. Kazakov, and N. V. Ramkova (Akademiia Nauk SSSR, Institut Mikrobiologii, Moscow, USSR). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975. Berlin, East Germany, Akademie-Verlag GmbH, 1976, p. 359-362.

Analysis of the stratosphere is highly complicated as any sampling must avoid penetration of extraneous microflora into the sampling device of a rocket-borne analyzer. A technique is described for complete exclusion of any possibility of contamination of analyzers by outside microflora. Identification of colonies reveals that at an altitude ranging between 48 and 77 km selected microorganisms comprise fungi Circinella muscae, Penicillium notatum, Aspergillus niger, Papulaspora anomala, as well as non-sporeforming bacteria Micrococcus albus and Mycobacterium luteum.

A77-24179 \* # Geomycology. N. J. Puerner and S. M. Siegel (Hawaii, University, Honolulu, Hawaii.). In: Life sciences and space research XIV; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna, Bulgaria, May 30, 31, 1975.

Berlin, East Germany, Akademie-Verlag GmbH, 1976. p. 363-366. 10 refs. Grant No. NGL-12-001-042.

Fungi have long been known to have capabilities for reduction and alkylation of arsenate and selenate but their general capabilities for solubilizing and accumulating metallic substances have been given serious attention only in recent years. Common members of the Aspergillaceae cultured on boron, copper, lead and other metals or oxides can solubilize and concentrate the elements or their compounds. To account for biosolubilization of the metals, we have set up a model study, incubating selected metals, e.g., mercury, in solutions of various metabolites including L-lysine and citric acid. Results of 100-300 days incubation showed that many metals can in fact be readily solubilized, and in some cases more effectively at pH 6-7 than at pH 1.5-2. (Author)

A77-24310 Some effects of infrasound on task performance. K. Kyriakides and H. G. Leventhall (Chelsea College, London, England). *Journal of Sound and Vibration*, vol. 50, Feb. 8, 1977, p. 369-388. 35 refs.

Some effects of moderate levels of infrasound on the performance of a complex task have been investigated using two experimental designs. A comparison between these effects and those due to alcohol, audio frequency noise, and combinations of infrasound-alcohol and alcohol-audio frequency noise is also presented. The complex task adopted for these experiments consisted of (1) a centrally located high priority pointer following task which had to be performed continuously and (2) the response to the onset of any one of four lights two of which were situated in front of the subject and two on his periphery of vision. The task was performed over a period of 36 minutes. Our results indicate that although performance in the infrasound condition does not suffer significant decrements in either the primary task or the central and peripheral components of the secondary task, the effects through time, both within the infrasound condition and in relation to the control, produce changes which are of a different nature to those of audible noise. In audible noise performance is maintained through time, whereas with infrasound and alcohol it appears to be degraded.

(Author)

A77-24355 Muscle glycogen repletion after high-intensity intermittent exercise. J. D. MacDougall, G. R. Ward, D. G. Sale, and J. R. Sutton (McMaster University, Hamilton, Ontario, Canada). Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology, vol. 42, Feb. 1977, p. 129-132. 21 refs.

A77-24356 Causes of high blood O2 affinity of animals living at high altitude. D. Petschow, I. Würdinger, R. Baumann, J. Duhm, G. Braunitzer, and C. Bauer (Medizinische Hochschule, Hanover; Pädagogische Hochschule, Hildesheim; München, Universität, Munich; Max-Planck-Institut für Biochemie, Martinsried, West Germany). Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology, vol. 42, Feb. 1977, p. 139-143. 34 refs.

To elucidate possible mechanisms by which high oxygen affinity of the blood can be caused in highland animals, an experimental study was conducted to investigate the oxygen-binding properties of blood and hemoglobin solutions as well as the concentration of organic phosphates in the erythrocyres of highland animal species such as the bar-headed goose (Anser indicus) and the guanaco (Lama guanicoe). Same measurements were carried out for the blood of two goose species that five at sea level and for the human blood. It is found that the much higher oxygen affinity of the blood of the bar-headed goose as compared to that of the sea-level geese can be largely accounted for by a reduced interaction of the hemoglobin with organic phosphates rather than by differences in intrinsic oxygen affinity or by a distinctly lower concentration of organic phosphates inside the red blood cell.

A77-24357 \* Spinal cord thermosensitivity and sorting of neural signals in cold-exposed rats. C. A. Fuller, J. M. Horowitz, and B. A. Horwitz (California, University, Davis, Calif.). Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology, vol. 42, Feb. 1977, p. 154-158. 23 refs. Grant No. NGR-05-004-099.

A77-24358 Role of ketone bodies in nonshivering thermogenesis in cold-acclimated rats. H. Maekubo, K. Moriya, and T. Hiroshige (Hokkaido University, Sapporo, Japan). Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology, vol. 42, Feb. 1977, p. 159-165. 36 refs.

A77-24359 Metabolic and cardiovascular responses to norepinephrine in trained and nontrained human subjects. J. LeBlanc, M. Boulay, S. Dulac, M. Jobin, A. Labrie, and S. Rousseau-Migneron (Université Laval, Quebec, Canada). Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology, vol. 42, Feb. 1977, p. 166-173. 58 refs.

A77-24360 Lung mast cell density and distribution in chronically hypoxic animals. A. Tucker, I. F. McMurtry, A. F. Alexander, J. T. Reeves, and R. F. Grover (Colorado, University, Medical Center, Denver; Colorado State University, Fort Collins, Colo.). Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology, vol. 42, Feb. 1977, p. 174-178. 17 refs. Research supported by the Colorado Heart Association; Grant No. NIH-HL-14985.

Changes in the density and distribution of pulmonary mast cells were determined in six mammalian species exposed to hypobaric hypoxia at 435 torr for 19-48 days. Control animals were studied at 1,600 m (635 torr). Total lung mast cell hyperplasia was observed only in calves exposed to high altitude. Pigs, rats, and sheep exhibited small, but insignificant, increases in mast cell density. Perivascular mast cell proliferation adjacent to 30-500 micron diam vessels was seen in both calves and pigs. Bronchial, alveolar septal, and systemic tissue (tongue) mast cell hyperplasia was not observed in any of the species. Three indices of pulmonary hypertension (right ventricular hypertrophy, medial thickness of pulmonary arteries, and pulmonary arterial pressure) correlated with perivascular mast cell density. The findings indicate that perivascular mast cell proliferation may relate more to the morphological pulmonary vascular changes and to pulmonary hypertension than to hypoxia, so that mast cells increase in number in response to hypertension. (Author)

A77-24361 Lung elasticity and airway dynamics in Peruvian natives to high altitude. J. S. Brody, S. Lahiri, M. Simpser, E. K. Motoyama, and T. Velasquez (Boston University, Boston, Mass.; Pennsylvania, University, Philadelphia, Pa.; Yale University, New Haven, Conn.; Universidad Nacional Mayor de San Marcos de Lima, Lima, Peru). Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology, vol. 42, Feb. 1977, p. 245-251. 31 refs. Grants No. NIH-HL-15880; No. NIH-HL-15063.

Experiments were conducted on a group of young adult Peruvian highland natives aged 17-20 yr to assess lung pressure-volume characteristics and maximum expiratory flow-volume curves with a view toward evaluating the role of genetic and environmental factors in the genesis of large lungs in highlanders. Results are compared with measurements in lowlanders of comparable genetic background and age. It is shown that the large lungs of highlanders result from postnatal environmental hypoxic stimulation of lung growth and that genetic factors play a minor role in this form of pulmonary adaptation. Importance of 'dysynaptic' lung growth in determining patterns of adult lung function is highlighted.

A77-24362 \* Fluid shifts during thermal stress with and without fluid replacement. L. G. Myhre (Lovelace Foundation for Medical Education and Research, Albuquerque, N. Mex.) and S. Robinson (Indiana University, Bloomington, Ind.). Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology, vol. 42, Feb. 1977, p. 252-256. 17 refs. Contracts No. NAS9-12572; No. DA-49-193-MD-2449.

Six unacclimatized men rested for 4 hr in a hot, dry environment without fluid replacement (DH). Another group of six men were exposed to the same thermal stress, replacing evaporative fluid loss with warm 0.1% NaCl'solution (FRP). Total grams of circulating hemoglobin, determined by CO immediately prior to and again during the last minutes of heat exposure, increased an insignificant 1.6 and 1.3% during DH and FRP, respectively. With DH, body weight loss of 2.6% was accompanied by a 7.8% reduction in calculated plasma volume (PV). Even when body weight was maintained (FRP), PV decreased 2.9% during the heat exposure. Total circulating serum protein did not change as a result of the heatstress with either DH or FRP. In a test-retest series of experiments on four men, DH was not detrimental to sweat rate. It is shown that hemodilution is not a general response to acute heat exposure. The disproportionately large reduction in PV during thermal dehydration is confirmed. (Author)

A77-24363 cAMP in temperature and ADH-regulating centers after thermal stress. I. Kornbluth, R. A. Siegel, N. Conforti, and I. Chowers (Hadassah University Hospital, Jerusalem, Israel). Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology, vol. 42, Feb. 1977, p. 257-261. 31 refs. Research supported by the U.S. Israel Binational Foundation.

Experiments were conducted on male rats weighing between 180 and 240 g to determine whether cyclic adenosine 3',5'-monophosphate (cAMP) is one of the molecular factors involved in the activity of temperature-regulating centers (TRCs). Concentration of cAMP were measured in specified brain areas along with plasma osmololity following acute thermal stress for periods of 10, 20, and 30 min. The brain areas studied were the preoptic area, the posterior medial hypothalamus, the paraventricular nuclei, and the supraoptic nuclei. The study provides evidence that cAMP is involved in the mechanisms of thermoregulation in the TRCs of the central nervous system and in the neurohypophysis at the cellular level. However, the whole chain of metabolic events and the exact function of cAMP in this chain remain to be elucidated.

A77-24364 Cardiac responses to moderate training in rats. M. A. Codini, T. Yipintsoi, and J. Scheuer (Montefiore Hospital and Medical Center; Albert Einstein College of Medicine, Bronx, N.Y.). Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology, vol. 42, Feb. 1977, p. 262-266. 25 refs. Grants No. PHS-HL-15498; No. PHS-HL-17809; No. PHS-HL-07071.

Results are presented for an experimental study designed to assess cardiac responses in open-chest respired rats conditioned by swimming, in which left ventricular pressure and the rate of left ventricular pressure rise were measured during ejection and isovolumetric contractions, during sinus rhythm and during atrial pacing. Sedentary rats were used as controls. In each animal, measurements were made with the aorta unobstructed and during gradual aortic occlusion to produce essentially isovolumetric contractions. Group comparisons were made to obtain statistical significance using the Student test. Results indicate that although baseline cardiac performance may be the same in rats conditioned by a moderated swimming program and in sedentary animals, physical conditioning of rats conditioned by swimming produces intrinsic alterations in the myocardium which are independent of hypertrophic response and bradycardia. The cardiac reserve could only be improved by the applied physical stress.

A77-24365 Hypoxia-induced metabolic and core temperature changes in the squirrel monkey. D. H. Horstman and L. E. Banderet (U.S. Army, Research Institute of Environmental Medicine, Natick, Mass.). Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology, vol. 42, Feb. 1977, p. 273-278. 14 refs.

A77-24366 Interaction of lung volume and chemical drive on respiratory muscle EMG and respiratory timing. S. G. Kelsen, M. D. Altose, and N. S. Cherniack (Pennsylvania, University, Philadelphia, Pa.). Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology, vol. 42, Feb. 1977, p. 287-294. 24 refs. Grant No. PHS-HL-08805.

Fifteen spontaneously breathing dogs weighing 15-22 kg were studied to assess the influence of vagal stimulation applied throughout the respiratory cycle on inspiratory (diaphragm) and expiratory (external oblique) muscle activity under conditions of changing chemical stimulus. The electromyogram was measured rather than ventilation since the mechanical effects on the chest bellows produced by FRC (Functional Residual Capacity) changes could by themselves decrease ventilation even if respiratory neuron activity were unaffected. Progressive hypercapnia and hypoxia were produced by rebreathing techniques in order to allow wide variations in chemical drive. Vagal reflexes were stimulated by applying positive pressure to the airway to increase lung volume (FRC). Results suggest that tonic vagal stimulation produced by increases in FRC modifies the change in respiratory muscle electrical activity and timing produced by increasing chemical drive. It seems possible that the influence of vagal afferent activity on the central respiratory neurons decreases as chemical drive increases.

A77-24367 Effects of cold exposure and dehydration on renal function in black-tailed prairie dogs. J. D. Hamilton and E. W. Pfeiffer (Montana, University, Missoula, Mont.). Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology, vol. 42, Feb. 1977, p. 295-299. 22 refs. Research supported by the University of Montana.

A77-24368 Ventilatory and gas exchange dynamics in response to sinusoidal work. R. Casaburi, B. J. Whipp, K. Wasserman, W. L. Beaver, and S. N. Koyal (Harbor General Hospital; California, University, Torrance, Calif.). Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology, vol. 42, Feb. 1977, p. 300-311. 38 refs. Grants No. NIH-HL-14967; No. NIH-HL-11907; No. NIH-HL-17107.

Frequency analysis techniques were used to determine the dynamic relationships between ventilation and gas exchange variables in subjects exercising on a bicycle ergometer against a workload which varies sinusoidally. The work regimen was so designed that the sinusoidal fluctuation of workload would not involve anaerobiosis, with the result that a linear model is capable of adequately describing the underlying processes. The response characteristics are found to be well described by first-order linear dynamics with time constants for the heart rate and minute ventilations of expired air, carbon dioxide, and oxygen averaging 0.8, 1.4, 1.2, and 0.8 min, respectively. The results lead to the conclusion that exercise hyperpnea is linked to metabolism via carbon dioxide production. The fact that ventilatory response is precisely matched to the rate at which carbon dioxide reaches the lung suggests that the sensory system is located not at the site of metabolism but more centrally in the lungs or perhaps in the arterial circulation. S.D.

A77-24425 # Introduction to the study of a mathematical model of a pilot (Introduction à l'étude d'un modèle mathématique

de pilote). J.-C. Wanner (ONERA, Châtillon-sous-Bagneux, Hauts-de-Seine, France). (Colloque sur la Biomécanique du Pilotage, 2nd, Toulouse, France, Nov. 24-26, 1976.) ONERA, TP no. 1976-118, 1976. 12 p. In French.

A discussion of the safety of a piloted vehicle revealed that an accident occurs when one of the parameters characterizing the functioning of a piloted vehicle departs from a permissible range of values as a result of a sequence of events related to vehicle handling, maneuverability, and sensitivity to perturbations. Theoretical analysis of handling events requires the introduction of a mathematical model of a pilot in the piloting loop. A detailed study is conducted concerning the physical and mental behavior of a pilot. It is shown that a pilot does not behave like a conventional servomechanism, but performs separately and successively the required mental and physical operating of piloting. Conditions to be satisfied by the mathematical model of a pilot are identified.

A77-24453 Evaluation of the toxicity of combustion products. F. Saito (Ministry of Construction, Building Research Institute, Tokyo, Japan). *Journal of Combustion Toxicology*, vol. 4, Feb. 1977, p. 32-55. 7 refs.

Toxicity of combustion products to the human organism during fire outbreaks is discussed in terms of detrimental heat, smoke, and gases produced. Symptoms caused by typical gases other than CO are identified along with pertinent physiological effects. Relation between time to death and toxicity of single gases and gas mixtures is analyzed. Attention is directed to the experimental evaluation of gas toxicity on mice by means of different techniques. Quantitative analysis of toxicity is provided using suitable formulas. The specific toxicity of various materials is determined.

A77-24455 Acute combined effects of HCN and CO, with special reference to a theoretical consideration of acute combined effects on the basis of the blood cyanide and COHb analyses. K. Yamamoto (Kyoto University, Kyoto, Japan). *Journal of Combustion Toxicology*, vol. 4, Feb. 1977, p. 69-78. 17 refs.

On the assumption that the acute toxicities of HCN and CO are proportional to their concentration-exposure time (CT) products and that blood concentrations of cyanide and CO depend upon their CT products, an equation relating acute combined effects of HCN and CO with their blood concentrations was derived. In deriving the equation, death of the animal was used as an index of the acute toxicity. The application of the equation to the data on the blood CO and cyanide levels of rats acutely exposed to the combustion products from various combinations of polyacrylonitrile-gauze mixtures was discussed. (Author)

A77-24501 Visual field contraction during G stress at 13, 45, and 65 deg seatback angles. K. K. Gillingham and G. B. McNaughton (USAF, School of Aerospace Medicine, Brooks AFB, Tex.). Aviation, Space, and Environmental Medicine, vol. 48, Feb. 1977, p. 91-96. 7 refs.

Two groups of six experienced subjects, operating a highresolution visual field limit tracker, were exposed to gradual-onset (0.067 G/s) G stress to a 7-G maximum on a human centrifuge. Data obtained from one group described the G-induced vertical visual field contraction, and that from the other described horizontal visual field contraction - as they occurred in relaxed subjects in seats with 13, 45, and 65 deg seatback angles. Curves of peripheral vision remaining against G level indicated a statistically significant difference in tolerance provided by the 65 deg seat over that provided by the 13 and 45 deg seats in the 5- to 7-G range, and a significant difference in tolerance provided by the 45 and 65 deg seats over that provided by the 13 deg seat in the 4- to 5-G range. Two-dimensional reconstructions of the superior half of mean binocular vision remaining at the various levels of G stress showed complete visual loss near 5 G in the 13 deg seat, complete loss near 6 G in the 45 deg seat, and substantial peripheral vision remaining at 7 G in the 65 deg seat.

(Author)

A77-24502 Effective temperature scale useful for hypoand hyperbaric environments. Y. Nishi (John B. Pierce Foundation Laboratory, New Haven, Conn.) and A. P. Gagge (Yale University, New Haven, Conn.). Aviation, Space, and Environmental Medicine, vol. 48, Feb. 1977, p. 97-107. 24 refs. Grant No. NIH-ES-00354.

Basic physics of man's heat exchange by radiation, convection, evaporation, and conduction through clothing is used to define and establish a Standard Effective Temperature Scale (SET), with which sensory and physiological responses of sedentary and active personnel can be related. The standard environment chosen is the Effective Temperature Scale, i.e., the temperature of an isothermal enclosure at sea level with 50% rh and still air (0.1-0.15 m/s) in which a clothed sedentary subject would exchange the same total sensible and insensible heat as in the actual test environment. Mean skin temperature and skin wettedness can be associated at sea level with thermal comfort and neutrality and with heat exchange. For hypo- and hyperbaric environments, thermal equivalence between SET and any test environment occurs when mean body temperature for each is identical. Comprehensive data, developed for a 2-node model of human temperature regulation and of the associated partitional calorimetry, demonstrate the expected interaction between SET and the basic environmental and clothing factors over the barometric range 0.33 to 30 ATA. (Author)

A77-24503 Combined effect of space flight and radiation on skeletal muscles of rats. E. I. Il'ina-Kakueva and V. V. Portugalov (Ministerstvo Zdravookhraneniia SSSR, Institut Mediko-Biologicheskikh Problem, Moscow, USSR). Aviation, Space, and Environmental Medicine, vol. 48, Feb. 1977, p. 115-119, 13 refs.

Skeletal muscles of rats flown for 20.5 days aboard the biosatellite Cosmos-690 and irradiated with a dose of 800 rad on the 10th flight day were studied. The radiation exposure aggravated the severity of atrophic and dystrophic processes in m. soleus and atrophic process in m. gastrocnemius that developed under the conditions of weightlessness and hypokinesia. At the same time, an exposure to penetrating radiation did not affect the muscles where no flight-induced pathologies occurred. The radiation affected the pattern of reparation in those regions of the soleus muscle that developed pathology inflight, slowed down resorption of the connective tissue formed during the pathological process, and inhibited the course of the reparative process. (Author)

A77-24504 \* Reversal of bedrest-induced orthostatic intolerance by lower body negative pressure and saline. K. H. Hyatt and D. A. West (U.S. Public Health Service Hospital, San Francisco, Calif.). Aviation, Space, and Environmental Medicine, vol. 48, Feb. 1977, p. 120-124. 18 refs. NASA Order T-40-B.

Six healthy male volunteers underwent two 1-week periods of bedrest, each preceded and followed by 2-week control and recovery periods. The daily metabolic diet contained 150 mEq of sodium. Following one 7-day bedrest period, each man was subjected to LBNP at a level of -30 mm Hg for 4 hr while consuming 1000 ml obeef bouillon containing 154 mEq of sodium. After the other bedrest period, each man simply consumed the bouillon without LBNP treatment during 4 hr of continued bedrest. Measurements of plasma volume and orthostatic tolerance were made before and after each treatment period. After combined LBNP and saline therapy, plasma volume and response to LBNP testing showed a return to pre-bedrest levels. Saline consumption alone had a lesser effect. With continuation of bedrest in three subjects, the beneficial effects of these measures appeared to be largely gone after 18 hr. (Author)

A77-24505 Changes in orthostatic tolerance in man at an altitude of 3500 meters. M. S. Malhotra and W. S. Murthy (Defence Institute of Physiology and Allied Sciences, Delhi, India). *Aviation, Space, and Environmental Medicine,* vol. 48, Feb. 1977, p. 125-128. 8 refs.

Orthostatic tolerance was measured in 20 lowlander Indian soldiers (sojourners) by recording responses of heart rate (HR), blood pressure and mean skin temperature to 70 deg head-up passive tilt, initially at Delhi (260 m altitude) and thereafter at 3500 m at weekly intervals for 3 weeks. For comparison, observations were also made once on 10 acclimatized lowlanders (AL) and 10 high-altitude natives (HAN) at the same altitude. Among sojourners, the percentage of subjects showing orthostatic intolerance (OI) during tilt increased at high altitude in the first and second weeks; six subjects fainted in the first week as compared to one who fainted at sea level (SL). There was no incidence of fainting among AL or HAN and the percentage of subjects showing OI was very small. The magnitude of cardioacceleration to tilt was higher in sojourners at high altitude (HA) and relatively less in AL and HAN. Skin temperature drop was observed during tilt, which was of a lesser magnitude at HA. Results indicate that there is a reduced orthostatic tolerance at high altitude during the first week, due to hypocapnia, after which it is improved as a result of relative sympathetic hyperactivity and adaptation of the vasomotor center to reduced PaCO2 level.

A77-24506 \* Induction of illusory self-rotation and nystagmus by a rotating sound-field. J. R. Lackner (Brandeis University, Waltham; MIT, Cambridge, Mass.). *Aviation, Space, and Environmental Medicine*, vol. 48, Feb. 1977, p. 129-131. 13 refs. Research supported by the Rosenstiel Sciences Foundation and Spencer Foundation; Grant No. NGL-22-009-308.

Subjects seated in darkness often experience illusory self-rotation when exposed to a rotating sound field. Compelling illusions of a self-rotation are generally accompanied by nystagmoid movements of the eyes with the slow phase in the direction opposite that of the experienced self-rotation. These phenomena are related to the functioning of a spatial constancy mechanism by which a stable distinction is normally maintained between movements of self and movements of the environment. The appearance of nystagmus during illusory self-rotating indicates that apparent body orientation can influence oculomotor control. (Author)

A77-24507 \* Cardiovascular responses of men and women to lower body negative pressure. L. D. Montgomery, P. J. Kirk, P. A. Payne, R. L. Gerber, S. D. Newton, and B. A. Williams (NASA, Ames Research Center, Moffett Field, Calif.). Aviation, Space, and Environmental Medicine, vol. 48, Feb. 1977, p. 138-145. 36 refs.

Changes in blood flow and blood redistribution were measured by impedance plethysmography in the pelvic and leg regions of six male and four female subjects during three 5-min exposures to -20. -40, and -60 mm Hg lower body negative pressure (LBNP). Female subjects demonstrated significantly higher mean heart rate and lower leg blood flow indices than the male subjects during the recumbent control periods. Men had slightly higher mean resting systolic and diastolic blood pressures and higher mean control pelvic blood indices. Women demonstrated significantly less blood pooling in the legs and slightly less in the pelvic region than the men. All of the 18 tests with male subjects at -60 mm Hg were completed without initial signs of syncope, while only two of the tests with women were completed successfully without the subject exhibiting presyncopal conditions. Results indicate that impedance plethysmography can be used to measure segmental cardiovascular responses during LBNP and that females may be less tolerant to -60 mm Hg LBNP than males.

(Author)

A77-24508 Maximal aerobic power in women cadets at the U.S. Air Force Academy. R. W. Cote, III, J. B. Bomar, Jr., G. E. Robertshaw, and J. C. Thomas (U.S. Air Force Academy, Colorado Springs, Colo.). Aviation, Space, and Environmental Medicine, vol. 48, Feb. 1977, p. 154, 155. 16 refs.

A sample of 17 women cadets of the U.S. Air Force Academy's Class of 1980 was assessed to determine their maximal oxygen consumption and per cent body fat. The sample was selected using the ponderal index to insure a stratified sample of body types. The Short Balke protocol was used to determine maximal oxygen consumption, and the Siri and the Keys and Brozek equations were used to find per cent body fat. The Katch and McArdle equation was employed to determine body density. The average maximal oxygen consumption for the women cadets was 46.1 ml/kg/min (SD = 4.0). Correcting for altitude, this value compares quite favorably with other reported values. The 24.8% mean body fat places these subjects well within the normal range for college age females. The female cadets of the Class of 1980 appear to be above their contemporaries in civilian life in circulo-respiratory fitness.

A77-24509 Impairment of flying efficiency in anancastic pilots. L. R. C. Haward (Surrey, University, Guildford, England). Aviation, Space, and Environmental Medicine, vol. 48, Feb. 1977, p. 156-161, 32 refs.

The records of six anancastic and ten dysthymic pilots were examined for differences in level of psychophysiological arousal, flying skill in a simulator, and performance on a concomitant psychomotor task under conditions of emotional stress and channel capacity overload. Excessive rumination and arousal induced by sympathetic nervous system were the predominant characteristics of the anancastic and dysthymic groups, respectively. Significant qualitative and quantitative differences between the two groups were discussed. The dysthymic pilots showed the greatest impairment of flying skill, but improved as flying continued. The anancastic pilots showed less performance decrement in flying but also showed no improvement with time. In particular, the dysthymic pilots were overaroused and tended to overcompensate in their movements of the control column, but were quick to see changes in the cockpit display and to respond to them. The anancastic pilots were much more controlled in keeping to the flight path but made much more errors of omission. The anancastic personality has much to contribute to safe flying. Excessive rumination can be suppressed by suitable medication, of which sodium diphenylhydantoinate appears the most potent. S.D.

A77-24510 Coronary risk factors in flying personnel - A progress report. W. H. King, L. F. Owens, and J. A. Fadusko (USAF Hospital Dover, Dover AFB, Del.). *Aviation, Space, and Environmental Medicine*, vol. 48, Feb. 1977, p. 162, 163.

Since October 1974, the Flight Surgeon's Office at the USAF Hospital Dover has implemented a program of early detection and treatment of coronary risk factors in aircrew personnel. The program is integrated with USAF periodic physical examinations with interval follow-up of members found to have possible risk factors. A report of initial (baseline) findings was presented at the Aerospace Medical Association meeting in May 1975. During the past year, the base did experience one death due to myocardial infarction in an aircrew member, while two others were grounded due to serial ECG changes, consistent with silent myocardial infaction, confirmed by review at the USAF-SAM ECG Library. (Author)

A77-24511 Inexpensive technique to record respiration during flight. J. D. Rugh, H. Wichman, and W. O. Faustman (Claremont Graduate School; Claremont Men's College, Claremont, Calif.). Aviation, Space, and Environmental Medicine, vol. 48, Feb. 1977, p. 169-171.

This paper describes the development and use of a small (19 x 11 x 18 cm) tape recording system designed to monitor respiratory patterns during flight. This lightweight (1.85 kg) system was developed for less than \$200 using commercially available subassemblies. Respiratory patterns are detected via a comfortable

intranasal thermometer, amplified, and converted to an FM signal for taping. The device will also convert the tape recorded signal to a graphic display on a laboratory strip chart recorder. Reliable recordings of respiratory rate and respiratory regularity have been made in ambient temperatures of up to 43 C. Chart recordings of student pilots' respiratory patterns at different stages of flight are presented. With modifications to the transducer assembly and amplifier, the basic recording system may be used to monitor other biological functions such as EMG, GSR, EEG, and ECG. Environmental variables have a frequency of less than 250 Hz (wind velocity, temperature, noise, etc.) may also be recorded with proper transducers. (Author)

A77-24618 \* Variation in stable carbon isotopes in organic matter from the Gunflint Iron Formation. E. S. Barghoorn, A. H. Knoll (Harvard University, Cambridge, Mass.), H. Dembicki, Jr., and W. G. Meinschein (Indiana University, Bloomington, Ind.). Geo-lehimica et Cosmochimica Acta, vol. 41, Mar. 1977, p. 425-430. 34 refs. NSF Grant No. DES-73-06514; Grant No. NGL-22-007-069.

Results are presented for an isotopic analysis of the kerogen separated from 15 samples of the Gunflint Iron Formation, Ontario, and the conformably overlying Rove Formation. Reasons for which the Gunffint Iron Formation is suitable for such a study of a single Precambrian formation are identified. The general geology of the formation is outlined along with sample selection, description, and preparation. Major conclusions are that the basal Gunflint algal chert and shale facies are depleted in C-13 relative to the chert-carbonate and taconite facies, that differences in the delta C-13 values between Gunflint facies correlate with marked differences in their biological source materials as evidenced by their respective microbiotas, that the anthraxolites are anomalously depleted in C-13 relative to the kerogen of their encompassing cherts and shales, and that the effects of igneous intrusion and concomitant thermal alteration are shown by a marked loss of C-12 at the contact. The demonstration that not all kerogens are isotopically alike stresses the importance of facies data to the interpretation of C-13/C-12 ratios of ancient organic matter.

A77-24696 Visual performance and image coding. P. G. Roetling (Xerox Webster Research Center, Webster, N.Y.). In: Image processing; Proceedings of the Seminar, Pacific Grove, Calif., February 24-26, 1976. Palos Verdes Estates, Calif., Society of Photo-Optical Instrumentation Engineers, 1976, p. 195-199. 6 refs.

The paper examines the problem of how visual performance characteristics can be related to the average number of bits per pixel (picture element) in a sampled and quantized image. Particular attention is given to the selection of sampling interval and quantization levels based on visual performance. An approach is described in which visual data for modulation transfer function of the eye can be utilized to determine the useful information in an image. At a sample interval of 20 samples per millimeter, the visually useful information is found to be about 2.8 bits per pixel. The shape of the visual performance curve reveals that more levels need to be represented at lower spatial frequencies and less levels at higher spatial frequencies. It is shown that halftone or texture codes, although simple, represent image information in a manner which tends to be compatible with visual system characteristics.

A77-24699 Visual processing of repetitive images. C. W. Tyler (Smith-Kettlewell Institute, San Francisco, Calif.) and J.-J. Chang (Bell Telephone Laboratories, Inc., Murray Hill, N.J.). In: Image processing; Proceedings of the Seminar, Pacific Grove, Calif., February 24-26, 1976. Palos Verdes Estates, Calif., Society of Photo-Optical Instrumentation Engineers, 1976, p. 216-222. 13 refs.

The paper is concerned with visual detection of complex two-dimensional patterns composed of repeated stripes of random texture. Experiments were conducted in free viewing of the display screen at a distance of 2 m except where other conditions were noted, and the experimental procedure was a modified method of limits. The effects of width of the repeated segment on sensitivity (reciprocal of signal-to-noise ratio) for the repetitive pattern were assessed. It is shown that the two-dimensional Fourier spectrum gives a condensation of the information in the patterns, which has good descriptive value for the processing capacity of the human visual system. Although it is not yet known whether the visual system actually performs an operation that could be considered equivalent to a Fourier analysis of the stimulus, the Fourier description of complex pattern stimuli is suitable for experimental analysis of the visual system.

S.D.

A77-24737 \* Computerized X-ray reconstruction tomography in stereometric analysis of cardiovascular dynamics. R. A. Robb, L. D. Harris, and E. L. Ritman (Mayo Foundation, Rochester, Minn.). In: Applications of optics in medicine and biology; Proceedings of the Seminar, San Diego, Calif., August 26, 27, 1976. Seminar sponsored by the Society of Photo-Optical Instrumentation Engineers. Palos Verdes Estates, Calif., Society of Photo-Optical Instrumentation Engineers (SPIE Proceedings. Volume 89), 1977, p. 69-82. 35 refs. Grants No. NIH-HL-04664; No. NIH-RR-0007; No. NIH-CB-53857; No. NGR-24-003-001; Contract No. F44620-71-0069.

A computerized technique is proposed for obtaining cross-sectional images of the dynamic spatial distribution of X-ray attenuation covering the entire anatomic extent of the thorax and its contents in living dogs with a resolution of 1 mm and at time intervals of 1/60 sec. Use is made of an X-ray imaging chain which is a new high-performance video-fluoroscopic system, unique in its design and construction and called SSDSR for single source dynamic spatial reconstructor. This dynamic spatial reconstruction system is shown to provide the temporally and spatially coherent multiple cross sections required to obtain the full three-dimensional anatomic and simultaneous hemodynamic information necessary for detailed quantitative analyses of regional cardiopulmonary and vascular functions in both basic investigations of animals and clinical diagnostic applications to patients. Numerous photographs supplement the text.

A77-24738 \* Computer analysis of arteriograms. R. H. Selzer, J. H. Armstrong, E. B. Beckenbach (California Institute of Technology, Jet Propulsion Laboratory, Pasadena, Calif.), D. H. Blankenhorn, D. W. Crawford, S. H. Brooks, and M. E. Sanmarco (South California, University, Los Angeles, Calif.). In: Applications of optics in medicine and biology; Proceedings of the Seminar, San Diego, Calif., August 26, 27, 1976. Seminar sponsored by the Society of Photo-Optical Instrumentation Engineers. Palos Verdes Estates, Calif., Society of Photo-Optical Instrumentation Engineers (SPIE Proceedings. Volume 89), 1977, p. 129-134. Grant No. NIH-HL-14138.

A computer system has been developed to quantify the degree of atherosclerosis in the human femoral artery. The analysis involves first scanning and digitizing angiographic film, then tracking the outline of the arterial image and finally computing the relative amount of roughness or irregularity in the vessel wall. The image processing system and method are described. (Author)

A77-24738 \* Computer analysis of arteriograms. R. H. Selzer, J. H. Armstrong, E. B. Beckenbach (California Institute of Technology, Jet Propulsion Laboratory, Pasadena, Calif.), D. H. Blankenhorn, D. W. Crawford, S. H. Brooks, and M. E. Sanmarco (South California, University, Los Angeles, Calif.). In: Applications of optics in medicine and biology; Proceedings of the Seminar, San Diego, Calif., August 26, 27, 1976. Seminar sponsored by the Society of Photo-Optical Instrumentation Engineers. Palos Verdes Estates, Calif., Society of Photo-Optical Instrumentation Engineers

(SPIE Proceedings. Volume 89), 1977, p. 129-134. Grant No. NIH-HI 14138

A computer system has been developed to quantify the degree of atherosclerosis in the human femoral artery. The analysis involves first scanning and digitizing angiographic film, then tracking the outline of the arterial image and finally computing the relative amount of roughness or irregularity in the vessel wall. The image processing system and method are described. (Author)

A77-24830 New method of artificial motion synthesis and application to locomotion robots and manipulators. M. Vukobratovic, D. Hristic, D. Stokic, and N. Gluhajic (Institut za Automatizaciju i Telekomunikaciju, Belgrade, Yugoslavia). In: Symposium on Automatic Control in Space, 7th, Rottach-Egern, West Germany, May 17-21, 1976, Preprints. Volume 2.

Düsseldorf, VDI/VDE-Gesellschaft Mess- und Regelungstechnik, 1976, p. 680-700. 13 refs.

Artificial motion synthesis is performed with respect to the complete dynamics of an artificial gait or manipulator system. The dynamic control procedure consists in a twofold division of the system into a system performing prescribed motions and a system performing prescribed and compensating motions. Control is suboptimal. Large perturbations are reduced to small perturbations by transferring the system to the nearest precalculated state (synergy), bringing it to a predetermined endpoint.

P.T.H.

A77-24831 Semi-auto manipulator control systems and their dynamic analysis with computer. V. S. Kuleshov, A. G. Leskov, V. S. Medvedev, and A. S. lushchenko. In: Symposium on Automatic Control in Space, 7th, Rottach-Egern, West Germany, May 17-21, 1976, Preprints. Volume 2. Düsseldorf, VDI/VDE-Gesellschaft Mess- und Regelungstechnik, 1976, p. 701-716. 8 refs

The paper examines a semi-automatic control system for manipulators, where the human operator plays an active part in the control process, and the computer is used to automate repetitious and tiresome tasks. The operator observes directed movements performed in the automatic mode of operation and is prepared to assume manual control in unexpected situations. The problem of choosing control modes for the manipulator is considered and a dynamic investigation of the control system is carried out.

B.J.

A77-24832 Algorithms for combined and supervisor robot and manipulator control. E. P. Popov, A. F. Vereshchagin, V. L. Generosov, S. L. Zenkevich, and V. B. Kucherov. In: Symposium on Automatic Control in Space, 7th, Rottach-Egern, West Germany, May 17-21, 1976, Preprints. Volume 2. Düsseldorf, VDI/VDE-Gesellschaft Mess- und Regelungstechnik, 1976, p. 717-723.

The hierarchical structure of a robot control system is considered with primary attention given to control algorithms relating to cases when the human operator enters and interrupts the automatic operation of the manipulator-robot at a high level of the hierarchical control system. The problem of the inverse operator and the linear programming of movement are considered.

B.J.

A77-24856 # Instructional systems development - A new approach to flight-crew proficiency. J. C. McLachlan (U.S. Navy, Washington, D.C.). Naval Research Reviews, Jan. 1977, p. 26-32.

A ground-based simulator program for low-cost training of a crew of four (pilot, copilot, sensor operator, tactical coordinator) to operate the S-3A carrier-based ASW aircraft is described. Didactic tasks incorporated into the ISD (instructional systems development) simulator for the S-3A are described, along with auxiliary programs (videotape, computer-assisted instruction). A new PLATO IV (Programmed Logics for Automated Teaching Operations) designed to supplement the training program and fill in gaps discovered is described; this interactive computer training system proved highly effective.

R.D.V.

A77-24998 Synthesis of phospholipids and membranes in prebiotic conditions. W. R. Hargreaves, S. J. Mulvihill, and D. W. Deamer (California, University, Davis, Calif.). *Nature*, vol. 266, Mar. 3, 1977, p. 78-80. 23 refs. NSF-supported research.

A description is given of the abiotic synthesis of various lipids, including membranogenic phospholipids. The reported work has implications concerning the possible origin of life on earth. The investigations show that both fatty acid and fatty aldehyde react rapidly with glycerol in the absence of catalysts to form the precursors of membrane lipids, and that phospholipids and lipid-membrane vesicles can assemble in possible prebiotic conditions. It is suggested that silicates other than kaolin are likely to have promoted such syntheses.

G.R.

A77-25072 \* Use of human engineering standards in design. J. G. Rogers and R. Armstrong (Alabama, University, Huntsville, Ala.). *Human Factors*, vol. 19, Feb. 1977, p. 15-23. 6 refs. Grant No. NGL 01.098-001

Results are presented for a research study intended to assess the impact of present human engineering standards on product design. The approach consisted of three basic steps: a comparison of two display panels to determine if, in fact, products designed to the same standards are truly standardized; a review of two existing standards to determine how well their information can be used to solve design problems; and a survey of human factors specialists to assess their opinions about standards. It is shown that standards have less than the desired influence on product design. This is evidenced by a lack of standardization between hardware designed under common standards, by deficiencies within the standards that detract from their usefulness and encourage users to ignore them, and by the respondents of the survey who consider standards less valuable than other reference sources for design implementation. Recommendations aimed at enhancing the use of standards are set forth. S.D.

A77-25073 Broadbent and Gregory revisited - Vigilance and statistical decision. A. Craig (Medical Research Council, Perceptual and Cognitive Performance Unit, Brighton, England). *Human Factors*, vol. 19, Feb. 1977, p. 25-36. 16 refs.

Broadbent and Gregory (1963) have shown that the equalvariance model of signal detection theory (SDT) offers a reasonable account of vigilance performance in the sense that receiver operating characteristics (ROCs) obtained from vigilance data were of the curved form predicted by the model. Earlier studies have been directed toward examining the within-session changes in the parameters of the ROC curves for groups of subjects, although attention should be paid to the ROCs of the individuals who comprise the groups. The present paper analyzes 200 individual ROCs obtained from four vigilance experiments. The fact that about half of the individual ROC functions are of the curved form predicted by the equal-variance SDT model corroborates the hypothesis that vigilance performance can be interpreted in terms of this theoretical model of decision making. A substantial proportion (30%) of the individual ROC functions, however, are found to be of a particular form which is hardly interpretable within the SDT framework. Other appropriate models are discussed.

A77-25074 Formatting and organization of a human engineering standard. J. G. Rogers and C. D. Pegden (Alabama, University, Huntsville, Ala.). *Human Factors*, vol. 19, Feb. 1977, p. 55-61. 7 refs.

A detailed item-by-item analytical review of two existing government human engineering standards and the results of a users' survey on human engineering standards revealed formatting and organization problems in current human engineering standards which detract from their utility to the designer. Problems identified and recommended solutions are presented. The recommended solutions are primarily directed at improving the ability to retrieve data from the standards and as a result increasing the degree to which the human engineering discipline has an effect on design. (Author)

A77-25075 Multiple images as a function of LEDs viewed during vibration. T. M. Riley (Bunker-Ramo Corp., Electronic Systems Div., Dayton, Ohio). *Human Factors*, vol. 19, Feb. 1977, p. 79-82. Contract No. F33615-73-C-0391.

If a refreshed light emitting diode (LED) display is moved relative to the observer with such severity that the display cannot be fixated, multiple images of the display may appear. To determine the threshold refresh rate of this perceptual phenomenon, subjects evaluated the relative multiple imaging of nine LED refresh rates while under whole body vibration. (Author)

A77-25147 \* Reduction in plasma vasopressin levels of dehydrated rats following acute stress. L. C. Keil (NASA, Ames Research Center, Moffett Field, Calif.) and W. B. Severs (M. S. Hershey Medical Center, Hershey, Pa.). Endocrinology, vol. 100, Jan. 1977, p. 30-38, 27 refs.

Results are presented for an investigation directed to substantiate and extend preliminary findings of stress-induced reduction in plasma arginine vasopressin (pAVP). Since normally hydrated rats have very low levels of pAVP, it is difficult to measure reliably any decrease in pAVP that may result from stress. To overcome this problem, the pAVP levels of the tested rats were raised by dehydration prior to application of stress. A radioimmunoassay for pAVP is described and used to determine the levels of vasopressin in the plasma of nondehydrated and dehydrated rats after exposure to ether or acceleration stress. Plasma pAVP is also determined in rats following nicotine administration. It is shown that exposure of nondehydrated rats to ether or acceleration stress does not elicit any significant alterations in circulating pAVP levels while nicotine injections stimulate a marked increase. In particular, ether and acceleration stress produce a rapid reduction in the pAVP level of dehydrated rats, the decrease being observed in both large and small animals. The mechanism for this reduction in pAVP level following stress is yet unknown.

A77-25170 A two-dimensional model for the cochlea. II-The heuristic approach and numerical results. M. A. Viergever (Delft, Technische Hogeschool, Delft, Netherlands). *Journal of Engineering* Mathematics, vol. 11, Jan. 1977, p. 11-28. 15 refs.

An alternative is given for the approach to a two-dimensional boundary-value problem for the cochlea. Because of the mathematical simplicity of this alternative, several extensions of the model are possible. The compressibility of the perilymph and variations of the scala height are considered; other extensions are briefly discussed. Numerical calculations lead to the following conclusions: (1) the results of one- and two-dimensional models show large quantitative but hardly any qualitative differences; (2) Von Bekesy's (1960) conclusions concerning the influence of the scala height on the motion of the partition are incorrect; (3) the quantitative discrepancies between the model's results and the experiments of Rhode (1971) can be eliminated by a large reduction of the scala height; (4) the phase difference as a function of frequency and phase velocity shows no qualitative disparities with experimental data; and (5) models with few sections, such as the hybrid computer model of Hubbard and Geisler (1972) are inaccurate. (Author)

A77-25217 An experimental validation of mathematical simulation of human thermoregulation. S. Konz, C. Hwang, B. Dhiman, J. Duncan, and A. Masud (Kansas State University of Agriculture and Applied Science, Manhattan, Kan.). Computers in Biology and Medicine, vol. 7, Jan. 1977, p. 71-82. 16 refs. NSF Grant No. ENG-73-03676.

An experimental validation of Stolwijk's mathematical model of thermoregulation is presented. Although the model seems to be accepted widely, very little experimental data for validation exists in the open literature. Experimental data for transient conditions of rectal, head skin, trunk skin, arm skin, leg skin, mean skin and mean body temperature as well as cardiac output and evaporative heat loss under heat stress are presented and compared with simulation output

for the model. In general, the predictions of the model are good; the difference between experimental data and the model averaged 0.2 C for mean body temperature. A version of Stolwijk's thermoregulatory model is described briefly. The controller equations are given as well as a short discussion of the rationale for each. Tables give coefficients for the controller equations, and, for the 25 compartments, heat capacitance, thermal conductance, basal metabolic heat production, basal evaporative heat loss, and basal effective blood flow. (Author)

A77-25300 \* Two mechanisms of rephasal of circadian rhythms in response to a 180 deg phase shift /simulated 12-hr time zone change/. C. W. DeRoshia, C. M. Winget (NASA, Ames Research Center, Biomedical Research Div., Moffett Field, Calif.), and G. H. Bond (Syntex Research, Palo Alto, Calif.), Journal of Interdisciplinary Cycle Research, vol. 7, no. 4, 1976, p. 279-286. 16 refs.

A model developed by Wever (1966) is considered. The model describes the behavior of circadian rhythms in response to photoperiod phase shifts simulating time zone changes, as a function of endogenous periodicity, light intensity, and direction of phase shift. A description is given of an investigation conducted to test the model upon the deep body temperature rhythm in unrestrained subhuman primates. An evaluation is conducted regarding the applicability of the model in predicting the type and duration of desynchronization induced by simulated time zone changes as a function of endogenous periodicity.

G.R.

A77-25325 # Life support of space crews after forced landing on ground or water (Zhizneobespechenie ekipazhei letatel'nykh apparatov posle vynuzhdennogo prizemleniia ili privodneniia). V. G. Volovich. Moscow, Izdatel'stvo Nauka (Problemy Kosmicheskoi Biologii. Volume 30), 1976. 333 p. 1258 refs. In Russian.

The present work is concerned with the pressing problem of human survival after aircraft or spacecraft accidents requiring forced landing in an uninhabited inaccessible location under various critical climatic conditions where the victim must sustain his own existence. Particular attention is given to a description of the various physicogeographical regions on the earth, to an analysis of the features of detrimental influence of environmental factors on the human organism, and to the existing methods of protection and prevention. Survival in the Arctic, desert, jungle, and ocean is examined.

A77-25345 # Thermoregulatory responses in animals in a helium-oxygen atmosphere under elevated pressure (Termoreguliatornye reaktsii u zhivotnykh v gelio-kislorodnoj atmosfere pod povyshennym davleniem). G. V. Troshikhin and Zh. A. Donina (Akademiia Nauk SSSR, Institut Fiziologii, Leningrad, USSR). Fiziologicheskii Zhurnal SSSR, vol. 63, Jan. 1977, p. 146-149. 12 refs, In Russian.

Experiments were conducted on male Wistar rats maintained for 1 hr in an altitude chamber filled first with air at 28 C and then with a normal-oxygen-tension (0.21 kgf per sq cm) mixture of helium and oxygen under an elevated pressure of 40 kgf per sq cm at 30, 31, 32, and 33 C. The objective was to determine the range of comfortable temperatures. A stay of the rats in the helium-oxygen mixture under elevated pressure over the temperature range 31-32 C resulted in minimum increase of the gas exchange level and in constant body temperature, with a slight enhancement of muscular electrical activity as revealed by EMG. The temperature range of 31-32 C is inferred to be comfortable. Enhancement of the electrical activity of skeletal muscles, under these conditions, appears to be due to the narcotic action of helium under elevated pressure.

S.D.

A77-25416 # Response of the vestibular apparatus to prolonged caloric stimulation of the labyrinths (Reaktsii vestibuliarnogo apparata na dlitel'noe kaloricheskoe razdrazhenie labirintov). G. I. Gorgiladze. Fiziologiia Cheloveka, vol. 3, Jan.-Feb. 1977, p. 112-117. 24 refs. In Russian.

A77-25417 # Adaptation of vestibular responses to galvanic stimulation of the labyrinths (Privykanie vestibuliarnykh reaktsii na gal'vanicheskoe razdrazhenie labirintov), G. I. Gorgiladze, G. I. Samarin, and Iu. V. Kreidich, Fiziologiia Cheloveka, vol. 3, Jan.-Feb. 1977, p. 118-123, 28 refs. In Russian.

A77-25418 # Automatic control of decompression on the basis of the impedance signal of the body (Avtomaticheskoe upravlenie dekompressiei po impedansnomu signalu organizma). A. A. Shurubura, I. A. Aleksandrov, Iu. E. Zhmur, N. V. Ivanova, and A. A. Minaev (Nauchno-Issledovatel'skii Institut Skoroi Pomoshchi; Akademiia Nauk SSSR, Institut Evoliutsionnoi Fiziologii i Biokhimii, Leningrad, USSR). Fiziologiia Cheloveka, vol. 3, Jan.-Feb. 1977, p. 183-186. 10 refs. In Russian.

The study focuses on an earlier hypothesis on the development of gas bubbles in the body during decompression, whose onset is the appearance of the first bubbles in the pulmonary circulation. To ensure decompression based on this hypothesis, a device is described for automatic control of decompression on the basis of the impedance signal of the body. It is assumed that the decompression process regulated by the body is a result of the dynamics underlying the development of gas bubbles in the blood. The device is such that the impedance of the pulmonary circulation is measured with a rheograph, whose output signal is applied to a filter and an integrator. The filter is intended for isolating the invariable component of the impedance signal, while the integrator sums up the variable components of the impedance signal into an integrated variable. Results are presented for automatic decompression in terms of the impedance signal of the pulmonary circulation as related to two rabbits and one dog following a stay under a pressure of 35 kgf per sq cm for 10 hr. Highly quick-response regulation of the total volume of gas bubbles in the body is obtained, thereby providing a safe decompression.

A77-25424 # Pathophysiological mechanisms of the effect of hyperoxia on the function of the lungs in man (Patofiziologicheskie mekhanizmy vliianiia giperoksii na funktsii legkikh cheloveka). M. A. Tikhonov and E. V. Loginova. Akademiia Nauk SSSR, Izvestiia, Seriia Biologicheskaia, Jan. Feb. 1977, p. 38-43. 13 refs. In Russian.

A77-25425 # Effect of space flight factors and elevated temperatures on seeds of diploid and tetraploid buckwheat (Vliianie faktorov kosmicheskogo poleta i povyshennoi temperatury na semena diploidnoi i tetraploidnoi grechikhi). R. N. Platonova, V. P. Ol'khovenko, G. P. Parfenov, A. A. Lukin, and V. G. Chuchkin. Akademiia Nauk SSSR, Izvestiia, Seriia Biologicheskaia, Jan. Feb. 1977, p. 65-72. 23 refs. In Russian.

Cytological analysis performed on meristematic cells of seeds of diploid and autotetraploid buckwheat flown aboard the Salyut 1 spacecraft for 72 days revealed a small but significant increase in the rearrangement frequency of chromosomes in comparison with the control. This increase is due to the rearrangement of the chromosome type. After flight, stimulated germination was noted. It is suggested that the observed effects can be accounted for by temperature changes during the experiment. Experiments showed that elevated temperature may induce changes in both cytogenetic structures and in seed germination processes.

P.T.H.

A77-25629 # Investigation of the function of external respiration in flying personnel (Issledovanie funktsii vneshnego dykhaniia u letnogo sostava). V. l. Kopanev, S. N. Akimov, and I. N. Artamonov. Voenno-Meditsinskii Zhurnal, Dec. 1976, p. 61-65. In Russian.

Spirographic experiments were conducted to study the range of normal fluctuations for the indicators of external respiration in flying personnel and the functional state of the respiratory system in the case of common respiratory diseases in pilots, with particular reference to age-related changes in external respiration. Among the 78 subjects tested, 52 were healthy and 26 were afflicted with common respiratory diseases. The results can be used for professional selection and aviation physical examination purposes.

S.D.

A77-25746 # Vehicle/manipulator/packaging interaction - A synergistic approach to large erectable space system design. R. T. Mayer (General Electric Co., Re-Entry and Environmental Systems Div., Philadelphia, Pa.). In: Structures, Structural Dynamics and Materials Conference, 18th, March 21-23, 1977, and Aircraft Composites: The Emerging Methodology for Structural Assurance, San Diego, Calif., March 24, 25, 1977, Technical Papers. Volume A. New York, American Institute of Aeronautics and Astronautics, Inc., 1977, p. 176-185. (AIAA 77-394)

The position is taken that mechanical manipulators in one form or another will be employed to assemble and erect Large Space Systems in orbit. Various generic types and parameters effecting their applicability are discussed. More specifically, limitations at their current stage of development are considered and the hypothesis advanced that much can be achieved by a systematic approach which imposes restrictions and caveats on vehicle design, packaging and erection procedures which would simplify the roll of the manipulator, moderate its complexity and hasten its use. Attention is focused on the relatively near term wherein the first wave of moderate size erectable systems will be deployed and space manipulator system development is still in the exploratory stage. (Author)

A77-26052 Shuttle era waste collection. C. F. Whitaker (Rockwell International Corp., El Segundo, Calif.), R. W. Murray, and J. D. Schelkopf (General Electric Co., Fairfield, Conn.). In: Environmental technology 76; Proceedings of the Twenty-second Annual Technical Meeting, Philadelphia, Pa., April 26-28, 1976.

Mount Prospect, Ill., Institute of Environmental, Sciences, 1976, p. 257-260.

An overview of the biowaste-management techniques used in the Apollo and Skylab programs is given, the system being designed for the Shuttle Orbiter is described, and techniques that will be employed in advanced manned spacecraft are outlined. The Shuttle Orbiter waste-collector design provides for male and female astronauts who may not be specially trained, and all waste processing is automatic. Air flows are utilized to entrain and transport wastes so that phase separators are required in the waste collectors to separate the air from waste material. Future capabilities discussed include subsystems for automatic sampling and measurement of biowaste as well as an integrated waste-management system capable of water recovery through a distillation technique powered by radioisotope heaters.

A77-26074 Experiments on the locus of induced motion.
J. N. Bassili (Toronto, University, West Hill, Ontario, Canada) and J.
M. Farber (Cornell University, Ithaca, N.Y.). Perception and Psychophysics, vol. 21, no. 2, Feb. 1977, p. 157-161. 9 refs.

Two experiments examined the locus of induced motion effects. In the first used a subjective technique to test for the presence of retinal slippage due to systematic eye movements when an observer fixates a test spot in the center of a horizontally moving rectangle. The second experiment tested for 'local' retinal effects by presenting test and inducing figures dichoptically. There, was no evidence of retinal slippage under conditions where induced motion was not discriminable from real motion. Moreover, good induction was produced across eyes. Implications for the locus of induced motion effects are discussed. (Author)

A77-26101 # Nutrition hygiene for flying personnel in prolonged flights (Gigiena pitaniia letnogo sostava pri dlitel'nykh poletakh). I. G. Popov. Kosmicheskaia Biologiia i Aviakosmicheskaia Meditsina, vol. 11, Jan.-Feb. 1977, p. 3-10. 28 refs. In Russian.

Problems encountered in developing hygienically-acceptable adequate nutrition for flying personnel engaged in long-term flights since the year 1935 are outlined. Nutritive value of flight rations and methods of preserving the high quality of food during flight are stressed. Nutrition hygiene in high-altitude flights is discussed. New directions in the investigation and quality improvement of flight rations are highlighted.

A77-26102 # Long-term space flights and human habitat (Dlitel'nye kosmicheskie polety i sreda obitaniia cheloveka). O. G. Gazenko and E. la. Shepelev. Kosmicheskaia Biologiia i Aviakosmicheskaia Meditsina, vol. 11, Jan.-Feb. 1977, p. 10-13. 7 refs. In Russian.

The paper discusses the necessity of developing a habitat which would meet more adequately the human biological requirements evolving during man's adaptation to the biosphere as applied to manned space flights of long duration. Such a habitat should have additional functional effects on the physiological systems of the human organism during hypokinetic activity in space flight. Attention must be directed to a constructive analysis of environmental models for use in standardizing the physical parameters of the atmosphere, the composition of food rations, and the quality of potable water in spacecraft.

S.D.

A77-26103 # Effect of space flight on skeletal bones in rats // /light- and electron-microscopic investigation/ (O vliianii kosmicheskogo poleta na kosti skeleta krysy // Svetoopticheskoe i elektronno-mikroskopicheskoe issledovanie/). V. S. lagodovskii, L. A. Triftanidi, and G. P. Gorokhova. Kosmicheskaia Biologiia i Aviakosmicheskaia Meditsina, vol. 11, Jan.-Feb. 1977, p. 14-20. 21 refs. In Russian.

Light and electron microscopy is applied to long tubular bones in white Wistar rats examined on the 2nd postflight day after a 22-day space flight. The objective of electron microscopy of skeletal bones was to examine the submicroscopical structure of osteocytes, osteocyte cavities (lacunae), and bone substance. Moderate and 'rarely significant depletion of the spongy osseous tissue in the metaphyses is revealed, along with wide osteocyte cavities associated with perilacunar osteolysis. Histological examination of skeletal bones on the 27th postflight day showed that this time interval is insufficient to normalize the resultant changes.

S.D.

A77-26104 # Effect of space-flight factors on skeletal muscles in rats (Vliianie faktorov kosmicheskogo poleta na skeletnuiu muskulaturu krys). E. I. II'ina-Kakueva, V. V. Portugalov, and N. P. Krivenkova. Kosmicheskaia Biologiia i Aviakosmicheskaia Meditsina, vol. 11, Jan.-Feb. 1977, p. 20-25. 7 refs. In Russian.

