AEROSPACE MEDICINE
AND BIOLOGY
A CONTINUING BIBLIOGRAPHY
WITH INDEXES
(Supplement 146)
OCTOBER 1975

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
ACCESSION NUMBER RANGES

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

STAR (N-10000 Series)  N75-25863—N75-28002
IAA (A-10000 Series)    A75-35877—A75-38853

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 146)

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 September 1975 in

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

Scientific and Technical Information Office
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Washington, D.C.

OCTOBER 1975
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 for $4.00. For copies mailed to addresses outside the United States, add $2.50 per copy for handling and postage.
INTRODUCTION

This Supplement to *Aerospace Medicine and Biology* (NASA SP-7011) lists 223 reports, articles and other documents announced during September 1975 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 1975 Supplements.
AVAILABILITY OF CITED PUBLICATIONS

IAA ENTRIES (A75-10000 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., (A75-10763), when requesting publications.

STAR ENTRIES (N75-10000 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 to U.S. customers at the price shown in the citation following the letters HC (hard, paper, or facsimile copy). Customers outside the U.S. should add $2.50 per copy for handling and postage charges to the price shown. (Prices shown in earlier STAR volumes, 1962-1974, have been superseded but may be calculated from the number of pages shown in the citation. The price schedule by page count was given in the last STAR issue of 1974 or may be obtained from NTIS.)

Microfiche(1) are available at a standard price of $2.25 (plus $1.50 for non-U.S. customers) regardless of age for those accessions followed by a "#" symbol. Accession numbers followed by a "+" sign are not available as microfiche because of size or reproducibility.

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 $2.25 price for those documents identified by a "#" symbol.)

(1) 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 1/2 reduction)
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

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) at $10.00 each and microfilm at $4.00 each regardless of the length of
the manuscript. Handling and shipping charges are additional. 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

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 fur Luftfahrt/documentation 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 $18.75 domestic, $23.50 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
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 Bldg
Washington D C  20242

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

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 fur Luftfahrtdokumentation und -Information
8 Munchen 86
Postfach 880
Federal Republic of Germany
TABLE OF CONTENTS

IAA Entries (A75-10000) .................................................. 273
STAR Entries (N75-10000) ................................................. 285
Subject Index ................................................................. I-1
Personal Author Index ..................................................... I-23

TYPICAL CITATION AND ABSTRACT FROM STAR

NASA SPONSORED DOCUMENT

NASA ACCESSION NUMBER N75-10689*

THE DEPENDENCE OF REACTION TIMES ON THE LOCATION OF THE STIMULUS

G. S. Hall Washington NASA Oct 1974 16 p refs Transl into ENGLISH from Arch Anatomie Physiol (West Germany) 1879 p 1-10

(Contract NASw-2483) (NASA-TT-F-16001) Avail NTIS HC $3.25 CSCL 06P

Reaction times to stimuli were measured using simple apparatus in the upper arm, index finger and retina. It is found that reduced reaction times are not noticeably different for various parts of the body. In the case of the eye, the reaction times are similar to other functions. Therefore, the reaction method cannot be used to determine the sensible and motor conduction velocity and at the present time, the conduction velocity in the long paths of the spine are unknown.

TYPICAL CITATION AND ABSTRACT FROM IAA

AIAA SPONSORSHIP

AIAA ACCESSION NUMBER A75-12823*

Brain stem auditory evoked responses in human infants and adults K. Hecox and R. G. Gambros (California University, La Jolla, Calif.) Archives of Otolaryngology, vol 99, Jan 1974, p 30-33 17 refs Research supported by the Sloan Foundation, Grants No. PHS-NS-10482-01, No. NGR 05-009 198

Brain stem evoked potentials were recorded by conventional scalp electrodes in infants (3 weeks to 3 years of age) and adults. The latency of one of the major response components (wave V) is shown to be a function both of click intensity and the age of the subject. This latency at a given signal strength shortens postnatally to reach the adult value (about 6 msec) by 12 to 18 months of age. The demonstrated reliability and limited variability of these brain stem electrophysiological responses provide the basis for an optimistic estimate of their usefulness as an objective method for assessing hearing in infants and adults.
AEROSPACE MEDICINE AND BIOLOGY

A Continuing Bibliography (Suppl. 146) OCTOBER 1975

IAA ENTRIES


Soil sterilized in various ways was evaluated by transmission electron microscopy, viewing the thin sectioned preparations and replicas of frozen-etched preparations to determine the types of sterilization which would either destroy or leave unaltered the cellular structure of the indigenous microorganism. The cellular fine structure was altered by the heat treatments but was not affected by the other treatments with O3O4, Co 60 radiation, prolonged autoclaving and glutaraldehyde. The results are discussed (1) in relation to the residual biological information observable by electron microscopy in soil samples which have been sterilized to eliminate possible pathogens before handling of the soil, and (2) with the objective of obliterating the fine structure of the indigenous microorganisms during soil sterilization so that electron microscopy studies can be made of microorganisms inoculated into and grown in the presterilized soil

M G

A75-35902 * Simplified procedures for releasing and concentrating microorganisms from soil for transmission electron microscopy viewing as thin-sectioned and frozen-etched preparations D L Balkwill, D P Labeda, and L E Casida, Jr (Pennsylvania State University, University Park, Pa) Canadian Journal of Microbiology, vol 21, no 3, 1975, p 252-262 13 refs Grant No NGR-39-009-180

A75-35979 // Motion of pendulum-type biped systems (Perevidzhennie dvynogikh sistem maatnikovogo tipo) V B Larin Akademia Nauk SSSR, Izvestia, Mekhanika Tverdogo Tela, Mar-Apr 1975, p 58-61 6 refs In Russian

Vukobratovich et al (1972) have studied biped mechanisms in which the motion of the compensating mass is a major element of the system dynamics. The dynamic processes involved in the motion of biped walking mechanisms without a compensation mass are analyzed, and problems associated with controlling and stabilizing the motion of such mechanisms are examined

V P

A75-36070 Conduction cardiograph-bundle of His detector. L Siegel, E B Mahoney, J A Manning, and S Stewart (Rochester, University, Rochester, N Y) IEEE Transactions on Biomedical Engineering, vol BME-22, July 1975, p 269-274 8 refs

Heart block is a potential complication in the surgical repair of several congenital cardiac defects. The proximity of the bundle of His to these defects makes their repair particularly hazardous. Earlier workers devised a method for the anatomic localization of portions of the conduction system at the time of cardiotomy. This method is inefficient and time-consuming and therefore has not received general acceptance. This paper describes an instrument which expands upon that method to facilitate and expedite the localization process. This should enhance the overall utility of the method. The instrument is self-contained, reduces the signal complexity arriving from the exploring probe, analyzes the waveforms and responds instantly with an audible tone when the probe overlies the bundle of His

(Author)

A75-36071 Miniaturized electrode for on-line PO2 measurements. G Eden, G F Inbar (Technion - Israel Institute of Technology, Haifa, Israel), I Timor-Tritsch (Rambam Government Hospital, Haifa, Israel), and H I Bicher (Arkansas, University, Fayetteville, Ark) IEEE Transactions on Biomedical Engineering, vol BME-22, July 1975, p 275-280 7 refs Research supported by the Mediscience Corp

A new method of constructing miniaturized Clarke-type electrodes that can be fabricated en masse is described. These electrodes, which have typical Clarke electrode characteristics, are very small, thus allowing on-line monitoring, they are also very easy and inexpensive to manufacture. Real-time monitoring of PO2 is essential since continuous information about this parameter is often necessary in operating theaters, open-heart surgery, postoperative care units, coronary care units, intensive care of premature babies, and research

S J M

A75-36072 A computerized system for optimal filtering of left ventricular pressure data H Broman (Chalmers Tekniska Hoga-skola, Sahlgren Hospital, Gothenburg, Sweden), J Kvasnicka (Karlov University, Hradec Kralove, Czechoslovakia), B Lander, and E Varnauskas (Sahlgren Hospital, Gothenburg, Sweden) IEEE Transactions on Biomedical Engineering, vol BME-22, July 1975, p 287-292 5 refs. Research supported by the Swedish National Association against Heart and Chest Diseases

On account of noise, considerable errors appear in standard and pressure-record estimates of left ventricular performance. These errors can be reduced by adequate data processing. A clinically useful criterion of such processing of left ventricular pressure is presented. The reproducibility and clinical usefulness of the method are demonstrated by application to a number of experimental records as well as to a series of simulated pressure waves

(Author)

A75-36073 * Continuous cardiac output measurement - Aspects of Doppler frequency analysis. R S. MacKay and H B Hechtman (Boston University, Boston, Mass) IEEE Transactions on Biomedical Engineering, vol BME-22, July 1975, p 346-350 12 refs Grants No NGR-22-004-024, No NIH-7-915-00659

(End)
From the suprasternal notch blood flow velocity in the aorta can be measured non-invasively by a Doppler probe. Integration over systole after frequency analysis gives a measure of stroke volume if a separate diameter observation is incorporated. Frequency analysis by a zero crossing counter or by a set of parallel phase lock loops was less effective than a set of bandpass filters. Observations on dogs, baboons and humans before and after exercise or surgery suggest the indications to be useful. Application to judging heart failure by the effect of introducing a volume load is indicated. Changes in output also are measured in freely moving subjects (Author).

A75-36074

This work is directed toward reducing the number of parameters necessary to describe the electrical activity of the heart. The approach taken is one of template matching using a linear combination of a set of template waveforms to fit a set of pattern waveforms. Using selected electrocardiogram (EKG) waveforms as a template results in a great reduction in the number of parameters necessary to match other EKGs. (Author).


Experiments are conducted to study the possibility of preventing decompression sickness during accidental depressurization of an aircraft cabin at altitudes above 7 km by means of desaturation performed in flight. Desaturation is carried out using oxygen-respiratory equipment in conjunction with high-altitude gear, i.e., under conditions of a moderately rarefied atmosphere while inhaling oxygen or air with increased oxygen content. Experimental results show that breathing oxygen followed by an air-oxygen mixture or inhaling one mixture for 2-4 hr at altitudes of 4-4.5 km is an effective means of preventing decompression sickness during a long stay (24 hr) at altitudes of 11-12 km. (Author).


The effects of weightlessness, cosmic radiation, and other space environment factors on human metabolism and organ function are investigated. Studies reported concern characteristics of metabolism during prolonged water immersion, changes in vestibular function during space flight, otolitholaryngological problems in medical support of space flights, effects of muscle electrostimulation during simulated weightlessness, postmission plasma volume and red-cell mass changes in the crews of the first two Skylab missions, and Skylab task and work performance (experiment M-151 - time and motion study). (Author).


The renal function and regulation of the water-salt balance were investigated in cosmonauts postflight and in earth-bound simulation experiments with the aid of water loading and hormonal injections. Water- and ion-release were also studied during LBNP and physical exercises. The cosmonauts who performed space flights of 2 to 5 days showed water retention and increased urine excretion of salts during the first postflight days in response to a water load. After the 18-day flight water excretion remained unchanged whereas salt excretion increased. The study of the hormonal effect in simulation experiments demonstrated a normal renal response to the hormonal excretion. After the LBNP tests and physical exercises the water- and salt-excretion declined. The data on the blood- and urine-ionic composition, excretion of nitrogen metabolites, and hormones postflight as well as the results of load and functional tests suggest that changes in the renal function of cosmonauts in weightlessness are associated with regulatory effects on the kidney rather than disturbances in the function of nephron cells. (Author).


Translation

Twelve-day water immersion in a horizontal position was studied as a simulation of weightlessness in order to determine its effects on metabolism. Parameters of protein metabolism, carbohydrate metabolism, acid-base equilibrium, enzyme activity, and steroid hormonal activity were studied. Immersion was accompanied by increased residual blood NO2, reduced blood creatine, increased urine creatinine and creatine, increased blood glucose and lactate, respiratory and metabolic acidosis, increased creatine phosphokinase and lactate dehydrogenase isoenzyme activity, and intensified glucocorticoid and androgenic function (indicating stress). (Author).


Several studies in animals over the past decade have shown that prolonged exposures to pressures within the range 226 mm Hg to 160 mm Hg (30,000 to 37,500 ft) are likely to lead to brain damage. This occurs in neurological and behavioral disturbance, which may be subtle and reversible or gross and ultimately fatal. The appearance of these impairments is often delayed until several hours or even days after exposure. Immediate survival does not necessarily ensure recovery. In contrast, decompression to pressures below 160 mm Hg or above 226 mm Hg are unlikely to have adverse effects if the exposure is survived. The most probable outcomes of such decompressions are death or uneventful recovery. (Author).


Past observations on vestibular-vegetative and vestibular-sensory disorders encountered during space flight are analyzed. Disorders discussed include spatial illusions, vertigo, and kinesthesia exacerbated by sudden head movements. It is concluded that decisive factors in the development of motion sickness are the disturbance of the function of analyzers responsible for spatial orientation which take the form of sensory conflicts and the altered reactivity of the organism due to the hemodynamic rearrangement. The vestibular problem as a whole and its various aspects, particularly those concerning selection, training, and medical support during flight, remains urgent as before and require attentive investigation. (Author).

A75-36331 Otolitholaryngological problems in medical support of space flights. I. I. Branov, E. I. Matsnev, and I. Ia. Lakovleva (Institute of Biomedical Problems, Moscow, USSR) (International Symposium on Basic Environmental Problems of Man

Postural and motor events during REM (desynchronized) sleep and neurophysiological and neurochemical mechanisms involved in the control of these events are discussed. It is concluded that the postural atonia typical of desynchronized sleep is due to post-synaptic inhibition of spinal motoneurons resulting from tonic activation of a bulbospinal inhibitory mechanism. Evidence indicates that during REM sleep, cholinergic reticular neurons fire asynchronously, thus being able to trigger the bulbospinal inhibitory system responsible for the atonia.

S J M


In a 45-day experiment, test subjects were exposed to bed rest with their heads down at -4 deg. Twice a day their stomach, back, and shin muscles were stimulated with electric current for 25 to 30 min. The value of muscle tension was close to the maximum voluntary contraction. The main objective was to prevent muscle atrophy and to maintain their trophic and functional states. Physiological measurements were carried out together with morphological, cytochemical, and biometric evaluations. The tissue removed during biopsy from the soleus 7 days before the test and on the 30th hypokinetical day was used as substrate. Electrostimulation favorably affected the tone and strength of muscles as well as their static and dynamic endurance. Morphological studies showed a positive effect of electrostimulation on the muscle tissue, preventing the development of atrophic processes. Orthostatic tolerance increased during the first post-hypokinetical day.

Author


The Biostack I and II experiments, undertaken to determine the influence and spectra of high-energy particles in spacecraft and to ascertain their biological effects, are described. The degree of damage depended on whether the hit cell was replaceable or not. A cosmic radiation dose of up to 500 or more times that on atmosphere-protected earth, present in spacecraft, could have severe effects on man, especially in conjunction with weightlessness.

S J M


The prediction that various stresses of flight, particularly weightlessness, would bring about significant derangements in the metabolism of the musculoskeletal system has been based on various balance-study observations of long-term immobilized or inactive bed rest. The three astronauts of Skylab II consumed a planned dietary intake of major metabolic elements in mixed foods and beverages and provided virtually complete collections of excreta for 31 days preflight, 28 days inflight, and 17 days postflight. Analyses showed that varying degrees among the crewmen, urinary calcium increased gradually during flight in a pattern similar to that observed in bed-rest studies. Fecal calcium excretion did not change significantly, but calcium balance, owing to the urinary calcium rise, became either negative or less positive than in preflight measurement. Increased excretion and negative nitrogen and phosphorus balances inflight indicated appreciable loss of muscle tissue in all three crewmen. Significant losses also occurred inflight in potassium, sodium, and magnesium. Based on the similarity in pattern and degree between these observations of calcium, phosphorus, and nitrogen loss, musculoskeletal integrity would not be threatened in space flights of up to at least 3 months. However, if similar changes occur in planned Skylab flights for considerably more than 28 days, concern for capable musculoskeletal function should be serious for flights of very many months' duration.

Author
The experiment was performed to ascertain whether man’s ability to perform mechanical work would be altered as a result of exposure to the weightless environment. Skylab II crewmen were exercised on a bicycle ergometer at loads approximating 25%, 50%, and 75% of their maximum oxygen uptake while their physiological responses were monitored. The results of these tests indicate that the crewmen had no significant decrement in their response to exercise during their exposure to zero gravity immediately postflight, however, all crewmen demonstrated an inability to perform the programmed exercise with the same metabolic effectiveness as they did both preflight and inflight. The most significant changes were elevated heart rates for the same work load and oxygen consumption (decreased oxygen pulse), decreased stroke volume, and decreased cardiac output at the same oxygen consumption level. It is apparent that the changes occurred inflight, but did not manifest themselves until the crewmen attempted to readapt to the 1-G environment.

Author
the HSH and LSH animals manifest different changes in external respiration and rhythm of heart beating. The reason for the changed sensitivity of certain individuals to hypoxia may be a phenomenon of a partial genetic blockage which determines peculiarities in the energetic processes in cells at low partial pressure of oxygen.

(A75-36392) Changes in the field of peripheral vision under conditions of high mountain climbing (Zmiana pola peryfokrnogo zoru v umovakh visokogorno pidiumu) L R Osipov Fiziolochii Zhurnal, vol 21, May June 1975, p 407-409 14 refs In Ukrainian

The field of peripheral vision of 32 young men was studied at an initial height of 710 m, at 3700 m, and at 5043 m (at the top of the Kazbek mountain) Each man carried a load of 17 to 20 kg. The ascent was accomplished, without preliminary training, in the course of three days. At a height of 3700 m, the field of vision of left eye narrowed down by 6.9%, and that of the right eye, by 10.4% The changes are attributed to an increase in the vascular tonus of the retina.

V P

A75-36522 Resonant electromagnetic power deposition in man and animals O P Gandhi (Utah, University, Salt Lake City, Utah) In Microwaves in service to man, International Microwave Symposium, Palo Alto, Calif, May 12-14, 1975, Digest of Technical Papers New York, Institute of Electrical and Electronics Engineers, Inc, 1975, p 282-284 8 refs Grant No DAMD17-74-C-4002

Experiments are reported showing that strongest power absorption by biological bodies occurs for waves with electric field polarized parallel to the long dimension of the bodies It is also shown that maximum absorption correlates with wavelengths one-quarter as long as the lengths of the bodies Thus, for adult humans, highest whole-body absorption is anticipated at 40-55 MHz.

S J M

A75-36523 Complex permittivity and penetration depth of certain biological tissue between 40 and 90 GHz J Edrich and P C Hardee (Denver, University, Denver, Colo) In Microwaves in service to man, International Microwave Symposium, Palo Alto, Calif, May 12-14, 1975, Digest of Technical Papers New York, Institute of Electrical and Electronics Engineers, Inc, 1975, p 288-290 9 refs

Preliminary results of experiments on millimeter-wave irradiation of human body tissue are reported, showing that penetration does not occur to any significant depth below the tissue surface. Significant variations in tissue properties vis-a-vis radiation were observed after death when compared to life. Measurements were performed over the 40-54 and 85 90 GHz frequency ranges.

S J M

A75-36710 A new formula for estimating oxygen consumption in man and animal L A Wannberg (Forsvarets Forskningsanstalt, Sundbyberg, Sweden) European Journal of Applied Physiology, vol 34, no 2, 1975, p 65 68 10 refs Research supported by the Styrelsen for Teknisk Utveckling

A formula for estimating the oxygen consumption in man and animals is derived using an inlet volume flow and the oxygen fraction of CO2-free outlet air. The formula is simplified and the induced error is evaluated. Two applications are discussed.

(Author)

A75-36711 Effects of fatiguing isometric exercise upon Achilles tendon reflex and planter flexion reaction time components in man K C Hayes (Waterloo, University, Waterloo, Ontario, Canada) European Journal of Applied Physiology, vol 34, no 2, 1975, p 69-79 27 refs

A75-36712 Influence of bicycle ergometer work and oral glucose administration on the human muscle-hexokinase activity (Der Einfluss von Fahrradergometerarbeit und oraler Glucose-Gabe auf die Muskeln-Hexokinase-Aktivität des Menschen) G Hoffmann, Ch Scheder, B Holzmuller, and W Muller-Lummroth (Munchen, Technische Universitat, Munich, West Germany) European Journal of Applied Physiology, vol 34, no 2, 1975, p 9196 15 refs In German

A75-36713 Venous and capillary blood hematocrit at rest and following submaximal exercise T D Fahey and R Rolph (San Jose State University, San Jose, Calif) European Journal of Applied Physiology, vol 34, no 2, 1975, p 109-112 13 refs

Experiments are reported in which excess CO2 release (exc CO2) was measured during treadmill testing and compared with simultaneous max V02 measurements. From the values of exc CO2 recorded in an increasing running speed test, the threshold of aerobic metabolism (V-TAM) was easily determined. The investigation was designed to assess indices of power, capacity and efficiency of both aerobic and anaerobic metabolism Exc CO2 achieves these ends and is easy to determine, as it does not require blood sampling and can be carried out concurrently with measurement of VO2 consumption.

S J M

A75-36725 Consequence of social isolation on blood pressure, cardiovascular reactivity and design in spontaneously hypertensive rats M Hallback (Goteborg, University, Goteborg, Sweden) Acta Physiologica Scandinavica, vol 93, Apr 1975, p 455-456 28 refs Research supported by the Swedish National Association Against Heart and Chest Disease and University of Goteborg, Swedish Medical Research Council Grant No 874-14X-16-10C


Photogrammetric measurements of the surface topography of the aortic valves obtained from silicon rubber molds of freshly excised human aortic valves are presented. The data are part of an investigation into the design of a new prosthetic valve which will be a central flow device, like the real valve and unlike previous central occluding prostheses. Since the maximum stress on the heart valve is induced when the valve is closed and subject to diastolic back-pressure, it was decided to determine the valve geometry during diastole. That is, the molds were formed by pouring the rubber down the excised aortas, causing the valves to close. The molds were made under different pressures (20 120 torr), photogrammetry served as a vehicle for the assessment of the mold topography through the following outputs digital models, surface profiles, and contour maps.

S J M

A75-36993 Methods of electronic simulation of flight sounds (Methoden der elektronischen Fliegerscheunsimulation) K Hilman and K P Gartner (Forschungstitut fur Anthropotechnik, Meckenheim, West Germany) Zeitschrift fur Flugwissenschaften, vol 23, June 1975, p 203-209 8 refs In German

An overview of methods for electronically synthesizing sounds is presented. A given amount of hardware and computer capacity places an upper limit on the degree and fidelity of realism which is attainable. Good sound realism for aircraft simulators can be especially expensive because of the complexity of flight sounds and their changing patterns with time. Nevertheless, a flight simulator shows that it is possible to design an inexpensive sound simulator with the required acoustic properties using analog computer...
elements The characteristics of the infrasound elements produced by
this sound simulator for take-off, cruise, and approach are discussed
(Author)

A75-37000 Possible mechanisms of corona discharge
involved in biogenesis J Latham (University of Manchester Institute
of Science and Technology, Manchester, England) Nature, vol 258,
July 3, 1975, p 34, 35 5 refs

A brief description is presented of experiments which demon-
strate how corona discharges involved in biogenesis can be produced
at or near the ocean surface. It is noted that electric discharges can
synthesize amino acids and other organic compounds under condi-
tions simulating the atmosphere of the primitive earth, and that
corona discharges in the vicinity of an ocean surface can result from
drop splashing, bubble bursting, and raindrop collisions in the
presence of strong electric fields associated with thunderclouds. The
described experiments show that corona discharges can occur when
bubbles burst at a water surface in fields with values of at least 260
kV/m

F G M

A75-37024 Dynamic properties of eye position coded
neurons in the alert monkey during saccades R Eckmiller
(California, University, Berkeley, Calif , Berlin, Freie Universitat,
Berlin, West Germany) Pflugers Archiv, vol 357, no 3-4, 1975, p
253-265 29 refs Research supported by the Deutsche Forschungs-
gemeinschaft, Grant No PHS-EY-00592

A75-37025 Investigation on the possible role of a work
factor in thermoregulatory behavior of man M Scarperi, K Behling,
and A Bleichert (Hamburg, Universitat, Hamburg, West Germany)
Pflugers Archiv, vol 357, no 3-4, 1975, p 267 273 9 refs

A75-37047 # Comments on the work of an airlineer crew
(Uwagi o pracy zalogi samolotu komunikacyjnego) T Buczyloko
Technika Lotnicza i Astronautyczna, vol 30, June 1975, p
11-14 9 refs In Polish

The ergonomic aspects of the work of airlineer crews are
discussed, with particular reference to the adaptation of aircraft
systems to the human operator. An attempt is made to model the
decision making by the pilot on the basis of prescribed criteria and of
the flow of information from ATC and onboard instruments V P

A75-37072 Role of histamine in the hypoxic vascular
response of the lung C A Hales (Massachusetts General Hospital,
Boston, Mass ) and H Kazemi (Harvard University, Boston, Mass )
Respiration Physiology, vol 24, June 1975, p 81 88 20 refs Grants
No NIH-HL 06864, No NIH-HL 05767

Studies were undertaken to determine the contribution of
histamine to the localized pulmonary vasoconstrictor response to
hypoxia. One lung in each of several anesthetized dogs was ventilated
with nitrogen, after 10 minutes, perfusion (Q) to the lung was
decreased by 32% When chlorpheniramine maleate, a potent
antihistamine, was intravenously infused, no change in Q was
observed. Therefore, no significant role was demonstrated for
histamine in the regional lung vascular response to hypoxia S J M

A75-37139 Effects of motion on the parameters of the
human operator engaged in a roll axis tracking task J A Nef and A
M Junker (NASA, Aerospace Medical Research Laboratories, Wright
Patterson AFB, Ohio) In Conference on Decision and Control, 5th

The saccadic eye movement system is an important neurologi-
cal feedback control system contributing to crucial visual informa-
tion processing and decision operations in man and animals. Careful
modeling of the extraocular muscles and eyeball joint as well as the
reciprocal innervation controller signal patterns have enabled us to
demonstrate the time optimal nature of the saccadic movement
trajectory. We here propose a pulse width modulation process for
generating these time optimal saccades and present supporting
experimental and modeling results S J M

A75-37149 A pulse-width modulated model for visual eye
tracking M R Clark, A T Bahill, and L Stark (California,
University, Berkeley, Calif ) In Conference on Decision and
Control, 5th and Symposium on Adaptive Processes, 13th, Phoenix,
655-657 8 refs

The saccadic eye movement system is an important neurologi-
cal feedback control system contributing to crucial visual informa-
tion processing and decision operations in man and animals. Careful
modeling of the extraocular muscles and eyeball joint as well as the
reciprocal innervation controller signal patterns have enabled us to
demonstrate the time optimal nature of the saccadic movement
trajectory. We here propose a pulse width modulation process for
generating these time optimal saccades and present supporting
experimental and modeling results S J M

A75-37171 Time estimates in a long-term time-free en-
177-186 9 refs Grant No NGR-10 005-057

Subjects in a time-free environment for 14 days estimated the
hour and day several times a day. Half of the subjects were under a
heavy exercise regime. During the waking hours, the no-exercise
group showed no difference between estimated and real time, whereas
the exercise group showed significantly shorter estimated
than real time. Neither group showed a difference after the sleeping
periods. However, the mean accumulated error for the two groups
was 48.73 hours and was strongly related to the displacements of
sleep/wake behavior. It is concluded that behavioral cues are the
primary determinants of time estimates in time-free environments
(Author)

A75-37250 A bibliography of published information on
combustion toxicology C J Hilado and C L Shabude (West
Virginia Institute of Technology, Montgomery, W Va ) Journal of
Fire and Flammability, Combustion Toxicology Supplement, vol 2,
May 1975, p 169-174 77 refs

A75-37326 A mathematical analysis of the mortality
kinetics of Drosophila melanogaster exposed to gamma radiation. C
B Dolkas, H Atlan, G Dolkas, and J Miquel (NASA, Ames
Research Center, Moffett Field, California, University, Berkeley,
59-69 8 refs