Morphological and histochemical examinations of skeletal muscles of rats in space flight demonstrated atrophic and dystrophic developments in m. soleus, which were followed by metabolic disorders in the muscular tissue. The changes were reversible, although they did not disappear entirely on the 27th postflight day. Early signs of atrophic developments were found in m. gastrocnemius, m. quadriceps, m. extensor digitorum longus and m. biceps brachii on the 2nd postflight day. Comparative study of simultaneous data on flight and ground-based rats showed that muscular disorders developed as a result of hypodynamics and were enhanced by weightlessness. (Author)

A77-26105 # Potassium and phosphorus content and Ca-45 inclusion in bones and teeth of rats after a 22-day space flight aboard the biosatellite Cosmos 605 (Soderzhanie kal'tsiia, fosfora i vkliuchenie Ca-45 v kostiakh i zubakh krys posle 22-sutochnogo kosmicheskogo orbital'nogo poleta na korable-sputnike 'Kosmos-605'). A. A. Prokhonchukov, R. A. Tigranian, A. G. Kolesnik, L. L. Novikov, N. T. Timofeeva, N. A. Zhizhina, A. I. Volozhin, G. V. Neustroev, and V. P. Matvienko. Kosmicheskaia Biologiia i Aviakosmicheskaia Meditsina, vol. 11, Jan.-Feb. 1977, p. 26-30. 22 refs. In Russian.

A77-26106 # Influence of accelerations, additional weight load and hypokinesia on protein catabolism in the Japanese quail /Coturnix Coturnix Japonica/ (Vliianie uskorenii, dopolnitel'noi vesovoi nagruzki i gipokinezii na katabolizm belkov u perepela iaponskogo /Coturnix Coturnix Japonica/). M. Gazho, I. Iankela, V. Sabo, and K. Bodia. Kosmicheskaia Biologiia i Aviakosmicheskaia Meditsina, vol. 11, Jan.-Feb. 1977, p. 30-32. In Russian.

A77-26107 # Changes in fluid balance during prolonged hypokinesia with antiorthostatic posture (Izmeneniia vodnogo obmena pri dlitel'noi gipokinezii s antiortostaticheskim polozheniem tela). V. P. Krotov, A. A. Titov, E. A. Kovalenko, V. V. Bogomolov, L. L. Stazhadze, and V. P. Masenko. Kosmicheskaia Biologiia i Aviakosmicheskaia Meditsina, vol. 11, Jan. Feb. 1977, p. 32-37. 28 refs. In Russian.

Variations in the total content of body fluid and intravascular fluid were measured during a 49-day bedrest experiment and a 25-day recovery period. During the experiment the subjects maintained a head-down position at an angle of 4 deg. The diminished motor activity led to a decrease of the absolute and, to a greater extent, of the relative content of water in the body which was associated with intravascular losses. The major changes in fluid balance occurred during the first two weeks of bedrest, most probably due to the head-down position of the subjects. (Author)

A77-26108 # Comparative evaluation of studies of the effect of hypoxia of different levels on immunobiological status in man (Sravnitel'naia otsenka issledovanii deistviia razlichnogo urovnia gipoksii na immunobiologicheskii status cheloveka). T. N. Krupina, M. M. Korotaev, Ia. I. Pukhova, N. I. Tsyganova, N. P. Likhacheva, and M. P. Reutova. Kosmicheskaia Biologiia i Aviakosmicheskaia Meditsina, vol. 11, Jan. Feb. 1977, p. 38-43. 18 refs. In Russian.

Sixteen subjects were tested to assess the effect of hypoxic hypoxia on specific immunity factors during a 30-day stay at an altitude ranging between 2100 and 4200 m above sea level. Altitude-chamber experiments were also conducted on 28 subjects who exercised on a bicycle ergometer at different altitudes at a workload level of 450-900 kgm/min. It is shown that hypoxic hypoxia results in consistent changes in the human immunobiological status, directly correlated with the level of hypoxia. The changes include a decrease in acquired antiviral and antitoxic immunity, activation of the autoimmune process, and increase in the phagocyte activity of neutrophils.

A77-26109 # Some parameters of phosphocreatine metabolism in man during increased and decreased energy expenditures (Nekotorye pokazateli fosfokreatinovogo obmena pri povyshennykh i ponizhennykh energotratakh u cheloveka). V. V. Poliakov, A. N. Agureev, T. F. Vlasova, and A. S. Ushakov. Kosmicheskaia Biologiia i Aviakosmicheskaia Meditsina, vol. 11, Jan. Feb. 1977, p. 43-47. 13 refs. In Russian.

Changes in phosphocreatine metabolism (creatinine excretion in the urine and arginine content in plasma) were studied in 40 male subjects who performed increased or decreased work and consumed standard protein food. It was shown that there was a correlation between creatinine excretion in the urine and the content of arginine in plasma, on the one hand, and the amount of nitrogen consumed, on the other. It was also found that at increased or decreased energy

expenditures, creatinine excretion and arginine content increased. These data are indicative of changes in phosphocreatine metabolism in response to environmental effects.

(Author)

A77-26110 # Indicators of nitrogen, carbohydrate and lipid metabolism in man during prolonged stay under hyperbaric conditions (Pokazateli azotistogo, uglevodnogo i lipidnogo obmenov pri dlitel'nom prebyvanii cheloveka v usloviiakh giperbarii). V. A. Petrovykh, O. A. Shovkoplias, D. A. Mikhel'son, and E. N. Aronova. Kosmicheskaia Biologiia i Aviakosmicheskaia Meditsina, vol. 11, Jan.-Feb. 1977, p. 48-50. 8 refs. In Russian.

A77-26111 # Hemodynamics of healthy individuals under various regimes of lower body negative pressure (Gemodinamika zdorovykh liudei pri razlichnykh rezhimakh otritsatel'nogo davleniia vokrug nizhnei poloviny tela). L. la. Andriiako, V. G. Voloshin, and V. A. Degtiarev. Kosmicheskaia Biologiia i Aviakosmicheskaia Meditsina, vol. 11, Jan.-Feb. 1977, p. 50-54. 24 refs. In Russian.

An experimental study was conducted on 30 healthy male athletes lying in a recumbent position and subjected to lower body negative pressure (LBNP) ranging from 40 to 80 mm Hg. The parameters measured were the heart rate, arterial blood pressure, ventricular blood ejection, vascular tone, and other hemodynamic parameters. It is found that cardiac output stabilized, while other cardiovascular parameters underwent significant changes. Mechanisms for the development of compensatory responses under LBNP are discussed along with pertinent tolerance criteria.

A77-26112 # Motor activity of mice in a magnetic field of varying strength (Dvigatel'naia aktivnost' myshei v magnitnom pole raznoi napriazhennosti). L. A. Andrianova and N. P. Smirnova. Kosmicheskaia Biologiia i Aviakosmicheskaia Meditsina, vol. 11, Jan.-Feb. 1977, p. 54-58. 7 refs. In Russian.

Results are presented for an experimental study in which 144 mice weighing 18-23 g were exposed to a constant magnetic field of a strength ranging from 250 to 4,000 Oe and to an alternating magnetic field of 100 Oe and a frequency of 100 Hz for an exposure time varying between 10 and 30 min. The objective was to evaluate changes in motor activity in a high-strength magnetic field, with special emphasis on their dependence on magnetic field strength. It is found that the motor activity is slightly activated during exposure to a constant magnetic field of 500 Oe and immediately following exposure to a constant magnetic field. Exposure to a constant magnetic field of 1000 Oe and to the cited alternating magnetic field. Exposure to a constant magnetic field of 1000 Oe resulted in significant inhibition of the mice's motor activity.

A77-26113 # Characteristics of changes in the body state of dogs during failure of the environmental control system in a sealed chamber (Zakonomernosti izmeneniia sostoianiia organizma sobak pri vykhode iz stroia sistemy regeneratsii atmosfery v germoob'eme). E. A. Kovalenko, V. L. Popkov, N. G. Lakota, and S. L. Kantor. Kosmicheskaia Biologiia i Aviakosmicheskaia Meditsina, vol. 11, Jan.-Feb. 1977, p. 58-63. 12 refs. In Russian.

Experiments were carried out on dogs kept in a sealed chamber. Changes in the O2 and CO2 concentrations as well as variations of physiological functions, the so-called survival curves, were studied under conditions of used-up O2 supply and CO2 utilization. The criteria of investigation, mathematical and physiological analysis were chosen from the point of view of predicting hazardous states during failure of the environmental control system. Tolerance limits during slow and rapid changes of the environment, phases of changes of the body state and mechanisms of a combined effect of increasing hypercapnia and hypoxia were considered. (Author)

A77-26114 # Prevention of decompression sickness during short-term flights in a depressurized cabin at high altitudes (Preduprezhdenie vysotnoi dekompressionnoi bolezni v usloviiakh neprodolzhitel'nykh poletov v razgermetizirovannoi kabine na bol'shikh vysotakh). I. N. Cherniakov, I. V. Maksimov, and V. A. Glazkova. Kosmicheskaia Biologiia i Aviakosmicheskaia Meditsina, vol. 11, Jan.-Feb. 1977, p. 63-67. 8 refs. In Russian.

Forty altitude chamber experiments were carried out in which 18 subjects participated. The objective was to prevent decompression sickness in a pilot using a pressurized suit and an oxygen mask. It was demonstrated that oxygen breathing on the ground and at an altitude of 8 km for 20 and 50-60 min eliminated severe symptoms and lowered the frequency of occurrence of mild symptoms of decompression sickness during the subsequent 10-20 and 60-120 min exposures to altitudes of 40,000 and 11,000 m respectively. An increase in the absolute pressure to 240-290 mm Hg in the pressurized suit prevented decompression sickness symptoms at altitudes of 11,000-15,000 m and eliminated them when occurring at lower barometric pressure. (Author)

A77-26115 # State of hemopoiesis during irradiation simulating radiation exposure in prolonged space flight (Sostoianie krovetvoreniia pri obluchenii, imitiruiushchem radiatsionnoe vozdeistvie v usloviiakh dlitel'nogo kosmicheskogo poleta). T. E. Burkovskaia. Kosmicheskaia Biologiia i Aviakosmicheskaia Meditsina, vol. 11, Jan.-Feb. 1977, p. 68-73. 9 refs. In Russian.

Results are presented for studies on the peripheral blood and bone marrow in 36 male dogs exposed to 3-yr chronic gamma radiation (from Co-60 source) at a dose rate of 0.17 rad per day, combined with acute irradiations. The animals received 360 and 564 rad in total. The leukoblastic system showed inhibition and decreased reactivity in case of irradiation with a higher dose. The red blood cell balance remained stable over a long period of time due to enhanced erythropoiesis. (Author)

A77-26116 # Some personality characteristics of pilot trainees with different levels of achievement (Nekotorye osobennosti lichnosti kursantov s razlichnym urovnem letnoi uspevaemosti). N. F. Luk'ianova. Kosmicheskaia Biologiia i Aviakosmicheskaia Meditsina, vol. 11, Jan.-Feb. 1977, p. 73-77. 5 refs. In Russian.

An appropriate psychological assessment methodology is used to identify the personality features of pilot trainees with different levels of achievement in their studies. Linear discrimination analysis is applied to differentiate the groups of excellent and poor trainees on the basis of their personality features. A statistically optimal criterion is derived for quantitative prediction of progress in flight training.

S.D.

A77-26117 # Effect of electrostimulation of the hypothalamus and limbic structures on vestibulo-somatic reflexes (Vliianie elektrostimuliatsii gipotalamusa i limbicheskikh obrazovanii na vestibulo-somaticheskie refleksy). I. V. Raitses. Kosmicheskaia Biologiia i Aviakosmicheskaia Meditsina, vol. 11, Jan. Feb. 1977, p. 78-81. 8 refs. In Russian

Studies were conducted under conditions of chronic experiment on male adult rabbits with implanted electrodes in the lateral and ventromedial regions of the hypothalamus, ventral and dorsal hippocampus, and nuclei of the amygdaloid complex according to the coordinates of a stereotactic atlas. It is shown that electrostimulation of these cerebral structures, which produced different emotional and behavioral responses during preliminary tests, results in a distinct modulating effect on the vestibular (rotatory and post-rotatory) nystagmus and labyrinthine postural-tonic reflexes.

A77-26118 # Dependence of the species composition of a mixed culture of microalgae on illumination and supply rate of nutrients (Zavisimost' vidovogo sostava smeshannoi kul'tury mikrovodoroslei ot osveshchennosti i skorostei postupleniia elementov pitaniia). N. S. Abrosov and B. G. Kovrov. Kosmicheskaia Biologiia i Aviakosmicheskaia Meditsina, vol. 11, Jan.-Feb. 1977, p. 81-85. 7 refs. In Russian.

The paper is concerned with a theoretical analysis of conditions for coexistence of a few species of microalgae in a continuous polyculture, with special emphasis on methods of controlling species composition. It is shown that if the growth of some species is limited by the same nutrients, competition among species is won by the one which has the highest coefficient of adaptation to the underlying limiting factor. Dependence of the species structure of coexistence on illumination and supply rate of nutrients is demonstrated. S.D.

A77-26119 # Resonance effect of vibration on living structure of various organizational levels (Rezonansnyi effekt deistviia vibratsii na zhivye struktury razlichnykh urovnei organizatsii). S. N. Romanov. Kosmicheskaia Biologiia i Aviakosmicheskaia Meditsina, vol. 11, Jan.-Feb. 1977, p. 85-87. 6 refs. In Russian.

A77-26120 # Some indicators of natural immunity in rabbits following exposure to increased pressure for 10 days (Nekotorye pokazateli estestvennogo immuniteta u krolikov posle deistviia povyshennogo davleniia v techenie 10 sut). L. G. Ogorodnikova. Kosmicheskaia Biologiia i Aviakosmicheskaia Meditsina, vol. 11, Jan.-Feb. 1977, p. 87-89. 22 refs. In Russian.

A77-26121 # Effect of acceleration growth rate on the response of the external respiratory system (Vliianie skorosti narastaniia peregurzki na reaktsii sistemy vneshnego dykhaniia). lu. N. Kamenskii, E. B. Shul'zhenko, and V. G. Andreeva. Kosmicheskaia Biologiia i Aviakosmicheskaia Meditsina, vol. 11, Jan.-Feb. 1977, p. 89-91. 10 refs. In Russian.

Ten healthy male adults were tested on a 14.50-m diam centrifuge to assess the characteristics of the response of external respiration upon exposure to +10 g(x) accelerations—attained at different growth rates. Four acceleration growth rates were considered: 0.05, 0.1, 0.2, and 0.4 g/sec. It is found that the initial values of the ventilation parameters varied within the limits of physiological fluctuations, and that the differences between them were not significant (P greater than 0.5). The responses of external respiration occurred in the same direction in all the testing regimes. It is concluded that the response of external respiration under a stressful acceleration of +10 g(x) depends on the total time of exposure which, under otherwise identical conditions, is determined by the duration of the centrifuge acceleration.

A77-26224 # Electrical activity of the layers of an isolated cortex when falling asleep and in various stages of sleep (Elektricheskaia aktivnost' sloev izolirovannoi kory pri zasypanii i raznykh stadiiakh sna). M. Bogoslovskii and S. V. Al'bertin (Akademiia Meditsinskikh Nauk SSSR, Leningrad, USSR). Fiziologicheskii Zhurnal SSSR, vol. 62, Dec. 1976, p. 1753-1759. 10 refs. In Russian.

An experimental study was conducted on cats with isolated cortex and implanted electrodes in different layers of this isolated cortex with a view toward assessing electrical changes when falling asleep and during the various stages of sleep. It is shown that, as in the intact cortex, the first electrographic changes occur in the lower layer of the isolated cortex. Three to four months after cortex isolation, changes in the electrical activity are found to occur simultaneously in the cortex of both hemispheres during development of sleep and sequence of its stages. Awakening is found to desynchronize the electrical activity in all cortical layers of both hemispheres.

A77-26225 # Interaction of the regulatory systems for muscle-contraction thermogenesis and external respiration (Vzaimodeistvie sistem regulirovaniia sokratitel'nogo termogeneza i vneshnego dykhaniia). lu. V. Lupandin and G. I. Kuz'mina (Petrozavodskii Gosudarstvennyi Universitet, Petrozavodsk, USSR). Fiziologicheskii Zhurnal SSSR, vol. 62, Dec. 1976, 1848-1855. 25 refs. In Russian.

An experimental study was conducted on adult cats to examine the EMG of the muscles of the trunk and limbs during cold-induced shivering, with special emphasis on evaluating the effect of reflex respiratory changes on the course of cold-induced shivering. It is shown that the diaphragm and the rhythmic neuromotor units of intercostal muscles are not involved in shivering. In contrast, the static neuromotor units of intercostal muscles are found to participate in the development of cold-induced shivering. Reflex respiratory changes did not produce any significant changes in the thermoregulatory activity in the muscles of the trunk and limbs. S.D.

A77-26241 Arrhythmias documented by 24 hour continuous electrocardiographic monitoring in 50 male medical students without apparent heart disease. M. Brodsky, D. Wu, P. Denes, C. Kanakis, and K. M. Rosen (Illinois, University, Chicago, III.). American Journal of Cardiology, vol. 39, Mar. 1977, p. 390-395. 36 refs. Grant No. NIH-18794-01.

A77-26242 Transient asymptomatic S-T segment depression during daily activity. S. J. Schang, Jr. (U.S. Navy, Naval Regional Medical Center, Philadelphia, Pa.) and C. J. Pepine (Florida, University, Gainesville, Fla.). American Journal of Cardiology, vol. 39, Mar. 1977, p. 396-402. 18 refs. Research supported by the Merrell National Laboratories. Navy Project 206-612.

A77-26244 \* Computerized tomography using video recorded fluoroscopic images. A. C. Kak, C. V. Jakowatz, Jr. (Purdue University, West Lafayette, Ind.), N. A. Baily, and R. A. Keller (California, University, San Diego, Calif.). *IEEE Transactions on Biomedical Engineering*, vol. BME-24, Mar. 1977, p. 157-169. 39 refs. Contract No. F30602-75-C-0150; Grant No. NGR-05-009-257.

The use of video-recorded fluoroscopic images as input data for digital reconstruction of objects from their projections is examined. The fluoroscopic and the scanning apparatus used for the experiments are of a commercial type already in existence in most hospitals. It is shown that for beams with divergence up to about 15 deg, one can use a convolution algorithm designed for the parallel radiation case with negligible degradation both quantitatively and from a visual quality standpoint. This convolution algorithm is computationally more efficient than either the algebraic techniques or the convolution algorithms for radially diverging data. Results from studies on Lucite phantoms and a freshly sacrificed rat are included.

S.D,

A77-26267 # Stereocarotid angiography of the ophthalmic artery (Vyiavlenie glaznichnoi arterii metodom stereo-karotidnoi angiografii). I. N. Beradze (Tbilisskii Gosudarstvennyi Institut Usovershenstvovaniia Vrachei, Tiflis, Georgian SSR). Akademiia Nauk Gruzinskoi SSR, Soobshcheniia, vol. 84, Nov. 1976, p. 473-475. In Russian.

A77-26270 # New aspects of the study of the respiratory function of the blood during adaptation to hypoxia (Novye aspekty izucheniia dykhatel'noi funktsii krovi pri adaptatsii k gipoksii). Z. l. Barbashova (Akademiia Nauk SSSR, Institut Evoliutsionnoi Fiziologii i Biokhimii, Leningrad, USSR). Uspekhi Fiziologicheskikh Nauk, vol. 8, Jan.-Mar. 1977, p. 3-18. 51 refs. In Russian.

The paper examines various channels of adaptation of the respiratory function of the blood of man and animals during prolonged stay under hypoxic conditions. Possible explanations are proposed for the existing discrepancies in studies of the morphological composition of red blood and of the oxygen-transport properties of hemoglobin. The hypothesis is established that the absence of

erythrocytose during hypoxia adaptation, observed in a number of cases, by no means indicates the constancy of the oxygen volume of the blood, since in investigating the blood the number of erythrocytes and the hemoglobin content are determined only per unit volume of blood and not per unit body weight, which would be more significant.

P.T.H.

A77-26271 # The role of chemoreceptors in the adaptation of an organism to hypoxia (O roli khemoretseptorov v adaptatsii organizma k gipoksii). N. A. Agadzhanian and A. I. Elfimov. *Uspekhi Fiziologicheskikh Nauk*, vol. 8, Jan.-Mar. 1977, p. 44-54. 79 refs. In Russian.

On the basis of literature data and original results of physiological investigations performed on different kinds of animals, the fundamental role of the maintenance of afferentation from sinocarotid chemoreceptors in the adaptation of animals to oxygen deficiency in both prolonged and short-time hypoxia is revealed. The role of arterial chemoreceptors in the formation of ventilator reactions is discussed.

P.T.H.

A77-26275 A nonlinear model for the spatial characteristics of the human visual system. C. F. Hall (Southern California, University, Los Angeles, Calif.) and E. L. Hall (Tennessee, University, Knoxville, Tenn.). *IEEE Transactions on Systems, Man, and Cybernetics*, vol. SMC-7, Mar. 1977, p. 161-170. 52 refs. Contracts No. F08606-72-0008; No. F33615-77-C-1016. ARPA Order 1706.

The paper develops a mathematical model of the human visual system (HVS) which can take into account the nonlinearities associated with the spatial frequency characteristics of the system. A model consisting of a logarithmic nonlinearity followed by linear independent frequency channels is shown to be able to account for the phenomenon of brightness constancy, but this model is inconsistent with findings which indicate a distortion of signals at high, but not low, spatial frequencies. Therefore a new model is proposed, which places a low-pass filter in front of the nonlinearity. The major implication of this model is that the HVS is analogous to a variable bandwidth filter controlled by the contrast of the input image. As input contrast increases, the bandwidth decreases in an attempt to maintain maximum signal-to-noise ratio.

A77-26569 # Evoked responses of visual cortex under stimulation of hypothalamic formations (Viklikani reaktsii neironiv zorovoi kori pri stimuliatsii gipotalamichnikh utvoren'). R. R. Velikaia and V. M. Il'in (Akademiia Nauk Ukrains'koi RSR, Institut Fiziologii, Kiev, Ukrainian SSR). Fiziologichnii Zhurnal, vol. 23, Jan.-Feb. 1977, p. 28-32. 13 refs. In Ukrainian.

The effect of electric stimulation of the hypothalamus preoptic area (PA), the anterior hypothalamic areas (AHA) and mammilary bodies (MB) on the responses of visual cortex neurons to light flashes were studied in immobilized rabbits. After stimulation of AHA or MB, the neuronal responses to flashes increased, the long-latency responses being predominantly increased. The effect of PA stimulation was more complex and variable. The response changes depended on the correlation between the evoked and the background activity of the same neuron. It was mainly the short-latency response which increased. It is suggested that PA and AHA or MB affect different levels of the visual analyzer.

A77-26570 # Apparatus for transmitting physiological data (Pristrii dlia peredachi fiziologichnoi informatsii). V. S. Sautkin (Donets'kii Medichnii Institut, Donetsk, Ukrainian SSR). Fiziologichnii Zhurnal, vol. 23, Jan.-Feb. 1977, p. 129, 130. 6 refs. In Ukrainian.

The paper gives and discusses the equivalent circuit for a piece of equipment for telemetric transmission of physiological data from a human subject who is able to move freely. The circuit is based on a field effect transistor and silicon transistors. The data are transmitted by FM, and the range of the transmitter for a receiving sensitivity of 10 mV is 100 m. P.T.H.

A77-26571 # Electronic device for studying high-speed reactions (Elektronnii prilad dlia doslidzhennia shvidkisnikh reaktsii).

O. N. Lebid' and V. P. Didenko (Voroshilovgrads'kii Medichnii Institut, Voroshilovgradsk, Ukrainian SSR). Fiziologichnii Zhurnal, vol. 23, Jan.-Feb. 1977, p. 130-133. 5 refs. In Ukrainian.

A procedure is described for studying the development of artificial fatigue from the dynamics of change of the time of response reactions to arrhythmic light or sound stimuli. A special electronic device was made for this - the reflexointervalograph, with which one can induce artificial fatigue by continuous feeding of an arrhythmic stimulator with simultaneous recording of the response reactions. Experiments showed that the total time of response reactions varies in a wave-like fashion with increasing amplitude during fatigue, which can be used in quantitative estimates of artificial fatigue.

P.T.H

A77-26578 # Visual conspicuity as an external determinant of eye movements and selective attention. F. L. Engel. Eindhoven, Technische Hogeschool, Doctor in de technische Wetenschappen Thesis, 1976, 98 p. 149 refs.

Selective processes are considered along with external and internal determinants and questions related to visual conspicuity, directed attention, and retinal locus. Aspects of visual conspicuity and selective background interference in eccentric vision are discussed, taking into account stimuli and apparatus, procedures, observers, terminology, the influence of the diameter, the influence of luminance, and the combined effect of the two factors. Topics related to visual conspicuity, visual search, and fixation tendencies of the eye are explored. Attention is given to experimental details, conspicuity area determinations, spontaneous eye movements, search time, spontaneous fixations, experimental findings, processing models, the degree of visual prominence, and exploratory eye movements.

A77-26582 \* Renal electrolyte circadian rhythms - Independence from feeding and activity patterns. M. C. Moore-Ede and J. A. Herd (Harvard University, Boston and Southboro, Mass.). American Journal of Physiology, vol. 232, Feb. 1977, p. F128-F135. 34 refs. Contract No. NAS9-14249; Grants No. NIH-HL-13872; No. NIH-HL-14150.

Experiments were conducted on six unanesthetized chairacclimatized adult male squirrel monkeys (Saimiri sciureus) weighing 600-900 q to determine whether internal synchronization is the result of simple passive dependence of renal excretory rhythms on endogenous rhythms of those variable that influence electrolyte excretion such as dietary intake and muscular activity. Independence of the urinary rhythms from diurnal variations in feeding, drinking, and activity was secured by depriving the animals of food, water, and training them to perform a two-hourly schedule of feeding, drinking, and activity throughout day and night. Results indicate that the internal synchronization which is normally observed between the behavioral and urinary rhythms cannot be explained by any direct dependence of renal function on behavioral patterns. The most probable mechanism for circadian internal synchronization is that the various behavioral and renal rhythms are controlled by potentially independent separate oscillators which are normally kept in synchrony with one another.

# Page Intentionally Left Blank

### STAR ENTRIES

N77-18724\*# Baylor Univ., Houston, Tex. Immunohematology Research Lab

ANTI-IG AUTOANTIBODY AND COMPLEMENT-MEDIATED DESTRUCTION OF NEOPLASTIC CELLS Summary Report, 1 Oct. 1975 - 31 Mar. 1976

Jeremiah J. Towmey 16 Jul. 1976 23 p refs (Contract NAS9-14820)

(NASA-CR-151206) Avail: NTIS HC A02/MF A01 CSCL

.06C

Some immune response are effected through immunoglobulins (Ig), of which five classes have been recognized, namely, IgA, IgD, IgE, IgG, and IgM. Auto-antibodies associated with rheumatoid arthritis, termed rheumatoid factors (RF) react with antigenic determinants on IgG heavy chains. RF has predominant but not complete IgM specificity. This auto-antibody response was not detected in treated patients with primary brain tumors (where tissue is sequestered from the immune system by an intact bloodbrain barrier) or with multiple myeloma where humoral immunity is usually impaired. In addition, the prevalence of RF is not increased with solid tumors prior to initiation of chemotherapy or radiotherapy. It is proposed that RF is related to prior chemotherapy or radiotherapy of tumors anatomically accessible to immunologic tissues capable of antibody responses. A primary IgG response occurs, antigen-antibody complexes form, complexed IgG becomes immunologic, and an RF response results. Author

N77-18725\*# Baylor Univ., Houston, Tex. Immunohematology Research Lab

BIOPROCESSING DEVELOPMENT: IMMUNE/CELLULAR APPLICATIONS: ANTI-IG AUTOANTIBODY AND COMPLE-MENT-MEDIATED DESTRUCTION OF NEOPLASTIC CELLS Final Report, 16 Oct. 1975 - 15 Oct. 1976

Jeremiah J. Twomey 15 Nov. 1976 45 p refs

(Contract NAS9-14820)

(NASA-CR-151207) Avail: NTIS HC A03/MF A01 CSCL 06C

This space bioprocessing contract effort was comprised of four general objectives. These were: (1) the evaluation of current separation processes, (2) the identification of problems relevant to the separation of important biologicals, (3) the identification of ground-based assay methods needed for pre- and postflight analysis of space bioprocessing separation technology; and (4) the establishment of methods to determine the efficiency of space bioprocessing separation procedures. Immunology was deemed advantageous to study the diversity of cells and cell products: involved and the extensive interest being given to their separation. Upon recognition of a cellular or molecular agent as i foreign to the body, the immune system becomes activated to produce cells whose function is to destroy that agent and cell products whose function is to inactivate the agent and assist in its destruction. Long after the agent is removed from the body, some cells remain in a state of readiness to continue these destructive actions specifically against that agent should further exposure to it occur. This is the basis of acquired immunity to disease. Author

N77-18726# Hohenheim Univ., Stuttgart (West Germany). Dept. of Animal Health.

RAPID BACTERIOLOGICAL DIAGNOSIS SYSTEMS ON

PHYSICAL BASIS, NOTING SPLENIC FEVER PROOF [UNTERSUCHUNGEN UEBER BAKTERIOLOGISCHE SCHNELLDIAGNOSE-SYSTEME AUF PHYSIKALISCHER BASIS UNTER BESONDERER BERUECKSICHTIGUNG DES MILZBRAND-NACHWEISES]

Dieter Strauch Bonn DOKZENTBw 1976 175 p refs In GERMAN; ENGLISH summary Sponsored by Bundesmin, fuer Verteidigung

(BMVg-FBWT-76-15) Avail: NTIS HC A06/MF A01: DOKZENTEW DM 40

A short survey of rapid-diagnosis systems is given. Factors which might have an influence on the spectra of directfluorochromated bacteria were compiled from literature. Of the various chambers for measuring bacteria which were tested in preliminary studies, the EDER system proved to be the most effective. The optimal combination of filters for measuring with the micro-spectrograph was determined. The significance and importance of the following factors was examined: background, breadth of slot, focusing, duration of measurement, and the shape and position of the bacteria in the measuring field. Preliminary studies on infrared spectroscopy of bacteria were completed, and samples of these and of the gaschromatic experiments were prepared. Author (ESA)

N77-18727# Haskins Labs., New Haven, Conn. ALGAL METABOLITE INFLUENCE ON BLOOM SEQUENCE IN EUTROPHIED FRESHWATER PONDS Final Report Kathleen Irwin Keating Jul. 1976 159 p refs

(Grant EPA-R-801387)

(PB-258445/6; EPA-600/3-76-081)

NTIS Avail:

HC A08/MF A01 CSCL 08H

Preliminary tests indicate that the inhibition of diatom growth by blue-green algal metabolites may be widespread in freshwater lakes. When the elimination of excessive nutrient inflow is not practical, bioligical management, or programming, of blooms in eutrophied lakes should be attempted. An hypothetical plan is offered to modify the unsatisfactory conditions in one lake which would cost approximately \$500 per annum while providing a more satisfactory lake from both aesthetic and food chain points of view.

N77-18728\*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.

SPECULATIONS ON THE CONSEQUENCES TO BIOLOGY OF SPACE SHUTTLE-ASSOCIATED INCREASES IN GLOBAL UV-B RADIATION

M. M. Averner and R. D. MacElroy Jan. 1977 17 p refs (NASA-TM-X-73200; A-6896) Avail: NTIS HC A02/MF A01 CSCL 06R

Various aspects of the impact of ozone depletion on the biosphere are assessed and discussed. Speculations on the factors which determine the extent and nature of biological damage due to an increased flux of ultra violet light are presented. It is concluded that a complete assessment must consider both direct effects (organisms) as well as indirect effects (ecosystems). The role of computer simulation of ecosystem models as a predictive Author tool is examined.

N77-18729\*# Beckman Instruments, Inc., Fullerton, Calif. Advanced Technology Operations.

FEASIBILITY OF A FETAL MEASUREMENT ELECTRODE

SYSTEM Final Report Jan. 1977 25 p refs (NASA Order T-4777-E)

(NASA-CR-151175; FR-1217-101)

HC A02/MF A01 CSCL 06B

Avail: NTIS

Findings of the study are summarized and conclude that all monitoring requirements are not currently satisfied. An approach is presented to provide a multiparametric monitoring system through combinations of existing transducers. This monitoring system would be appropriate, not only for intrapartum monitoring, but also for neonatal and adult blood gas evaluations. A literature search was conducted to provide an insight into current state-of-the-art in fetal monitoring.

N77-18730\*# Martin Marietta Corp., Denver, Colo. CARDIOVASCULAR INSTRUMENTATION FOR SPACE-**FLIGHT** 

Roger T. Schappell, John T. Polhemus, and Nicholas J. Ganiaris Dec. 1976 84 p refs

(Contract NAS2-9062)

(NASA-CR-151935) Avail: NTIS HC A05/MF A01 CSCL 06B

The observation mechanisms dealing with pressure, flow, morphology, temperature, etc. are discussed. The approach taken in the performance of this study was to (1) review ground and space-flight data on cardiovascular function, including earlier related ground-based and space-flight animal studies. Mercury, Gemini, Apollo, Skylab, and recent bed-rest studies, (2) review cardiovascular measurement parameters required to assess individual performance and physiological alternations during space flight. (3) perform an instrumentation survey including a literature search as well as personal contact with the applicable investigators, (4) assess instrumentation applicability with respect to the established criteria, and (5) recommend future research and development activity. It is concluded that, for the most part, the required instrumentation technology is available but that mission-peculiar criteria will require modifications to adapt the applicable instrumentation to a space-flight configuration. Author

#### N77-18731\*# Scientific Translation Service, Santa Barbara, Calif. ULTRASTRUCTURAL AND FUNCTIONAL ANATOMY OF THE VESTIBULE

H. Spoendlin Washington NASA Mar. 1977 21 p refs Transl. into ENGLISH from Rev. Med. (France), v. 17, no. 27, 5 Jul. 1976 p 1439-1448

(Contract NASw-2791)

(NASA-TT-F-17405) Avail: NTIS HC A02/MF A01 CSCL

The elements of the vestibular apparatus comprise two groups of receptors: one for the reception of angular or rectangular acceleration, and the other, the secondary structures whose function is still little known. The vestibular receptors are so organized that they transform the physical message into electrical information of the vestibular nervous flux. This several stage Author information transfer is discussed.

N77-18732\*# Battelle Pacific Northwest Labs., Richland, Wash. Dept. of Occupational and Environmental Safety.

REGIONAL MEASUREMENT OF BODY NITROGEN Final Report, 1 Feb. - 31 Oct. 1976

H. E. Palmer 31 Oct. 1976 21 p refs

(Contract NAS9-14248)

(NASA-CR-151200) Avail: NTIS HC A02/MF A01 06P

Studies of methods for determining changes in the muscle mass of arms and legs are described. N-13 measurements were made in phantom and cadaver parts after neutron irradiation. The reproducibility in these measurements was found to be excellent and the radiation dose required to provide sufficient activation was determined. Potassium-40 measurements were made on persons who lost muscle mass due to leg injuries. It appears that K-40 measurements may provide the most accurate and convenient method for determining muscle mass changes.

N77-18733\*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.

DETECTION OF MICROBIAL INFECTION IN BLOOD AND ANTIBIOTIC DETERMINATIONS Patent Application

Christian G. Schrock (New Engl. Med. Center Hospitals), Jody W. Deming (New Engl. Med. Center Hospitals), Grace L. Picciolo, and Emmett W. Chappelle, inventors (to NASA) Filed 19 Jan. .. 1977 26 p

(NASA-Case-GSC-12045-1; US-Patent-Appl-SN-760795) Avail: NTIS HC A03/MF A01 CSCL 06B

A method for the rapid detection of bacteria in blood and quick determination of the susceptibilities of various unidentified bacteria contained in blood to one or more antibiotics is described. A bacterial adenosine triphosphate (ATP) assay is carried out after the elimination of interfering cellular elements in blood and non-bacterial ATP to determine whether an infection exists. If an infection does exist, a portion of a blood culture is further processed, including subjecting parts of the portion to one or more antibiotics. Change in bacterial ATP in the parts is determined, again by an ATP assay, to determine whether the unidentified bacteria in the sample are susceptible to the antibiotic or antibiotics under test.

N77-18734\*# Scientific Translation Service, Santa Barbara, Calif. PRINCIPLES OF AVIATION AND SPACE MEDICINE

A. A. Lavnikov Washington NASA Mar. 1977 319 p Transl. into ENGLISH of the book "Osnovy Aviats, i Kosmich, Med.," (Moscow), 1975 p 1-359 (Contract NASw-2791)

(NASA-TT-F-17511) Avail: NTIS HC A14/MF A01 CSCL 06E

The effects on the human body of various flight factors are discussed as well as the physiological and hygienic features of aircraft cockpits and breathing equipment. Special treatment is given to features of space flight. Other topics included are matters of hygiene during different climatic conditions, and safe practices in servicing aircraft and materials handling.

N77-18735# Texas Inst. for Rehabilitation and Research, Houston. Biostereometrics Lab.

MASS DISTRIBUTION OF THE HUMAN BODY USING BIOSTEREOMETRICS Final Report

R. L. Herron, J. R. Cuzzi, and J. Hugg Wright-Patterson AFB, Ohio AMRL Jun. 1976 203 p refs

(Contracts F33615-74-C-5121; DOT-HS-017-2-315-1A;

AF Proj. 7184)

(AD-A029402: AMRL-TR-75-18) NTIS Avail:

HC A10/MF A01 CSCL 06/14

Biostereometrics is the spatial and spatio-temporal analysis of biological form and function based on principles of analytic geometry. When applied to humans, it constitutes a modern

approach to anthropometry. A suitable stereometric sensor is used to locate the three dimensional coordinates of points distributed over the body surface. The coordinates serve as input to a digital computer which is programmed to yield permutations of numerical or analog (graphical or physical) outputs as the application requires. In the present study, stereophotogrammetry was used to obtain stereometric data in the form of Cartesian coordinates of six segmented human cadavers. Density data provided by the contractor (AMRL) were then used in conjunction with the stereometric data to generate mass, volume, center of mass and principal moments of inertia about the principal axes of inertia with the aid of an IBM 360-50 digital computer. This study was undertaken to further explore the viability of computing mass distribution from biostereometric data and the best available human density values. GRA

N77-18736# School of Aerospace Medicine, Brooks AFB, Tex. ENDOCRINE-METABOLIC EFFECTS IN SHORT-DURATION, HIGH-WORKLOAD MISSIONS: FEASIBILITY STUDY Final Report, Oct. 1974 - Dec. 1975

William F. Storm, Bryce O. Hartman, Gabriel P. Intano, and Gregory L. Peters Aug. 1976 13 p. refs

(AF Proj. 7930)

(AD-A030524; SAM-TR-76-30)

Avail:

NTIS:

HC A02/MF A01 CSCL 05/5

A study was conducted at the USAF Instrument Flight Center to test an augment assembly of measures for assessing the relative merits of various flight instrumentation systems. The USAF School of Aerospace Medicine (SAM) stress battery was included. Although the study was not designed so as to permit an optimized evaluation of the SAM stress battery, the following results were noted: anticipatory stress, mild flight stress, and no habituation across missions. The SAM battery appears to be a useful addition to the flight instrumentation research program. Author (GRA)

N77-18737# Illinois Univ., Urbana-Champaign. Dept. o Psychology.

THE VOCABULARY OF BRAIN POTENTIALS: INFERRING COGNITIVE EVENTS FROM BRAIN POTENTIALS IN OPERATIONAL SETTINGS Progress Report, 1 Jul. 1975

Emanuel Donchin Aug. 1976 .227 p refs (Contract N00014-76-C-0002; ARPA Order 3053; NR Proj. 201.195)

(AD-A029452) Avail: NTIS HC A11/MF A01 CSCL 05/10
This report outlines the experimental progress of the biocybernetics project in FY 1976, describes the facilities of the Cognitive Psychophysiology Laboratory, and outlines directions of current and future research. The separate components of the event related potential (ERP) are described, emphasizing the relation to task relevance, event expectancy, and information content. Also the ability to employ single trial extraction techniques for ERP classification utilizing discriminant analysis is demonstrated. Experimental reports describing these research efforts are included.

N77-18738# San Jose State Univ., Calif. Dept. of Speech-Communication.

DESCRIPTIVE COMMUNICATION STRUCTURE METRICS: A PRELIMINARY LOGICAL AND EMPIRICAL ANALYSIS Jane A. Edwards and Peter R. Monge Dec. 1975 41 p refs (Contract N00014-75-C-0445; NR Proj. 170-763) (AD-A030512; TR-4) Avail: NTIS HC A03/MF A01 CSCL 05/10

A systematic analysis of the descriptive communication structure metrics is seen as a necessary prelude to relating them in research to each other and to non-communication variables. In the absence of such an analysis research involving them would seem to run the risk of either (a) potentially misleading results, or (b) suboptimal use of data. This paper presents a logical and empirical analysis of three structural metrics used to describe the communication behavior of the individual group member. The logical portion of the analysis applies some general issues of index construction to the specific metrics under examination, and questions the utility of the individual connectedness metric for comparisons involving individuals belonging to groups of differing sizes. The empirical portion reports the results of a commonality analysis, showing the degree to which each of the metrics reflects the unique or common effects of the individual's total number of reciprocated links, the individual's total number of reciprocated within group links, the proportion of the individual:s total that are within group links and the number of people in the group to which the individual belongs. Author (GRA)

N77-18739\*# Martin Marietta Corp., Denver, Colo.
PAYLOAD CREW ACTIVITY PLANNING INTEGRATION.
TASK 2: INFLIGHT OPERATIONS AND TRAINING FOR
PAYLOADS

F. R. Hitz 23 Dec. 1976 78 p refs (Contract NAS9-14676) (NASA-CR-151187) Avail: NTIS HC A05/MF A01 CSCL 05F

The primary objectives of the Payload Crew Activity Planning Integration task were to: (1) Determine feasible, cost-effective payload crew activity planning integration methods. (2) Develop an implementation plan and guidelines for payload crew activity plan (CAP) integration between the JSC Orbiter planners and the Payload Centers. Subtask objectives and study activities were defined as: (1) Determine Crew Activity Planning Interfaces. (2) Determine Crew Activity Plan Type and Content. (3) Evaluate Automated Scheduling Tools. (4) Develop a draft Implementation Plan for Crew Activity Planning Integration. The basic guidelines were to develop a plan applicable to the Shuttle operations timeframe, utilize existing center resources and expertise as much as possible, and minimize unnecessary data exchange not directly productive in the development of the end-product timelines.

Author

N77-18740\*# Massachusetts Inst. of Tech., Cambridge. Man-Vehicle Lab.

INTEGRATION OF VISUAL AND MOTION CUES FOR FLIGHT SIMULATOR REQUIREMENTS AND RIDE QUALITY INVESTIGATION Semiannual Progress Report, Jun. - Dec. 1976

L. R. Young Dec. 1976 107 p (Grant NGR-22-009-701) (NASA-CR-149667) Avail: NTIS HC A06/MF A01 CSCL

NASA-CR-149667) Avail: NTIS HC A06/MF A01 CSC

Investigations for the improvement of flight simulators are reported. Topics include: visual cues in landing, comparison of linear and nonlinear washout filters using a model of the vestibular system, and visual vestibular interactions (yaw axis). An abstract is given for a thesis on the applications of human dynamic orientation models to motion simulation.

N77-18741\*# Life Systems, Inc., Cleveland, Ohio.
TECHNOLOGY ADVANCEMENT OF THE STATIC FEED
WATER ELECTROLYSIS PROCESS Annual Report
F. C. Jensen and F. H. Schubert, Jan. 1977, 59 p. refr.

F. C. Jensen and F. H. Schubert Jan. 1977 59 p refs (Contract NAS2-8682)

(NASA-CR-151934; LSI-ER-265-11) Avail: NTIS HC A04/MF A01 CSCL 06K

Some results are presented of a research and development program to continue the development of a method to generate oxygen for crew metabolic consumption during extended manned space flights. The concept being pursued is that of static feed water electrolysis. Specific major results of the work included: (1) completion of a 30-day electrode test using a Life Systems. Inc.-developed high performance catalyst. During startup the cell voltages were as low as 1.38 V at current densities of 108 mA/sq cm (100 ASF) and temperatures of 355 K (180 F). At the end of 30 days of testing the cell voltages were still only 1.42 V at 108 mA/sq cm. (2) determination that the Static Feed Water Electrolysis Module does not release an aerosol of the cell electrolyte into the product gas streams after a break-in period of 24 hours following a new electrolyte charge, and (3) completion of a detailed design analysis of an electrochemical Oxygen Generation Subsystem at a three-man level (4.19 kg/day (9.24 lb/day) of oxygen). Author

N77-18742# National Swedish Road and Traffic Research Inst., Linkoeping.

THE RATING AND MEASURING OF ROAD ROUGHNESS

Georg Magnusson and Peter W. Arnberg 1976 50 p refs Sponsored by Natl. Swed. Road Admin.

(VTI-83-A) Avail: NTIS HC A03/MF A01

A study has been carried out aiming, in part, to elucidate the significance of road roughness for road-users' experience of comfort and, in part, to find an objective method for measuring road roughness, giving data which are directly comparable with the road-users' experience of comfort. Thirty subjects in the preliminary experiment and forty in the main experiment rated their experience of comfort on twenty road sections representing varying degrees of smoothness to roughness conditions. The ratings were carried out in passenger cars, trucks and in a bus. Two kinds of ratings were made: an estimation of the general experience of discomfort when the road sections were compared with one another and a general estimation of what was considered to be an acceptable level of discomfort in different specified situations (e.g., on different types of roads, while traveling at different speeds, and while traveling for different lengths of time). The results of the ratings were partly used to evaluate the appropriateness of the ISO comfort standard in connection with road use and partly to evaluate four different kinds of road meters. Three of the four road meters which were used produced results well in accordance with the results from the subjective ratings. Due to measuring and evaluating techniques, however, only one of these can be recommended for more extensive measurements involving road building and road maintenance.

Author (ESA)

N77-18743# Institut fuer Informationsverarbeitung in Technik und Biologie, Karlsruhe (West Germany).

PERFORMANCE OF AN OBSERVER IN REAL TIME RECONNAISSANCE [UNTERSUCHUNG DER LEISTUNGSFAEHIGKEIT EINES BEOBACHTERS BEI ECHTZEITAUF-KLAERUNG]

Alwin Guedesen and Hans Joachim Reinig Bonn DOKZENTBw 1976 132 p refs in GERMAN; ENGLISH summary Sponsored by Bundesmin, fuer Verteidigung

(BMVg-FBWT-76-5) Avail: NTIS HC A07/MF A01: DOKZENTBW DM 40

TV-operator efficiency in real time reconnaissance missions was investigated. Efficiency is defined as recognition error rate and recognition time. Both variables depend on various parameters of which the most important were examined. Those are picture resolution, influence of contrast, and disturbing backgrounds. Quantitative results and influences of parameters on operator efficiency are presented graphically. Recognition experiments were carried out by 20 untrained test persons. Their increasing performance by continuous training is considerable. This was studied quantitatively. Experiments were started using fixed scenes first. The influence of moving pictures on operator efficiency was also studied. No decrease in efficiency is obtained if objects are presented on a TV screen at least one second. The results obtained are discussed in regard to reconnaissance missions by remotely piloted vehicles. The dependence between recognition results and flight parameters was studied and is presented graphically. Author (ESA)

N77-18744# National Aerospace Lab., Amsterdam (Netherlands) Flight Div

HUMAN PILOT DESCRIBING FUNCTION, REMNANT AND ASSOCIATED INFORMATION FOR PITCH ATTITUDE CONTROL: RESULTS FROM IN-FLIGHT AND GROUND-BASED TRACKING EXPERIMENTS

M. F. C. VanGool and H. A. Mooij Sep. 1975 86 p refs refs HCA05/MF A01 (Contract NIVR-RB-1745)

(NLR-TR-75062-U) Avail: NTIS

Servo-analysis techniques, using mathematical models of human control behavior, are effectively used in studies of the system formed by the human pilot and the flight control system/aircraft combination. Measurement and data analysis techniques for the determination of pilot describing function, remnant, and associated information needed in servo-analysis, are described. Results obtained from three compensatory tracking

experiments (in-flight and ground based) are presented. Comparisons with results of similar investigations, published in the literature, are made.

Author (ESA)

N77-18745# National Aerospace Lab., Amsterdam (Netherlands). Flight Div.

INVESTIGATION ON A PASSENGER RIDE-COMFORT IMPROVEMENT SYSTEM WITH LIMITED CONTROL SURFACE ACTUATOR PERFORMANCE FOR A FLEXIBLE AIRCRAFT

L. J. J. Erkelens and J. Schuring 28 Nov. 1975 85 p refs (Contract NIVR-1752)

(NLR-TR-75140-U) Avail: NTIS HC A05/MF A01

For the low wing-loading aircraft, considered in this investigation, vertical acceleration appeared to be an important factor concerning passenger comfort. To reduce vertical motions, a ride-comfort improvement system was introduced. Determination of parameters of the system, like gains and allowable performance limitations, required analog simulation because of strong nonlinearities. Symmetric aircraft dynamics, ride-comfort improvement system, and atmospheric turbulence were represented by mathematical models. The aircraft's model consisted of two rigid body and three structural modes. The ride-comfort improvement system comprised fast-moving auxiliary flaps, over the entire flap span, commanded by a vertical acceleration sensor. The driving actuators were subject to acceleration, rate, and displacement limits. Vertical atmospheric turbulence was modelled according to the Dryden spectrum. A phugoid instability, appearing in the simulation, required a simple attitude-hold system. A more serious problem was posed by a limit cycle instability due to interference of the wing bending mode with the actuator rate limitation. Decoupling of wing bending motion and flap action was provided by relocation of the acceleration sensor. An optimization of the ride-comfort improvement system was carried out by means of parameter variation and resulted in a satisfactory performance. Reductions in vertical acceleration up to about 50% were obtained, in heavy turbulence, realistic actuator characteristics being included. Author (ESA)

N77-18746# Royal Aircraft Establishment, Farnborough (England)

THE EFFECTS OF 3 HOURS OF VERTICAL VIBRATION AT 5 Hz ON THE PERFORMANCE OF SOME TASKS

R. Gray, R. T. Wilkinson, K. R. Maslen, and G. F. Rowlands Jan. 1976  $\,$  66  $\,$  p  $\,$  refs

(RAE-TR-76011; BR52057) Avail: NTIS HC A04/MF A01 A laboratory experiment was conducted to investigate the effect on eight subjects of 3-hour exposures to vertical vibration. and to compare the results with the recommendations for maintaining efficiency of the international standard ISO 2631: Guide for the evaluation of human exposure to whole-body vibration. The vibration used was 5 Hz vertical, with an acceleration level of 1.2 m/sq sec rms, corresponding to the ISO recommended maximum durations of 1 hour for fatigue decreased proficiency and 3 hours for safe exposure. The duration of each session was approximately 3 hours, and four series of four sessions were conducted using two subjects at a time. Four tasks were used, audio vigilance, visual search, compensatory tracking by hand and handwriting. Effects on sight and hearing were checked at the beginning and end of each session. Based on average results, little evidence was found to support the timedependency of the limits specified for 5 Hz in the international standard in that little fatigue effect was discovered. There was, however, an immediate appreciable decrement in performance of three out of the four tasks as a direct effect of the vibration, suggesting that the short-term nominal limit specified (2.8 m/sq sec rms for 1-4 min) is too high, for the particular Author (ESA) tasks used.

N77-18747# Navy Experimental Diving Unit, Panama City, Fla. MODIFIED COLLINS PEDAL-MODE ERGOMETER: DEVEL-OPMENT AND MEDICAL TESTS Technical Report, 1971 -

Thomas W. James 15 Jun. 1976 51 p (AD-A028355; NEDU-1-76) Avail: NTIS HC A04/MF A01 CSCL 06/12

Modifications made to the Collins Pedal-Mode Ergometer by NEDU and Battelle from 1971 to 1975 are described, along with a discussion of two predecessor ergometers used by NEDU from the mid 1950's to roughly 1970. Modifications to the commercially available Collins ergometer were performed in order to make the unit watertight and suitable for use at high ambient pressures. This work was accomplished in two phases: first, by NEDU for 1971 to 1972 and later by Battelle from 1973 to 1975. Battelle's final design featured a completely redesigned housing, Bal-Seals and a stainless steel shaft. Medical test conducted with the prototype and final designs are summarized, highlighting the importance of a standard, reliable ergometer in imposing specific diver workloads for a wide array of NEDU equipment and physiological tests. Information on the ergometer control unit, bicycle frames and calibration unit is also provided.

N77-18748# Michigan Univ., Ann Arbor. Highway Safety Research Inst.

AN EVALUATION OF THE 1974 AND 1975 RESTRAINT SYSTEMS Special Report, Jan. 1974 - May 1976

Robert E. Scott, Jairus D. Flora, and Joseph C. Marsh, IV May 1976 178 p refs Sponsored by the Motor Vehicle Manufacturers Assoc. of the US, Inc.,

(PB-258585/9; UM-HSRI-76-13) Avail: HC A09/MF A01 CSCL 13F

Restraint systems in cars demonstrated a substantial capability to reduce the incidence of moderate or worse injury when they were used. Lap belts alone reduce the probability 27% compared to no restraint. The lap and upper torso belts together reduce the probability 21%, compared to no restraint.

N77-18749# Sierra Engineering Co., Sierra Madre, Calif. ANTHROPOMETRIC TEST DUMMY, MODEL 825-50, DESIGN, DEVELOPMENT AND PERFORMANCE Final Report, 1 Dec. 1972 - 28 Feb. 1975

J. L. Roshala Aug. 1976 245 p (Contract DOT-HS-254-3-568)

(PB-257179/2; TR-825-900; DOT-HS-801-971) Avail: NTIS HC A11/MF A01 CSCL 13F

The development, manufacture, testing, and evaluation of two (2) 50th percentile male anthropomorphic test dummies are outlined. The objective was to develop a test dummy which could be used for compliance tests with appropriate Federal Motor Vehicle Safety Standards in the evaluation of protection systems for vehicle occupants during real and simulated impact conditions. A further objective was to generate a corresponding test dummy data package which could be made available to any source interested in manufacturing, checking, comparing with other dummy configurations and otherwise verifying the accuracy and precision of the various details.

N77-18750# Hughes Aircraft Co., Culver City, Calif. Dept. of Display Systems and Human Factors.

HUMAN PERFORMANCE EVALUATION OF MATRIX DISPLAYS: LITERATURE AND TECHNOLOGY REVIEW Final Technical Report, Apr. 1974 - Sep. 1975

L. A. Scanlan and W. L. Carel Jun. 1976 205 p refs

(Contract F33615-74-C-4083; AF Proj. 7184)

(AD-A029932; HAC-P75-468; HAC-D1755) Avail: NTIS HC A10/MF A01 CSCL 09/5

In recent years a number of different types of flat-panel displays have been developed which utilize large arrays of discrete display elements for the presentation of symbolic and sensor information. These displays offer several advantages over the conventional cathode ray tube, including reductions in display volume, weight, and power requirements. Included in this class of matrix displays are light emitting diode (LED) arrays, flat panel cathode ray tubes (e.g., the Digisplay). AC plasma and liquid crystal displays. This spectrum of displays allows the designer a new freedom in selecting the most appropriate display type for a given task and environment. To make such decisions successfully, designers need data relating specific display design parameters to measures of system performance. The most critical information that a designer needs concerns those parameters that affect the performance of the operator using the displays. The operator must be able to obtain from the display the information he needs to perform his task(s), to some minimum level of acceptability, under the poorest expected operational circumstances. Little of the mass of literature on display design parameters and human performance research has been oriented to this new class of matrix displays.

N77-18751# Johns Hopkins Univ., Baltimore, Md. Dept. of Psychology.

# CONDITIONS FOR IMPROVING VISUAL INFORMATION **PROCESSING Final Report**

Howard E. Egeth 31 Aug. 1976 20 p refs (Contract N00014-67-A-0163-0012; NR Proj. 197-017) (AD-A030425; TR-88) Avail: NTIS HC A02/MF A02 05/5

The mission of this contract was to determine how performance in information processing tasks may be optimized. The research spanned five major topics: 1. Performance in visual search and detection tasks. These studies have demonstrated substantial capacity for parallel processing of display elements. 2. Perceptualizing data displays. The use of some unconventional formats for the representation of complex sets of data has been explored. 3. Selective attention. This research on attention is consistent with the notion that attention does not operate at the earliest stages (sensory or perceptual) of information processing, but is restricted to later stages such as memory scanning or response selection. 4. Factors affecting stimulus comparison. The major findings have to do with strategies for comparing stimuli. 5. Short-term memory. Two .experiments examined factors that affect the retrieval of well-learned items (digits) from short-term memory. GRA

N77-18752# Johns Hopkins Univ., Baltimore, Md. Psychology. CONDITIONS FOR IMPROVING VISUAL INFORMATION

# PROCESSING

Howard E. Egeth, H. H. Brownell, L. C. Sager, A. Caramazza, P. Sommers, L. D. Geoffrion, G. C. Gilmore, and P. Whitehouse Aug. 1976 51 p refs

(Contract N00014-67-A-0163-0012; NR Proj. 197-017) (AD-A029898; TR-84; TR-85; TR-86; TR-87) Avail: NTIS HC A04/MF A01 CSCL 05/10

Four experiments concerned with human information processing are reported. In TR 84 the authors test the proposal that the comparison of a pair of stimuli may in certain circumstances be mediated by the detection of overall vertical symmetry of the pair. The data do not support the conjecture. In TR 85 the authors analyze the frequently reported 'dominance' of visual stimuli over auditory stimuli and find the effect to be nonsensory in origin. In TR 86 the authors apply an incidental memory paradigm in the context of a visual search task to try to determine if processing is exhaustive or self-terminating during search. In TR 87 the authors examine the spatial limits of the ability to attend to relevant information and ignore nearby irrelevant information GRA

N77-18753# Defense Documentation Center, Alexandria, Va. PERFORMANCE MEASUREMENTS Report Bibliography, May 1961 - Apr. 1976 Sep. 1976 549 p refs

(AD-A029850; DDC/BIB-76/08) Avail: NTIS

HC A23/MF A01 CSCL 05/10

This bibliography contains studies which aid in measuring and assessing data relevant to human performance. Training devices, aptitude and achievement tests, special clothing and equipment are all employed to establish the criteria used in these studies. There are also references on environmental, physical and stress factors, which not only evaluate performance, but under certain conditions may predict it. Corporate Author-Monitoring Agency, Subject, Title and Personal Author are provided.