A75-37336 Advances in clinical vectorcardiography A Benchimol and K B Desser (Good Samaritan Hospital, Phoenix, Ariz.) American Journal of Cardiology, vol 36, July 1975, p 75-87 72 refs Research supported by the Nichols and Sigsworth Memorial Funds

Experiments are reported that demonstrate the clinical superiority of the vectorcardiogram over the conventional 12 lead scalar electrocardiogram. Vectorcardiograms were taken along with performance of complete right and left heart catheterization and selective coronary cineangiography in 5,000 patients. Disorders observed included atrial and ventricular hypertrophy, coronary artery disease and myocardial infarction, conduction abnormalities, and cardiac arrhythmias S J M

A75-37337 Left ventricular volume measurement by echo-cardiography - Fact or fiction J W Linhart, G S Mintz, B L Segal, N Kawai, and M N Kotler (Chicago Medical School, Chicago, Ill., Hahnemann Medical College and Hospital, Philadelphia, Pa.) American Journal of Cardiology, vol 36, July 1975, p 114-118 11 refs

A critical evaluation of echo-cardiographic measurement of left ventricular volume is presented. Errors in measuring minor axis, in measuring distance, and in translating minor axis dimension into volume determination are discussed, along with correlation of echo-cardiographic with angiographic measurements and the clinical status of echo-cardiography. It is concluded that the method is not adequate as a means of absolute measurement, but that it has value in relative measurements over time in the same patient S J M


Recent attempts have been made to develop electroencephalographic (EEG) pattern recognition systems for a variety of diagnostic and monitoring applications. However, intersubject EEG variation has proven to be a major source of difficulty in the development of reliable EEG pattern recognition systems. Several aspects of the problem of estimating and reducing the effect of intersubject EEG variation are discussed with reference to a specific EEG pattern recognition system (Author)


Passenger and crew behavioral factors involved in flight accidents and fatalities, and causes of that behavior, are discussed Emphasis is on the need for future research in this area. Fields explored include training simulators, pilot problems in low-visibility approach and landing, selected medical problems in the field of human factors or ergonomics, professional ground handling, life changes and aviation accidents, workload reduction on the flight deck, passenger behavior in emergencies, and passenger escape from commercial aircraft S J M


The cost-effectiveness of flight training simulators is discussed as it relates to procedural fidelity and training objectives. The law of diminishing returns on simulator transfer effectiveness is described, if a simulator costs almost as much as its counterpart airplane, then when an hour of simulator time saves less than an hour of flight training time, the simulator will cease to be cost-effective. Moreover, recent studies have shown that simulators without moving cockpits are more transfer-effective in training pilots for aircraft than are ones with moving cockpits. Procedural fidelity, involving easily forgotten cognitive skills, is deemed more important than perceptual-motor fidelity, and more difficult to achieve S J M


Recent illustrations of human factors research, ergonomic developments in the field of highway safety, the influence of aging on pilot performance and safety, and the need for developing airport medical programs are discussed. Specific topics treated include early developments in air transportation, private flying and neglected areas of study, new design features in automobiles, the role of the driving driver, medical conditions and accidents among drivers, the changing nature of the age composition in our population, age distributions of airline pilots, and medical services needed for passengers and airport employees S J M


Qualitative data are discussed which indicate that an increased frequency of favorable or unfavorable changes in an ongoing lifestyle is often connected with an aircraft accident. Such a correlation is especially strong in the case of the accident-prone personality. This person is adventurous, impulsive, and hard on himself, when personal changes begin to accumulate, he feels he is losing control and becomes depressed. The depression lowers his mental and physical reactivity, but he continues to fly to the limits of his personal envelope, which is often demanding because he is a high achiever. Eventually a mistake is made, and a mishap results S J M


The cost-effectiveness of flight training simulators is discussed as it relates to procedural fidelity and training objectives. The law of diminishing returns on simulator transfer effectiveness is described, if a simulator costs almost as much as its counterpart airplane, then when an hour of simulator time saves less than an hour of flight training time, the simulator will cease to be cost-effective. Moreover, recent studies have shown that simulators without moving cockpits are more transfer-effective in training pilots for aircraft than are ones with moving cockpits. Procedural fidelity, involving easily forgotten cognitive skills, is deemed more important than perceptual-motor fidelity, and more difficult to achieve S J M


Qualitative data are discussed which indicate that an increased frequency of favorable or unfavorable changes in an ongoing lifestyle is often connected with an aircraft accident. Such a correlation is especially strong in the case of the accident-prone personality. This person is adventurous, impulsive, and hard on himself, when personal changes begin to accumulate, he feels he is losing control and becomes depressed. The depression lowers his mental and physical reactivity, but he continues to fly to the limits of his personal envelope, which is often demanding because he is a high achiever. Eventually a mistake is made, and a mishap results S J M


Qualitative data are discussed which indicate that an increased frequency of favorable or unfavorable changes in an ongoing lifestyle is often connected with an aircraft accident. Such a correlation is especially strong in the case of the accident-prone personality. This person is adventurous, impulsive, and hard on himself, when personal changes begin to accumulate, he feels he is losing control and becomes depressed. The depression lowers his mental and physical reactivity, but he continues to fly to the limits of his personal envelope, which is often demanding because he is a high achiever. Eventually a mistake is made, and a mishap results S J M


Qualitative data are discussed which indicate that an increased frequency of favorable or unfavorable changes in an ongoing lifestyle is often connected with an aircraft accident. Such a correlation is especially strong in the case of the accident-prone personality. This person is adventurous, impulsive, and hard on himself, when personal changes begin to accumulate, he feels he is losing control and becomes depressed. The depression lowers his mental and physical reactivity, but he continues to fly to the limits of his personal envelope, which is often demanding because he is a high achiever. Eventually a mistake is made, and a mishap results S J M
A75-37618


Proposed is a neuronal network capable of learning pattern discrimination. Basic characteristics of the component neurons largely reflect well-established physiological principles and their individual plastic properties are consistent with recent findings concerning visual experience and synaptic changes detected by electron-microscopy. Pattern discrimination within the network is robust under rather severe input-pattern degradation. (Author)

A75-37620


This paper discusses the use of color in air traffic control displays. Various methods of color coding to enhance and declutter the air traffic display are presented, together with results of evaluation of human performance using color and monochrome displays. Particular emphasis is placed on the current state of the art of color cathode ray tubes. Special circuit design considerations for displays are discussed. (Author)

A75-37692


Speech, since it is a natural means of communicating, offers significant advantages as a means of man/machine interface. Techniques currently exist for enabling the computer to understand spoken commands, as well as for computer generation of speech. This paper describes application of these techniques to the problems of air traffic control in (1) training applications and (2) the operational environment. For training, a system currently used to train Ground Controlled Approach (GCA) controllers, developed for and in conjunction with NTAC, is described. A combined speech recognition and synthesizing system for application to the operational environment is also described. (Author)

A75-37693


Many automated functions that are to be added to the National Airspace System (NAS) could benefit from the addition of computer-generated voice. In fact, some may require its addition to ensure that controller voice communications workloads do not become excessive. This paper describes several future air traffic control automation functions that are likely to be added to the NAS and the benefits that could be derived from adding computer-generated voice to these functions. In addition, it provides a summary review of computer-generated voice techniques, the rationale for the selection of a technique (digitally encoded prerecorded voice), and a description of two experimental computer-generated voice systems used in the air traffic control environment. (Author)

A75-38004


The method and materials used in the experiment are discussed in detail. The occipital EEG and the horizontal and vertical EOG of the four male subjects were recorded during the experiments. Resulting data are analyzed. It was concluded that the AEP was less in amplitude when the stimulus was presented horizontally or vertically. The amplitude of the AEP was more variable for the oblique orientation. No orientational effect was observed upon the AEP latency. (Author)

A75-38046


This paper presents the operation of a digital computer program, VECTAN II, for the spatial analysis of the vectorcardiogram (VCG).
The program incorporates a unique waveform recognition algorithm based on the spatial vector length which has been shown to perform better than previous algorithms. The waveform analysis employed by the program considers the vectorcardiogram as a three dimensional entity rather than as scalar or planar representations. VECTAN II is designed chiefly to measure and quantify the VCG response of normal subjects to a controlled stress by analyzing one VCG complex every five seconds throughout a long experiment. The program has been used to analyze data from the NASA Johnson Space Center Cardiovascular Laboratory, from the pre- and postflight medical examinations of the Apollo 15, 16 and 17 crews, and from onboard Skylab experiments.

A75-38182  Manipulator robots (Roboty-maneuvrury)
E P Popov (Moskovskoe Vysshue Tekhnicheske Uchilishe, Moscow, USSR) In Selected problems in applied mechanics
Collection of works dedicated to the sixtieth birthday of academian Vladimir Nikolaevich Chelomei
Moscow, Izdatel'stvo VINITI, 1974, p 575-582 In Russian

The characteristics of manipulator robots are described, and their application as multipurpose systems in extremal environments where a human operator cannot survive is examined. A typical block diagram of a manipulator robot is discussed, along with means of obtaining computer-aided solutions to problems of perfecting such manipulators.

A75-38300  The state of sleep of the winter personnel of a coastal Antarctic station (Stostojanie snna zimooschchikov pribrezh-
noi Antarktieschoi stantsii) M M Bogoslovski Antarktika, no 14, 1975, p 197-204 23 refs In Russian

Data concerning the state of sleep were obtained from questionnaires and by recording EEG's, movements during sleep, breathing, etc. The mean annual duration of sleep was 8 hrs. The sleep characteristics did not differ during the dark or light times of the year. Sleep was most peaceful toward the end of the year, and most restless during the middle of the winter stay. EEG studies showed that at the end of the winter stay, there was a decline in the frequency of occurrence and length of paradoxical phase of sleep, and an increase in frequency and length of superficial phase of sleep. The data show that polar insomnia can be avoided and that normal sleep can be maintained by adhering to a strict daily routine.

A75-38379  A simulation study of coronary circulation
F Kajiya, H Inada, N Hoki, and T Furukawa (Osaka University, Osaka, Japan) Osaka University, Technology Reports, vol 25, Mar 1975, p 91 100 16 refs Research supported by the Monbusho Kagaku-Kenkyuhi

A simulation study is conducted to evaluate the roles of the coronary-luminal pathways (sinusoidal vessels and thebesian vessels) and to analyze coronary blood flow patterns. In the present model, variable resistances of the intramyocardial portion of coronary vessels are estimated from extravascular pressure and intravascular pressure based on the elastic diagram of each blood vessel. Following the simulation study, it is found that flow in the extramyocardial coronary artery is in good agreement with that obtained by an electromagnetic flow meter. Coronary venous flow shows two kinds of forward flow patterns in the systolic and the diastolic phase, while the coronary luminal pathway and right atrial pressure influence the configuration of the venous flow. These results imply that coronary-luminal pathways play a role in pressure transmission to the intramyocardial coronary vessels and in blood supply to the heart.

A75-38408  Vocational interests of air traffic control personnel
R C Smith and G L Hutto (FAA, Civil Aeromedical Institute, Oklahoma City, Okla) Aviation, Space, and Environmental Medicine, vol 46, July 1975, p 871-877 8 refs

The interest patterns of air traffic controllers were surveyed for the purposes of (1) determining the interests of journeyman controllers, (2) determining the relationship of controller interests to those of other occupational groups, (3) devising an interest scale for air traffic work, and (4) developing a measure for guidance for selection of air traffic specialties (e.g., terminal, en route, flight service specialists). A total of 787 male controllers from terminal, en route, and FSS facilities completed the strong vocational interest blank, a measure of interest patterns. It was found that none of the existing occupational scales clearly reflected the interest patterns of controllers. An air traffic controller scale was devised which distinguished the air traffic controllers from men in general and from men in other occupations. There were no substantial differences between the interest patterns for the three options, however, it was found that dissatisfied controllers scored lower on the overall air traffic controller scale than did satisfied controllers.

A75-38409  Cardiopulmonary effects of combined exercise and +Gz acceleration
S A Nunneley and D Shindell (New York, State University, Buffalo, NY) Aviation, Space, and Environmental Medicine, vol 46, July 1975, p 878-882 17 refs Contracts No N00014-68-A-0216, No F44620-72 C 0009, Grants No NIH-NIL 4414-02, No PHS-S-T01 GM-00341

Experiments were conducted to evaluate the effects of leg exercise on cardiopulmonary function in four men exposed to + 1, + 2, and + 3 Gz at ergometer settings of 0, 300, and 600 kpm/min. It was found that acceleration raised resting oxygen uptake, minute volume of expired gas, their ratio, and heart rate, but it lowered oxygen pulse and end tidal CO2 tension. At higher workloads, the combination of G with exercise caused a divergence from control measurements. Cardiogenic oscillation amplitude increased with G and decreased with work, which indicates that exercise improves the homogeneity of alveolar ventilation/lung perfusion at all G-levels.

S D

A75-38410  Arterial and tissue gas tensions in rats during development of pulmonary oxygen poisoning
M Valimaki (Turku, University, Turku, Finland) Aviation, Space, and Environmental Medicine, vol 46, July 1975, p 883-886 23 refs Research supported by the Emil Aaltonen Foundation

A75-38411  Physiologic effects of seatback angles less than 45 deg/from the vertical/ relative to G R R Burton, P F Lampietro, and S D Leverett, Jr (USAF, School of Aerospace Medicine, Brooks AFB, Tex) Aviation, Space, and Environmental Medicine, vol 46, July 1975, p 887-897 18 refs

Eight experimental subjects and four YF 16/17 test pilots were exposed to a simulated aerial combat maneuver (SACM) which included a maximum G exposure of 6 s at 8 G. The following physiologic parameters were examined relative to seatback angles of 23, 28, and 40 deg: heart rate and rhythm, arterial oxygen saturation, performance, intrathoracic (esophageal) pressure, arterial pressure, and subject comfort, effort, and fatigue. Relaxed and strained conditions were measured. It was found that acceleration raised resting oxygen uptake, minute volume of expired gas, their ratio, and heart rate, but it lowered oxygen pulse and end tidal CO2 tension. At higher workloads, the combination of G with exercise caused a divergence from control measurements. Cardiogenic oscillation amplitude increased with G and decreased with work, which indicates that exercise improves the homogeneity of alveolar ventilation/lung perfusion at all G-levels.

A75-38412  Effect of hyperbaric helium on vitamin uptake and utilization by micro-organisms
V Frattali and R Robertson (National Naval Medical Center, Naval Medical Research Institute, Bethesda, Md) Aviation, Space, and Environmental Medicine, vol 46, July 1975, p 898-901 15 refs Naval Task M4306.02,4080 DBK9
A75-38413

Growth responses under hyperbaric helium of various procaryotic microorganisms to graded levels of six water-soluble vitamins were measured. Vitamins included thiamin, riboflavin, niacin, pantothenic acid, biotin, and folic acid (folacin). The growth response of each organism under hyperbaric helium was compared with that under 80% He-20% O2 and other He-20% gas mixtures at atmospheric pressure, and with the response in air at atmospheric pressure. For five of the six vitamins, no differences in response were observed. The growth response of streptococcus faecalis to growth limiting concentrations of folic acid was depressed during cultivation under He-02 at 69 ATA. It is concluded that the growth response of an organism is repressed by hyperbaric helium as a result of interference with uptake or utilization of this vitamin.

(Author)

A75-38413 * Effects of prolonged weightlessness on the swimming pattern of fish aboard Skylab 3 J R von Baumgarten, R C Simmonds, J F Boyd, and O K Garrett. (NASA, Ames Research Center, Moffett Field, Calif.) Avitation, Space, and Environmental Medicine, vol 46, July 1975, p 902-906 13 refs

Looping behavior of minnows aboard Skylab 3 is analyzed. Extensive looping patterns were observed at first look on the third day of weightlessness, thereafter, the frequency of the looping episodes diminished until complete adaptation on the twenty first day, at which time the fish oriented themselves with their backs to the light. The swimming anomaly could be due to (1) absence of continuous bending of sense hairs to a certain extent by gravity, causing the fish to tilt forward in an attempt to increase leverage on the hairs in the absence of all gravity, tilting is continued into looping (this hypothesis is supported by parabolic flight experiments with partial gravity, in which only tilting was seen), or (2) an attempt by the fish to create a gravitoventral stimulus by 'centrifuging' its otoliths by looping.

S J M

A75-38414 Changes in exercise heart rate in lowlanders after prolonged stay at high altitude 4000 m J S Gupta, G L Dua, N Srinivasulu, and M S Malhotra. (Defence Institute of Physiology and Allied Sciences, Delhi, India) Avitation, Space, and Environmental Medicine, vol 46, July 1975, p 907-910 22 refs

Studies were conducted on cardiac frequency during sub-maximal and maximal work in 26 sea level residents prior to transfer to and during stay at high altitude for 1, 10, and 20 months. Maximal O2 uptake and performance in a 1.6 km run were observed. Results indicated a significant drop in V-02 after arrival at altitude and during stay at high altitude for 1, 10, and 20 months.

(Author)

A75-38415 Effects of hypoxia on early pregnancy and embryonic development in the mouse B A Rattner and G M Ramn (Maryland, University, College Park, Md.) Avitation, Space, and Environmental Medicine, vol 46, July 1975, p 911-915 27 refs

Research supported by the University of Maryland and Clay Adams Co

A75-38416 Variations in the activity of some brain and plasma enzymes under the influence of +Gz acceleration S A Cananau, P Groza, A Albu, C T Dragomir, A Petrescu, and B Zaharia. (Institute of Medicine and Pharmacy, Bucharest, Romania) Avitation, Space, and Environmental Medicine, vol 46, July 1975, p 916-921 36 refs

The present paper examines the activity of enzymes associated with cytmembranes in the plasma and brain of guinea pigs exposed to repeated +10 Gz acceleration. Immediately after the last run, diminution of enzymatic activity in the brain supernate paralleled a rise in plasma enzymatic activity. Variations in enzymatic activity suggested the liberation of enzymes connected with the neuronal organelles, consequent to alterations in the permeability or structure of the neuronal cytmembranes. These alterations are interpreted as being accompanied by permeabilization of the blood brain barrier, with release of the enzymes from their normal structures into the plasma. Changes in the permeability of the neuronal membranes are attributed to several factors: cerebral hypoxia following the hemodynamic and ventilation alterations induced by hypergravitation, the influence upon the membrane permeability of hormones released in excess under the stress of acceleration, and the strain to which the central nervous system neurons are subjected by the multitude of afferent impulses from receptors stimulated by hypergravitation.

(Author)


Research supported by the Portland State University.

One group of rats was stabilized on a variable ratio (VR) schedule and another on a differential reinforcement of low rate (DRL) 20/s schedule. Four subgroups in each were exposed to 1.71, 102, or 13.3 ATA for 30 min once a week for 6 weeks with a seventh exposure after a 4-week hiatus. At 10.2 and 13.3 ATA, DRL 20/s response rate increased and VR 50 decreased at 13.3 ATA, time spent responding was markedly reduced for the VR 50 animals and less so for the DRL 20/s animals. Response rate of the DRL 20/s group varied as a function of weekly exposures to pressure, but not systematically so. There was an increase in VR 50 time spent responding on the third dive which continued through the sixth and was lost on the seventh. Findings were discussed in terms of the utility of a behavioral preparation for a pharmacological analysis of nitrogen narcosis.

(Author)

A75-38418 Prevention of decompression sickness during a simulated space docking mission J P Cooke, R R Bollinger, and B Richardson. (USAF, School of Aerospace Medicine, Brooks AFB, Tex.) Avitation, Space, and Environmental Medicine, vol 46, July 1975, p 930-933 21 refs.

This study has shown that repetitive exchanges between the Apollo space vehicle atmosphere of 100% oxygen at 5 psia (258 torr) and the Soyuz spacecraft atmosphere of 30% oxygen-70% nitrogen at 10 psa (533 torr), as simulated in altitude chambers, will not likely result in any form of decompression sickness. This conclusion is based upon the absence of any form of bends in seven crewmen who participated in 11 tests distributed over three 24-h periods. During each period, three transfers from the 5 to the 10 psa environment were performed by simulating passage through a docking module which served as an airlock where astronauts and cosmonauts first adapted to each other's cabin gases and pressures before transfer. Biochemical tests, subjective fatigue scores, and the complete absence of any form of pain were also indicative of the absence of decompression sickness.

(Author)


A computer program for analyzing nystagmus has been developed and can be used on a small laboratory digital computer. The algorithm accepts digitized data and looks for the minimum and maximum (minmax) points of the nystagmus waveform. These points in turn are used to define seven descriptive parameters of nystagmus, including the amplitude, duration, and velocity of the slow and fast phases, and the frequency. The algorithm uses three
The electroretinogram (ERG) and electrooculogram (EOG) are electrophysiological tests employed in ophthalmology to diagnose degeneration or injury to the outer half of the retina, including the rods and cones of the visual system. This pilot study was undertaken to determine if sleep deprivation of more than 24 h in rated flying personnel may show a normality in retinal function as measured by the ERG and/or EOG. This may give insight to the visual function in flying personnel on deployment or other long missions where uninterrupted sleep may be a problem. The results of this study showed that some subjects deprived of sleep exhibited a statistically significant variance in their EOG ratios as compared to a nondeprived control group. No significant changes in ERG were detected.

Austere ’normal’ ECG can coexist with known coronary heart disease (CHD). Combined sensitivity and specificity errors of at least 10% in exercise ECGs are not unusual. Improved screening for CHD was attempted using amplitude/frequency analysis of ECG recordings. Thirty normal males and 30 with documented CHD were selected. The ECGs were recorded on electromagnetic tape during supine rest. Analyses provided digital conversion, selection of four ECG segments, time-normalization, and amplitude/frequency analysis. Analyses provided one digital plot per each segment and one per each 30-s subject average. The results from one ECG lead are presented. Significant differences (p less than or equal to 0.05) appeared in the comparisons between the normal and CHD groups. Retrospectively, amplitude criteria individually screened normal from CHD males to an improved degree compared with exercise ECGs.

Medical flying fitness - a routine affair but who examines and assesses psychic health? H-P. Goerres (Bundesministerium der Verteidigung, Flugmedizinisches Institut, Furstenfeldbruck, West Germany) Aviation, Space, and Environmental Medicine, vol 46, July 1975, p 953-957 12 refs.

The regular medical examination of pilots is presently accepted as a thorough diagnosis of flying fitness, although the psychological aspects are sometimes almost completely ignored. Computer-aided procedures for the best possible appraisal of flying fitness are discussed. It is shown that the flying fitness examination procedure presently oriented towards the somatic status is by no means sufficient to determine the actual degree of flying fitness and may be detrimental to the flight safety and health of the individual pilot.


The use of special equipment is described for connecting a patient undergoing electroretinographic examination with the electrodes. The equipment consists of an eyeglass frame on which electrodes of various kinds are fixed. Silver lamellar electrodes are fixed to the lower rims of the frame; these electrodes make contact with the eye, a ground electrode is fastened to the rim of the frame and makes contact with the patient’s nose, finally, neutral electrodes on the arms of the frame contact the patient’s temporal skin. This method offers several advantages over the contact corneal electrode method. It is easier to administer and the ERG amplitude requires lower voltage than that of ERG recorded by a contact electrode.

A hybrid computer is described that quantitatively detects both normal and pathological heart rhythms and makes them accessible to the physician in digital form. The device is very helpful in cardiac therapy, where it enables a far more exact prescription of antiarrhythmic substances to be made than do conventional methods, such as the electrocardiogram. During the acute phase of a myocardial infarction, it can detect most of the early symptoms of the often fatal final ventricular fibrillation.


The use of special equipment is described for connecting a patient undergoing electroretinographic examination with the electrodes. The equipment consists of an eyeglass frame on which electrodes of various kinds are fixed. Silver lamellar electrodes are fixed to the lower rims of the frame; these electrodes make contact with the eye, a ground electrode is fastened to the rim of the frame and makes contact with the patient’s nose, finally, neutral electrodes on the arms of the frame contact the patient’s temporal skin. This method offers several advantages over the contact corneal electrode method. It is easier to administer and the ERG amplitude requires lower voltage than that of ERG recorded by a contact electrode.

A hybrid computer is described that quantitatively detects both normal and pathological heart rhythms and makes them accessible to the physician in digital form. The device is very helpful in cardiac therapy, where it enables a far more exact prescription of antiarrhythmic substances to be made than do conventional methods, such as the electrocardiogram. During the acute phase of a myocardial infarction, it can detect most of the early symptoms of the often fatal final ventricular fibrillation.
simple Fourier components of a complex wave can often be heard as if separate by the listener. Evidence for difficulties with the discrete model is the finding that difference frequencies (sidebands) can be detected by the ear which have for all practical purposes no sonic energy, this phenomenon is not due to nonlinear distortion by the inner ear, but to stimulation of a particular set of receptors. Similarly, the eye has been shown to respond to specific spatial frequencies distributed over the entire visual field.


When elemental enrichment factors in living organisms are plotted against the ionic potential of the elements, a strikingly similar pattern is found for different groups of organisms, the pattern is also similar, in its general features, to that found in seawater. These relationships support the idea that life began in a water-rich environment interfacing with the primitive atmosphere of the earth.

A75-38634 The visual aptitude of inspection personnel for magnetic-particle and penetrant testing (Visuelle Eignung des Prufpersonals fur Magnetpulver- und Eindringverfahren) F Michalski (Stahlwerke Rochling Burbach GmbH, Volklingen, West Germany), D Kaiser (Mannesmannrohren-Werke AG, Dusseldorf, West Germany), and M Stadthaus (Bundesanstalt fur Materialprufung, Berlin, West Germany) (Deutsche Gesellschaft fur Zerstorungsfreie Prufverfahren, Vortragstagung uber Zerstorungsfreie Materialprufung, Berlin, West Germany, May 5-7, 1975) Materialprufung, vol 17, July 1975, p 233-235 13 refs In German

The requirements regarding the visual capacities of persons who are to be employed with the conduction of magnetic-particle inspection tests or tests involving the use of a penetrant are considered. Directions for testing the vision of the inspection personnel are discussed, giving attention to international, American, and British specifications.

A75-38667 Central inhibitory interactions in human vision V Virsu and H Taskinen (Helsinki, University, Helsinki, Finland) Experimental Brain Research, vol 23, July 11, 1975, p 65-74 19 refs Research supported by the Academy of Finland

Experiments are reported in which contrast threshold and perceived orientation of one line segment were found to alter with both monoptic and dichoptic masking by a second line segment. The masking increased contrast threshold, and the largest change in perceived orientation due to masking was observed at a 15-deg masking angle. Results support the hypothesis that there are lateral inhibitory interactions between central neural units in the human visual system.

A75-38669 The fractional rate of change of ventricular power during isovolumic contraction - Derivation of haemodynamic terms and studies in dogs P D Stein, G G McBride, and H N Sabbah (Oklahoma, U S Veterans Administration Hospital, Oklahoma City, Okla) Cardiovascular Research, vol 9, July 1975, p 456-467 16 refs Research supported by the U S Veterans Administration and American Heart Association, Grant No PHS-NHLBI-72-2921-B

A method is described for measuring the susceptibility of bacteria to antimicrobial agents by utilizing the bioluminescent reaction between adenosine triphosphate (ATP) and luciferase-luciferin mixtures. The bacterium is cultured in a growth medium and the amount of ATP in a sample of the bacterium is determined by measuring the amount of luminescent light emitted when the bacterial ATP is reacted with a luciferase-luciferin mixture. A fresh sample of the bacterium is then subjected to an antibiotic agent and the amount of bacterial ATP is assayed after the antibiotic treatment in the same manner. The ATP index is determined from the values obtained from the assay procedures.

Author


The retention of flavor during freeze drying was studied with model systems. Mechanisms by which flavor retention phenomena is explained are developed and process conditions specified so that flavor retention is optimized. The literature is reviewed and results of studies of the flavor retention behavior of a number of real food products, including both liquid and solid foods are evaluated. Process parameters predicted by the mechanisms to be of greatest significance are freezing rate, initial solids content, and conditions which result in maintenance of sample structure. Flavor quality for the real food showed the same behavior relative to process conditions as predicted by the mechanisms based on model system studies.