N77-18754# Anacapa Sciences, Inc., Santa Barbara, Calif.
AIRCREW TRAINING REQUIREMENTS FOR NAP-OF-THEEARTH FLIGHT Final Report

Charles A. Gainer and Dennis J. Sullivan Aug. 1976 57 p refs

(Contract DAHC19-73-C-0059; DA Proj. 2Q1-62107-A-745; DA Proj. 2Q7-64715-A-757)

(AD-A030420; ARI-RR-1190; Rept-203-1) Avail: NTIS HC A04/MF A01 CSCL 05/9

In nap-of-the-earth (NOE) flight a helicopter moves at less than treetop height and at variable airspeeds, using natural features for concealment--a dangerous procedure requiring great skill in flying and in navigation. This report identifies specific areas in which NOE training might be improved. Information from agencies and operational units provided data for analysis of NOE mission requirements, aircrew task analyses, and performance requirements for emergencies. Training objectives derived from the analyses were verified, compared with existing NOE training programs, and used to suggest improvements. Problems in navigation and orientation are the major hazard in NOE flight, and training improvements should concentrate in these areas. Suggestions for ground-based training aids are visual (cinematic) simulation, a map-interpretation manual for NOE use, and techniques of ground-level orienteering. Suggestions for flightbased training are procedures such as more practice in reorientation, equipment such as map displays, and policies such as flying over more varied terrain. Results of the analyses were validated by ARI's field research program and used as the basis for developing the experimental Map Interpretation Terrain Analysis Course (MITAC) now being evaluated at the Army Aviation School, Fort Rucker, Alabama.

N77-18755# Air Force Human Resources Lab., Brooks AFB,

ADVANCED SIMULATION IN UNDERGRADUATE PILOT TRAINING: AN OVERVIEW Final Report, Mar. 1971 - Jul. 1975

Don R. Gum, William B. Albery, and James D. Basinger Dec. 1975 28 p refs

(AF Proj. 1192)

(AD-A030224: AFHRL-TR-75-59(1)) Avail: NTIS HC A03/MF A01 CSCL 05/9

An overview of the entire Advanced Simulation in Undergraduate Pilot Training (ASUPT) program is presented to provide the reader with a general introduction to the research system. The three major components of the ASUPT are summarized, including the basic simulators, visual displays, and computer image generation (CIG) system, and interested readers are referenced to the six other volumes of this technical report for more specific and detailed information. This volume touches upon the highlights of the ASUPT design, development, and testing and includes the general progress of the program from its genesis in 1967 to the final acceptance of the simulator in January 1975. GRA

N77-18756# Kaman Sciences Corp., Colorado Springs, Colo.
STATIC EVALUATION OF AIR CUSHION DEPLOYMENT
EFFECTS ON THE MEMORY RETENTION OF THE SOLID
STATE DIGITAL RECORDER SYSTEM Final Report

Sep. 1976 29 p ref

(Contract DOT-NHTSA-6-5377)

(PB-259006/5; K-76-64U(R); DOT-HS-802-040) Avail: NTIS HC A03/MF A01 CSCL 13F

A part 572 anthropomorphic dummy containing the solid state digital recorder was subjected to static laboratory air cushion inflation test series. It was determined that over the range of conditions tested, no interaction of electric and magnetic fields

generated during the inflation required and the dummy's recorder system occurred. Voltage measurements on and near the air cushion during the inflation required were also made. GRA

N77-18757# Construction Engineering Research Lab. (Army), Champaign, III.

CONCEPTUALIZATION OF HABITABILITY EXPRESSIONS FOR THE HABITABILITY DATA BASE Interim Report T. A. Davis Aug. 1976 62 p refs

(DA Proj. 4A7-62719-AT-03)

(AD-A029661; CERL-TR-D-68) Avail: NTIS HC A04/MF A01 CSCL 13/13

Habitability is defined and documents containing statements on habitability are identified within the context of the Corps of Engineers facility delivery process. This process is described as a cycle of events that includes master planning, construction programming, project development, design, and construction. Three generic and ten specific habitability expressions are conceptualized which relate properties of occupant activities (physical, physiological, and mental) to properties of facilities (dimensions of length, width, light and sound levels, temperature, etc.). Three expressions of cost-effectiveness are conceptualized as ratios of the dollar cost of a facility, facility property, or property categories divided by units of occupant needs for health, safety, performance and satisfactions. Structural, content, and technical assumptions are given, and data categories are defined by example. Further steps toward the development of prototype expressions are outlined. Author (GRA)

N77-19729\*# Alcorn State Univ., Lorman, Miss. Dept. of Biological Sciences.

BIO-GAS PRODUCTION FROM ALLIGATOR WEEDS Semiannual Report

Abdul Latif 1 Jun. 1976 11 p

(Grant NsG-8036)

(NASA-CR-149809) Avail: NTIS HC A02/MF A01 CSCL 06C

Laboratory experiments were conducted to study the effect of temperature, sample preparation, reducing agents, light intensity and pH of the media, on bio-gas and methane production from the microbial anaerobic decomposition of alligator weeds (Alternanthera philoxeroides. Efforts were also made for the isolation and characterization of the methanogenic bacteria.

Author

N77-19730# Florida Univ., Gainesville. Water Resources

INTERRELATIONSHIPS BETWEEN CERTAIN MICROOR-GANISMS AND SOME ASPECTS OF SEDIMENT-WATER NUTRIENT EXCHANGE IN TWO BAYOU ESTUARIES, PHASE 1 AND 2

Gerald A. Moshiri (West Florida Univ.) 12 Jul. 1976 50 p

(Contracts DI-14-31-0001-5065)

(PB-259538/7; WRRC-Pub-37; W77-00674) Avail: NTIS HC A03/MF A01 CSCL 13B

Over a two-year period, certain aspects of nutrient exchange and regeneration were studied as related to major physical, chemical, and microbial parameters in two bayou estuaries. Sediment to water phosphate PO4(-3) exchange was affected by dissolved oxygen concentrations in both systems, but Eh effects of oxygen depletion on PO4(-3) exchange kinetics differed in the two bayous. Sediment Eh profiles followed a temporal pattern perhaps related to the bacterial activity. Glucose concentrations and uptake were monitored as related to possible sources and utilizers respectively.

N77-19731# Advisory Group for Aerospace Research and Development, Paris (France).

RECENT ADVANCES IN SPACE MEDICINE

J. Colin, ed. Jan. 1977 113 p refs in ENGLISH; partly in FRENCH Conf. Proc of the Aerospace Medical Panel Specialists' Meeting, Athens, 20-24 Sep. 1976 (AGARD-CP-203; ISBN-92-835-0186-1)

(AGARD-CP-203; HC A06/MF A01

Some of the topics discussed are: the effect of free fall on ... the vestibular organ and of its post flight readaptation as part of the shuttle program; successful transfer of adaptation aquired in a slow rotation room to motion environments in Navy flight training; environmental investigations on motion sickness susceptibility; and space mission simulation. The significance of physical fitness in selection and training of spacelab crews; and the psychometric characteristics of astronauts are also reviewed.

N77-19732# Milan Univ. (Italy).

INVESTIGATION OF THE EFFECT OF FREE FALL ON THE VESTIBULAR ORGAN AND OF ITS POST-FLIGHT READAP-TATION AS PART OF THE SHUTTLE PROGRAM: CONTRIBUTION TO BASIC VESTIBULAR PHYSIOLOGY AND TO THE PROBLEM OF SPACE SICKNESS

Torquato Gualtierotti In AGARD Recent Advances in Space Medicine Jan. 1977 7 p refs

Avail: NTIS HC A06/MF A01

Basic vestibular physiology and the problem of space sickness was reviewed. A space experiment monitoring the single vestibular statoreceptors output indicated important reversible and unreversible changes. The significance of such changes is discussed Author

N77-19733\*# Naval Aerospace Medical Research Lab., Pensacola, Fla.

SUCCESSFUL TRANSFER OF ADAPTATION ENVIRON-MENTS IN NAVY FLIGHT TRAINING

D. B. Cramer, A. Graybiel, and W. J. Oosterveld. In AGARD Recent Advances in Space Medicine Jan. 1977 5 p refs Sponsored by NASA

Avail: NTIS HC A06/MF A01

Two flight students, grounded for the reason they were highly susceptible to motion sickness, completed their training after gradually adapting 10 rpm, achieved by executing head movements during small stepwise increases in angular velocity. Subject 1 executed a total of about 77,000 head movements within a period of five months and Subject 2 executed about 108,000 head movements within a period of 42 days. The transfer of the adaptation acquired in the laboratory to most motion environments aloft was good; the notable exception involved weightless maneuvers in the case of Subject 1. Both were on flight status when contacted recently. The current motion sickness susceptibility in Subject 1 in the fall of 1975 was assessed. He reached a (mild) motion sickness endpoint, in the rotating room, at 17 rpm; the average endpoint is 7 to 8 rpm. Some practical and theoretical implications are discussed. Author

N77-19734# Air Force Inst. of Aviation Medicine, Fuerstenfeldbruck (West Germany).

EXPERIMENTAL INVESTIGATIONS ON MOTION SICKNESS SUSCEPTIBILITY

W. Hoffelt In AGARD Recent Advances in Space Medicine Jan. 1977 5 p refs

Avail: NTIS HC A06/MF A01

The sensory conflict theory formulated by REASON was experimentally examined with psychological and sensoryphysiological methods in two groups differing in their resistencetowards coriolis accelerations. In all tests applied both groups showed consistent behavioral differences which may be interpreted in the sense of the conflict theory. Author

N77-19735# Air Force Inst. of Aviation Medicine, Fuerstenfeldbruck (West Germany).

SPACE MISSION TRAINING: A NECESSARY ELEMENT IN PLANNING AND TRAINING FOR SHUTTLE SPACELAB MISSIONS

Eduard C. Burchard In AGARD Recent Advances in Space Medicine Jan. 1977 13 p

Avail: NTIS HC A06/MF A01

In an attempt during the last 2 years to evaluate space mission simulations, two shuttle spacelab simulations were performed at the NASA Lyndon B. Johnson Space Center. The first spacelab mission simulation provided valuable insights into the many Shuttle Spacelab Operations which were not necessarily payload dependent. Two crewmen, free of Orbiter duties, acted as mission specialist and payload specialists to operate 12 typical life sciences experiments on one shift schedule. The second spacelab mission simultion involved one mission specialist and two payload specialists in a 7-day multidiscipline simulation which included 20 life sciences experiments and one cosmic ray laboratory experiment. The use of space mission simulations in preparation for Shuttle Spacelab Missions is discussed. Author

N77-19736# Deutsche Forschungs- und Versuchsanstalt fuer Luft- und Raumfahrt, Bad Godesberg (West Germany). fuer Flugmedizin.

NEUTRAL BUOYANCY: ONE POSSIBLE TOOL FOR MAN'S TRAINING IN A SIMULATED ZERO-G ENVIRONMENT

Heinz Öser In AGARD Recent Advances in Space Medicine Jan. 1977 5 p refs

Avail: NTIS HC A06/MF A01

In order to get the payload specialists well prepared for performing their tasks under space conditions in a resonable time, the water immersion technique for simulating certain aspects of zero and partial gravity condition is amongst others one possible tool. The water immersion technique was used mainly for three purposes: (1) studying physiological responses to weightlessness, (2) evaluating human performance under quasi weightless conditions, and (3) testing equipment, facilities and simulation techniques. Author

N77-19737# Erno Raumfahrttechnik G.m.b.H., Bremen (West Germany).

HUMAN ENGINEERING: CREW SYSTEMS TOOL FOR SPACELAB DESIGN

Udo G. Munkelt (McDonnell-Douglas Corp., St. Louis) and Harold S. Jencks (McDonnell-Douglas Corp., St. Louis) In AGARD Recent Advances in Space Medicine Jan. 1977 9 p refs

Avail: NTIS HC A06

The space shuttle spacelab system is described with emphasis on crew accommodation/utilization. The artificially supplied internal environment is discussed which provides for the well being of the crew in the hostile surroundings of space including atmosphere, temperature, lighting and noise. The interior arrangement of spacelab showing architectural considerations which essentially provide a one - G oriented concept in respect to work stations, display control consoles, floor, ceiling, etc., minimizing disorientation and faciliting ground operations is explained. The restraint systems are cited which enable the crewman not only to overcome the negative aspects of working in zero - G, but also to take advantage of the positive aspects. Several photos and sketches are provided showing full scale Mockups and neutral buoyancy test fixtures which support the human engineering considerations in Spacelab design/ development. Author

N77-19738\*# Royal Air Force Inst. of Aviation Medicine, Farnborough (England).

THE EFFECTS OF PROLONGED SPACEFLIGHT ON THE

# REGIONAL DISTRIBUTION OF FLUID, MUSCLE AND FAT: BIOSTEREOMETRIC RESULTS FROM SKYLAB

M. W. Whittle, R. E. Herron (Texas Inst. for Rehabilitation and Res., Houston), J. R. Cuzzi (Texas Inst. for Rehabilitation and Res., Houston), and C. W. Keys (Technology Inc., Houston) In AGARD Recent Advances in Space Medicine Jan. 1977 5 prefs

(Contract NAS9-11604)

Avail: NTIS HC A06/MF A01

Biostereometric analysis of body form was performed several times preflight and postflight on the astronauts of all three skylab flights. The analysis was made by deriving the three-dimensional coordinates of numerous points on the body surface from stereoscopic pairs of photographs of the subject, using a stereoplotter. The volume of segments of the body, and of the body as a whole, was calculated by integration of cross sectional areas derived from the coordinate data. All nine astronauts demonstrated regional changes in volume distribution which could be related to changes in total body water, muscle mass, and fat deposits. The change in water resulted from a redistribution of fluid in response to zero gravity. Changes in muscle mass resulted from an alternation in patterns of musclar activity in the absence of gravity, and changes in fat resulted from discrepancies between the individual's caloric needs and his food consumption. Author

N77-19739# Air Force Inst. of Aviation Medicine, Fuerstenfeld-bruck (West Germany).

OPHTHALMOLOGICAL REQUIREMENTS FOR SPACELAB ASTRONAUT-SCIENTISTS

F. J. Dauman In AGARD Recent Advances in Space Medicine Jan. 1977 6 p refs 10-51)

Avail: NTIS HC A06/MF A01

Ophthalmological requirements for visual acuity, field of vision, binocular vision, accommodation, color vision, and equilibrium of eye muscles are presented from an occupational medical point of view. Correction of visual deficiencies by means of glasses and contact lenses is discussed. The necessity of full visual field, binocular vision, dark adaptation and color vision is stressed. Next, anomalies and diseases compatible with the stresses of a payload-specialist and those causing rejection are covered.

Author

N77-19740# Deutsche Forschungs- und Versuchsanstalt fuer Luft- und Raumfahrt, Bad Godesberg (West Germany). Inst. fuer Flugmedizin.

ATHLETIC ENDURANCE TRAINING: ADVANTAGE FOR SPACE FLIGHTS? THE SIGNIFICANCE OF PHYSICAL FITNESS FOR SELECTION AND TRAINING OF SPACELAB CREWS

K. E. Klein, H. M. Wegmann, and P. Kuklinski *In* AGARD Recent Advances in Space Medicine Jan. 1977 13 p refs

Avail: NTIS HC A06/MF A01

The morphological and functional changes obtained with an athletic endurance training are rather specific, and not at all, of general advanatage for the tolerance to space stresses. In particular during gravitational loads they allow a higher shift of fluid into the lower extremities with the possible consequence of a reduced tolerance. This response obviously, is accentuated through immersion and weightlessness; also, the aerobic work capacity is more impaired.

N77-19741# School of Aerospace Medicine, Brooks AFB, Tex. PSYCHOMETRIC CHARACTERISTICS OF ASTRONAUTS
Bryce O. Hartman and Richard C. McNee In AGARD Recent Advances in Space Medicine Jan. 1977 9 p refs

Avail: NTIS HC A06/MF A01

Detailed information on the role of psychological testing in the selection process for NASA astronauts is reported. Because of the current activity in the European space agency, where there is a requirement for astronaut selection, psychometric procedures and data are of renewed scientific interest. An overview of the psychometric process and extensive statistical analyses are reported.

Author

N77-19742# Deutsche Forschungs- und Versuchsanstalt fuer Luft- und Raumfahrt, Hamburg (West Germany). Inst. fuer Flugmedizin.

PSYCHOLOGICAL SELECTION OF ASTRONAUT-SCIENTISTS (PAYLOAD SPECIALISTS)

Klaus-Martin Goeters *In* AGARD Recent Advances in Space Medicine Jan. 1977 5 p refs

Avail: NTIS HC A06/MF A01

Psychological testing of spacelab-payload specialists is mandatory. Astronaut-scientists characteristics were discussed: (1) High basic technical comprehension and practical skills, (2) high motivation, (3) adequate group behavior, and (4) emotional maturity and stress resistence. The significance of these psychological factors for working in confinement are demonstrated by experimental results.

N77-19743# Royal Air Force Inst. of Aviation Medicine, Farnborough (England).

# EXPERIMENTAL BASIS FOR THE USE OF HYPNOTICS BY AEROSPACE CREWS

A. N. Nicholson, R. G. Borland, Coral H. Clarke, and Barbara M. Stone In AGARD Recent Advances in Space Medicine Jan. 1977 11 p refs

Avail: NTIS HC A06/MF A01

The work which was carried out at the Royal Air Force Institute of Aviation Medicine on the immediate and residual effects of hypnotics on performance, the effectiveness of hypnotics, and the problems associated with the use of hypnotics at unusual times of the day is reviewed.

N77-19744\* National Aeronautics and Space Administration, Washington, D.C.

SPACE AGE HEATLH CARE DELIVERY

Walter L. Jones *In AGARD* Recent Advances in Space Medicine Jan. 1977 9 p refs

Avail: NTIS HC A06/MF A01 CSCL 06E

Space age health care delivery is being delivered to both NASA astronauts and employees with primary emphasis on preventive medicine. The program relies heavily on comprehensive health physical exams, health education, screening programs and physical fitness programs. Medical data from the program is stored in a computer bank so epidemiological significance can be established and better procedures can be obtained. Besides health care delivery to the NASA population, NASA is working with HEW on a telemedicine project STARPAHC, applying space technology to provide health care delivery to remotely located populations.

N77-19746\*# Methodist Hospital, Houston, Tex.
AUTOMATED ELECTROENCEPHALOGRAPHY SYSTEM
AND ELECTROENCEPHALOGRAPHIC CORRELATES OF
SPACE MOTION SICKNESS, PART 3 Final Report
James D. Frost, Jr. 15 Feb. 1977 179 p refs
(Contract NAS9-13870)

(NASA-CR-151210) Avail: NTIS HC A09/MF A01 CSCL

Computer quantification methods were used to analyze the Skylab electroencephalographic data obtained during the course of the M133 series of experiments. This undertaking was prompted by initial observations made during visual analysis of the tape-recorded sleep records where there appeared to be an increase of the alpha-rhythm frequency during some inflight recording sessions, as compared to preflight baseline observations. A number of potential etiological factors are identified and their various possible influences discussed. The presence of the zero-g state is thought to be an important factor, possibly influencing EEG through alteration of vestibular function and/or

by producing fluid shifts secondary to loss of hydrostatic pressure.

N77-19747\*# Technology, Inc., Houston, Tex. Life Sciences

# SYSTOLIC TIME INTERVAL DATA ACQUISITION SYSTEM. SPECIALIZED CARDIOVASCULAR STUDIES

Joseph T. Baker 3 May 1976 61 p refs

(Contract NAS9-14880)

(NASA-CR-151213) Avail: NTIS HC A04/MF A01 CSCL

The development of a data acquisition system for noninvasive measurement of systolic time intervals is described. R-R interval from the ECG determines instantaneous heart rate prior to the beat to be measured. Total electromechanical systole (Q-S2) is measured from the onset of the ECG Q-wave to the onset of the second heart sound (S2). Ejection time (ET or LVET) is measured from the onset of carotid upstroke to the incisure. Pre-ejection period (PEP) is computed by subtracting ET from Q-S2. PEP/ET ratio is computed directly.

# N77-19748\*# Adrian Industries, Inc., Titusville, Fla. PERCUTANEOUS MULTIPLE ELECTRODE CONNECTOR, DESIGN PARAMETERS AND FABRICATION (BIOMEDI-CAL)

Laurence A. Myers Feb. 1977 20 p refs

(NASA Order CC-56498-A)

(NASA-CR-144859) Avail: NTIS HC A02/MF A01 06B

A percutaneous multielectrode connector was designed which utilizes an ultrapure carbon collar to provide an infection free biocompatible passage through the skin. The device provides reliable electrical continuity, mates and demates readily with the implant, and is fabricated with processes and materials oriented Author to commercial production.

N77-19749\*# Virginia Univ., Charlottesville. Dept. of

# **EFFECTS ON BODY SIZE AND COMPOSITION OF CHRONIC** EXPOSURE TO ALTERED GRAVITY Final Report, 1 Aug. 1973 - 31 Mar. 1977

Grover C. Pitts Mar. 1977 103 p refs

(Grant NGR-47-005-213)

(NASA-CR-149804) Avail: NTIS HC A06/MF A01 .CSCL 06P

The effects of chronic centrifugation on body composition and growth of rats, mice, monkeys, and man are studied. The benefits of exercise and restraint during acceleration are investigated. Physiological regulation and energy balance are also discussed.

N77-19750\*# National Aeronautics and Space Administration. Pasadena Office, Calif.

# AUTOMATED CLINICAL SYSTEM FOR CHROMOSOME **ANALYSIS** Patent Application

Kenneth Castleman (JPL), Howard J. Frieden (JPL), Elbert J Johnson (JPL), Paul A. Rennie (JPL), and Raymond J. Wall, Inventors (to NASA) (JPL) Filed 16 May 1976 215 p (Contract NAS7-100)

(NASA-Case-NPO-13913-1; US-Patent-Appl-SN-687251) Avail: NTIS HC A10/MF A01 CSCL 06B

An automatic chromosome analysis system is provided wherein a suitably prepared slide with chromosome spreads thereon is placed on the stage of an automated microscope. The automated microscope stage is computer operated to move the slide to enable detection of chromosome spreads on the slide. The X and Y location of each chromosome spread that is detected is stored. At the conclusion of this searching operation, the computer directs the microscope to again sequence through the chromosome spread locations in response to the stored X and Y locations.

N77-19751# Wyoming Univ., Laramie. Dept. of Chemistry. PHOTO-INITIATED PROCESSES IN VISION Technical Progress Report, 1 Jul. 1975 - 30 Jun. 1976 A. V. Guzzo 1976 8 p refs Sponsored by ERDA (COO-1627-31) Avail: NTIS HC A02/MF A01

The photoreaction between vitamin A (and other carbonyl containing compounds) and various nitroxide spin labels was analyzed. The decrease in the label signal upon illumination is due to the photosensitization of the nitroxide resulting in the reduction of the N-O group to the N-OH group. No evidence of any carbonyl radical participation was obtained therefore a triplet-doublet energy transfer process is proposed. A similar behavior was noted for the Schiff bases of these carbonyl compounds and nitroxides. The findings do not support the idea of radical participation in the retinal isomerization process even when a good electron acceptor is present.

## N77-19752\*# Old Dominion Univ., Norfolk, Va. A REVIEW OF METHODOLOGICAL FACTORS IN PERFORM-ANCE ASSESSMENTS OF TIME-VARYING AIRCRAFT NOISE EFFECTS

Glynn D. Coates, Earl A. Alluisi, and C. J. Adkins, Jr. Mar. 1977 38 p refs

(Grant NsG-1092)

(NASA-CR-2789) Avail: NTIS HC A03/MF A01 CSCL 05E Literature on the effects of general noise on human performance is reviewed in an attempt to identify (1) those characteristics of noise that have been found to affect human performance; (2) those characteristics of performance most likely to be affected by the presence of noise, and (3) those characteristics of the performance situation typically associated with noise effects. Based on the characteristics identified, a theoretical framework is proposed that will permit predictions of possible effects of time-varying aircraft-type noise on complex human performance. An annotated bibliography of 50 articles is included.

# N77-19753\*# Life Systems, Inc., Cleveland, Ohio. ADVANCED COMBINED IODINE DISPENSER AND **DETECTOR Final Report**

J. B. Lantz, F. H. Schubert, F. C. Jensen, and J. D. Powell Jan. 1977 132 p refs (Contract NAS9-14624)

(NASA-CR-151214; ER-277-4) Avail: NTIS HC A07/MF A01 CSCL 06K

A total weight of 1.23 kg (2.7 lb), a total volume of 1213 cu m (74 cu in), and an average power consumption of 5.5W was achieved in the advanced combined iodine dispenser/detector by integrating the detector with the iodine source, arranging all iodinator components within a compact package and lowering the parasitic power to the detector and electronics circuits. These achievements surpassed the design goals of 1.36 kg (3.0 lb), 1671 cu m (102 cu in) and 8W. The reliability and maintainability were improved by reducing the detector lamp power, using an interchangeable lamp concept, making the electronic circuit boards easily accessible, providing redundant water seals and improving the accessibility to the iodine accumulator for refilling. The system was designed to iodinate (to 5 ppm iodine) the fuel cell water generated during 27 seven-day orbiter missions (equivalent to 18,500 kg (40,700 lb) of water) before the unit must be recharged with iodine crystals. Author

N77-19754\*# Massachusetts Inst. of Tech., Cambridge. Man-Vehicle Lab. HUMAN DYNAMIC ORIENTATION MODEL APPLIED TO MOTION SIMULATION M.S. Thesis

Joshua D. Borah May 1976 219 p refs (Contract NSR-22-009-701) (NASA-CR-149862) Avail: NTIS HC A10/MF A01 CSCL

The Ormsby model of dynamic orientation, in the form of a discrete time computer program was used to predict non-visually induced sensations during an idealized coordinated aircraft turn. To predict simulation fidelity, the Ormsby model was used to assign penalties for incorrect attitude and angular rate perceptions. It was determined that a three rotational degree of freedom simulation should remain faithful to attitude perception even at the expense of incorrect angular rate sensations. Implementing this strategy, a simulation profile for the idealized turn was designed for a Link GAT-1 trainer. A simple optokinetic display was added to improve the fidelity of roll rate sensations. Author

N77-19755\*# Lockheed Electronics Co., Houston, Tex. Aerospace Systems Div.

FEASIBILITY STUDY OF AUTOMATIC CONTROL OF CREW COMFORT IN THE SHUTTLE EXTRAVEHICULAR MOBILITY UNIT

D. W. Cook 22 Feb. 1977 27 p (Contract NAS9-15200)

(NASA-CR-151230; LEC-9980; TM-7001) Avail: NTIS

HC A03/MF A01 CSCL 05E

Computer simulation is used to demonstrate that crewman comfort can be assured by using automatic control of the inlet temperature of the coolant into the liquid cooled garment when input to the controller consists of measurements of the garment inlet temperature and the garment outlet temperature difference. Subsequent tests using a facsimile of the control logic developed in the computer program confirmed the feasibility of such a design scheme.

N77-19756\*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.

CONTROL OF THERMAL BALANCE BY A LIQUID CIRCULA-TING GARMENT BASED ON A MATHEMATICAL REPRE-SENTATION OF THE HUMAN THERMOREGULATORY SYSTEM Ph.D. Thesis - California Univ., Berkeley

Lawrence H. Kuznetz Oct. 1976 561 p refs (NASA-TM-X-58190; JSC-11579) HC A24/MF A01

Test data and a mathematical model of the human thermoregulatory system were used to investigate control of thermal balance by means of a liquid circulating garment (LCG). The test data were derived from five series of experiments in which environmental and metabolic conditions were varied parametrically as a function of several independent variables, including LCG flowrate, LCG inlet temperature, net environmental heat exchange, surrounding gas ventilation rate, ambient pressure, metabolic rate. and subjective/obligatory cooling control. The resultant data were used to relate skin temperature to LCG water temperature and flowrate, to assess a thermal comfort band, to demonstrate the relationship between metabolic rate and LCG heat dissipation, and so forth. The usefulness of the mathematical model as a tool for data interpretation and for generation of trends and relationships among the various physiological parameters was also investigated and verified. Author

N77-19757# Calspan Corp., Buffalo, N.Y. DEVELOPMENT OF A FRONT PASSENGER ASPIRATOR AIR BAG SYSTEM FOR SMALL CARS

David J. Romer Sep. 1976 136 p refs (Contract DOT-HS-5-01254)

(PB-259008/1: CALSPAN-ZP-5777-V-1: DOT-HS-802-039) Avail: NTIS HC A07/MF A01 CSCL 13F

During the first year's effort an aspirator air bag system was designed and developed. Tests with the aspirator air bag system produced data which satisfied the injury criteria for the full range of adult dummy sizes through the 45 MPH crash speed range. Test results indicate that the system did not present a hazard to the forward, out-of-position child and that the results also satisfied the injury criteria for the normally seated 6 yr. old child size dummy through the 45 MPH crash range.

N77-19758# Probe Consultants, Inc., Phoenix, Ariz. SAINT SIMULATION OF A REMOTELY PILOTED VEHICLE/ DRONE CONTROL FACILITY: MODEL DEVELOPMENT AND ANALYSIS Final Report, Oct. 1974 - Jun. 1975

David B. Wortman, Deborah J. Seifert, and Steven D. Duket Jun. 1976 214 p refs

(Contract F33615-75-C-5012; AF Proj. 7184)

AMRL-TR-75-118) (AD-A031085: HC A10/MF A01 CSCL 01/3

NTIS Avail:

A model of a real-time simulation of a Remotely piloted Vehicle/Drone Control Facility (RPV/DCF) has been constructed using SAINT, a totally digital man-machine modeling and simulation technique. The real-time simulation consists of a mock-up of a DCF, where actual operators control the flight of simulated RPVs through the use of cathode ray tube (CRT) displays of RPB flight paths and parameters. The SAINT model consists of two interacting components. The state variable component of the model duplicated the simulation of RPV flight of the real-time simulation. The task-oriented component represents the control and decision tasks performed by the DCF operators. The interactions between the components include models of the presentation of mission status information to the operators and the processing of commands sent to the RPVs by the operators. Through input values, the generalized SAINT model is made specific to one group of operators performing one mission of the real-time simulation. This mission is simulated using SAINT. The simulation results are evaluated by comparing them with the mission performance output obtained from the real-time simulation. GRA

N77-19759# Bunker-Ramo Corp., Westlake Village, Calif. Electronic Systems Div.

PILOT FACTORS CONSIDERATIONS IN SEE-TO-LAND Final Technical Report, Apr. 1974 - Jan, 1975

William F. Swartz, Donald M. Condra, and Ralph P. Madero May 1976 52 p refs

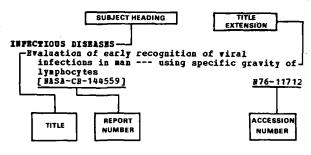
(Contract F33615-73-C-0391; AF Proj. 6190) (AD-A030789) Avail: NTIS HC A04/MF A01 CSCL 01/2 The aviation industry is employing a building block approach with respect to aircraft avionics in general and automatic flight control systems in particular, to move systematically from Category 1 through Category 2 to Category 3 operations. The building block approach has been quite effective in structuring what must be done in terms of equipment for delivering the aircraft reliably to the Category 1, 2 and 3 equipment minima. From an operational viewpoint, however, the recovery of the aircraft still remains a see-to-land operation for these categories. The purpose of this paper is to address the issue of how far the see-to-land concept can be extended considering the pilot factors constraints in the environment in which the problem exists. The basic question is can the pilot effectively use the equipment in what remains a see-to-land operation. The low visibility landing experiences of the USAF Flight Dynamics Laboratory and the USAF Instrument Flight Center are heavily drawn upon in the preparation of this report. The results of their flying a Head-Up Display in visibilities down to 400 feet Runway Visual Range (RVR) in a T-39 Sabreliner are reviewed and reported. In addition, a number of other relevant papers and reports are used in helping to describe the nature of the low visibility landing. An assessment is made of some solutions that are being proposed for dealing with the see-to-land problem while considering the pilot factors con-

# SUBJECT INDEX

# AEROSPACE MEDICINE AND BIOLOGY / A Continuing Bibliography (Suppl. 168)

**JUNE 1977** 

# Typical Subject Index Listing



The title is used to provide a description of the subject matter. When the title is insufficiently descriptive of the document content, a title extension is added, separated from the title by three hyphens. The NASA or AIAA accession number is included in each entry to assist the user in locating the abstract in the abstract section of this supplement. If applicable, a report number is also included as an aid in identifying the document.

### ABIOGREESIS

Synthesis of phospholipids and membranes in prebiotic conditions

A77-24998

### ABUNDANCE

Variation in stable carbon isotopes in organic matter from the Gunflint Iron Pormation ---Precambrian rock analysis

177-24618

# ACCELERATION STRESSES (PHYSIOLOGY)

weightlessness

Effects of acceleration on thermoregulatory

responses of unanesthetized rats A77-23425

Physiological effects of sustained acceleration A77-24137

Physiological changes associated with long-term increases in acceleration

Human tolerance to acceleration after exposure to

A77-24142

Hypergravitation and sympatho-adrenergic reactivity

A77-24171 A study of the cumulative effects of repeated

exposures to radial accelerations

Visual field contraction during G stress at 13,

45, and 65 deg seatback angles A77-24501

Reversal of bedrest-induced orthostatic intolerance by lower body negative pressure and

saline

A77-24504 Cardiovascular responses of men and women to lower

body negative pressure

Reduction in plasma vasopressin levels of dehydrated rats following acute stress

A77-25147 Influence of accelerations, additional weight load and hypokinesia on protein catabolism in the

Japanese quail /Coturnix Coturnix Japonica/

A77-26106

Hemodynamics of healthy individuals under various

regimes of lower body negative pressure A77-26111

ACCELERATION TOLERANCE

Effect of acceleration growth rate on the response of the external respiratory system

Experimental investigations on motion sickness susceptibility N77-19734

ACCIDENT PREVENTION

An evaluation of the 1974 and 1975 restraint systems [PB-258585/9] #77-18748 ACOUSTIC BECITATION

Some effects of infrasound on task performance A77-24310

ACTIVATION REERGY

Performance of fungi in low temperature and hypersaline environments

ACTIVITY (BIOLOGY)

Renal electrolyte circadian rhythms - Independence from feeding and activity patterns

A77~26582 ADAPTATION

Adaptation of vestibular responses to galvanic stimulation of the labyrinths

ADENOSINES

camp in temperature- and ADH-regulating centers after thermal stress --- cyclic Adenosine MonoPhosphate in AntiDiuretic Hormone centers

ADRESERGICS Hypergravitation and sympatho-adrenergic reactivity

A77-24171

A77-24176

A77~25417

A77-24363

ABRIAL RECONNAISSANCE

Performance of an observer in real time reconnaissance --- remotely piloted wehicles N77-18743.

ABROSPACE ENVIRONMENTS

Characteristics of postural self-regulation in complex spatial environments and after-effects of weightlessness

A77-24170 Effect of space factors on Escherichia coli B/r

ABROSPACE MEDICINE

Biomedical results of the Skylab Program A77-24131

Results of medical investigations carried out on

board the Salyut orbital stations

Maximal aerobic power in women cadets at the U.S.

Air Force Academy A77-24508

Investigation of the function of external respiration in flying personnel

A77-25629

Effect of acceleration growth rate on the response

of the external respiratory system A77-26121

Principles of aviation and space medicine N77-18734

[NASA-TT-F-17511] Recent advances in space medicine

FAGARD-CP-203] N77-19731

Experimental basis for the use of hypnotics by

aerospace crews N77-19743

Space age heatlh care delivery

N77-19744 and

Automated electroencephalography system electroencephalographic correlates of space

motion sickness, part 3 [NASA-CR-151210] N77-19746

APPERENT BERVOUS SYSTEMS

Cerebellum and gravity --- Russian book on neurophysiology

AIR PLOT SUBJECT : SUBJECT

AIR FLOW	nyi ronzonė	ANTIGRAVITI Antiorthostatic test as a model to study	
Heat exchange between the organism and en under conditions of weightlessness - He approach		antigravity mechanisms of the cardiova	
abbroacu	A77-24173	system	A77-24163
AIRCRAFT COSTROL	4// 24//3	ANTISEPTICS	277-24103
The pilot and the airplane: Aviation ergo Russian book	onomics	Advanced combined iodine dispenser and d for microorganism annihilation in	
CITUM cimpleties of a sectols sileted	A77-23546	water	
SAINT simulation of a remotely piloted vehicle/drone control facility: Model	•	[HASA-CR-151214]	N77-19753
Development and analysis		Conceptualization of habitability expres	sions for
[AD-A031085] AIRCRAPT LANDING	¥77-19758	the habitability data base [AD-A029661]	N77-18757
Pilot factors considerations in see-to-1a		ARMED FORCES (UNITED STATES)	
[AD-A030789] AIRCRAFT MOISE	<b>877-19759</b>	Aircrew training requirements for map-of flight	-the-earth
A review of methodological factors in per		[AD-A030420]	N77-18754
assessments of time-varying aircraft no	oise effects	ARRITHMIA	
with annotated bibliography [HASA-CH-2789]	N77-19752	Arrhythmias documented by 24 hour contin electrocardiographic monitoring in 50	
AIRCRAFT SAFETY		medical students without apparent hear	t disease
Introduction to the study of a mathematic of a pilot	cal model	ARTERIES	A77-26241
	A77-24425	Arterial lactate responses in dogs made	apneic or
ALERTHESS		breathing nitrogen	-
Dynamic control characteristics and brain regulation of the vigilance of man duri performance of control tasks German	ing the n book	Stereocarotid angiography of the ophthal	A77-23419 mic artery A77-26267
Broadbent and Gregory revisited - Vigilar	A77-23547	ARTERIOSCIEROSIS Computer analysis of arteriograms	
statistical decision in human	ice and	computer analysis of afteriograms	A77-24738
auditory/visual tasks	177 25472	ASPERGILLUS	
ALGAE	A77-25073	Geomycology fungal biosolubilization accumulation of metals	and
Dependence of the species composition of		1480 ATT - DEDTO DELTA	A77-24179
culture of microalgae on illumination a rate of nutrients	ing suppry	ASTROBAUT PERFORMANCE Rotary motion of the body of an astronau	t
	A77-26118		A77-23833
ALGORITHMS Algorithms for combined and supervisor romanipulator control	obot and	Ophthalmological requirements for Spaceli astronaut-scientists	ab N77-19739
manipulator Control	A77-24832	Athletic endurance training: Advantage :	
ALTITUDE ACCLIBATIZATION		flights? The significance of physical	fitness
Lung mast cell density and distribution in chronically hypoxic animals	in	for selection and training of Spacelab	CTEWS N77-19740
	A77-24360	Psychometric characteristics of astronau	
Comparative evaluation of studies of the		Prophelogical relection of antonomic and	W77-19741
hypoxia of different levels on immunobi status in man	Orogical	Psychological selection of astronaut-scie (payload specialists)	entists
	A77-26108		N77-19742
New aspects of the study of the respirate function of the blood during adaptation		Experimental basis for the use of hypnot: aerospace crews	ics by
	A77-26270	•	N77~19743
The role of chemoreceptors in the adaptatory organism to hypoxia	ion of an	ATHOSPHERIC EFFECTS	
	A77-26271	Speculations on the consequences to biolo space shuttle-associated increases in o	
ALTITUDE TOLBRANCE		UV-B radiation	-
Changes in orthostatic tolerance in man a altitude of 3500 meters	ıt an	[NASA-TH-X-73200] ATHOSPHERIC TURBULENCE	N77-18728
dititude of 3300 meters	A77-24505	Investigation on a passenger ride-comfort	t
Prevention of decompression sickness duri		improvement system with limited control	l surface
short-term flights in a depressurized c	adin at	actuator performance for a flexible aim	FCTaft 1877-18745
	A77-26114	AUDITORY PERCEPTION	
ALVEOLAR AIR Hypoxia and carbon dioxide as separate an	.a	Oltrastructural and functional anatomy of vestibule	f the
interactive depressants of ventilation	iu.	[ NASA-TT-P-17405 ]	พ77-18731
	A77-23289	AUDITORY TASKS	
AMINO ACIDS  Amino acid spectrum of human blood plasma	during	Broadbent and Gregory revisited - Vigilar statistical decision in human	nce and
space flight and in antiorthostatic hyp	okinesia	auditory/visual tasks	
ANGIOGRAPHY	A77-24160	The effects of 2 hours of wortigel without	A77-25073
Stereocarotid angiography of the ophthalm	ic artery	The effects of 3 hours of vertical vibrat Hz on the performance of some tasks	LLUM AL J
•	A77-26267	[RAB-TR-76011]	N77-18746
ABTEROPOSETRY  Hass distribution of the human body using	i	AUTOKINESIS  Experiments on the locus of induced motion	n n
biostereometrics		Paralegues on the locus of induced MOCIC	A77-26074
	N77-18735	AUTONATA THEORY	_
ANTIBODIES Anti-Ig autoantibody and complement-media	teď:	New method of artificial motion synthesis application to locomotion robots and ma	
destruction of neoplastic cells	• .	•	A77-24830
[ NASA-CR-151206 ]	H77-18724	AUTOMATIC CONTROL	
ARTIDIURBTICS  camp in temperature- and ADH-regulating c	enters	Automatic control of decompression on the the impedance signal of the body	e pasis of
after thermal stress cyclic Adenosi	ne		A77-25418
MonoPhosphate in AntiDiuretic Hormone c			
	<b>A77-24363</b>		

SUBJECT INDEX BIOPHYSICS

UTOMATIC CONTROL VALVES	<b>*</b>	BIODEGRADATION	
Peasibility study of automatic control o	Mobility	Geomycology fungal biosolubilization accumulation of metals	
Unit liquid cooled garment regulat (NASA-CR-151230)	อะ พ77-19755	Bio-gas production from alligator weeds	A77-24179
OTOMATIC TEST EQUIPMENT Automated clinical system for chromosome		[NASA-CR-149809] BIODYBANICS	N77-19729
[NASA-CASE-NPO-13913-1] UTOMOBILES An evaluation of the 1974 and 1975 restr	N77-19750 aint systems	Computerized I-ray reconstruction tomogr. stereometric analysis of cardiovascula	
[PB-258585/9] Development of a front passenger aspirat	N77-18748	BIOBLECTRICITY Ultrastructural and functional anatomy of	f the
system for small cars [PB-259008/1]	ท77-19757	<pre>vestibule   [NASA-TT-P-17405] The vocabulary of brain potentials: Info</pre>	N77-18731
В		cognitive events from brain potentials operational settings	
PACTERIA	_	[AD-A029452]	¥77-18737
Detection of microbial infection in bloo antibiotic determinations	d and	BIORMGINEBRING Procedural selection, construction, desi-	gn, and
[NASA-CASE-GSC-12045-1]	N77-18733	application possibility in the case of measuring device for the human physiol	
Rapid bacteriological diagnosis systems physical basis, noting splenic fewer p		study of the biomechanics of the lower	
[BEVG-PBWT-76-15]	B77-18726		A77-23550
NATOUS Interrelationships between certain micro		Rotary motion of the body of an astronau	A77-23833
and some aspects of sediment-water nut exchange in two bayou estuaries, phase		A two-dimensional model for the cochlea. heuristic approach and numerical resul	
[PB-259538/7] DED REST	N77-19730	BIOINSTRUMENTATION	A77-25170
Pluid and electrolyte shifts during bed isometric and isotonic exercise	rest with	Measuring device for His-bundle analysis heart	at the
Body composition changes in men and wome	A77-23423 n after	Cardiowascular instrumentation for space	A77-23621 flight
2-3 weeks of bed rest	A77-24162	[NASA-CR-151935] Percutaneous multiple electrode connecto	N77-18730 r, design
Metabolic processes in hypokinetic and rehabilitated men	.77 2046 <i>h</i>	parameters and fabrication (biomedical) [NASA-CR-144859]	
Effect of antiorthostatic bed rest on th	A77-24164 e human body A77-24165	BIOLOGICAL EFFECTS  Biochemical changes in rats flown on boat  Cosmos 690 biosatellite	rd the
Renal osmoregulatory function during sim			A77-24149
space flight	A77-24169	Pioneer 10 and 11 Jovian encounters - Ra dose and biological lethality	
Reversal of bedrest-induced orthostatic intolerance by lower body negative pre	ssure and	Lesional effects of primary cosmic heavy	A77-24151 ions on
saline	A77-24504	rat brain	A77-24155
IBLIOGRAPHIES Performance measurements		The Biostack as an approach to high LET: Linear Energy Transfer	researcb
[AD-A029850]	N77-18753	-	A77-24156
IOASSAY Automated clinical system for chromosome [NASA-CASE-NPO-13913-1]	analysis N77-19750	Influence of heavy ions on the transform activity of DNA.	ing A77-24158
IOASTRONAUTICS Life sciences and space research XIV; Pr		Space flight effect upon the bioenergetic skeletal muscles in rats	
of the Open Heeting of the Working Gro Space Biology, May 29-June 7, 1975, an	up on	Principles of aviation and space medicing	A77-24161
Symposium on Gravitational Physiology, Bulgaria, May 30, 31, 1975		[MASA-TT-F-17511] BIOLOGICAL BYOLUTION	¥77-18734
Biomedical results of the Skylab Program	A77-24130	The evolutionary role of gravity	A77-24134
_	A77-24131	BIONEDICAL DATA	
The prevention of motion sickness in orb	A77-24140	Apparatus for transmitting physiological	A77-26570
Mineral and nitrogen metabolic studies of flights and comparison with effects of long-term recumbency		BIOHETRICS The effects of prolonged spaceflight on regional distribution of fluid, muscle	
Results of medical investigations carrie	A77-24141 d out on	Biostereometric results from Skylab	N77-19738
board the Salyut orbital stations	A77-24144	Systolic time interval data acquisition : Specialized cardiovascular studies	_
Spacelab and its utilization for biomedi- experiments	A77-24145	[WASA-CR-151213] BIOPHYSICS Weight and shape gravitational effect	#77-1974?
Long-term space flights and human habita		biological evolution	A77-24135
IOCHENISTRY		Gravity and embryonic development	
Biochemical changes in rats flown on boa Cosmos 690 biosatellite		Resonance effect of vibration on living	A77-24136 structure
Study of the biochemical indicators of cirradiation in rats	A77-24149 bronic	of various organizational levels	A77-26119
ICCONTROL SYSTEMS	A77-24150	Bioprocessing development: Immune/cellul applications: Anti-Ig autoantibody and	ā
Automatic control of decompression on the	e basis of	complement-mediated destruction of neopole cells	
the impedance signal of the body		[ WASA-CR-151207 ]"	¥77-18725