Author

N75-26831* California Univ Los Angeles CONTINUOUS ANIMAL EXPOSURE TO A MIXTURE OF DICHLOROMETHANE AND 1,1,1-TRICHLOROETHANE Final Report 1975 25 p refs (NASA Order T-9035-B) (NASA-CR-141889) Avail NTIS HC S3 25 CSCL 06C

An investigation of the effects of combined exposure of animals to dichloromethane and 1,1,1-trichloroethane was conducted using atmospheric concentrations of each solvent which had individually produced minimal measurable effects on livers. Previously established spacecraft threshold limit values for the individual solvent compounds were studied to determine validity when both were present in an astronaut's breathing environment under continuous exposure conditions. Results show that the combined effect of 90-day continuous exposure of animals to 100 ppm dichloromethane and 1000 ppm 1,1,1-trichloroethane is no greater than the effect of each alone. While the exposed livers of mice appeared to contain slightly more fat, the degree of increased liver weight and the liver-to-body ratios are slightly lower than those measured for each solvent alone.

Author


A subject lived in a hermetically-sealed, 4.5 cu m room for 30 days. During this time his oxygen was completely supplied by chlorrella grown in a special reactor. After a time, the system achieved a degree of stability. Carbon monoxide and methane accumulation stabilized after 3 and 12 days, respectively. Waste materials were broken down and purified in a miniature "aerotank," similar to those used for city wastes. Water for drinking, food preparation and hygiene was collected from condensation on the reactor and from moisture secreted by the subject's skin and lungs as well as from waste matter. 50 g of dried chlorrella were included in the subject's diet. The life-support system showed no sign of change at the end of the experiment, additional plants and especially animals would improve the system, e.g., make it a 100% closed CO2 cycle system.
N75-26635

N75-26635** Adverse Group for Aerospace Research and Development, Paris (France)
A REVIEW OF ANTHROPOMETRIC DATA OF GERMAN AIR FORCE AND UNITED STATES AIR FORCE FLYING PERSONNEL, 1967 - 1968
H J Grunhofer, ed (German Air Force) and G Kroh ed (German Air Force Inst of Aviation Med) Apr 1975 180 p refs (AGARD-AG-205, AGARDograph-205) Avail NTIS HC S7 00

Standardized equipment, definitions and procedures were used according to Hertzberg for each program. Both data collections were obtained from preselected personnel and are not representative of the whole male population of the respective country; however, the results are representative of the reference collectives. For each body dimension the following detailed information is given: the definition, written and illustrated, for body dimensions to be measured, the frequency of certain ranges a breakdown of GAF and USAF data in percentile essentials on the statistics of data distribution. The correlation matrix of GAF data is also included.

N75-26636** Public Health Service Hospital Staten Island, N Y
RENAIL EFFECTS OF CONTINUOUS NEGATIVE PRESSURE BREATHING Final Report

Continuous negative pressure breathing (CNBP) was utilized to simulate the thoracic vascular distension of zero g or space, in 11 anesthetized rats. The animals underwent renal clearance and micropuncture renal nephron studies before, during, and after CNBP. Rats were pretreated with a high salt diet and 1-M desoxycorticosterone (DOCA) in excess. None of these rates diuresed with CNBP. In contrast, 5 of the 7 remaining rats increased the fraction of the filtered sodium excreted (C sub Na/GFR, p < 05) end their urinary flow rate (V p < 05). Potassium excretion increased (U sub k V, p < 05). End proximal tubular fluid specimen’s T/P/P inulin ratios were unchanged. Whole kidney and single nephron glomerular filtration rates fell 10% CNBP. A mechanism for atrial distension, appears to cause in rats, a decrease in distal tubular sodium water and potassium reabsorption. Exogenous mineral-corticoid prevents the diuresis, saluresis, and hypokalemia. Author.

N75-26637** Scientific Translation Service, Santa Barbara, Calif
REDOX TRANSFORMATIONS OF NICOTINAMIDE-ADENINEdINUCLETIDE IN SKELETAL MUSCLES DURING WORK AND AT REST

The determination of beta-hydroxy butyrate dehydrogenase substrate content in rat skeletal muscles is described as a means of more closely evaluating redox transformation of free nicotinamide-adenine-dinucleotide (NAD) in muscle mitochondria both at rest and after intense work (15 minutes swimming). During work, muscle NAD reduction uses glycogen, at rest, NAD reduction takes place using free mitochondrial NAD. The dynamics of pyruvate (lactate and acetocetate) beta-hydroxy butyrate ratios in the blood are the same as that in the skeletal muscles, and can be used as an index to skeletal muscle energy metabolism. The effect of lumisterol-3 on calcium absorption in bone tissue than vitamin D sub 3 Author.

N75-26638** Scientific Translation Service, Santa Barbara, Calif
HOW’S YOUR HEALTH, COSMONAUT?

The function of medical specialists during spaceflights is to compare the cosmonaut’s current physical state with his previous one, and to predict future health. The three concepts (current, past and future physical state), and methods for determining them are discussed. Heuristic, mathematical, and clinico-physiological approaches to predicting the physical state are described. The H Selven adaptation syndrome is discussed along with a way of monitoring the organisms’ approach to the ‘over-exertion zone’ by mathematical analysis of cardiac rhythm. Author.

N75-26639** Scientific Translation Service, Santa Barbara Calif
EFFECT OF LUMISTEROL-3 ON THE CALCIUM ABSORPTION IN THE GUT AND ON THE CALCIFICATION OF BONE TISSUE

The effect of lumisterol-3 on calcium transport in the intestines and on bone tissue calcium absorption was examined in vitro on the large tibial bone of white leghorn chicks. Four groups of animals were kept on a rachitogenic diet for one month after wean one group of controls. Another was administered 400 IU of vitamin D sub 3, the third was administered a mixture of 200 IU of vitamin D sub 3 and 200 IU of lumisterol-3. The latter mixture proved to be the most effective, in increasing calcium absorption in the intestines. Results indicate that lumisterol-3 by itself stimulates more calcium absorption in bone tissue than vitamin D sub 3 Author.

N75-26640** Naval Postgraduate School, Monterey, Calif
EEG FREQUENCY ANALYSIS ON THE PDP LAB 8/E COMPUTER SYSTEM M S Thesis
Lawrence Morrison Goharn Sep 1974 42 p refs (AD-A003522) Avail NTIS SCSL 06/6

This thesis describes the analysis, method and computer programs used to obtain the fast Fourier Transformation (FFT) of an electroencephalogram (EEG) using a small laboratory computer like the PDP Lab 8/E. The EEG power spectrum was then computed from this transformation. The information contained in this thesis is intended to enable the user to compute the Fourier coefficients of a set of data points or compute the power spectrum of a real waveform such as the EEG. GRA

N75-26641** Institute for Behavioral Research, Inc., Silver Spring, Md
David McK Roich Nov 1974 12 p refs (Contract DAHC04-74-C-0004) (AD-A004024, Rept-151, ARO-11739 1-L) Avail NTIS SCSL 06/18

Several groups of dated pregnant rats were exposed starting on the 13th day of gestation in the anechoic chambers or in a calibrated oven. All the exposures to microwave irradiation were conducted after 0700 and before 1500 hours. The rats were sacrificed on the 17th day of gestation, the fetuses weighed, and their brains fixed and serially sectioned. No differences were found between the irradiated fetuses and the controls which had been similarly handled but not irradiated. In a final experiment, rats were exposed to irradiation from 1700 to 1900 hours or overnight (from 1800 to 0800 or 1000 hours) at 1700 MHz and 5 or 10 mw/sq cm, on the 6th to the 9th and the 12th to the 16th days of gestation. The exposed fetuses were heavier than the controls and the brains larger. The difference was approximately 10 percent. This finding suggests that the effect may be due to some factor which varies with the circadian rhythm. It may also have resulted from the earlier or the repeated irradiation. GRA

N75-26642** Pennsylvania Univ., Philadelphia
STUDY OF TISSUE MECHANICAL PROPERTIES OF THE BLOOD VESSELS AND THEIR REGULATION Final Report
Lysie H Peterson 1975 31 p refs

...
The general objective of the program was to increase and improve knowledge and understanding of the properties and behavior of the circulatory system under normal operating and diseased conditions. The diseased condition being emphasized was hypertension, although the study related to other abnormal states such as shock and also provided insight into the atherosclerotic process. The study dealt extensively with the chemical metabolic and physical characteristics of blood vessels and with how nervous, endocrine and renal functions control cardiovascular properties and behavior. An important aspect of the study was the approach being taken, i.e. the systems approach.

N75-28643# Army Chemical Center, Edgewood, Md
A REVIEW OF THE TOXICOLOGY OF COLORED CHEMICAL SMOKE AND COLORED SMOKE DYES
Edmund J Owens and Dorothy M Ward Dec 1974 71 p refs

N75-28644# Center for Blood Research Boston Mass
FROZEN BLOOD CELL CHANGES Final Report, 1 Sep 1869 - 30 Nov 1974
Fabian J Lionetti 15 Jan 1975 9 p refs

N75-28645# Union Carbide Corp. Tarrytown N Y
ACCESS DIVER PERFORMANCE AND PHYSIOLOGY IN RAPID COMPRESSION TO 31 ATMOSPHERES
R W Hamilton Jr T C Schmidt D J Kenyon and Mark Freitag 1 Dec 1974 87 p refs

N75-28646# Union Carbide Corp. Tarrytown N Y
NEON DECOMPRESSION Final Report, 1 Jan - 31 Dec 1974
R W Hamilton, Jr M R Powell, D J Kenyon and Mark Freitag 31 Dec 1974 20 p refs

N75-28647# Union Carbide Corp. Tarrytown N Y
STUDIES OF DECOMPRESSION PHENOMENA Final Report, 1 Jan - 31 Dec 1974
Michael R Powell 31 Dec 1974 18 p refs

N75-26648# Environmental Health Lab Kelly AFB Tex
INDUSTRIAL HYGIENE SURVEY 123RD TACTICAL CONTROL SQUADRON (CRP), OH ANG, BLUE ASH OH 46242 Final Technical Survey Report
Lawrence W Grauvogel Dec 1974 27 p refs

N75-26649# School of Aerospace Medicine Brooks AFB, Tex
PRINCIPLES OF BIODYNAMICS INTRODUCTION TO GRAVITATIONAL BIOLOGY, 1
Arthur H Smith Nov 1974 51 p refs
field includes the greater energy requirement for mechanical work and displacement of materials in nonrigid systems. There also are secondary changes such as an increased nutritional requirement and blood volume increase. A particularly important condition to gravitational biology is weightlessness. Here the effects of earth-gravity are removed and the intensities of the remaining biological functions are mass determined. This review deals with the physical bases of gravitational biology and the descriptive terminology available. GRA

N75-266500 National Bureau of Standards, Boulder, Colo Cryogenics Div

EVALUATION PROGRAM

EARTH ORBITAL TELEOPERATOR VISUAL SYSTEM


The performance of an orbital teleoperator system which includes small dextrous servicing manipulators to be used in satellite servicing was examined. System/operator performance testing was implemented and the results of a fine positioning control test using two different manipulator systems varying widely in manipulator configuration and control systems are presented. Fine position control is viewed as representing a fundamental requirement placed on manipulator control. The relationship of position control to more complex tasks which directly represent on-orbit servicing operations are also presented. Author

N75-266520 Essex Corp. Huntsville, Ala

E A REALISTIC VIEW OF THE PEOPLE IN AIR TRAFFIC CONTROL

Roger C Smith Dec 1974 6 p refs (AD-A006789 FAA-AM-74-12) Avail NTIS HC $3 25 CSCL 05/5

An overview of research findings on air traffic controllers is presented. Results of personality attitude motivation interest and attitude studies are considered in terms of the general pattern of characteristics found to be associated with success in the air traffic profession. The implications of these findings for managerial programs are discussed. Author

N75-266540 Deutsche Forschungs- und Versuchsanstalt fuer Luft- und Raumfahrt Bad Godesberg (West Germany) Abteilung Luftfahrtpsychologie

FACTOR ANALYSIS OF A NEW MULTI-DIMENSIONAL PERSONALITY QUESTIONNAIRE: A CHECK OF THE FACTOR MODEL IN COMPARISON WITH SIMILAR METHODS

Helmut Kirsch Klaus-Martin Goeters, and Rainer Ewe 21 Jan 1975 26 p refs in GERMAN ENGLISH summary (DLR-FB-75-20) Avail NTIS HC $3 75 DFVLR Poz West Ger 12,20 DM

A personality inventory the Temperament-Structure-Scales was developed for the psychological selection of aviation personnel. The inventory includes questions about attitudes, behavior, and biographical events. The questions are arranged in nine test scales which are described. The nine scales were split in half (odd-even). The matrix of correlations of the resulting 18 half-scales was factor-analyzed. The results are reported and compared with a similar research on the 16 P-f-test and on the HSPQ. The psychometric data are discussed. The assumed 9-factor-structure was confirmed sufficiently. This structure of traits seems to correspond with conceptions which parents and social environment have about educational aims. Author (ESRO)

N75-266550 Stanford Univ Calif Dept of Computer Science

INFORMATION PROCESSING ANALYSIS OF VISUAL PERCEPTION A REVIEW


It is suggested that recent advances in the construction of artificial vision systems provide the beginnings of a framework for an information processing analysis of human visual perception. A review is made of some pertinent investigations which have appeared in the psychological literature along with some of the salient and potentially useful theoretical concepts which have resulted from the attempts to build computer vision systems. An attempt is made to integrate these two sources of ideas to suggest some desirable structural and behavioral concepts which apply to both the natural and the artificial systems. GRA

N75-266560 Computer Image Corp. Denver Colo

THE EFFECTS OF OBSERVER CONTROL OVER VISUAL INFORMATION IN CLASSIFICATION PERFORMANCE Final Technical Report

Louis Cicchinni and Joseph Halpern Nov 1974 77 p refs Prepared in cooperation with Denver Univ (Contract NO0014-74-C-0117) (AD-A003953) Avail NTIS CSCL 05/10

A series of experiments is reported which investigated the effects on performance of observer control over certain information parameters of a dynamic visual display. The results showed that classification performance was enhanced when experienced observers could eliminate and attenuate information. When naive observers were presented with this attenuated information set, their performance was superior to that of a comparable group shown the entire information set. These results were consistent across two different but related sets of stimuli: ambient sea noises and ship sounds. GRA

N75-266570 Air Force Inst of Tech Wright-Patterson AFB Ohio School of Engineering

THE MATRIX ORGANIZATION IN ASD: A STUDY IN COLLOCATION OF ENGINEERS M S Thesis

Cheryl L Moyer Sep 1974 269 p refs (AD-A003604 GSM/SMD/74D-9) Avail NTIS CSCL 05/9

The purpose of this study is to determine if there are peculiar human relations problems associated with the matrix form of organization as applied in the Aeronautical Systems Division (ASD) of the Air Force Systems Command. The data for this study was gathered by the interview questionnaire method. The questionnaire was designed to determine the work motive values job satisfaction and the current work conditions or climate as
perceived by the engineers interviewed. The analyses consisted mainly of (1) Contingency Table Tests (2) Tabulations and (3) Subjective Comparisons. The major variables selected for analysis were (1) work assignment categories of (a) dedication (b) collaboration and (c) functional (not collocated or dedicated) (2) work location categories of (a) ASD SPO (b) Super SPO and (c) Home Office (3) civilian or military and (4) age categories of (a) under 35, (b) 35 through 49 and (c) 50 and older. The major findings of the analyses were grouped into eight major categories and recommendations relevant to each category were made.


The Progress Report is concerned with research performance and results on the contract during the period 1 Jul 1973 - 30 June 1974. On a very general classification level the tasks are of two general types: those dealing with human resources research and those dealing with manned systems research. More specifically four tasks (2, 4, 5, and 8) deal primarily with pilot selection and training performance assessment and the prediction of future operational effectiveness. Three tasks (1, 3, and 7) deal with human perceptual and decision processes and with principles of aviation display, control and computer-assisted technology in problem solving environments involving the use of computers. It was assumed that a major deterrent to effective use of computer technology in problem solving was the lack of knowledge concerning the interaction between man and machine. By giving structure to this aspect of problem solving behavior and studying it experimentally, it was felt that knowledge useful in the design and development of decision support systems could be obtained. While the study of user behavior was a consistent theme of work accomplished and resulted in some fundamental additions to knowledge, the largest part of the effort was devoted to developing the computer systems technology necessary to provide the experimental environment.

N75-26658* Naval Postgraduate School, Monterey, Calif PREDICTION OF PERFORMANCE AND SATISFACTION OF AERONAUTICAL ENGINEERING STUDENTS AT THE NAVAL POSTGRADUATE SCHOOL M.S. Thesis

Charles Theodore Sofge Sep 1974 79 p refs

This paper investigates the periodic variation in human performance predicted by Biorhythm theory. Fourier analysis was performed on performance data of three subjects. The results indicated that the postulated basic biorhythmic cycles exist. Comparison of the phase of predominant experimental frequency with the phase predicted by biorhythm indicated that the frequencies may not be as stable as the theory suggests.

N75-26660* Naval Postgraduate School, Monterey, Calif PERIODIC VARIATIONS IN HUMAN PERFORMANCE M.S. Thesis

Francis Leroy Sink Sep 1974 50 p refs

This paper investigates the periodic variation in human performance predicted by Biorhythm theory. Fourier analysis was performed on performance data of three subjects. The results indicated that the postulated basic biorhythmic cycles exist. Comparison of the phase of predominant experimental frequency with the phase predicted by biorhythm indicated that the frequencies may not be as stable as the theory suggests.

N75-26661* Air Force Inst of Tech Wright-Patterson AFB, Ohio A STUDY OF THE PERSONAL VALUE SYSTEMS AND JOB SATISFACTIONS OF UNITED STATES AIR FORCE OFFICERS M.S. Thesis

John A Madia Oct 1974 105 p refs

The primary objectives of this research were to gain insights into the personal value systems and job satisfactions of Air Force officers. Prior to analyzing data, the paper discusses the role of values in human behavior and outlines the major job satisfaction theories currently in the literature. Using an adaptation of England's methodology the primary orientations (POR) of 1321 officers, as well as the behavioral relevance of 77 personal values (PV) concepts were determined. A modification of Hoppock's general job satisfaction blank 'was used to measure the satisfactions of the officers. Through tests of means and analysis of distributions, the satisfactions of the various officer subgroups were then compared.

N75-26662* Naval Postgraduate School, Monterey, Calif VISUAL SEARCH PROCESSES OF COAST GUARD AIRCREWMEM M.S. Thesis

David Allen Jones Dec 1974 61 p refs

The thesis presents the visual components of the visual search process as it applies to Coast Guard lookouts. It begins with a description of the human eye and follows with an introduction to detection lobe theory. Next, the most distinct region of daylight vision, the foveal vision area, is discussed.

N75-26663# Yale Univ., New Haven, Conn School of Organization and Management HUMAN BEHAVIOR IN PROBLEM SOLVING ENVIRONMENT Final Report

Robert B Fetter 24 Jan 1975 11 p refs

A method for predicting the effectiveness of an augmented remote manipulator system is presented. Such a system represents the combination of a manipulator with a human operator and a small computer. Both the human and the computer have the capability for generating commands to control the manipulator. The performance of the integrated man-machine system can be predicted through the combination of manual control data with a model of the augmentation scheme. This involves the description of human behavior in a form which allows comparisons of the time required by the human to perform a task with and without augmentation. A set of experiments was conducted to generate the necessary human performance data. Results from these experiments are used to investigate some aspects of task description and manipulator rating as well as establishing the form of human performance. The experimentally derived manual control data can be used to predict the performance of an augmented remote manipulator system.

N75-26664 Stanford Univ., Calif FACTORS AFFECTING CONTROL ALLOCATION FOR AUGMENTED REMOTE MANIPULATION PH.D. Thesis

Douglas Edward McGovern 1975 236 p

A method for predicting the effectiveness of an augmented remote manipulator system is presented. Such a system represents the combination of a manipulator with a human operator and a small computer. Both the human and the computer have the capability for generating commands to control the manipulator. The performance of the integrated man-machine system can be predicted through the combination of manual control data with a model of the augmentation scheme. This involves the description of human behavior in a form which allows comparisons of the time required by the human to perform a task with and without augmentation. A set of experiments was conducted to generate the necessary human performance data. Results from these experiments are used to investigate some aspects of task description and manipulator rating as well as establishing the form of human performance. The experimentally derived manual control data can be used to predict the performance of an augmented remote manipulator system.

N75-26665# Minnesota Univ Minneapolis PERSONNEL TECHNIQUES NECESSARY TO MAXIMIZE BIO-BARRIER INTEGRITY AT A MARTIAN RECEIVING LABORATORY Annual Report, 1 Jul 1974 - 30 Jun 1975

G S Michaelson and Thomas A Mahoney 30 Jun 1975 13 p refs

The planning of biological isolation measures for the Mars Surface Sample Return Mission is discussed in terms of personnel and organizational management. Deficiencies in past operations of the Lunar Receiving Laboratory are analyzed. It was found that the failure to clearly define relationships among the government
agencies involved and to effectively integrate their objectives and responsibilities was a major cause of laboratory deficiencies. Possible solutions to these problems are presented for application to future missions.

THE MODULAR ANTI-EXPOSURE SYSTEM
Richard L Bell 25 Jun 1974 27 p
(AD-A003603, NADC-74139-40) Aval NTIS CSCL 06/17
The components of the system is a lightweight, constant-wear, liquid loop garment, an encapsulating life raft, and a thermoelectric portable power plant. The full length liquid loop garment, worn integrally with a lightweight coverall will be essentially the basic clothing configuration required by the airman for a normal mission. In the event of ejection the encapsulating life raft will deploy and completely enclose the airman during parachute descent. The portable power plant called the Downed Airman Power Source (DAPS), requires no batteries for its operation. It will simultaneously provide heat energy for warming the downed survivor and electrical energy for operation of a survival radio. Subjective tests have demonstrated that the Modular Anti-Exposure System performs adequately in maintaining a survivor for up to 24 hours in an extremely low temperature environment.

Wolfgang Stegemann 25 Jul 1974 121 p
In GERMAN Aval NTIS HC $5 25
Structural analysis of the complex between trypsin and the trypsin inhibitor by crystallographic calculations establishes heavy atom positions in isomorph derivatives and phases of the native protein A Fourier synthesis of the complex structures at 2 8 A is provided. An atomic model for the trypsin inhibitor is formulated from experimental data up to 1 9 A resolution Crystallographic proof for the tetrameric substructure of L-asparaginase is developed that shows molecular pseudo positions at a 222 point symmetry A probable packing scheme is developed in combination with Patterson functions

N75-26671# Boeing Computer Services, Inc Seattle, Wash Space and Military Applications Div PROMETHEUS, A USER ORIENTED PROGRAM FOR HUMAN CRASH DYNAMICS Computer Program User Manual
David W Twigg and Richard N Barnes Nov 1974 270 p
(Contract N60014-72-C-0223)
[AD-A004856 BCS-40038] Aval NTIS CSCL 13/12
PROMETHEUS is an efficient user oriented interactive simulation program to study the effects of vehicle crashes on human occupants. A vehicle occupant is modeled as a two dimensional seven link mass-spring dynamic system restrained by seatbelt and shoulder harness subject to an arbitrary impulsive force. An arbitrary optimum absorbing seat interacts with the occupant. Detailed descriptions of how to use the program along with a sample example are presented. The program is designed to operate on the CDC 6600 computer in either a batch or interactive mode.

N75-26672# Forschungsinstitut fuer Anthropotechnik Meckenheim (West Germany) OPTIMIZATION OF CONTROL SIGNAL GAIN BY SELF-ADJUSTMENT [DIE OPTIMIERUNG DER BEDIENSIGNAL-VERSTAEKRUNG DURCH SELBSTEINSTELLUNG]
W Kruse and G Rotbauer Mar 1974 49 p
In GERMAN English summary (FR-13) Aval NTIS HC $3 75, Forschungsinstit fuer Anthropotechnik, Meckenheim, West Ger DM 10
An optimization method was developed allowing for continuous adjustment of control gain settings for a two-dimensional pursuit display, first order tracking system, and fingerstick control. The optimal control gain was also optimal with respect to operator load. The experiment, with 10 poorly and 5 well trained subjects, showed that the optimal gain was not affected by the degree of training. In a second experiment, with control gain continuously adjustable by the subjects themselves, the well trained subjects tended to adjust to the previously determined optimum rather accurately in a short time. The poorly trained subjects tended to select the left or right margin of the optimal setting depending on the initial control gain setting.

N75-26673# Navy Experimental Diving Unit, Washington, D.C. ABSTRACTS BIOMEDICAL RESEARCH AND UNDERWATER BREATHING APPARATUS EVALUATION DIVES 10 TO 1600 FEET CONFERENCE Final Report
L W Raymond and W H Spaur Apr 1974 33 p
Conf held on 1-2 Apr 1974
(AD-A003472 NEDU-23-74) Aval NTIS CSCL 06/19
The report presents the results and tentative conclusions of biomedical research and underwater breathing apparatus evaluation performed in a series of dives ranging from 10 to 1600 feet.

N75-26674# Advisory Group for Aerospace Research and Development Paris (France) VIBRATION AND COMBINED STRESSES IN ADVANCED SYSTEMS
Henning E VonGierske ed (AFSC) Mar 1975 272 p
In ENGLISH, partly in FRENCH Presented at the Aerospace Med Panel Specialists Meeting Oslo 22-23 Apr 1974
(AGARD-CP-145) Aval NTIS HC $8 50
Operational vibration environments and their psychophysiological effects on performances of crews of aircraft land vehicles, and ships are studied.

290
MEN T IN HELICOPTERS

consequences of vibration were discomfort and difficulty in reading to determine the scope and nature of problems due to vibration. Three hundred questionnaires were completed. The chief consequences of vibration were discomfort and difficulty in reading to determine the scope and nature of problems due to vibration. Three hundred questionnaires were completed. The chief

AIRCREW ASSESSMENT OF THE VIBRATION ENVIRONMENT IN HELICOPTERS

B H Rance and J W Chappelow In AGARD Vibration and Combined Stresses in Advan Systems Mar 1975 7 p refs

A survey of military helicopter crews was carried out to determine the scope and nature of problems due to vibration. Three hundred questionnaires were completed. The chief consequences of vibration were discomfort and difficulty in reading. The major effects were, mainly confined to the larger aircraft. Most of the reports from Royal Navy helicopters were associated with hovering or transition to or from the hover, turbulence was found to increase the number of reports of vibration effects. Loading of the aircraft was not found to cause any increase in the number of reports.

N75-27687 Max-Planck-Institut fuer Landarbeit und Landtechnik Bad Kreuznach (West Germany)

HUMAN EXPOSURE TO WHOLE-BODY VIBRATION IN MILITARY VEHICLES AND EVALUATION BY APPLICATION OF ISO/DIS 2631

Heinrich Dupuis In AGARD Vibration and Combined Stresses in Advan Systems Mar 1975 7 p refs

The vibration strain of soldiers and test drivers in military vehicles concerns mainly those reactions which, by the way of influencing the sensation and motoric coordination, can decrease the human performance when operating vehicles and carrying out military tasks. So especially visual sensation will be influenced by vibration stress. Furthermore, vibration at high amplitude in certain frequency ranges may lead to injuries to health. Results of vibration measurements in 13 wheeled vehicles, 3 tanks and 2 ambulances show that the vibration stress under certain conditions may be very high. By the use of national and international standards the measured vibration stress is evaluated. As consequences of these results, technical improvements and daily exposure time limits are proposed.