BIOSATELLITES SUBJECT INDEX

BIOSATELLITES		BODY TEMPERATURE	
Irradiation of bio-objects aboard the Cos		Variations in evaporation and body temper	atures
biosatellite		during sleep in man	
	A77-24146		A77-2342
Biochemical changes in rats flown on boar	d the	Effects of acceleration on thermoregulato	ry
Cosmos 690 biosatellite	177 20400	responses of unanesthetized rats	A77-2342
Combined effect of space flight and radia	A77-24149	Role of ketone bodies in nonshivering	B/1-2342
skeletal muscles of rats	icion on	thermogenesis in cold-acclimated rats	
	A77-24503		A77-2435
BIOSPHERE		Eypoxia-induced metabolic and core temper	ature .
On micro-organisms of the stratosphere		changes in the squirrel monkey	
BIOSYNTRESIS	A77-24178		A77-2436
Synthesis of phospholipids and membranes	in	Effective temperature scale useful for hy hyperbaric environments	ро-апа
prebiotic conditions			A77-2450
	A77-24998	Changes in orthostatic tolerance in man a	
BIOTELERETRY		altitude of 3500 meters	
Apparatus for transmitting physiological			A77-2450
	A77-26570	An experimental validation of mathematica	1
BLOOD  Detection of microbial infection in blood		simulation of human thermoregulation	A77-2521
antibiotic determinations	аци	Two mechanisms of rephasal of circadian r	
	N77-18733	response to a 180 deg phase shift /simu	
BLOOD FLOW		12-hr time zone change/	
Antiorthostatic test as a model to study	_		A77-2530
antigravity mechanisms of the cardiovas	cular	Thermoregulatory responses in animals in	
system	A77-24163	helium-oxygen atmosphere under elevated	pressur   2534-
Cardiovascular responses of men and women		BONE DEMINERALIZATION	M//-2554.
body negative pressure		Potassium and phosphorus content and Ca-4	5
	A77-24507	inclusion in bones and teeth of rats af	
BLOOD PLASHA		22-day space flight aboard the biosatel	lite
Fluid and electrolyte shifts during bed r	est with	Cosmos 605	A77-2610
isometric and isotonic exercise	A77-23423	BORES	A / /- 26 10
Effect of irradiation in the space enviro		Effect of space flight on skeletal bones :	in rats
the blood-forming system in rats		/light- and electron-microscopic invest	
	A77-24148		A77-2610:
Amino acid spectrum of human blood plasma		BOUNDARY VALUE PROBLEMS	
space flight and in antiorthostatic hyp		A two-dimensional model for the cochlea.	
Fluid shifts during thermal stress with a	A77-24160	heuristic approach and numerical result	s 1477-2517
without fluid replacement		BRAIN	23
	A77-24362	Effect of electrostimulation of the hypot	paramas
Reduction in plasma vasopressin levels of		Effect of electrostimulation of the hypot and limbic structures on vestibulo-some	
Reduction in plasma vasopressin levels of dehydrated rats folloving acute stress		Effect of electrostimulation of the hypotiand limbic structures on vestibulo-soma reflexes	tic
Reduction in plasma vasopressin levels of dehydrated rats following acute stress		Effect of electrostimulation of the hypot and limbic structures on vestibulo-some reflexes	tic 177-2611'
Reduction in plasma vasopressin levels of dehydrated rats following acute stress BLOOD PRESSURE	<b>A77-25147</b>	Effect of electrostimulation of the hypotend and limbic structures on vestibulo-some reflexes  The vocabulary of brain potentials: Infer	tic A77-2611' cring
Reduction in plasma vasopressin levels of dehydrated rats following acute stress BLOOD PRESSURE Changes in orthostatic tolerance in man a	<b>A77-25147</b>	Effect of electrostimulation of the hypot and limbic structures on vestibulo-some reflexes	tic A77-2611' cring
Reduction in plasma vasopressin levels of dehydrated rats following acute stress BLOOD PRESSURE Changes in orthostatic tolerance in man a altitude of 3500 meters	A77-25147 t an A77-24505	Effect of electrostimulation of the hypotiand limbic structures on vestibulo-some reflexes  The vocabulary of brain potentials: Infercognitive events from brain potentials: operational settings [AD-A029452]	tic A77-2611' cring
Reduction in plasma vasopressin levels of dehydrated rats following acute stress BLOOD PRESSURE Changes in orthostatic tolerance in man a altitude of 3500 meters Hemodynamics of healthy individuals under	A77-25147 t an A77-24505 Various	Effect of electrostimulation of the hypot and limbic structures on vestibulo-some reflexes  The vocabulary of brain potentials: Infercognitive events from brain potentials: operational settings [AD-A029452]  BRAIN CIRCULATION	tic A77-2611° cring in 877-1873°
Reduction in plasma vasopressin levels of dehydrated rats following acute stress BLOOD PRESSURE Changes in orthostatic tolerance in man a altitude of 3500 meters Hemodynamics of healthy individuals under regimes of lower body negative pressure	A77-25147 t an A77-24505 Various	Effect of electrostimulation of the hypot and limbic structures on vestibulo-some reflexes  The vocabulary of brain potentials: Infecting cognitive events from brain potentials: operational settings [AD-A029452]  BRAIN CIRCULATION  The role of brief hypocapnia in the venti	tic A77-2611° cring in 877-1873°
Reduction in plasma vasopressin levels of dehydrated rats following acute stress BLOOD PRESSURE Changes in orthostatic tolerance in man a altitude of 3500 meters Hemodynamics of healthy individuals under regimes of lower body negative pressure	A77-25147 t an A77-24505 Various	Effect of electrostimulation of the hypotiand limbic structures on vestibulo-some reflexes  The vocabulary of brain potentials: Inferogrational settings [AD-A029452]  BRAIN CIRCULATION  The role of brief hypocapnia in the ventifications to CO2 with hypoxia	tic M77-2611 rring In M77-1873 latory
Reduction in plasma vasopressin levels of dehydrated rats following acute stress  BLOOD PRESSURE Changes in orthostatic tolerance in man a altitude of 3500 meters  Hemodynamics of healthy individuals under regimes of lower body negative pressure  BLOOD VOLUME	A77-25147 t an A77-24505 Various A77-26111	Effect of electrostimulation of the hypothand limbic structures on vestibulo-some reflexes  The vocabulary of brain potentials: Inferogrational settings [AD-A029452]  BRAIN CIRCULATION The role of brief hypocapnia in the ventimesponse to CO2 with hyporia	tic A77-2611° cring in 877-1873°
Reduction in plasma vasopressin levels of dehydrated rats following acute stress  BLOOD PRESSURE Changes in orthostatic tolerance in man a altitude of 3500 meters  Hemodynamics of healthy individuals under regimes of lower body negative pressure  BLOOD VOLUME New aspects of the study of the respirato	A77-25147 t an A77-24505 various A77-26111	Effect of electrostimulation of the hypot and limbic structures on vestibulo-some reflexes  The vocabulary of brain potentials: Infection operational settings [AD-A029452]  BRAIN CIRCULATION The role of brief hypocapnia in the ventimesponse to CO2 with hypoxia	tic M77-26111 Fring in M77-18731 latory M77-23288
Reduction in plasma vasopressin levels of dehydrated rats following acute stress  BLOOD PRESSURE Changes in orthostatic tolerance in man a altitude of 3500 meters  Hemodynamics of healthy individuals under regimes of lower body negative pressure  BLOOD VOLUME Wew aspects of the study of the respirato function of the blood during adaptation	A77-25147 t an A77-24505 various A77-26111	Effect of electrostimulation of the hypothand limbic structures on vestibulo-some reflexes  The vocabulary of brain potentials: Inferogrational settings [AD-A029452]  BRAIN CIRCULATION The role of brief hypocapnia in the ventimesponse to CO2 with hyporia	tic M77-26111 Fring in M77-18731 latory M77-23288
Reduction in plasma vasopressin levels of dehydrated rats following acute stress  BLOOD PRESSURE Changes in orthostatic tolerance in man a altitude of 3500 meters  Hemodynamics of healthy individuals under regimes of lower body negative pressure  BLOOD VOLUME New aspects of the study of the respirato function of the blood during adaptation  BODY CORPOSITIOE (BIOLOGY)	A77-25147  t an  A77-24505  various  A77-26111  ry  to hypoxia  A77-26270	Effect of electrostimulation of the hypot and limbic structures on vestibulo-some reflexes  The vocabulary of brain potentials: Inferogration operations settings [AD-A029452]  BRAIN CIRCULATION The role of brief hypocapnia in the venticesponse to CO2 with hypoxia  BRAIN DAMAGE Lesional effects of primary cosmic heavy rat brain	tic M77-26111 Fring in M77-18731 latory M77-23288
Reduction in plasma vasopressin levels of dehydrated rats following acute stress  BLOOD PRESSURE Changes in orthostatic tolerance in man a altitude of 3500 meters  Hemodynamics of healthy individuals under regimes of lower body negative pressure  BLOOD VOLUME New aspects of the study of the respirato function of the blood during adaptation  BODY CORPOSITION (BIOLOGY) Body composition changes in men and women	A77-25147  t an  A77-24505  various  A77-26111  ry  to hypoxia  A77-26270	Effect of electrostimulation of the hypotiand limbic structures on vestibulo-soma reflexes  The vocabulary of brain potentials: Inferogrammer cognitive events from brain potentials: operational settings [AD-A029452]  BRAIN CIRCULATION  The role of brief hypocapnia in the venticesponse to CO2 with hypoxia  BRAIN DANAGE Lesional effects of primary cosmic heavy rat brain	tic 177-2611' rring in 177-1873' latory 177-2328' ions on 177-2415
Reduction in plasma vasopressin levels of dehydrated rats following acute stress  BLOOD PRESSURE Changes in orthostatic tolerance in man a altitude of 3500 meters  Hemodynamics of healthy individuals under regimes of lower body negative pressure  BLOOD VOLUME Hew aspects of the study of the respirato function of the blood during adaptation  BOOY COMPOSITION (BIOLOGY) Body composition changes in men and women 2-3 weeks of bed rest	A77-25147 t an A77-24505 various A77-26111 ry to hypoxia A77-26270 after	Bffect of electrostimulation of the hypot and limbic structures on vestibulo-some reflexes  The vocabulary of brain potentials: Infer cognitive events from brain potentials: operational settings [AD-AO29452]  BRAIN CIRCULATION  The role of brief hypocapnia in the ventimesponse to CO2 with hypoxia  BRAIN DAMAGE  Lesional effects of primary cosmic heavy rat brain  BUOYAMCY  Reutral buoyancy: One possible tool for the contract of	tic 177-26111 177-18737 1010-18737 1010-18737 1010-18737 1010-1873 1010-1873 1011-1873 101
Reduction in plasma vasopressin levels of dehydrated rats following acute stress  BLOOD PRESSURE Changes in orthostatic tolerance in man a altitude of 3500 meters  Hemodynamics of healthy individuals under regimes of lower body negative pressure  BLOOD VOLUME New aspects of the study of the respirato function of the blood during adaptation  BODY CORPOSITION (BIOLOGY) Body composition changes in men and women 2-3 weeks of bed rest	A77-25147  t an  A77-24505  various  A77-26111  ry  to hypoxia  A77-26270  after  A77-24162	Effect of electrostimulation of the hypothand limbic structures on vestibulo-some reflexes  The vocabulary of brain potentials: Inferographic events from brain potentials: operational settings [AD-A029452]  BRAIN CIRCULATION The role of brief hypocapnia in the ventimesponse to CO2 with hypoxia  BRAIN DAMAGE Lesional effects of primary cosmic heavy rat brain  BUOTANCY Heutral buoyancy: One possible tool for training in a simulated zero-genvironm	tic 177-26111 177-18737 1010-18737 1010-18737 1010-18737 1010-1873 1010-1873 1011-1873 101
Reduction in plasma vasopressin levels of dehydrated rats following acute stress  BLOOD PRESSURE Changes in orthostatic tolerance in man a altitude of 3500 meters  Hemodynamics of healthy individuals under regimes of lower body negative pressure  BLOOD VOLUME Hew aspects of the study of the respirato function of the blood during adaptation  BOOY COMPOSITION (BIOLOGY) Body composition changes in men and women 2-3 weeks of bed rest	A77-25147  t an  A77-24505     various  A77-26111  ry     to hypoxia  A77-26270  after  A77-24162  bronic	Effect of electrostimulation of the hypothand limbic structures on vestibulo-some reflexes  The vocabulary of brain potentials: Inferographic events from brain potentials: operational settings [AD-A029452]  BRAIN CIRCULATION The role of brief hypocapnia in the ventimesponse to CO2 with hypoxia  BRAIN DAMAGE Lesional effects of primary cosmic heavy rat brain  BUOTANCY Heutral buoyancy: One possible tool for training in a simulated zero-genvironm	tic  A77-2611'  rring  In  877-1873'  latory  A77-2328'  ions on  A77-2415:  man's
Reduction in plasma vasopressin levels of dehydrated rats following acute stress  BLOOD PRESSURE Changes in orthostatic tolerance in man a altitude of 3500 meters  Hemodynamics of healthy individuals under regimes of lower body negative pressure  BLOOD VOLUME New aspects of the study of the respirato function of the blood during adaptation  BODY COMPOSITION (BIOLOGY) Body composition changes in men and women 2-3 weeks of bed rest  Effects on body size and composition of cerposure to altered gravity centrif stress in mammals	A77-25147  t an  A77-24505  various  A77-26111  ry  to hypoxia  A77-26270  after  A77-24162  hronic  uging	Beffect of electrostimulation of the hypotiand limbic structures on vestibulo-soma reflexes  The vocabulary of brain potentials: Inferogrammer cognitive events from brain potentials: operational settings [AD-A029452]  BRAIN CIRCULATION  The role of brief hypocapnia in the venticesponse to CO2 with hypoxia  BRAIN DANAGE  Lesional effects of primary cosmic heavy rat brain  BUOYAMCY  Heutral buoyancy: One possible tool for training in a simulated zero-g environment.	tic  A77-2611'  rring  In  877-1873'  latory  A77-2328'  ions on  A77-2415:  man's
Reduction in plasma vasopressin levels of dehydrated rats following acute stress  BLOOD PRESSURE Changes in orthostatic tolerance in man a altitude of 3500 meters  Hemodynamics of healthy individuals under regimes of lower body negative pressure  BLOOD VOLUME New aspects of the study of the respirato function of the blood during adaptation  BODY COMPOSITION (BIOLOGY) Body composition changes in men and women 2-3 weeks of bed rest  Effects on body size and composition of c exposure to altered gravity centrif stress in mammals [NASA-CR-149804]	A77-25147  t an  A77-24505     various  A77-26111  ry     to hypoxia  A77-26270  after  A77-24162  bronic uging  877-19749	Effect of electrostimulation of the hypothand limbic structures on vestibulo-some reflexes  The vocabulary of brain potentials: Inferogrammer cognitive events from brain potentials: operational settings [AD-A029452]  BRAIN CIRCULATION The role of brief hypocapnia in the venticesponse to CO2 with hypoxia  BRAIN DAMAGE Lesional effects of primary cosmic heavy rat brain  BUOYAMCY Reutral buoyancy: One possible tool for training in a simulated zero-g environment.	tic  A77-2611'  rring  In  877-1873'  latory  A77-2328'  ions on  A77-2415:  man's
Reduction in plasma vasopressin levels of dehydrated rats following acute stress  BLOOD PRESSURE Changes in orthostatic tolerance in man a altitude of 3500 meters  Hemodynamics of healthy individuals under regimes of lower body negative pressure  BLOOD VOLUME Wew aspects of the study of the respirato function of the blood during adaptation  BODY COMPOSITION (BIOLOGY) Body composition changes in men and women 2-3 weeks of bed rest  Effects on body size and composition of c exposure to altered gravity centrif stress in mammals [MASA-CR-149804]  BODY FLUIDS	A77-25147 t an A77-24505 various A77-26111 ry to hypoxia A77-26270 after A77-24162 hronic uging	Beffect of electrostimulation of the hypot and limbic structures on vestibulo-soma reflexes  The vocabulary of brain potentials: Infer cognitive events from brain potentials: operational settings [AD-A029452]  BRAIN CIRCULATION  The role of brief hypocapnia in the ventimesponse to CO2 with hypoxia  BRAIN DAMAGE  Lesional effects of primary cosmic heavy rat brain  BUOYANCY  Reutral buoyancy: One possible tool for training in a simulated zero-g environments.	tic a77-2611' rring in s77-1873' latory a77-23280 ions on a77-24150 man's ent s77-19730
Reduction in plasma vasopressin levels of dehydrated rats following acute stress  BLOOD PRESSURE Changes in orthostatic tolerance in man a altitude of 3500 meters  Hemodynamics of healthy individuals under regimes of lower body negative pressure  BLOOD VOLUME New aspects of the study of the respirato function of the blood during adaptation  BODY COMPOSITION (BIOLOGY) Body composition changes in men and women 2-3 weeks of bed rest  Effects on body size and composition of c exposure to altered gravity centrif stress in mammals [NASA-CR-149804]  BODY FLUIDS Fluid shifts during thermal stress with a	A77-25147 t an A77-24505 various A77-26111 ry to hypoxia A77-26270 after A77-24162 hronic uging	Effect of electrostimulation of the hypot and limbic structures on vestibulo-soma reflexes  The vocabulary of brain potentials: Inferographic cognitive events from brain potentials: operational settings [AD-A029452]  BRAIN CIRCULATION  The role of brief hypocapnia in the venticesponse to CO2 with hypoxia  BRAIN DAMAGE  Lesional effects of primary cosmic heavy: rat brain  BUOTANCY  Heutral buoyancy: One possible tool for training in a simulated zero-g environments of the complex procession sickness during the complex prevention of decompression sickness during the complex prevention of the complex prevention prevention of the complex prevention prevention of the complex prevention of the complex prevention p	tic  A77-2611  rring  In  X77-1873  latory  A77-2328  ions on  A77-2415  man's  ent  X77-19736
Reduction in plasma vasopressin levels of dehydrated rats following acute stress  BLOOD PRESSURE Changes in orthostatic tolerance in man a altitude of 3500 meters  Hemodynamics of healthy individuals under regimes of lower body negative pressure  BLOOD VOLUME New aspects of the study of the respirato function of the blood during adaptation  BODY COMPOSITION (BIOLOGY) Body composition changes in men and women 2-3 weeks of bed rest  Effects on body size and composition of c exposure to altered gravity centrif stress in mammals [NASA-CR-149804]  BODY FLUIDS Fluid shifts during thermal stress with a without fluid replacement	A77-25147 t an A77-24505 various A77-26111 ry to hypoxia A77-26270 after A77-24162 hronic uging	Beffect of electrostimulation of the hypot and limbic structures on vestibulo-soma reflexes  The vocabulary of brain potentials: Infer cognitive events from brain potentials: operational settings [AD-A029452]  BRAIN CIRCULATION  The role of brief hypocapnia in the ventimesponse to CO2 with hypoxia  BRAIN DAMAGE  Lesional effects of primary cosmic heavy rat brain  BUOYANCY  Reutral buoyancy: One possible tool for training in a simulated zero-g environments.	tic  A77-2611  rring  In  X77-1873  latory  A77-2328  ions on  A77-2415  man's  ent  X77-19736
Reduction in plasma vasopressin levels of dehydrated rats following acute stress  BLOOD PRESSURE Changes in orthostatic tolerance in man a altitude of 3500 meters  Hemodynamics of healthy individuals under regimes of lower body negative pressure  BLOOD VOLUME Wew aspects of the study of the respirato function of the blood during adaptation  BODY COMPOSITION (BIOLOGY) Body composition changes in men and women 2-3 weeks of bed rest  Effects on body size and composition of c exposure to altered gravity centrif stress in mammals [MASA-CR-149804]  BODY FLUIDS Fluid shifts during thermal stress with a without fluid replacement  The effects of prolonged spaceflight on the	A77-25147  t an  A77-24505 various  A77-26111  ry to hypoxia  A77-26270  after  A77-24162 hronic uging  B77-19749  nd  A77-24362 he	Beffect of electrostimulation of the hypot and limbic structures on vestibulo-soma reflexes  The vocabulary of brain potentials: Inferographic cognitive events from brain potentials: operational settings [AD-A029452]  BRAIN CIRCULATION  The role of brief hypocapnia in the venticesponse to CO2 with hypoxia  BRAIN DAMAGE  Lesional effects of primary cosmic heavy: rat brain  BUOTANCY  Heutral buoyancy: One possible tool for training in a simulated zero-g environment of the complex procession of the complex process procession of the complex procession of the com	tic  A77-2611  rring  In  X77-1873  latory  A77-2328  ions on  A77-2415  man's  ent  X77-19736
Reduction in plasma vasopressin levels of dehydrated rats following acute stress  BLOOD PRESSURE Changes in orthostatic tolerance in man a altitude of 3500 meters  Hemodynamics of healthy individuals under regimes of lower body negative pressure  BLOOD VOLUME New aspects of the study of the respirato function of the blood during adaptation  BODY COMPOSITION (BIOLOGY) Body composition changes in men and women 2-3 weeks of bed rest  Effects on body size and composition of c exposure to altered gravity centrif stress in mammals [MASA-CR-149804]  BODY FLUIDS Fluid shifts during thermal stress with a without fluid replacement  The effects of prolonged spaceflight on t regional distribution of fluid, muscle	A77-25147  t an  A77-24505 various  A77-26111  ry to hypoxia  A77-26270  after  A77-24162 hronic uging  B77-19749  nd  A77-24362 he	Effect of electrostimulation of the hypoth and limbic structures on vestibulo-soma reflexes  The vocabulary of brain potentials: Inferographic events from brain potentials: operational settings [AD-A029452]  BRAIN CIRCULATION The role of brief hypocapnia in the venticesponse to CO2 with hypoxia  BRAIN DAMAGE Lesional effects of primary cosmic heavy: rat brain  BUOYAMCY Heutral buoyancy: One possible tool for training in a simulated zero-g environment of the complex procession procession of the complex procession procession of the complex procession of the complex procession procession of the complex procession procession of the complex procession of the complex procession of the complex procession of the complex procession of the comple	tic a77-2611' rring in a77-1873' latory a77-2328' ions on a77-2415' man's ent a77-1973'
Reduction in plasma vasopressin levels of dehydrated rats following acute stress  BLOOD PRESSURE Changes in orthostatic tolerance in man a altitude of 3500 meters  Hemodynamics of healthy individuals under regimes of lower body negative pressure  BLOOD VOLUME Hew aspects of the study of the respirato function of the blood during adaptation  BODY COMPOSITION (BIOLOGY) Body composition changes in men and women 2-3 weeks of bed rest  Effects on body size and composition of c exposure to altered gravity centrif stress in mammals [HASA-CR-149804]  BODY FLUIDS Fluid shifts during thermal stress with a without fluid replacement  The effects of prolonged spaceflight on tiregional distribution of fluid, muscle and stress with a biostereometric results from Skylab	A77-25147 t an A77-24505 various A77-26111 ry to hypoxia A77-26270 after A77-24162 hronic uging E77-19749 nd A77-24362 he and fat:	Effect of electrostimulation of the hypoth and limbic structures on vestibulo-soma reflexes  The vocabulary of brain potentials: Inferographic cognitive events from brain potentials: operational settings [AD-A029452]  BRAIN CIRCULATION  The role of brief hypocapnia in the vention response to CO2 with hypoxia  BRAIN DAMAGE  Lesional effects of primary cosmic heavy: rat brain  BUOTANCY  Reutral buoyancy: One possible tool for training in a simulated zero-g environment of the compression sickness during short-term flights in a depressurized continuation and complete content and Ca-45  CALCIUM ISOTOPES  Potassium and phosphorus content and Ca-45	tic a77-2611' cring in a77-1873' latory a77-2328' ions on a77-2415' man's ent a77-1973' abin at
Reduction in plasma vasopressin levels of dehydrated rats following acute stress  BLOOD PRESSURE Changes in orthostatic tolerance in man a altitude of 3500 meters  Hemodynamics of healthy individuals under regimes of lower body negative pressure  BLOOD VOLUME New aspects of the study of the respirato function of the blood during adaptation  BODY COMPOSITION (BIOLOGY) Body composition changes in men and women 2-3 weeks of bed rest  Effects on body size and composition of c exposure to altered gravity centrif stress in mammals [MASA-CR-149804]  BODY FLUIDS Fluid shifts during thermal stress with a without fluid replacement  The effects of prolonged spaceflight on t regional distribution of fluid, muscle a Biostereometric results from Skylab	A77-25147  t an  A77-24505 various  A77-26111  ry to hypoxia  A77-26270  after  A77-24162 hronic uging  B77-19749  nd  A77-24362 he	Effect of electrostimulation of the hypoth and limbic structures on vestibulo-soma reflexes  The vocabulary of brain potentials: Inferographic cognitive events from brain potentials: operational settings [AD-A029452]  BRAIN CIRCULATION  The role of brief hypocapnia in the ventimesponse to CO2 with hypoxia  BRAIN DAMAGE  Lesional effects of primary cosmic heavy: rat brain  BUOTANCY  Heutral buoyancy: One possible tool for training in a simulated zero-genvironment in the complex serior short-term flights in a depressurized contains and titudes  CALCIUM ISOTOPES  Potassium and phosphorus content and Ca-4: inclusion in bones and teeth of rats affiliations	a77-2611' a77-1873' latory a77-2328' ions on a77-2415' man's ent a77-1973'
Reduction in plasma vasopressin levels of dehydrated rats following acute stress  BLOOD PRESSURE Changes in orthostatic tolerance in man a altitude of 3500 meters  Hemodynamics of healthy individuals under regimes of lower body negative pressure  BLOOD VOLUME New aspects of the study of the respirato function of the blood during adaptation  BODY CORPOSITION (BIOLOGY) Body composition changes in men and women 2-3 weeks of bed rest  Effects on body size and composition of c exposure to altered gravity centrif stress in manmals [MASA-CR-149804]  BODY FLUIDS Fluid shifts during thermal stress with a without fluid replacement  The effects of prolonged spaceflight on t regional distribution of fluid, muscle Biostereometric results from Skylab	A77-25147 t an A77-24505 various A77-26111 ry to hypoxia A77-26270 after A77-24162 hronic uging W77-19749 nd A77-24362 he and fat:	Effect of electrostimulation of the hypoth and limbic structures on vestibulo-soma reflexes  The vocabulary of brain potentials: Inferographic cognitive events from brain potentials: operational settings [AD-A029452]  BRAIN CIRCULATION  The role of brief hypocapnia in the vention response to CO2 with hypoxia  BRAIN DAMAGE  Lesional effects of primary cosmic heavy: rat brain  BUOTANCY  Reutral buoyancy: One possible tool for training in a simulated zero-g environment of the compression sickness during short-term flights in a depressurized continuation and complete content and Ca-45  CALCIUM ISOTOPES  Potassium and phosphorus content and Ca-45	a77-2611' a77-1873' latory a77-2328' ions on a77-2415' man's ent a77-1973'
Reduction in plasma vasopressin levels of dehydrated rats following acute stress  BLOOD PRESSURE Changes in orthostatic tolerance in man a altitude of 3500 meters  Hemodynamics of healthy individuals under regimes of lower body negative pressure  BLOOD VOLUME New aspects of the study of the respirato function of the blood during adaptation  BODY COMPOSITION (BIOLOGY) Body composition changes in men and women 2-3 weeks of bed rest  Effects on body size and composition of cerposure to altered gravity centrif stress in mammals [MASA-CR-149804]  BODY FLUIDS Fluid shifts during thermal stress with a without fluid replacement  The effects of prolonged spaceflight on the regional distribution of fluid, muscle is biostereometric results from Skylab  BODY KIREMATICS Rotary motion of the body of an astronaut	A77-25147 t an A77-24505 various A77-26111 ry to hypoxia A77-26270 after A77-24162 hronic uging W77-19749 nd A77-24362 he and fat:	Beffect of electrostimulation of the hypoth and limbic structures on vestibulo-soma reflexes  The vocabulary of brain potentials: Inferographic cognitive events from brain potentials: operational settings [AD-A029452]  BRAIN CINCULATION  The role of brief hypocapnia in the vention response to CO2 with hypoxia  BRAIN DAMAGE  Lesional effects of primary cosmic heavy: rat brain  BUOYANCY  Heutral buoyancy: One possible tool for training in a simulated zero-g environment of the compression sickness during short-term flights in a depressurized of high altitudes  CALCIUM ISOTOPES  Potassium and phosphorus content and Ca-quinclusion in bones and teeth of rats aff 22-day space flight aboard the biosatell Cosmos 605	a77-2611' a77-1873' latory a77-2328' ions on a77-2415' man's ent a77-1973'
Reduction in plasma vasopressin levels of dehydrated rats following acute stress  BLOOD PRESSURE Changes in orthostatic tolerance in man a altitude of 3500 meters  Hemodynamics of healthy individuals under regimes of lower body negative pressure  BLOOD VOLUME New aspects of the study of the respirato function of the blood during adaptation  BODY CORPOSITION (BIOLOGY) BODY CORPOSITION (BIOLOGY) BODY composition changes in men and women 2-3 weeks of bed rest  Effects on body size and composition of c exposure to altered gravity centrif stress in manmals [MASA-CR-149804]  BODY FLOIDS Fluid shifts during thermal stress with a without fluid replacement  The effects of prolonged spaceflight on t regional distribution of fluid, muscle Biostereometric results from Skylab  BODY KIREHATICS Rotary motion of the body of an astronaut	A77-25147 t an A77-24505 various A77-26111 ry to hypoxia A77-26270 after A77-24162 hronic uging E77-19749 nd A77-24362 he and fat: E77-19738	Effect of electrostimulation of the hypoth and limbic structures on vestibulo-soma reflexes  The vocabulary of brain potentials: Inferographic cognitive events from brain potentials: operational settings [AD-A029452]  BRAIN CIRCULATION The role of brief hypocapnia in the venticesponse to CO2 with hypoxia  BRAIN DAMAGE Lesional effects of primary cosmic heavy: rat brain  BUOTANCY Heutral buoyancy: One possible tool for training in a simulated zero-genvironm  CCABIN ATMOSPHERES Prevention of decompression sickness during short-term flights in a depressurized contains at the complex content and Ca-quinclusion in bones and teeth of rats aff 22-day space flight aboard the biosatell Cosmos 605  CALCIUM SSIHULI	tic a77-2611' rring in a77-1873' latory a77-2328' ions on a77-2415' man's ent a77-1973' abin at a77-26114' 5 ter a lite
Reduction in plasma vasopressin levels of dehydrated rats following acute stress  BLOOD PRESSURE Changes in orthostatic tolerance in man a altitude of 3500 meters  Hemodynamics of healthy individuals under regimes of lower body negative pressure  BLOOD VOLUME Hew aspects of the study of the respirato function of the blood during adaptation  BODY CORPOSITION (BIOLOGY) Body composition changes in men and women 2-3 weeks of bed rest  Effects on body size and composition of c exposure to altered gravity centrif stress in mammals [MASA-CR-149804]  BODY FLUIDS Fluid shifts during thermal stress with a without fluid replacement  The effects of prolonged spaceflight on the regional distribution of fluid, muscle is instereometric results from Skylab  BODY KIREMATICS Rotary motion of the body of an astronaut  BODY MEASUREMENT (BIOLOGY) Effects on body size and composition of cl	A77-25147 t an A77-24505 various A77-26111 ry to hypoxia A77-26270 after A77-24162 hronic uging B77-19749 nd A77-24362 he and fat: B77-19738 A77-23833 hronic	Beffect of electrostimulation of the hypoth and limbic structures on vestibulo-soma reflexes  The vocabulary of brain potentials: Inferographic cognitive events from brain potentials: operational settings [AD-A029452]  BRAIN CINCULATION  The role of brief hypocapnia in the vention response to CO2 with hypoxia  BRAIN DAMAGE  Lesional effects of primary cosmic heavy: rat brain  BUOYANCY  Heutral buoyancy: One possible tool for training in a simulated zero-g environment of the compression sickness during short-term flights in a depressurized of high altitudes  CALCIUM ISOTOPES  Potassium and phosphorus content and Ca-quinclusion in bones and teeth of rats aff 22-day space flight aboard the biosatell Cosmos 605  CALORIC STIMULI Response of the vestibular apparatus to propose of the vestibula	tic a77-2611' rring in a77-1873' latory a77-2328' ions on a77-2415' man's ent a77-1973' abin at a77-26114' 5 ter a lite
Reduction in plasma vasopressin levels of dehydrated rats following acute stress  BLOOD PRESSURE Changes in orthostatic tolerance in man a altitude of 3500 meters  Hemodynamics of healthy individuals under regimes of lower body negative pressure  BLOOD VOLUME Hew aspects of the study of the respirato function of the blood during adaptation  BODY COMPOSITIOE (BIOLOGY) Body composition changes in men and women 2-3 weeks of bed rest  Effects on body size and composition of c exposure to altered gravity centrif stress in mammals [BASA-CR-149804] BODY FLUIDS Fluid shifts during thermal stress with a without fluid replacement  The effects of prolonged spaceflight on t regional distribution of fluid, muscle shipstereometric results from Skylab  BODY KIMEMATICS Rotary motion of the body of an astronaut  BODY MEASUREMENT (BIOLOGY) Effects on body size and composition of c exposure to altered gravity centrifi	A77-25147 t an A77-24505 various A77-26111 ry to hypoxia A77-26270 after A77-24162 hronic uging B77-19749 nd A77-24362 he and fat: B77-19738 A77-23833 hronic	Effect of electrostimulation of the hypot and limbic structures on vestibulo-soma reflexes  The vocabulary of brain potentials: Infer cognitive events from brain potentials: operational settings [AD-A029452]  BRAIN CIRCULATION  The role of brief hypocapnia in the ventimesponse to CO2 with hypoxia  BRAIN DAMAGE  Lesional effects of primary cosmic heavy: rat brain  BUOTANCY  Heutral buoyancy: One possible tool for training in a simulated zero-genvironment in the ventime short-term flights in a depressurized contains and phosphorus content and Ca-4 inclusion in bones and teeth of rats aff 22-day space flight aboard the biosatell Cosmos 605  CALCIUM STIMULI  Response of the vestibular apparatus to precaloric stimulation of the labyrinths	a77-26111 a77-1873 latory a77-2328 ions on a77-2415 man's ent a77-1973 abin at a77-26114 cter a lite a77-2610
Reduction in plasma vasopressin levels of dehydrated rats following acute stress  BLOOD PRESSURE Changes in orthostatic tolerance in man a altitude of 3500 meters  Hemodynamics of healthy individuals under regimes of lower body negative pressure  BLOOD VOLUME New aspects of the study of the respirato function of the blood during adaptation  BODY CORPOSITION (BIOLOGY) BODY COMPOSITION (BIOLOGY) BODY COMPOSITION (BIOLOGY) BODY COMPOSITION (BIOLOGY) BODY COMPOSITION (BIOLOGY) BODY PLOUDS FINENATION (BIOLOGY) FOR STREMATICS Rotary motion of the body of an astronaut  BODY KINENATICS Rotary motion of the body of an astronaut  BODY MEASUREMENT (BIOLOGY) Effects on body size and composition of clerposure to altered gravity centrifunction of clerposure to altered gravity centrifunctions of clerposure to altered gravity centrifunctions in mammals	A77-25147 t an A77-24505 various A77-26111 ry to hypoxia A77-26270 after A77-24162 hronic uging W77-19749 nd A77-24362 he and fat: W77-19738 A77-23833 hronic uging	Effect of electrostimulation of the hypote and limbic structures on vestibulo-some reflexes  The vocabulary of brain potentials: Inference cognitive events from brain potentials: operational settings [AD-A029452]  BRAIN CIRCULATION  The role of brief hypocapnia in the ventimesponse to CO2 with hyporia  BRAIN DAMAGE  Lesional effects of primary cosmic heavy rate brain  BUOYAMCY  Reutral buoyancy: One possible tool for training in a simulated zero-genvironment in the ventime short-term flights in a depressurized continuing in the ventime short-term flights in a depressurized continuing in the ventimes flights in a depressurized continuing in the ventimes of the light aboard the biosatel. Cosmos 605  CALCIUM ISOTOPES  Potassium and phosphorus content and Ca-4: inclusion in bones and teeth of rate affects of the ventime short term of the light aboard the biosatel. Cosmos 605  CALCIUM STIMULI  Response of the vestibular apparatus to precaloric stimulation of the labyrinths	tic a77-2611' rring in a77-1873' latory a77-2328' ions on a77-2415' man's ent a77-1973' abin at a77-26114' 5 ter a lite
Reduction in plasma vasopressin levels of dehydrated rats following acute stress  BLOOD PRESSURE Changes in orthostatic tolerance in man a altitude of 3500 meters  Hemodynamics of healthy individuals under regimes of lower body negative pressure  BLOOD VOLUME Hew aspects of the study of the respirato function of the blood during adaptation  BODY COMPOSITION (BIOLOGY) Body composition changes in men and women 2-3 weeks of bed rest  Effects on body size and composition of cerposure to altered gravity centrif stress in mammals [MASA-CR-149804]  BODY FLUIDS Fluid shifts during thermal stress with a without fluid replacement  The effects of prolonged spaceflight on tregional distribution of fluid, muscle shostereometric results from Skylab  BODY KIBEMATICS Rotary motion of the body of an astronaut  BODY MEASUREMENT (BIOLOGY) Effects on body size and composition of clerposure to altered gravity centrif stress in mammals [MASA-CR-149804]	A77-25147 t an A77-24505 various A77-26111 ry to hypoxia A77-26270 after A77-24162 hronic uging W77-19749 nd A77-24362 he and fat: W77-19738 A77-23833 hronic uging	Beffect of electrostimulation of the hypoth and limbic structures on vestibulo-soma reflexes  The vocabulary of brain potentials: Inferographic cognitive events from brain potentials: operational settings [AD-A029452]  BRAIN CINCULATION  The role of brief hypocapnia in the vention response to CO2 with hypoxia  BRAIN DAMAGE  Lesional effects of primary cosmic heavy: rat brain  BUOYANCY  Heutral buoyancy: One possible tool for training in a simulated zero-g environment of training in a simulated zero-g environment of the labyrints and phosphorus content and Ca-quinclusion in bones and teeth of rats aff 22-day space flight aboard the biosatell Cosmos 605  CALORIC STIMULI  Response of the vestibular apparatus to procaloric stimulation of the labyrints	ary - 26114 ary - 1873; latory - 1873; latory - 2328; ions on - 1877 - 2415; man's - 1973; ary - 1973; ary - 1973; ary - 26114 ary - 2610; colonged
Reduction in plasma vasopressin levels of dehydrated rats following acute stress  BLOOD PRESSURE Changes in orthostatic tolerance in man a altitude of 3500 meters  Hemodynamics of healthy individuals under regimes of lower body negative pressure  BLOOD VOLUME New aspects of the study of the respirato function of the blood during adaptation  BODY CORPOSITION (BIOLOGY) Body composition changes in men and women 2-3 weeks of bed rest  Effects on body size and composition of c exposure to altered gravity centrif stress in mammals [BASA-CR-149804]  BODY FLUIDS Fluid shifts during thermal stress with a without fluid replacement  The effects of prolonged spaceflight on t regional distribution of fluid, muscle Biostereometric results from Skylab  BODY KINEMATICS Rotary motion of the body of an astronaut  BODY MEASUREMENT (BIOLOGY) Effects on body size and composition of clerposure to altered gravity centrift stress in mammals [FASA-CR-149804]  BODY SIZE (BIOLOGY) Weight and shape gravitational effects	A77-25147 t an A77-24505 various A77-26111 ry to hypoxia A77-26270 after A77-24162 hronic uging W77-19749 nd A77-24362 he and fat: W77-19738 A77-23833 hronic uging	Effect of electrostimulation of the hypote and limbic structures on vestibulo-some reflexes  The vocabulary of brain potentials: Inference cognitive events from brain potentials: Operational settings [AD-A029452]  BRAIN CIRCULATION  The role of brief hypocapnia in the ventimesponse to CO2 with hyporia  BRAIN DAMAGE  Lesional effects of primary cosmic heavy: rat brain  BUOYAMCY  Heutral buoyancy: One possible tool for training in a simulated zero-genvironment in a simulated zero-genvironment in the ventimesponse content and Ca-4: inclusion in bones and teeth of rats affined and the biosatel. Cosmos 605  CALCIUM ISOTOPES  Potassium and phosphorus content and Ca-4: inclusion in bones and teeth of rats affined and company content and Ca-4: cosmos 605  CALCIUM STIMULI  Response of the vestibular apparatus to procaloric stimulation of the labyrinths  CARBOHIDRATE HETABOLISM  Indicators of nitrogen, carbohydrate and metabolism in man during prolonged stay	arr-26112 arring lin arr-18733 latory arr-23280 ions on arr-24159 man's ent arr-26114 ster a lite arr-26109 colonged
Reduction in plasma vasopressin levels of dehydrated rats following acute stress  BLOOD PRESSURE Changes in orthostatic tolerance in man a altitude of 3500 meters  Hemodynamics of healthy individuals under regimes of lower body negative pressure  BLOOD VOLUME Hew aspects of the study of the respirato function of the blood during adaptation  BODY COMPOSITION (BIOLOGY) BODY FIGURE to altered gravity centrif stress in mammals [MASA-CR-149804] BODY FIUIDS Fluid shifts during thermal stress with a without fluid replacement  The effects of prolonged spaceflight on the regional distribution of fluid, muscle is instereometric results from Skylab  BODY KIREMATICS ROTATY motion of the body of an astronaut  BODY MEASUREMENT (BIOLOGY) Biffects on body size and composition of clerposure to altered gravity centrif stress in mammals [MASA-CR-149804] BODY SIZE (BIOLOGY) Weight and shape gravitational effects biological evolution	A77-25147 t an A77-24505 various A77-26111 ry to hypoxia A77-26270 after A77-24162 hronic uging W77-19749 nd A77-24362 he and fat: W77-19738 A77-23833 hronic uging	Effect of electrostimulation of the hypoth and limbic structures on vestibulo-soma reflexes  The vocabulary of brain potentials: Inferographic cognitive events from brain potentials: operational settings [AD-A029452]  BRAIN CINCULATION  The role of brief hypocapnia in the ventimesponse to CO2 with hypoxia  BRAIN DAMAGE  Lesional effects of primary cosmic heavy: rat brain  BUOYANCY  Heutral buoyancy: One possible tool for training in a simulated zero-genvironment in the ventime short-term flights in a depressurized contains and phosphorus content and Ca-quinclusion in bones and teeth of rats aff 22-day space flight aboard the biosatell cosmos 605  CALCIUM ISOTOPES  Potassium and phosphorus content and Ca-quinclusion in bones and teeth of rats aff 22-day space flight aboard the biosatell cosmos 605  CALORIC STHULI  Response of the vestibular apparatus to procaloric stimulation of the labyrinths  CARBOHYDRATE HETABOLISM  Indicators of nitrogen, carbohydrate and imetabolism in man during prolonged stay hyperbaric conditions	arr-26112 arring lin arr-18733 latory arr-23280 ions on arr-24159 man's ent arr-26114 ster a lite arr-26109 colonged

	•		
CARBON DIOXIDE CONCENTRATION The role of brief hypocapnia in the ven	tilatory	CHARGED PARTICLES Influence of heavy ions on the transform	ing <sup>.</sup>
response to CO2 with hypoxia	A77-23288	activity of DNA	A77-24158
Hypoxia and carbon dioxide as separate interactive depressants of ventilation	n '	CHEMORECEPTORS  The role of chemoreceptors in the adapta	
CARBON MONOXIDE POISONING	A77-23289	organism to hypoxia	A77-26271
Evaluation of the toxicity of combustion		CHROMOSOMES	
Acute combined effects of HCW and CO, we reference to a theoretical considerat		Effect of space flight factors and eleva- temperatures on seeds of diploid and to buckwheat	ted etraploid
acute combined effects on the basis of		240.142.020	A77-25425
cyanide and COHb analyses	A77-24455	Automated clinical system for chromosome [NASA-CASE-NPO-13913-1]	analysis #77-19750.
CARBON 13  Variation in stable carbon isotopes in	organic	CHRONIC COMDITIONS  Physiological changes associated with log	ng-tors
matter from the Gunflint Iron Pormati- Precambrian rock analysis	on	increases in acceleration	A77-24138
G10071G F07007G10G	A77-24618	CIRCADIAN RHYTHMS	
CARDIAC VENTRICLES  Cardiac responses to moderate training:	in rats	Two mechanisms of rephasal of circadian response to a 180 deg phase shift /sim	
	A77-24364	12-hr time zone change/	
CARDIOGRAPHY		Possi sissista discritica statuta T-	A77-25300
Systolic time interval data acquisition Specialized cardiovascular studies	system.	Renal electrolyte circadian rhythms - In- from feeding and activity patterns	терепдепсе
[NASA-CR-151213]	N77-19747	•	A77-26582
CARDIOVASCULAR SYSTEM	thaatatia	CLINICAL MEDICINE	
Physiological effects induced by antior hypokinesia	thostatic	Computer analysis of arteriograms	A77-24738
••	A77-24139	Automated clinical system for chromosome	
Antiorthostatic test as a model to stud		[NASA-CASE-NPO-13913-1]	N77-19750
antigravity mechanisms of the cardioversystem	ascular	COBALT 60 Study of the biochemical indicators of c	hronic
- •	A77-24163	irradiation in rats	
Metabolic and cardiovascular responses		COCHERA	A77-24150
norepinephrine in trained and nontrai subjects	ned numan	COCHLEA A two-dimensional model for the cochlea.	II - The
545,5555	A77-24359	heuristic approach and numerical resul-	
Cardiovascular responses of men and wom	en to lower		A77-25170
body negative pressure	A77-24507	COGNITIVE PSYCHOLOGY Visual conspicuity as an external determ	inant of
Computerized X-ray reconstruction tomog		eye movements and selective attention	
stereometric analysis of cardiovascul			<b>A77-26578</b>
Remodynamics of healthy individuals unde	A77-24737	COLD ACCLIBATIZATION  Spinal cord thermosensitivity and sorting	T of
regimes of lower body negative pressu		neural signals in cold-exposed rats	, 01
g	A77-26111	P-16 b-4 b-31 1111	A77-24357
Cardiovascular instrumentation for space [NASA-CR-151935]	eilight N77-18730	Role of ketone bodies in nonshivering thermogenesis in cold-acclimated rats	
CATABOLISM			A77-24358
Influence of accelerations, additional		COLD TOLERANCE  Effects of cold exposure and dehydration	on ronal
and hypokinesia on protein catabolism Japanese quail /Coturnix Coturnix Jap		function in black-tailed prairie dogs	on renar
	A77-26106		A77-24367
CBLLS (BIOLOGY)  Lung mast cell density and distribution	in	COMBUSTION PRODUCTS  Evaluation of the toxicity of combustion	producte
chronically hypoxic animals	10	nvaraderon or the toxxorty or compastion	A77-24453
	A77-24360	Acute combined effects of HCN and CO, with	
CENTRIFUGING STRESS  Fluid and electrolyte shifts in women do	uring +Gg	reference to a theoretical consideration acute combined effects on the basis of	
acceleration after 15 days' bed rest	uling .oz	cyanide and COHb analyses	cae brood
	A77-23424		A77-24455
A study of the cumulative effects of re- exposures to radial accelerations	peated	COMPORT Investigation on a passenger ride-comfort	•
capobages to radada describitions	A77-24172	improvement system with limited control	
Effect of acceleration growth rate on the	he response	actuator performance for a flexible air	
of the external respiratory system	A77-26121	[NLR-TR-75140-U] COMMUNICATION BQUIPMENT	N77-18745
CEREBELLUM		Apparatus for transmitting physiological	
Cerebellum and gravity Russian book	on	Descriptive communication structure metri	177-26570
neurophysiology	A77-23500	preliminary logical and empirical analy	
CEREBRAL CORTEX		[AD-A030512]	N77-18738
Electrical activity of the layers of an		COMPRESATORY TRACKING	and
cortex when falling asleep and in variof sleep	ious stages	Human pilot describing function, remnant associated information for pitch attitudes	
•	A77-26224	control: Results from in-flight and	•
Evoked responses of visual cortex under		ground-based tracking experiments	W77_ 407##
stimulation of hypothalamic formations	s A77-26569	[NLR-TR-75062-U] COMPUTER ASSISTED INSTRUCTION	N77-18744
The vocabulary of brain potentials: In		Advanced simulation in undergraduate pilo	)t
cognitive events from brain potential:		training: An overview	w77 40755
operational settings [AD-A029452]	N77-18737	[AD-A030224] COMPUTER STORAGE DEVICES	N77-18755
CBRENKOV RADIATION		Static evaluation of air cushion deployme	
Role of Cerenkov radiation in the eye-fi	lashes	effects on the memory retention of the	solid
observed by Apollo astronauts	A77-24153	state digital recorder system [PB-259006/5]	N77-18756
		f	

COMPUTER TRUMMIQUES SUBJECT INDEX

COMPUTER TECHNIQUES	CITOLOGY
Computerized X-ray reconstruction tomography in stereometric analysis of cardiovascular dynamics A77-24737	Effect of space flight factors and elevated temperatures on seeds of diploid and tetraploid buckwheat
Computer analysis of arteriograms	A77-25425
Semi-auto manipulator control systems and their	D ·
dynamic analysis with computer A77-24831	DATA ACQUISITION
Computerized tomography using video recorded fluoroscopic images	Systolic time interval data acquisition system. Specialized cardiovascular studies
A77-26244	[MASA-CR-151213] H77-19747
Automated electroencephalography system and electroencephalographic correlates of space	DATA LINKS Descriptive communication structure metrics: A
motion sickness, part 3 (NASA-CR-151210) R77-19746	preliminary logical and empirical analysis [AD-A030512] N77-18738
COMPUTERIZED SIMULATION	DATA PROCESSING
An experimental validation of mathematical simulation of human thermoregulation	Conditions for improving visual information processing
A77-25217 Advanced simulation in undergraduate pilot	[AD-A030425] E77-18751 Conditions for improving visual information
training: An overview	processing
[AD-A030224] B77-18755	[AD-A029898] N77-18752
SAINT simulation of a remotely piloted vehicle/drone control facility: Model Development and analysis	DATA RECORDING Static evaluation of air cushion deployment effects on the memory retention of the solid
[AD-A031085] H77-19758	state digital recorder system [PB-259006/5] N77-18756
Life sciences and space research XIV; Proceedings	DATA RETRIEVAL
of the Open Meeting of the Working Group on Space Biology, May 29-June 7, 1975, and	Formatting and organization of a human engineering standard
Symposium on Gravitational Physiology, Varna,	A77-25074
Bulgaria, May 30, 31, 1975	DATA TRANSMISSION
CONVECTIVE HEAT TRANSPER	Apparatus for transmitting physiological data A77-26570
Experimental study of convective heat transfer	DECOMPRESSION SICKNESS
coefficient for the human body in water A77-23426	Automatic control of decompression on the basis of the impedance signal of the body
CORONARY ARTERY DISEASE Coronary risk factors in flying personnel - A	A77-25418 Prevention of decompression sickness during
progress report	short-term flights in a depressurized cabin at
A77-24510 COSHIC RAYS	high altitudes A77-26114
Study with a multi-threshold HZE-particle	DECONDITIONING
dosimeter using plastic detectors in Apollo Biostack experiment	Deconditioning during prolonged immersion and possible countermeasures
A77-24154	A77-24166
COSMOS SATELLITES Irradiation of bio-objects aboard the Cosmos 690	DEHYDRATION  Bffects of cold exposure and dehydration on renal
biosatellite	function in black-tailed prairie dogs
A77-24146 Investigation of radiation sensitivity in mammals	A77-24367 Reduction in plasma vasopressin levels of
under long duration weightlessness	dehydrated rats following acute stress
A77-24147 Biochemical changes in rats flown on board the	A77-25147 Changes in fluid balance during prolonged
Cosmos 690 biosatellite	hypokinesia with antiorthostatic posture
A77-24149 Cytogenetic analysis of seeds of Crepis capillaris	DEOXYRIBONUCLEIC ACID
/L/ Wallr. exposed on board the earth artificial	Influence of heavy ions on the transforming
satellite Cosmos 613 A77-24152	activity of DNA A77-24158
CRASH LANDING	Effect of space factors on Escherichia coli B/r
Life support of space crews after forced landing on ground or water Russian book	cells A77-24177
A77-25325	DESERTS
CABATIBE Some parameters of phosphocreatine metabolism in	On methods of detection of extraterrestrial life A77-24175
man during increased and decreased energy	DETECTION
expenditures A77-26109	Detection of microbial infection in blood and antibiotic determinations
COLTURE TECHNIQUES	[NASA-CASE-GSC-12045-1] N77-18733
Performance of fungi in low temperature and hypersaline environments	DIAGNOSIS Computer analysis of arteriograms
A77-24176	A77-24738
Dependence of the species composition of a mixed	Rapid bacteriological diagnosis systems on
culture of microalgae on illumination and supply rate of nutrients	physical basis, noting splenic fever proof [BMVG-PBWT-76-15] N77-18726
A77-26118 CUMULATIVE DAMAGE	DIETS
A study of the cumulative effects of repeated	Metabolic processes in hypokinetic and rehabilitated men
exposures to radial accelerations	A77-24164
A77-24172 CYTOGENESIS	DIGITAL DATA Static evaluation of air cushion deployment
Cytogenetic analysis of seeds of Crepis capillaris	effects on the memory retention of the solid
/L/ Wallr. exposed on board the earth artificial satellite Cosmos 613	state digital recorder system [PB-259006/5] N77-18756
A77-24152	DIGITAL TECHNIQUES
	Visual performance and image coding

SUBJECT INDEX ERGONETERS

DISPLAY DEVICES Use of human engineering standards in de	esign A77-25072	Electrical activity of the layers of an cortex when falling asleep and in vari	
Pormatting and organization of a human of standard		of sleep Automated electroencephalography system	A77-26224
Multiple images as a function of LEDs v	A77-25074 Lewed	electroencephalographic correlates of motion sickness, part 3	space
during vibration	A77-25075	[NASA-CR-151210] BLECTROLYSIS	N77-19746
Human performance evaluation of matrix of Literature and technology review	. •	Technology advancement of the static fee electrolysis process	
[AD-A029932] DIVING (UNDERWATER)	ท77-18750	[NASA-CR-151934] BLECTROLYTE METABOLISE	N77-18741
Modified collins pedal-mode ergometer: Development and medical tests		Fluid and electrolyte shifts during bed isometric and isotonic exercise	rest with
[AD-A028355] DRONE AIRCRAFT	N77-18747	Fluid and electrolyte shifts in women du	A77-23423
SAINT simulation of a remotely piloted vehicle/drone control facility: Mode:	1	acceleration after 15 days' bed rest	A77-23424
Development and analysis [AD-A031085]	ห77-19758	Renal osmoregulatory function during sim space flight	
Anthropometric test dummy, model 825-50, development and performance	, design,	Renal electrolyte circadian rhythms - In from feeding and activity patterns	
[PB-257179/2] DIWARIC CONTROL	N77-18749	BLECTROMYOGRAPHY	A77-26582
Dynamic control characteristics and bra:		· Interaction of lung volume and chemical	
regulation of the wigilance of man dure performance of control tasks German	an book	respiratory muscle BMG and respiratory	A77-24366
New method of artificial motion synthes: application to locomotion robots and		Thermoregulatory responses in animals in helium-oxygen atmosphere under elevate	
DYNAMIC RESPONSE	A77-24830	Interaction of the regulatory systems fo muscle-contraction thermogenesis and e	) T
Human dynamic orientation model applied simulation	to motion	respiration	A77-26225
(NASA-CR-149862)	N77-19754	ELECTRONIC RECORDING SYSTEMS Inexpensive technique to record respirat	
. <b>E</b>		flight	A77-24511
ECOLOGY Speculations on the consequences to bio	logy of	ELECTROPHYSIOLOGY Automatic control of decompression on th	
space shuttle-associated increases in .UV-B radiation	global	the impedance signal of the body	A77-25418
[NASA-TM-X-73200]	N77-18728	EMBRYOLOGY Gravity and embryonic development	
BFFEREET HERVOUS SYSTEMS Hotor activity of mice in a magnetic fie		Gravity and embryonic development .	A77-24136
BFFERENT HERVOUS SYSTEMS Notor activity of mice in a magnetic fic varying strength		Gravity and embryonic development  EMBRYOS  Localization of the lactate dehydrogenas	se /LDH/
BFFERENT MERVOUS SYSTEMS  Notor activity of mice in a magnetic fit varying strength  ELECTRIC COMMECTORS Percutaneous multiple electrode connecte	eld of A77-26112 or, design	Gravity and embryonic development .  EMBRYOS	se /LDH/ iver cells th gamma ray
BFFERRHT HERVOUS SYSTEMS  Notor activity of mice in a magnetic fit varying strength  ELECTRIC COMMECTORS  Percutaneous multiple electrode connect parameters and fabrication (biomedica: [NASA-CR-144859]	eld of A77-26112 or, design	Gravity and embryonic development  EMBRYOS  Localization of the lactate dehydrogenas and of the acid phosphatase /AP/ in li of embryos and chickens irradiated wit  EMDOCRIME GLANDS	e /LDH/ lver cells th gamma ray A77-23768
BFFERENT HERVOUS SYSTEMS  Notor activity of mice in a magnetic fit varying strength  ELECTRIC COMMETORS  Percutaneous multiple electrode connects parameters and fabrication (biomedica)	eld of A77-26112 or, design L) N77-19748	Gravity and embryonic development  EMBRYOS  Localization of the lactate dehydrogenas and of the acid phosphatase /AP/ in li of embryos and chickens irradiated wit	e /LDH/ ver cells h gamma ray A77-23768
BFFERENT MERVOUS SYSTEMS Motor activity of mice in a magnetic fit varying strength  ELECTRIC COMMECTORS Percutaneous multiple electrode connect parameters and fabrication (biomedica: [NASA-CR-1040859]  ELECTRIC STIMULI	eld of A77-26112 or, design L) N77-19748	Gravity and embryonic development  EMBRYOS  Localization of the lactate dehydrogenas and of the acid phosphatase /AP/ in li of embryos and chickens irradiated wit  EMDOCRIME GLANDS Endocrine-metabolic effects in short-dur	e /LDH/ ver cells h gamma ray A77-23768
BFFERENT MERVOUS SYSTEMS  Notor activity of mice in a magnetic fit varying strength  BLECTRIC COMMECTORS  Percutaneous multiple electrode connect parameters and fabrication (biomedical [NASA-CR-144859]  BLECTRIC STIMULI Adaptation of vestibular responses to ga	eld of A77-26112 or, design l) N77-19748 alvanic A77-25417 othalamus	Gravity and embryonic development  EMBRYOS  Localization of the lactate dehydrogenas and of the acid phosphatase /AP/ in li of embryos and chickens irradiated wit  EMDOCRIME GLANDS  Endocrine-metabolic effects in short-dur high-workload missions: Peasibility s [AD-A030524]	te /LDH/ tver cells th gamma ray A77-23768 tation, study N77-18736
BFFERRET BERVOUS SYSTEMS  Notor activity of mice in a magnetic fit varying strength  BLECTRIC COMMECTORS  Percutaneous multiple electrode connects parameters and fabrication (biomedical [NASA-CR-144859]  BLECTRIC STIMULI Adaptation of vestibular responses to gestimulation of the labyrinths  Effect of electrostimulation of the hype and limbic structures on vestibulo-son reflexes  Evoked responses of visual cortex under	A77-26112  Dr, design L) H77-19748  Alvanic A77-25417  Othalamus  matic A77-26117	EMBRYOS  Localization of the lactate dehydrogenas and of the acid phosphatase /AP/ in li of embryos and chickens irradiated wit   ENDOCRIBE GLANDS  ENDOCRIBE GLANDS  Endocrine-metabolic effects in short-dur high-workload missions: Peasibility s [AD-A030524]  ENERGY SPECTRA  Study with a multi-threshold HZE-particl dosimeter using plastic detectors Biostack experiment  ENVIRONMENT EFFECTS	te /LDH/ tver cells th gamma ray A77-23768 sation, study N77-18736 te in Apollo A77-24154
BFFERENT NERVOUS SYSTEMS  Motor activity of mice in a magnetic fit varying strength  ELBCTRIC COMMECTORS  Percutaneous multiple electrode connect: parameters and fabrication (biomedica: [NASA-CR-144859]  ELBCTRIC STIMULI  Adaptation of vestibular responses to gastimulation of the labyrinths  Effect of electrostimulation of the hypeand limbic structures on vestibulo-sor reflexes  Evoked responses of visual cortex under stimulation of hypothalamic formations	A77-26112  Dr, design L) H77-19748  Alvanic A77-25417  Othalamus  matic A77-26117	EMBRYOS  Localization of the lactate dehydrogenas and of the acid phosphatase /AP/ in li of embryos and chickens irradiated wit  ENDOCRIBE GLANDS  Endocrine-metabolic effects in short-dur high-workload missions: Feasibility s [AD-AO30524]  ENERGY SPECTRA  Study with a multi-threshold HZE-particl dosimeter using plastic detectors Biostack experiment	te /LDH/ tver cells th gamma ray A77-23768 sation, study N77-18736 te in Apollo A77-24154
BFFERENT MERVOUS SYSTEMS  Notor activity of mice in a magnetic fit varying strength  BLECTRIC COMMECTORS  Percutaneous multiple electrode connect, parameters and fabrication (biomedical [NASA-CR-144859]  BLECTRIC STIMULI  Adaptation of vestibular responses to go stimulation of the labyrinths  Bffect of electrostimulation of the hype and limbic structures on vestibulo-son reflexes  Evoked responses of visual cortex under stimulation of hypothalamic formations The vocabulary of brain potentials: Ind	ald of  A77-26112  Dr, design  L)  R77-19748  Alvanic  A77-25417  Othalamus  matic  A77-26117  S  A77-26569  ferring	EMBRYOS  Localization of the lactate dehydrogenas and of the acid phosphatase /AP/ in li of embryos and chickens irradiated with the control of embryos. Peasibility of a particle of the control of the co	te /LDH/ tver cells th gamma ray A77-23768 tation, study N77-18736 te in Apollo A77-24154 Peruvian
BFFERENT MERVOUS SYSTEMS  Motor activity of mice in a magnetic fit varying strength  ELBCTRIC COMMECTORS  Percutaneous multiple electrode connect parameters and fabrication (biomedical [NASA-CR-144859]  ELBCTRIC STIMUI  Adaptation of vestibular responses to gastimulation of the labyrinths  Effect of electrostimulation of the hype and limbic structures on vestibulo-sor reflexes  Evoked responses of visual cortex under stimulation of hypothalamic formations  The vocabulary of brain potentials: Incognitive events from brain potentials operational settings	eld of  A77-26112  or, design  1)  N77-19748  alvanic  A77-25417  othalamus matic  A77-26117  S  A77-26569 ferring s in	EMBRYOS  Localization of the lactate dehydrogenas and of the acid phosphatase /AP/ in li of embryos and chickens irradiated wit  BHDOCRIBE GLANDS  Endocrine-metabolic effects in short-dur high-workload missions: Feasibility s [AD-A030524]  ENERGY SPECTRA  Study with a multi-threshold HZE-particl dosimeter using plastic detectors Biostack experiment  ENVIRONMENT EPPRCTS  Lung elasticity and airway dynamics in P	e /LDH/ ever cells h gamma ray A77-23768 sation, study N77-18736 le in Apollo A77-24154 Peruvian A77-24361 d their
BFFERENT NERVOUS SYSTEMS  Motor activity of mice in a magnetic fit varying strength  ELECTRIC COMMECTORS  Percutaneous multiple electrode connect: parameters and fabrication (biomedica: [NASA-CR-144859]  ELECTRIC STIMULI  Adaptation of vestibular responses to gastimulation of the labyrinths  Effect of electrostimulation of the hypeand limbic structures on vestibulo-sor reflexes  Evoked responses of visual cortex under stimulation of hypothalamic formation:  The vocabulary of brain potentials: Incognitive events from brain potentials operational settings [AD-A029452]  ELECTROCARDIOGRAPHY	eld of  A77-26112  or, design  1)  N77-19748  alvanic  A77-25417  othalamus  satic  A77-26117  S  A77-26569 ferring s in  N77-18737	EMBRYOS  Localization of the lactate dehydrogenas and of the acid phosphatase /AP/ in li of embryos and chickens irradiated with the state of embryos and the state of embr	te /LDH/ tver cells th gamma ray A77-23768 ration, study R77-18736 te in Apollo A77-24154 Peruvian A77-24361 their A77-24831
BFFERENT MERVOUS SYSTEMS  Notor activity of mice in a magnetic fit varying strength  BLECTRIC COMMECTORS  Percutaneous multiple electrode connect, parameters and fabrication (biomedical [NASA-CR-144859]  BLECTRIC STIMULI  Adaptation of vestibular responses to gestimulation of the labyrinths  Bffect of electrostimulation of the hype and limbic structures on vestibulo-sor reflexes  Evoked responses of visual cortex under stimulation of hypothalamic formations  The vocabulary of brain potentials: Incognitive events from brain potentials operational settings [AD-A029452]	ald of  A77-26112  or, design  N77-19748  alvanic  A77-25417 othalamus matic  A77-26117  S  A77-26569 ferring s in  N77-18737  s at the	EMBRYOS  Localization of the lactate dehydrogenas and of the acid phosphatase /AP/ in li of embryos and chickens irradiated with EMDOCRIME GLAMDS  ENDOCRIME GLAMDS  Endocrine-metabolic effects in short-dur high-workload missions: Feasibility s [AD-A030524]  EMBRGY SPECTRA  Study with a multi-threshold HZE-particl dosimeter using plastic detectors Biostack experiment  EMVIROMMENT EPPECTS  Lung elasticity and airway dynamics in Partives to high altitude  Semi-auto manipulator control systems and dynamic analysis with computer  ENVIROMMENTAL CONTROL  Characteristics of changes in the body s dogs during failure of the environment	e /LDH/ ever cells h gamma ray A77-23768 sation, study N77-18736 le in Apollo A77-24154 Peruvian A77-24361 d their A77-24831
BFFERENT NERVOUS SYSTEMS  Notor activity of mice in a magnetic fit varying strength  ELBCTRIC COMMECTORS  Percutaneous multiple electrode connect parameters and fabrication (biomedical [NASA-CR-144859]  ELBCTRIC STIMULI  Adaptation of vestibular responses to gastimulation of the labyrinths  Effect of electrostimulation of the hype and limbic structures on vestibulo-sor reflexes  Evoked responses of visual cortex under stimulation of hypothalamic formations  The vocabulary of brain potentials: Incognitive events from brain potentials operational settings [AD-A029452]  ELBCTROCARDIOGRAPHY  Neasuring device for His-bundle analysis heart  Arrhythmias documented by 24 hour contin	ald of  A77-26112  or, design  1)  N77-19748  alvanic  A77-25417  othalamus matic  A77-26569  ferring  s in  N77-18737  s at the  A77-23621  nuous	EMBRYOS  Localization of the lactate dehydrogenas and of the acid phosphatase /AP/ in li of embryos and chickens irradiated with the seminary of the seminary of embryos. The seminary of	e /LDH/ ever cells h gamma ray A77-23768 sation, study N77-18736 le in Apollo A77-24154 Peruvian A77-24361 d their A77-24831
BFFERENT NERVOUS SYSTEMS  Motor activity of mice in a magnetic fit varying strength  ELBCTRIC COMMECTORS  Percutaneous multiple electrode connect: parameters and fabrication (biomedica: [NASA-CR-144859]  ELBCTRIC STIMULI  Adaptation of vestibular responses to gastimulation of the labyrinths  Effect of electrostimulation of the hypeand limbic structures on vestibulo-sor reflexes  Evoked responses of visual cortex under stimulation of hypothalamic formation:  The vocabulary of brain potentials: Incognitive events from brain potentials operational settings [AD-A029452]  ELBCTROCARDIOGRAPHY Neasuring device for His-bundle analysis heart	ald of  A77-26112  or, design  1)  N77-19748  alvanic  A77-25417  othalamus  matic  A77-26569  ferring  s in  N77-18737  s at the  A77-23621  nuous  male  tt disease	EMBRYOS  Localization of the lactate dehydrogenas and of the acid phosphatase /AP/ in li of embryos and chickens irradiated with the second phosphatase /AP/ in li of embryos and chickens irradiated with the second phosphatase /AP/ in li of embryos and chickens irradiated with the second phosphatase /AP/ in li of embryos and chickens irradiated with the second phosphatase in second phosphatase in second phosphatase in the second phosphatase in a sealed chamber.	te /LDH/ tver cells th gamma ray A77-23768 ration, study A77-18736 rein Apollo A77-24154 reruvian A77-24361 d their A77-24831 state of cal control A77-26113
BFFERENT NERVOUS SYSTEMS  Notor activity of mice in a magnetic fit varying strength  BLBCTRIC COMMECTORS  Percutaneous multiple electrode connecting parameters and fabrication (biomedical [NASA-CR-144859]  BLBCTRIC STIMULI  Adaptation of vestibular responses to grant stimulation of the labyrinths  Bffect of electrostimulation of the hyperand limbic structures on vestibulosor reflexes  Evoked responses of visual cortex under stimulation of hypothalamic formations  The vocabulary of brain potentials: Incognitive events from brain potentials operational settings  [AD-A029452]  BLBCTROCARDIOGRAPHY  Neasuring device for His-bundle analysis heart  Arrhythmias documented by 24 hour continule electrocardiographic monitoring in 50 medical students without apparent hear	ald of  A77-26112  or, design  1)  N77-19748  alvanic  A77-25417  othalamus matic  A77-26569  ferring s in  N77-18737 s at the  A77-23621  nuous male ct disease A77-26241	EMBRYOS  Localization of the lactate dehydrogenas and of the acid phosphatase /AP/ in li of embryos and chickens irradiated with the computer of embryos and chickens irradiated with the computer of the process of embryos and chickens irradiated with the computer of the	te /LDH/ tver cells h gamma ray A77-23768 sation, study H77-18736 ei in Apollo A77-24154 eruvian A77-24361 d their A77-24831 state of sal control A77-26113
BFFERENT NERVOUS SYSTEMS  Notor activity of mice in a magnetic fit varying strength  ELBCTRIC COMMECTORS  Percutaneous multiple electrode connect parameters and fabrication (biomedical [NASA-CR-144859]  ELBCTRIC STIMULI  Adaptation of vestibular responses to gastimulation of the labyrinths  Effect of electrostimulation of the hype and limbic structures on vestibulo-sor reflexes  Evoked responses of visual cortex under stimulation of hypothalamic formations  The vocabulary of brain potentials: Incognitive events from brain potentials operational settings [AD-A029452]  ELBCTROCARDIOGRAPHY  Measuring device for His-bundle analysis heart  Arrhythmias documented by 24 hour contin electrocardiographic monitoring in 50 medical students without apparent hear  Transient asymptomatic S-T segrant depre- during daily activity	ald of  A77-26112  or, design  1)  N77-19748  alvanic  A77-25417  othalamus matic  A77-26569  ferring s in  N77-18737 s at the  A77-23621  nuous male ct disease A77-26241	EMBRYOS  Localization of the lactate dehydrogenas and of the acid phosphatase /AP/ in li of embryos and chickens irradiated with the second control of embryos and chickens irradiated with the second control of embryos and chickens irradiated with the second control of embryos and chickens irradiated with the second control of embryos and chickens irradiated with the second control of embryos emb	te /LDH/ tver cells h gamma ray A77-23768 sation, study N77-18736 e in Apollo A77-24154 Peruvian A77-24361 d their A77-24831 state of sal control A77-26113
BFFERENT NERVOUS SYSTEMS  Motor activity of mice in a magnetic fit varying strength  ELBCTRIC COMMECTORS  Percutaneous multiple electrode connect: parameters and fabrication (biomedica: [NASA-CR-144859]  ELBCTRIC STIMUII  Adaptation of vestibular responses to gastimulation of the labyrinths  Effect of electrostimulation of the hypeand limbic structures on vestibulo-sor reflexes  Evoked responses of visual cortex under stimulation of hypothalamic formation:  The vocabulary of brain potentials: Incognitive events from brain potentials operational settings [AD-A029452]  ELBCTROCARDIOGRAPHY  Measuring device for His-bundle analysis heart  Arrhythmias documented by 24 hour contin electrocardiographic monitoring in 50 medical students without apparent hear  Transient asymptomatic S-T segrant depreduring daily activity  ELBCTRODES Feasibility of a fetal measurement elect	ald of  A77-26112  or, design  1)  N77-19748  alvanic  A77-25417  othalamus  matic  A77-26569  ferring  s in  N77-18737  s at the  A77-23621  nuous  male  tt disease  A77-26241  ession  A77-26242  trode system	EMBRYOS  Localization of the lactate dehydrogenas and of the acid phosphatase /AP/ in li of embryos and chickens irradiated with the state of embryos. Embroary and airsate of embryos embry	te /LDH/ tver cells h gamma ray A77-23768 ration, study N77-18736 rein Apollo A77-24154 reruvian A77-24361 d their A77-246102 rypoxic A77-23427 re /LDH/
BFFERENT MERVOUS SYSTEMS  Notor activity of mice in a magnetic fit varying strength  ELBCTRIC COMMECTORS  Percutaneous multiple electrode connect parameters and fabrication (biomedical [NASA-CR-144859]  ELBCTRIC STIMULI  Adaptation of vestibular responses to gastimulation of the labyrinths  Bffect of electrostimulation of the hype and limbic structures on vestibulo-sor reflexes  Evoked responses of visual cortex under stimulation of hypothalamic formations  The vocabulary of brain potentials: Incognitive events from brain potentials operational settings [AD-A029452]  ELBCTROCARDIOGRAPHY  Neasuring device for His-bundle analysis heart  Arrhythmias documented by 24 hour contin electrocardiographic monitoring in 50 medical students without apparent hear  Transient asymptomatic S-T segpant depreduring daily activity  ELBCTRODES Peasibility of a fetal measurement elect [MASA-CR-151175]  ELBCTRODESCEPHALOGRAPHY	A77-26112  or, design  l)  N77-19748  alvanic  A77-25417  othalamus matic  A77-26117  S  A77-26569 ferring s in  N77-18737  s at the  A77-23621  nuous male ct disease A77-26241 ession  A77-26242  trode system H77-18729	EMBRYOS  Localization of the lactate dehydrogenas and of the acid phosphatase /AP/ in li of embryos and chickens irradiated with the control of embryos embryos. Feasibility of an anosocial embryos e	te /LDH/ tver cells h gamma ray A77-23768 tation, tudy H77-18736 te in Apollo A77-24154 Peruvian A77-24361 d their A77-24313 tate of all control A77-26113 tt A77-26102 typoxic A77-23427 te /LDH/ tver cells h gamma ray
BFFERENT MENVOUS SYSTEMS  Notor activity of mice in a magnetic fit varying strength  ELBCTRIC COMMECTORS  Percutaneous multiple electrode connect, parameters and fabrication (biomedical [NASA-CR-144859]  ELBCTRIC STIMULI  Adaptation of vestibular responses to gastimulation of the labyrinths  Effect of electrostimulation of the hype and limbic structures on vestibulo-sor reflexes  Evoked responses of visual cortex under stimulation of hypothalamic formations  The vocabulary of brain potentials: Incognitive events from brain potentials operational settings [AD-A029452]  ELBCTROCARDIOGRAPHY  Measuring device for His-bundle analysis heart  Arrhythmias documented by 24 hour conting electrocardiographic monitoring in 50 medical students without apparent hear  Transient asymptomatic S-T segment depreducing daily activity  ELBCTRODES  Peasibility of a fetal measurement electer [NASA-CR-151175]  ELBCTROEMECEPHALOGRAPHY  Dynamic control characteristics and brainegulation of the vigilance of man dur	ald of  A77-26112  or, design  1)  N77-19748  alvanic  A77-25417  othalamus matic  A77-26569 ferring s in  N77-18737 s at the  A77-23621 nuous male rt disease A77-26241 ession  A77-26242 trode system N77-18729 In-electric ring the	EMBRYOS  Localization of the lactate dehydrogenas and of the acid phosphatase /AP/ in li of embryos and chickens irradiated wit EMDOCRIME GLANDS  Endocrine-metabolic effects in short-dur high-workload missions: Peasibility s [AD-A030524]  EMBRGY SPECTRA  Study with a multi-threshold HZE-particl dosimeter using plastic detectors Biostack experiment  ENVIRONMENT EFFECTS  Lung elasticity and airway dynamics in Patives to high altitude  Semi-auto manipulator control systems and dynamic analysis with computer  ENVIRONMENTAL CONTROL  Characteristics of changes in the body s dogs during failure of the environment system in a sealed chamber  ENVIRONMENTAL ENGINEERING  Long-term space flights and human habita  ENZIME ACTIVITY  Superoxide dismutase /SOD/ activity in hammalian systems  Localization of the lactate dehydrogenas and of the acid phosphatase /AP/ in li of embryos and chickens irradiated wites.	te /LDH/ ver cells h gamma ray A77-23768 tation, study N77-18736 e in Apollo A77-24154 Peruvian A77-24361 d their A77-24831 state of al control A77-26113 t A77-26102 typoxic A77-23427 ee /LDH/ ver cells
BFFERENT NERVOUS SYSTEMS  Notor activity of mice in a magnetic fit varying strength  ELBCTRIC COMMECTORS  Percutaneous multiple electrode connect: parameters and fabrication (biomedica: [NASA-CR-144859]  ELBCTRIC STIMUII  Adaptation of vestibular responses to gastimulation of the labyrinths  Effect of electrostimulation of the hypeand limbic structures on vestibulo-sor reflexes  Evoked responses of visual cortex under stimulation of hypothalamic formation: The vocabulary of brain potentials: Incognitive events from brain potentials operational settings [AD-A029452]  ELBCTROCARDIOGRAPHY Neasuring device for His-bundle analysis heart  Arrhythmias documented by 24 hour contin electrocardiographic monitoring in 50 medical students without apparent hear  Transient asymptomatic S-T segpant depreduring daily activity  ELBCTRODES Peasibility of a fetal measurement elect [NASA-CR-151175]  ELBCTRODES Peasibility of a fetal measurement elect [NASA-CR-151175]	ald of  A77-26112  or, design  1)  N77-19748  alvanic  A77-25417  othalamus matic  A77-26569 ferring s in  N77-18737 s at the  A77-23621 nuous male rt disease A77-26241 ession  A77-26242 trode system N77-18729 In-electric ring the	EMBRYOS  Localization of the lactate dehydrogenas and of the acid phosphatase /AP/ in li of embryos and chickens irradiated with the state of embryos and embryos. The state of embryos and the lactate dehydrogenas and of the acid phosphatase /AP/ in li of embryos and chickens irradiated with	te /LDH/ tver cells h gamma ray A77-23768 tation, tudy H77-18736 te in Apollo A77-24154 Peruvian A77-24361 d their A77-24313 tate of all control A77-26113 tt A77-26102 typoxic A77-23427 te /LDH/ tver cells h gamma ray