N75-27688 Surface Effects Ship Project Office Bethesda Md

CREW PERFORMANCE REQUIREMENTS IN THE VIBRATION ENVIRONMENTS OF SURFACE EFFECT SHIPS

Alfred Skolnick In AGARD Vibration and Combined Stresses in Advan Systems Mar 1975 22 p refs

Basic requirements and habitability standards are studied for designing surface effect ships employing a self-generated cushion of air for lift support with vertical motion centered in the 0.2 to 3.0 Hz region. Emphasis is placed on vibratory loads and crew performance. Using empirical data from a 2000-ton testcraft and motion predictions from a 2000-ton SES math model, a simulated pilot house is stimulated to portray ship response characteristics at various speeds in diverse sea states. Results of these motion simulations and selected critical crew tasks conducted during the tests for up to four hour intervals are discussed.

N75-27689 Royal Air Force Inst of Aviation Medicine, Farnborough (England)

THE TRANSMISSION OF ANGULAR ACCELERATION TO THE HEAD IN THE SEATED HUMAN SUBJECT

G R Barnes and B H Rance In AGARD Vibration and Combined Stresses in Advan Systems Mar 1975 7 p refs

Sinusoidal angular oscillation in yaw of seated human subjects both restrained and unrestrained has demonstrated that responses of significant magnitude may be elicited in all three head axes. In the unrestrained condition, the torso appeared to absorb the input acceleration and the response of the head to the yaw axis exhibited very rapid attenuation and large phase lags at frequencies above 4 Hz. In the restrained condition the transmission to the yaw axis of the head was much less severely attenuated with smaller phase lags above 4 Hz. The yaw responses in the unrestrained condition exhibited a resonant peak at 2 Hz in both experimental conditions there was a significant response in both the roll and pitch axes of the head. The response in pitch exhibited significant 2nd harmonic components which were manifested as a frequency doubling effect between 1 and 6 Hz.

N75-27690 Naval Air Development Center Warminster, Pa

AERIAL VIBRATION STRESS ON THE CARDIOVASCULAR SYSTEM OF MAN [ACTION DES VIBRATIONS DE BASSES FREQUENCES SUR LE SYSTEME CARDIO-VASCULAIRE DE L'HOMME]

J Demange R Auffret and B Vettes In AGARD Vibration and Combined Stresses in Advan Systems Mar 1975 5 p refs

Cardiac variability in subjects exposed to low frequency mechanical vibrations was studied. Vascular response to these vibrations was also measured. Particular attention was given to physiological disorders, especially in the case of vibration effects on sick or wounded subjects. Measurements were made of circulation and human performance after exposure to the vibrations. Some subjects were required to perform complex tasks.

N75-27692 Centre d'Essais en Vol Bretigny-sur-Orge (France) Lab de Medecine Aerospatiale

ACTION OF LOW VIBRATION FREQUENCIES ON THE CARDIO-VASCULAR SYSTEM OF MAN [ACTION DES VIBRATIONS DE BASSES FREQUENCES SUR LE SYSTEME CARDIO-VASCULAIRE DE L'HOMME]

J Demange R Auffret and B Vettes In AGARD Vibration and Combined Stresses in Advan Systems Mar 1975 5 p refs

In FRENCH

Cardiac variability in patients exposed to low frequency mechanical vibrations was studied. Vascular response to these vibrations was also measured. Particular attention was given to physiological disorders, especially in the case of vibration effects on sick or wounded subjects. Measurements were made of circulation and human performance after exposure to the vibrations. Some subjects were required to perform complex tasks.

N75-27693 Kentucky Univ Lexington Wenner-Gren Research Lab

EFFECTS OF VIBRATION STRESS ON THE CAR-
VOL ET FRACTURES DU RACHIS

short term helicopter flying However, the impact conditions of
Walter M Braunohler In AGARD Vibration and Combined
EFFECTS OF VIBRATION ON THE MUSCULOSKELETAL
seats, and aircraft malfunctions or sudden movements as caused
were studied—sudden intensive accelerations causing ejection from
high performance jet aircraft are examined Specifically two cases
refs In FRENCH
Rhesus monkeys were chronically exposed to sinusoidal
vibration in the Z axis Gastrointestinal bleeding and lowered
hematcrits were noted during exposure Multiple lesions of the
gastric mucosa were seen at necropsy The impression is one of
early erosive hemorrhagic gastric lesions with subsequent
adjustment to the stress and resultant healing of the lesions

N75-27694 Aerospace Medical Research Labs Wright-Patterson
AFB, Ohio
LABORATORY STUDIES ON CHRONIC EFFECTS OF
VIBRATION EXPOSURE
D V Sturges, D W Badger (Natl Inst for Occupational Safety
and Health, Cincinnati) R N Slarve and D E Wasserman (Natl
Inst for Occupational Safety and Health, Cincinnati) In AGARD
Vibration and Combined Stresses in Advan Systems Mar 1975
2 p refs
Rhesus monkeys were chronically exposed to sinusoidal vibration
in the Z axis. Gastrointestinal bleeding and lowered hematocrits were
noted during exposure. Multiple lesions of the gastric mucosa were
seen at necropsy. The impression is one of early erosive hemorrhagic
gastric lesions with subsequent adjustment to the stress and resultant
healing of the lesions.

N75-27695 National Inst for Occupational Safety and Health
Cincinnati Ohio
SERUM AND URINE CHANGES IN MACACA MULATTA
FOLLOWING PROLONGED EXPOSURE TO 12 Hz, 1.5 g
VIBRATION
D W Badger, D V Sturges (Aerospace Med Res Lab) R N
Slarve (Aerospace Med Res Lab) and D E Wasserman In
AGARD Vibration and Combined Stresses in Advan Systems
Mar 1975 3 p refs
Serum and urine changes in male rhesus monkeys were measured before during and after exposure to 12 Hz, 1.5 g vibration
5 hours daily for 130 hours. Marked erythrocyte loss occurred in 10 exposed animals within 3 weeks probably as a result of
extensive gastrointestinal lesions. Serum albumin globulin ratios decreased. Similar values for 13 controls were unchanged
during this time. No evidence of renal impairment was seen since serum creatinine was unchanged and hematocrit increased
proteinuria and urine sediment morphology were either absent
or not changed.

N75-27696 Centre d’Essais en Vol Bretigny-sur-Orge (France)
Lab de Medecine Aerospatiale
RAPID FLIGHT VIBRATION PHENOMENA AND SPINE
FRACTURES [PHENOMENES VIBRATOIRES RAPIDES EN
VOL ET FRACTURES DU RACHIS]
R Auffret R P Delahaye and J Salvagnac In AGARD Vibration
and Combined Stresses in Advan Systems Mar 1975 5 p refs In FRENCH
Severe vibrations leading to vertebral fractures to pilots of
high performance jet aircraft are examined. Specifically two cases
were studied—sudden intensive accelerations causing ejection from
seats, and aircraft malfunctions or sudden movements as caused
by turbulence, pilot correction procedures, aircraft control, or
servomechanism malfunctions.

N75-27697 Army Aeromedical Research Lab Fort Rucker Ala
EFFECTS OF VIBRATION ON THE MUSCULOSKELETAL
SYSTEM
Walter M Braunohler In AGARD Vibration and Combined
Stresses in Advan Systems Mar 1975 7 p refs
No significant change occurs in bone mineral density after
short term helicopter flying. However, the impact conditions of
basic physical training induce 10% demineralization of the distal
ulna. It is our impression that this is a transient phenomenon.
Long term follow-up of helicopter pilots flying 6.5 hours/week
over two years reveals no evidence of musculoskeletal strain
however there appears to be a trend towards demineralization of
the distal radius. Continued monitoring of this population group
is recommended to determine when pathological changes may
be expected to occur.

N75-27698 Royal Air Force Inst of Aviation Medicine
Farnborough (England)
THE RESPIRATORY AND METABOLIC EFFECTS OF
CONSTANT AMPLITUDE WHOLE-BODY VIBRATION IN
MAN
G R Sharp, G A Patrick and W R Withey In AGARD Vibration
and Combined Stresses in Advan Systems Mar 1975 6 p refs
Nine human subjects were exposed to constant amplitude whole body G sub z vibration for 10 minutes, at frequencies of
2, 4, 6, 8, and 10 Hz. It was found that at 2 and 4 Hz, pulmonary ventilation, oxygen uptake, and tidal carbon dioxide
tension and heart rate were unchanged. At frequencies of 6, 8, and 10 Hz, however, there was an increase in pulmonary
ventilation and in oxygen uptake. Pulmonary ventilation was increased in excess of the oxygen uptake, resulting in hyperventilation. There were no qualitative or quantitative differences in values of
pulmonary ventilation or oxygen uptake between subjects who were unrestrained and who were fully restrained on the vibrator. Most subjects experienced discomfort or pain during exposure to
frequencies of 6, 8, and 10 Hz. It is considered that this pain induced the observed hyperventilation. The increase in oxygen
uptake is thought to be related to the tensing of musculature.

N75-27699 Southampton Univ (England) Human Factors
Research Unit
A STUDY OF VIBRATION, PILOT VISION AND HELICOPTER
ACCIDENTS
Michael J Griffin In AGARD Vibration and Combined Stresses
in Advan Systems Mar 1975 16 p refs
A series of experiments has been conducted to investigate
the hypothesis that the occurrence of helicopters flying into wires
is associated with vibration having a detrimental effect on pilot
visual acuity. The research commenced with an investigation of
the evidence for the problem by surveying the incidence of wire
strikes and determining the conditions in which they occur. The
second study measured pilot visual acuity during flight in two
different helicopter types. It was concluded that under normal
conditions the loss of visual acuity is minimal in these two helicopters was unlikely to be a major cause of wire strikes. The third investigation resulted in the detailed specification of the vibration
experienced in the Scout AH Mk I helicopter. Particular emphasis
was placed on the changes in vibration with the various flight
conditions and the differences between pilots and between
aircraft of the same type. The final series of experiments was
designed to determine the minimum levels of vibration which
would affect visual acuity.

N75-27700 Aerospace Medical Research Labs Wright-Patterson
AFB, Ohio
MECHANISMS OF VIBRATION EFFECTS ON AIRCREW
PERFORMANCE
Richard W Shoenberger In AGARD Vibration and Combined
Stresses in Advan Systems Mar 1975 9 p refs
The effects of vibration on a variety of human performance
tasks are reviewed. Research is categorized with respect to
the predominant performance requirements of the tasks investigated
and results are evaluated in order to determine which aspects of
task performance (sensory input, central processing, and motor
output) are affected by vibration interference. This procedure
reveals that the vast majority of vibration effects occur for tasks
which require fine sensory discrimination or precise motor
response or both only a very few studies show effects which
can be attributed to interference with intellectual or cognitive
functions. On the basis of logical analyses of differential vibration effects on various types of tasks it is suggested that the predominant mechanism for vibration performance effects is direct mechanical interference with functions occurring in the input and output stages of operator performance tasks. Vibration effects on tasks which are primarily intellectual in nature and have minimal sensorimotor requirements are discussed in relation to generalized stress mechanisms. Recent research is described in which analytical deconstruction of reaction time measures made it possible to definitively isolate vibration effects on peripheral and central performance functions within a single task.

Author

N75-27701 Dayton Univ Research Inst Ohio

PERFORMANCE AND PHYSIOLOGICAL EFFECTS OF COMBINED STRESS INCLUDING VIBRATION
J C Guignard In AGARD Vibration and Combined Stresses in Advan Systems Mar 1975 6 p refs

Whole body vibration affects human task performance by two main mechanisms: peripherally by mechanical interference at the point of contact between the man and his task and centrally, by burdening the brain with irrelevant sensory information. In the latter regard the action of vibration is in some ways akin to that of noise. Any particular effect of vibration on performance depends on many factors including the physical characteristics of the vibration, the nature of the task and the skill and motivation of the performer time, and the presence of other stress agents or circumstances. Unfortunately our ignorance of the psychophysiological mechanisms by which vibration degrades particular kinds of task performance is still profound and our knowledge for the most part qualitative in nature. That is mainly because much laboratory based research into the psychophysiological actions of vibration suffers from the lack of an appropriate standardized methodology and of complete and proper measurements of the vibratory forces affecting the man at the time when his performance is being evaluated.

Author

N75-27702 Medical Research Council, Cambridge (England)

EFFECTS OF DURATION OF VERTICAL VIBRATION BEYOND THE PROPOSED ISO “FATIGUE-DECREASED PROFICIENCY’ TIME, ON THE PERFORMANCE OF VARIOUS TASKS
R T Wilkinsen and R Gray (RAE Farnborough England) In AGARD Vibration and Combined Stresses in Advan Systems Mar 1975 5 p refs

Six subjects carried out four 3-hour sessions of performance tasks two with continuous 5 Hz, 1.2 m/s squared rms vertical vibration and two under static conditions. There was no general support for a prediction from the proposed ISO curves of fatigue-decreased proficiency (FDP) that vibration can lower proficiency as a function of duration of exposure. However vibration associated with a 1-hour vigilance task and knowledge of results decreased proficiency towards the end of the 3-hour work period.

Author

N75-27703 Advisory Group for Aeronautical Research and Development, Paris (France)

PERIPHERAL VISION ARTIFICIAL HORIZON DISPLAY
R Malcolm K E Money, and P Anderson In AGARD Vibration and Combined Stresses in Advan Systems Mar 1975 3 p refs

The artificial horizon instrument currently used in aircraft suffers from two shortcomings, the pilot cannot obtain continuous information from it since he must also look at other instruments and second, during episodes of heavy vibration, turbulence or disorientation, a small instrument becomes extremely difficult to read. This paper describes a device which projects a line or bar of light from beside the pilot’s head forward onto the instrument panel. The line is approximately one to four inches wide and subtends 160 - 170 deg of arc from the pilot’s head, so that it extends well into his peripheral vision. The light source is driven by servomotors which are controlled from the aircraft’s inertial gyro's such that the bar of light seen by the pilot duplicates the pitch and roll motions of the real horizon outside the cockpit. The advantages of this display are visibility during turbulence and vibration while looking at other instruments and reduction of the pilot’s workload by making use of the neural programming which naturally orients us with the horizon.

Author

N75-27704 Federal Inst for Occupational Safety and Accident Research Dortmund (West Germany)

A REVIEW OF BIOMECHANICAL MODELS FOR THE EVALUATION OF VIBRATION STRESS
Wolfgang Lange In AGARD Vibration and Combined Stresses in Advan Systems Mar 1975 8 p refs

Physical resonances of the human body or of its parts under vibration correlate with subjective responses. Biodynamic models can be calculated from data of vibration investigations. Several such models are discussed. The models differ in their degrees of freedom in their mass, elasticity and damper elements and in the way these elements are coupled. A further important parameter is the linearity or nonlinearity of the model. For the evaluation of vibratory stress it is necessary to establish physiological and/or psychological criteria which correlate with biomechanical responses that can be simulated by models. Several methods for evaluating vibration stress are discussed and compared.

Author

N75-27705 National Aeronautics and Space Administration Langley Research Center, Langley Station VA

AN ELEMENTARY PSYCHOPHYSICAL MODEL TO PREDICT RIDE COMFORT IN THE COMBINED STRESS OF MULTIPLE DEGREES OF FREEDOM
Ralph W Stone Jr In AGARD Vibration and Combined Stresses in Advan Systems Mar 1975 7 p refs

The quality of airplane rides probably will become increasingly important to passengers, particularly in terminal area operations and short haul trips. The development of models to predict ride comfort is considered. An elementary model concept is presented here and compared with subjective ride comfort response ratings measured on actual scheduled airline flights and simulated flights.

Author

N75-27706 Kentucky Univ Lexington

MODELS OF THE CARDIOVASCULAR SYSTEM UNDER WHOLE BODY VIBRATION STRESS
Charles F Knapp In AGARD Vibration and Combined Stresses in Advan Systems Mar 1975 13 p refs

Five major mechanisms can be listed as the main factors responsible for producing alterations in the circulatory system exposed to vibration. The mechanisms important for vibration stress of a given waveform frequency displacement acceleration transmitted force axis and duration are (1) reaction of the fluid and vessel system (2) reaction of large body organ systems and the musculoskeletal system (3) reaction of the mechanoreceptors (4) reaction of the hormonal metabolic and hematological systems and (5) reaction modification through the central nervous system and the psychophysiological pathways. Analytical efforts are reviewed as they relate to the five mechanisms listed above and current efforts in modeling the hydrodynamic aspects of the cardiovascular system are discussed in order to estimate its relative contribution to the total changes in arterial pressures and flows measured in animals exposed to whole body sinusoidal vibration.

Author

N75-27707 Systems Technology Inc Hawthorne Calif

EVALUATING BIODYNAMIC INTERFERENCE WITH OPERATIONAL CREWS
Henry R Jex and R Wade Allen In AGARD Vibration and Combined Stresses in Advan Systems Mar 1975 18 p refs

A review is made of operational situations in which biodynamic interference with aircrews is a problem, and it is shown that there is a large contrast between the information needed to evaluate these problems in operational situations versus that available from existing laboratory research. A structure and means...
for extrapolating the large and growing empirical data base is discussed. Some progress in work along these lines is presented including systems performance models for interrelating the many variables refined biomechanical models for analyzing vibration feedback through controls in closed loop manual tasks and procedures for including habitability or ride ratings in the overall evaluations. 

Author

**N75-27708** Advisory Group for Aeronautical Research and Development Paris (France) 

**THE ISO GUIDE FOR THE EVALUATION OF HUMAN WHOLE BODY VIBRATION EXPOSURE**

G Bobbert *In its Vibration and Combined Stresses in Advan Systems Mar 1975 6 p refs*

It exists a demand for regulations to evaluate the vibration exposure of human beings. Although the knowledge of the human reaction is not sufficient for all cases of vibration exposure experts from ten countries discussed a standard which gives a guide for the evaluation. As this standard is agreed by the ISO-Council and it is now going to be printed, the background of this standard and the most important details are reported. 

Author

**N75-27709** Royal Aircraft Establishment Farnborough (England) 

**PROPOSED LIMITS FOR EXPOSURE TO WHOLE BODY VERTICAL VIBRATION, 0 1 TO 1 0 Hz**

Geoff Allen *In AGARD Vibration and Combined Stresses in Advan Systems Mar 1975 11 p refs*

The need for design standards for civil and military vehicles to cover human reaction to vibration below 1 Hz is outlined. Limits are proposed against two criteria: the first to prevent severe discomfort merges at 1 Hz with the DIS2631 exposure limit, the second to prevent reduced comfort merges at 1 Hz with the DIS2631 reduced comfort boundary. Because of lack of information, limits have been given for 25 minutes and 8 hour durations only and it has not been possible to suggest values for the preservation of working efficiency. The information on which the proposals are based is outlined namely some twenty laboratory and field investigations and critical reviews yielding about fifty data points. Consider the approximate nature of some of the information it is relatively consistent, and reinforces previous assertions that the critical frequency range for motion sickness is below 0.5 Hz. 

Author

**N75-27710** Boeing Co Wichita Kans 

**RIDE QUALITY OF CREW MANNED MILITARY AIRCRAFT**

Stanley H Brumaghim *In AGARD Vibration and Combined Stresses in Advan Systems Mar 1975 7 p refs*

Ride quality criteria are compared in terms of both short-term and extended term crew performance decrement thresholds. Flight test data are included which illustrate the capability to modify aircraft response to gusts through ride control systems. Requirements to strengthen application of existing criteria to design of airplane ride control systems are given. Chief among these are the need for improved ability to handle human response to frequencies of vibration below 1 Hz and in validation of thresholds for extended exposure to vibration. Test data are also discussed in which the need to consider impact of ride environment on time to complete crew tasks in addition to the more frequent concern with impact on performance errors. 

Author

**N75-27711** Centre de Recherches de Medecine Aeronautique, Paris (France) 

**STUDY OF MAN'S PHYSIOLOGICAL RESPONSE TO EXPOSURE TO INFRA-SOUND LEVELS OF 130 dB**

P Borreton J Nathie and A Gibert *In AGARD Vibration and Combined Stresses in Advan Systems Mar 1975 13 p refs in FRENCH*

Infrasound effects on the physiological functions of man after a 50 minute exposure period were investigated. Special efforts were made to observe circulatory reactions and summarize totally the action of aerial infrasonic vibrations. Measurements were made of man's response to a luminous solicitation cardiac frequency and maximum and minimum arterial pressure. An audiogram was made of the aerial luminary tones. Detailed results are given in tabular form. 

Transl by E H W

**N75-27712** Centre de Recherches de Medecine Aeronautique Paris (France) 

**EFFECT OF LOW FREQUENCY AERIAL VIBRATIONS ON NOCTURNAL ACTIVITY OF A RAT [EFFET D'UNE EXPOSITION A DES VIBRATIONS AERIENNES DE BASSE FREQUENCE SUR L'ACTIVITE NOCTURNE DU RAT]**

P Pesques and J Nathie *In AGARD Vibration and Combined Stresses in Advan Systems Mar 1975 4 p refs in FRENCH*

Observations were made of rat nocturnal activity after exposure to general aerial vibrations. The rats were exposed for eight hours to sinusoidal vibrations at a pressure of 147 dB and at frequencies of 8 16 and 32 Hz. Results indicate the vibrations were not loud enough to severely influence nighttime activity, however some increases and decreases were noted depending on exposure level. 

Transl by E H W

**N75-27713** Erlangen-Nuremberg Univ (West Germany) 

**VIBRATESE LANGUAGE**

Wolf D Keidel *In AGARD Vibration and Combined Stresses in Advan Systems Mar 1975 9 p refs*

A brief review of the work done to develop vibratese languages is given. A special type of vibratese language is described using the v Bekesy model of the cochlea. Here the frequency range of speech is adapted to that of the vibroactile system without changing the time domain so that the speech communication by means of a mechanical stimulation of the skin of the human forearm the LINC B or PDP 12 has been written for this purpose. 

Author

**N75-27714**# Scientific Translation Service Santa Barbara Calif 

**ON THE DIRECTED MONITORING OF STERILIZATION**


The magnitude and the causes of failures in sterilization are evaluated and the effectiveness of an additional indicator to strengthen sterilization monitoring is tested. The spore-earth test is evaluated for the hot air and steam sterilization separately for the period from 1971 to 1973. A glucose-plasma indicator is shown to increase the effectiveness of the biological control when used in conjunction with the standard spore-earth test. 

Author

**N75-27715**# Kanner (Leol) Associates Redwood City Calif 

**Ca SALTS OF THE SACCUS ENDOLYMATHICUS AND PROCESSES OF CALCIFICATION OF BONES DURING NORMAL AND EXPERIMENTAL METAMORPHOSIS IN TADPOLES OF BUFO VULGARIS, RANA DALMATINA AND RANA ESCULENTA**

A Guardabassi Washington NASA Jul 1975 33 p refs Transl into ENGLISH from Arch Anat Microsc Morphol Exp (France) v 41 no 2 1952 p 143-167 (Contract NASw-2790) (NASA-TT-F-16472) Avail NTIS HC $3.75 CSCL 06C 

The feeding of tadpoles with thymus was found to have no significant effect on the size of the animals. The development of the saccus endolymathicus its Ca salt content or bone calcification Experiments on exposure to thyroxine seem to indicate that the calcium salts in the saccus endolymathicus can gradually be mobilized during normal metamorphosis to compensate for any calcium deficiency in the surrounding medium at a finding partly indicated by the fact that the metamorphosis of...
the tadpoles exposed to thyroxine was accelerated and the bones were unable to calcify completely

Author

N75-27717*# Mississippi Valley State Univ Itta Bena BIOLOGICAL INDICATORS FOR MONITORING WATER QUALITY OF MTF CANALS SYSTEM Semianual Status Report. 26 Apr 1974 - 25 Apr 1975 S L Sethi 25 Apr 1975 16 p refs (Grant NgS-8009) (NASA-CR-143178) Avail NTIS HC $3 25 CSCL 06B Biological models, diversity indexes were developed to predict environmental effects of NASA's Mississippi test facility (MTF) chemical operations on canal systems in the area. To predict the effects on local streams, a physical model of unpolluted streams was established. The model is fed by artesian well water free of background levels of pollutants. The species diversity and biota composition of unpolluted MTF stream was determined; resulting information will be used to form baseline data for future comparisons. Biological models were accomplished by adding controlled quantities or kinds of chemical pollutants and evaluating the effects of these chemicals on the biological life of the stream.

Author

N75-27718# Armed Forces Radiobiology Research Inst Bethesda Md CEREBRAL TEMPERATURE CHANGES IN THE MONKEY (MACACA MULATTA) AFTER 2500 RADS IONIZING RADIATION W L McFarland and J A Willis Apr 1974 15 p refs (DNA Prog MWED-QAXMA905) (AD-A004854 AFRRI-SR-74-7) Avail NTIS CSCL 06/18 To determine the temperature response of the brain to radiation thermistor temperature sensing probes were implanted into thalamic and cortical areas of eight monkeys and the arch of the aorta. After securing base-line temperature recordings the monkeys were exposed to 2500 rads whole-body pulsed mixed gamma-neutron radiation in the AFRRI-TRIGA reactor. Temperature at all measured sites generally dropped briefly immediately after the pulse, then rose and stayed elevated 1-2°C for the remainder of the 3-1/2-hour observation period. There did not appear to be any regional differences in brain temperature response and brain temperature followed core (aortic) temperature changes.

GRA

N75-27719# Armed Forces Radiobiology Research Inst Bethesda Md TEMPORAL CHANGE IN RADIOSENSITIVITY OF MINIATURE SWINE AS EVALUATED BY THE SPLIT-DOSE TECHNIQUE J F Taylor J L Terry M E Ekstrom and J E West Jul 1974 26 p refs (DNA Prog NWED-QAXMC903) (AD-A004597 AFRRI-SR-74-14) Avail NTIS CSCL 06/18 Using the split-dose technique recovery was measured in miniature swine exposed to whole-body 60Co gamma radiation delivered at 34-35 rads/minute. The initial conditioning dose (150 rads) was approximately two-thirds of the normal LD50/30 (237 rads). The redetermined or challenge LD50/30 measured 28 days after the conditioning dose was 477 rads, indicating 260 percent recovery from the initial sublethal dose. Histopathological examinations of three animals euthanatized 28 days after 150 rads revealed no histologic evidence that could account for the radiosensitive state at that time.

GRA

N75-27720# Franklin Inst Research Labs Philadelphia, Pa Science Information Sciences Dept STRUCTURE-ACTIVITY CORRELATION BIBLIOGRAPHY, WITN SUBJECT AND AUTHOR INDEX Interim Report Frank D Gower Mar 1975 74 p refs (Contract EPA-68-01-2657) (PB-240658/5, EPA-560-1/75-001) Avail NTIS HC $4 25 CSCL 06T References are provided to the literature on two principle methods of chemical structure-biological activity correlation which employ multiple regression, the multiple parameter approach (Hansch) and the additive model (Free-Wilson). Papers employing factor analysis discriminant analysis pattern recognition, and cluster analysis to correlate chemical structure to biological activity are cited. As these techniques and new ones are published in the literature, they are being included in the compilation. This edition of the bibliography covers the literature to November 1974.

GRA

N75-27721 Wisconsin Univ Madison THERMOCURRENT DOSIMETRY WITH HIGH PURITY ALUMINUM OXIDE Ph D Thesis Gary Dodson Fullerton 1974 145 p Avail Unv Microfilms Order No 75-9971 The application of thermocurrent (TC) to ionizing radiation dosimetry was studied. It was shown that TC in alumina has properties that are suited to personnel dosimetry and environmental monitoring. The TC dosimeters were made from thin disks of alumina Aluminum electrodes were evaporated on each side on one face a high voltage electrode and on the opposite face a measuring electrode encircled by a guard ring. Exposure to ionizing radiation resulted in stored electrons and holes in metastable trapping sites. The signal was read-out by heating the dosimeter with a voltage source and picocoumeter connected in series between the opposite electrodes. The thermally remobilized charge caused a transient TC. The thermogram TC versus time or temperature is similar to a TL glow curve. Either the peak current or the integrated current is a measure of absorbed dose.

Dissert Abstr

N75-27722 Pennsylvania Univ Philadelphia DEVELOPMENTAL PROGRAMMING FOR RETINOTECTAL PATTERNS Ph D Thesis Richard Kevin Hunt 1974 100 p Avail Unv Microfilms Order No 75-14573 Embryonic development of the retinal axes was studied. It was found that before a certain stage these axes may be realigned but then they are irreversibly specified as the permanent reference axes for retinotectal mapping. Axial specification is triggered by the eye itself. When eye cell differentiation was blocked by the thymidine analog 5-bromodeoxyuridine the time of specifica
tion was shown to correlate with the onset of cytologic differentiation of the ganglion cells in the central optic cup. These results indicate that the control mechanisms for axial specification are localized in the gangliogenic precursor cells in the neuroepithelium and are activated as a lineage-dependent, differentiative event. In earlier embryonic stages the capacity to undergo axial replacement is an advantage enabling the eye to compensate for spontaneous misalignments or distortions of the retinal axes. Later the specified permanent axes make possible a fixed plan for position-dependent differentiation of the ganglion cells.

Dissert Abstr

N75-27723 Colorado State Univ, Fort Collins THE EFFECT OF HYPOXIA ON THE PULMONARY CAPILLARIES Ph D Thesis Wiltz Walter Wagner Jr 1974 77 p Avail Unv Microfilms Order No 75-14682
To facilitate study of the effect of hypoxia on pulmonary capillaries, windows were inserted in the chest wall of nine dogs. The total length of all perfused capillaries in the field of observation was then determined for various arterial oxygen tensions. Total perfused capillary length was nearly constant between arterial oxygen tensions of 160 and 70 torr. As the tension fell below 70 torr, recruitment of previously unperfused capillaries occurred. At 40 torr, the total length of perfused capillaries was about four times greater than during normoxia. There was no correlation between the recruitment of capillaries and alterations in left atrial pressure, only a weak correlation with cardiac output changes, but a very strong correlation with increased pulmonary artery pressure. This implies that recruitment is caused by constriction within the lung. This response increases the surface area for gas exchange and therefore could be advantageous during airway hypoxia. Dissert Abstr.

N75-27729# National Aeronautics and Space Administration Lyndon B Johnson Space Center Houston, Tex

BIOCHEMICAL OBSERVATION DURING 28 DAYS OF SPACE FLIGHT

Carolyn S Leach and Paul C. Kambaut In Its Proc of the 1973 JSC Endocrine Program Conf Jun 1975 38 p refs

CSCL 06A

With the completion of the 28-day flight of Skylab 2, the sum of biochemical data on human reaction to the weightless environment was significantly extended both quantitatively and qualitatively. The biochemical studies were divided into two broad categories. One group included the more routine blood studies similar to those used in everyday medical practice. The second category encompassed those analyses used to investigate more thoroughly the endocrinological and fluid changes first seen in the crewmembers following the Gemini Apollo and Soviet missions. Significant biochemical changes were observed that varied in magnitude and direction, but all disappeared shortly after return to earth. Most of changes indicate successful adaptation by the body to the combined stresses of weightlessness. Results of the biochemical observation are presented in the form of data tables and graphs. Author.

N75-27730# National Aeronautics and Space Administration Ames Research Center Moffett Field, Calif

MODULATING THE PITUITARY-ADRENAL RESPONSE TO STRESS

Joan Vernikos-Danelis In Its Proc of the 1973 JSC Endocrine Program Conf Jun 1975 10 p refs

CSCL 06S

Serotonin is believed to be a transmitter or regulator of neuronal function. A possible relationship between the pituitary-adrenal secretion of steroids and brain serotonin in the rat was investigated by evaluating the effects of altering brain 5-hydroxytryptamine (HT) levels on the daily fluctuation of plasma corticosterone and on the response of the pituitary-adrenal system to a stressful or noxious stimulus in the rat. The approach was either to inhibit brain 5-HT synthesis with para-chlorophenyl alanine or to raise its level with precursors such as tryptophan or 5-hydroxytryptophan. Author.

N75-27731# National Aeronautics and Space Administration Ames Research Center Moffett Field, Calif

SIGNIFICANCE OF BIORHYTHMS IN SPACE FLIGHT

Charles M Winget In Its Proc of the 1973 JSC Endocrine Program Conf Jun 1975 11 p refs

CSCL 06P

Evidence is presented that the most important factor in the maintenance of optimal health and performance is the stability of the relationship of one body rhythm to another. The effect of social interaction on performance, well-being, and psychophysiological rhythm synchrony was investigated. Three groups of healthy males, ages 21 to 25, were confined in rooms (3.4 by 5.2 meters (11...
by 17 feet!) for a total period of 105 days. Two of the groups were in rooms in which the environment could be regulated to ambient experimental conditions. The confined subjects were exposed for periods to several days each to 16 hours of light and 8 hours of darkness or to continuous light at a light intensity of 161 lumens per square meter (15 foot-candles). The confined subjects were deprived of all time cues and meals ad libitum. The subjects were observed throughout the study by a video camera and were scored for activity. Communications were limited to meal and sample-collection information, and meals and samples were passed through a two-way hatch. Rectal temperature and heart rate (HR) were sampled every 30 minutes by telemetry throughout the study. Results are presented.

CSCL 06P

Support to the hypothesis that reserpine-induced ACTH hypersecretion is related to brain amine changes.

N75-27736*

Harvard University Cambridge Medical School

THE IMPORTANCE OF THE RENIN-ANGIOTENSIN SYSTEM IN NORMAL CARDIOVASCULAR HOMEOSTASIS

Edgar Haber

In NASA Johnson Space Center Proc of the 1973 JSC Endocrine Program Conf Jun 1975 8 p refs

CSCL 06P

Studies were carried out on adult mongrel dogs (20 to 30 kilograms) to investigate the importance of the renin-angiotensin system. Results indicate that the renin-angiotensin system plays a major role in the maintenance of basal homeostasis and that angiotensin II concentration, in addition to renal perfusion pressure, is a factor in the regulation of renin release.

N75-27733*

Baylor University, Houston, Texas, Department of Physiology

STRESS-INDUCED CHANGES IN CORTICOSTEROID METABOLISM Progress Report

Martha M Tacker

In NASA Johnson Space Center Proc of the 1973 JSC Endocrine Program Conf Jun 1975 10 p refs

CSCL 06S

Because plasma and urine corticosteroid concentrations are influenced by several factors in addition to adrenal cortex secretion, the effect of stress on all of these factors was determined in order to interpret the plasma and urine concentrations. Progress on the interpretation is reported.

N75-27734*

Texas University San Antonio, Department of Anatomy

RECENT STUDIES OF PHYSIOLOGICAL FACTORS INVOLVED IN THE REGULATION OF SEROTONIN CONTENT AND TURNOVER IN THE BRAIN

William W Morgan

In NASA Johnson Space Center Proc of the 1973 JSC Endocrine Program Conf Jun 1975 48 p refs

CSCL 06P

The results of investigations of the psychologic role of serotonin (5-HT) in the brain are discussed. Experiments are described in detail and results presented in tabular and graphical form.

N75-27735*

Indiana University Bloomington

THE ROLE OF BRAIN BIgenic AMINES IN THE CONTROL OF PITUITARY-ADRENOcORTICAL ACTIVITY

Roger P MacKiel

In NASA Johnson Space Center Proc of the 1973 JSC Endocrine Program Conf Jun 1975 10 p refs

CSCL 06P

It was found that pretreatment of animals with desmethylinpropionate antagonized the reserpine-induced sedation without preventing the decline in brain amine or the hypersecretion of adrenocorticotropic hormone (ACTH). The antagonism of reserpine-induced ACTH hypersecretion by the monoamine oxidase (MAO) inhibitor pargyline (MD 841) and the MAO inhibitor N-methyl-N-benzyl-2-propynilamine was studied. Evidence is presented that this antagonism is related to the level of brain biogenic amines maintained during the course of action of the drug. Pretreatment with MAO inhibitors does not affect the ACTH hypersecretion evoked by exposure to cold or chlorpromazine lending further support to the hypothesis that reserpine-induced ACTH hypersecretion is related to brain amine changes.

N75-27737*

Massachusetts General Hospital, Boston, Endocrine Unit

PARATHYROID HORMONE, CALCITONIN, AND VITAMIN D 1974 PRESENT STATUS OF PHYSIOLOGICAL STUDIES AND ANALYSIS OF CALCIUM HOMEOSTASIS

John T Potts Jr and K G Swenson

In NASA Johnson Space Center Proc of the 1973 JSC Endocrine Program Conf Jun 1975 27 p refs

CSCL 06P

The role of parathyroid hormone calcitonin and vitamin D in the control of calcium and bone metabolism was studied. Particular emphasis was placed on the physiological adaptation to weightlessness and as a potential model for this purpose, on the immobilization characteristic of space flight or prolonged bed rest. The biosynthesis control of secretion, and metabolism of these hormonal agents is considered.

N75-27738*

National Aeronautics and Space Administration Lyndon B Johnson Space Center, Houston, Texas

ENDOCRINE CONSIDERATIONS IN THE RED-CELL-MASS AND PLASMA VOLUME CHANGES OF THE SKYLAB 2 AND 3 CREWS

Philip C Johnson (Baylor Coll of Med Houston Tex) Carolyn S Leach and Theda Driscoll (Baylor Coll of Med Houston Tex)

In its Proc of the 1973 JSC Endocrine Program Conf Jun 1975 9 p refs

CSCL 06P

The effect of unknown endocrine changes on blood volume of crewmembers was investigated. The results are presented in tabular form. The fact that some of the changes were in the wrong direction suggests that changes in endocrine function were not the primary cause of the decreases in the plasma volume and red cell mass.

N75-27739*

Scientific Translation Service, Santa Barbara, California

THE PROPHYLACTIC EFFECT OF HEAD-COOLING ON COAL MINER'S CRAMPS REPORT 2 THE EFFECT OF HEAD-COOLING ON COAL MINERS UNDER HOT AND HUMID ENVIRONMENT

Tsuneshi Shiratori, Kazuo Sasaki, Yoshikiko Suzuki, Yoshisada Ina and Isaoishi Saito Washington NASA Jul 1975 16 p refs

Transl into ENGLISH from Tohoku Ishi (Japan) v 66 no 2 1963 p 266-271

Contract NASw-2483

(NASA-ET-F-16449) Aval NTIS HC 52 25 CSCL 06E

An examination was conducted of 12 individuals who had been subjected to head-cooling in the hot and humid environment of the Joban coal mine to determine their body temperature, pulse, respiration, blood pressure rate of perspiration, blood gravity, blood capacity, blood count, plasma protein and urine. The results are discussed.

The data on the unne and focal composition were determined and processed statistically for young healthy male examinees. The experiments were conducted under controlled conditions with the maintenance of standard diet. It was found that for the given category of people the normal values of the component parts of both unne and faces will fluctuate.

Author

N75-27741*# California Univ La Jolla Dept of Neurosciences

CLINICAL APPLICATIONS OF THE HUMAN BRAINSTEM RESPONSES TO AUDITORY STIMULI


A technique utilizing the frequency following response (FFR) (obtained by auditory stimulation, whereby the stimulus frequency autocorrelation function is measured in the resulting brainwaves) as a clinical tool for hearing disorders in humans of all ages is presented. Various medical studies are discussed to support the clinical value of the technique. The discovery and origin of the FFR and another significant brainstem auditory response involved in studying the eighth nerve is also discussed.

J R T

N75-27742*# California Univ La Jolla Dept of Neurosciences

THE AUDITORY NEURAL NETWORK IN MAN


N75-27743*# California Univ La Jolla Dept of Neurosciences

ELECTROPHYSIOLOGICAL MEASUREMENT OF HUMAN AUDITORY FUNCTION


Knowledge of the human auditory evoked response is reviewed including methods of determining this response, the way particular changes in the stimulus are coupled to specific changes in the response, and how the state of mind of the listener will influence the response. Important practical applications of this basic knowledge are discussed. Measurement of the brainstem evoked response for instance can state unequivocally how well the peripheral auditory apparatus functions. It might then be developed into a useful hearing test, especially for infants and/or for the severely impaired children. Clinical applications of measuring the brain waves evoked 100 msec and later after the auditory stimulus are undetermined. These waves are closely related to brain events associated with cognitive processing of auditory signals, since their properties depend upon where the listener directs his attention and whether how long he expects the signal.

Author

N75-27744*# California Univ La Jolla Dept of Neurosciences

ON HEMISPHERIC DIFFERENCES IN EVOKED POTENTIALS TO SPEECH STIMULI


Confirmation is provided for the belief that evoked potentials may reflect differences in hemispheric functioning that are marginal at best. Subjects were right-handed and audiologically normal men and women, and responses were recorded using standard EEG techniques. Subjects were instructed to listen for the targets while laying in a darkened sound booth. Different stimuli speech and tone signals were used. Spectrograms were shown to evoke a response pattern that resembles that to tone or clicks. Analysis of variances on peak amplitude and latency measures showed no significant differences between hemispheres, however, a Wicoxon test showed significant differences in hemispheres for certain target tasks.

Author

N75-27745*# California Univ La Jolla Dept of Neurosciences

STIMULUS NOVELTY, TASK RELEVANCE AND THE VISUAL EVOKED POTENTIAL IN MAN


The effect of task relevance on P3 (waveform of human evoked potential) waves and the methodologies used to deal with them are outlined. Visual evoked potentials (VEPs) were recorded from normal adult subjects performing a visual discrimination task. Subjects counted the number of presentations of the numeral 4 which was interspersed rarely and randomly within a sequence of tachistoscopically flashed background stimuli. Intrusive, task-irrelevant (not counted) stimuli were also interspersed rarely and randomly in the sequence of 2s. These stimuli were of two types: simples which were easily recognizable, and novels, which were completely unrecognizable. It was found that the simples and the counted 4s evoked posteriorly distributed P3 waves while the irrelevant novels evoked large frontally distributed P3 waves. These large frontal P3 waves to novels were also found to be preceded by large N2 waves. These findings indicate that the P3 wave is not a unitary phenomenon but should be considered in terms of a family of waves differing in their brain generators and in their psychological correlates.

Author

N75-27746*# California Univ La Jolla Dept of Psychology and Neurosciences

LOUDNESS ENHANCEMENT MONOURAL BINAURAL AND DICHOTIC


It is shown that when one tone burst precedes another by 100 msec variations in the intensity of the first systematically influences the loudness of second. When the first burst is more intense, the loudness of the second is decreased.

Author

N75-27747*# Methodist Hospital Houston Tex

SKYLAB SLEEP MONITORING EXPERIMENT (EXPERIMENT V2F 747*M Methodist Hospitpl. Houston Tex

Author
A summary of the conceptual design of the Skylab sleep monitoring experiment and a comprehensive compilation of the data-analysis results from the three Skylab missions is presented. One astronaut was studied per flight, electroencephalographic, electro-oculographic and headmotion signals acquired during sleep by use of an elastic recording cap containing sponge electrodes and an attached miniature preamplifier/accelerometer unit are shown. A control-panel assembly mounted in the sleep compartment, tested electrodes preserved analog signals, which automatically analyzed data in real time (providing a telemetered indication of sleep stage). Results indicate that men are able to obtain adequate sleep in regularly scheduled eight-hour rest periods during extended space missions. 

Author (GRA)

ON RANDOM AND TARGET-ORIENTED SEARCH
J T Cordaro Aug 1974 29 p refs
(Grant AF-AFOSR-2178-72 AF Proj 9789)
(AD-080945. FAA-NA-74-61) Avail NTIS CSCL 05/7
To evaluate the oculometer as a virtual fixation measuring device for man/machine interface investigations, air traffic controllers performed simulated radar control functions. A seventh controller performed the control tasks, while both an oculometer record and a manual record were made of visual attention. Approximately 80% of the test time was spent looking at the radar screen; while much less was spent on other instruments and miscellaneous objects. Good agreement was shown between the data obtained by each method but the oculometer was more capable of recording brief eye movements and additional detail. This additional precision was accompanied, however, by an additional workload in data reduction. It was concluded that the oculometer has the potential to produce reliable and accurate information when used within the limits of its design. The addition of automatic output of fixation coordinates would be a valuable improvement resulting in reduced test workload.

Author (GRA)

N75-27755#  Control Data Corp Arlington Va Engineering Management Operations
ASSESSMENT OF RURAL HEALTH RESEARCH EXECUTIVE SUMMARY
G Singleton and S Wyban Mar 1975 54 p refs
(Contract AG-12-01-01-5-S10)
(PB-240271/7, CDC/EMO-74/01) Avail NTIS HC$ 25 CSCL 06E
Problems and possible solutions in the area of rural health research and development are presented.

Author (GRA)
1974 69 p refs (AF Proj 7930)
(AD-A004780, SAM-TR-74-41) Avail NTIS CSCL 05/9

A prototype control and scoring system has been developed around the Link GAT-1 trainer that permits laboratory assessment of pilot performance. This system automatically presents subjects with a number of manoeuvres to perform, from which the performance is scored electronically in terms of how closely subjects are able to stay within the tolerances prescribed for various flight instruments as they execute the series of manoeuvres. Major components of this non-computer based system are (1) two Link GAT-1 trainers, (2) special display panels mounted in the cockpit of each trainer, (3) a central control station, (4) an assembly of special-purpose analog and digital logic for error detection and scoring, and (5) paper tape perforators for data logging. This report covers the basic design and circuitry details. Results of performance tests using this system are reported elsewhere.

N75-27756# Arizona State Univ Tempe Dept of Educational Technology

MEASUREMENT OF FLIGHT PERFORMANCE IN A FLIGHT SIMULATOR Interim Report
Brian D Shiplely Vernon S Gerlack and Fritz H Breckel Aug 1974 147 p refs
(Grant AF-AFOSR-2128-71. AF Proj 9778)

Performance evaluation is an essential part of effective instructional research. The evaluation of complex psychomotor performances is difficult because they are typically transitory. There is no permanent record of trace or product after the performance is completed to indicate the characteristics of the performance. The performance of student pilots in the flight simulator or in the aircraft exemplifies the difficulties stemming from the complexity of the task and from the transitory nature of performance transience. This report describes the results of a methodological study carried out to solve these problems for the purpose of evaluating student pilot performance in a flight simulator.

N75-27757# Arizona State Univ Tempe Dept of Educational Technology

CUES, FEEDBACK, AND TRANSFER IN UNDERGRADUATE PILOT TRAINING, PHASE 3
Vernon S Gerlach Oct 1974 20 p
(Grant AF-AFOSR-2128-71)

Three related lines of endeavor are reported. Central to all activity was continued research concerning the effect of cues and feedback on transfer type tasks. Because questions arose on the effect of practice in the pre-training phase of skill acquisition an experiment was designed to study this variable. A second research thrust was the continued effort to discover more effective and efficient methods of measuring student pilot flight performance. The third line of research centered on the study of algorithms as a tool for the instructional designer whose responsibility it is to improve flying training procedures and techniques.

N75-27758* National Aeronautics and Space Administration Pasadena Office Calif

COORDINATE MULTIAXIS SENSOR FOR TELEOPERATION OF ARTICLE MANIPULATING APPARATUS Patent
(NASA-Case-NPO-13389-1 US-Patent-3 883 362)

A portable miniature ultrasonic transducer positioning apparatus is described. The apparatus has a transducer receiving sleeve coupled to a pair of orthogonally orientated independently pivotable yokes. The yokes are pivotally mounted to a base member. A pair of potentiometers are coupled to the axes of the yokes and to a dial meter sheave position indicator for indicating with respect to the axes of the yokes the angular position of a probe slidably fitted in the sleeve. An oscilloscope or similar signal display device is coupled to the probe for providing signal readout for use in ultrasonic cardiology oscilloscope studies. As an option, a ball lever assembly is provided for remotely controlling yoke position and the angular position of the sleeve and a probe fitted to it.

N75-27760* National Aeronautics and Space Administration Ames Research Center Moffett Field Calif

REFERENCE APPARATUS FOR MEDICAL ULTRASONIC TRANSDUCER Patent
Robert D Lee, Robert J Hudock, and Dale I Shute inventors (to NASA) Issued 8 Jul 1975 8 p Filed 21 Dec 1973
(NASA-Case-ARC-10753-1 US-Patent-3 893 449)

A apparatus for, providing an article under remote control is provided with a sensor comprised of a photodetecting cell divided into four quadrants to define X and Y coordinates and a light emitting diode on a z axis normal to the X and Y axes. Two additional light emitting diodes are equally spaced on each side of the first diode along the X axis of the sensor. The diodes are sequentially energized and images of the diodes are reflected by a target comprising two plane mirrors and a corner retroreflector mounted on the article to produce signals from the cells which when combined and nullled, will align X, Y, and Z axes of the sensor with corresponding axes Xm, Ym and Zm of the target, and also decrease the distance between the sensor and the mirror to a predetermined value.

N75-27761* National Aeronautics and Space Administration Pasadena Office Calif

HEAT STERILIZABLE PATIENT VENTILATOR Patent
Alexander S Irons (JPL) Paul P Muehler (JPL) and Willie D Kent inventors (to NASA) JPL Issued 8 Jul 1975 9 p Filed 7 Mar 1974

Sponsored by NASA
An improved heat-stabilizable patient ventilator is disclosed. The device is characterized by a ported center-body and a shell formed of heat-stabilizable material mounted on the center-body and defining a hermetically sealed reservoir for confining under positive pressure a mixture of bacteria-free gas and a pneumatic circuit including an oxygen delivery just coupled with an absolute filtration system for delivering bacteria-free mixture of gases to the reservoir. Official Gazette of the U.S. Patent Office.

**N75-27762**# IIT Research Inst., Chicago, Ill. Techno/Economic Studies Group

**MARKET STUDY BIOLOGICAL ISOLATION GARMENT**

May 1975 16 p. ref. (Contract NASw-2483)

(NASA-CR-144350) Avail NTIS HC $3.25 CSCL 06K

The biological isolation garment was originally designed for Apollo astronauts to wear upon their return to earth from the moon to avoid the possibility of their contaminating the environment. The concept has been adapted for medical use to protect certain patients from environmental contamination and the risk of infection. The nature and size of the anticipated market are examined with certain findings and conclusions relative to clinical acceptability and potential commercial viability of the biological isolation garment.

**Author**

**N75-27763**# Scientific Translation Service, Santa Barbara Calif

**THE INTERNATIONAL ORBITAL LABORATORY**


(NASA-TR-F-16442) Avail NTIS HC $3.25 CSCL 06S

The problems encountered in space flights such as visual signal contrast sensitivity and motor reactions are discussed. The psychophysiological mechanisms are described and the problems to be solved in the Apollo-Soyuz flight are analyzed.

**Author**

**N75-27764**# Royal Aircraft Establishment Farnborough (England)

**THE DRIVING SEAT ITS ADAPTATION TO FUNCTIONAL AND ANTHROPOMETRIC REQUIREMENTS**

R Rebiffe May 1975 22 p. refs Transl. into ENGLISH from the French

(RAE-Lib-Trans-1841 BR48031) Avail NTIS HC $3.25

The relationship of the drivers seat with the various functions to be carried out from the driving position was considered. The study included (1) analysis of the drivers task (2) determination of the body posture which best meets the task requirements, and (3) definition of the seat characteristics giving optimum support to the driver in this posture. The main characteristics of the seat obtained were the seating height, the location and extent of the adjustment zone, the seat back inclination, the cushion inclination and the static consistency of the cushion.

**Author**

**N75-27765**# Scientific Translation Service, Santa Barbara Calif

**THE SPACE WATCH IN SALYUT AS ON THE EARTH**


(NASA-TR-F-16468) Avail NTIS HC $3.25 CSCL 06S

Medical-experimental investigations carried out onboard Salyut space station are described. The equipment used to train the cosmonauts is briefly discussed.

**Author**

**N75-27766**# Aerospace Medical Research Labs Wright-Patterson AFB Ohio

**EVALUATION OF A WATER-COOLED HELMET LINER**

Final Report, Mar - Jun 1974


(AD-A004776 AMRL-TR-74-135) Avail NTIS CSCL 06/17

Five subjects completed four 80 minute heat exposures (46°C (115°F) 40% relative humidity) twice wearing the water-cooled helmet liner and twice without for a total of 20 heat exposures. During the thermal exposure, the subjects accomplished psychomotor performance tests. Physiological measurements included mean skin rectal and body temperatures, mean heart rate, body heat storage, sweat loss and Physiologic Index of Strain. The performance measurements included tracking mental arithmetic visual-motor response time and auditory differentiation tasks. Head cooling significantly reduced the magnitude of all the physiological responses. The effect of head cooling on psychomotor performance was less impressive. The overall results indicate a lack of performance decrement as a result of the heat loads used here and no differential effect of head cooling on a subject's performance.

**Author**

**N75-27767**# Aerospace Medical Research Labs, Wright-Patterson AFB, Ohio

**BREATHING AIR QUALITY UNDER THE FIRE PROXIMITY SUIT HOOD**


Four subjects wearing the fire fighters proximity suit (except for gloves) were exposed to low and moderate exercise regimens on a treadmill. These exercise levels plus a resting condition were combined with auxiliary air ventilation flow rates of 5 or 10 liters/minute and nonventilated conditions. A continuous sample of the breathing atmosphere under the hood was evaluated for CO2 and O2 content throughout the ten minute exposure periods. The increases in heart rate are solely related to the level of exercise and were not influenced by the presence or magnitude of auxiliary air ventilation. Under the most severe conditions of this study, O2 and CO2 values did not attain levels of clinical significance. Increased activity in operational situations is a distinct possibility and CO2 levels could be elevated an additional 2-3% generating undesirable symptoms. The added weight and cost penalties of an auxiliary air ventilation system must be balanced against the possible development of an undesirable breathing environment of questionable operational significance.

**Author**

**N75-27768**# Massachusetts Inst of Tech Cambridge Artificial Intelligence Lab

**A MECHANICAL ARM CONTROL SYSTEM**


(AD-A004672, AI-M-301) Avail NTIS CSCL 06/4

The paper describes a system for controlling the motion of a mechanical manipulator primarily through software rather than hardware. In addition, much attention is paid to what characteristics such a system should have so that the manipulator can be conveniently directed to perform complex tasks.