ESCHERICHIA SUBJECT INDEX

BSCHERICHIA  Effect of space factors on Escherichia of cells	coli B/r	PRTUSES  Peasibility of a fetal measurement elect [WASA-CR-151175]	rode system
Cells	A77-24177	FIRES	R17-10129
BSTURRIES .		Evaluation of the toxicity of combustion	
Interrelationships between certain micro and some aspects of sediment-water nut		Acute combined effects of HCN and CO, wi	177-24453 th special
exchange in two bayou estuaries, phase		reference to a theoretical considerati	
[PB-259538/7]	N77-19730	acute combined effects on the basis of	
ETHERS		cyanide and COHb analyses	
Reduction in plasma vasopressin levels of		PLEXIBLE WINGS	A77-24455
dehydrated rats following acute stress	A77-25147	Investigation on a passenger ride-comfor	t
BUTROPHICATION	20111	improvement system with limited contro	
Algal metabolite influence on bloom sequ	ence in	actuator performance for a flexible ai	
eutrophied freshwater ponds	#77 40707	[NLR-TR-75140-0]	N77-18745
[PB-258445/6] BVAPORATION	N77-18727	FLIGHT CREWS  Coronary risk factors in flying personne	1 - 1
Variations in evaporation and body temper	ratures	progress report	
during sleep in man			A77-24510
	A77-23421	Instructional systems development - A ne	a abbroacp
EVOKED RESPONSE (PSYCHOPHYSIOLOGY) Evoked responses of visual cortex under		to flight-crew proficiency	A77-24856
stimulation of hypothalamic formations	;	PLIGHT PITHESS	H//-24030
***************************************	A77-26569	Maximal aerobic power in women cadets at	the U.S.
BEOBIOLOGY		Air Porce Academy	
Life sciences and space research XIV; Pr of the Open Meeting of the Working Gro		Impairment of flying officiency in apance	177-24508
Space Biology, May 29-June 7, 1975, an	nd on	Impairment of flying efficiency in ananca	A77-24509
Symposium on Gravitational Physiology,	Varna,	Coronary risk factors in flying personne	
Bulgaria, May 30, 31, 1975		progress report	
Effect of extreme factors on micro-organ	A77-24130	Athletic endurance training: Advantage	A77-24510
for the control of the effectiveness of		flights? The significance of physical	
sterilization in Martian environme		for selection and training of Spacelab	
conditions	.==		N77-19740
On methods of detection of extraterrestr	A77-24174	PLIGHT SAPETY The pilot and the airplane: Aviation ergo	
On Methods of detection of extratefiestr	A77-24175	Russian book	OHOMICS
Effect of space factors on Escherichia c			177-23546
cells		PLIGHT SIMULATION	
BITRATERRESTRIAL LIFE	177-24177	Advanced simulation in undergraduate pile training: An overview	ot
Effect of extreme factors on micro-organ	isms used	[AD-A030224]	N77-18755
for the control of the effectiveness of	f	PLIGHT SIMULATORS	
sterilization in Martian environme	ent	Integration of visual and motion cues for	
conditions	A77-24174	simulator requirements and ride quality investigation	y
On methods of detection of extraterrestr		[ HASA-CR-149667]	N77-18740
	A77-24175	Human dynamic orientation model applied	to motion
BITRAVBHICULAR ACTIVITY	£	simulation	w77 4076h
Feasibility study of automatic control o comfort in the shuttle Extravehicular		[NASA-CR-149862] FLIGHT STRESS (BIOLOGY)	N77-19754
Unit liquid cooled garment regulat		Impairment of flying efficiency in anance	astic pilot:
[ HASA-CR-151230 ]	N77-19755	•	A77-24509
BIE (AMATOMI)	achac	Inexpensive technique to record respirat:	ion during
Role of Cerenkov radiation in the eye-fl observed by Apollo astronauts	asues	flight	A77-24511
	A77-24153	Prevention of decompression sickness duri	
A study of the cumulative effects of rep	eated	short-term flights in a depressurized of	cabin at
exposures to radial accelerations	A77-24172	high altitudes	A77-26114
BYB MOVEMENTS	8//-241/2	Principles of aviation and space medicine	
Visual conspicuity, visual search and fi	xation	[ WASA-TT-P-17511]	N77-18734
tendencies of the eye	177 02000	FLIGHT TRAINING	
Visual conspicuity as an external determ	A77-23290	Some personality characteristics of pilot with different levels of achievement	trainees
eye movements and selective attention	<b>~_</b>	Torogo of monterement	A77-26116
·	A77-23625	Successful transfer of adaptation environ	nments in
Experiments on the locus of induced moti		navy flight training	40777
Visual conspicuity as an external determ	A77-26074	PLUOROSCOPY	N77-19733
eye movements and selective attention		Tumor localization and beam monitoring -	
•	A77-26578	Electrofluorotomography	
_		Computarized V-man managements to	177-23321
F		Computerized X-ray reconstruction tomogra stereometric analysis of cardiovascular	
PATIGUE (BIOLOGY)		The state of the s	A77-24737
Electronic device for studying high-spee		Computerized tomography using video recor	rded
arrythmic pulse generator for ment	al fatigue	fluoroscopic images	177, 26222
studies	A77-26571	FLIING PRESONNEL	A77-26244
FEMALES		Investigation of the function or external	L '
Pluid and electrolyte shifts in women du	ring +Gz	respiration in flying personnel	
acceleration after 15 days' bed rest	A77-23424	Untrition hydiana for flying homes 1 1-	A77-25629
FERNENTATION	AT 1"43444	Nutrition hygiene for flying personnel in prolonged flights	•
Bio-gas production from alligator weeds		•	A77-26101
[HASA-CR-149809]	N77-19729		•

SUBJECT INDEX REAVY IONS

FOREIGE BODIES		GRAVIRECEPTORS	
Bioprocessing development: Immune/cellu		Cerebellum and gravity Russian book	on
applications: Anti-Ig autoantibody an complement-mediated destruction of neo		neurophysiology	A77-23500
cells	FILLE	GRAVITATIONAL EFFECTS	
[#ASA-CR-151207]	N77-18725	Cerebellum and gravity Bussian book	on
FORMAT Formatting and organization of a human e	naimeerina	neurophysiology	A77-23500
standard	uganeciany	Life sciences and space research XIV; Pr	
	A77-25074	of the Open Meeting of the Working Gro	
FOURIER AWALYSIS Visual processing of repetitive images		Space Biology, Hay 29-June 7, 1975, an Symposium on Gravitational Physiology,	
visual processing of repetitive images	A77-24699	Bulgaria, May 30, 31, 1975	varua,
PREE PALL			A77-24130
Investigation of the effect of free fall vestibular organ and of its post-fligh		Considerations of geotropism in plants	A77-24132
readaptation as part of the shuttle pr		Hormones and the growth of plants in res	
contribution to basic vestibular physi		gravity	
to the problem of space sickness	N77-19732	The evolutionary role of gravity	A77-24133
PONGI	M/1-13/34	The evolutionary role of gravity	A77-24134
Performance of fungi in low temperature	and	Weight and shape gravitational effec	
hypersaline environments	A77-24176	biological evolution	A77-24135
Geomycology fungal biosolubilization		Gravity and embryonic development	A//-24135
accumulation of metals			A77-24136
	A77-24179	Effects on body size and composition of	
G		<pre>exposure to altered gravity centri stress in mammals</pre>	ruging
		[ NASA-CR-149804]	N77-19749
GALVANIC SKIN RESPONSE Adaptation of vestibular responses to qa	1	•	
stimulation of the labyrinths	TAGUIC	<b>H</b>	
	A77-25417	HABITABILITY	
GAMMA RAYS Localization of the lactate dehydrogenas	10 /I D# /	Conceptualization of habitability expres	sions for
and of the acid phosphatase /AP/ in li		the habitability data base [AD-A029661]	ท77-18757
of embryos and chickens irradiated wit		HEALTH PHYSICS	_
Irradiation of bio-objects aboard the Co	A77-23768	Radiation risk on earth and in space book	Russian
biosatellite	SMOS UJU	BOOK ,	A77-23496
	A77-24146	Principles of aviation and space medicin	
Investigation of radiation sensitivity i under long duration weightlessness	n mampals	[NASA-TT-P-17511] HEART DISPASES	ห77-18734
duder long adracton welghtlessness	A77-24147	Transient asymptomatic S-T segment depre	ssion
Effect of irradiation in the space envir	onment on	during daily activity	
the blood-forming system in rats	A77-24148	HBART PUBCTION	A77-26242
Cytogenetic analysis of seeds of Crepis		Cardiac responses to moderate training i	n rats
/L/ Wallr. exposed on board the earth	artificial		A77-24364
satellite Cosmos 613	A77-24152	HEART RATE  Measuring device for His-bundle analysis	at the
State of hemopoiesis during irradiation		heart	at the
radiation exposure in prolonged space	flight	<b>41</b> - <b>7</b> - <b>11</b> - <b>1</b>	A77-23621
GAS EXCHANGE	A77-26115	Changes in orthostatic tolerance in man altitude of 3500 meters	at an
Ventilatory and gas exchange dynamics in	response	42020440 01 3300 Beccers	A77-24505
to sinusoidal work		Arrhythmias documented by 24 hour contin	
GAS PRESSURE	A77-24368	electrocardiographic monitoring in 50 medical students without apparent hear	
Thermoregulatory responses in animals in	a		A77-26241
helium-oxygen atmosphere under elevate	d pressure	Feasibility of a fetal measurement elect	
GEOBOTANY	A77-25345	[NASA-CR-151175] HEAT ACCLIMATIZATION	N77-18729
Geomycology fungal biosolubilization	and	Pluid shifts during thermal stress with	and
accumulation of metals		without fluid replacement	
GEOCHEMISTRY	A77-24179	camp in temperature- and ADH-regulating	A77-24362
Variation in stable carbon isotopes in o	rganic	after thermal stress cyclic Adenos	
matter from the Gunflint Iron Formatio	n	MonoPhosphate in AntiDiuretic Hormone	
Precambrian rock analysis	A77-24618	HEAT GENERATION	A77-24363
GEOTROPISM	877 24010	Role of ketone bodies in nonshivering	
Considerations of geotropism in plants		thermogenesis in cold-acclimated rats	
GRRMINATION	A77-24132	HEAT TRANSPER	A77-24358
Effect of space flight factors and eleva	ted	Heat exchange between the organism and e	nvironment
temperatures on seeds of diploid and t		under conditions of weightlessness - M	ethodical
buckwheat	A77-25425	approach	A77-24173
GLOBULIES	E11-23423	HEAT TRANSPER CORPFICIENTS	arr=41/3
Anti-Ig autoantibody and complement-medi-	ated	Experimental study of convective heat tr	
destruction of neoplastic cells	N77-18724	coefficient for the human body in wate	T A77-23426
[NASA-CR-151206] GLYCOGENS	M//- 10/24	HEAVY IONS	A,,-23420
Muscle glycogen repletion after high-int	ensity	Study with a multi-threshold HZE-particl	
intermittent exercise	A77-24355	dosimeter using plastic detectors Biostack experiment	ın Apollo
	411 27777	ordere experiment	

# BELIUM-OXYGHE ATHOSPHERES

•	•
Lesional effects of primary cosmic heavy ions on rat brain	HUMAN BEHAVIOR Descriptive communication structure metrics: A
A77-24155	preliminary logical and empirical analysis
The Biostack as an approach to high LET research	[AD-A030512] H77-18738
Linear Energy Transfer A77-24156	HUMAN BODY  Variations in evaporation and body temperatures
Influence of heavy ions on the transforming	during sleep in man
activity of DNA	A77-23421
177-24158	Experimental study of convective heat transfer
HBLIUM-OXYGEN ATHOSPHERES Thermoregulatory responses in animals in a	coefficient for the human body in water A77-23426
helium-oxygen atmosphere under elevated pressure	Procedural selection, construction, design, and
A77-25345	application possibility in the case of a
Some indicators of natural immunity in rabbits	measuring device for the human physiological
following exposure to increased pressure for 10 days	study of the biomechanics of the lower extremity German book
A77-26120	A77-23550
HENATOPOIBSIS	Rotary motion of the body of an astronaut
State of hemopoiesis during irradiation simulating radiation exposure in prolonged space flight	A77-23833 Body composition changes in men and women after
A77-26115	2-3 weeks of bed rest
HEMATOPOIETIC SYSTEM	A77-24162
Effect of irradiation in the space environment on	Automatic control of decompression on the basis of
the blood-forming system in rats	the impedance signal of the body A77-25418
HEMODINANIC RESPONSES	Regional measurement of body nitrogen
Antiorthostatic test as a model to study	[NASA-CR-151200] N77-18732
antigravity mechanisms of the cardiovascular system	<pre>Hass distribution of the human body using biostereometrics</pre>
A77-24163	[AD-A029402] N77-18735
Cardiac output during physical exercises following	HUMAN CENTRIPUGES
real and simulated space flight	Visual field contraction during G stress at 13, 45, and 65 deg seatback angles
A77-24168 Hypergravitation and sympatho-adrenergic reactivity	A77-24501
A77-24171	HUMAN FACTORS ENGINEERING
New aspects of the study of the respiratory	The pilot and the airplane: Aviation ergonomics
function of the blood during adaptation to hypoxia A77-26270	Russian book A77-23546
The role of chemoreceptors in the adaptation of an	Introduction to the study of a mathematical model
organism to hypoxia	of a pilot
HEMODYNAMICS A77-26271	[ONERA, TP NO. 1976-118] A77-24425 Visual field contraction during G stress at 13,
Study of space perception functioning during	45, and 65 deg seatback angles
simulation of certain space flight factors	A77-24501
A77-24167 Hemodynamics of healthy individuals under various	Use of human engineering standards in design A77-25072
regimes of lower body negative pressure	Broadbent and Gregory revisited - Vigilance and
A77-26111	statistical decision in human
HBMOGLOBIN  Fluid shifts during thermal stress with and	auditory/visual tasks A77-25073
without fluid replacement	Formatting and organization of a human engineering
A77-24362	standard
HBURISTIC HETHODS A two-dimensional model for the cochlea. II - The	A77-25074 Multiple images as a function of LEDs viewed
heuristic approach and numerical results	during vibration
A77-25170	A77-25075
HIGH ALTITUDE ENVIRONMENTS  Causes of high blood 02 affinity of animals living	Shuttle era waste collection A77-26052
at high altitude	A nonlinear model for the spatial characteristics
A77-24356	of the human visual system
Prevention of decompression sickness during	177-26275
short-term flights in a depressurized cabin at high altitudes	Endocrine-metabolic effects in short-duration, high-workload missions: Feasibility study
A77-26114	[AD-A030524] N77-18736
HIGH GRAVITY ENVIRONMENTS	Integration of visual and motion cues for flight
Effects of acceleration on thermoregulatory responses of unanesthetized rats	simulator requirements and ride quality investigation
A77-23425	[NASA-CR-149667] N77-18740
Hypergravitation and sympatho-adrenergic reactivity	The effects of 3 hours of vertical vibration at 5
HIS BUNDLE	Hz on the performance of some tasks [RAB-TR-76011] N77-18746
Beasuring device for His-bundle analysis at the	Human performance evaluation of matrix displays:
heart	Literature and technology review
HORNOWE METABOLISMS	[AD-A029932] N77-18750 Conceptualization of habitability expressions for
Metabolic and cardiovascular responses to	the habitability data base
norepinephrine in trained and nontrained human	[AD-A029661] N77-18757
subjects	Human engineering: Crew systems tool for Spacelab design
HORMONES A77-24359	N77-19737
Hormones and the growth of plants in response to	Control of thermal balance by a liquid circulating
gra <b>vity</b> A77-24133	garment based on a mathematical representation
camp in temperature- and ADH-regulating centers	of the human thermoregulatory system [NASA-TH-X-58190] N77-19756
after thermal stress cyclic Adenosine	HUMAN PATHOLOGY
MonoPhosphate in AntiDiuretic Hormone centers A77-24363	Physiological effects of sustained acceleration A77-24137
. 877-24303	877-24137

SUBJECT INDEX EXPOXIA

Pathophysiological mechanisms of the effect of hyperoxia on the function of the lungs in man A77-25424	Interaction of lung volume and chemical drive on respiratory muscle EMG and respiratory timing 177-24366
HUMAN PERFORMANCE Dynamic control characteristics and brain-electric	Characteristics of changes in the body state of dogs during failure of the environmental control
regulation of the vigilance of man during the performance of control tasks German book	system in a sealed chamber
177-23547	HYPEROXIA
Characteristics of postural self-regulation in complex spatial environments and after-effects of weightlessness	Depression of serotonin clearance by rat lungs during oxygen exposure A77-23418
A77-24170	Pathophysiological mechanisms of the effect of
Maximal aerobic power in women cadets at the U.S. Air Porce Academy	hyperoxia on the function of the lungs in man A77-25424
Visual performance and image coding	HYPERTHERMIA Dependency of hypoxic pulmonary vasoconstriction
A77-24696 Visual conspicuity as an external determinant of eye movements and selective attention Book	on temperature A77-23422 HYPHOSIS
A77-26578	Experimental basis for the use of hypnotics by
HUMAN REACTIONS	aerospace crews
A study of the cumulative effects of repeated	N77-19743
exposures to radial accelerations	HYPOBARIC ATMOSPHERES
A77-24172	
	Effective temperature scale useful for hypo- and
Metabolic and cardiovascular responses to norepinephrine in trained and nontrained human	hyperbaric environments
subjects	HYPOCAPHIA
<b>A77-24359</b>	The role of brief hypocaphia in the ventilatory
Induction of illusory self-rotation and nystagmus by a rotating sound-field	response to CO2 with hypoxia
A77-24506	HYPOKINESIA
Human dynamic orientation model applied to motion	Fluid and electrolyte shifts during bed rest with
simulation	isometric and isotonic exercise
[NASA-CR-149862] N77-19754	A77-23423
HUMAN TOLBRANCES	Physiological effects induced by antiorthostatic
Pluid and electrolyte shifts in women during +Gz	hypokinesia
acceleration after 15 days' bed rest	A77-24139
A77-23424	Amino acid spectrum of human blood plasma during
Radiation risk on earth and in space Russian	space flight and in antiorthostatic hypokinesia
book	A77-24160
A77-23496	Body composition changes in men and women after
Human tolerance to acceleration after exposure to	2-3 weeks of bed rest
weightlessness	A77-24162
A77-24142	
	Metabolic processes in hypokinetic and
Changes in orthostatic tolerance in man at an	rehabilitated men
altitude of 3500 meters	A77-24164
A77-24505	Effect of space-flight factors on skeletal muscles
Comparative evaluation of studies of the effect of	in rats
hypoxia of different levels on immunobiological	A77-26104
status in man	Influence of accelerations, additional weight load
A77-26108	and hypokinesia on protein catabolism in the
Principles of aviation and space medicine	Japanese quail /Coturnix Coturnix Japonica/
[NASA-TT-F-17511] N77-18734	A77-26106
Modified collins pedal-mode ergometer:	Changes in fluid balance during prolonged
Development and medical tests	hypokinesia with antiorthostatic posture
[AD-A028355] N77-18747	A77-26107
Experimental investigations on motion sickness	HYPOTHALAHUS
susceptibility	Effect of electrostimulation of the hypothalamus
N77-19734	and limbic structures on vestibulo-somatic
A review of methodological factors in performance	reflexes
assessments of time-varying aircraft noise effects	A77-26117
with annotated bibliography	Evoked responses of visual cortex under
[NASA-CR-2789] N77-19752	stimulation of hypothalamic formations
HUHAN WASTES	A77-26569
Shuttle era waste collection	HYPOTHERNIA
A77-26052	Dependency of hypoxic pulmonary vasoconstriction
HYDROCYANIC ACID	on temperature
Acute combined effects of HCN and CO, with special	A77-23422
reference to a theoretical consideration of	HIPOXIA
acute combined effects on the basis of the blood	The role of brief hypocapnia in the ventilatory
cyanide and COHb analyses	response to CO2 with hypoxia
	response to CO2 with hypoxia
A77-24455	
HYPERBARIC CHAMBERS	Hypoxia and carbon dioxide as separate and
Effective temperature scale useful for hypo- and	
	interactive depressants of Ventilation
hyperbaric environments	A77-23289
A77-24502	pH effects on lactate and excess lactate in
A77-24502 Indicators of nitrogen, carbohydrate and lipid	pH effects on lactate and excess lactate in relation to 02 deficit in hypoxic dogs
A77-24502 Indicators of nitrogen, carbohydrate and lipid metabolism in man during prolonged stay under	A77-23289 pH effects on lactate and excess lactate in relation to 02 deficit in hypoxic dogs A77-23420
A77-24502 Indicators of nitrogen, carbohydrate and lipid	pH effects on lactate and excess lactate in relation to 02 deficit in hypoxic dogs
A77-24502 Indicators of nitrogen, carbohydrate and lipid metabolism in man during prolonged stay under	pH effects on lactate and excess lactate in relation to 02 deficit in hypoxic dogs  A77-23420 Dependency of hypoxic pulmonary vasoconstriction
A77-24502 Indicators of nitrogen, carbohydrate and lipid metabolism in man during prolonged stay under hyperbaric conditions A77-26110	A77-23289 pH effects on lactate and excess lactate in relation to 02 deficit in hypoxic dogs A77-23420
A77-24502 Indicators of nitrogen, carbohydrate and lipid metabolism in man during prolonged stay under hyperbaric conditions A77-26110 Some indicators of natural immunity in rabbits	pH effects on lactate and excess lactate in relation to 02 deficit in hypoxic dogs  A77-23420  Dependency of hypoxic pulmonary vasoconstriction on temperature  A77-23422
A77-24502 Indicators of nitrogen, carbohydrate and lipid metabolism in man during prolonged stay under hyperbaric conditions A77-26110 Some indicators of natural immunity in rabbits following exposure to increased pressure for 10	pH effects on lactate and excess lactate in relation to 02 deficit in hypoxic dogs  A77-23420  Dependency of hypoxic pulmonary vasoconstriction on temperature  A77-23422  Superoxide dismutase /SOD/ activity in hypoxic
A77-24502 Indicators of nitrogen, carbohydrate and lipid metabolism in man during prolonged stay under hyperbaric conditions A77-26110 Some indicators of natural immunity in rabbits following exposure to increased pressure for 10 days	A77-23289 pH effects on lactate and excess lactate in relation to 02 deficit in hypoxic dogs  A77-23420 Dependency of hypoxic pulmonary vasoconstriction on temperature  A77-23422 Superoxide dismutase /SOD/ activity in hypoxic mammalian systems
Indicators of nitrogen, carbohydrate and lipid metabolism in man during prolonged stay under hyperbaric conditions  A77-26110  Some indicators of natural immunity in rabbits following exposure to increased pressure for 10 days  A77-26120	PH effects on lactate and excess lactate in relation to 02 deficit in hypoxic dogs  A77-23420  Dependency of hypoxic pulmonary vasoconstriction on temperature  A77-23422  Superoxide dismutase /SOD/ activity in hypoxic mammalian systems  A77-23427
A77-24502 Indicators of nitrogen, carbohydrate and lipid metabolism in man during prolonged stay under hyperbaric conditions A77-26110 Some indicators of natural immunity in rabbits following exposure to increased pressure for 10 days A77-26120 EYPEBCAPBIA	A77-23289 pH effects on lactate and excess lactate in relation to 02 deficit in hypoxic dogs  A77-23420 Dependency of hypoxic pulmonary vasoconstriction on temperature  A77-23422 Superoxide dismutase /SOD/ activity in hypoxic mammalian systems  A77-23427 Causes of high blood 02 affinity of animals living
Indicators of nitrogen, carbohydrate and lipid metabolism in man during prolonged stay under hyperbaric conditions  A77-26110  Some indicators of natural immunity in rabbits following exposure to increased pressure for 10 days  A77-26120	PH effects on lactate and excess lactate in relation to 02 deficit in hypoxic dogs  A77-23420  Dependency of hypoxic pulmonary vasoconstriction on temperature  A77-23422  Superoxide dismutase /SOD/ activity in hypoxic mammalian systems  A77-23427

ILLUMINATION SUBJECT INDEX

Lung mast cell density and distribution in	IODINE	
chronically hypoxic animals	Advanced combined iodine of 4360 for microorganism as	
Lung elasticity and airway dynamics in Peruvia		unimitation in potable
natives to high altitude	[NASA-CR-151214]	N77-19753
A77-7  Hypoxia-induced metabolic and core temperature		nd in space Russian
changes in the squirrel monkey	book	<del>-</del>
A77-7 Interaction of lung volume and chemical drive		A77-23496 ts flown on board the
respiratory muscle EMG and respiratory timin		Trova on Doard the
A77-2		A77-24149
Comparative evaluation of studies of the effer hypoxia of different levels on immunobiologi status in man		r segment depression
A77-2		A77-26242
Characteristics of changes in the body state of		
dogs during failure of the environmental con system in a sealed chamber	trol Bioprocessing development: applications: Anti-Ig a	
A77-2		
New aspects of the study of the respiratory	cells	<u>-</u>
function of the blood during adaptation to be A77-2		N7718725
The role of chemoreceptors in the adaptation of		
organism to hypoxia	. J	
A77-2 Peasibility of a fetal measurement electrode s		ancounters - Radiation
[NASA-CR-151175] N77-1		
•	• •	A77-24151
	••	
ILLUMINATION	K	
Dependence of the species composition of a mix		
culture of microalgae on illumination and surrate of nutrients	pply Variation in stable carbon matter from the Gunflint	
177-2		is
INAGING TECHNIQUES Visual performance and image coding	KETONES	177-24618
A77-2		nonshivering
Computerized X-ray reconstruction tomography i		
stereometric analysis of cardiovascular dyna A77-2		A77-24358
Computerized tomography using video recorded	L	
fluoroscopic images	<del>-</del>	
	67/// TADVOTUMU	
INHUBITY	6244 LABYRINTH  Response of the vestibular	apparatus to prolonged
IMMUNITY Some indicators of natural immunity in rabbits	Response of the vestibular caloric stimulation of t	he labyrinths
IMMUNITY Some indicators of natural immunity in rabbits following exposure to increased pressure for	Response of the vestibular caloric stimulation of t	he labyrinths A77-25416
IMMUNITY Some indicators of natural immunity in rabbits	Response of the vestibular caloric stimulation of t  10 Adaptation of vestibular r	he labyrinths A77-25416 responses to galvanic
IMMUNITY Some indicators of natural immunity in rabbits following exposure to increased pressure for days  A77-2 IMBUBOLOGY	Response of the vestibular caloric stimulation of t  Adaptation of vestibular r stimulation of the labyr	he labyrinths A77-25416 responses to galvanic
IMMUNITY Some indicators of natural immunity in rabbits following exposure to increased pressure for days  A77-2 IMMUNOLOGY Comparative evaluation of studies of the effec	Response of the vestibular caloric stimulation of t  10 Adaptation of vestibular r stimulation of the labyr t of LACTATES	the labyrinths A77-25416 responses to galvanic rinths A77-25417
IMMUNITY  Some indicators of natural immunity in rabbits following exposure to increased pressure for days  A77-2  IMBUNOLOGY  Comparative evaluation of studies of the effect hypoxia of different levels on immunobiologistatus in man	Response of the vestibular caloric stimulation of t  10 Adaptation of vestibular r 6120 stimulation of the labyr t of LACTATES cal Arterial lactate responses breathing nitrogen	the labyrinths A77-25416 responses to galvanic rinths A77-25417 responses in dogs made appeic or
IMMUNITY Some indicators of natural immunity in rabbits following exposure to increased pressure for days  A77-2  IMMUNOLOGY Comparative evaluation of studies of the effect hypoxia of different levels on immunobiologic status in man	Response of the vestibular caloric stimulation of t  Adaptation of vestibular r stimulation of the labyr  t of LACTATES cal Arterial lactate responses breathing nitrogen	the labyrinths A77-25416 responses to galvanic rinths A77-25417 s in dogs made apneic or A77-23419
IMMUNITY  Some indicators of natural immunity in rabbits following exposure to increased pressure for days  A77-2  IMBUBOLOGY  Comparative evaluation of studies of the effect hypoxia of different levels on immunobiologic status in man  A77-2  IMPACT TESTS	Response of the vestibular caloric stimulation of to the laby:  10 Adaptation of vestibular restinulation of the laby:  t of LACTATES cal Arterial lactate responses breathing nitrogen  5108 pH effects on lactate and	he labyrinths A77-25416 esponses to galvanic inths A77-25417 s in dogs made apneic or A77-23419 excess lactate in
IMMUNITY Some indicators of natural immunity in rabbits following exposure to increased pressure for days  A77-2 IMMUNOLOGY Comparative evaluation of studies of the effect hypoxia of different levels on immunobiologic status in man  A77-2 IMPACT TESTS Anthropometric test dummy, model 825-50, design development and performance	Response of the vestibular caloric stimulation of to the stimulation of the labyr to fulfill the stimulation of the labyr the stimulation of the labyr the stimulation of the stimulation of the labyr the stimulation of the stimula	he labyrinths A77-25416 esponses to galvanic inths A77-25417 s in dogs made apneic or A77-23419 excess lactate in
IMMUNITY  Some indicators of natural immunity in rabbits following exposure to increased pressure for days  A77-2  IMMUNOLOGY  Comparative evaluation of studies of the effect hypoxia of different levels on immunobiologistatus in man  A77-2  IMPACT TESTS  Anthropometric test dummy, model 825-50, design development and performance [PB-257179/2]  N77-1	Response of the vestibular caloric stimulation of to the lady caloric stimulation of the lady caloric	he labyrinths A77-25416 responses to galvanic rinths A77-25417 s in dogs made apneic or A77-23419 excess lactate in a hypoxic dogs A77-23420
IMMUNITY Some indicators of natural immunity in rabbits following exposure to increased pressure for days  A77-2  IMBUNOLOGY Comparative evaluation of studies of the effect hypoxia of different levels on immunobiologicatus in man  A77-2  IMPACT TESTS Anthropometric test dummy, model 825-50, design development and performance [PB-257179/2] IMPLANTED ELECTRODES (BIOLOGY) Percutaneous multiple electrode connector, design	Response of the vestibular caloric stimulation of to depend on the labyr stimulation of the labyr to find the lactate responses breathing nitrogen pH effects on lactate and relation to 02 deficit in lactate and	he labyrinths A77-25416 responses to galvanic rinths A77-25417 s in dogs made apneic or excess lactate in hypoxic dogs A77-23420 e on bloom sequence in ends
IMMUNITY  Some indicators of natural immunity in rabbits following exposure to increased pressure for days  A77-2  IMMUNOLOGY  Comparative evaluation of studies of the effect hypoxia of different levels on immunobiologic status in man  A77-2  IMPACT TESTS  Anthropometric test dummy, model 825-50, design development and performance (PB-257179/2)  Percutaneous multiple electrode connector, designare parameters and fabrication (biomedical)	Response of the vestibular caloric stimulation of to describe the caloric stimulation of the labyr to find the lactate responses and the caloric stimulation of the labyr to find the lactate responses breathing nitrogen breathing nitrogen pH effects on lactate and relation to 02 deficit in the caloric find the caloric stimulation of the vestibular caloric stimulation of the vestibular caloric stimulation of the vestibular caloric stimulation of the labyr the caloric stimulation of the caloric stimulation of the labyr the caloric stimulation of the caloric st	the labyrinths  A77-25416 responses to galvanic rinths  A77-25417 responses to galvanic rinths  A77-25417 responses to galvanic rinths  A77-23419 responses lactate in response to galvanic responses lactate in response to bloom sequence in
IMMUNITY  Some indicators of natural immunity in rabbits following exposure to increased pressure for days  A77-2  IMBUNOLOGY  Comparative evaluation of studies of the effect hypoxia of different levels on immunobiologistatus in man  A77-2  IMPACT TESTS  Anthropometric test dummy, model 825-50, design development and performance [PB-257179/2]  IMPLANTED BLECTRODES (BIOLOGY)  Percutaneous multiple electrode connector, desparameters and fabrication (biomedical) [NASA-CR-144859]  N77-1	Response of the vestibular caloric stimulation of to	he labyrinths A77-25416 responses to galvanic rinths A77-25417 s in dogs made apneic or excess lactate in hypoxic dogs A77-23420 e on bloom sequence in hads E77-18727
IMMUNITY  Some indicators of natural immunity in rabbits following exposure to increased pressure for days  A77-2  IMMUNOLOGY  Comparative evaluation of studies of the effect hypoxia of different levels on immunobiologistatus in man  A77-2  IMPACT TESTS  Anthropometric test dummy, model 825-50, design development and performance  [PB-257179/2]  IMPLANTED BLECTHODES (BIOLOGY)  Percutaneous multiple electrode connector, design parameters and fabrication (biomedical)  [NASA-CR-144859]  IMPECTIOUS DISEASES  Detection of microbial infection in blood and	Response of the vestibular caloric stimulation of to describe the caloric stimulation of the labyr stimulation of the labyr to of the lactate	the labyrinths  A77-25416 responses to galvanic rinths  A77-25417 responses to galvanic rinths  A77-25417 responses to galvanic rinths  A77-23419 responses lactate in response to hypoxic dogs  A77-23420 response to bloom sequence in response to bloom sequence in response to the case of a
IMMUNITY  Some indicators of natural immunity in rabbits following exposure to increased pressure for days  A77-2  IMBUNOLOGY  Comparative evaluation of studies of the effect hypoxia of different levels on immunobiologistatus in man  A77-2  IMPACT TESTS  Anthropometric test dummy, model 825-50, design development and performance (PB-257179/2)  IMPLANTED BLECTHODES (BIOLOGY)  Percutaneous multiple electrode connector, design parameters and fabrication (biomedical) (NASA-CR-144859)  IMPECTIOUS DISEASES  Detection of microbial infection in blood and antibiotic determinations	Response of the vestibular caloric stimulation of to	the labyrinths  A77-25416 responses to galvanic rinths  A77-25417 responses to galvanic rinths  A77-25417 responses to galvanic resp
IMMUNITY  Some indicators of natural immunity in rabbits following exposure to increased pressure for days  A77-2  IMMUNOLOGY  Comparative evaluation of studies of the effect hypoxia of different levels on immunobiologistatus in man  A77-2  IMPACT TESTS  Anthropometric test dummy, model 825-50, design development and performance  [PB-257179/2]  IMPLANTED BLECTHODES (BIOLOGY)  Percutaneous multiple electrode connector, design parameters and fabrication (biomedical)  [NASA-CR-144859]  IMPECTIOUS DISEASES  Detection of microbial infection in blood and	Response of the vestibular caloric stimulation of to	the labyrinths  A77-25416 responses to galvanic rinths  A77-25417 responses to galvanic rinths  A77-25417 responses to galvanic resp
IMMUNITY  Some indicators of natural immunity in rabbits following exposure to increased pressure for days  A77-2  IMBUNOLOGY  Comparative evaluation of studies of the effect hypoxia of different levels on immunobiologistatus in man  A77-2  IMPACT TESTS  Anthropometric test dummy, model 825-50, design development and performance  (PB-257179/2)  IMPLANTED BLECTHODES (BIOLOGY)  Percutaneous multiple electrode connector, design parameters and fabrication (biomedical)  (NASA-CR-144859)  IMPECTIOUS DISBASSS  Detection of microbial infection in blood and antibiotic determinations  (NASA-CASE-GSC-12045-1]  IMPRASOBIC PREQUENCIES  Some effects of infrasound on task performance	Response of the vestibular caloric stimulation of to the caloric stimulation of the labyr stimulation of the labyr to fulfill to ful	the labyrinths  A77-25416 responses to galvanic rinths  A77-25417 responses to galvanic rinths  A77-25417 responses to galvanic resp
IMMUNITY  Some indicators of natural immunity in rabbits following exposure to increased pressure for days  A77-2  IMBUNOLOGY  Comparative evaluation of studies of the effect hypoxia of different levels on immunobiologistatus in man  A77-2  IMPACT TESTS  Anthropometric test dummy, model 825-50, design development and performance (PB-257179/2)  IMPLATED BLECTRODES (BIOLOGY)  Percutaneous multiple electrode connector, design parameters and fabrication (biomedical) (MASA-CR-144859)  IMPECTIOUS DISEASES  Detection of microbial infection in blood and antibiotic determinations (MASA-CASE-GSC-12045-1)  IMPERSOBIC PREQUENCIES  Some effects of infrasound on task performance	Response of the vestibular caloric stimulation of to depth and caloric stimulation of the labyr stimulation of the labyr stimulation of the labyr to fulfill the caloric stimulation of the study of the biomechanic study of the biomechanic caloric stimulation of the caloric study of the biomechanic caloric study of the bi	the labyrinths  A77-25416 responses to galvanic rinths  A77-25417 responses to galvanic rinths  A77-25417 responses to galvanic rinths  A77-23419 responses lactate in response to hypoxic dogs  A77-23420 response to home sequence in response to galvanic responses to galvanic respons
IMMUNITY  Some indicators of natural immunity in rabbits following exposure to increased pressure for days  A77-2  IMBUNOLOGY  Comparative evaluation of studies of the effect hypoxia of different levels on immunobiologistatus in man  A77-2  IMPACT TESTS  Anthropometric test dummy, model 825-50, design development and performance  (PB-257179/2)  IMPLANTED BLECTHODES (BIOLOGY)  Percutaneous multiple electrode connector, design parameters and fabrication (biomedical)  (NASA-CR-144859)  IMPECTIOUS DISBASES  Detection of microbial infection in blood and antibiotic determinations  (NASA-CASE-GSC-12045-1)  IMPRASOBIC PREQUENCIES  Some effects of infrasound on task performance  A77-2  IMGESTIOM (BIOLOGY)  Renal electrolyte circadian rhythms - Independ	Response of the vestibular caloric stimulation of to describe the caloric stimulation of the labyr stimulation of the labyr to of the lactate of the caloric stimulation of the labyr to of the lactate of the caloric stimulation of the labyr to of the lactate of the caloric stimulation of the labyr to of the lactate of the caloric stimulation of the lactate of the lactate of the caloric stimulation of the lactate of th	the labyrinths  A77-25416 responses to galvanic rinths  A77-25417 responses to galvanic rinths  A77-25417 responses to galvanic rinths  A77-23419 responses lactate in response to galvanic responses to galvanic respon
IMMUNITY  Some indicators of natural immunity in rabbits following exposure to increased pressure for days  A77-2  IMBUNOLOGY  Comparative evaluation of studies of the effect hypoxia of different levels on immunobiologistatus in man  A77-2  IMPLACT TESTS  Anthropometric test dummy, model 825-50, design development and performance (PB-257179/2)  IMPLATED ELECTRODES (BIOLOGY)  Percutaneous multiple electrode connector, designameters and fabrication (biomedical) (MASA-CR-144859)  IMPLATIOUS DISEASES  Detection of microbial infection in blood and antibiotic determinations (MASA-CASE-GSC-12045-1)  IMPRASOBIC PREQUENCIES  Some effects of infrasound on task performance A77-2  IMGESTION (BIOLOGY)  Renal electrolyte circadian rhythms - Independence from feeding and activity patterns	Response of the vestibular caloric stimulation of to determine the caloric stimulation of the labyr stimulation of the labyr to fulfill to fulfill the caloric stimulation of the labyr to fulfill the caloric stimulation possibility measuring device for the study of the biomechanic st	the labyrinths  A77-25416 responses to galvanic rinths  A77-25417 responses to galvanic rinths  A77-25417 responses to galvanic rinths  A77-23419 responses lactate in response to galvanic responses to galvanic respon
IMMUNITY  Some indicators of natural immunity in rabbits following exposure to increased pressure for days  A77-2  IMBUNOLOGY  Comparative evaluation of studies of the effect hypoxia of different levels on immunobiologistatus in man  A77-2  IMPACT TESTS  Anthropometric test dummy, model 825-50, design development and performance  (PB-257179/2)  IMPLANTED BLECTHODES (BIOLOGY)  Percutaneous multiple electrode connector, design parameters and fabrication (biomedical)  (NASA-CR-144859)  IMPECTIOUS DISBASES  Detection of microbial infection in blood and antibiotic determinations  (NASA-CASE-GSC-12045-1)  IMPRASOBIC PREQUENCIES  Some effects of infrasound on task performance  A77-2  IMGESTIOM (BIOLOGY)  Renal electrolyte circadian rhythms - Independ	Response of the vestibular caloric stimulation of to describe the caloric stimulation of the labyr stimulation of the labyr to of the lactate of the caloric stimulation of the labyr to of the lactate of the caloric stimulation of the labyr to of the lactate of the caloric stimulation of the labyr to of the lactate of the caloric stimulation of the lactate of the lactate of the caloric stimulation of the lactate of the lactate of the caloric stimulation of the lactate of the lact	the labyrinths  A77-25416 responses to galvanic rinths  A77-25417 responses to galvanic rinths  A77-25417 responses to galvanic rinths  A77-23419 responses lactate in response to galvanic responses to galvanic respon
IMMUNITY  Some indicators of natural immunity in rabbits following exposure to increased pressure for days  A77-2  IMBUNOLOGY  Comparative evaluation of studies of the effect hypoxia of different levels on immunobiologistatus in man  A77-2  IMPLACT TESTS  Anthropometric test dummy, model 825-50, design development and performance (PB-257179/2)  IMPLAMTED ELECTRODES (BIOLOGY)  Percutaneous multiple electrode connector, designameters and fabrication (biomedical) (MASA-CLA-144859)  IMPLATIOUS DISEASES  Detection of microbial infection in blood and antibiotic determinations (MASA-CLASE-GSC-12045-1)  IMPRASOBIC PREQUENCIES  Some effects of infrasound on task performance A77-2  IMGESTIOM (BIOLOGY)  Renal electrolyte circadian rhythms - Independ from feeding and activity patterns  A77-2  IMJURIES  An evaluation of the 1974 and 1975 restraint services and ser	Response of the vestibular caloric stimulation of to the caloric stimulation of the labyr stimulation of the labyr to fulfill to ful	the labyrinths  A77-25416 responses to galvanic rinths  A77-25417 responses to galvanic A77-25417 responses to galvanic A77-25417 responses to galvanic A77-23419 responses lactate in A77-23420 responses lactate in A77-23420 responses lactate in A77-18727 responses lactate in A77-18727 responses lactate in A77-23550 responses lactate in A77-23550 responses lactate in A77-24151 responses to galvanic A77-24151
IMMUNITY  Some indicators of natural immunity in rabbits following exposure to increased pressure for days  A77-2  IMBUNOLOGY  Comparative evaluation of studies of the effect hypoxia of different levels on immunobiologistatus in man  A77-2  IMPACT TESTS  Anthropometric test dummy, model 825-50, design development and performance  [PB-257179/2]  IMPLANTED ELECTRODES (BIOLOGY)  Percutaneous multiple electrode connector, designameters and fabrication (biomedical)  [NASA-CR-144859]  IMPECTIOUS DISEASES  Detection of microbial infection in blood and antibiotic determinations  [HASA-CASE-GSC-12045-1]  IMPRASOBIC PREQUENCIES  Some effects of infrasound on task performance from feeding and activity patterns  A77-2  IMJURIES  An evaluation of the 1974 and 1975 restraint s  [PB-258585/9]  N77-1	Response of the vestibular caloric stimulation of to determine the caloric stimulation of the labyr stimulation of the labyr to fulfill the caloric stimulation possibility measuring device for the study of the biomechanic study of the study of	the labyrinths  A77-25416 responses to galvanic rinths  A77-25417 responses to galvanic rinths  A77-25417 responses to galvanic rinths  A77-23419 responses lactate in response lactate in response and response r
IMMUNITY  Some indicators of natural immunity in rabbits following exposure to increased pressure for days  A77-2  IMBUNOLOGY  Comparative evaluation of studies of the effect hypoxia of different levels on immunobiologistatus in man  A77-2  IMPLACT TESTS  Anthropometric test dummy, model 825-50, design development and performance (PB-257179/2)  IMPLAMTED ELECTRODES (BIOLOGY)  Percutaneous multiple electrode connector, designameters and fabrication (biomedical) (MASA-CLA-144859)  IMPLATIOUS DISEASES  Detection of microbial infection in blood and antibiotic determinations (MASA-CLASE-GSC-12045-1)  IMPRASOBIC PREQUEBCIES  Some effects of infrasound on task performance (MASA-CLASE-GSC-12045-1)  Renal electrolyte circadian rhythms - Independ from feeding and activity patterns  A77-2  IMJURIES  An evaluation of the 1974 and 1975 restraint s (PB-258585/9)  IMORGANIC PREOXIDES  Superoxide dismutase /SOD/ activity in hypoxice	Response of the vestibular caloric stimulation of to depth and caloric stimulation of the labyr stimulation of the labyr stimulation of the labyr to fulfill to fulfi	the labyrinths  A77-25416 responses to galvanic rinths  A77-25417 responses to galvanic A77-25417 responses to galvanic A77-25417 responses to galvanic A77-23419 responses lactate in A77-23419 responses lactate in A77-23420 responses lactate in A77-18727 responses lactate in A77-18727 responses lactate in A77-18727 responses lactate in A77-23550 responses lactate in A77-23550 responses lactate in A77-24151 responses lactate in A77-25325 responses lactate in A77-26052
IMMUNITY  Some indicators of natural immunity in rabbits following exposure to increased pressure for days  A77-2  IMBUNOLOGY  Comparative evaluation of studies of the effect hypoxia of different levels on immunobiologistatus in man  A77-2  IMPACT TESTS  Anthropometric test dummy, model 825-50, design development and performance  [PB-257179/2]  IMPLANTED ELECTRODES (BIOLOGY)  Percutaneous multiple electrode connector, designameters and fabrication (biomedical)  [NASA-CR-144859]  IMPECTIOUS DISEASES  Detection of microbial infection in blood and antibiotic determinations  [HASA-CASE-GSC-12045-1]  IMPRASOBIC PREQUENCIES  Some effects of infrasound on task performance from feeding and activity patterns  [PB-258585/9]  INJURIES  An evaluation of the 1974 and 1975 restraint s  [PB-258585/9]  INOTEGRABIC PREDUIDES  Superoxide dismutase /SOD/ activity in hypoxical mammalian systems	Response of the vestibular caloric stimulation of to depth and caloric stimulation of the labyr stimulation of the labyr stimulation of the labyr to follow the following process of the lactate responses breathing nitrogen breathing nitrogen predicts in lactate and relation to 02 deficit in lactate responses breathing nitrogen and relation to 02 deficit in lactate responses breathing nitrogen and relation to 02 deficit in lactate responses breathing nitrogen and relation to 02 deficit in lactate responses breathing nitrogen and relation to 02 deficit in lactate responses breathing nitrogen and relation to 02 deficit in lactate responses breathing nitrogen and relation to 02 deficit in lactate responses breathing nitrogen and relation to 02 deficit in lactate responses breathing nitrogen and relation to 02 deficit in lactate responses breathing nitrogen and relation to 02 deficit in lactate responses breathing nitrogen and relation	the labyrinths  A77-25416 responses to galvanic rinths  A77-25417 responses to galvanic rinths  A77-25417 responses to galvanic rinths  A77-25417 responses to galvanic response
IMMUNITY  Some indicators of natural immunity in rabbits following exposure to increased pressure for days  A77-2  IMBUNOLOGY  Comparative evaluation of studies of the effect hypoxia of different levels on immunobiologistatus in man  A77-2  IMPACT TESTS  Anthropometric test dummy, model 825-50, design development and performance  (PB-257179/2)  Percutaneous multiple electrode connector, design parameters and fabrication (biomedical)  (NASA-CR-144859)  IMPRICTIOUS DISEASES  Detection of microbial infection in blood and antibiotic determinations  (NASA-CR-144859-1)  IMPRASOBIC PREQUENCIES  Some effects of infrasound on task performance A77-2  INGESTION (BIOLOGY)  Renal electrolyte circadian rhythms - Independ from feeding and activity patterns  [PB-258585/9]  INORGANIC PREDOXIDES  Superoxide dismutase /SOD/ activity in hypoxic mammalian systems	Response of the vestibular caloric stimulation of to caloric stimulation of to the caloric stimulation of the labyr stimulation of the labyr to for the caloric stimulation of the labyr to for the caloric stimulation of the labyr to for the caloric stimulation of the labyr to forest in the caloric stimulation of the labyr to forest in the caloric stimulation of the labyr to forest in the caloric stimulation of the labyr to forest in the caloric stimulation of the caloric stimu	the labyrinths  A77-25416 responses to galvanic rinths  A77-25417 responses to galvanic rinths  A77-25417 responses to galvanic rinths  A77-25417 responses to galvanic response
IMMUNITY  Some indicators of natural immunity in rabbits following exposure to increased pressure for days  A77-2  IMBUNOLOGY  Comparative evaluation of studies of the effect hypoxia of different levels on immunobiologistatus in man  A77-2  IMPACT TESTS  Anthropometric test dummy, model 825-50, design development and performance [PB-257179/2]  IMPLANTED BLECTRODES (BIOLOGY)  Percutaneous multiple electrode connector, design development and fabrication (biomedical) [NASA-CR-144859]  IMPECTIOUS DISEASES  Detection of microbial infection in blood and antibiotic determinations [HASA-CASE-GSC-12045-1]  IMPRASOBIC PREQUENCIES  Some effects of infrasound on task performance A77-2  IMGESTION (BIOLOGY)  Renal electrolyte circadian rhythms - Independ from feeding and activity patterns  A77-2  IMJURIES  An evaluation of the 1974 and 1975 restraint s [PB-258585/9]  IMONGAMIC PREDXIDES  Superoxide dismutase /SOD/ activity in hypoxic mammalian systems  A77-2  IMTRAVEBICULAR ACTIVITY  Payload crew activity planning integration. T	Response of the vestibular caloric stimulation of to caloric stimulation of to caloric stimulation of the labyr stimulation of the labyr stimulation of the labyr to function to the labyr to function of the labyr to function to caloric stimulation of the labyr to function to caloric stimulation of the labyr to function to caloric stimulation particles and relation to 02 deficit in the caloric stimulation possibility and the study of the biomechanic study of the biomec	the labyrinths  A77-25416 responses to galvanic rinths  A77-25417 responses to galvanic rinths  A77-25417 responses to galvanic rinths  A77-25417 responses to galvanic response
IMMUNITY  Some indicators of natural immunity in rabbits following exposure to increased pressure for days  A77-2  IMBUNOLOGY  Comparative evaluation of studies of the effect hypoxia of different levels on immunobiologistatus in man  A77-2  IMPACT TESTS  Anthropometric test dummy, model 825-50, design development and performance  (PB-257179/2)  IMPLANTED ELECTRODES (BIOLOGY)  Percutaneous multiple electrode connector, design parameters and fabrication (biomedical)  (NASA-CR-144859)  IMPRECTIOUS DISEASES  Detection of microbial infection in blood and antibiotic determinations  (NASA-CR-144859)  IMPRASOBIC PREQUENCIES  Some effects of infrasound on task performance A77-2  INFRASOBIC PREQUENCIES  Some effects of infrasound on task performance from feeding and activity patterns  (PB-258585/9)  INORGANIC PREQUENCIES  Superoxide dismutase /SOD/ activity in hypoxic mammalian systems  A77-2  INTRAVEBICULAR ACTIVITY  Payload crew activity planning integration. T  2: Inflight operations and training for pay	Response of the vestibular caloric stimulation of to aloric stimulation of to the caloric stimulation of the labyr stimulation of the labyr to of the caloric stimulation particles and relation to 02 deficit in the caloric stimulation of the caloric stimulation possibility measuring device for the study of the biomechanic study of the biomechanic study of the biomechanic study of the biomechanic study of the caloric study	the labyrinths  A77-25416 responses to galvanic rinths  A77-25417 responses to galvanic rinths  A77-25417 responses to galvanic rinths  A77-25417 responses to galvanic rinth and sade apneic or  A77-23419 response lactate in response and sequence in response response of a response o
IMMUNITY  Some indicators of natural immunity in rabbits following exposure to increased pressure for days  A77-2  IMBUNOLOGY  Comparative evaluation of studies of the effect hypoxia of different levels on immunobiologistatus in man  A77-2  IMPACT TESTS  Anthropometric test dummy, model 825-50, design development and performance [PB-257179/2]  IMPLANTED BLECTRODES (BIOLOGY)  Percutaneous multiple electrode connector, design development and fabrication (biomedical) [NASA-CR-144859]  IMPECTIOUS DISEASES  Detection of microbial infection in blood and antibiotic determinations [HASA-CASE-GSC-12045-1]  IMPRASOBIC PREQUENCIES  Some effects of infrasound on task performance A77-2  IMGESTION (BIOLOGY)  Renal electrolyte circadian rhythms - Independ from feeding and activity patterns  A77-2  IMJURIES  An evaluation of the 1974 and 1975 restraint s [PB-258585/9]  IMONGAMIC PREDXIDES  Superoxide dismutase /SOD/ activity in hypoxic mammalian systems  A77-2  IMTRAVEBICULAR ACTIVITY  Payload crew activity planning integration. T	Response of the vestibular caloric stimulation of to aloric stimulation of to the caloric stimulation of the labyr stimulation of the labyr to of the caloric stimulation particles and relation to 02 deficit in the caloric stimulation of the caloric stimulation possibility measuring device for the study of the biomechanic study of the biomechanic study of the biomechanic study of the biomechanic study of the caloric study	the labyrinths  A77-25416 responses to galvanic rinths  A77-25417 responses to galvanic rinths  A77-25417 responses to galvanic rinths  A77-25417 responses to galvanic responses to galvanic responses to galvanic responses lactate in response to hypoxic dogs response to hypoxic dogs response to hypoxic design, and in the case of a response to human physiological response