**Author**
**SUBJECT INDEX**

AEROSPACE MEDICINE AND BIOLOGY / A Continuing Bibliography (Suppl. 146) OCTOBER 1975

### Typical Subject Index Listing

<table>
<thead>
<tr>
<th>SUBJECT HEADING</th>
<th>TITLE EXTENSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLANTS (BOTANY)</td>
<td>Problems of space biology. Volume 27: Radiobiology and genetics of arabidopsis --- effects of radiation and weightlessness. [NASA-TP-P-15849]</td>
</tr>
<tr>
<td>PLANTS (BOTANY)</td>
<td>PUTF (BOATABI) 1</td>
</tr>
<tr>
<td>PLANTS (BOTANY)</td>
<td>Problems of space biology. Volume 27: Radiobiology and genetics of arabidopsis --- effects of radiation and weightlessness. [NASA-TP-P-15849]</td>
</tr>
<tr>
<td>PLANTS (BOTANY)</td>
<td>AEROSPACE MEDICINE AND BIOLOGY / A Continuing Bibliography (Suppl. 146) OCTOBER 1975</td>
</tr>
<tr>
<td>PLANTS (BOTANY)</td>
<td>Typical Subject Index Listing</td>
</tr>
<tr>
<td>PLANTS (BOTANY)</td>
<td>SUBJECT HEADING</td>
</tr>
<tr>
<td>PLANTS (BOTANY)</td>
<td>TITLE EXTENSION</td>
</tr>
<tr>
<td>PLANTS (BOTANY)</td>
<td>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</td>
</tr>
</tbody>
</table>

### A

#### ABIOGENESIS

- Possible mechanisms of corona discharge involved in biogenesis [A75-37000]
- Origin of life - Clues from relations between chemical compositions of living organisms and natural environments [A75-38616]

#### ACCELERATION (PHYSICS)

- Rapid flight vibration phenomena and spine fractures [A75-27696]
- Skylab experiment S-092 - Results of the first manned mission [A75-25335]

#### ACCELERATION STRESSES (PHYSIOLOGY)

- Cardiopulmonary effects of combined exercise and +Gz acceleration [A75-38809]
- Physiologic effects of seatback angles less than 45 deg/from the vertical/ relative to G [A75-38411]
- Variations in the activity of some brain and plasma enzymes under the influence of +Gz acceleration [A75-38416]

#### ACCELERATION TOLERANCE

- Principles of biodynamics. Introduction to gravitational biology, 1 [AD-A03628] [A75-26649]

#### ACCIDENT PREVENTION

- Prophylaxis of high-altitude decompression sickness during flights in depressurized cabins [A75-39175]

#### ACCIDENT PREVENTION

- Otorhinolaryngological problems in medical support of space flight [A75-36331]

#### ACCIDENT PROGRESSION

- Skylab experiment S-092 - Results of the first manned mission [A75-36535]
- Selected medical problems in the field of human factors or ergonomics [A75-39790]

#### APPEARENT NERVOUS SYSTEMS

- Influence of receptor-receptor fibres on the spontaneous afferent activity from semicircular canals in the frog /Dana ascultans/ [A75-37620]

#### AGING (BIOLOGY)

- Effects of oxygen-nitrogen /1:1/ at 760 Torr on the life span and fine structure of Drosophila melanogaster [A75-37323]

#### AIR QUALITY

- Breathng air quality under the fire proximity suit hood [AD-A008770] [A75-27767]

#### AIR TRAFFIC CONTROL

- Color coding for air traffic control displays [A75-37681]
- Advanced speech technology applied to problems of air traffic control [A75-37692]
- Computer-generated voice in air traffic control applications [A75-37693]
- Vocational interests of air traffic control personnel [A75-38408]
ANGIOGRAPHY
Measurement of peak rates of left ventricular wall movement in man - Comparison of echocardiography with angiography
A75-38536

ANGULAR VELOCITY
Perceived distance and the perceived speed of self-motion - Linear vs. angular velocity
A75-36358

ANIMALS
Continuous animal exposure to a mixture of dichloromethane and 1,1,1-trichloroethane [NASA-CR-141089] N75-26631
Effects of vibration stress on the cardiovascular system of animals N75-27693
Models of the cardiovascular system under whole body vibration stress N75-27706

ANNUAL VARIATIONS
The state of sleep of the winter personnel of a coastal Antarctic station N75-38300

ANTARCTIC REGIONS
The state of sleep of the winter personnel of a coastal Antarctic station N75-38300

ANTHRHOPOBETHT
Human exposure to whole-body vibration in military vehicles and evaluation by application of ISO/DIS 2631 N75-27687
The driving seat. Its adaptation to functional and anthropometric requirements [RAE-LID-TRANS-1041] N75-27764

ANTIBIOTICS
Application of luciferase assay for ATP to antimicrobial drug susceptibility testing [NASA-CASE-GSC-12039-1] N75-26629

AORTA
Continuous cardiac output measurement - Aspects of Doppler frequency analysis A75-36073
Geometry of aortic heart valves --- prosthetic design A75-36836

APOLLO PROJECT
APOLLO SOYUZ TEST PROJECT
Prevention of decompression sickness during a simulated space docking mission A75-38418

ARMED FORCES
"ARMED FORCES (UNITED STATES)"
A study of the personal value systems and job satisfactions of United States Air Force officers [AD-A003602] N75-26661

ARHYTHMIA
Hybrid calculators for the analysis of cardiac arrhythmias A75-38538

ARTERY
Cytological reaction of the arterial wall to injury A75-38508

ASTRONAUT PERFORMANCE
Characteristics of metabolism during prolonged water immersion A75-36328
Otochirnologenical problems in medical support of space flights A75-36331
Skylab tank and work performance /Experiment M-151 - Time and motion study/ A75-36339
Skylab experiment M-171 'Metabolic Activity' - Results of the first manned mission A75-36340
How's your health, cosmonaut? [NASA-TT-F-16331] N75-26638

I-2
<table>
<thead>
<tr>
<th>SUBJECT INDEX</th>
<th>BLOOD FLOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>The international orbital laboratory --- a discussion of human operational problems [NASA-TT-P-16442]</td>
<td>Effects of prolonged weightlessness on the swimming pattern of fish aboard Skylab 3 [A75-38413]</td>
</tr>
<tr>
<td>The space watch in Salyut as on the earth --- physical training and the effects of spaceflight stress on cosmonaut performance [NASA-TT-P-16468]</td>
<td>Rat operant responding - An indicator of nitrogen narcosis [A75-38417]</td>
</tr>
<tr>
<td>ATHLETES Assessment of aerobic and anaerobic capacity of athletes in treadmill running tests</td>
<td>BIBLIOGRAPHIES A bibliography of published information on combustion toxicology [A75-37250]</td>
</tr>
<tr>
<td>ATMOSPHERIC MODELS Origin of life - Clues from relations between chemical compositions of living organisms and natural environments</td>
<td>Structure-activity correlation bibliography, with subject and author index - chemical compounds toxicity [PB-240658/5]</td>
</tr>
<tr>
<td>ATS 6 The feasibility of dermatologic consultation to remote areas via 2-way color satellite transmission [AIAA PAPER 75-896]</td>
<td>BINAURAL HEARING Loudness enhancement: Monaural, binaural and dichotic [NASA-CR-143138]</td>
</tr>
<tr>
<td>AUDITORY PERCEPTION Waves in the eye and ear /Sixth Annual Parry Lecture/ --- theory of sensory perception</td>
<td>BIOMICRONOMICS Central inhibitory interactions in human vision [A75-38667]</td>
</tr>
<tr>
<td>Electrophysiological measurement of human auditory function [NASA-CR-143136]</td>
<td>BIOCHEMISTRY Biochemical observation during 28 days of space flight [A75-27729]</td>
</tr>
<tr>
<td>AUDITORY TASKS Loudness enhancement in man. 1: Brainstem evoked response correlates</td>
<td>Stimulus novelty, task relevance and the visual evoked potential in man [NASA-CR-143139]</td>
</tr>
<tr>
<td>AUGMENTATION Factors affecting control allocation for augmented remote manipulation</td>
<td>BIOENGINEERING Geometry of aortic heart valves --- prosthetic design [A75-36836]</td>
</tr>
<tr>
<td>Loudness enhancement in man. 1: Brainstem evoked response correlates</td>
<td>BIOLOGY/IMMERSCIENCE Application of luciferase assay for ATP to antimicrobial drug susceptibility testing [NASA-CAS5-86C-12039-1]</td>
</tr>
<tr>
<td>AUTOMATA THEORY Motion of pendulum-type biped systems</td>
<td>BIODRICAL DATA A computerized system for optimal filtering of left ventricular pressure data [A75-36072]</td>
</tr>
<tr>
<td>AUTOMATIC CONTROL Environment-sensitive manipulator control --- real time, decision making computer aided control</td>
<td>A concise parametric representation of electrocardiograms [A75-36074]</td>
</tr>
<tr>
<td>Manipulator robots</td>
<td>How's your health, cosmonaut? [NASA-TT-P-16321]</td>
</tr>
<tr>
<td>AUTOMOBILE ACCIDENTS PROMETHEUS, a user oriented program for human crash dynamics [AD-A004656]</td>
<td>Biochemical observation during 28 days of space flight [A75-26638]</td>
</tr>
<tr>
<td>AUTOMOBILE FUELS Efflux of gaseous hydrogen or methane fuels from the interior of an automobile [COM-75-10288/9]</td>
<td>Significance of biorhythms in space flight [A75-27729]</td>
</tr>
<tr>
<td>AUTOMOBILES The driving seat. Its adaptation to functional and anthropometric requirements [K-AR-LIB-TEAMS-1841]</td>
<td>BIONETICS Miniaturized electrode for on-line PO2 measurements</td>
</tr>
<tr>
<td>B</td>
<td>back injuries Rapid flight vibration phenomena and spine fractures [A75-27696]</td>
</tr>
<tr>
<td>BACTEROLOGY Application of luciferase assay for ATP to antimicrobial drug susceptibility testing [NASA-CAS5-86C-12039-1]</td>
<td>BIOSIC1 A pulse-width modulated model for visual eye tracking [A75-36071]</td>
</tr>
<tr>
<td>BED BASE Effects of muscle electrostimulation during simulated weightlessness [A75-36333]</td>
<td>A simulation study of coronary circulation [A75-37149]</td>
</tr>
<tr>
<td>Mineral and nitrogen balance study - Results of metabolic observations on Skylab II 28-day orbital mission [A75-36336]</td>
<td>Information processing analysis of visual perception: A review [AD-A003624]</td>
</tr>
<tr>
<td></td>
<td>BLOOD FLOW Conscious cardiac output measurement - Aspects of Doppler frequency analysis [A75-36655]</td>
</tr>
</tbody>
</table>
Measurement of peak rates of left ventricular wall movement in man - Comparison of echocardiography with angiography A75-38536

The fractional rate of change of ventricular power during isovolumic contraction - Derivation of haemodynamic terms and studies in dogs A75-38669

CARDIOLOGY

Hybrid calculators for the analysis of cardiac arrhythmia A75-38538


CARDIOVASCULAR SYSTEM

Consequence of social isolation on blood pressure, cardiovascular reactivity and design in spontaneously hypertensive rats A75-36725

Cardiopulmonary effects of combined exercise and +Gz acceleration A75-38009

Changes in exercise heart rate in lowlanders after prolonged stay at high altitude /6000 m/ A75-38418

Study of the in vivo mechanical properties of the blood vessels and their regulation [AD-A003613] A75-26642

Action of low vibration frequencies on the cardiovascular system of man A75-27692

Effects of vibration stress on the cardiovascular system of animals A75-27693

Models of the cardiovascular system under whole body vibration stress A75-27706

The importance of the renin-angiotensin system in normal cardiovascular homeostasis A75-27732

CATHODE RAY TUBES

Color coding for air traffic control displays A75-37691

CELLS (BIOLOGY)

Cytological reaction of the arterial wall to injury A75-38508

CENTRAL NERVOUS SYSTEM DEPRESSANTS

Relationship between administration time of drugs and acute toxicity in mice - mortality rate of mice injected with central stimulants and depressants [NASA-TP-F-16411] A75-26632

CENTRAL NERVOUS SYSTEM STIMULANTS

Relationship between administration time of drugs and acute toxicity in mice - mortality rate of mice injected with central stimulants and depressants [NASA-TP-F-16411] A75-26632

CEREBRO

Cerebral temperature changes in the monkey (Macaca mulatta) after 2500 rads ionizing radiation A75-27718

CHEMICAL COMPOSITION

Origin of life - Clues from relations between chemical compositions of living organisms and natural environments A75-38616

The composition of urines and feces in healthy subjects [NASA-TP-F-16420] A75-27780

CHEMICAL COMPOUNDS

Biological indicators for monitoring water quality of MTP canals system [NASA-CR-100178] A75-27717

Structure-activity correlation bibliography, with subject and author index - chemical compounds toxicity [PB-260658/5] A75-27720

Industry survey of test methods of potential health hazard -- for chemicals [PB-239914] A75-27750

CHEMICAL INDICATORS

On the directed monitoring of sterilization -- using the spore-earth test and a glucose-plasma indicator [NASA-TP-F-16459] A75-27714

CHLORELLA

A month alone with chlorella [NASA-TP-F-16463] A75-26634

CIRCULATORY RHYTHMS

Time estimates in a long-term time-free environment -- human performance A75-37171

CLASSIFICATIONS

On the classification of multivariate time dependent patterns in view of their process structure -- evaluation of EEG A75-27726

CLINICAL MEDICINE

Advances in clinical vectorcardiography A75-37386

Clinical applications of the human brainstem responses to auditory stimuli [NASA-CR-143134] A75-27741

CLOSED ECOCLOGICAL SYSTEMS

A month alone with chlorella [NASA-TP-F-16463] A75-26634

COCHLEA

Study of hydromechanical models of the inner ear with illustration of basilar membrane, corti-organ, and covering membrane A75-27727

COLLISIONS

A study of vibration, pilot vision and helicopter accidents A75-27699

COLOR

Color coding for air traffic control displays A75-37691

COLOR TELEVISION

The feasibility of dermatomic consultation to remote areas via 2-way color satellite transmission [NASA-PAPER 75-696] A75-38031

COMBUSTION PRODUCTS

A bibliography of published information on combustion toxicology A75-37250

COMFORT

An elementary psychophysical model to predict ride comfort in the combined stress of multiple degrees of freedom A75-27705

COMPARATIVE TRACKING

Effects of motion on the parameters of the human operator engaged in a roll axis tracking task A75-37139

COMPUTER PROGRAMS

VECTOR II - A computer program for the spatial analysis of the vectorcardiogram A75-38046

Algorithm for the multi-parameter analysis of nystagmus using a digital computer A75-38419

PHRENOBURG, a user oriented program for human crash dynamics [AD-A004656] A75-26671

Two programs for speech recognition and system identification research [AD-A003806] A75-27754

COMPUTER TECHNIQUES

A computerized system for optimal filtering of left ventricular pressure data A75-36072

Methods of electronic simulation of flight sounds A75-36993

Environment-sensitive manipulator control -- real time, decision making computer aided control A75-37148

Advanced speech technology applied to problems of air traffic control A75-37692

Computer-generated voice in air traffic control A75-37693

EKG frequency analysis on the PDP 8/E computer system [AD-A003522] A75-26640

COMPUTERIZED SIMULATION

Discrete time modelling of human pilot behavior [COMBAT, TP NO. 1975-52] A75-37913

A simulation study of coronary circulation A75-38379
### Subject Index

**Doppler Effect**
- Continuous cardiac output measurement - Aspects of Doppler frequency analysis [A75-36073]
- Studies of decompression phenomena - bubble detection by means of Doppler ultrasound bubble detector [AD-A003513]

**Dose Phases**
- Thrombocytopenia with high purity aluminium oxide [W75-26647]

**Drosophila**
- A mathematical analysis of the mortality kinetics of Drosophila melanogaster exposed to gamma radiation [A75-37326]
- Effects of oxygen-nitrogen (1:1) at 760 Torr on the life span and fine structure of Drosophila melanogaster [W75-37327]

**Dyes**
- A review of the toxicology of colored chemical smokes and colored smoke dyes [AD-A003927]

**Dynamic Characteristics**
- Motion of pendulum-type biped systems [A75-35979]
- Dynamic properties of eye position coded neurons in the alert monkey during saccades [A75-37024]

**Dynamic Control**
- Environment-sensitive manipulator control - real-time, decision making computer aided control [A75-37148]

**Dynamic Models**
- A review of biomechanical models for the evaluation of vibration stress [W75-27704]
- An elementary psychophysical model to predict ride comfort in the combined stress of multiple degrees of freedom [W75-27705]
- Study of hydro-mechanical models of the inner ear with illustration of basilar membrane, corti-organ, and covering membrane [W75-27727]

**Dynamic Response**
- PROMPTFORS, a user oriented program for human crash dynamics [AD-A004656] [W75-26671]

**Echocardiography**
- Left ventricular volume measurement by echocardiography - Fact or fiction [A75-37387]
- Measurement of peak rates of left ventricular wall movement in man - comparison of echocardiography with angiography [A75-38536]

**Electric Corona**
- Possible mechanisms of corona discharge involved in biogenesis [A75-37000]

**Electric Stimuli**
- Effects of muscle electrical stimulation during simulated weightlessness [A75-38536]

**Electrocardiography**
- Conduction cardigraph-bundle of His detector [A75-36070]
- A concise parametric representation of electrocardiograms [A75-36074]
- Advances in clinical vectorcardiography [A75-37396]
- Amplitude/frequency differences in a single-lead ECG of normal versus coronary heart diseased males [A75-38421]

**Electrodes**
- A stable combination of electrodes for an electroretinographic investigation [A75-38507]

**Electroencephalography**
- On estimating and reducing the effect of intersubject EEG variation on the performance of EEG pattern recognition systems [A75-37436]
- The effect of stimulus orientation on the visual evoked potential in human subjects [A75-38004]
- EEG frequency analysis on the PDP Lab 8/E computer system [AD-A003522] [W75-26640]
- On the classification of multivariate time dependent patterns in view of their process structure - evaluation of EEG [W75-27726]

**Electrolyte Metabolism**
- Study of water-salt metabolism and renal function in cosmonauts [A75-36327]

**Electromagnetic Absorption**
- Resonant electromagnetic power deposition in man and animals [A75-36522]

**Electron Microscopes**
- Simplified procedures for releasing and concentrating microorganisms from soil for transmission electron microscopy viewing as thin-sectioned and frozen-etched preparations [A75-35902]

**Electroretinography**
- The effect of stimulus orientation on the visual evoked potential in human subjects [A75-38004]

**Electrophysiology**
- Conduction cardigraph-bundle of His detector [A75-36070]
- The auditory neural network in man [NASA-CR-143136] [W75-27744]
- Electrophysiological measurement of human auditory function [NASA-CR-143136] [W75-27743]
- On hemispheric differences in evoked potentials to speech stimuli [NASA-CR-143137] [W75-27744]

**Electromyography**
- Use of the EEG and EOG in evaluating the effect of sleep deprivation on visual function in flying personnel [A75-38420]

**Embryology**
- A stable combination of electrodes for an electroretinographic investigation [A75-38507]

**Endothelium**
- The effects of malnutrition on the developing brain stem of the rat - A preliminary experiment using the lateral vestibular nucleus [A75-35900]
- Effects of hypoxia on early pregnancy and embryonic development in the mouse [A75-38415]

**Employee Relations**
- The matrix organization in ASD: A study in collocation of engineers [AD-A003604] [W75-26657]

**Encapsulating**
- The modular anti-exposure system [AD-A003603] [W75-26670]

**Endocrine Systems**
- Proceedings of the 1973 Lyndon B. Johnson Space Center Endocrine Program Conference [NASA-MS-X-58155] [W75-27728]
- Biochemical observation during 28 days of space flight [W75-27729]
- Endocrine considerations in the red-cell-mass and plasma volume changes of the Skylab 2 and 3 crews [W75-27738]

**Entolynph**
- Ca salts of the mucous endolyphatic and processes of calcification of bones during normal and experimental metamorphosis in tadpoles of Rana and Rana species and Rana esculenta [NASA-TT-F-16472] [W75-27715]
FLIGHT CREWS
Comments on the work of an airliner crew --- human factors engineering A75-37047
Increase in the flight deck A75-37899
Use of the ECG and EOG in evaluating the effect of sleep deprivation on visual function in flying personnel A75-38420
Factor analysis of a new multi-dimensional personality questionnaire. A check of the factor model in comparison with similar methods [NASA-CB-111866] B75-26654
Aircrrew assessment of the vibration environment in helicopters N75-27686
Evaluating biodynamic interference with operational crews N75-27707
Ride quality of crew manned military aircraft N75-27710

FLIGHT FATIGUE
Workload reduction on the flight deck A75-37949
Aircrew assessment of the vibration environment in helicopters N75-27686
FLIGHT FITNESS
Medical flying fitness - a routine affair - but who examines and assesses psychic health A75-38422
FLIGHT RISKS
The biological effectiveness of HZE-particles of cosmic radiation studied in the Apollo 16 and 17 EVA and EVA simulations and experiments A75-36334
Prevention of decompression sickness during a high acceleration flight tests A75-38418

FLIGHT SAFETY
Human factors in safe flight operations: Proceedings of the Twenty-seventh Annual International Air Safety Seminar, Williamsburg, Va., November 10-16, 1974 A75-37487
Human error in aviation operations A75-37942
FLIGHT SIMULATION
Physiologic effects of seatback angles less than 45 deg /from the vertical/ relative to G A75-38411
FLIGHT SIMULATORS
Methods of electronic simulation of flight sounds A75-36993
An automated system to assess pilot performance in a Link CAT-1 trainer [AD-A004780] 175-27755
Measurement of flight performance in a flight simulator [AD-A004488] B75-27756

FLIGHT TRAINING
Incremental transfer and cost effectiveness of flight training simulators A75-37988
Life changes and aviation accidents A75-37988

FRAGMENTATION
Fragmentation of fixed line stimuli as a function of gravitational orientation A75-36359
FREEZING
FREQUENCY RESPONSE
Amplitude/frequency differences in a single-lead ECG of normal versus coronary heart disease patients A75-38421

FROGS
Ca salts of the saccans endolymphaticns and processes of calcification of bones during normal and experimental metamorphosis in tadpoles of Bufo vulgaris, Rana dalmatina and Rana esculenta [NASA-TP-P-16472] B75-27715

ENIRONMENT EFFECTS
Time estimates in a long-term time-free environment --- human performance A75-37171
The state of sleep of the winter personnel of a coastal Antarctic station A75-38900
ENIRONMENT MODELS
Origin of life - Clues from relations between chemical compositions of living organisms and natural environments A75-38616
ENERGY ACTIVITY
Influence of bicycle ergometer work and oral glucose administration on the human muscle-bisokinase activity A75-36712
Variations in the activity of some brain and plasma enzymes under the influence of +Gz acceleration A75-38416
ENGINES
The development and application of computer methods and computer programs for the structural analysis of proteins - for example the trypsin-trypsin inhibitor complexes, the free inhibitors, and the L-asparaginase model [NASA-CASE-WP-13601-2] N75-27759
ERGOETERS
Influence of bicycle ergometer work and oral glucose administration on the human muscle-bisokinase activity A75-36712
ERROR ANALYSIS
Left ventricular volume measurement by echocardiography - Fact or fiction A75-37387
ETHEROCYTES
Postmission plasma volume and red-cell mass changes in the crews of the first two Skylab missions A75-36337
Endocrine considerations in the red-cell mass and plasma volume changes of the Skylab 2 and 3 crews N75-27738
EVOLUTION (DEVELOPMENT)
ESTROGENS (PHYSIOLOGY)
The influence of posture on isometric strength and endurance of forearm blood flow, and the blood pressure and heart rate response to isometric exercise [AD-A004332] B75-27749
EXPOSURE
Continuous animal exposure to a mixture of dichloromethane and 1,1,1-trichloroethane [NASA-CR-141889] W75-26631
EYE EXAMINATIONS
Multparameter vision testing apparatus [NASA-CASE-WSP-13601-2] W75-27759

FACTOR ANALYSIS
Factor analysis of a new multi-dimensional personality questionnaire. A check of the factor model in comparison with similar methods [DLR-FB-75-20] W75-26654
Factors affecting control allocation for augmented remote manipulation A75-26664
FEEDBACK
Cues, feedback, and transfer in undergraduate pilot training, phase 3 [AD-A003786] W75-27757
FISHES
Effects of prolonged weightlessness on the swimming pattern of fish aboard Skylab 3 A75-38413

VOL. 6-8
The fractional rate of change of ventricular power during isovolumic contraction - derivation of haemodynamic terms and studies in dogs

HYDRATIONS

Role of histamine in the hypoxic vascular response of the lung

BLOODSTAINS

The importance of the 'retic-angiotensin system in normal cardiovascular homeostasis

STORAGE

SUBJECT INDEX

GAMMA RAYS
A mathematical analysis of the mortality kinetics of Drosophila melanogaster exposed to gamma radiation

GAS EXCHANGE
Cardiopulmonary effects of combined exercise and +Gz acceleration

GAS FLOW
A gas flow indicator for portable life support systems

GASTROINTESTINAL SYSTEM
Laboratory studies on chronic effects of vibration exposure

GLUCOSE
Influence of bicycle ergometer work and oral glucose administration on the human muscle-benozoic activity

On the directed monitoring of sterilization - using the space-earth test and a glucose-plasma indicator

GRAVITATIONAL EFFECTS
Fragmentation of fixed line stimuli as a function of gravitational orientation

Evaluation of the effects of hypergravity exposure and caging restraint on bone mineralization in the Beagle by in vivo photon absorptiometry

Principles of biodynamics. Introduction to gravitational biology, 1

GYRO HORIZONS
Peripheral vision artificial horizon display

HEAD (ANATOMY)
The prophylactic effect of head-cooling on coal miner's cramps. Report 2: The effect of head-cooling on coal miners under hot and humid environment

HEAD MOVEMENT
The transmission of angular acceleration to the head in the seated human subject

HEAD-UP DISPLAYS
Peripheral vision artificial horizon display

HEALTH
The composition of urine and feces in healthy subjects

HEALTH PHYSICS
How's your health, cosmonaut?

Industrial hygiene survey. 123rd Tactical Control Squadron (CF), OH ANG, Blue Ash OH 45242 - hazardous noise levels

HEART DISEASES
Conduction cardiograph-bundle of His detector

Advances in clinical vectorcardiography

HEART RATE
Skylab experiment S-092 - Results of the first manned mission

Changes in exercise heart rate in lowlanders after prolonged stay at high altitude /6000 m/

Measurement of peak rates of left ventricular wall movement in man - Comparison of echocardiography with angiography

Hybrid calculators for the analysis of cardiac arrhythmias

The influence of posture on isometric strength and endurance forca blood flow, and the blood pressure and heart rate response to isometric exercise

HEART VALUES
Geometry of aortic heart valves as prosthetic design

HEAT TREATMENT
Soil sterilization effects on in situ indigenous microbial cells in soil

Heat sterilizable patient ventilator

HEART WAVE
Vena caval and capillary blood hematocrit at rest and following submaximal exercise

HYPOHEMATOCRINES
The fractional rate of change of ventricular power during isovolumic contraction - derivation of haemodynamic terms and studies in dogs

HELIOCURVE
Influence of bicycle ergometer work and oral glucose administration on the human muscle-benozoic activity

HEXAMETHYL-ETHER ATMOSPHERES
Effect of hyperbaric helium on vitamin uptake and utilization by micro-organisms

HELRELS
Evaluation of a water-cooled helmet liner

HEMATOCRINES
Venous and capillary blood hematocrit at rest and following submaximal exercise

HEMODYNAMICS
The fractional rate of change of ventricular power during isovolumic contraction - derivation of haemodynamic terms and studies in dogs

HEPOOXIMETRY
Influence of bicycle ergometer work and oral glucose administration on the human muscle-benozoic activity

HIGH ALTITUDE BREATHING
Prophylaxis of high-altitude decompression sickness during flights in depressurized cabins

Individual features in the reaction to hypoxia --- high altitude simulation

HIGH ALTITUDE ENVIRONMENTS
Changes in the field of peripheral vision under conditions of high mountain climbing

HIGH PRESSURE
Access: Diver performance and physiology in rapid compression to 31 atmospheres

HJS BUNDLE
Conduction cardiograph-bundle of His detector

HISTAMINES
Role of histamine in the hypoxic vascular response of the lung

SICKLE CELLS
The importance of the 'retic-angiotensin system in normal cardiovascular homeostasis

STORAGE
HORNOUS METABOLISMS

Parathyroid hormone, calcitonin, and vitamin D
1974: Present status of physiological studies and analysis of calcium homeostasis

HORMONE METABOLISMS

Effect of lanisterol-3 on the calcium absorption in the gut and on the calcification of bone tissue [NASA-TT-F-16422] W75-26639

HUMAN BEHAVIOR

Investigation on the possible role of a work factor in thermo-regulatory behavior of man A75-37025

Life changes and aviation accidents A75-37493

Discrete time modelization of human pilot behavior [ONERA, TP NO. 1975-52] A75-37913

The state of sleep of the winter personnel of a coastal Antarctic station A75-38300

Human behavior in problem solving environment -- involving the use of computers [AD-A003805] W75-26663

HUMAN BODY

The transmission of angular acceleration to the head in the seated human subject W75-27689

Effects of vibration on the musculoskeletal system W75-27697

The respiratory and metabolic effects of constant amplitude whole-body vibration in man W75-27698

A review of biomechanical models for the evaluation of vibration stress W75-27700

The ISO guide for the evaluation of human whole body vibration exposure W75-27708

A multi-factorial design of computer supported research of human sleep under the influence of various thermal conditions W75-27725

HUMAN FACTORS ENGINEERING

Comments on the work of an airline crew -- human factors engineering A75-37047

Human factors in safe flight operations; Proceedings of the Twenty-seventh Annual International Air Safety Seminar, Williamsburg, Va., November 10-14, 1974 A75-37497

Selected medical problems in the field of human factors or ergonomics A75-37490

Human error in aviation operations A75-37492

Physiologic effects of seatback angles less than 45 deg from the vertical/relative to 6 A75-38411

A month alone with chlorella [NASA-TT-F-16463] W75-26634

Enhancement of human effectiveness in system design, training, and operation [AD-800149] W75-26658

Vibration and combined stresses in advanced systems [AGARD-CP-145] W75-27685

HUMAN PATHOLOGY

Amplitude/frequency differences in a single lead ECG of normal versus coronary heart disease males A75-38421

Cytological reaction of the arterial wall to injury A75-38508

HUMAN PERFORMANCE

Selected medical problems in the field of human factors or ergonomics A75-37490

The effects of observer control over visual information in classification performance [AD-1003953] W75-26656

Enhancement of human effectiveness in system design, training, and operation [AD-800149] W75-26658

Prediction of performance and satisfaction of aeronautical engineering students at the Naval Postgraduate School [AD-8003529] W75-26659


Vibration and combined stresses in advanced systems [AGARD-CP-145] W75-27685

Human exposure to whole-body vibration in military vehicles and evaluation by application of ISO/DIS 2631 W75-27687

Crew performance requirements in the vibration environments of surface effect ships W75-27688

Action of low vibration frequencies on the cardiovascular system of man W75-27692

Performance and physiological effects of combined stress including vibration W75-27701

Effects of duration of vertical vibration beyond the proposed ISO "fatigue-decreased proficiency" time, on the performance of various tasks W75-27702

Evaluating biodynamic interference with operational crews W75-27707

Ride quality of crew manned military aircraft W75-27710

Stimulus novelty, task relevance and the visual evoked potential in man [NASA-CR-143139] W75-27745

HUMAN REACTIONS


Changes in the vestibular function during space flight W75-36330

A study of the personal value systems and job satisfactions of United States Air Force officers [AD-8003602] W75-26661

PROMETHEUS, a user oriented program for human crash dynamics [AD-8004656] W75-26671

Proposed limits for exposure to whole body vertical vibration, 0.1 to 1.0 Hz W75-27709


HUMAN RESOURCES

A study of the personal value systems and job satisfactions of United States Air Force officers [AD-8003602] W75-26661

HUMAN TOLERANCES

Effects of transient vibrations on human safety and performance W75-27691

HYBRID COMPUTERS

Hybrid calculators for the analysis of cardiac arrhythmias W75-38538

HYDROGEN FUELS

Efflux of gaseous hydrogen or methane fuels from the interior of an automobile [COM-75-10288/9] W75-26650

HYDROMECHANICS

Study of hydromechanical models of the inner ear with illustration of basilar membrane, cortex-organ, and covering membrane W75-27727

HYPERBARIC CHAMBERS

Effect of hyperbaric helium on vitamin uptake and utilization by micro-organisms A75-38042

Hypoxia.

Effect of hyperbaric helium on vitamin uptake and utilization by micro-organisms A75-38042

Hypoxia.

Effect of hyperbaric helium on vitamin uptake and utilization by micro-organisms A75-38042

HYPERTENSION

Consequence of social isolation on blood pressure, cardiovascular reactivity and design in spontaneously hypertensive rats A75-36725
HYPERTENSION
The respiratory and metabolic effects of constant amplitude whole-body vibration in man A75-27698

HYPOTHESIS
Individual features in the reaction to hypoxia --- high altitude simulation A75-36391
Pole of histamine in the hypoxic vascular response of the lung A75-37072
Effects of hypoxia on early pregnancy and embryonic development in the mouse A75-38615
The effect of hypoxia on the pulmonary capillaries A75-27723

IMPLANTED ELECTRODES (BIOLOGY)
Miniaturized electrode for on-line PO2 measurements A75-36071

IN-FLIGHT MONITORING
The Skylab sleep monitoring experiment - methodology and initial results A75-36338
Skylab sleep monitoring experiment (experiment N133) [NASA-CR-181806] A75-27767

INDUSTRIAL SAFETY
Industrial hygiene survey, 123rd Tactical Control Squadrons (CCP), OH A75-26648
Industrial hygiene survey, 123rd Tactical Control Squadrons (CCP), OH A75-26648

INDUSTRIES
Industry survey of test methods of potential health hazard --- for chemicals A75-27750

INFRASONIC FREQUENCIES
Study of man's physiological response to exposure to infra-sound levels of 130 dB A75-27711

INTERNATIONAL COOPERATION
The international orbital laboratory --- a discussion of human operational problems [NASA-TP-16642] A75-27763

INTESTINES
Effect of lunasterol-3 on the calcium absorption in the gut and on the calcification of bone tissue [NASA-TP-16642] A75-26639

IONIZING RADIATION
Cerebral temperature changes in the monkey (Macaca mulatta) after 2500 rads x-raying radiation [AD-A004854] A75-27718
Thermocurrent dosimetry with high purity aluminum oxide A75-27721

IRRADIATION
Effects of microwave irradiation on embryonic brain tissue [AD-A004024] A75-26641

LEARNING CURVES
Skylab task and work performance /Experiment N-151 - Time and motion study/ A75-36339

LESIONS
Cytological reaction of the arterial wall to injury A75-38508
Laboratory studies on chronic effects of vibration exposure A75-27694

LIFE SUPPORT SYSTEMS
Study and assessment of advanced ETC/LSS application to space shuttle [NASA-CR-141872] A75-26666

LINES
Evaluation of a water-cooled helmet liner [AD-A004776] A75-27766

LONG TERM EFFECTS
Mineral and nitrogen balance study - Results of metabolic observations on Skylab II 28-day orbital mission A75-36336
Time estimates in a long-term time-free environment --- human performance A75-37171
Effects of duration of vertical vibration beyond the proposed ISO **fatigue-decreased proficiency'' time, on the performance of various tasks A75-27702

LOUDNESS
Aural enhancement in man. 1: Brainstem evoked response correlates A75-27746

LOW FREQUENCIES
Action of low vibration frequencies on the cardiovascular system of man A75-27692
Effect of low frequency aerial vibrations on nocturnal activity of a rat A75-27712

LOW TEMPERATURE ENVIRONMENTS
The modular anti-exposure system A75-26670

LUNAR MODULE
Discrete time modelization of human pilot behavior [OWERA, TP NO. 1975-52] A75-37913

MAGNETIC MEASUREMENT
The visual aptitude of inspection personnel for magnetic-particle and penetrant testing A75-38634

MAN MACHINE SYSTEMS
Comments on the work of an airliner crew --- human factors engineering A75-37047
Selected medical problems in the field of human factors or ergonomics A75-37490
Human error in aviation operations A75-37922
Advanced speech technology applied to problems of air traffic control A75-37692

Manipulator robots A75-38182
Enhancement of human effectiveness in system design, training, and operation [AD-A004149] A75-26658
Human behavior in problem solving environment --- involving the use of computers [AD-A004305] A75-26663
Optimization of control signal gain by self-adjustment --- pursuit tracking task [PB-13] A75-26668

MANIPULATORS
Environment-sensitive manipulator control --- real time, decision making computer aided control A75-37148
Manipulator robots A75-38182
Earth orbital teleoperator visual system evaluation program [NASA-CR-143875] A75-26652
Factors affecting control allocation for augmented remote manipulation A75-26664

A mechanical arm control system [AD-A004672] A75-27768
SUBJECT INDEX

MUSCULOSKELETAL SYSTEM
Mineral and nitrogen balance study - Results of metabolic observations on Skylab II 28-Day orbital mission
A75-36336

Bedox transformations of nicotinamide-adenine-dinucleotide in skeletal muscles during work and at rest
[NASA-TT-F-16432] N75-26637

Effects of vibration on the musculoskeletal system
N75-27697

NEUROCARDIAL INFARCTION
Hybrid calculators for the analysis of cardiac arrhythmias
A75-38538

NEUROCARDIUM
The fractional rate of change of ventricular power during isovolumic contraction - Derivation of haemodynamic turns and studies in dogs
A75-38669

NARCOSIS
Bat operant responding - An indicator of nitrogen narcosis
A75-38417

NAVIGATION AIDS
Computer-generated voice in air traffic control applications
A75-37693

NEON
Neon decapsulation
[AD-A003506] N75-26666

NERVES
Influence of receptor-receptor fibres on the spontaneous afferent activity from semicircular canals in the frog /Rana esculenta/
A75-37620

NEURAL NETS
Adaptive pattern processing in the visual system
A75-37618

NEUROLOGY
The auditory neural network in man
[NASA-CR-143135] N75-27742

Dynamic properties of eye position coded neurons in the alert monkey during saccades
A75-37024

Adaptive pattern processing in the visual system
A75-37618

NEUROPHYSIOLOGY
The control of posture and movements during REM sleep - Neurophysiological and neurochemical mechanisms
A75-36332

NICOTINAMIDE
Bedox transformations of nicotinamide-adenine-dinucleotide in skeletal muscles during work and at rest
[NASA-TT-F-16432] N75-26637

NITROGEN
Fat operant responding - An indicator of nitrogen narcosis
A75-38417

NOCTURNAL VARIATIONS
Effect of low frequency aerial vibrations on nocturnal activity of a rat
N75-27712

NOISE (SOUND)
Industrial hygiene survey, 123rd Tactical Control Squadron (CPS), OH ANG, Blue Ash OH 45242 --- hazardous noise levels
[AD-A003491] N75-26648

HOMESTORE
A new formula for estimating oxygen consumption in man and animal
A75-36710

NONDESTRUCTIVE TESTS
The visual aptitude of inspection personnel for magnetic-particle and penetrant testing
A75-38634

NUCLEAR EXPLOSIONS
Effects of transient vibrations on human safety and performance
N75-27691

NUCLEOTIDES
Bedox transformations of nicotinamide-adenine-dinucleotide in skeletal muscles during work and at rest
[NASA-TT-F-16432] N75-26637

NUTRITION
The effects of malnutrition on the developing brain stem of the rat - A preliminary experiment using the lateral vestibular nucleus
A75-35900

OCEAN SURFACE
Possible mechanisms of corona discharge involved in biogenesis
A75-37000

OCTOLOMETERS
Use of the EOG and EEG in evaluating the effect of sleep deprivation on visual function in flying personnel
A75-38420

Oculometer measurement of air traffic controller visual attention
[AD-A006965] N75-27753

OCULOMOTOR NERVES
Dramatic properties of eye position coded neurons in the alert monkey during saccades
A75-37024

OPERATIONAL HAZARDS
Human factors in safe flight operations; Proceedings of the Twenty-seventh Annual International Air Safety Seminar, Williamsburg, Va., November 10-14, 1974
A75-37487

OPERATIONAL PROBLEMS
The international orbital laboratory - a discussion of human operational problems
[NASA-TT-F-16442] N75-27763

OPERATOR PERFORMANCE
Effects of motion on the parameters of the human operator engaged in a roll axis tracking task
A75-37139

Selected medical problems in the field of human factors or ergonomics
A75-37490

Manipulator robots
A75-36182

The visual aptitude of inspection personnel for magnetic-particle and penetrant testing
A75-36634

Oculometer measurement of air traffic controller visual attention
[AD-A006965] N75-27753

OPTICAL MEASURING INSTRUMENTS
Multiparameter vision testing apparatus
[NASA-CASE-MSC-13601-2] N75-27759

OPTICAL SCANNERS
Information processing analysis of visual perception: A review
[AD-A003483] N75-26655

OPTIMAL CONTROL
Optimization of control signal gain by self-adjustment -- pursuit tracking task
[TF-13] N75-26668

ORBITAL ASSEMBLY
Earth orbital teleoperator manipulator system evaluation program
[NASA-CR-143874] N75-26651

OSCILLATING FLOW
Study of hydromechanical models of the inner ear with illustration of basilar membrane, corti-organ, and covering membrane
N75-27727

OTOLOGYNGOLOGY
Otomihalaryngological problems in medical support of space flights
A75-36331

OXYGEN BREATHING
Effects of oxygen-nitrogen /1:1/ at 760 Torr on the life span and fine structure of Drosophila melanogaster
A75-37327

OXYGEN CONSUMPTION
A new formula for estimating oxygen consumption in man and animal
A75-36710
PHYSIOLOGICAL EFFECTS

Effects of oxygen–nitrogen /1:1/ at 760 Torr on
the life span and fine structure of Drosophila melanogaster
A75-37327

Effects of hypoxia on early pregnancy and
embryonic development in the mouse
A75-38815

PATTERN RECOGNITION

A concise parametric representation of
electrocardiograms
A75-36074

On estimating and reducing the effect of
intersubject EEG variation on the performance of
EEG pattern recognition systems
A75-37936

Adaptive pattern processing in the visual system
A75-37618

On the classification of multivariate time
dependent patterns in view of their process
structure --- evaluation of EEG
A75-27726

PENDULUMS

Motion of pendulum-type biped systems
A75-35979

PEPTIDES

The importance of the renin-angiotensin system in
normal cardiovascular homeostasis
A75-27732

PERFORMANCE

Earth orbital teleoperator visual system
evaluation program
[ NASA-CR-183875] A75-26652

PERFORMANCE PREDICTION

Prediction of performance and satisfaction of
aeronautical engineering students at the Naval
Postgraduate School
[ AD-A003539] A75-26659

PERFORMANCE TESTS

Abstracts Biomedical Research and Underwater
Breathing Apparatus Evaluation Dives 10 to 1600
Peeft Conference
[ AD-A003472] A75-26669

PERIODIC VARIATIONS

Periodic variations in human performance
[ AD-A003517] A75-26660

PERIPHERAL VISION

Changes in the field of peripheral vision under
conditions of high mountain climbing
A75-36392

PERSONALITY TESTS

Vocational interests of air traffic control
personnel
A75-38408

Factor analysis of a new multi-dimensional
personality questionnaire. A check of the
factor model in comparison with similar methods
[ DLB-PB-75-20] A75-26654

PERSONNEL

A realistic view of the people in air traffic
control
[ AD-A006789] A75-26653

PERSONNEL SELECTION

Vocational interests of air traffic control
personnel
A75-38408

The visual aptitude of inspection personnel for
magnetic-particle and penetrant testing
A75-38634

Factor analysis of a new multi-dimensional
personality questionnaire. A check of the
factor model in comparison with similar methods
[ DLB-PB-75-20] A75-26654

PHYSIOLOGY

The fractional rate of change of ventricular power
during isovolumic contraction - Derivation of
haemodynamic terms and studies in dogs
A75-38669

PHOTOGRAMMETRY

Geometry of aortic heart valves --- prosthetic
design
A75-36836

PHYSICAL EXERCISE

Effects of fatiguing isometric exercise upon
Achilles tendon reflex and plantar flexion
reaction time components in man
A75-36711

Venous and capillary blood hematocrit at rest and
following submaximal exercise
A75-36713

Assessment of aerobic and anaerobic capacity of
athletes in treadmill running tests
A75-36714

Time estimates in a long-term time-free environment
--- human performance
A75-37171

Cardiopulmonary effects of combined exercise and
+Gz acceleration
A75-38409

Changes in exercise heart rate in lowlanders after
prolonged stay at high altitude /4000 m/
A75-38414

The space watch in Salyut as on the earth
--- physical training and the effects of spaceflight
sessions on cardiovascular performance
[ NASA-TT-F-16468] A75-27765

PHYSICAL FITNESS

The influence of posture on isometric strength and
endurance forresds blood flow, and the blood
pressure and heart rate response to isometric
exercise
[ AD-A004332] A75-27749

PHYSICAL WORK

Skylab experiment 8-177 "Metabolic Activity" -
Results of the first manned mission
A75-36340

Investigation on the possible role of a work
factor in thermoregulatory behavior of man
A75-37025

PHYSIOLOGICAL EFFECTS

Physiologic effects of seatback angles less than
45 deg /from the vertical/ relative to G
A75-38411

Performance and physiological effects of combined
stress including vibration
A75-27701

The prophylactic effect of head-cooling on coal
miner's cramps. Report 2: The effect of
head-cooling on coal miners under hot and humid
environment
[ NASA-TT-F-16469] A75-27739
SUBJECT INDEX

PHYSIOLOGICAL FACTORS
A review of the toxicology of colored chemical smokes and colored smoke dyes [AD-003827]
Recent studies of physiological factors involved in the regulation of serotonin content and turnover in the brain [AD-26683]

PHYSIOLOGICAL RESPONSES
Characteristics of metabolism during prolonged water immersion
Skylab experiment E-171 'Metabolic Activity' - Results of the first manned mission
Individual features in the reaction to hypoxia --- high altitude simulation
Consequence of social isolation on blood pressure, cardiovascular reactivity and design in spontaneously hypertensive rats
Effects of vibration stress on the cardiovascular system of animals
A review of biomechanical models for the evaluation of vibration stress
Models of the cardiovascular system under whole body vibration stress
Study of man's physiological response to infra-sound levels of 130 dB
A multi-factorial design of computer supported research of human sleep under the influence of various thermal conditions
Loudness enhancement in man: l: Brainstem evoked response correlates

PHYSIOLOGICAL TESTS
Changes in the field of peripheral vision under conditions of high mountain climbing
Assessment of aerobic and anaerobic capacity of athletes in treadmill running tests

PHYSIOLOGY
Study of the in vitro mechanical properties of the blood vessels and their regulation [AD-003613]

PILOT ERROR
Human error in aviation operations
Life changes and aviation accidents

PILOT PERFORMANCE
Comments on the work of an airliner crew --- human factors engineering
Discrete time modelization of human pilot behavior [ONERA, TP NO. 1975-52]
Physiologic effects of seatback angles less than 45 deg/from the vertical/relative to g
The effect of the individual and combined stresses of vibration and sustained g on pilot performance
Mechanisms of vibration effects on aircrew performance
Peripheral vision artificial horizon display
An automated system to assess pilot performance in a Link GAT-1 trainer [AD-0011487]
Measurement of flight performance in a flight simulator [AD-0014188]

PILOT TRAINING
Enhancement of human effectiveness in system design, training, and operation [AD-001449]

Measurement of flight performance in a flight simulator [AD-0004488]
Cues, feedback, and transfer in undergraduate pilot training, phase 3 [AD-0013708]

PITUITARY GLAND
Modulating the pituitary-adrenal response to stress
The role of brain biogenic amines in the control of pituitary-adrenocortical activity

PLANTAR TISSUES
Effects of fatiguing isometric exercise upon Achilles tendon reflex and plantar flexion reaction time components in man

POLARIZATION CHARACTERISTICS
Resonant electromagnetic power deposition in man and animals

PORTABLE LIFE SUPPORT SYSTEMS
A gas flow indicator for portable life support systems [NASA-CR-141892]

POSTING DEVICES (MACHINERY)
Reference apparatus for medical ultrasonic transducer [NASA-CSP-ARC-10753-1]

POSTURE
The control of posture and movements during REM sleep - Neurophysiological and neurochemical mechanisms
The influence of posture on isometric strength and endurance forearm blood flow, and the blood pressure and heart rate response to isometric exercise [AD-0004332]

PREGNANCY
Effects of hypoxia on early pregnancy and embryonic development in the mouse

PRESSURE MEASUREMENTS
Miniaturized electrode for on-line PO2 measurements

PROBLEM SOLVING
Human behavior in problem solving environment --- involving the use of computers [AD-001366]

PROPRIOECEPTION
Changes in the vestibular function during space flight

PROSTHETIC DEVICES
Geometry of aortic heart valves --- prosthetic design

PROTECTIVE CLOTHING
The modular anti-exposure system [NASA-CR-148350]
Market study: Biological isolation garments [NASA-CR-148350]
Breathing air quality under the fire proximity suit hood [AD-0014770]

PROTEINS
The development and application of computer methods and computer programs for the structural analysis of proteins - for example the trypsin-trypsin inhibitor complexes, the free inhibitors, and the L-asparaginase

PSYCHOLOGICAL FACTORS
Life changes and aviation accidents
Medical flying fitness - a routine affair - but who examines and assesses psychic health

PSYCHOLOGICAL TESTS
Vocational interests of air traffic control personnel

PSYCHOPHYSIOLOGY
Perceived distance and the perceived speed of self-motion - Linear vs. angular velocity
Vibration and combined stresses in advanced systems [AGARD-CP-185]

I-15
The biological effectiveness of HZE-particles of cosmic radiation studied in the Apollo 16 and 17 biostack experiments.

Remote regions: The feasibility of dermatologic consultation to remote areas via 2-way color satellite transmission.

Renal function: Study of water-salt metabolism and renal function in cosmonauts.

Remote control: Environment-sensitive manipulator control --- real time, decision making computer aided control.

Radiation hazards: Cooperative multisensor sensor for teleoperation of article manipulating apparatus.

Radiation effects: Factors affecting control allocation for augmented remote manipulation.

Radiation tolerance: Renal effects of continuous negative pressure breathing.

Respiratory physiology: A new formula for estimating oxygen consumption in man and animal.

Retinal images: Fragmentation of foveal line stimuli as a function of gravitational orientation.

Retina: Developmental programming for retinotectal patterns.

Resonant frequencies: Renal electromagnetic power deposition in man and animals.

Respiration: Effects of fatiguing isometric exercise upon Achilles tendon reflex and plantar flexion reaction time components in man.

Remote handling: Earth orbital teleoperator manipulator system evaluation program.

Remote control: Environment-sensitive manipulator control --- real time, decision making computer aided control.

Radiation effects: Factors affecting control allocation for augmented remote manipulation.

Radiation hazards: Cooperative multisensor sensor for teleoperation of article manipulating apparatus.

Radiation absorption: Complex permittivity and penetration depth of certain biological tissue between 40 and 90 GHz.

Radiation dosage: Temporal change in radiosensitivity of miniature swine as evaluated by the split-dose technique.

Radiation tolerances: Temporal change in radiosensitivity of miniature swine as evaluated by the split-dose technique.

Radiobiology: The biological effectiveness of HZE-particles of cosmic radiation studied in the Apollo 16 and 17 biostack experiments.

Resonant frequencies: Renal electromagnetic power deposition in man and animals.
SAFETY FACTORS
Human factors in safe flight operations; Proceedings of the Twenty-seventh Annual International Air Safety Seminar, Williamsburg, Va., November 10-14, 1974

Workload reduction on the flight deck

SAFETY MANAGEMENT

Effect of gaseous hydrogen or methane fuels from the interior of an automobile

(S-75-10260/9)

SATELLITE SPACE STATION

The space watch in Skylab as on the earth --- physical training and the effects of spaceflight stress on cosmonaut performance

[NASA-TP-F-16868]

SATTELITE TELEVISION

The feasibility of dermatologic consultation to remote areas via 2-way color satellite transmission

[AIAA Paper 75-896]

SEARCH PROFILES

On random and target-oriented search

[NASA CR-113137]

SEA BASS

Physiologic effects of seatback angles less than 45 deg from the vertical/relative to G

[S-75-38411]

SEMICIRCULAR CANALS

Influence of receptor-receptor fibres on the spontaneous afferent activity from semicircular canals in the frog /Rana esculenta/

[S-75-37620]

SENSOMOTOR PERFORMANCE

Mechanisms of vibration effects on aircrew performance

[S-75-27700]

SENSORY DISCRIMINATION

On hemispheric differences in evoked potentials to speech stimuli

[NASA CR-141317]

SENSORY PERCEPTION

Waves in the eye and ear /Sixth Annual Fairey Lecture/ --- theory of sensory perception

[S-75-38608]

SEPTOCHIN

Recent studies of physiological factors involved in the regulation of serotonin content and turnover in the brain

[S-75-27734]

STERUS

Serum and urine changes in macaca mulatta following prolonged exposure to 12 hr, 1.5 g vibration

[S-75-27695]

SHELTERS

Effects of transient vibrations on human safety and performance

[S-75-27691]

SHIPS

Crew performance requirements in the vibration environments of surface effect ships

[S-75-27688]

SIGNAL PROCESSING

EEG frequency analyses on the PDP Lab 8/E computer system

[AD-A003522]

SIMULATED ALTITUDE

Subatmospheric decompression -- Neurological and behavioral studies

[S-75-36329]

SKIN

(VA) Anatomical language

[S-75-27713]

SKIN TEMPERATURE (Biology)

Investigation on the possible role of a work factor in thermoregulatory behavior of man

[S-75-37025]

SKYLAB PROGRAM

Postmission plasma volume and red-cell mass changes in the crews of the first two Skylab missions

[S-75-36337]

The Skylab sleep monitoring experiment - Methodology and initial results

[S-75-36338]

Proceedings of the 1973 Lyndon B. Johnson Space Center Endocrine Program Conference

[NASA CR-141886]

[S-75-37278]

SKYLAB 2

Skylab sleep monitoring experiment (experiment 1133)

[NASA CR-141886]

[S-75-37747]

SKYLAB 3

Mineral and nitrogen balance study - Results of metabolic observations on Skylab II 28-day orbital mission

[S-75-36336]

Skylab tank and work performance /Experiment H-151 - Time and motion study/

[S-75-36339]

Skylab experiment H-171 'Metabolic Activity' - Results of the first manned mission

[S-75-36340]

Biochemical observation during 28 days of space flight

[S-75-27729]

Endocrine considerations in the red-cell-mass and plasma volume changes of the Skylab 2 and 3 crews

[S-75-27738]

SLEEP

The Skylab sleep monitoring experiment - Methodology and initial results

[S-75-27638]

The state of sleep of the winter personnel of a coastal Antarctic station

[S-75-38400]

A multi-factorial design of computer supported research of human sleep under the influence of various thermal conditions

[S-75-27725]

Skylab sleep monitoring experiment (experiment 1133)

[NASA CR-141886]

[S-75-27747]

SLEEP DEPRIVATION

Use of the EEG and EOG in evaluating the effect of sleep deprivation on visual function in flying personnel

[S-75-38420]

Skylab sleep monitoring experiment (experiment 1133)

[NASA CR-141886]

[S-75-27747]

SOCIAL ISOLATION

Consequence of social isolation on blood pressure, cardiovascular reactivity and design in spontaneously hypertensive rats

[S-75-36725]

SOIL SCIENCE

Soil sterilization effects on in situ indigenous microbial cells in soil

[S-75-35901]

Simplified procedures for releasing and concentrating microorganisms from soil for transmission electron microscopy viewing as thin-sectioned and frozen-etched preparations

[S-75-35902]

SPACE ENVIRONMENT SIMULATION

Prevention of decompression sickness during a simulated space docking mission

[S-75-38413]

SPACE FLIGHT

Significance of biorythms in space flight

[S-75-27731]

SPACE FLIGHT STRESS


[S-75-36326]

Study of water-salt metabolism and renal function in cosmonauts

[S-75-36327]

Changes in the vestibular function during space flight

[S-75-36330]

Otorhinolaryngological problems in medical support of space flights

[S-75-36331]
THIROREGULATION
Investigation on the possible role of a work factor in thermo-regulatory behavior of man A75-37025

THRESHOLDS (PERCEPTION)
Central inhibitory interactions in human vision A75-38667

TIME DISCRIMINATION
Time estimates in a long-term time-free environment --- human performance A75-37717

TIME OPTIMAL CONTROL
A pulse-width modulated model for visual eye tracking A75-37149

TISSUES (BIOLOGY)
Complex permittivity and penetration depth of certain biological tissue between 40 and 90 GHz A75-36523
Arterial and tissue gas tensions in rats during development of pulmonary oxygen poisoning A75-38410

TOLERANCES (PHYSIOLOGY)
Continuous animal exposure to a mixture of dichloroethane and 1,1,1-trichloroethane [NASA-CR-181889] A75-26631

TOXIC EFFECTS
A bibliography of published information on combustion toxicology A75-37250
Industry survey of test methods of potential health hazard --- for chemicals [PB-239080] A75-27750

TOXICITY
Relationship between administration time of drugs and acute toxicity in mice --- mortality rate of mice injected with central stimulants and depressants [NASA-TT-P-16411] A75-26432
Structure-activity correlation bibliography, with subject and author index --- chemical compounds toxicity [PR-240658/5] A75-27720

TOXICOLOGY
A bibliography of published information on combustion toxicology A75-37250
A review of the toxicology of colored chemical smokes and colored smoke dyes [AD-1003927] A75-26643