•	•
LIGHT RHITTING DIODES  Hultiple images as a function of LEDs viewed	MALES Hetabolic processes in hypokinetic and
during vibration	rehabilitated men
177-25075	A77-24164
Buman performance evaluation of matrix displays:	Hamals
Literature and technology review	Effects on body size and composition of chronic
[AD-A029932] N77-18750	exposure to altered gravity centrifuging
LINVOLOGY	stress in mammals
Algal metabolite influence on bloom sequence in	[ HASA-CR-149804 ] N77-19749
eutrophied freshwater ponds	HAN HACHINE SYSTEMS
[PB-258445/6] N77-18727	The pilot and the airplane: Aviation ergonomics
LINEAR ENERGY TRANSPER (LET)	Russian book
The Biostack as an approach to high LET research	A77-23546
Linear Energy Transfer	Dynamic control characteristics and brain-electric
A77-24156	regulation of the vigilance of man during the
LIPID METABOLISM	performance of control tasks German book
Metabolic processes in hypokinetic and	A77-23547
rehabilitated men	Introduction to the study of a mathematical model
A77-24164	of a pilot
Indicators of nitrogen, carbohydrate and lipid	[ONERA, TP NO. 1976-118] A77-24425
metabolism in man during prolonged stay under	Semi-auto manipulator control systems and their
hyperbaric conditions	dynamic analysis with computer
A77-26110	A77-24831
LIPIDS .	Algorithms for combined and supervisor robot and
Synthesis of phospholipids and membranes in	manipulator control
prebiotic conditions	A77-24832
A77-24998	Use of human engineering standards in design
LIQUID COOLING	A77-25072
Peasibility study of automatic control of crew	A nonlinear model for the spatial characteristics
comfort in the shuttle Extravehicular Mobility	of the human visual system
Unit liquid cooled garment regulator	A77-26275
[NASA-CR-151230] N77-19755	Human pilot describing function, remnant and
Control of thermal balance by a liquid circulating	associated information for pitch attitude
garment based on a mathematical representation	control: Results from in-flight and
of the human thermoregulatory system	ground-based tracking experiments
[NASA-TM-X-58190] H77-19756	[NLR-TR-75062-U] R77-18744
LIQUID CRYSTALS	Conditions for improving visual information
Human performance evaluation of matrix displays:	processing
Literature and technology review	[AD-A030425] N77-18751
[AD-A029932] N77-18750	Pilot factors considerations in see-to-land
LOCONOTION	[AD-A030789] N77-19759
New method of artificial motion synthesis and	MAHI PULATORS
application to locomotion robots and manipulators	New method of artificial motion synthesis and
A77-24830	application to locomotion robots and manipulator
LONG TERM BPPECTS	A77-24830
Physiological changes associated with long-term	Semi-auto manipulator control systems and their
increases in acceleration	dynamic analysis with computer
A77-24138	A77-24831
Long-term space flights and human habitat	Algorithms for combined and supervisor robot and
A77-26102	manipulator control
State of hemopoiesis during irradiation simulating	A77-24832
radiation exposure in prolonged space flight	Vehicle/manipulator/packaging interaction - A
A77-26115	synergistic approach to large erectable space
LONGITUDINAL CONTROL	system design
Human pilot describing function, remnant and	[AIAA 77-394] A77-25746
associated information for pitch attitude	HANNED SPACE PLIGHT
control: Results from in-flight and	Long-term space flights and human habitat
ground-based tracking experiments	A77-26102
[NLR-TR-75062-U] N77-18744	HANUAL CONTROL
LOW TEMPERATURE BEVIRONAUNTS	Semi-auto manipulator control systems and their
Performance of fungi in low temperature and	dynamic analysis with computer
hypersaline environments	A77-24831
A77-24176	HARS BUVIRONHENT
LUNG MORPHOLOGY	Effect of extreme factors on micro-organisms used
Depression of serotonin clearance by rat lungs	for the control of the effectiveness of
during oxygen exposure	sterilization in Martian environment
A77-23418	conditions
Lung mast cell density and distribution in	A77-24174
chronically hypoxic animals	MATHEMATICAL HODELS
. A77-24360	Introduction to the study of a mathematical model
Lung elasticity and airway dynamics in Peruvian	of a pilot
natives to high altitude	[ONERA, TP NO. 1976-118] A77-24425
A77-24361	A two-dimensional model for the cochlea. II - The
Interaction of lung volume and chemical drive on	heuristic approach and numerical results
respiratory muscle BMG and respiratory timing	A77-25170
A77-24366	An experimental validation of mathematical
	simulation of human thermoregulation
48	A77-25217
M	Investigation on a passenger ride-comfort
MACROPHAGES	improvement system with limited control surface
Superoxide dismutase /SOD/ activity in hypoxic	actuator performance for a flexible aircraft
mammalian systems	[NLR-TR-75140-U] N77-18745
A77-23427	Control of thermal balance by a liquid circulating
MAGNETIC EFFECTS	garment based on a mathematical representation
Motor activity of mice in a magnetic field of	of the human thermoregulatory system
varying strength	[NASA-TH-X-58190] N77-19756

HEDICAL ELECTROPICS SUBJECT HEDEN

		4	
HEDICAL ELECTRONICS		HOLECULES	_
Measuring device for His-bundle analysis	s at the	Bioprocessing development: Immune/cellu	
heart	A77-23621	applications: Anti-Ig autoantibody an complement-mediated destruction of neo	
Inexpensive technique to record respirat		cells	Plastic
flight	Jan darang	[ BASA-CR-151207 ]	N77-18725
	A77-24511	HOTION PERCEPTION	
Computerized I-ray reconstruction tomogram	caphy in	Experiments on the locus of induced moti	on .
stereometric analysis of cardiovascula			A77-26074
1-1-11-1 11.2 b- 0h 1	A77-24737	Integration of visual and motion cues fo	
Arrhythmias documented by 24 hour contin		simulator requirements and ride qualit investigation	<b>y</b> .
electrocardiographic monitoring in 50 medical students without apparent hear		[ HASA-CR-149667]	₩77-18740
section Students attnout abbutent near	A77-26241	HOTION SICKURSS	B// 10/40
MEBBRANES		The prevention of motion sickness in orb	ital flight
Synthesis of phospholipids and membranes	s in	elee and a second control of the second cont	A77-24140
prebiotic conditions		Successful transfer of adaptation enviro	nments in
WOWELT DEPRESSED	A77-24998	navy flight training	N77-19733
BRUTAL PERFORMANCE  Electronic device for studying high-spee	d reactions	Experimental investigations on motion si	
arrythmic pulse generator for ment		susceptibility	CKHESS
studies	Lai Laciyae	onpockerning, '	N77-19734
	A77-26571	Automated electroencephalography system	and
HETABOLIC WASTES		electroencephalographic correlates of	space
Study of the biochemical indicators of c	chronic	motion sickness, part 3	
irradiation in rats		[WASA-CR-151210]	.N77-19746
Madagada	177-24150	HOTION SIMULATORS	
Endocrine-metabolic effects in short-dur		successful transfer of adaptation environment flight training	uments in
high-workload missions: Peasibility s [AD-A030524]	877-18736	navy flight training	#77-19733
HETALS	a,, 10,30	Human dynamic orientation model applied	
Geomycology fungal biosolubilization	and	simulation	
accumulation of metals		[ MASA-CR-149862 ]	<b>877-1975</b> 4
	A77-24179	HOUNTAIN INHABITANTS	
ERTHANK		Causes of high blood 02 affinity of anima	als living
Bio-gas production from alligator weeds	naa 40300	at high altitude	177 2025
[NASA-CR-149809]	B77-19729	Lung elasticity and airway dynamics in Po	A77-24356
MICROBIOLOGY  Algal metabolite influence on bloom sequ	ence in	natives to high altitude	erdaran
eutrophied freshwater ponds	ence In	necros to may difficult	A77-24361
[PB-258445/6]	N77-18727	MOSCLES	
HICROORGANISHS		Muscle glycogen repletion after high-int	ensity
Effect of extreme factors on micro-organ		intermittent exercise	
for the control of the effectiveness of		0-deed	A77-24355
sterilization in Hartian environme conditions	ent	Regional measurement of body nitrogen [MASA-CR-151200]	N77-18732
Conditions	A77-24174	The effects of prolonged spaceflight on	
On methods of detection of extraterrestr		regional distribution of fluid, muscle	
	A77-24175	Biostereometric results from Skylab	
On micro-organisms of the stratosphere		•	N77-19738
	A77-24178	MUSCULAR PUNCTION	
Interrelationships between certain micro		Some parameters of phosphocreatine metabo	olism in
and some aspects of sediment-water nut		man during increased and decreased ener	cdà
exchange in two bayou estuaries, phase [PB-259538/7]	N77-19730	expenditures	A77-26109
Advanced combined iodine dispenser and d		Interaction of the regulatory systems for	
for microorganism annihilation in	potable	. muscle-contraction thermogenesis and ex	
water		respiration	
[NASA-CR-151214]	N77-19753		A77-26225
MILITARY OPERATIONS		HUSCULAR TOHUS	
Performance measurements	W77_107E2	On the mechanisms of changes in skeletal	muscles
[AD-A029850] HILITARY PSYCHOLOGY	N77-18753	in the weightless environment	A77-24143
Performance measurements		Effect of space-flight factors on skeleta	
[AD-A029850]	N77-18753	in rats	
HILITARY TRCHWOLOGY			A77-26104
Instructional systems development - A ne	w approach	MUSCULOSKBLETAL SYSTEM	_
to flight-crew proficiency	177 24256	On the mechanisms of changes in skeletal	nuscles
HINERAL METABOLISM	A77-24856	in the weightless environment	A77-24143
Mineral and nitrogen metabolic studies o	n Skulah	Space flight effect upon the bioenergetic	
flights and comparison with effects of		skeletal muscles in rats	-5 02 020
long-term recumbency			A77-24161
	A77-24141	Combined effect of space flight and radia	ation on
HISSION PLANNING		skeletal muscles of rats	
Payload crew activity planning integrati			A77-24503
2: Inflight operations and training f		Effect of space flight on skeletal bones	
[NASA-CR-151187]	N77-18739	/light- and electron-microscopic invest	11gat10n/ 177-26103
Space mission training: A necessary ele planning and training for Shuttle Spac		Effect of space-flight factors on skeleta	
Missions	~= a n	in rats	=430162
	N77-19735		A77-26104
MODULATION TRANSPER PUNCTION		Effect of electrostimulation of the hypot	thalamus
Visual performance and image coding		and limbic structures on vestibulo-some	
	A77-24696	reflexes	
MOLECULAR SPECTRA		HTOCA DRIVE	A77-26117
Amino acid spectrum of human blood plasm	a nuring	MYOCARDIUM	
		Cardiac responses to moderate training is	rate
space flight and in antiorthostatic hy		Cardiac responses to moderate training in	rats 177-24364

<b></b>	_
N	Ð
WASA PROGRAMS Cardiovascular instrumentation for spaceflight	OPERATOR PERFORMANCE Some effects of infrasound on task performance
[NASA-CR-151935] N77-1873	
Aircrew training requirements for nap-of-the-eart flight	
[AD-A030420] N77-1875	
Successful transfer of adaptation environments in navy flight training	
HEOPLASMS N77-1973	OPERATORS (PERSONNEL)
Anti-Ig autoantibody and complement-mediated destruction of neoplastic cells	Performance of an observer in real time reconnaissance remotely piloted vehicles
[NASA-CR-151206] N77-1872 HETHORK ANALYSIS	OPHTHALHOLOGY
Descriptive communication structure metrics: A preliminary logical and empirical analysis	Stereocarotid angiography of the ophthalmic artery A77-26267
[AD-A030512] N77-1873	astronaut-scientists
Spinal cord thermosensitivity and sorting of neural signals in cold-exposed rats	ORBITAL ASSEMBLY
A77-2435	
Evoked responses of visual cortex under stimulation of hypothalamic formations	system design [AIAA 77-394] A77-25746
A77-2656	
Cerebellum and gravity Russian book on neurophysiology	<pre>matter from the Gunflint Iron Pormation Precambrian rock analysis</pre>
A77-2350 HIGHT PLIGHTS (AIRCRAFT)	
Pilot factors considerations in see-to-land [AD-A030789] #77-1975	
NITROGRE Arterial lactate responses in dogs made appeic or	
breathing mitrogen	
Regional measurement of body nitrogen [NASA-CR-151200] N77-1873	
MITROGEM METABOLISM  Mineral and nitrogen metabolic studies on Skylab flights and comparison with effects of earth long-term recumbency	hypokinesia A77-24139 Amino acid spectrum of human blood plasma during space flight and in antiorthostatic hypokinesia
A77-2414 Indicators of nitrogen, carbohydrate and lipid	
metabolism in man during prolonged stay under hyperbaric conditions A77-2611	antigravity mechanisms of the cardiovascular system
HOISE POLLUTION	Reversal of bedrest-induced orthostatic
Some effects of infrasound on task performance	
NONLINEAR SYSTEMS A nonlinear model for the spatial characteristics of the human visual system	A77-24504 Changes in orthostatic tolerance in man at an altitude of 3500 meters
NORRPINEPHRINE	
Metabolic and cardiovascular responses to norepinephrine in trained and nontrained human	hypokinesia with antiorthostatic posture A77-26107
subjects A77-2435	OSHOSIS 9 Renal osmoregulatory function during simulated
NUMERICAL CONTROL Algorithms for combined and supervisor robot and	space flight 177-24169
manipulator control A77-2483	OXYGEN  2 Arterial lactate responses in dogs made apneic or
NUTRIBUTS Dependence of the species composition of a mixed	breathing nitrogen A77-23419
culture of microalgae on illumination and suppl rate of nutrients	Thermoregulatory responses in animals in a
177-2611 Interrelationships between certain microorganisms	177-25345
and some aspects of sediment-water nutrient exchange in two bayou estuaries, phase 1 and 2 [PB-259538/7]	Prevention of decompression sickness during short-term flights in a depressurized cabin at high altitudes
BUTRITION  Nutrition hygiene for flying personnel in	A77-26114 OXIGES CONSUMPTION
prolonged flights	Space flight effect upon the bioenergetics of the
EISTAGEUS Induction of illusory self-rotation and mystageus	177-24161 Eypoxia-induced metabolic and core temperature
by a rotating sound-field A77-2450	
Response of the Vestibular apparatus to prolonged caloric stimulation of the labyrinths	Air Porce Academy
177-2541	6 A77-24508

OXIGEN PRODUCTION SUBJECT INDEX

New aspects of the study of the respiration of the blood during adaptation		Cardiac output during physical exercises real and simulated space flight	
The role of chemoreceptors in the adapte organism to hypoxia		Muscle glycogen repletion after high-int intermittent exercise	A77-24168 ensity A77-24355
OXYGEE PRODUCTION Technology advancement of the static ferelectrolysis process	ed water	Some parameters of phosphocreatine metab man during increased and decreased ene expenditures	olism in
[WASA-CR-151934] ONYGEN TENSION Pathophysiological mechanisms of the ef:	N77-18741 fect of	Transient asymptomatic S-T segment depre during daily activity	A77-26109 ssion
hyperoxia on the function of the lung	s in man A77-25424	PHYSICAL PITUBSS	A77-26242
P		On the mechanisms of changes in skeletal in the weightless environment	Muscles
PASSENGERS		Muscle glycogen repletion after high-int intermittent exercise	ensit <b>y</b>
Investigation on a passenger ride-comform inprovement system with limited contractuator performance for a flexible at [MLR-TR-75140-U]	ol surface	Metabolic and cardiovascular responses to norepinephrine in trained and nontrain	
PATTERN RECOGNITION  Visual echoes - The perception of repet:	ition in	subjects	A77-24359
quasi-random patterns	A77-23291	Cardiac responses to moderate training i	n rats 177-24364
PAYLOADS Spacelab and its utilization for biomed:	ical	Maximal aerobic power in women cadets at Air Force Academy	the U.S.
experiments  Payload crew activity planning integrat:  2: Inflight operations and training :		Athletic endurance training: Advantage flights? The significance of physical for selection and training of Spacelab	for space fitness
(NASA-CR-151187) PERCEPTUAL TIME CONSTANT	N77-18739	Space age heatlh care delivery	N77-19740
Blectronic device for studying high-spec		PHYSICAL WORK	N77-19744
studies	A77-26571	Ventilatory and gas exchange dynamics in to sinusoidal work	•
PERFORMANCE PREDICTION Some personality characteristics of pile with different levels of achievement	ot trainees	PHYSIOLOGICAL BPFECTS Physiological effects of sustained accel-	177-24368 eration
PERFORMANCE TESTS	A77-26116	Effect of antiorthostatic bed rest on the	A77-24137 e human body
Performance measurements [AD-A029850] PERIPHERAL VISION	N77-18753	Experimental investigations on motion signs susceptibility	
Visual field contraction during G stress 45, and 65 deg seatback angles	s at 13, A77-24501	PHYSIOLOGICAL RESPONSES The role of brief hypocapnia in the went	W77-19734 ilatory
PERSONALITY Some personality characteristics of pilo	ot trainees	response to CO2 with hypoxia	A77-23288
with different levels of achievement	A77-26116	Physiological effects induced by antiort hypokinesia	hostatic
PH affects on legisle and orders legisle		Body composition changes in men and wome	A77-24139
pH effects on lactate and excess lactate relation to 02 deficit in hypoxic dogs		2-3 weeks of bed rest	A77-24162
PHASE SHIPT		Deconditioning during prolonged immersion	
Two mechanisms of rephasal of circadian response to a 180 deg phase shift /si		possible countermeasures	177-24166
12-hr time zone change/	A77-25300	<pre>Muscle glycogen repletion after high-intended intermittent exercise</pre>	_
PHOSPHATES  CAMP in temperature— and ADH-regulating  after thermal stress cyclic Adenos		Cardiac responses to moderate training in	177-24355 1 rats 177-24364
MonoPhosphate in AntiDiuretic Hormone		Hypoxia-induced metabolic and core temper changes in the squirrel monkey	•
PHOSPHORIC ACID  Synthesis of phospholipids and membranes prebiotic conditions		Ventilatory and gas exchange dynamics in to sinusoidal work	•
PHOSPHORUS SETABOLISM Potassium and phosphorus content and Ca-	A77-24998 -45	Effective temperature scale useful for by hyperbaric environments	177-24368 ppo- and
inclusion in bones and teeth of rats a 22-day space flight aboard the biosate Cosmos 605		Reversal of bedrest-induced orthostatic intolerance by lower body negative pres	A77-24502 ssure and
Some parameters of phosphocreatine metal	A77-26105	saline	A77-24504
man during increased and decreased ene expenditures	erg <b>y</b>	Cardioyascular responses of men and women body negative pressure	to lower
PHOTOSBUSITIVITY	A77-26109	Two mechanisms of rephasal of circadian r	A77-24507
Photo-initiated processes in vision (COO-1627-31) PHYSICAL EXERCISE	N77-19751	response to a 180 deg phase shift /simu 12-hr time zone change/	
Pluid and electrolyte shifts during bed isometric and isotonic exercise	rest with	Botor activity of mice in a magnetic field varying strength	
TORECTIO AND TRACTOR STATEMENT	A77-23423	-arlind octonion	A77-26112

Resonance effect of vibration on living structure	PIGHEER 11 SPACE PROBE
of various organizational levels 177-26119	Pioneer 10 and 11 Jovian encounters - Radiation dose and biological lethality
Effect of acceleration growth rate on the response	A77-24151
of the external respiratory system	PLANTS (BOTANT)
A77-26121 Investigation of the effect of free fall on the	Considerations of geotropism in plants
vestibular organ and of its post-flight	A77-24132  Bormones and the growth of plants in response to
readaptation as part of the shuttle program: A	gravity
contribution to basic vestibular physiology and	177-24133
to the problem of space sickness	On methods of detection of extraterrestrial life
N77-19732	A77-24175
PHYSIOLOGICAL TESTS	Bffect of space flight factors and elevated
<ul> <li>Fluid and electrolyte shifts in women during +Gz acceleration after 15 days' bed rest</li> </ul>	temperatures on seeds of diploid and tetraploid buckwheat
177-23424	A77-25425
Evaluation of the toxicity of combustion products	Bio-qas production from alligator weeds
À77-24453	[ WASA-CR-149809 ] W77-19729
Changes in fluid balance during prolonged	PLETHYSHOGRAPHY
hypokinesia with antiorthostatic posture A77-26107	Cardiovascular responses of men and women to lower
Hemodynamics of healthy individuals under various	body negative pressure
regimes of lower body negative pressure	POLARIMETRY
A77-26111	On methods of detection of extraterrestrial life
Characteristics of changes in the body state of	A77-24175
dogs during failure of the environmental control	PONDS
system in a sealed chamber A77-26113	Algal metabolite influence on bloom sequence in eutrophied freshwater ponds
Some indicators of natural immunity in rabbits	[PB-258445/6] N77-18727
following exposure to increased pressure for 10	POSTURE
days	Characteristics of postural self-regulation in
A77-26120	complex spatial environments and after-effects
Apparatus for transmitting physiological data A77-26570	of weightlessness
PHYSIOLOGY	POTABLE WATER
Procedural selection, construction, design, and	Advanced combined iodine dispenser and detector
application possibility in the case of a	for microorganism annihilation in potable
measuring device for the human physiological	water
study of the biomechanics of the lower extremity	[NASA-CR-151214] N77-19753
A77-23550	POTASSIUM Potassium and phosphorus content and Ca-45
PHYTOTROUS	inclusion in bones and teeth of rats after a
Dependence of the species composition of a mixed	22-day space flight aboard the biosatellite
culture of microalgae on illumination and supply	Cosmos 605
rate of nutrients	A77-26105
PILOT PERFORMANCE	PRECAMBRIAN PERIOD  Variation in stable carbon isotopes in organic
The pilot and the airplane: Aviation ergonomics	matter from the Gunflint Iron Pormation
Russian book	Precambrian rock analysis
A77-23546	A77-24618
Introduction to the study of a mathematical model of a pilot	PRESSURE EPFECTS Some indicators of natural immunity in rabbits
[ONERA, TP NO. 1976-118] A77-24425	following exposure to increased pressure for 10
Impairment of flying efficiency in anancastic pilots	days
A77-24509	A77-26120
Prevention of decompression sickness during	PRIMARY COSMIC RAYS
short-term flights in a depressurized cabin at high altitudes	Lesional effects of primary cosmic heavy ions on
A77-26114	rat brain A77-24155
Some personality characteristics of pilot trainees	PRODUCT DEVELOPMENT
with different levels of achievement	Use of human engineering standards in design
A77-26116	177-25072
Human pilot describing function, remnant and associated information for pitch attitude	PROPRIOCEPTION  Cerebellum and gravity Russian book on
control: Results from in-flight and	neurophysiology
ground-based tracking experiments	A77-23500
[NLR-TR-75062-U] N77-18744	PROTECTIVE CLOTHING
Aircrew training requirements for nap-of-the-earth	Control of thermal balance by a liquid circulating
flight [AD-A030420] N77-18754	garment based on a mathematical representation of the human thermoregulatory system
Advanced simulation in undergraduate pilot	[NASA-TH-X-58190] N77-19756
training: An overview	PROTEIN METABOLISM
[AD-A030224] N77-18755	Metabolic processes in hypokinetic and
Human dynamic orientation model applied to motion	rehabilitated men
simulation [NASA-CR-149862] N77-19754	A77-24164 Influence of accelerations, additional weight load
PILOT SBLECTION	and hypokinesia on protein catabolism in the
Investigation of the function of external	Japanese quail /Coturnix Coturnix Japonica/
respiration in flying personnel	A77-26106
177-25629	PSYCHOACOUSTICS
Psychological selection of astronaut-scientists (payload specialists)	A review of methodological factors in performance assessments of time-varying aircraft noise effect
(payroad specialists) N77-19742	with annotated bibliography
PIONEER 10 SPACE PROBE	[NASA-CR-2789] N77-19752
Pioneer 10 and 11 Jovian encounters - Radiation	PSYCHOLOGICAL EFFECTS
dose and biological lethality	
	Induction of illusory self-rotation and nystagmus
A77-24151	

PSYCHOLOGICAL FACTORS Some personality characteristics of pilot trainees with different levels of achievement	RADIATION TOLERANCE Investigation of radiation sensitivity in mammals under long duration weightlessness
177-26116 Psychonetric characteristics of astronauts	BADIO TELEBETRY
PSYCHOLOGICAL TESTS	Apparatus for transmitting physiological data A77-26570
Psychometric characteristics of astronauts #77-19741 Psychological selection of astronaut-scientists	RADIOBIOLOGY  Tumor localization and beam monitoring -  Electrofluorotomography
(payload specialists) E77-19742	A77-23321 Life sciences and space research XIV: Proceedings
PSYCHORETRICS PSychometric characteristics of astronauts #77-19741	of the Open Heeting of the Working Group on Space Biology, May 29-June 7, 1975, and Symposium on Gravitational Physiology, Varna,
PSYCHONOTOR PERFORMANCE Impairment of flying efficiency in anancastic pilots A77-24509	Bulgaria, May 30, 31, 1975 A77-24130 Irradiation of bio-objects aboard the Cosmos 690
PSYCHOPHYSICS Conditions for improving visual information	biosatellite A77-24146
Processing [AD-A029898] 877-18752	Investigation of radiation sensitivity in mammals under long duration weightlessness  A77-24147
PSYCHOPHYSIOLOGY Impairment of flying efficiency in anancastic pilots A77-24509	Effect of irradiation in the space environment on the blood-forming system in rats
PUBLIC HEALTH Space age heatlh care delivery H77-19744	A77-24148 Study of the biochemical indicators of chronic irradiation in rats
PULMOBARY CIRCULATION	A77-24150
Dependency of hypoxic pulmonary vasoconstriction on temperature A77-23422	The Biostack as an approach to high LET research Linear Energy Transfer  A77-24156
Automatic control of decompression on the basis of the impedance signal of the body	Influence of heavy ions on the transforming activity of DNA
A77-25418 PULMOBARY FUNCTIONS Pathophysiological mechanisms of the effect of	A77-24158 Combined effect of space flight and radiation on skeletal muscles of rats
hyperoxia on the function of the lungs in man A77-25424	RADIOGRAPHY
Investigation of the function of external respiration in flying personnel	Tumor localization and beam monitoring - Electrofluorotomography
A77-25629	A77-23321 Computerized X-ray reconstruction tomography in stereometric analysis of cardiovascular dynamics A77-24737
RADIATION DAMAGE	Computerized tomography using video recorded
Localization of the lactate debydrogenase /LDB/ and of the acid phosphatase /AP/ in liver cells of embryos and chickens irradiated with gamma rays	fluoroscopic images A77-26244 RANDOM NOISE
A77-23768 Lesional effects of primary cosmic heavy ions on	Visual echoes - The perception of repetition in quasi-random patterns
rat brain A77-24155	RAHDOM PROCESSES
RADIATION DOSAGE Pioneer 10 and 11 Jovian encounters - Radiation	Visual processing of repetitive images A77-24699
dose and biological lethality	RATINGS
A77-24151 Study with a multi-threshold HZE-particle dosimeter using plastic detectors in Apollo	The rating and measuring of road roughness comparing road user comfort experience [VTI-83-A] N77-18742
Biostack experiment A77-24154	HATIONS Nutrition hygiene for flying personnel in
The Biostack as an approach to high LET research Linear Energy Transfer	prolonged flights
RADIATION EPPECTS Biochemical changes in rats flown on board the	REACTION TIME A review of methodological factors in performance assessments of time-varying aircraft noise effects
Cosmos 690 biosatellite A77-24149 Study of the biochemical indicators of chronic	with annotated bibliography [NASA-CR-2789] REAL TIME OPERATION
irradiation in rats A77-24150 State of hemopolesis during irradiation simulating	Performance of an observer in real time reconnaissance remotely piloted vehicles [BMYG-PBWT-76-5] N77-18743
radiation exposure in prolonged space flight A77-26115	RECEPTORS (PHYSIOLOGY) Ultrastructural and functional anatomy of the
RADIATION HAZARDS  Radiation risk on earth and in space Russian book	Vestibule [BASA-TT-P-17405] B77-18731 REBETTY EPFECTS
A77-23496	Human tolerance to acceleration after exposure to
RADIATION INJURIES Cytogenetic analysis of seeds of Crepis capillaris /L/ Wallr. exposed on board the earth artificial	weightlessness A77-24142 RELIABILITY
satellite Cosmos 613	Development of a front passenger aspirator air bag system for small cars
RADIATION PROTECTION  Radiation risk on earth and in space Russian	[PB-259008/1] N77-19757 REMOTE CONTROL
book A77-23496	<pre>Vehicle/manipulator/packaging interaction - A synergistic approach to large erectable space</pre>
	system design [AIAA 77-394] A77-25746

SUBJECT INDEX SHIVERING

REMOTE REGIONS	RISK
Life support of space crews after forced landing on ground or water Russian book	Coronary risk factors in flying personnel - A progress report
A77-25325	A77-24510
REMOTELY PILOTED YERICLES  Performance of an observer in real time  reconnaissance remotely piloted vehicles	ROADS The rating and measuring of road roughness comparing road user comfort experience
[BHVG-PBWT-76-5]. N77-18743 SAINT simulation of a remotely piloted	[VTI-83-A] N77-18742
<pre>vehicle/drone control facility: Model Development and analysis</pre>	Mey method of artificial motion synthesis and application to locomotion robots and manipulators
[AD-A031085] N77-19758 REMAL PUNCTION	A77-94830 Algorithms for combined and supervisor robot and
Renal osmoregulatory function during simulated space flight	manipulator control A77-24832
A77-24169	RODENTS
Effects of cold exposure and dehydration on renal function in black-tailed prairie dogs A77-24367	Effects of cold exposure and dehydration on renal function in black-tailed prairie dogs A77-24367
Renal electrolyte circadian rhythms - Independence from feeding and activity patterns	ROTATING ENVIRONMENTS Induction of illusory self-rotation and nystagaus
A77-26582	by a rotating sound-field
REPETITION Visual echoes - The percéption of repetition in quasi-random patterns	A77-24506
A77-23291	8
Visual processing of repetitive images A77-24699	S-3 AIRCRAFT Instructional systems development - A new approach
REPRODUCTION (BIOLOGY)  Feasibility of a fetal measurement electrode system	to flight-crew proficiency A77-24856
[NASA-CR-151175] N77-18729 RESONANT VIBRATION	SAFETY DEVICES An evaluation of the 1974 and 1975 restraint systems
Resonance effect of vibration on living structure of various organizational levels	[PB-258585/9] N77-18748 Development of a front passenger aspirator air bag
A77-26119	system for small cars [PB-259008/1] N77-19757
Arterial lactate responses in dogs made apneic or breathing nitrogen	SALIBITY Performance of fungi in low temperature and
A77-23419 RESPIRATORY DISBASES	hypersaline environments A77-24176
Investigation of the function of external respiration in flying personnel	SALTUT SPACE STATION  Results of medical investigations carried out on
RESPIRATORY PHYSIOLOGY	board the Salyut orbital stations A77-24144
pH effects on lactate and excess lactate in relation to 02 deficit in hypoxic dogs A77-23420	SATELLITE-BORNE INSTRUMENTS  Spacelab and its utilization for biomedical
Causes of high blood O2 affinity of animals living at high altitude	experiments A77-24145 SCIBHTISTS
A77-24356 Interaction of lung volume and chemical drive on	Ophthalmological requirements for Spacelab astronaut-scientists
respiratory muscle BMG and respiratory timing A77-24366	N77-19739 Psychological selection of astronaut-scientists
Pathophysiological mechanisms of the effect of hyperoxia on the function of the lungs in man	(payload specialists) N77-19742
A77-25424 Investigation of the function of external	SEARCHIEG Visual conspicuity, visual search and fixation
respiration in flying personnel A77-25629	tendencies of the eye
Interaction of the regulatory systems for muscle-contraction thermogenesis and external respiration	SEDIMENTS Interrelationships between certain microorganisms and some aspects of sediment-water nutrient
A77-26225  New aspects of the study of the respiratory function of the blood during adaptation to hypoxia	exchange in two bayou estuaries, phase 1 and 2 [PB-259538/7] N77-19730 SEEDS
A77-26270 RESPIRATORY RATE	Cytogenetic analysis of seeds of Crepis capillaris /L/ Wallr. exposed on board the earth artificial
Hypoxia and carbon dioxide as separate and interactive depressants of ventilation	satellite Cosmos 613
A77-23289 Inexpensive technique to record respiration during flight	SELECTIVITY Visual conspicuity as an external determinant of eye movements and selective attention
A77-24511	A77-23625
RESPIRATORY REFLERES  Bffect of acceleration growth rate on the response  of the external respiratory system	SENSORY STIBULATION  Blectronic device for studying high-speed reactions  arrythmic pulse generator for mental fatique
RETIWA	studies A77-26571
Experiments on the locus of induced motion A77-26074	SEROTORIN  Depression of serotonin clearance by rat lungs
RETIVAL IMAGES	during oxygen exposure
Visual conspicuity as an external determinant of eye movements and selective attention Book 177-26578	A77-23418 SHIVERIEG Spinal cord thermosensitivity and sorting of
RHEO ENCEPHALOGRAPHY	neural signals in cold-exposed rats
Antiorthostatic test as a model to study antigravity mechanisms of the cardiovascular system	A77-24357
177 20462	

SIGNAL DISTORTION SUBJECT INDEX

Interaction of the regulatory systems fo muscle-contraction thermogenesis and e		The prevention of motion sickness in orbi	A77-24140
respiration	A77-26225	On the mechanisms of changes in skeletal in the weightless environment	muscles
SIGNAL DISTORTION A nonlinear model for the spatial charac of the human visual system	teristics	Results of medical investigations carried board the Salyut orbital stations	A77-24143 dout on
of the hundr visual system	A77-26275	board the sarjut orbital stations	A77-24144
SIGNAL EMCODING Visual performance and image coding	•	Effect of irradiation in the space environth the blood-forming system in rats	onment on
SIGNAL PROCESSING Visual processing of repetitive images	A77-24696	Amino acid spectrum of human blood plasma space flight and in antiorthostatic hyp	
SITTING POSITION	A// 24033	Space flight effect upon the bioenergetic	
Visual field contraction during G stress 45, and 65 deg seatback angles	,	skeletal muscles in rats	A77-24161
SKIB (ANATONY)	A77-24501	Deconditioning during prolonged immersion possible countermeasures	and
Variations in evaporation and body tempe	ratures	•	A77-24166
during sleep in man		Cardiac output during physical exercises	following
Percutaneous multiple electrode connecto	A77-23421	real and simulated space flight	A77-24168
parameters and fabrication (biomedical [NASA-CR-144859] SKYLAB PROGRAM	) N77-19748	Heat exchange between the organism and er under conditions of weightlessness - He approach	vironment thodical
Biomedical results of the Skylab Program	A77-24131	Combined effect of space flight and radia	A77-24173
The effects of prolonged spaceflight on		skeletal muscles of rats	czon on
regional distribution of fluid, muscle Biostereometric results from Skylab		Effect of space flight factors and elevat temperatures on seeds of diploid and te	
SLBEP	13730	buckwheat	, each rear
Variations in evaporation and body tempe during sleep in man		Long-term space flights and human habitat	
71-sk-i-1 kill 1	177-23421	Reference of annual file of the latest bases	A77-26102
Electrical activity of the layers of an accorder when falling asleep and in various of sleep		Effect of space flight on skeletal bones /light- and electron-microscopic invest	igation/ A77-26103
COLTA COLOR BESTON	177-26224	Effect of space-flight factors on skeleta in rats	l muscles
SOLID STATE DEVICES  Static evaluation of air cushion deploys	ent	in rats	A77-26104
effects on the memory retention of the	soliđ	Potassium and phosphorus content and Ca-4	
state digital recorder system [PB-259006/5]	N77-18756	inclusion in bones and teeth of rats af 22-day space flight aboard the biosatel	
SOUND FIELDS Induction of illusory self-rotation and	nvstagnus	Cosmos 605	A77-26105
by a rotating sound-field		State of hemopoiesis during irradiation s	imulating
SPACE BHVIRONNERT SIMULATION	A77-24506	radiation exposure in prolonged space f	A77-26115
Physiological effects induced by antiort hypokinesia	hostatic	Cardiovascular instrumentation for spacef [NASA-CR-151935]	:light N77-18730
	A77-24139	SPACE MISSIONS	
Study of space perception functioning du simulation of certain space flight fac		Space mission training: A necessary elem planning and training for Shuttle Space Missions	
Renal osmoregulatory function during sim			N77-19735
space flight		SPACE PERCEPTION	
notor activity of mice in a magnetic fie	A77-24169 ld of	Study of space perception functioning dur simulation of certain space flight fact	
varying strength	A77-26112	SPACE SHUTTLES	A / / - 24 10 /
SPACE ERECTABLE STRUCTURES		Shuttle era waste collection	
Vehicle/manipulator/packaging interaction		Garantelana on the annual to biolo	A77-26052
synergistic approach to large erectable system design	e Space	Speculations on the consequences to biolo space shuttle-associated increases in g	
[AIAA 77-394] SPACE PLIGET	A77-25746	UV-B radiation [NASA-TH-X-73200]	N77-18728
Cytogenetic analysis of seeds of Crepis		Recent advances in space medicine	
/L/ Wallr. exposed on board the earth	artificial	[AGARD-CP-203]	N77-19731
satellite Cosmos 613	A77-24152	Investigation of the effect of free fall vestibular organ and of its post-flight	
SPACE FLIGHT STRESS		readaptation as part of the shuttle pro	gram: A
Cerebellum and gravity Russian book of neurophysiology	on	contribution to basic vestibular physic to the problem of space sickness	logy and
	A77-23500	•	B77-19732
Life sciences and space research XIV; Pro		Peasibility study of automatic control of	
of the Open Reeting of the Working Gro Space Biology, Bay 29-June 7, 1975, and		comfort in the shuttle Extravehicular M Unit liquid cooled garment regulato	
Symposium on Gravitational Physiology,			N77-19755
Bulgaria, May 30, 31, 1975		SPACE SUITS	
Biomedical results of the Skylab Program	A77-24130	Feasibility study of automatic control of comfort in the shuttle Extravehicular E	obility
Physiological effects of sustained accele		Unit liquid cooled garment regulato [WASA-CR-151230]	r #77-19755
	A77-24137		
Physiological changes associated with log increases in acceleration			
•	177-24138		

SUBJECT INDEX THERMOREGULATION

•			
SPACECRAFT CABLE ATHOSPHERES  Characteristics of changes in the body s  dogs during failure of the environment		STRESS (BIOLOGY)  Reduction in plasma vasopressin levels o dehydrated rats following acute stress	
system in a sealed chamber	A77-26113	STRESS (PHYSIOLOGY)	A77-25147
Technology advancement of the static fee electrolysis process	d water	Budocrine-metabolic effects in short-dur high-workload missions: Feasibility s	tudy
[#ASA-CR-151934] SPACECRAFT CABIN SIMULATORS Space mission training: A necessary ele	H77-18741	[AD-A030524] STRESS (PSYCHOLOGY) Dynamic control characteristics and brai	N77-18736
planning and training for Shuttle Space	elab	regulation of the vigilance of man dur performance of control tasks Germa	ing the
SPAC ECRAFT DESIGN	H77-19735	Tenningon of fining officious is accommon	177-23547
Human engineering: Crew systems tool for	or Spacelab	Impairment of flying efficiency in ananc	A77-24509
design	¥77-19737	SUBHERGED BODIES  Experimental study of convective heat tr	
SPACECRAFT ENVIRONMENTS Radiation risk on earth and in space	Russian	coefficient for the human body in water	T 177-23426
book	A77-23496	SUBMERGING Deconditioning during prolonged immersion	n and
Shuttle era waste collection	<b>177-26052</b>	possible countermeasures	A77-24166
SPACECREWS Payload crew activity planning integrati	on. Task	Neutral buoyancy: One possible tool for training in a simulated zero-g environ	man's ment
<ol><li>Inflight operations and training f [NASA-CR-151187]</li></ol>	N77-18739	SUBPACE ROUGHERSS	N77-19736
Human engineering: Crew systems tool for design		The rating and measuring of road roughner comparing road user comfort experience	ss
Experimental basis for the use of hypnot	N77-19737 ics by	[VTI-83-A] SURVIVAL	N77-18742
aerospace Crews	<b>M77-19743</b>	Life support of space crews after forced on ground or water Russian book	landing
SPACELAB Spacelab and its utilization for biomedi	.cal	SISTEM RFFECTIVENESS	A77-25325
experiments	A77-24145	Semi-auto manipulator control systems and dynamic analysis with computer	
Recent advances in space medicine [AGARD-CP-203]	N77-19731	SYSTEM PAILURES	A77-24831
Space mission training: A necessary ele planning and training for Shuttle Space Missions		Characteristics of changes in the body so dogs during failure of the environmentory system in a sealed chamber	
Human engineering: Crew systems tool fo	N77-19735 or Spacelab	SYSTEMS BEGINEERING	A77-26113
design	N77-19737	Vehicle/manipulator/packaging interaction synergistic approach to large erectable	
Ophthalmological requirements for Spacel astronaut-scientists	N77-19739	system design [AIAA 77—394] Systolr	A77-25746
Athletic endurance training: Advantage	for space	Systolic time interval data acquisition :	system.
flights? The significance of physical for selection and training of Spacelah	Titness Crews N77-19740	Specialized cardiovascular studies [NASA-CR-151213]	N77-19747
SPATIAL FILTERING A nonlinear model for the spatial charac	teristics	Ţ	
of the human visual system	A77-26275	TARGET RECOGNITION Visual conspicuity, visual search and fire	ration
SPINAL CORD  Spinal cord thermosensitivity and sortin neural signals in cold-exposed rats	g of	tendencies of the eye	A77-23290
•	A77-24357	Some effects of infrasound on task perform	rmance A77-24310
SPLEEN Rapid bacteriological diagnosis systems	on	TECHNOLOGY UTILIZATION	A77-24310
physical basis, noting splenic fever p [BMVG-PBWT-76-15]		Recent advances in space medicine [AGARD-CP-203]	N77-19731
STANDARDS Use of human engineering standards in de		TBLEVISION SYSTEMS Performance of an observer in real time	
Pormatting and organization of a human e	A77-25072	reconnaissance remotely piloted web [BMVG-PBWT-76-5]	hicles N77-18743
standard  The rating and measuring of road roughne	A77-25074	TEMPERATURE EPPECTS  Effect of space flight factors and elevate temperatures on seeds of diploid and to	
comparing road user comfort experience [VTI-83-A]		buckwheat	A77-25425
STATISTICAL DECISIOF THEORY  Broadbent and Gregory revisited - Vigila  statistical decision in human	nce and	TEMPERATURE SCALES  Effective temperature scale useful for hy hyperbaric environments	ypo- and
auditory/visual tasks	.77 05070		A77-24502
STERILIZATION	A77-25073	TEXTURES Visual processing of repetitive images	
Effect of extreme factors on micro-organ for the control of the effectiveness o		THERMAL STRESSES	A77-24699
sterilization in Hartian environme conditions	nt	Fluid shifts during thermal stress with a without fluid replacement	
STRATOSPHERE	A77-24174	THERMOREGULATION	177-24362
On micro-organisms of the stratosphere	A77-24178	Effects of acceleration on thermoregulate responses of unanesthetized rats	ory

# SUBJECT INDEX

# THRESHOLD DETECTORS (DOSINETERS)

Heat exchange between the organism and under conditions of weightlessness -		VASOCOMSTRICTION Dependency of hypoxic pulmonary vasocom	striction
approach		on temperature	
camp in temperature- and add-regulating after thermal stress cyclic aden	osine	VASOCOESTRICTOR DRUGS Reduction in plasma vasopressin levels	
MonoPhosphate in AntiDiuretic Hormon  Effective temperature scale useful for	A77-24363	dehydrated rats following acute stress  VECETATION GROWTH	8 177-25147
hyperbaric environments  An experimental validation of mathemat		Considerations of geotropism in plants  Hormones and the growth of plants in re-	177-24132 sponse to
simulation of human thermoregulation  Thermoregulatory responses in animals	A77-25217	gravity VEHICLES	A77-24133
helium-oxygen atmosphere under eleva	ted pressure 177-25345	The rating and measuring of road roughn comparing road user comfort experience	e
Interaction of the regulatory systems muscle-contraction thermogenesis and respiration		[YTI-83-A] YBETILATIOE The role of brief hypocapnia in the ven	#77-18742 tilatory .
	A77-26225	response to CO2 with hypoxia	
Feasibility study of automatic control comfort in the shuttle Extravehicula Unit liquid cooled garment regul	r Mobility	Hypoxia and carbon dioxide as separate a interactive depressants of ventilation	
[NASA-CR-151230]  Control of thermal balance by a liquid garment based on a mathematical repr	N77-19755 circulating	Ventilatory and gas exchange dynamics in to sinusoidal work	A77-23289
of the human thermoregulatory system			A77-24368
[NASA-TM-Y-58190] THRESHOLD DETECTORS (DOSINETERS) Study with a multi-threshold HZE-partic	N77-19756	VESTIBULAR MYSTAGRUS  Effect of electrostimulation of the hype and limbic structures on vestibulo-so	
dosimeter using plastic detectors	- in Apollo	reflexes	.== 0
Biostack experiment	A77-24154	VESTIBULAR TESTS	A77-26117
TIME DEPENDENCE The effects of 3 hours of vertical vib		Response of the vestibular apparatus to caloric stimulation of the labyrinths	
Hz on the performance of some tasks [RAB-TR-76011] TIME MEASUREMENT.	B77-18746	Adaptation of vestibular responses to go stimulation of the labyrinths	A77-25416
Systolic time interval data acquisition Specialized cardiovascular studies [BASA-CR-151213]	n system. N77-19747	Integration of Visual and motion cues for simulator requirements and ride quality	
TOXICITY  Byaluation of the toxicity of combustic		investigation [#ASA-CR-149667]	N77-18740
Acute combined effects of HCN and CO, reference to a theoretical considera acute combined effects on the basis	tion of	Investigation of the effect of free fall vestibular organ and of its post-fligi readaptation as part of the shuttle pi contribution to basic vestibular physic	ht rogram: A
cyanide and COHb analyses	A77-24455	to the problem of space sickness	N77-19732
TRAINING SIMULATORS	211-24433	VESTIBULES	u., (3,32
Instructional systems development - A to flight-crew proficiency	new approach A77-24856	Cerebellum and gravity Russian book neurophysiology	on 177-23500
Neutral buoyancy: One possible tool for		Ultrastructural and functional anatomy of	
training in a simulated zero-g envir	onment N77-19736	<pre>vestibule [NASA-TT-F-17405]</pre>	N77-18731
TRANSIENT RESPONSE Transient asymptomatic S-T segment dep		VIBRATION EPPECTS Hultiple images as a function of LEDs vi	
during daily activity	177-26242	during vibration	A77-25075
TUBORS Tumor localization and beam monitoring Electrofluorotomography		Resonance effect of vibration on living of various organizational levels	
Precessitant ocomodiabilă	A77-23321	The effects of 3 hours of vertical vibra Hz on the performance of some tasks	ation at 5
ULTRAVIOLET RADIATION		[RAE-TR-76011]  VIDEO DATA  Computerized tomography using video reco	N77-18746
Bffect of space factors on Escherichia cells	coli B/r	fluoroscopic images	<b>≥77-2624</b> 4
Speculations on the consequences to bi space shuttle-associated increases in UV-B radiation		VISUAL DISCRIBINATION  Visual conspicuity as an external determoneye and selective attention	
[HASA-TH-X-73200]	N77-18728	VISUAL FIELDS Visual field contraction during G stress 45, and 65 deg seatback angles	s at 13,
V		45, and 65 dey seatback angles	A77-24501
VACUUM EFFECTS  Effect of space factors on Escherichia	coli B/r	VISUAL OBSERVÀTION Role of Cerenkov radiation in the eye-fl	
cells	A77-24177	observed by Apollo astronauts	A77-24153
VASCULAR SYSTEM A study of the cumulative effects of reexposures to radial accelerations		VISUAL PERCEPTION  Visual conspicuity, visual search and fi  tendencies of the eye	
	177-20172	consoners or the ele	377-23200

SUBJECT INDEX X RAY AMALYSIS

_
Visual echoes - The perception of repetition in quasi-random patterns
A77-23291 Visual Conspicuity as an external determinant of
eye movements and selective attention A77-23625
Visual Performance and image coding
Visual Processing of repetitive images A77-24699 Hultiple images as a function of LEDs viewed
during vibration A77-25075
Evoked responses of visual cortex under stimulation of hypothalamic formations
177-26569 Visual Conspicuity as an external determinant of
eye movements and selective attention Book A77-26578
Integration of visual and motion cues for flight simulator requirements and ride quality
investigation [NASA-CR-149667] N77-18740
Conditions for improving visual information processing FAD-A030425] N77-18751
Conditions for improving visual information processing
[AD-A029898] N77-18752 Photo-initiated processes in vision
[COO-1627-31] N77-19751 FISUAL SIGNALS
Visual echoes - The perception of repetition in quasi-random patterns
VISUAL STIBULI
Visual Conspicuity as an external determinant of eye movements and selective attention A77-23625
VISUAL TASKS Some effects of infrasound on task performance
A77-24310 Broadbent and Gregory revisited - Vigilance and
statistical decision in human auditory/visual tasks
A77-25073 A nonlinear model for the spatial characteristics
of the human visual system A77-26275 The effects of 3 hours of vertical vibration at 5
Hz on the performance of some tasks [RAE-TR-76011] 877-18746
w
NASTE DISPOSAL
Shuttle era waste collection A77-26052 BEIGHTLESSERSS
Rotary motion of the body of an astronaut
The prevention of motion sickness in orbital flight A77-24140
Human tolerance to acceleration after exposure to weightlessness
A77-24142 On the mechanisms of changes in skeletal nuscles in the weightless environment
A77-24143 Results of medical investigations carried out on
board the Salyut orbital stations
Investigation of radiation sensitivity in mammals under long duration weightlessness
A77-24147  Effect of irradiation in the space environment on the blood-forming system in rats
A77-24148 Biochemical changes in rats flown on board the Cosmos 690 biosatellite
A77-24149 Space flight effect upon the bioenergetics of the skeletal muscles in rats
A77-24161 Bffect of antiorthostatic bed rest on the human body
A77-24165 Deconditioning during prolonged immersion and possible countermeasures
possible countermeasures

Study of space perception functioning during simulation of certain space flight factors

A77-24167
Cardiac output during physical exercises following real and simulated space flight

A77-24168
Characteristics of postural self-regulation in complex spatial environments and after-effects of weightlessness

A77-24170
Heat exchange between the organism and environment under conditions of weightlessness - Methodical approach

A77-24173
Effect of space flight on skeletal bones in rats /light- and electron-microscopic investigation/
A77-26103
Effect of space-flight factors on skeletal muscles in rats

A17-26104
Automated electroencephalography system and electroencephalographic correlates of space motion sickness, part 3
[NASA-CR-151210]
WEIGHTLESSNESS SIMULATION
Neutral buoyancy: One possible tool for man's training in a simulated zero-g environment
NT7-19736
WORK CAPACITY
Endocrine-metabolic effects in short-duration, high-workload missions: Peasibility study
[AD-A030524]
WORKLOADS (PSYCHOPHYSIOLOGY)
Electronic device for studying high-speed reactions --- arrythmic pulse generator for mental fatigue studies

X

X RAY ANALYSIS
Tumor localization and beam monitoring Blectrofluorotomography

# PERSONAL AUTHOR INDEX

AEROSPACE MEDICINE AND BIOLOGY / A Continuing Bibliography (Suppl. 168)

**JUNE 1977** 

# . Typical Personal Author Index Listing

PERSONAL AUTHOR	
- Advanced crew procedures development tech	hniques:
Procedures and performance program train	ining plan
[ HASA-CR-144526]	N76-10721
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
	1
REPORT	CCESSION
TITLE	NUMBER
L TOMBEN	

The title of the document is used to provide the user with a brief description of the subject matter. The NASA or AIAA accession number is included in each entry to assist the user in locating the abstract in the abstract section of this supplement. If applicable, a report number is also included as an aid in identifying the document.

ABROSOV, M. S. Dependence of the species composition of a mixed culture of microalgae on illumination and supply rate of nutrients

A77-26118

ADKINS, C. J., JR.
A review of methodological factors in performance review of methodological lactors in performance assessments of time-varying aircraft noise effects fwasa-cR-27891 [NASA-CR-2789]

AGADZHAHIAM, M. A.

The role of chemoreceptors in the adaptation of an organism to hypoxia

AGURBBY, A. H

Some parameters of phosphocreatine metabolism in man during increased and decreased energy expenditures

A77-26109

Biochemical changes in rats flown on board the Cosmos 690 biosatellite

Irradiation of bio-objects aboard the Cosmos 690 biosatellite

A77-24146

AKIBOV, S. E.

Investigation of the function of external respiration in flying personnel

Electrical activity of the layers of an isolated cortex when falling asleep and in various stages of sleep

ALBERY, W. B. Advanced simulation in undergraduate pilot

training: An overview

[AD-A030224]

ALEKSABDROV, I. A.
Automatic control of decompression on the basis of the impedance signal of the body

ALBESERY, D. A.

Antiorthostatic test as a model to study antigravity mechanisms of the cardiovascular

A77-24163

ALEXANDER, A. P. Lung mast cell density and distribution in chronically hypoxic animals

A77-24360

A review of methodological factors in performance assessments of time-varying aircraft noise effects [NASA-CR-2789] N77-19752

ALTOSE, H. D. Interaction of lung volume and chemical drive on respiratory muscle EMG and respiratory timing A77-24366

ANDREEVA, V. G.
Effect of acceleration growth rate on the response of the external respiratory system A77-26121

ANDRIANOVA, L. A. Motor activity of mice in a magnetic field of varying strength

A77-26112

Remodynamics of healthy individuals under various regimes of lower body negative pressure

ARMSTRONG, J. H. Computer analysis of arteriograms

A77-24738

Use of human engineering standards in design A77-25072

ARBBERG, P. W.

The rating and measuring of road roughness
[VII-83-A]

ROHOVA, B. W.
Indicators of nitrogen, carbohydrate and lipid
metabolism in man during prolonged stay under

hyperbaric conditions

A77-26110

ARTAHOMOV, I. W.
Investigation of the function of external respiration in flying personnel

AVERNER, M. H.

Speculations on the consequences to biology of space shuttle-associated increases in global UV-B radiation [NASA-TH-X-73200] N77-18728

# B

BAILY, W. A. Tumor localization and beam monitoring -Blectrofluorotomography

Computerized tomography using video recorded fluoroscopic images A77-26244

BAKER. J. Systolic time interval data acquisition system.
Specialized cardiovascular studies
[WASA-CR-151213] #77-19 #77-19747

BANDERET, L. B. Hypoxia-induced metabolic and core temperature

changes in the squirrel monkey

few aspects of the study of the respiratory function of the blood during adaptation to hypoxia

BARGHOORN, B. S. Variation in stable carbon isotopes in organic matter from the Gunflint Iron Pormation

# PERSONAL AUTHOR INDEX

BARTHOLOMAE, KP. Study with a sulti-threshold HZE-partic dosimeter using plastic detectors	le	BOMAR, J., B., JR. Eaximal aerobic power in women cadets: Air Force Academy	at the U.S.
dosinetel asing plastic detectors	A77-24154	are toroc accord	A77-24508
BASINGER, J. D. Advanced simulation in undergraduate pitraining: An overview	lot	BORD, G. H., Two mechanisms of rephasal of circadia response to a 180 deg phase shift /s.	
[AD-A030224]	N77-18755	12-hr time zone change/	A77-25300
BASSILI, J. H. Experiments on the locus of induced mot		BOND, V. P.	
BAUER, C.	A77-26074	Role of Cerenkov radiation in the eye- ,observed by Apollo astronauts	flashes.
Causes of high blood 02 affinity of ani. at high altitude	mals living	BORAH, J. D.	177-24153
BAUNANN, R.	A77-24356	Human dynamic orientation model applied simulation	to motion
Causes of high blood 02 affinity of aniath at high altitude	mals living	( MASA-CR-149862 ] BORLAND, R. G.	N77-19754
BEAUJEAN, R.	A77-24356	experimental basis for the use of hypn- aerospace crews	otics by
Study with a multi-threshold HZE-partic	le	<u>-</u>	N77-19743
dosimeter using plastic detectors	A77-24154	BOUGUES, L. Experimental study of convective heat	transfer
BEAVER, W. L. Ventilatory and gas exchange dynamics i		coefficient for the human body in was	
to sinusoidal work	A77-24368	BOULAY, H. Metabolic and cardiovascular responses	
BECKENBACH. E. B.	277-24300	norepinephrine in trained and nontra: subjects	
Computer analysis of arteriograms	A77-24738	•	A77-24359
BEIERLEIN, HR. Procedural selection, construction, des		BOUTELIER, C.  Biperimental study of convective heat to	
application possibility in the case of measuring device for the human physic		coefficient for the human body in was	ter 177-23426
study of the biomechanics of the lower		BRAUSITZER, G. Causes of high blood 02 affinity of an:	
BENKO, A. B. Study of the biochemical indicators of		at high altitude	A77-24356
irradiation in rats	A77-24150	BRIANOV, 1. I. Results of medical investigations carr:	
BENUMOF, J. L.		board the Salyut orbital stations	A77-24144
Dependency of hypoxic pulmonary vasocons on temperature	SCLICCION	BRODSKY, H.	A77-24144
	A77-23422	Arrhythmias documented by 24 hour conti electrocardiographic monitoring in 50 medical students without apparent he	) male
BERWAUER, B. M.	A77-26267	BRODY, J. S.	A77-26241
Fluid and electrolyte shifts during bed isometric and isotonic exercise	rest with	Lung elasticity and airway dynamics in natives to high altitude	Peruvian
	A77-23423	-	A77-24361
Pluid and electrolyte shifts in women do acceleration after 15 days' bed rest	_	BROOKS, S. H. Computer analysis of arteriograms	
BITTEL, J.	A77-23424	BROWNELL, H. H.	A77-24738
Variations in evaporation and body temporation during sleep in man	eratures	Conditions for improving visual informations	tion
BLANKENHORN, D. H.	A77-23421	(AD-A029898) BUBCKER, H.	N77-18752
Computer analysis of arteriograms		The Biostack as an approach to high LE	
BLOCK, E. R.	A77-24738	Effect of space factors on Escherichia	A77-24156 coli B/r
Depression of serotonin clearance by rad during oxygen exposure	t lungs	cells	A77-24177
BOBIC, D.	A77-23418	BUGARY, B. P. The pilot and the airplane: Aviation en	
Hypergravitation and sympatho-adrenergic	A77-24171	BUGUET, A.	A77-23546
Influence of accelerations, additional		Variations in evaporation and body temporation and body temporation during sleep in man	
and hypokinesia on protein catabolism Japanese quail /Coturnix Coturnix Japo	onica/	BURCHARD, E. C.	A77-23421
BOGOMOLOV, V. v. Changes in fluid balance during prolong	A77-26106	Space mission training: A necessary el planning and training for Shuttle Spa Missions	
hypokinesia with antiorthostatic post		BURKOVSKAIA, T. B.	N77-19735
BOGOSLOVSKII, H. H. Electrical activity of the layers of an	isolated	State of hemopolesis during irradiation radiation exposure in prolonged space	
cortex when falling asleep and in ward of sleep	-	BYCHKOV, V. P.	E 20113
BOKHOV, B. B.	A77-26224	Metabolic processes in hypokinetic and rehabilitated men	
Study of space perception functioning do simulation of certain space flight fac		<del></del>	A77-24164
or correr perce rary no rac	A77-24167	•	

C		COTE, R. W., III  Haximal aerobic power in women cadets at Air Force Academy	the U.S.
CAIN, S. H.		·	A77-24508
Arterial lactate responses in dogs made a breathing nitrogen		CRAIG, A. Broadbent and Gregory revisited - Vigilar	ce and
	A77-23419	statistical decision	
pH effects on lactate and excess lactate			A77-25073
relation to 02 deficit in hypoxic dogs	A77-23420	CRAMER, D. B. successful transfer of adaptation environ navy flight training	ments in
Eypergravitation and sympatho-adrenergic	2000414144	mavy ringut claiming	<b>N77-19733</b>
milending regeron and planatuo agrenerate	A77-24171	CRAWFORD, D. W.	877-13733
CARAHASSA, A.	A//-241/1	Computer analysis of arteriograms	
Conditions for improving visual informati	lan	compacer analysis or arcertodrass	A77-24738
processing	1011	CHEST I D	A//-24/30
[AD-A029898]	N77-18752	CUZZI, J. R.	
CARBL, W. L.	8/7-10/32	Mass distribution of the human body using	J
Human performance evaluation of matrix di	ionlawa	biostereometrics	₩77-18735
Literature and technology review	rabiala:	[AD-A029402] The effects of prolonged spaceflight on t	
[AD-A029932]	N77-18750	regional distribution of fluid, muscle	
CARMACIU, R.	10/30	Biostereometric results from Skylab	and race
Hypergravitation and sympatho-adrenergic	reactivity.	prostereometric rendira irom akitab	N77-19738
	A77-24171		B77-13730
CASABURI, R.	4//-24///	_	
Ventilatory and gas exchange dynamics in	Tesnonse	D	
to sinusoidal work	2 c b p o u b e	DAUMAN, P. J.	
TO DELLEGICAL VOLK	A77-24368	Ophthalmological requirements for Spacela	h
CASTLEMAN, K.	277 24300	astronaut-scientists	
Automated clinical system for chromosome	analycic		N77-19739
	N77-19750	DAVIS, G. L.	13733
CHANG, JJ.		Fluid and electrolyte shifts in women dur	ing +GZ
Visual echoes - The perception of repetit	tion in	acceleration after 15 days' bed rest	· · · ·
quasi-random patterns		acceptant areas is days and rese	A77-23424
1 t 4000 mb	A77-23291	DAVIS, T. A.	20121
Visual processing of repetitive images		Conceptualization of habitability express	ions for
,,	A77-24699	the habitability data base	
CHAPPELLE, E. W.			N77-18757
Detection of microbial infection in blood	l and	DEAMER, D. W.	
antibiotic determinations		Synthesis of phospholipids and membranes	in
	N77-18733	prebiotic conditions	
CHELWATA, W. A.			A77-24998
Effect of irradiation in the space enviro	onment on	DEGTIAREV, V. A.	
the blood-forming system in rats		Hemodynamics of healthy individuals under	various
	A77-24148	regimes of lower body negative pressure	!
CHERNIACK, N. S.			A77-26111
Interaction of lung volume and chemical d		DEMBICKI, H., JR.	
respiratory muscle BMG and respiratory		Variation in stable carbon isotopes in or	
	A77-24366	matter from the Gunflint Iron Formation	
CHERNIAKOV, I. N.			A77-24618
Prevention of decompression sickness duri		DENING, J. W.	
short-term flights in a depressurized of	abin at	Detection of microbial infection in blood	and
high altitudes	277 2644#	antibiotic determinations	www.
THAU BRO T	A77-26114		N77-18733
CHOWERS, I.		DENES, P.	
camp in temperature- and ADH-regulating of	enters	Arrhythmias documented by 24 hour continu	
after thermal stress	177 24262	electrocardiographic monitoring in 50 m	
	A77-24363	medical students without apparent heart	
CHUCHKIN, V. G.			A77-26241
Effect of space flight factors and elevat temperatures on seeds of diploid and te	eq	DENISOV, V. G.	
buckwheat	etrapioid	The pilot and the airplane: Aviation ergo	A77-23546
	377_25#25		A11-23346
CLARKE, C. H.	A77-25425	DEROSHIA, C. W. Two mechanisms of rephasal of circadian r	hether in
experimental basis for the use of hypnoti	on he	response to a 180 deg phase shift /simu	
	ics by		laced
aerospace crews	N77-19743	12-hr time zone change/	A77-25300
COATES, G. D.	877-13743	DEIMAN, B.	A / / 25500
A review of methodological factors in per	formanco	An experimental validation of mathematica	1
assessments of time-varying aircraft no		simulation of human thermoregulation	-
[NASA-CR-2789]	N77-19752		A77-25217
CODINI, M. A.	, 13132	DIDENKO, V. P.	202
Cardiac responses to moderate training in	rats'	Electronic device for studying high-speed	reactions
	A77-24364		A77-26571
COLIN, J.		DIETLEIN, L. P.	
Recent advances in space medicine		Biomedical results of the Skylab Program	
[AGARD-CP-203]	N77-19731		A77-24131
CONDRA, D. M.	· ·-·	DONCHIN, E.	
Pilot factors considerations in see-to-la	ınd	The vocabulary of brain potentials: Infe	rring
	N77-19759	cognitive events from brain potentials	
COMPORTI, B.		operational settings	
camp in temperature- and ADH-regulating of	enters		ท77-18737
after thermal stress		DONINA, ZH. A.	
	A77-24363	Thermoregulatory responses in animals in	
OOK, D. W.		helium-oxygen atmosphere under elevated	
Peasibility study of automatic control of			A77-25345
comfort in the shuttle Extravehicular M	lobility		
Unit			
[NASA-CR-151230]	N77-19755		

DRIAHOVSKI, P. G.		PADUSKO, J. A.	
Localization of the lactate dehydrogenas		Coronary risk factors in flying personne	1 - A
and of the acid phosphatase /AP/ in li of embryos and chickens irradiated wit		progress report	A77-24510
-	A77-23768	PARBER, J. H.	_
DRUZHININ, IU. P. Investigation of radiation sensitivity i	n mammale	Experiments on the locus of induced moti	on A77-26074
under long duration weightlessness	LL Edituals	PAUSTHAH, W. O.	M//-200/4
·	A77-24147	Inexpensive technique to record respirat	ion during
DUBIBIN, B. P. The evolutionary role of gravity		flight	A77-24511
the evolutionary role of gravity	A77-24134	PEDOROV, B. E.	27, 24311
DUBB, J.		Effect of antiorthostatic bed rest on th	
Causes of high blood 02 affinity of animat high altitude	ials living	PEDOROVA, K. O.	A77-24165
uu aaya waaaaa	A77-24356	Effect of extreme factors on micro-organ	
DUKET, S. D. SAINT simulation of a remotely piloted		for the control of the effectiveness o sterilization	£
vehicle/drone control facility: Model		30011112401011	177-24174
Development and analysis	w77 107E0	PILATOVA, L. H.	
[AD-A031085] DULAC, S.	¥77-19758	Effect of antiorthostatic bed rest on th	A77-24165
Metabolic and cardiovascular responses t		PISHER, A. B.	_
norepinephrine in trained and nontrain subjects	ed human	Depression of serotonin clearance by rat during oxygen exposure	lungs
345 Jec (2	A77-24359		A77-23418
DUNCAN, J.  An experimental validation of mathematic	·a1	PLORA, J. D. An evaluation of the 1974 and 1975 restr	aint cyctame
simulation of human thermoregulation	·ar	[PB-258585/9]	N77-18748
	A77-25217	PRIEDEM, H. J.  Automated clinical system for chromosome	
E	•	[NASA-CASE-NPO-13913-1]	N77-19750
		PROST, J. D., JR.	
BDWARDS, J. A.  Descriptive communication structure metr	ics: A	Automated electroencephalography system electroencephalographic correlates of	
preliminary logical and empirical anal	ysis	motion sickness, part 3	
[AD-A030512] BGBTH, H. B.	N77-18738	[NASA-CR-151210] FULLER, C. A.	N77-19746
Conditions for improving visual informat	ion	Effects of acceleration on thermoregulat	ory
processing [AD-A030425]	¥77-18751	responses of unanesthetized rats	A77-23425
Conditions for improving visual informat		Spinal cord thermosensitivity and sortin	
processing	w77 40750	neural signals in cold-exposed rats	
	N//-IN/32		A / / - 2435 /
[AD-A029898] BGOROV, A. D.	177-18752		A77-24357
BGOROV, A. D. Results of medical investigations carrie	•	e	A//-2435/
BGOROV, A. D. Results of medical investigations carrie board the Salyut orbital stations	•	GAGGB, A. P.	
BGOROV, A. D. Results of medical investigations carrie board the Salyut orbital stations  BLPIMOV, A. 1.	d out on 177-24144	GAGGE, A. P.  Effective temperature scale useful for h	
BGOROV, A. D. Results of medical investigations carrie board the Salyut orbital stations	d out on 177-24144 tion of an	GAGGB, A. P. Effective temperature scale useful for h hyperbaric environments	
BEGOROV, A. D. Results of medical investigations carrie board the Salyut orbital stations  BLFIMOV, A. I. The role of chemoreceptors in the adapta organis# to hypoxia	d out on 177-24144	GAGGE, A. P.  Effective temperature scale useful for h hyperbaric environments  GAIBER, C. A.	ypo- and . 1477-24502
BGOROV, A. D. Results of medical investigations carrie board the Salyut orbital stations  BLPIMOV, A. I. The role of chemoreceptors in the adapta organis# to hypoxia  BHGE, W. Study with a multi-threshold HZE-particl	d out on A77-24144 tion of an A77-26271	GAGGB, A. P.  Effective temperature scale useful for h hyperbaric environments  GAIBER, C. A. Aircrew training requirements for nap-of flight	ypo- and . 1477-24502 -the-earth
BGOROV, A. D. Results of medical investigations carrie board the Salyut orbital stations  BLPIMOV, A. I. The role of chemoreceptors in the adapta organis# to hypoxia  BHGB, W.	d out on 177-24144 tion of an 177-26271	GAGGB, A. P.  Effective temperature scale useful for h hyperbaric environments  GAIBER, C. A. Aircrew training requirements for nap-of flight [AD-A030420]	ypo- and . 1477-24502
BGOROV, A. D. Results of medical investigations carrie board the Salyut orbital stations  BLPIMOV, A. I. The role of chemoreceptors in the adapta organis# to hypoxia  BHGE, W. Study with a multi-threshold HZE-particl	d out on A77-24144 tion of an A77-26271	GAGGB, A. P.  Effective temperature scale useful for h hyperbaric environments  GAIBER, C. A. Aircrew training requirements for nap-of flight	ypo- and . 177-24502 -the-earth 177-18754
BEGOROV, A. D. Results of medical investigations carrie board the Salyut orbital stations  BLPIMOV, A. I. The role of chemoreceptors in the adapta organism to hypoxia  BEGE, W. Study with a multi-threshold HZE-particl dosimeter using plastic detectors  EMGEL, P. L. Visual conspicuity, visual search and fi	d out on A77-24144 tion of an A77-26271 e A77-24154	GAGGB, A. P.  Effective temperature scale useful for h hyperbaric environments  GAINER, C. A.  Aircrew training requirements for nap-of flight [AD-A030420]  GANIARIS, W. J.  Cardiovascular instrumentation for space [NASA-CR-151935]	ypo- and . 177-24502 -the-earth 177-18754
BGOROV, A. D. Results of medical investigations carrie board the Salyut orbital stations  BLPIMOV, A. I. The role of chemoreceptors in the adapta organism to hypoxia  BHGE, W. Study with a multi-threshold HZE-particl dosimeter using plastic detectors  EMGEL, F. L.	d out on A77-24144 tion of an A77-26271 e A77-24154	GAGGB, A. P.  Effective temperature scale useful for h hyperbaric environments  GAINER, C. A.  Aircrew training requirements for nap-of flight [AD-A030420]  GANIARIS, B. J.  Cardiovascular instrumentation for space	ypo- and A77-24502 -the-earth H77-18754 flight H77-18730
BEGOROV, A. D. Results of medical investigations carried board the Salyut orbital stations  RLFIHOV, A. I. The role of chemoreceptors in the adaptations organism to hypoxia  BHGE, W. Study with a multi-threshold HZE-particle dosimeter using plastic detectors  EMGEL, F. L. Visual conspicuity, visual search and fittendencies of the eye  Visual conspicuity as an external determination of the search and determinations.	A77-24144  A77-26271  e  A77-24154  xation  A77-23290	GAGGE, A. P.  Effective temperature scale useful for h hyperbaric environments  GAIBER, C. A. Aircrew training requirements for nap-of flight [AD-A030420]  GABIARIS, W. J.  Cardiovascular instrumentation for space [MASA-CR-151935] GAZEMKO, O. G.	ypo- and 177-24502 -the-earth 1877-18754 flight 1877-18730 d out on
BGOROV, A. D. Results of medical investigations carried board the Salyut orbital stations  BLPIHOV, A. I. The role of chemoreceptors in the adaptations organism to hypoxia  BHGE, W. Study with a multi-threshold HZE-particle dosimeter using plastic detectors  BHGEL, P. L. Visual conspicuity, visual search and fittendencies of the eye	A77-24144  A77-26271  e  A77-24154  xation  A77-23290	GAGGE, A. P.  Effective temperature scale useful for h hyperbaric environments  GAIBER, C. A. Aircrew training requirements for nap-of flight [AD-A030420]  GABIARIS, W. J.  Cardiovascular instrumentation for space [NASA-CR-151935]  GAZENKO, O. G. Results of medical investigations carrie board the Salyut orbital stations	ypo- and A77-24502 -the-earth M77-18754 flight M77-18730 d out on A77-24144
BEGOROV, A. D. Results of medical investigations carried board the Salyut orbital stations  RLPIHOV, A. I. The role of chemoreceptors in the adaptatorganism to hypoxia  BEGE, W. Study with a multi-threshold HZE-particle dosimeter using plastic detectors  EMGEL, F. L. Visual conspicuity, visual search and fit tendencies of the eye  Visual conspicuity as an external determination of the conspicuity as an external	A77-24144  A77-26271  A77-24154  A77-23290  A77-23625	GAGGE, A. P.  Effective temperature scale useful for h hyperbaric environments  GAINER, C. A. Aircrew training requirements for nap-of flight	ypo- and A77-24502 -the-earth M77-18754 flight M77-18730 d out on A77-24144
BGOROV, A. D. Results of medical investigations carried board the Salyut orbital stations  BLPIMOV, A. I. The role of chemoreceptors in the adaptatorganism to hypoxia  BHGE, W. Study with a multi-threshold HZE-particle dosimeter using plastic detectors  BHGEL, F. L. Visual conspicuity, visual search and fittendencies of the eye  Visual conspicuity as an external determined to the eye movements and selective attention	A77-24144 Ation of an A77-26271 A77-24154 Ation A77-23290 A77-23625 A77-23625	GAGGE, A. P.  Effective temperature scale useful for h hyperbaric environments  GAIBER, C. A. Aircrew training requirements for nap-of flight [AD-A030420]  GABIARIS, W. J.  Cardiovascular instrumentation for space [NASA-CR-151935]  GAZENKO, O. G. Results of medical investigations carrie board the Salyut orbital stations  Long-term space flights and human habita  GAZHO, B.	ypo- and A77-24502 -the-earth N77-18754 flight N77-18730 d out on A77-24144 t
BEGOROV, A. D. Results of medical investigations carried board the Salyut orbital stations  BLPIMOV, A. I. The role of chemoreceptors in the adaptatorganism to hypoxia  BHGE, W. Study with a multi-threshold HZE-particle dosimeter using plastic detectors  BHGEL, P. L. Visual conspicuity, visual search and fittendencies of the eye  Visual conspicuity as an external determined to the eye movements and selective attention  Visual conspicuity as an external determined to the eye movements and selective attention	A77-24144 Ation of an A77-26271 Be A77-24154 Aration A77-23290 Dinant of A77-23625 Dinant of A77-26578	GAGGE, A. P.  Effective temperature scale useful for h hyperbaric environments  GAINER, C. A.  Aircrew training requirements for nap-of flight	ypo- and  A77-24502  -the-earth  N77-18754  flight  N77-18730  d out on  A77-24144  t  A77-26102  eight load  in the
BGOROV, A. D. Results of medical investigations carried board the Salyut orbital stations  BLPIMOV, A. I. The role of chemoreceptors in the adaptatorganism to hypoxia  BHGE, W. Study with a multi-threshold HZE-partical dosineter using plastic detectors  BHGEL, F. L. Visual conspicuity, visual search and fit tendencies of the eye  Visual conspicuity as an external determined to the eye novements and selective attention  Visual conspicuity as an external determine eye movements and selective attention  BREBIE, A. V. Results of medical investigations carried	A77-24144 Ation of an A77-26271 Be A77-24154 Aration A77-23290 Dinant of A77-23625 Dinant of A77-26578	GAGGE, A. P.  Effective temperature scale useful for h hyperbaric environments  GAINER, C. A.  Aircrew training requirements for nap-of flight [AD-A030420]  GANIARIS, W. J.  Cardiovascular instrumentation for space [NASA-CR-151935]  GAZENKO, O. G.  Results of medical investigations carrie board the Salyut orbital stations  Long-term space flights and human habita  GAZHO, B.  Influence of accelerations, additional w	ypo- and  A77-24502  -the-earth  N77-18754  flight  N77-18730  d out on  A77-24144  t  A77-26102  eight load in the nica/
BGOROV, A. D. Results of medical investigations carried board the Salyut orbital stations  BLPIMOV, A. I. The role of chemoreceptors in the adaptatorganism to hypoxia  BEGE, W. Study with a multi-threshold HZE-particled dosimeter using plastic detectors  BEGEL, F. L. Visual conspicuity, visual search and fit tendencies of the eye  Visual conspicuity as an external determine eye movements and selective attention  Visual conspicuity as an external determine eye movements and selective attention  BREBIE, A. V. Results of medical investigations carried board the Salyut orbital stations	A77-24144 Ation of an A77-26271 Be A77-24154 Aration A77-23290 Dinant of A77-23625 Dinant of A77-26578	GAGGE, A. P.  Effective temperature scale useful for h hyperbaric environments  GAINER, C. A.  Aircrew training requirements for nap-of flight [AD-A030420]  GANIARIS, B. J.  Cardiovascular instrumentation for space [NASA-CR-151935]  GAZENKO, O. G.  Results of medical investigations carrie board the Salyut orbital stations  Long-term space flights and human habita  GAZHO, B.  Influence of accelerations, additional w and hypokinesia on protein catabolism Japanese quail /Coturnix Coturnix Japo	ypo- and  A77-24502  -the-earth  B77-18754  flight  B77-18730  d out on  A77-24144  t  A77-26102  eight load in the nica/ A77-26106
BGOROV, A. D. Results of medical investigations carried board the Salyut orbital stations  BLPIMOV, A. I. The role of chemoreceptors in the adaptatorganism to hypoxia  BHGE, W. Study with a multi-threshold HZE-partical dosineter using plastic detectors  BHGEL, F. L. Visual conspicuity, visual search and fit tendencies of the eye  Visual conspicuity as an external determined to the eye novements and selective attention  Visual conspicuity as an external determine eye movements and selective attention  BREBIE, A. V. Results of medical investigations carried board the Salyut orbital stations  BREBLEBS, L. J. J.	A77-24144 Ation of an A77-26271 A77-24154 Ation A77-23290 A77-23625 A77-26578 A out on A77-24144	GAGGE, A. P.  Effective temperature scale useful for h hyperbaric environments  GAIBER, C. A.  Aircrew training requirements for nap-of flight [AD-A030420]  GABIARIS, W. J.  Cardiovascular instrumentation for space [NASA-CR-151935]  GAZENKO, O. G.  Results of medical investigations carrie board the Salyut orbital stations  Long-term space flights and human habita  GAZHO, H.  Influence of accelerations, additional w and hypokinesia on protein catabolism Japanese quail /Coturnix Coturnix Japo  GENEROSOV, V. L. Algorithms for combined and supervisor r.	ypo- and  A77-24502  -the-earth  B77-18754  flight  B77-18730  d out on  A77-24144  t  A77-26102  eight load in the nica/ A77-26106
BGOROV, A. D. Results of medical investigations carried board the Salyut orbital stations  BLPIMOV, A. I. The role of chemoreceptors in the adaptatorganism to hypoxia  BEGE, W. Study with a multi-threshold HZE-particled dosimeter using plastic detectors  EMGEL, F. L. Visual conspicuity, visual search and fittendencies of the eye  Visual conspicuity as an external determine eye movements and selective attention  Visual conspicuity as an external determine eye movements and selective attention  BREBIE, A. V. Results of medical investigations carried board the Salyut orbital stations  BREBLEWS, L. J. J. Investigation on a passenger ride-comfor improvement system with limited control	A77-24144  A77-26271  A77-26271  A77-24154  Aration  A77-23290  Dinant of  A77-23625  Dinant of  A77-26578  A out on  A77-24144  At surface	GAGGE, A. P.  Effective temperature scale useful for h hyperbaric environments  GAINER, C. A.  Aircrew training requirements for nap-of flight (AD-A030420)  GANIARIS, W. J.  Cardiovascular instrumentation for space (MASA-CR-151935)  GAZENKO, O. G.  Results of medical investigations carrie board the Salyut orbital stations  Long-term space flights and human habita  GAZHO, H.  Influence of accelerations, additional w and hypokinesia on protein catabolism Japanese quail /Coturnix Coturnix Japo  GENEROSOV, V. L. Algorithms for combined and supervisor remanipulator control	ypo- and  A77-24502  -the-earth  B77-18754  flight  B77-18730  d out on  A77-24144  t  A77-26102  eight load in the nica/ A77-26106
BGOROV, A. D. Results of medical investigations carried board the Salyut orbital stations  BLPIMOV, A. I. The role of chemoreceptors in the adaptatorganism to hypoxia  BHGE, W. Study with a multi-threshold HZE-particly dosineter using plastic detectors  BHGEL, F. L. Visual conspicuity, visual search and fittendencies of the eye  Visual conspicuity as an external determined by the constitution of the constitution by the constitution of th	A77-24144 Ation of an A77-26271 A77-24154 Ation A77-23290 Aninant of A77-23625 A17-26578 A1 out on A77-24144 Ation A77-24144 Ation	GAGGE, A. P.  Effective temperature scale useful for h hyperbaric environments  GAIBER, C. A. Aircrew training requirements for nap-of flight [AD-A030420]  GABIARIS, W. J.  Cardiovascular instrumentation for space [NASA-CR-151935]  GAZENKO, O. G.  Results of medical investigations carrie board the Salyut orbital stations  Long-term space flights and human habita  GAZHO, H.  Influence of accelerations, additional w and hypokinesia on protein catabolism Japanese quail /Coturnix Coturnix Japo  GEMEROSOV, V. L. Algorithms for combined and supervisor r manipulator control  GEBIE, A. H.	ypo- and  A77-24502  -the-earth  N77-18754  flight  N77-18730  d out on  A77-24144  t  A77-26102  eight load in the nica/  A77-26106  obot and  A77-24832
BGOROV, A. D. Results of medical investigations carried board the Salyut orbital stations  ELPIMOV, A. I. The role of chemoreceptors in the adaptatorganism to hypoxia  BEGE, W. Study with a multi-threshold HZE-particled dosimeter using plastic detectors  EMGEL, F. L. Visual conspicuity, visual search and fittendencies of the eye  Visual conspicuity as an external determine eye movements and selective attention  Visual conspicuity as an external determine eye movements and selective attention  BREBIE, A. V. Results of medical investigations carried board the Salyut orbital stations  ERKELEES, L. J. J. Investigation on a passenger ride-comforting improvement system with limited controlactuator performance for a flexible ai [HLR-TR-75140-U]  EVDOKIMOVA, M. D.	A77-24144  A177-24144  A177-26271  A177-24154  A177-24154  A177-23290  A177-23625  A177-23625  A177-26578  A1 out on  A177-24144  A1 surface  CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC	GAGGE, A. P.  Effective temperature scale useful for h hyperbaric environments  GAINER, C. A.  Aircrew training requirements for nap-of flight (AD-A030420)  GANIARIS, W. J.  Cardiovascular instrumentation for space (MASA-CR-151935)  GAZENKO, O. G.  Results of medical investigations carrie board the Salyut orbital stations  Long-term space flights and human habita  GAZHO, H.  Influence of accelerations, additional w and hypokinesia on protein catabolism Japanese quail /Coturnix Coturnix Japo  GENEROSOV, V. L. Algorithms for combined and supervisor remanipulator control	ypo- and  A77-24502  -the-earth  M77-18754  flight  M77-18730  d out on  A77-24144  t  A77-26102  eight load in the nica/ A77-26106  obot and  A77-24832  d out on
BGOROV, A. D. Results of medical investigations carried board the Salyut orbital stations  BLPIMOV, A. I. The role of chemoreceptors in the adaptatorganism to hypoxia  BHGE, W. Study with a multi-threshold HZE-particle dosimeter using plastic detectors  BHGEL, P. L. Visual conspicuity, visual search and fittendencies of the eye  Visual conspicuity as an external determine eye movements and selective attention  Visual conspicuity as an external determine eye movements and selective attention  BREBIE, A. V. Results of medical investigations carried board the Salyut orbital stations  BREBLEES, L. J. J. Investigation on a passenger ride-comforting improvement system with limited controlactuator performance for a flexible aitance.	A77-24144 Ation of an A77-26271 e A77-24154 Ation A77-23290 Ation A77-23625 A10 of A77-26578 d out on A77-24144 t 1 surface rcraft E77-18745 ial life	GAGGE, A. P.  Effective temperature scale useful for h hyperbaric environments  GAIBER, C. A.  Aircrew training requirements for nap-of flight [AD-A030420]  GABIARIS, W. J.  Cardiovascular instrumentation for space [NASA-CR-151935]  GAZENKO, O. G.  Results of medical investigations carrie board the Salyut orbital stations  Long-term space flights and human habita  GAZHO, H.  Influence of accelerations, additional w and hypokinesia on protein catabolism Japanese quail /Coturnix Coturnix Japo  GENEROSOV, V. L.  Algorithms for combined and supervisor r manipulator control  GEBIE, A. H.  Results of medical investigations carried board the Salyut orbital stations	ypo- and  A77-24502  -the-earth  N77-18754  flight  N77-18730  d out on  A77-24144  t  A77-26102  eight load in the nica/  A77-26106  obot and  A77-24832
BGOROV, A. D. Results of medical investigations carried board the Salyut orbital stations  ELPIMOV, A. I. The role of chemoreceptors in the adaptatorganism to hypoxia  BEGE, W. Study with a multi-threshold HZE-particled dosimeter using plastic detectors  EMGEL, F. L. Visual conspicuity, visual search and fittendencies of the eye  Visual conspicuity as an external determine eye movements and selective attention  Visual conspicuity as an external determine eye movements and selective attention  BREBIE, A. V. Results of medical investigations carried board the Salyut orbital stations  ERKELEES, L. J. J. Investigation on a passenger ride-comforting improvement system with limited controlactuator performance for a flexible ai [HLR-TR-75140-U]  EVDOKIMOVA, M. D.	A77-24144  A177-24144  A177-26271  A177-24154  A177-24154  A177-23290  A177-23625  A177-23625  A177-26578  A1 out on  A177-24144  A1 surface  CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC	GAGGE, A. P.  Effective temperature scale useful for h hyperbaric environments  GAIMER, C. A.  Aircrew training requirements for nap-of flight [AD-A030420]  GAMIARIS, W. J.  Cardiovascular instrumentation for space [NASA-CR-151935]  GAZEMO, O. G.  Results of medical investigations carrie board the Salyut orbital stations  Long-term space flights and human habita  GAZHO, H.  Influence of accelerations, additional w and hypokinesia on protein catabolism Japanese quail /Coturnix Coturnix Japo  GEMEROSOV, V. L.  Algorithms for combined and supervisor r manipulator control  GEMIE, A. H.  Results of medical investigations carries	ypo- and  A77-24502  -the-earth  N77-18754  flight  N77-18730  d out on  A77-24144  t  A77-26102  eight load in the nica/  A77-26106  obot and  A77-24832  d out on  A77-24144
BGOROV, A. D. Results of medical investigations carried board the Salyut orbital stations  BLPIMOV, A. I. The role of chemoreceptors in the adaptatorganism to hypoxia  BHGE, W. Study with a multi-threshold HZE-particled dosimeter using plastic detectors  BHGEL, P. L. Visual conspicuity, visual search and fintendencies of the eye Visual conspicuity as an external determine eye movements and selective attention  Visual conspicuity as an external determine eye movements and selective attention  BREBIE, A. V. Results of medical investigations carried board the Salyut orbital stations  BREBLEES, L. J. J. Investigation on a passenger ride-comforting content actuator performance for a flexible ait [NLE-TR-75140-0]  EVDOXIBOVA, B. D. On methods of detection of extraterrestr	A77-24144 Ation of an A77-26271 e A77-24154 Ation A77-23290 Ation A77-23625 A10 of A77-26578 d out on A77-24144 t 1 surface rcraft E77-18745 ial life	GAGGE, A. P.  Effective temperature scale useful for h hyperbaric environments  GAIBER, C. A. Aircrew training requirements for nap-of flight [AD-A030420]  GABIARIS, W. J.  Cardiovascular instrumentation for space [NASA-CR-151935]  GAZENO, O. G.  Results of medical investigations carrie board the Salyut orbital stations  Long-term space flights and human habita  GAZHO, H.  Influence of accelerations, additional w and hypokinesia on protein catabolism Japanese quail /Coturnix Coturnix Japo  GENEROSOV, V. L. Algorithms for combined and supervisor r manipulator control  GENIE, A. H.  Results of medical investigations carrie board the Salyut orbital stations  GEOFFRION, L. D. Conditions for improving visual informat processing	ypo- and  A77-24502  -the-earth  N77-18754  flight  N77-18730  d out on  A77-24144  t  A77-26102  eight load in the nica/  A77-26106  obot and  A77-24832  d out on  A77-24144
BGOROV, A. D. Results of medical investigations carried board the Salyut orbital stations  ELPIMOV, A. I. The role of chemoreceptors in the adaptatorganism to hypoxia  BEGE, W. Study with a multi-threshold HZE-particled dosimeter using plastic detectors  EMGEL, F. L. Visual conspicuity, visual search and fittendencies of the eye  Visual conspicuity as an external determine eye movements and selective attention  Visual conspicuity as an external determine eye movements and selective attention  BREBIE, A. V. Results of medical investigations carried board the Salyut orbital stations  ERKELEES, L. J. J. Investigation on a passenger ride-comforting improvement system with limited controlactuator performance for a flexible ai [HLR-TR-75140-U]  EVDOKIMOVA, M. D.	A77-24144 Ation of an A77-26271 e A77-24154 Ation A77-23290 Ation A77-23625 A10 of A77-26578 d out on A77-24144 t 1 surface rcraft E77-18745 ial life	GAGGE, A. P.  Effective temperature scale useful for h hyperbaric environments  GAINER, C. A.  Aircrew training requirements for nap-of flight [AD-A030420]  GANIARIS, W. J.  Cardiovascular instrumentation for space [MASA-CR-151935]  GAZENKO, O. G.  Results of medical investigations carrie board the Salyut orbital stations  Long-term space flights and human habita  GAZHO, M.  Influence of accelerations, additional w and hypokinesia on protein catabolism Japanese quail /Coturnix Coturnix Japo  GENEROSOV, V. L.  Algorithms for combined and supervisor r manipulator control  GENIE, A. M.  Results of medical investigations carrie board the Salyut orbital stations  GEOFPRION, L. D.  Conditions for improving visual informat	ypo- and  A77-24502  -the-earth  N77-18754  flight  N77-18730  d out on  A77-24144  t  A77-26102  eight load in the nica/  A77-26106  obot and  A77-24832  d out on  A77-24144
BGOROV, A. D. Results of medical investigations carried board the Salyut orbital stations  BLPIMOV, A. I. The role of chemoreceptors in the adaptatorganism to hypoxia  BHGE, W. Study with a multi-threshold HZE-particly dosimeter using plastic detectors  BHGEL, P. L. Visual conspicuity, visual search and fittendencies of the eye Visual conspicuity as an external determine eye movements and selective attention  Visual conspicuity as an external determine eye movements and selective attention  BREBIE, A. V. Results of medical investigations carried board the Salyut orbital stations  BREBLESS, L. J. J. Investigation on a passenger ride-comfort improvement system with limited controlationary performance for a flexible ai (HLR-TR-75140-U)  BYDOKIHOVA, B. D. On methods of detection of extraterrestr	A77-24144 Ation of an A77-26271 e A77-24154 Ation A77-23290 Aninant of A77-23625 Ainant of A77-26578 d out on A77-24144 t 1 surface rcraft E77-18745 ial life A77-24175	GAGGE, A. P.  Effective temperature scale useful for h hyperbaric environments  GAIBER, C. A.  Aircrew training requirements for nap-of flight [AD-A030420]  GABIARIS, W. J.  Cardiovascular instrumentation for space [NASA-CR-151935]  GAZENKO, O. G.  Results of medical investigations carrie board the Salyut orbital stations  Long-term space flights and human habita  GAZHO, H.  Influence of accelerations, additional wand hypokinesia on protein catabolism Japanese quail /Coturnix Coturnix Japo  GENEROSOV, V. L.  Algorithms for combined and supervisor remanipulator control  GEBIE, A. H.  Results of medical investigations carried board the Salyut orbital stations  GEOFFRION, L. D.  Conditions for improving visual informating processing [AD-A029898]  GERBER, R. L.  Cardiovascular responses of men and women	ypo- and  A77-24502  -the-earth  M77-18754  flight  M77-18730  d out on  A77-24144  t  A77-26102  eight load in the mica/  A77-26106  obot and  A77-2932  d out on  A77-24144  in the mica/  A77-24145  in the mica/  A77-26106
BGOROV, A. D. Results of medical investigations carried board the Salyut orbital stations  BLPIMOV, A. I. The role of chemoreceptors in the adaptatorganism to hypoxia  BHGE, W. Study with a multi-threshold HZE-particled dosimeter using plastic detectors  BHGEL, P. L. Visual conspicuity, visual search and fittendencies of the eye  Visual conspicuity as an external determine eye movements and selective attention  Visual conspicuity as an external determine eye movements and selective attention  BREBIE, A. V. Results of medical investigations carried board the Salyut orbital stations  BREBLEES, L. J. J. Investigation on a passenger ride-comforting to the salyut orbital stations  BREBLEES, L. J. J. Investigation on a passenger ride-comforting to the salyut orbital stations  BREBLEES, L. J. J. On methods of detection of extraterrestrestreshies of the Biostack as an approach to high LET  Beffect of space factors on Escherichia of	A77-24144 Ation of an A77-26271 e A77-24154 Exation A77-23290 A10 A17-23625 A10 A17-26578 d out on A77-24144 t 1 surface reraft E77-18745 ial life A77-24175	GAGGE, A. P.  Effective temperature scale useful for h hyperbaric environments  GAIBER, C. A.  Aircrew training requirements for nap-of flight [AD-A030420]  GANIARIS, W. J.  Cardiovascular instrumentation for space [MASA-CR-151935]  GAZEMKO, O. G.  Results of medical investigations carrie board the Salyut orbital stations  Long-term space flights and human habita  GAZHO, M.  Influence of accelerations, additional w and hypokinesia on protein catabolism Japanese quail /Coturnix Coturnix Japo  GENEROSOV, V. L.  Algorithms for combined and supervisor remanipulator control  GENIE, A. M.  Results of medical investigations carried board the Salyut orbital stations  GEOPPRION, L. D.  Conditions for improving visual informating processing [AD-A029898]  GERBER, R. L.  Cardiovascular responses of men and women body negative pressure	ypo- and  A77-24502  -the-earth  M77-18754  flight  M77-18730  d out on  A77-24144  t  A77-26102  eight load in the mica/  A77-26106  obot and  A77-2932  d out on  A77-24144  in the mica/  A77-24145  in the mica/  A77-26106
BGOROV, A. D. Results of medical investigations carried board the Salyut orbital stations  BLPIMOV, A. I. The role of chemoreceptors in the adaptatorganism to hypoxia  BHGE, W. Study with a multi-threshold HZE-particly dosimeter using plastic detectors  BHGEL, P. L. Visual conspicuity, visual search and fittendencies of the eye Visual conspicuity as an external determine eye movements and selective attention  Visual conspicuity as an external determine eye movements and selective attention  BREMIE, A. V. Results of medical investigations carried board the Salyut orbital stations  BREKELBES, L. J. J. Investigation on a passenger ride-comfort improvement system with limited controlationate for a flexible ai (BLE-TR-75140-U)  BYDOKIHOVA, B. D. On methods of detection of extraterrestry  FACIUS, R. The Biostack as an approach to high LET	A77-24144 Ation of an A77-26271 e A77-24154 Ation A77-23290 Annant of A77-23625 Annant of A77-26578 dout on A77-24144 t 1 surface rcraft H77-18745 ial life A77-24175  research A77-24156 oli B/r	GAGGE, A. P.  Effective temperature scale useful for h hyperbaric environments  GAIBER, C. A.  Aircrew training requirements for nap-of flight [AD-A030420]  GABLARIS, W. J.  Cardiovascular instrumentation for space [NASA-CR-151935]  GAZENKO, O. G.  Results of medical investigations carrie board the Salyut orbital stations  Long-term space flights and human habita  GAZHO, H.  Influence of accelerations, additional wand hypokinesia on protein catabolism Japanese quail /Coturnix Coturnix Japo  GENEROSOV, V. L.  Algorithms for combined and supervisor remanipulator control  GENIE, A. H.  Results of medical investigations carried board the Salyut orbital stations  GEOFPRION, L. D.  Conditions for improving visual informating processing [AD-A029898]  GENBER, R. L.  Cardiovascular responses of men and vome body negative pressure	ypo- and  A77-24502  -the-earth  N77-18754  flight  N77-18730  d out on  A77-24144  t  A77-26102  eight load in the nica/  A77-26106  obot and  A77-24832  d out on  A77-24144  ion  E77-18752  n to lower  A77-24507
BGOROV, A. D. Results of medical investigations carried board the Salyut orbital stations  BLPIMOV, A. I. The role of chemoreceptors in the adaptatorganism to hypoxia  BHGE, W. Study with a multi-threshold HZE-particled dosimeter using plastic detectors  BHGEL, P. L. Visual conspicuity, visual search and fittendencies of the eye  Visual conspicuity as an external determine eye movements and selective attention  Visual conspicuity as an external determine eye movements and selective attention  BREBIE, A. V. Results of medical investigations carried board the Salyut orbital stations  BREBLEES, L. J. J. Investigation on a passenger ride-comforting to the salyut orbital stations  BREBLEES, L. J. J. Investigation on a passenger ride-comforting to the salyut orbital stations  BREBLEES, L. J. J. On methods of detection of extraterrestrestreshies of the Biostack as an approach to high LET  Beffect of space factors on Escherichia of	A77-24144 Ation of an A77-26271 e A77-24154 Exation A77-23290 A10 A17-23625 A10 A17-26578 d out on A77-24144 t 1 surface reraft E77-18745 ial life A77-24175	GAGGE, A. P.  Effective temperature scale useful for h hyperbaric environments  GAIBER, C. A.  Aircrew training requirements for nap-of flight [AD-A030420]  GANIARIS, W. J.  Cardiovascular instrumentation for space [MASA-CR-151935]  GAZEMKO, O. G.  Results of medical investigations carrie board the Salyut orbital stations  Long-term space flights and human habita  GAZHO, M.  Influence of accelerations, additional w and hypokinesia on protein catabolism Japanese quail /Coturnix Coturnix Japo  GENEROSOV, V. L.  Algorithms for combined and supervisor remanipulator control  GENIE, A. M.  Results of medical investigations carried board the Salyut orbital stations  GEOPPRION, L. D.  Conditions for improving visual informating processing [AD-A029898]  GERBER, R. L.  Cardiovascular responses of men and women body negative pressure	ypo- and  A77-24502  -the-earth  N77-18754  flight  N77-18730  d out on  A77-24144  t  A77-26102  eight load in the nica/  A77-26106  obot and  A77-24832  d out on  A77-24144  ion  E77-18752  n to lower  A77-24507

A77-24501

PERSONAL AUTHOR INDEX HOROWITZ, J. H.

GILMORE, G. C.		GUM, D. R.	
Conditions for improving visual informat processing	ion	Advanced simulation in undergraduate pil- training: An overview	ot
(AD-A029898)	พ77-18752	[AD-A030224]	N77-18755
GLADILKIN, A. N. Irradiation of bio-objects aboard the Co	SEMOS 690	GUROVSKII, N. N. Results of medical investigations carrie	d out on
biosatellite	,SW03 070	board the Salvut orbital stations	u out on
	A77-24146	CTTTO A T	A77-24144
GLAZKOVA, V. A. Prevention of decompression sickness dur	ing	GUZZO, A. V.  Photo-initiated processes in vision	
short-term flights in a depressurized		[C00-1627-31]	ክ77-19751
high altitudes	A77-26114	GYENGE, L. Study of the biochemical indicators of c	hrania
GLUHAJIC, N.	A77-20114	irradiation in rats	HOUTE
New method of artificial motion synthesi		·	A77-24150
application to locomotion robots and m	anipulators A77-24830	-	
GOETERS, K. M.		H	
Psychological selection of astronaut-sci	entists	HALL, C. P.	
(payload specialists)	N77-19742	A nonlinear model for the spatial charact of the human visual system	teristics
GORGILADZE, G. I.			A77-26275
Response of the vestibular apparatus to caloric stimulation of the labyrinths	brolondeq	RALL, R. L.  A nonlinear model for the spatial charac	teristics
caloric brindiation of the labyliness	A77-25416	of the human visual system	cerratics
Adaptation of vestibular responses to ga	lvanic		A77-26275
stimulation of the labyrinths	A77-25417	HAMILTON, J. D.  Effects of cold exposure and dehydration	on renal
GOROKHOVA, G. P.		function in black-tailed prairie dogs	
Effect of space flight on skeletal bones /light- and electron-microscopic inves		HARGREAVES, W. R.	A77-24367
Alight and election-microscobic inves	A77-26103	Synthesis of phospholipids and membranes	in
GOULD, S. J.		prebiotic conditions	
Weight and shape	A77-24135	HARRIS, L. D.	A77-24998
GRAY, R.		Computerized X-ray reconstruction tomogra	aphy in
The effects of 3 hours of vertical vibra	tion at 5	stereometric analysis of cardiovascular	
Hz on the performance of some tasks [RAE-TR-76011]	N77-18746	HARTHAN, B. O.	A77-24737
GRAYBIEL, A.		Endocrine-metabolic effects in short-dura	
The prevention of motion sickness in orb	oital flight A77-24140	high-workload missions: Peasibility st	tudy N77-18736
successful transfer of adaptation enviro		Psychometric characteristics of astronau	
navy flight training			N77-19741
GREENLEAP, J. E.	N77-19733	HAVARD, L. R. C. Impairment of flying efficiency in ananca	astic milote
Fluid and electrolyte shifts during bed	rest with	Imputement of itying citioner, in ununce	A77-24509
isometric and isotonic exercise	177 22022	HENANE, R.	
Fluid and electrolyte shifts in women du	A77-23423 ring +Gz	Variations in evaporation and body temper during sleep in man	ratures
acceleration after 15 days' bed rest			A77-23421
COTTOODER 1 T	A77-23424	HERD, J. A. Renal electrolyte circadian rhythms - Inc	lenendence
		from feeding and activity patterns	
GRIGOREV, A. I.  Deconditioning during prolonged immersion	n and	rior recard and docrers, patterns	rependence
			A77-26582
Deconditioning during prolonged immersion possible countermeasures	A77-24166	HERRMAN, W. Study with a multi-threshold HZE-particle	A77-26582
Deconditioning during prolonged immersion	A77-24166 ulated	HERRMANN, V.	<b>A77-26582</b>
Deconditioning during prolonged immersion possible countermeasures  Renal osmoregulatory function during sime space flight	A77-24166	HERRMANN, W. Study with a multi-threshold HZE-particle dosimeter using plastic detectors	A77-26582
Deconditioning during prolonged immersion possible countermeasures  Renal osmoregulatory function during sim	A77-24166 ulated A77-24169	HERRHAMM, W. Study with a multi-threshold HZE-particle	A77-26582
Deconditioning during prolonged immersion possible countermeasures  Renal osmoregulatory function during simpace flight  GRIGOREV, IU. G.	A77-24166 ulated A77-24169 n mammals	HERRMANN, W.  Study with a multi-threshold HZE-particle dosimeter using plastic detectors  HERROW, R. L.  Hass distribution of the human body using biostereometrics	A77-26582
Deconditioning during prolonged immersion possible countermeasures  Renal osmoregulatory function during simpace flight  GRIGOREV, IU. G. Investigation of radiation sensitivity in under long duration weightlessness	A77-24166 ulated A77-24169	HERRMANN, W.  Study with a multi-threshold HZE-particle dosimeter using plastic detectors  HERROW, R. L.  Mass distribution of the human body using biostereometrics [AD-A029402]	A77-26582  A77-24154  M77-18735
Deconditioning during prolonged immersion possible countermeasures  Renal osmoregulatory function during simpace flight  GRIGORBY, IU. G. Investigation of radiation sensitivity i	A77-24166 ulated A77-24169 n mammals A77-24147	HERRMANN, W.  Study with a multi-threshold HZE-particle dosimeter using plastic detectors  HERROW, R. L.  Hass distribution of the human body using biostereometrics [AD-A029402]  The effects of prolonged spaceflight on t	A77-26582 A77-24154 B77-18735
Deconditioning during prolonged immersion possible countermeasures  Renal osmoregulatory function during simpace flight  GRIGOREV, IU. G. Investigation of radiation sensitivity inder long duration weightlessness  GRIGORIAE, R. A. Cerebellum and gravity	A77-24166 ulated A77-24169 n mammals	HERRMANN, W.  Study with a multi-threshold HZE-particle dosimeter using plastic detectors  HERROW, R. L.  Mass distribution of the human body using biostereometrics [AD-A029402]	A77-26582 A77-24154 B77-18735
Deconditioning during prolonged immersion possible countermeasures  Renal osmoregulatory function during simpace flight  GRIGOREV, IU. G. Investigation of radiation sensitivity in under long duration weightlessness  GRIGORIAN, R. A.	A77-24166 ulated A77-24169 n mammals A77-24147	HERRMANN, W.  Study with a multi-threshold HZE-particle dosimeter using plastic detectors  HERROW, R. L.  Hass distribution of the human body using biostereometrics [AD-A029402]  The effects of prolonged spaceflight on tregional distribution of fluid, muscle	A77-26582 A77-24154 B77-18735
Deconditioning during prolonged immersion possible countermeasures  Renal osmoregulatory function during sime space flight  GRIGOREV, IU. G. Investigation of radiation sensitivity in under long duration weightlessness  GRIGORIAE, R. A. Cerebellum and gravity  GROVER, R. F.	A77-24166 ulated A77-24169 .n mammals A77-24147 A77-23500 in	HERRMANN, W.  Study with a multi-threshold HZE-particle dosimeter using plastic detectors  HERROB, R. L.  Hass distribution of the human body using biostereometrics [AD-A029402]  The effects of prolonged spaceflight on tregional distribution of fluid, muscle Biostereometric results from Skylab  HIROSHIGE, T.	A77-26582 A77-24154 W77-18735 the and fat:
Deconditioning during prolonged immersion possible countermeasures  Renal osmoregulatory function during simpace flight  GRIGOREV, IU. G. Investigation of radiation sensitivity in under long duration weightlessness  GRIGORIAT, R. A. Cerebellum and gravity  GROVER, R. F. Lung mast cell density and distribution chronically hypoxic animals	A77-24166 ulated A77-24169 n mammals A77-24147	HERRMANN, W.  Study with a multi-threshold HZE-particle dosimeter using plastic detectors  HERROS, R. L.  Hass distribution of the human body using biostereometrics [AD-A029402]  The effects of prolonged spaceflight on tregional distribution of fluid, muscle Biostereometric results from Skylab  HIROSHIGE, T.  Role of ketone bodies in nonshivering	A77-26582 A77-24154 W77-18735 the and fat:
Deconditioning during prolonged immersion possible countermeasures  Renal osmoregulatory function during sime space flight  GRIGOREW, IU. G. Investigation of radiation sensitivity in under long duration weightlessness  GRIGORIAM, R. A. Cerebellum and gravity  GROVER, R. F. Lung mast cell density and distribution	A77-24166 sulated A77-24169 In mammals A77-24147 A77-23500 in A77-24360	HERRMANN, W.  Study with a multi-threshold HZE-particle dosimeter using plastic detectors  HERROW, R. L.  Bass distribution of the human body using biostereometrics [AD-A029402]  The effects of prolonged spaceflight on tregional distribution of fluid, muscle Biostereometric results from Skylab  HIROSHIGE, T.  Role of ketone bodies in nonshivering thermogenesis in cold-acclimated rats	A77-26582 A77-24154 W77-18735 the and fat:
Deconditioning during prolonged immersion possible countermeasures  Renal osmoregulatory function during simpace flight  GRIGOREV, IU. G. Investigation of radiation sensitivity in under long duration weightlessness  GRIGORIAW, R. A. Cerebellum and gravity  GROVER, R. F. Lung mast cell density and distribution chronically hypoxic animals  GROZA, P. Hypergravitation and sympatho-adrenergic	A77-24166 ulated A77-24169 .n mammals A77-24147 A77-23500 in A77-24360	HERRMANN, W.  Study with a multi-threshold HZE-particle dosimeter using plastic detectors  HERROB, R. L.  Hass distribution of the human body using biostereometrics [AD-A029402]  The effects of prolonged spaceflight on tregional distribution of fluid, muscle Biostereometric results from Skylab  HIROSHIGE, T.  Role of ketone bodies in nonshivering thermogenesis in cold-acclimated rats  HITZ, F. R.	A77-26582 A77-24154 H77-18735 The and fat: H77-19738
Deconditioning during prolonged immersion possible countermeasures  Renal osmoregulatory function during simpace flight  GRIGOREV, IU. G. Investigation of radiation sensitivity in under long duration weightlessness  GRIGORIAM, R. A. Cerebellum and gravity  GROVER, R. F. Lung mast cell density and distribution chronically hypoxic animals  GROZA, P. Bypergravitation and sympatho-adrenergic GROVERUM, B. W.	A77-24166 ulated A77-24169 n mammals A77-24147 A77-23500 in A77-24360 reactivity A77-24171	HERRMANN, W.  Study with a multi-threshold HZE-particle dosimeter using plastic detectors  HERROW, R. L.  Bass distribution of the human body using biostereometrics [AD-A029402]  The effects of prolonged spaceflight on tregional distribution of fluid, muscle Biostereometric results from Skylab  HIROSHIGE, T.  Role of ketone bodies in nonshivering thermogenesis in cold-acclimated rats	A77-26582 A77-24154 B77-18735 he and fat: B77-19738 A77-24358
Deconditioning during prolonged immersion possible countermeasures  Renal osmoregulatory function during simpace flight  GRIGOREV, IU. G. Investigation of radiation sensitivity in under long duration weightlessness  GRIGORIAW, R. A. Cerebellum and gravity  GROVER, R. F. Lung mast cell density and distribution chronically hypoxic animals  GROZA, P. Hypergravitation and sympatho-adrenergic	A77-24166 iulated A77-24169 in mammals A77-24147 A77-23500 in A77-24360 : reactivity A77-24171	HERRMANN, W.  Study with a multi-threshold HZE-particle dosimeter using plastic detectors  HERROW, R. L.  Hass distribution of the human body using biostereometrics [AD-A029802]  The effects of prolonged spaceflight on tregional distribution of fluid, muscle Biostereometric results from Skylab  HIROSHIGE, T.  Role of ketone bodies in nonshivering thermogenesis in cold-acclimated rats  HITZ, F. R.  Payload crew activity planning integration 2: Inflight operations and training for [NASA-CR-151187]	A77-26582 A77-24154 B77-18735 he and fat: B77-19738 A77-24358
Deconditioning during prolonged immersion possible countermeasures  Renal osmoregulatory function during simpace flight  GRIGOREV, IU. G. Investigation of radiation sensitivity in under long duration weightlessness  GRIGORIAM, R. A. Cerebellum and gravity  GROVER, R. F. Lung mast cell density and distribution chronically hypoxic animals  GROZA, P. Bypergravitation and sympatho-adrenergic  GROVERAUE, B. W. Body composition changes in men and wome 2-3 weeks of bed rest	A77-24166 ulated A77-24169 n mammals A77-24147 A77-23500 in A77-24360 reactivity A77-24171	HERRMANN, W.  Study with a multi-threshold HZE-particle dosimeter using plastic detectors  HERROW, R. L.  Bass distribution of the human body using biostereometrics [AD-A029402]  The effects of prolonged spaceflight on tregional distribution of fluid, muscle Biostereometric results from Skylab  HIROSHIGE, T.  Role of ketone bodies in nonshivering thermogenesis in cold-acclimated rats  HITZ, F. R.  Payload crew activity planning integration 2: Infilight operations and training for [HASA-CR-151187]	A77-26582 A77-24154 B77-18735 he and fat: B77-19738 A77-24358 on. Task or payloads B77-18739
Deconditioning during prolonged immersion possible countermeasures  Renal osmoregulatory function during simpace flight  GRIGORBY, IU. G. Investigation of radiation sensitivity in under long duration weightlessness  GRIGORIAM, R. A. Cerebellum and gravity  GROVER, R. F. Lung mast cell density and distribution chronically hypoxic animals  GROZA, P. Hypergravitation and sympatho-adrenergical GRUMBAUB, B. W. Body composition changes in men and women	A77-24166 iulated A77-24169 In mammals A77-24147 A77-23500 in A77-24360 Preactivity A77-24171 In after A77-24162	HERRMANN, W.  Study with a multi-threshold HZE-particle dosimeter using plastic detectors  HERROW, R. L.  Hass distribution of the human body using biostereometrics [AD-A029802]  The effects of prolonged spaceflight on tregional distribution of fluid, muscle Biostereometric results from Skylab  HIROSHIGE, T.  Role of ketone bodies in nonshivering thermogenesis in cold-acclimated rats  HITZ, F. R.  Payload crew activity planning integration 2: Inflight operations and training for [NASA-CR-151187]	A77-26582 A77-24154 B77-18735 he and fat: B77-19738 A77-24358 on. Task or payloads B77-18739
Deconditioning during prolonged immersion possible countermeasures  Renal osmoregulatory function during simple space flight  GRIGOREV, IU. G.  Investigation of radiation sensitivity in under long duration weightlessness  GRIGORIAM, R. A.  Cerebellum and gravity  GROVER, R. F.  Lung mast cell density and distribution chronically hypoxic animals  GROZA, P.  Hypergravitation and sympatho-adrenergic GRUMBAUE, B. W.  Body composition changes in men and wome 2-3 weeks of bed rest  GUALTIEROTTI, T.  Investigation of the effect of free fall vestibular organ and of its post-fligh	A77-24166 inlated A77-24169 in mammals A77-24147 A77-23500 in A77-24360 reactivity A77-24171 in after A77-24162 on the	HERRMANN, W.  Study with a multi-threshold HZE-particle dosimeter using plastic detectors  HERROS, R. L.  Hass distribution of the human body using biostereometrics [AD-A029402]  The effects of prolonged spaceflight on tregional distribution of fluid, muscle Biostereometric results from Skylab  HIROSHIGE, T.  Role of ketone bodies in nonshivering thermogenesis in cold-acclimated rats  HITZ, F. R.  Payload crew activity planning integration 2: Infilight operations and training for [HASA-CR-151187]  HOPFELT, W.  Experimental investigations on motion signs susceptibility	A77-26582 A77-24154 B77-18735 he and fat: B77-19738 A77-24358 on. Task or payloads B77-18739
Deconditioning during prolonged immersion possible countermeasures  Renal osmoregulatory function during sime space flight  GRIGORBY, IU. G. Investigation of radiation sensitivity in under long duration weightlessness  GRIGORIAM, R. A. Cerebellum and gravity  GROVER, R. F. Lung mast cell density and distribution chronically hypoxic animals  GROZA, P. Hypergravitation and sympatho-adrenergical GRUMBAUM, B. W. Body composition changes in men and wome 2-3 weeks of bed rest  GUALTIEROTTI, T. Investigation of the effect of free fall vestibular organ and of its post-fligh readaptation as part of the shuttle pr	A77-24166 ulated A77-24169 .n mammals A77-24147 A77-23500 in A77-24360 : reactivity A77-24171 on after A77-24162 .on the totogram: A	HERRMANN, W.  Study with a multi-threshold HZE-particle dosimeter using plastic detectors  HERROW, R. L.  Hass distribution of the human body using biostereometrics [AD-A029402]  The effects of prolonged spaceflight on tregional distribution of fluid, muscle Biostereometric results from Skylab  HIROSHIGB, T.  Role of ketone bodies in nonshivering thermogenesis in cold-acclimated rats  HITZ, F. R.  Payload crew activity planning integratic 2: Inflight operations and training for [MASA-CR-151187]  HOPPELT, W.  Experimental investigations on motion sice	A77-26582  A77-24154  #77-18735  he and fat:  #77-19738  A77-24358  DD. Task  r payloads  #77-18739  kness  #77-19734
Deconditioning during prolonged immersion possible countermeasures  Renal osmoregulatory function during sime space flight  GRIGOREV, IU. G. Investigation of radiation sensitivity in under long duration weightlessness  GRIGORIAM, R. A. Cerebellum and gravity  GROVER, R. F. Lung mast cell density and distribution chronically hypoxic animals  GROZA, P. Hypergravitation and sympatho-adrenergic GRUMBAUE, B. W. Body composition changes in men and wome 2-3 weeks of bed rest  GUALTIEROTTI, T. Investigation of the effect of free fall vestibular organ and of its post-flight	A77-24166 inlated A77-24169 in mammals A77-24147 A77-23500 in A77-24360 : reactivity A77-24171 in after A77-24162 . on the it ology and	HERRMANN, W.  Study with a multi-threshold HZE-particle dosimeter using plastic detectors  HERROW, R. L.  Hass distribution of the human body using biostereometrics [AD-A029402]  The effects of prolonged spaceflight on tregional distribution of fluid, muscle Biostereometric results from Skylab  HIROSHIGB, T.  Role of ketone bodies in nonshivering thermogenesis in cold-acclimated rats  HITZ, F. R.  Payload crew activity planning integratic 2: Inflight operations and training for [MASA-CR-151187]  HOPPELT, W.  Experimental investigations on motion sic susceptibility  HOROWITZ, J. H.	A77-26582 A77-24154 B77-18735 he and fat: B77-19738 A77-24358 on. Task or payloads B77-18739 ckness B77-19734
Deconditioning during prolonged immersion possible countermeasures  Renal osmoregulatory function during sime space flight  GRIGOREV, IU. G. Investigation of radiation sensitivity in under long duration weightlessness  GRIGORIAM, R. A. Cerebellum and gravity  GROVER, R. F. Lung mast cell density and distribution chronically hypoxic animals  GROZA, P. Hypergravitation and sympatho-adrenergic GRUMBAUM, B. W. Body composition changes in men and wome 2-3 weeks of bed rest  GUALTIEROTTI, T. Investigation of the effect of free fall readaptation as part of the shuttle prontribution to basic vestibular physit to the problem of space sickness	A77-24166 ulated A77-24169 .n mammals A77-24147 A77-23500 in A77-24360 : reactivity A77-24171 on after A77-24162 .on the totogram: A	HERRMANN, W.  Study with a multi-threshold HZE-particle dosimeter using plastic detectors  HERROB, R. L.  Hass distribution of the human body using biostereometrics [AD-A029402]  The effects of prolonged spaceflight on tregional distribution of fluid, muscle Biostereometric results from Skylab  HIROSHIGB, T.  Role of ketone bodies in nonshivering thermogenesis in cold-acclimated rats  HITZ, F. R.  Payload crew activity planning integratic 2: Inflight operations and training for [NASA-CR-151187]  HOPPELT, W.  Experimental investigations on motion sic susceptibility  HOROWITZ, J. H.  Effects of acceleration on thermoregulator responses of unanesthetized rats	A77-26582  A77-24154  #77-18735  he and fat:  #77-19738  A77-24358  DD. Task Dr payloads  #77-18739  kness  #77-19734  Dry  A77-23425
Deconditioning during prolonged immersion possible countermeasures  Renal osmoregulatory function during simpace flight  GRIGOREV, IU. G. Investigation of radiation sensitivity inder long duration weightlessness  GRIGORIAM, R. A. Cerebellum and gravity  GROVER, R. F. Lung mast cell density and distribution chronically hypoxic animals  GROZA, P. Bypergravitation and sympatho-adrenergic GROWBAUM, B. W. Body composition changes in men and wome 2-3 weeks of bed rest  GUALTIEROTTI, T. Investigation of the effect of free fall vestibular organ and of its post-fligh readaptation as part of the shuttle prontribution to basic vestibular physi	A77-24166 inlated A77-24169 in mammals A77-24147 A77-23500 in A77-24360 : reactivity A77-24171 in after A77-24162 . on the it ology and	HERRMANN, W.  Study with a multi-threshold HZE-particle dosimeter using plastic detectors  HERROW, R. L.  Hass distribution of the human body using biostereometrics [AD-A029802]  The effects of prolonged spaceflight on tregional distribution of fluid, muscle Biostereometric results from Skylab  HIROSHIGE, T.  Role of ketone bodies in nonshivering thermogenesis in cold-acclimated rats  HITZ, F. R.  Payload crew activity planning integratic 2: Inflight operations and training for [NASA-CR-151187]  HOFFELT, W.  Experimental investigations on motion side susceptibility  HOROWITZ, J. H.  Effects of acceleration on thermoregulators	A77-26582 A77-24154 B77-18735 he and fat: B77-19738 A77-24358 on. Task or payloads B77-18739 ckness B77-19734 ory A77-23425
Deconditioning during prolonged immersion possible countermeasures  Renal osmoregulatory function during simpace flight  GRIGOREV, IU. G. Investigation of radiation sensitivity inder long duration weightlessness  GRIGORIAM, R. A. Cerebellum and gravity  GROVER, R. F. Lung mast cell density and distribution chronically hypoxic animals  GROZA, P. Bypergravitation and sympatho-adrenergic  GROWALDE, B. W. Body composition changes in men and wome 2-3 weeks of bed rest  GUALTIEROTTI, T. Investigation of the effect of free fall vestibular organ and of its post-fligh readaptation as part of the shuttle prontribution to basic vestibular physito the problem of space sickness	A77-24166 inlated A77-24169 in mammals A77-24147 A77-23500 in A77-24360 : reactivity A77-24171 in after A77-24162 . on the it ology and	HERRMANN, W.  Study with a multi-threshold HZE-particle dosimeter using plastic detectors  HERROW, R. L.  Hass distribution of the human body using biostereometrics [AD-A029802]  The effects of prolonged spaceflight on tregional distribution of fluid, muscle Biostereometric results from Skylab  HIROSHIGE, T.  Role of ketone bodies in nonshivering thermogenesis in cold-acclimated rats  HITZ, F. R.  Payload crew activity planning integratic 2: Inflight operations and training for [NASA-CR-151187]  HOFFELT, W.  Experimental investigations on motion side susceptibility  HOROWITZ, J. H.  Effects of acceleration on thermoregulator responses of unanesthetized rats	A77-26582  A77-24154  #77-18735  he and fat:  #77-19738  A77-24358  DD. Task Dr payloads  #77-18739  kness  #77-19734  Dry  A77-23425

HORSTHAN, D. H.

Hypoxia-induced metabolic and core tem	perature		J	
changes in the squirrel monkey	A77-24365	JAKOWATZ, C. V., JR.	•	
HORWITZ, B. A. Effects of acceleration on thermoregul	.atory		aphy using video reco es	orded
responses of unanesthetized rats	177 02105	T1 400 0 0		A77-2624
Spinal cord thermosensitivity and sort neural signals in cold-exposed rats	A77-23425 ing of	JAMES, T. W.  Hodified collins per Development and me		
HRISTIC, D.	A77-24357	[AD-A028355] JEHCKS, H. S.	7444	N77-1874
New method of artificial motion synthe application to locomotion robots and	manipulators	Human engineering: design	Crew systems tool for	
nnga 1	A77-24830	Ibucau o C		N77-1973
HUGG, J.  Mass distribution of the human body us biostereometrics	ing	JEHSEH, F. C. Technology advancement electrolysis process	ent of the static fee	ed water
[AD-A029402] HWANG, C.	N77-18735	[ NASA-CR-151934]	odine dispenser and d	N77-1874 letector
An experimental validation of mathemat simulation of human thermoregulation		[ WASA-CR-151214 ] JOBIN, M.		N77-1975
HYATT, K. H.	A77-25217	norepinephrine in	ovascular responses t trained and nontrain	
Reversal of bedrest-induced orthostati intolerance by lower body negative p saline		subjects	·	A77-2435
Sqline	<b>177-24504</b>	[ NASA-CASE-NPO-139	system for chromosome 913-1]	analysis N77-1975
		JOHNSTON, R. S. Biomedical results o	of the Skylab Program	
IAGODOVSKII, V. S. Effect of space flight on skeletal bon	oc in rate	JOHES, W. L.		A77-2413
/light- and electron-microscopic inv		Space age heatlh can	e delivery:	N77-1974
IAKOVLEVA, I. IA. Study of space perception functioning	during		te shifts during bed	
simulation of certain space flight f	actors A77-24167	isometric and isot	onic exercise	A77-2342
INFIBERA, I. Influence of accelerations, additional	woight load			
and hypokinesia on protein catabolis Japanese quail /Coturnix Coturnix Ja	m in the	KAISER, R.	K	
IARULLIN, KH. KH.	A77-26106		primary cosmic heavy	ions on
Antiorthostatic test as a model to stu antigravity mechanisms of the cardio		KAK, A. C.		A77-2415
system	A77-24163	Computerized tomogra fluoroscopic image	iphy using video reco es	
IGNATOV, I. V. Irradiation of bio-objects aboard the	Cosmos 690	KAKURIH, L. I.		A77-2624
biosatellite	A77-24146	Physiological effect hypokinesia	ts induced by antiort	
ILIE, E. A. Investigation of radiation sensitivity	in manuals	KALAHDAROVA, H. P.		A77-2413
under long duration weightlessness	A77-24147		liation sensitivity i on weightlessness	n mammals
ILIN, V. M. Evoked responses of visual cortex under		Effect of irradiation	on in the space envir	A77-2414 conment on
stimulation of hypothalamic formatio	ns A77-26569	the blood-forming	system in rats	A77-2414
ILIHA-KARUBVA, B. I. Combined effect of space flight and ra- skeletal muscles of rats	diation on	KALDEWEY, H. Considerations of ge	otropism in plants	A77-2413
Effect of space-flight factors on skel	A77-24503 etal muscles		on growth rate on th	
in rats	A77-26104	of the external re	spiratory system	A77-2612
On methods of detection of extraterres	trial life A77-24175		ed by 24 hour continuic monitoring in 50	
On micro-organisms of the stratosphere			ithout apparent hear	
INTARO, G. P.		KAHTOR, S. L.	,	
<pre>Bndocrine-metabolic effects in short-do high-workload missions: Feasibility {AD-A030524}</pre>		Characteristics of c dogs during failur system in a sealed	e of the environment	
IUSHCHENKO, A. S. Semi-auto manipulator control systems		RATROVSKII, B. S.		A77-2611
dynamic analysis with computer	A77-24831		g physical exercises space flight	following
IVANOVA, M. V. Automatic control of decompression on	the basis of	KAUPMAN, G. R.		A77-24168
the impedance signal of the body	A77-25418	Pioneer 10 and 11 Jo dose and biologica		
		KAZAKOV, G. A. On micro-organisms o	of the ptysteenher-	A77-2415
		on arcro-ordanisms o	- rae arratoshuere	

177-24178

PERSONAL AUTHOR INDEX KUZIN, R. A.

KBATING, K. I. Algal metabolite influence on bloom sequ	ence in	ROSTIBA, L. H. Cytogenetic analysis of seeds of Crepis	capillaris
eutrophied freshwater ponds [PB-258445/6]	N77-18727	/L/ Wallr. exposed on board the earth satellite Cosmos 613	
REIL, L. C. Reduction in plasma vasopressin levels of		KOTOVSKAIA, A. R.	A77-24152
dehydrated rats following acute stress RELLER, R. A.	A77-25147	Human tolerance to acceleration after ex weightlessness	A77-24142
Tumor localization and beam monitoring - Electrofluorotomography		KOVALENKO, E. A. Space flight effect upon the bioenergeti	
Computerized tomography using video reco	A77-23321 orded	skeletal muscles in rats	A77-24161
fluoroscopic images	A77-26244	Changes in fluid balance during prolonge hypokinesia with antiorthostatic postu	re
KELSEH, S. G. Interaction of lung volume and chemical respiratory muscle EMG and respiratory		Characteristics of changes in the body s dogs during failure of the environment system in a sealed chamber	
KBYS, C. W. The effects of prolonged spaceflight on	the	KOVALEV, E. E.	A77-26113
regional distribution of fluid, muscle Biostereometric results from Skylab	and fat:	Radiation risk on earth and in space	A77-23496
KHUDIAKOVA, H. A. Deconditioning during prolonged immersion	N77-19738 on and	KOVROV, B. G.  Dependence of the species composition of culture of microalgae on illumination	
possible countermeasures	A77-24166	rate of nutrients	A77-26118
KING, W. H. Coronary risk factors in flying personne progress report	1 - A	KOYAL, S. W.  Ventilatory and gas exchange dynamics in to sinusoidal work	response
KIRK, P. J.	A77-24510	KOZERENKO, O. P.	177-24368
Cardiovascular responses of men and wome body negative pressure	n to lower A77-24507	Characteristics of postural self-regulat complex spatial environments and after of weightlessness	
KLEIN, K. B. Athletic endurance training: Advantage		KOZLOVA, S. B.	A77-24170
flights? The significance of physical for selection and training of Spacelah	fitness crews	Irradiation of bio-objects aboard the Co biosatellite	
KNOLL, A. H.	N77-19740	KOZYRBYSKAIA, G. I.	A77-24146
Variation in stable carbon isotopes in c matter from the Gunflint Iron Formation		Renal osmoregulatory function during sim space flight	ulated A77-24169
KODAHA, A. H.		KREIDICH, IU. V.	
Body composition changes in men and wome 2-3 weeks of bed rest	n after A77-24162	Adaptation of vestibular responses to ga stimulation of the labyrinths	A77-25417
KOLESNIK, A. G.		KRIVRHKOVA, H. P.	
Potassium and phosphorus content and Ca- inclusion in bones and teeth of rats a 22-day space flight aboard the biosate	fter a	Effect of space-flight factors on skelet in rats	al muscles 177-26104
Cosmos 605	A77-26105	KROTOW, W. P. Changes in fluid balance during prolonge	
KOLLIAS, J. Fluid and electrolyte shifts in women du	ring +Gz	hypokinesia with antiorthostatic postu	A77-26107
acceleration after 15 days' bed rest	A77-23424	RRUPINA, T. N. Effect of antiorthostatic bed rest on th	e human body A77-24165
Irradiation of bio-objects aboard the Co biosatellite	smos 690	A study of the cumulative effects of rep exposures to radial accelerations	
KONDRATEV, IU. I.	A77-24146	Comparative evaluation of studies of the	A77-24172 effect of
Investigation of radiation sensitivity i under long duration weightlessness		hypoxia of different levels on immunob status in man	iological
KONZ, S.	A77-24147	KUCHBROV, V. B.	A77-26108
An experimental validation of mathematic simulation of human thermoregulation		Algorithms for combined and supervisor r manipulator control	
KOPANEV, V. I.	A77-25217	KUKLINSKI, P.	A77-24832
Investigation of the function of externa respiration in flying personnel	A77-25629	Athletic endurance training: Advantage flights? The significance of physical for selection and training of Spacelab	fitness
KORHBLUTH, I.  camp in temperature- and ADH-regulating after thermal stress		KULESHOV, V. S. Semi-auto manipulator control systems an	
KORNILOVA, L. M.	A77-24363	dynamic analysis with computer	A77-24831
Study of space perception functioning du simulation of certain space flight fac		KUZIN, R. A. Irradiation of bio-objects aboard the Co biosatellite	smos 690
KOROTAEV, H. H. Comparative evaluation of studies of the		Investigation of radiation sensitivity i	A77-24146 n mammals
hypoxia of different levels on immunoh status in man		under long duration weightlessness	A77-24147

A77-26108

·			
KUZMIH, M. P.		LUKIAROVA, H. P.	
Physiological effects induced by antiort hypokinesia	hostatic	Some personality characteristics of pilo with different levels of achievement	ot trainees
nyponthesia	A77-24139		A77-26116
A study of the cumulative effects of rep	eated	LORIN, A. A.  Bffect of space flight factors and eleva	
exposures to radial accelerations	A77-24172	temperatures on seeds of diploid and t	
KURMINA, G. I.		buckwheat	
Interaction of the regulatory systems fo muscle-contraction thermogenesis and e		LUPANDIN; IU. V.	A77-25425
respiration		Interaction of the regulatory systems for	
FROM 1880 T C	A77-26225	muscle-contraction thermogenesis and e	external
KUZHETZ, L. H.  Control of thermal balance by a liquid c	irculating	respiration	A77-26225
garment based on a mathematical repres		LUTWAK, L.	
of the human thermoregulatory system [NASA-TM-X-58190]	N77-19756	Mineral and nitrogen metabolic studies of flights and comparison with effects of	
KTRIAKIDES, K.		long-term recumbency	
Some effects of infrasound on task perfo	rmance A77-24310	LYSENKO, S. V.	A77-24141
	A/7-24310	On micro-organisms of the stratosphere	
			A77-24178
LABRIE, A.		R <b>a</b>	
Metabolic and cardiovascular responses t	٥	M	
norepinephrine in trained and nontrain subjects	ed human	MACDOUGALL, J. D.  Muscle glycogen repletion after high-int	ensity
	A77-24359	intermittent exercise	-
LACKHER, J. R. Induction of illusory self-rotation and	nvetaamne	BACELROY, R. D.	A77-24355
by a rotating sound-field	a, o cay mao	Speculations on the consequences to biol	logy of
	A77-24506	space shuttle-associated increases in	global
LAHIRI, S. Lung elasticity and airway dynamics in P	eruvian	UV-B radiation [NASA-TH-X-73200]	N77-18728
natives to high altitude		MADERO, R. P.	
LAKOTA, M. G.	A77-24361	Pilot factors considerations in see-to-l [AD-A030789]	land 1975-19759
Characteristics of changes in the body s		MARKUBO, H.	
dogs during failure of the environment system in a sealed chamber	al control	Role of ketone bodies in nonshivering thermogenesis in cold-acclimated rats	
System in a seared cuanter	A77-26113	thermogenesis in cold acciliated fats	A77-24358
LANTZ, J. B.	****	MAGNUSSON, G.	
Advanced combined iodine dispenser and d [HASA-CR-151214]	#77-19753	The rating and measuring of road roughne [VTI-83-A]	#77-18742
LASSER, E. C.		MAILIAN, B. S.	
Tumor localization and beam monitoring - Electrofluorotomography		Space flight effect upon the bioenergeti skeletal muscles in rats	.cs of the
	A77-23321		A77-24161
LATIP, A. Bio-gas production from alligator weeds		HAILLIE, H. D. Pioneer 10 and 11 Jovian encounters - Ra	diation
[ NASA-CR-149809 ]	N77-19729	dose and biological lethality	
LAVHIKOV, A. A.  Principles of aviation and space medicin	e	MAKSIMOV, I. V.	A77-24151
[NASA-TT-P-17511]	ัท77-18734	Prevention of decompression sickness dur	
LBACE, C. Mineral and nitrogen metabolic studies o	n Chulah	short-term flights in a depressurized high altitudes	cabin at
flights and comparison with effects of		nigh attitudes	A77-26114
long-term recumbency	.177 20464	MALHOTRA, H. S.	
LEBID, O. H.	A77-24141	Changes in orthostatic tolerance in man altitude of 3500 meters	at an
Electronic device for studying high-speed			A77-24505
LEBLANC, J.	A77-26571	MARKARIAH, M. V.  Metabolic processes in hypokinetic and	
Metabolic and cardiovascular responses to		rehabilitated men	
norepinephrine in trained and nontraine subjects	ed human	HARSH, J. C., IV	A77-24164
-	A77-24359	An evaluation of the 1974 and 1975 restr	
LESKOV, A. G. Semi-auto manipulator control systems and	i thair	[PB-258585/9] HASEHKO, V. P.	N77-18748
dynamic analysis with computer	i their	Changes in fluid balance during prolonge	đ
· Serbangiti a	A77-24831	hypokinesia with antiorthostatic postu	
LEVENTHALL, H. G. Some effects of infrasound on task performance.	rmance	MASHIBSKII, A. L.	A77-26107
	A77-24310	Cytogenetic analysis of seeds of Crepis	
LIEBACHEVA, B. P. Comparative evaluation of studies of the	effect of	/L/ Wallr. exposed on board the earth satellite Cosmos 613	artificial
hypoxia of different levels on immunob:			A77-24152
status in man	A77-26108	MASLEN, K. R. The effects of 3 hours of vertical vibra	tion at 5
LIU, J.		Hz on the performance of some tasks	
Superoxide dismutase /SOD/ activity in hy mammalian systems	ypoxic	[RAE-TR-76011] HASUD, A.	N77-18746
	A77-23427	An experimental validation of mathematic	al .
LOGINOVA, E. V. Pathophysiological mechanisms of the effe	ect of	simulation of human thermoregulation	A77-25217
hyperoxia on the function of the lungs	in man	MATSHEV, E. I.	
•	A77-25424	Physiological effects induced by antiort hypokinesia	hostatic
		plhavrnearg	A77-24139

PERSONAL AUTHOR INDEX BISHI, Y.

Effect of antiorthostatic bed rest on th	e human body A77-24165	Cardiovascular responses of men and wome	n to lower
MATVIENKO, V. P.		body negative pressure	
Potassium and phosphorus content and Ca- inclusion in bones and teeth of rats a 22-day space flight aboard the biosate	fter a	MOOIJ, H. A. Human pilot describing function, remnant	A77-24507
Cosmos 605	A77-26105	associated information for pitch attit control: Results from in-flight and	
HAUSER, R. Measuring device for His-bundle analysis heart	at the	ground-based tracking experiments [NLR-TR-75062-U] HOORE-EDB, H. C.	N77-18744
HAYBR, R. T.	A77-23621	Renal electrolyte circadian rhythms - In from feeding and activity patterns	•
Vehicle/manipulator/packaging interaction synergistic approach to large erectable		HORIYA, K.	A77-26582
	A77-25746	Role of ketone bodies in nonshivering thermogenesis in cold-acclimated rats	.77 00050
MCLACHLAM, J. C. Instructional systems development - A ne	w approach	HORSE, J. T.	A77-24358
to flight-crew proficiency	A77-24856	Fluid and electrolyte shifts during bed isometric and isotonic exercise	
MCMURTRY, I. P. Lung mast cell density and distribution	in	MOSHIRI, G. A.	A77-23423
chronically hypoxic animals	A77-24360	Interrelationships between certain micro and some aspects of sediment-water nut	
MCNAUGHTON, G. B. Visual field contraction during G stress	a+ 13	exchange in two bayou estuaries, phase	1 and 2 N77-19730
45, and 65 deg seatback angles		[PB-259538/7] HOTOYAHA, B. K.	
HCNEE, R. C.	A77-24501	Lung elasticity and airway dynamics in P natiwes to high altitude	
Psychometric characteristics of astronau	N77-19741	MULVIHILL, S. J.	A77-24361
MCHULTY, P. J.  Role of Cerenkov radiation in the eye-fl observed by Apollo astronauts	ashes	Synthesis of phospholipids and membranes prebiotic conditions	in A77-24998
MEDVEDEV, V. S.	A77-24153	MUNKELT, U. G. Human engineering: Crew systems tool fo	
Semi-auto manipulator control systems an dynamic analysis with computer	d their	design	N77-19737
MBINSCHEIN, W. G.	A77-24831	MURRAY, R. W. Shuttle era waste collection	
Variation in stable carbon isotopes in o matter from the Gunflint Iron Formatio		MADONY & C	A77-26052
MIASNIKOV, V. I.	A77-24618	HURTHY, W. S. Changes in orthostatic tolerance in man altitude of 3500 meters	at an
Characteristics of postural self-regulat			A77-24505
complex spatial environments and after of weightlessness	-effects A77-24170	Percuraneous multiple electrode connecto	
MICHEL, B. L. Biomedical results of the Skylab Program		parameters and fabrication (biomedical [NASA-CR-144859] MYRRE, L. G.	N77-19748
	A77-24131	Pluid shifts during thermal stress with	and .
Physiological effects induced by antiort hypokinesia	hostatic	without fluid replacement	A77-24362
	A77-24139	N	
MIKHAILOYSKII, G. P. A study of the cumulative effects of rep exposures to radial accelerations	eated	WATOCHIW, IU. V. Renal osmoregulatory function during sim	n lateln
	A77-24172	space flight	
MIKHELSON, D. A. Indicators of nitrogen, carbohydrate and metabolism in man during prolonged sta		BEUSTROBY, G. V. Potassium and phosphorus content and Ca-	A77-24169 45
hyperbaric conditions	A77-26110	inclusion in bones and teeth of rats a 22-day space flight aboard the biosate	fter a
HILLER, M. J. Hypoxia and carbon dioxide as separate a	ъđ	Cosmos 605	A77-26105
interactive depressants of ventilation		WEWSON, B. D. Body composition changes in men and wome	
MILLER, M. W. Pioneer 10 and 11 Jovian encounters - Ra	diation	2-3 weeks of bed rest	A77-24162
dose and biological lethality	A77-24151	NEWTOH, S. D. Cardiovascular responses of men and wome	n to lower
MINARY, A. A. Automatic control of decompression on th	e basis of	body negative pressure	A77-24507
the impedance signal of the body	A77-25418	WICHOLSON, A. N. experimental basis for the use of hypnot aerospace crews	ics by
Influence of heavy ions on the transform	ing	•	N77-19743
activity of DNA	A77-24158	HICOLESCU, E.  Hypergravitation and sympatho-adrenergic	reactivity
#ISUROVA, E.  Biochemical changes in rats flown on boat Cosmos 690 biosatellite	rđ the	WISHI, Y.  Effective temperature scale useful for hy	
	A77-24149	hyperbaric environments	
BONGE, P. R. Descriptive communication structure metropreliminary logical and empirical analy [AD-A030512]			A77-24502

### PERSONAL AUTHOR INDEX

•	
HOGUES, C.	PEGDEN, C. D.
Lesional effects of primary cosmic heavy ions of rat brain	n Pormatting and organization of a human engineering standard
A77-2	155 177-25074
HOSKIN, A. D.	PEPINE, C. J.
Investigation of radiation sensitivity in mamma under long duration weightlessness	lls Transient asymptomatic S-T segment depression during daily activity
177-20	
HOVAR, L.	PETERS, G. L.
Heat exchange between the organism and environs under conditions of weightlessness - Hethodic	
approach	[AD-A030524] #77-18736
177-2	
MOVIKOV, L. L. Potassium and phosphorus content and Ca-45	Indicators of nitrogen, carbohydrate and lipid metabolism in man during prolonged stay under
inclusion in bones and teeth of rats after a	hyperbaric conditions
22-day space flight aboard the biosatellite	A77-26110
Cosmos 605	PETSCHOW, D.  105 Causes of high blood 02 affinity of animals living
	at high altitude
0	PPEIFFER, B. W.
OGAHOV, V. S.	Effects of cold exposure and dehydration on renal
On the mechanisms of changes in skeletal muscle	s function in black-tailed prairie dogs
in the weightless environment	143 PFISTER, A.
OGORODNIKOVA, L. G.	Lesional effects of primary Cosmic heavy ions on
Some indicators of natural immunity in rabbits	rat brain
following exposure to increased pressure for days	10 A77-24155 PHILLIPS, J. R.
177-26	
OLKHOVEHKO, V. P.	mammalian systems A77-23427
Effect of space flight factors and elevated temperatures on seeds of diploid and tetraplo	
buckwheat	Detection of microbial infection in blood and
OOSTERVELD, W. J.	425 antibiotic determinations [HASA-CASE-GSC-12045-1] N77-18733
successful transfer of adaptation environments	
navy flight training	Effects on body size and composition of chronic
OSBORNE, D. J.	733 exposure to altered gravity [NASA-CR-149804] N77-19749
Hormones and the growth of plants in response t	
gravity	Bffect of space flight factors and elevated
OSER, H.	temperatures on seeds of diploid and tetraploid buckwheat
Feutral buoyancy: One possible tool for man's	A77-25425
training in a simulated zero-g environment	PODLUZHNATA, G. B.
N77-19	736 Investigation of radiation sensitivity in mammals under long duration weightlessness
The role of brief hypocapnia in the ventilatory	A77-24147
response to CO2 with hypoxia	PODLIZERAIA, G. H.  288 Effect of irradiation in the space environment on
Hypoxia and carbon dioxide as separate and	the blood-forming system in rats
interactive depressants of ventilation	A77-24148
A77-23	289 POLHEMUS, J. T.  Cardiovascular instrumentation for spaceflight
Coronary risk factors in flying personnel - A	[NASA-CR-151935] N77-18730
progress report	POLIAROV, V. V.
B/7-24	510 Some parameters of phosphocreatine metabolism in man during increased and decreased energy
р .	expenditures
<u>-</u>	POLIAKOVA-KRSTEVA, O.
PACE, W.  Body composition changes in men and women after	
2-3 weeks of bed rest	and of the acid phosphatase /AP/ in liver cells
PALMER, H. B.	162 of embryos and chickens irradiated with gamma ray A77-23768
Regional measurement of body nitrogen	POHIOTOV, IU. D.
[NASA-CR-151200] N77-18	
PARTEY, T. P. Influence of heavy ions on the transforming	real and simulated space flight A77-24168
activity of DNA	POPKOV, V. L.
PARPEROV, G. P.	158 Characteristics of changes in the body state of dogs during failure of the environmental control
Effect of space flight factors and elevated	system in a sealed chamber
temperatures on seeds of diploid and tetraplo	
buckwheat	POPOV, B. P. 425 Algorithms for combined and supervisor robot and
PAYNE, P. A.	manipulator control
Cardiovascular responses of men and women to lo	
body negative pressure A77-24	POPOV, I. G. 507 Butrition hygiene for flying personnel in
PEASE, V. P.	prolonged flights
Role of Cerenkov radiation in the eye-flashes observed by Apollo astronauts	POPOV, V. I.
A77-24	
	biosatellite

PERSONAL AUTHOR-INDEX BYTHOY, H. I.

Investigation of radiation sensitivity in mammals under long duration weightlessness A77-24147	REMBIE, P. A. Automated clinical system for chromosome analysis [NASA-CASE-BPO-13913-1] 8777-19750
PORTUGALOV, W. V.  Combined effect of space flight and radiation on	RECTOVA, B. P. Comparative evaluation of studies of the effect of
skeletal muscles of rats	hypoxia of different levels on immunobiological status in man
Bffect of space-flight factors on skeletal muscles in rats	A77-26108
POTAPOV, A. U.	Multiple images as a function of LEDs viewed during vibration
On the mechanisms of changes in skeletal muscles in the weightless environment	A77-25075
A77-24143 POWELL, J. D. Advanced combined iodine dispenser and detector	Computerized X-ray reconstruction tomography in stereometric analysis of cardiovascular dynamics A77-24737
[ WASA-CR-151214] W77-19753	HOBB, R. A.
PRASLICEA, B.  Biochemical changes in rats flown on board the Cosmos 690 biosatellite	Computerized X-ray reconstruction tomography in stereometric analysis of cardiovascular dynamics
A77-24149	ROBERTSHAW, G. B.
PREDMERSZKY, T.  Study of the biochemical indicators of chronic	Maximal aerobic power in women cadets at the U.S. Air Force Academy A77-24508
irradiation in rats	ROBIN, B. D.
PRICE, D. C.  Body composition changes in men and women after	Superoxide dismutase /SOD/ activity in hypoxic mammalian systems A77-23427
2-3 weeks of bed rest	ROBINSON, S.
PROKHOHCHUKOV, A. A. Potassium and phosphorus content and Ca-45	Fluid shifts during thermal stress with and without fluid replacement
inclusion in bones and teeth of rats after a	A77-24362
22-day space flight aboard the biosatellite Cosmos 605	RODINA, G. P.  Effect of irradiation in the space environment on
PUBRHER, N. J.	the blood-forming system in rats
Geomycology	ROBTLING, P. G. Visual performance and image coding
PURHOVA, IA. I.	A77-24696
Comparative evaluation of studies of the effect of hypoxia of different levels on immunobiological status in man	ROGERS, J. G. Use of human engineering standards in design 177-25072
A77-26108	Formatting and organization of a human engineering standard
R R S S S S S S S S S S S S S S S S S S	ROMANOV, S. N.
RABLHAND, D. F. Rody composition changes in men and women after	Resonance effect of vibration on living structure of various organizational levels
2-3 weeks of bed rest A77-24162	ROMER, D. J.
RAITSES, I. V.  Effect of electrostimulation of the hypothalamus	Development of a front passenger aspirator air bag system for small cars
and limbic structures on vestibulo-somatic reflexes	[PB-259008/1] N77-19757 ROSEN, K. H.
A77-26117	Arrhythmias documented by 24 hour continuous electrocardiographic monitoring in 50 male
Mineral and nitrogen metabolic studies on Skylab flights and comparison with effects of earth	medical students without apparent heart disease A77-26241
long-term recumbency A77-24141	ROSHALA, J. L. Anthropometric test dummy, model 825-50, design,
RAMKOVA, B. V.  Effect of extreme factors on micro-organisms used	development and performance [PB-257179/2] N77-18749
for the control of the effectiveness of	ROUSSEAU-MIGHERON, S.
sterilization A77-24174	Metabolic and cardiovascular responses to norepinephrine in trained and nontrained human
On micro-organisms of the stratosphere	subjects A77-24359
RAZUMBBY, A. B. Cerebellum and gravity	ROUSSEL, B. Variations in evaporation and body temperatures
REEVES, J. T.	during sleep in man A77-23421
Lung mast cell density and distribution in chronically hypoxic animals	ROWLANDS, G. P. The effects of 3 hours of vertical vibration at 5
A77-24360	Hz on the performance of some tasks [RAE-TR-76011] N77-18746
Mineral and nitrogen metabolic studies on Skylab flights and comparison with effects of earth long-term recumbency	RUDOMETRIE, B. M.  Characteristics of postural self-regulation in  complex spatial environments and after-effects
A77-24141	of weightlessness
Performance of an observer in real time	RUGH, J. D.
reconnaissance [BHVG-PBWT-76-5] H77-18743	Inexpensive technique to record respiration during flight
BEITZ, G.  Bffect of space factors on Escherichia coli B/r	RYZHOV, H. I.
cells . A77-24177	Influence of heavy ions on the transforming activity of DNA
	A77-24158

1	t
3	
	ı

SABO, V.	
Influence of accelerations, additional we and hypokinesia on protein catabolism i Japanese quail /Coturnix Coturnix Japon	in the
•	A77-26106
SAGER, L. C. Conditions for improving visual informati processing	on
[AD-A029898] SALTO, F.	N77-18752
Evaluation of the toxicity of combustion	products A77-24453
SALB, D. G. Buscle glycogen repletion after high-interinterint exercise	ensity
SAMARIN, G. I.	A77-24355 ·
Adaptation of vestibular responses to gal stimulation of the labyrinths	
SANHARCO, M. E.	A77-25417
Computer analysis of arteriograms	A77-24738
SAUTKIN, V. S. Apparatus for transmitting physiological	data A77-26570
SCABLAW, L. A.  Human performance evaluation of matrix di Literature and technology review	splays:
[AD-A029932] SCRABPER, H.	¥77-18750
The Biostack as an approach to high LET r	esearch A77-24156
SCHANG, S. J., JR. Transient asymptomatic S-T segment depres during daily activity	sion
SCHAPPELL, R. T.	A77-26242
Cardiovascular instrumentation for spaces [NASA-CR-151935]	light N77-18730
SCHEGLOVA, G. V.  Effect of extreme factors on micro-organi	
for the control of the effectiveness of sterilization	
SCHELKOPP, J. D.	A77-24174
Shuttle era waste collection	A77-26052
SCREUER, J.	-
Cardiac responses to moderate training in SCRROCK, C. G.	177-24364
Detection of microbial infection in blood antibiotic determinations	and
[NASA-CASE-GSC-12045-1]	ช77-18733
SCHUBERT, P. H. Technology advancement of the static feed	vater
electrolysis process [NASA-CR-151934]	N77-18741
Advanced combined iodine dispenser and de [WASA-CR-151214]	tector N77-19753
SCHORING, J.	
Investigation on a passenger ride-comfort improvement system with limited control	surface
actuator performance for a flexible air [NLR-TR-75140-0]	craft 877-18745.
SCOTT, R. B. An evaluation of the 1974 and 1975 restra	int systems
[PB-258585/9] SEIBERT, G.	#77-18748 ·
Spacelab and its utilization for biomedic experiments	al .
SEIPERT. D. J.	A77-24145
SEIPERT, D. J.  SAINT simulation of a remotely piloted vehicle/drone control facility: Hodel	
CD) TEXT CROS 7 M	N77-19758
SELIVERSTOV, L. W. Irradiation of bio-objects aboard the Cos	
Irradiation of bio-objects aboard the Cos biosatellite	mos 690
Irradiation of bio-objects aboard the Cos biosatellite	

SEMENOV, V. G. Irradiation of bio-objects aboard the Cos	smos 690
biosatellite	A77-24146
SBROVA, L. V. Investigation of radiation sensitivity in	nammals
under long duration weightlessness  Effect of irradiation in the space enviro	A77-24147
the blood-forming system in rats	A77-24148
SEVERS, W. B. Reduction in plasma vasopressin levels of	
dehydrated rats following acute stress.	A77-25147
SHAPIRO, IA. H. Rotary motion of the body of an astronaut	± ▲77-23833
SHEPELEY, B. IA. Long-term space flights and human habitat	
SHOVKOPLIAS, O. A.	A77-26102
Indicators of nitrogen, carbohydrate and metabolism in man during prolonged stay hyperbaric conditions	lipid under
SHULZHENKO, B. B.	A77-26110
Deconditioning during prolonged immersion possible countermeasures	and
A study of the cumulative effects of repe	177-24166 eated
exposures to radial accelerations	A77-24172
Effect of acceleration growth rate on the of the external respiratory system	response
SHURUBURA, A. A. Automatic control of decompression on the	
the impedance signal of the body	A77-25418
SIEGEL, R. A. case in temperature- and ADS-regulating of	
after thermal stress	A77-24363
SIEGEL, S. M. Performance of fungi in low temperature a	ınd
hypersaline environments	A77-24176
Geomycology	A77-24179
SIMEOHOVSER, E. I. Localization of the lactate dehydrogenase and of the acid phosphatase /AP/ in liv	er cells
of embryos and chickens irradiated with	gamma rays 177-23768
SIROM, L. H. Superoxide dismutase /SOD/ activity in hy manmalian systems	poxic
SIMPSER, M.	A77-23427
Lung elasticity and airway dynamics in Pe natives to high altitude	ruvian
SKVORTSOVA, B. K.	A77-24361
Bffect of extreme factors on micro-organi for the control of the effectiveness of sterilization	sas used
SHIRBOYA, B. P.	177-24174
Botor activity of mice in a magnetic fiel varying strength	d of
SHITH, A. H.	177-26112 .
Physiological changes associated with lon increases in acceleration	g-term
SHITE, H.	A77-24138
Mineral and nitrogen metabolic studies on flights and comparison with effects of long-term recumbency	Skylab earth
	A77-24141
Life sciences and space research KIV; Pro of the Open Heeting of the Working Grou Space Biology, Hay 29-June 7, 1975, and Symposium on Gravitational Physiology,	ceedings p on
Bulgaria, May 30, 31, 1975	
· · · · · · · · · · · · · · · · · · ·	177 28428

A77-24130

A77-24738

PERSONAL AUTHOR INDEX VANGOOL, M. P. C.

SOMMERS, P. Conditions for improving visual informat	ion	TIKHONOV, M. A. Pathophysiological mechanisms of the effect of	
processing		hyperoxia on the function of the lungs in man	
[AD-A029898]	N77-18752	TIMBAL, J.	A77-25424
SOTHIROV, G. G. On methods of detection of extraterrestr	ial life	Experimental study of convective heat tr	ansfer
	A77-24175 ·	coefficient for the human body in wate	r
SPRITEL, T. W. Performance of fungi in low temperature	and	TIMOFREYA, W. T.	177-23426
hypersaline environments	ana .	Potassium and phosphorus content and Ca-	45
	A77-24176	inclusion in bones and teeth of rats a	fter a
SPOENDLIN, H. Ultrastructural and functional anatomy o	f the	22-day space flight aboard the biosate Cosmos 605	llite
vestibule	ı cue	003203 003	A77-26105
[NASA-TT-F-17405]	N77-18731	TITOV, A. A.	
STALRY, R. W. Fluid and electrolyte shifts during bed	rest with	Changes in fluid balance during prolonge hypokinesia with antiorthostatic postu	
isometric and isotonic exercise		nitournoord in an amountain bonen	A77-26107
	A77-23423	TIZOL, A. IA.	
STAZHADZE, L. L. Changes in fluid balance during prolonge	đ	A study of the cumulative effects of rep exposures to radial accelerations	eateu
hypokinesia with antiorthostatic postu	re	· ·	A77-24172
COTHERD D O	A77-26107	TODOROV, B. H. Localization of the lactate dehydrogenas	o /I DU /
STIBETT, H. O. Fluid and electrolyte shifts in women du	ring +Gz	and of the acid phosphatase /AP/ in li	
acceleration after 15 days' bed rest		of embryos and chickens irradiated wit	
STORIC, D.	A77-23424	TOWNEY, J. J.	A77-23768
New method of artificial motion synthesi		Anti-Ig autoantibody and complement-medi	ated
application to locomotion robots and m	anipulators A77-24830	destruction of neoplastic cells	N77-18724
STONE, B. M.	A//-24630	[NASA-CR-151206] TRIFTANIDI, L. A.	N//-18/24
experimental basis for the use of hypnot	ics by	Effect of space flight on skeletal bones	
aerospace crews	N77-19743	/light- and electron-microscopic inves	tigation/ A77-26103
STORM, W. P.	811-13143	TROSHIKHIN, G. V.	R//20103
Endocrine-metabolic effects in short-dur		Thermoregulatory responses in animals in	
high-workload missions: Feasibility s	tudy N77-18736	helium-oxygen atmosphere under elevate	A77-25345
STRAUCH, D.	411 107,50	TSYGAHOVA, H. I.	17, 23343
Rapid bacteriological diagnosis systems		Effect of antiorthostatic bed rest on th	
physical basis, noting splenic fever p [BMVG-FBWT-76-15]	17001 N77-18726	A study of the cumulative effects of rep	A77-24165 eated
SULLIVAN, D. J.		exposures to radial accelerations	
Aircrew training requirements for nap-of	-the-earth	Comparative evaluation of studies of the	177-24172
flight [AD-A030420]	N77-18754	hypoxia of different levels on immunob	
SUTTON, J. R.	• •	status in man	-
Muscle glycogen repletion after high-int intermittent exercise	ensity	TUCKER, A.	A77-26108
Intelmittent distant	A77-24355	Lung mast cell density and distribution	in
SWARTZ, W. P.		chronically hypoxic animals	A77-24360
Pilot factors considerations in see-to-1 [AD-A030789]	M77-19759	TWOHEY, J. J.	A77-24300
SYCHROV, M. A.		Bioprocessing development: Immune/cellu	
Irradiation of bio-objects aboard the Co biosatellite	SMOS 690	applications: Anti-Ig autoantibody an complement-mediated destruction of neo	
DIOSGUEILLU	A77-24146	cells	•
SZABO, L. D.		[ WASA-CR-151207 ]	N77-18725
Study of the biochemical indicators of c irradiation in rats	nronic	TYLER, C. W. Visual echoes - The perception of repeti	tion in
111441411111111111111111111111111111111	A77-24150	quasi-random patterns	
		Wignel proceeding of constitute income	A77-23291
Ţ		Visual processing of repetitive images	A77-24699
TRIBRY, S. H.	• • •		
The role of brief hypocapnia in the went response to CO2 with hypoxia	TTSTOLÀ	U	
	A77-23288	USHAKOV, A. S.	
Hypoxia and carbon dioxide as separate a interactive depressants of ventilation		Amino acid spectrum of human blood plasm: space flight and in antiorthostatic by	
THESTACTIVE debressance of Ashertaction	A77-23289	Space raight and in antiorthostatic hy	A77-24160
THOMAS, C.		Some parameters of phosphocreatine metab	
Effect of space factors on Escherichia c	O11 B/L	<pre>man during increased and decreased ener expenditures</pre>	-9¥
00215	A77-24177		A77-26109
THOMAS, J. C.  Haximal aerobic power in women cadets at	the T C	4.	
harinal aerobic power in women cadets at	CHE U.S	V	
	A77-24508	VAN BEAUHONT, W.	
TIGRANIAN, R. A. Biochemical changes in rats flown on boa	rđ the	Fluid and electrolyte shifts during bed : isometric and isotonic exercise	rest With
Cosmos 690 biosatellite			A77-23423
Determine and phageboung contact and do-	A77-24149	VANGOOL, H. F. C.	and
Potassium and phosphorus content and Ca- inclusion in bones and teeth of rats a		Human pilot describing function, remnant associated information for pitch attitudes	
22-day space flight aboard the biosate		control: Results from in-flight and	
Cosmos 605	A77-26105	ground-based tracking experiments [HLR-TR-75062-U]	N77-18744
•		f mm	

egya y szoj a meg kongregietak agen azól sítten jestetet letten jantalótatan tott i a oli til eller i lett. E

VASHKOV, V. I.  Effect of extreme factors on micro-organisms use	WANNER, JC. Introduction to the study of a mathematical model
for the control of the effectiveness of sterilization	of a pilot [OBERA, TP NO. 1976-118] A77-24425
¥ASILEVA, T. D.	74 WARD, G. R.  Muscle glycogen repletion after high-intensity
Antiorthostatic test as a model to study antigravity mechanisms of the cardiovascular	. intermittent exercise A77-24355
system . A77-2410	WASSERMAN, R.  63 Ventilatory and gas exchange dynamics in response
VAULINA, E. N. The evolutionary role of gravity	to sinusoidal work A77-24368:
A77-241: Cytogenetic analysis of seeds of Crepis capillar: /L/ Wallr. exposed on board the earth artificis satellite Cosmos 613	is Athletic endurance training: Advantage for space
VELASQUEZ, T.	52 WEST, D. A.
Lung elasticity and airway dynamics in Peruvian natives to high altitude	Reversal of bedrest-induced orthostatic intolerance by lower body negative pressure and
VELIKATA, R. R.	61 saline 177-24504
Evoked responses of visual cortex under stimulation of hypothalamic formations  A77-265	WHEDOW, G. D. Mineral and nitrogen metabolic studies on Skylab flights and comparison with effects of earth
VERBSECHAGIN, A. F. Algorithms for combined and supervisor robot and	long-term recumbency: A77-24141
manipulator control A77-248	
WERIGO, V. V.  Effect of irradiation in the space environment of	
the blood-forming system in rats A77-241	
VIERGEVER, E. A. A two-dimensional model for the cochlea. II - The heuristic approach and numerical results	Conditions for improving visual information
VIL-VILIAMS, I. P. Deconditioning during prolonged immersion and	70 processing [AD-A029898] N77-18752 WHITLE. H.
possible countermeasures A77-241	Mineral and nitrogen metabolic studies on Skylab
VLASOVA, T. F. Amino acid spectrum of human blood plasma during	long-term recumbency
space flight and in antiorthostatic hypokinesis A77-2418 Some parameters of phosphocreatine metabolism in	a WHITTLE, N. W.  The effects of prolonged spaceflight on the
man during increased and decreased energy expenditures	Biostereometric results from Skylab N77-19738
VOGT, L. H. Physiological effects of sustained acceleration	OP WICHNAM, B.  Inexpensive technique to record respiration during flight
A77-2413	37 A77-24511
VOLOSHIM, V. G.  Bemodynamics of healthy individuals under various regimes of lower body negative pressure	Hz on the performance of some tasks
VOLOVICH, V. G.	WILLIAMS, B. A.
Life support of space crews after forced landing on ground or water	Cardiovascular responses of men and women to lower body negative pressure
VOLUENTE, A. I.	WINGET, C. H.
Potassium and phosphorus content and Ca-45 inclusion in bones and teeth of rats after a 22-day space flight aboard the biosatellite	Two mechanisms of rephasal of circadian rhythms in response to a 180 deg phase shift /simulated 12-hr time zone change/
Cosmos 605	
WRANCIANU, R.  Hypergravitation and sympatho-adrenergic reactivi	
VUKOBRATOVIC, H.  You method of artificial motion synthesis and application to locomotion robots and manipulate a77-2483	WORTHAM, D. B. SAINT simulation of a remotely piloted ors vehicle/drone control facility: Model
W	#U, D. Arrhythmias documented by 24 hour continuous
WAHREEBROCK, S. A.  Dependency of hypoxic pulmonary vasoconstriction on temperature	electrocardiographic monitoring in 50 male medical students without apparent heart disease A77-26241
A77-2342	22 WURRDINGER, I.
WALL, R. J. Automated clinical system for chromosome analysis (#ASA-CASE-BPO-13913-1] #77-1975	
FALE, L.  Dynamic control characteristics and brain-electri	i.c
regulation of the vigilance of man during the performance of control tasks	

A77-23547

TAMAMOTO, K. Acute combined effects of HCW and CO, with special reference to a theoretical consideration of acute combined effects on the basis of the blood cyanide and COHb analyses

A77-24455

YIPINTSOI, T.
Cardiac responses to moderate training in rats
A77-24364

YOUNG, H. L.
Pluid and electrolyte shifts during bed rest with isometric and isotonic exercise A77-23423

YOUNG, L. R.
Integration of visual and motion cues for flight
simulator requirements and ride quality

N77-18740

investigation [NASA-CR-149667] Gravity and embryonic development

A77-24136

Z

EAVOLUBALL, B. S.

Bffect of extreme factors on micro-organisms used for the control of the effectiveness of sterilization

EBNKEVICH, S. L.
Algorithms for combined and supervisor robot and manipulator control

ZHIZHIMA, W. A.

Potassium and phosphorus content and Ca-45

inclusion in bones and teeth of rats after a
22-day space flight aboard the biosatellite
Cosmos 605

ZHMUR, IU. E.
Automatic control of decompression on the basis of
the impedance signal of the body A77-25418

		<del></del>		
1. Report No.	2. Government Access	ion No.	3. Recipient's Catalog	No.
NASA SP-7011 (168)	<del></del>			
4. Title and Subtitle			5. Report Date	
AEROSPACE MEDICINE AN	D BIOLOGY		June 1977	
A Continuing Bibliogr	aphy (Supplem	ent 168)	6. Performing Organiz	ation Code
7. Author(s)			8. Performing Organiza	tion Report No.
•				·
		-	10. Work Unit No.	
9. Performing Organization Name and Address			IU. WORK UNIT NO.	
	National Aeronautics and Space Administration			
Washington, D. C. 20546			11. Contract or Grant	No.
washington, b. c. 205	snington, v. c. 20546			
		-	13. Type of Report an	d Period Covered
12. Sponsoring Agency Name and Address			to, type at troport an	
		ļ		
			<ol><li>Sponsoring Agency</li></ol>	Code
15. Supplementary Notes				
1,				
		•		,
16. Abstract			<del></del>	·····
16. Abstract				
This billing a large				
This bibliography list				
introduced into the N/	ASA scientifi	c and technical	information	system
in May 1977.			•	
				•
,				
				·
		•		
· ·				
·				
,				•
			•	j
17. Key Words (Suggested by Author(s))		18. Distribution Statement	·	· · · · · · · · · · · · · · · · · · ·
Aerospace Medicine				}
Bibliographies				]
Biological Effects		Unclassified - Unlimited		ed
2.0.03.00. 2.10003		oniciassified - offilmited		
10 Conview Cloself (of this second)	20. Security Of!! (-	f this man)	21. No. of Pages	22. Price*
19. Security Classif. (of this report) Unclassified	20. Security Classif. (o		- 1	
i inclassitiad				ا منتصب للما
Uliciassi i reu	Unclassi	fied	94	\$4.75 HC

<sup>\*</sup>For sale by the National Technical Information Service, Springfield, Virginia 22161

## **PUBLIC COLLECTIONS OF NASA DOCUMENTS**

### **DOMESTIC**

NASA distributes its technical documents and bibliographic tools to ten special libraries located in the organizations listed below. Each library is prepared to furnish the public such services as reference assistance, interlibrary loans, photocopy service, and assistance in obtaining copies of NASA documents for retention.

**CALIFORNIA** 

University of California, Berkeley

COLORADO

University of Colorado, Boulder

DISTRICT OF COLUMBIA

**Library of Congress** 

**GEORGIA** 

Georgia Institute of Technology, Atlanta

**ILLINOIS** 

The John Crerar Library, Chicago

**MASSACHUSETTS** 

Massachusetts Institute of Technology, Cambridge

MISSOURI

Linda Hall Library, Kansas City

**NEW YORK** 

Columbia University, New York

**PENNSYLVANIA** 

Carnegie Library of Pittsburgh

WASHINGTON

University of Washington, Seattle

NASA publications (those indicated by an "\*" following the accession number) are also received by the following public and free libraries:

**CALIFORNIA** 

Los Angeles Public Library San Diego Public Library

COLORADO

**Denver Public Library** 

CONNECTICUT

Hartford Public Library

**MARYLAND** 

**Enoch Pratt Free Library, Baltimore** 

**MASSACHUSETTS** 

**Boston Public Library** 

**MICHIGAN** 

**Detroit Public Library** 

MINNESOTA

Minneapolis Public Library

**MISSOURI** 

Kansas City Public Library

St. Louis Public Library

NEW JERSEY

Trenton Public Library

**NEW YORK** 

**Brooklyn Public Library** 

**Buffalo and Erie County Public Library** 

**Rochester Public Library** 

**New York Public Library** 

OHIO

Akron Public Library

Cincinnati Public Library

Cleveland Public Library

**Dayton Public Library** 

**Toledo Public Library** 

**OKLAHOMA** 

Oklahoma County Libraries, Oklahoma City

TENNESSEE

Memphis Public Library

**TEXAS** 

Dallas Public Library

Fort Worth Public Library

WASHINGTON

Seattle Public Library

WISCONSIN

Milwaukee Public Library

An extensive collection of NASA and NASA-sponsored documents and aerospace publications available to the public for reference purposes is maintained by the American Institute of Aeronautics and Astronautics, Technical Information Service, 750 Third Avenue, New York, New York, 10017.

#### **EUROPEAN**

An extensive collection of NASA and NASA-sponsored publications is maintained by the British Library Lending Division, Boston Spa. Wetherby, Yorkshire, England. By virtue of arrangements other than with NASA, the British Library Lending Division also has available many of the non-NASA publications cited in *STAR*. European requesters may purchase facsimile copy or microfiche of NASA and NASA-sponsored documents, those identified by both the symbols "#" and "\*", from: ESRO/ELDO Space Documentation Service, European Space Research Organization, 114, av. Charles de Gaulle, 92-Neuilly-sur-Seine, France.

# NATIONAL AERONAUTICS AND SPACE ADMINISTRATION WASHINGTON, D.C. 20546

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE \$300

NUMBER

# SPECIAL FOURTH CLASS MAIL Book



POSTMASTER:

If Undeliverable (Section 158 Postal Manual) Do Not Return

FREQUENCY

## NASA CONTINUING BIBLIOGRAPHY SERIES

TITLE

PREQUENCI	HILE	NOMBER
Monthly	AEROSPACE MEDICINE AND BIOLOGY  Aviation medicine, space medicine, and	NASA SP7011
	space biology	
Monthly	AERONAUTICAL ENGINEERING	NASA SP7037
	Engineering, design, and operation of aircraft and aircraft components	
Semiannually	NASA PATENT ABSTRACTS BIBLIOGRAPHY	NASA SP -7039
	NASA patents and applications for patent	
Quarterly	EARTH RESOURCES	NASA SP7041
	Remote sensing of earth resources by aircraft and spacecraft	
Quarterly	ENERGY	NASA SP7043
	Energy sources, solar energy, energy conversion, transport, and storage	
Annually	MANAGEMENT	NASA SP-7500
	Program, contract, and personnel management, and management techniques	

Details on the availability of these publications may be obtained from:

SCIENTIFIC AND TECHNICAL INFORMATION OFFICE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Washington, D.C. 20546