TRACKING (POSITION)
A pulse-width modulated model for visual eye tracking A75-37149

TRAINING SIMULATORS
Incremental transfer and cost effectiveness of flight training simulators A75-37688
Advanced speech technology applied to problems of air traffic control A75-37692

TRANSFER OF TRAINING
Incremental transfer and cost effectiveness of flight training simulators A75-37688

TRANSPORT PROPERTIES
Effect of lumisterol-3 on the calcium absorption in the gut and on the calcification of bone tissue [NASA-TT-P-16422] A75-26639

ULTRASONIC RADIATION
Continuous cardiac output measurement - Aspects of Doppler frequency analysis A75-36073

ULTRASONIC WAVE TRANSDUCERS

ULTRASONICS
Studies of decompression phenomena --- bubble detection by means of Doppler ultrasound bubble detector [AD-A003513] A75-26647

UNDERWATER BREATHING APPARATUS
Abstracts Biomedical Research and Underwater Breathing Apparatus Evaluation Dives 10 to 1600 Feet Conference AD-A073472] A75-26669

URINATION
Serum and urine changes in macaca mulatta following prolonged exposure to 12 Hz, 1.5 g vibration A75-27695
The composition of urine and feces in healthy subjects [NASA-TT-P-16420] A75-27740

URINE
Stress-induced changes in corticosteroid metabolism --- plasma and urine concentrations A75-27733
The composition of urine and feces in healthy subjects [NASA-TT-P-16420] A75-27740

VASCULAR SYSTEM
Role of histamine in the hypoxic vascular response of the lung A75-37072

VASEODILATOR DRUGS
Role of histamine in the hypoxic vascular response of the lung A75-37072

VECTORCARDIOGRAPHY
Advances in clinical vectorcardiography A75-37186

VENTILATION
A gas flow indicator for portable life support systems [NASA-CR-141892] A75-26667

VENTILATORS

VESTIBULAR Nystagmus
Algorithms for the multi-parameter analysis of nystagmus using a digital computer A75-38419

VESTIBULAR TESTS
Changes in the vestibular function during space flight A75-36330
Effects of prolonged weightlessness on the swimming pattern of fish aboard Skylab 3 A75-38413

VESTIBULOUS
The effects of malnutrition on the developing brain stem of the rat - A preliminary experiment using the lateral vestibular nucleus A75-35900
Influence of receptor-receptor fibres on the spontaneous afferent activity from semicircular canals in the frog /Hana esculenta/ A75-37620

VIBRATION
Vibratome language A75-27713

VIBRATION EFFECTS
Action of low vibration frequencies on the cardiovascular system of man A75-27692
Effect of low frequency aerial vibrations on nocturnal activity of a rat A75-27712

VIBRATIONAL STRESS
Vibration and combined stresses in advanced systems [AGARD-CR-145] A75-27685
Aircrew assessment of the vibration environment in helicopters A75-27686
Human exposure to whole-body vibration in military vehicles and evaluation by application of ISO/DIS 2631 A75-27687
Crew performance requirements in the vibration environments of surface effect ships A75-27688
VIBRATORY LOADS

The effect of the individual and combined stresses of vibration and sustained G on pilot performance N75-27690
Effects of vibration stress on the cardiovascular system of animals N75-27693
Laboratory studies on chronic effects of vibration exposure N75-27694
Sweat and urine changes in macaca mulatta following prolonged exposure to 12 Hz, 1.5 g vibration N75-27695
Rapid flight vibration phenomena and spine fractures N75-27696
Effects of vibration on the musculoskeletal system N75-27697
The respiratory and metabolic effects of constant amplitude whole-body vibration in man N75-27698
A study of vibration, pilot vision and helicopter accidents N75-27699
Mechanisms of vibration effects on aircr bubble performance N75-27700
Performance and physiological effects of combined stress including vibration N75-27701
Effects of duration of vertical vibration beyond the proposed ISO "fatigue-decreased proficiency" time, on the performance of various tasks N75-27702
A review of biomechanical models for the evaluation of vibration stress N75-27704
Models of the cardiovascular system under whole body vibration stress N75-27706
Evaluating biodynamic interference with operations of the cardiovascular system N75-27707
The ISO guide for the evaluation of human whole body vibration exposure N75-27708
Proposed limits for exposure to whole body vertical vibration, 0.1 to 1.0 Hz N75-27709
How quality of crew manned military aircraft N75-27710
VIBRATORY LOADS

Subject Index

Central inhibitory interactions in human vision A75-38667
Information processing analysis of visual perception: A review [AD-A003803] N75-26655
The effects of observer control over visual information in classification performance [AD-A003953] N75-26656
Visual search processes of Coast Guard aircr penn N75-26662

VISUAL STIMULI

Fragmentation of fixated line stimuli as a function of gravitational orientation A75-36359
The effect of stimulus orientation on the visual evoked potential in human subjects A75-38004

VISUAL TASKS

A pulse-width modulated model for visual eye tracking A75-37749
Earth orbital telescope visual system evaluation program [Nasa-Cr-163875] N75-26652
Stimulus novelty, task relevance and the visual evoked potential in man [Nasa-Cr-163139] N75-27745

VITAMINS

Effect of hyperbaric helium on vitamin uptake and utilization by macro-organisms A75-38412

VOICE COMMUNICATION

Advanced speech technology applied to problems of air traffic control A75-37692
Computer-generated voice in air traffic control applications A75-37693

VOICE DATA PROCESSING

Two programs for speech recognition and system identification research [AD-A003806] N75-27754

WALKING MACHINES

Motion of pendulum-type biped systems A75-35979

WATER FLOW

Evaluation of a water-cooled helmet liner [AD-A004776] N75-27666

WATER POLLUTION

Biological indicators for monitoring water quality of 8T canals system [Nasa-Cr-163178] N75-27717

WEIGHTLESSNESS

Skylab experiment M-171 'Metabolic Activity' - Results of the first manned mission A75-36340
Effects of prolonged weightlessness on the swimming pattern of fish aboard Skylab 3 A75-38413
Remote effects of continuous negative pressure breathing [Nasa-Cr-161088] N75-26636
Principles of biodynamics. Introduction to gravitational biology, 1 [AD-A003629] N75-26649

WEIGHTLESSNESS SIMULATION

Characteristics of metabolism during prolonged water immersion A75-36328
Effects of muscle electrostimulation during simulated weightlessness A75-36333
Studies of acid-base homeostasis during simulated weightlessness: Application of the water immersion model to man A75-27736

WINTER

The state of sleep of the winter personnel of a coastal Antarctic station A75-38300

WORK CAPACITY

Assessment of aerobic and anaerobic capacity of athletes in treadmill running tests A75-36714
Workload reduction on the flight deck A75-37494
SUBJECT INDEX

WORK-REST CYCLE
The Skylab sleep monitoring experiment - Methodology and initial results
Time estimates in a long-term time-free environment
--- human performance

YEAST
Degradation of mitochondria in yeast induced by anaerobiosis at different growth phases
[ NASA-TT-P-16950 ]
### Typical Personal Author Index Listing

<table>
<thead>
<tr>
<th>PERSONAL AUTHOR</th>
<th>TITLE</th>
<th>REPORT NUMBER</th>
<th>ACCESSION NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>BALI, G. S.</td>
<td>The dependence of reaction times on the location of the stimulus</td>
<td>[NASA-TT-F-16001]</td>
<td>N75-10689</td>
</tr>
<tr>
<td>BOROVAN, V. G.</td>
<td>On random and target-oriented search</td>
<td>[BLL-BTS-9493]</td>
<td>N75-27752</td>
</tr>
<tr>
<td>ALBU, A.</td>
<td>Variations in the activity of some brain and plasma enzymes under the influence of +Gz acceleration</td>
<td>A75-38416</td>
<td></td>
</tr>
<tr>
<td>ALOY, P. A.</td>
<td>Life changes and aviation accidents</td>
<td>A75-37493</td>
<td></td>
</tr>
<tr>
<td>ALLEN, G.</td>
<td>Proposed limits for exposure to whole body vertical vibration, 0.1 to 1.0 Hz.</td>
<td>N75-27709</td>
<td></td>
</tr>
<tr>
<td>ALLEN, R. W.</td>
<td>Evaluating biodynamic interference with operational crews</td>
<td>N75-27707</td>
<td></td>
</tr>
<tr>
<td>ANDERSON, D. E.</td>
<td>Computer-generated voice in air traffic control applications</td>
<td>A75-37693</td>
<td></td>
</tr>
<tr>
<td>ANDERSON, P.</td>
<td>Peripheral vision artificial horizon display</td>
<td>N75-27703</td>
<td></td>
</tr>
<tr>
<td>ANTONOV, V. S.</td>
<td>On random and target-oriented search</td>
<td>[BLL-BTS-9693]</td>
<td>N75-27752</td>
</tr>
<tr>
<td>ARVIDSON, J. N.</td>
<td>Efflux of gaseous hydrogen or methane fuels from the interior of an automobile</td>
<td>[CON-75-10268/9]</td>
<td>N75-26650</td>
</tr>
<tr>
<td>ATLAW, H.</td>
<td>A mathematical analysis of the mortality kinetics of Drosophila melanogaster exposed to gamma radiation</td>
<td>A75-37326</td>
<td></td>
</tr>
<tr>
<td>AUFFRET, R.</td>
<td>Action of low vibration frequencies on the cardiovascular system of man</td>
<td>N75-27692</td>
<td></td>
</tr>
<tr>
<td>BADGER, D. W.</td>
<td>Laboratory studies on chronic effects of vibration exposure</td>
<td>N75-27694</td>
<td></td>
</tr>
</tbody>
</table>

Serum and urine changes in Macaca Mulatta following prolonged exposure to 12 Hz, 1.5 g vibration

BARKILL, A. T.
A pulse-width modulated model for visual eye tracking

BALKWILL, D. L.
Soil sterilization effects on in situ indigenous microbial cells in soil
Simplified procedures for releasing and concentrating microorganisms from soil for transmission electron microscopy viewing as thin-sectioned and frozen-etched preparations

BALK, A.
Origin of life - clues from relationships between chemical compositions of living organisms and natural environments

BANES, G. R.
The transmission of angular acceleration to the head in the seated human subject

BARK, M. J.
Application of luciferase assay for ATP to antifungal drug susceptibility testing

BASS, R. L., III
A gas flow indicator for portable life support systems

BAUSHER, J. W.
Loudness enhancement in man. I: Brainstem evoked response correlates

BARYNKY, B.
How's your health, cosmonaut?

BEAL, C. L.
Study and assessment of advanced ETC/LSS application to space shuttle

BECK, A. F.
Computer-generated voice in air traffic control applications

BEHLING, K.
Investigation on the possible role of a work factor in thermoregulatory behavior of man

BEJECZ, A. K.
Environment-sensitive manipulator control

BEL, R. L.
The modular anti-exposure system

BERRY, R. G.
Advances in clinical vectorcardiography

BERGER, K. G.
Effects of oxygen-nitrogen /1:1/ at 760 Torr on the life span and fine structure of Drosophila melanogaster

BERSON, P.
On hemispheric differences in evoked potentials to speech stimuli
BERDING, K. L.

Evaluation of the effects of hypergravity exposure and caging restraint on bone mineralization in the Beagle by an in vivo photon absorptiometry
[NASA-CR-137710] N75-26633

BERDOV, V. I.

Individual features in the reaction to hypoxia
A75-36391

BERGAN, S. A., JR.

Skylab experiment 9-092 - Results of the first manned mission
A75-36335

BICHER, H. I.

Minimized electrode for on-line PO2 measurements
A75-36071

BILLY, H. S.

Human error in aviation operations
A75-37492

BEITIN, T. G.

Information processing analysis of visual perception: A review
[AD-A003465] N75-26655

BLADDER, A. E.

Subatmospheric decompression - Neurological and behavioral studies
A75-36329

BLEICHER, A.

Investigation on the possible role of a work factor in thermoregulatory behavior of man
A75-37025

BOBBERT, G.

The ISO guide for the evaluation of human whole body vibration exposure
N75-27708

BOGOLOVSKII, R. M.

The state of sleep of the water personnel of a coastal Antarctic station
A75-38300

BOHLMANN, R. H.

Prevention of decompresion sickness during a simulated space docking mission
A75-38419

BOOGER, C. B.

The Skylab sleep monitoring experiment - Methodology and initial results
A75-36338

BORKOVICH, V. E.

Assessment of aerobic and anaerobic capacity of athletes in treadmill running tests
A75-36714

BORREDO, P.

Study of man's physiological response to exposure to infra-sound levels of 130 dB
A75-27711

BOYD, J. P.

Effects of prolonged weightlessness on the swimming pattern of fish aboard Skylab 3
A75-38413

BRANTZ, T.

Perceived distance and the perceived speed of self-motion - Linear vs. angular velocity
A75-36358

BRANCOGLER, W. H.

Effects of vibration on the musculoskeletal system
A75-27697

BRECK, B.

Rat operant responding - An indicator of nitrogen narcosis
A75-38417

BRENNER, P. H.

Measurement of flight performance in a flight simulator
[AD-A006486] N75-27756

BRETOV, L. I.

Changes in the vestibular function during space flight
A75-36330

BRODHART, D. E.

Otocholinaryngological problems in medical support of space flights
A75-36331

BROADHOURT, D. E.

Waves in the eye and ear /Sixth Annual Fairley Lecture/
A75-36068

BRONAN, H.

A computerized system for optimal filtering of left ventricular pressure data
A75-36072

PERSONAL AUTHOR INDEX

BROWN, D. J.

Measurement of peak rates of left ventricular wall movement in man - Comparison of echocardiography with angiography
A75-38536

BRENNGER, E.

Radio quality of crew manned military aircraft
A75-27710

BRETON, I.

How's your health, cosmonaut?
[NASA-TF-P-16331] N75-26638

BRY, E.

Earth orbital teleoperator manipulator system evaluation program
[NASA-CR-143807] N75-26651

BOCZILIK, T.

Coments on the work of an airliner crew
A75-37047

BUCHEK, H.

The biological effectiveness of HZE-particles of cosmic radiation studied in the Apollo 16 and 17 Biostack experiments
A75-36334

BUBBINGA, W. J.

Evaluation of a water-cooled helmet liner
[AD-A004776] N75-27766

Breathing air quality under the fire proximity suit hood
[AD-A004770] N75-27767

BUCHAN, E. E.

The influence of posture on isometric strength and endurance forearms blood flow, and the blood pressure and heart rate response to isometric exercise
[AD-A008332] N75-27749

BUNTON, V. E.

Physiologic effects of seatback angles less than 95 deg from the vertical/relative to G
A75-38411

C

CABOSS, E. J.

Color coding for air traffic control displays
A75-37691

CABANES, S. A.

Variations in the activity of some brain and plasma enzymes under the influence of g0z acceleration
A75-38046

CASIDA, M. E., JR.

Soil sterilization effects on in situ indigenous microbial cells in soil
A75-35901

Simplified procedures for releasing and concentrating microorganisms from soil for transmission electron microscopy viewing an thin-sectioned and frozen-etched preparations
A75-35902

CASTON, J.

Influence of receptor-receptor fibres on the spontaneous different activity from semicircular canals in the frog /Rana esculenta/
A75-37620

CAVALLI, D.

Discrete time modelization of human pilot behavior
[OREBE, TP NO. 1975-52] A75-37913

CHAGNOTHE, C. B.

Redox transformations of nicotinamide-adenine dinucleotide in skeletal muscles during work and at rest
[NASA-TR-P-16432] N75-26637

CHAPPLE, E. W.

Application of luciferase assay for ATP to antimicrobial drug susceptibility testing
[NASA-CS2-GSC-12039-1] N75-26629

CHAPPILLOW, J. W.

Aircrew assessment of the vibration environment in helicopters
A75-27686

CHERRYROCK, A. A.

Effects of muscle electrostimulation during simulated weightlessness
A75-36333


CHEHIIAKOV, I. E.
Prophylaxis of high-altitude decompression sickness during flights in depressurized cabins
A75-36175

CICCHI, L.
The effects of observer control over visual information in classification performance
[AD-A0020953] W75-26656

CLARK, E. B.
A pulse-width modulated model for visual eye tracking
A75-37199

COOPER, J. P.
Prevention of decompression sickness during a simulated space docking mission
A75-38448

COOPER, G. E.
Human error in aviation operations
A75-37492

CRODORO, J. T.
Two programs for speech recognition and system identification research
[AD-A003808] W75-27754

COURSCHENE, E.
Stimulus novelty, task relevance and the visual evoked potential in man
[NAS9-CR-143139] W75-27745

DELHATE, R. P.
Rapid flight vibration phenomena and spine fractures
A75-27696

DELOURJO, H. E.
The Skylab sleep monitoring experiment - Methodology and initial results
A75-36338

DEMBU, J.
Action of low vibration frequencies on the cardiovascular system of man
A75-27692

DESSER, A. B.
Advances in clinical vectorcardiography
A75-37386

DZCHAGANS, J.
Perceived distance and the perceived speed of self-motion - Linear vs. angular velocity
A75-36358

DIERBA, H. C.
Perceived distance and the perceived speed of self-motion - Linear vs. angular velocity
A75-36358

DISCAL, V. A.
Penal effects of continuous negative pressure breathing

DOLAS2, C. B.
A mathematical analysis of the mortality kinetics of Drosophila melanogaster exposed to gamma radiation
A75-37326

DOLAS, G.
A mathematical analysis of the mortality kinetics of Drosophila melanogaster exposed to gamma radiation
A75-37326

DRAGON, C. T.
Variations in the activity of some brain and plasma enzymes under the influence of g2 acceleration
A75-38416

DRISCOLL, T.
Endocrine considerations in the red-cell mass and plasma volume changes of the Skylab 2 and 3 crews
A75-27738

DRISCOLL, T. B.
Postmission plasma volume and red-cell mass changes in the crews of the first two Skylab missions
A75-36337

DRA, G. L.
Changes in exercise heart rate in lowlanders after prolonged stay at high altitude /4000 m/
A75-38414

DUPUIS, N.
Human exposure to whole-body vibration in military vehicles and evaluation by application of ISO/DIS 2631
W75-27687

ECKMILLER, R.
Dynamic properties of eye position coded neurons in the alert monkey during saccades
A75-37022

EDEK, G.
Miniaturized electrode for on-line PO2 measurements
A75-36071

EDRICH, J.
Complex permittivity and penetration depth of certain biological tissue between 80 and 90 GHz
A75-36523

EDORO, A. D.
Changes in the vestibular function during space flight
A75-36330

EDORO, B. E.
Effects of muscle electrostimulation during simulated weightlessness
A75-36333

EDSTON, R. E.
Temporal change in radiosensitivity of miniature swine as evaluated by the split-dose technique
[AD-A008597] W75-27719

ELLIOTT, S. R.
Fragmentation of fixated line stimuli as a function of gravitational orientation
A75-36359

ELMANSAR, R. C.
Loudness enhancement: Monaural, binaural and dichotic

Loudness enhancement in man: 1: Brainstem evoked response correlates
A75-27748

EPSTEIN, S.
Studies of acid-base homeostasis during simulated weightlessness: Application of the water immersion model to man
A75-27736

ERB, B.
Factor analysis of a new multi-dimensional personality questionnaire. A check of the factor model in comparison with similar methods
[DRK-FB-75-20] W75-26654

FAHBY, T. D.
Venous and capillary blood hematocrit at rest and following submaximal exercise
A75-36713

FATI, D. B.
Human behavior in problem solving environment
[AD-A0020955] W75-26663

FISCHER, G. L.
Evaluation of the effects of hypergravity exposure and caging restraint on bone mineralization in the Beagle by in vivo photon absorptiometry

FLICK, J. H.
Mechanisms of deterioration of nutrients
A75-26630

FRATNALL, C.
Effect of hyperbaric helium on vitamin uptake and utilization by micro-organisms
A75-38412

FRIDENBERG, P. H.
Earth orbital teleoperator manipulator system evaluation program

Earth orbital teleoperator visual system evaluation program
[NASA-CR-138785] W75-26652

FRIDTAD, R.
Access: Diver performance and physiology in rapid compression to 31 atmospheres
[AD-A003519] W75-26645

Neon decompression
[AD-A003506] W75-26646

FRIST, J. D., JR.
The Skylab sleep monitoring experiment - Methodology and initial results
A75-36338

Skylab sleep monitoring experiment (experiment 4133)

I-25
FULLER, G. D.

FULLER, G. D.
Thermocurrent dosimetry with high purity aluminum oxide N75-27721

FULLER, G. D.
A simulation study of vascular resistance [NASA-CR-130314] N75-38379

GALAMBOS, B.
Oculometer measurement of air traffic controller [AD-A006965] H75-27711

GALAMBOS, B.
The importance of the renin-angiotensin system in man [AD-A004488] H75-27715

GALLO, G.
Clinical applications of the human brainstem response to auditory stimuli [NASA-CR-163135] N75-27741

GALLO, G.

GALLO, G.
Electrophysiological measurement of human auditory function [NASA-CR-163137] N75-27744

GALLO, G.
Stimulus novelty, task relevance and the visual evoked potential in man [NASA-CR-163138] N75-27745

GALLO, G.
Loudness enhancement: Monaural, binaural and dichotic [NASA-CR-163139] N75-27746

GALLO, G.
Loudness enhancement in man, 1: Brainstem evoked response correlates N75-27748

GARDART, L. S.
On random and target-oriented search [BIL-BTS-9593] N75-27752

GARDNER, O. P.
Resonant electromagnetic power deposition in man and animals N75-36522

GARETT, O. K.
Effects of prolonged weightlessness on the swimming pattern of fish aboard Skylab 3 N75-38043

GARIISKI, V. S.
A stable combination of electrodes for an electroretinographic investigation N75-38507

GASKILL, V. S.
Cues, feedback, and transfer in undergraduate pilot training, phase 3 [AD-A003748] N75-27757

GASKILL, V. S.
Measurement of flight performance in a flight simulator [AD-A004880] N75-27756

GIBSON, D. G.
A study of man's physiological response to exposure to infra-sound levels of 130 dB N75-27711

GIBSON, D. G.
Measurement of peak rates of left ventricular wall movement in man - Comparison of echocardiography with angiography N75-38516

GLAZKOV, V. A.
Prophylaxis of high-altitude decompression sickness during flights in depressurized cabins N75-36175

GOFER, B. P.
Medical flying fitness - a routine affair - but who examines and assesses psychic health N75-38022

GOFER, B. P.
Factor analysis of a new multi-dimensional personality questionnaire. A check of the factor model in comparison with similar methods [DLR-TP-75-20] N75-26654

GOLDED, R.
Oculometer measurement of air traffic controller visual attention [AD-A006965] N75-27753

GOLDEN, D. P., JR.
VECTOR II - A computer program for the spatial analysis of the vectorcardiogram N75-38046

GOLDEN, R.
Evaluation of the effects of hypergravity exposure and caging restraint on bone mineralization in the beagle by in vivo photon absorptiometry [NASA-CR-137710] N75-26633

GORDH, L. M.
EEG frequency analysis on the PDP 8/E computer system [AD-1003522] N75-26640

GOVSETOVA, B. N.
Effect of l-tyrosine-3 on the calcium absorption in the gut and on the calcification of bone tissue [NASA-TP-F-16422] N75-26639

GRAY, W. M.
Advanced speech technology applied to problems of air traffic control N75-37692

GRAYBEEL, B.

GRAYBEEL, B.

GUARDABASSI, A.
Ca salts of the saccus endolymphaticus and processes of calcification of bones during normal and experimental metamorphosis in tadpoles of Bufo vulgaris, Rana dalmatina and Rana esculenta [NASA-TP-F-164672] N75-27715

GUJONARD, B. C.
Performance and physiological effects of combined stress including vibration N75-27701

GUPTA, J. S.
Changes in exercise heart rate in lowlanders after prolonged stay at high altitude /4000 m/ N75-38014

GUROVSKEI, B. N.
Changes in the vestibular function during space flight N75-36330
JONES, D. A.
Visual search processes of Coast Guard aircrewmen  
[AD-A004252] N75-26662

JUNKER, A. H.
Effects of motion on the parameters of the human operator engaged in a roll axis tracking task  
A75-37139

JUDKIN, M. Z.
Cytological reaction of the arterial wall to injury  
A75-38508

KAISER, D.
The visual aptitude of inspection personnel for magnetic-particle and penetrant testing  
A75-38634

KAGITA, Y.
A simulation study of coronary circulation  
A75-38379

KAKININ, L. I.
effects of muscle electrostimulation during simulated weightlessness  
A75-36333

KANDAY, P. C.
Biochemical observation during 28 days of space flight  
N75-27729

KARBER, H. B.
Geometry of aortic heart valves  
A75-36836

KARRE, M.
Mechanisms of deterioration of nutrients  
[NASA-CR-141866] N75-26630

KARLES, E. W.
PHENOMENUS, a user oriented program for human crash dynamics  
[AD-A004856] N75-26671

KARSTEN, G.
Oculometer measurement of air traffic controller visual attention  
[AD-A006965] K75-27753

KASAI, B.
Left ventricular volume measurement by echocardiography - Fact or fiction  
A75-37387

KASERI, H.
Role of histamine in the hypoxic vascular response of the lung  
A75-37072

KEDLER, W. D.
Vibratese language  
N75-27713

KENT, W. D.
Heat sterilizable patient ventilator  
[NASA-CAS#-NPO-13313-1] N75-27761

KENTON, D. J.
Incess: Diver performance and physiology in rapid compression to 31 atmospheres  
[AD-A003514] N75-26645

KHECHRHEUBARTS, L. S.
The international orbital laboratory  
[NASA-RT-F-16482] N75-27763

KIMBY, S. L.
Posttransmission plasma volume and red-cell mass changes in the crews of the first two Skylab missions  
A75-36337

KIEL, S. G.
Use of the HbG and HbC in evaluating the effect of sleep deprivation on visual function in flying personnel  
A75-38420

KINDEY, R. J.
Efficacy of continuous negative pressure breathing  
[NASA-CR-141866] N75-26636

KINDBY, W. III
Earth orbital teleoperator manipulator system evaluation program  
[NASA-CR-143874] N75-26651

KINDBY, W. III
Earth orbital teleoperator visual system evaluation program  
[NASA-CR-143875] N75-26652

KIBSF, H.
Factor analysis of a new multi-dimensional personality questionnaire. A check of the factor model in comparison with similar methods  
[DLB-FB-75-20] N75-26654

KISKE, A. T.
Evaluation of a water-cooled helmet liner  
[AD-A004776] N75-27766

KNAPP, R. P.
Models of the cardiovascular system under whole body vibration stress  
N75-27706

KOCHEKFOVA, A. M.
The composition of urine and feces in healthy subjects  
[NASA-PR-P-16420] N75-27740

KOTLER, R. E.
Left ventricular volume measurement by echocardiography - Fact or fiction  
A75-37387

KOVER, R. D.
Structure-activity correlation bibliography, with subject and author index  
[PB-240658/5] N75-27720

KOSTRBOVSKAIA, G. I.
Study of water-salt metabolism and renal function in cosmonauts  
A75-36327

KOBE, G.
[AGABEG-45-205] N75-26635

KROSE, W.
Optimization of control signal gain by self-adjustment  
[PB-13] N75-26668

KUBIS, J. Y.
Skylab task and work performance /Experiment M-151 - Time and motion study/  
A75-36339

KUNLEN, W. E.
Algorithms for the multi-parameter analysis of nystagmus using a digital computer  
A75-38419

KVASITZKA, J.
A computerized system for optimal filtering of left ventricular pressure data  
A75-36072

LABEDA, D. P.
Soil sterilization effects on in situ indigenous microbial cells in soil  
A75-35901

LAWSON, G. W.
Simplified procedures for releasing and concentrating microorganisms from soil for transmission electron microscopy viewing as thin-sectioned and frozen-etched preparations  
A75-35902

LEMMER, J. K.
Human error in aviation operations  
A75-37492

LANGE, W.
A review of biomechanical models for the evaluation of vibration stress  
N75-27704

LAMB, V. B.
Motion of pendulum-type biped systems  
A75-35979

LAPPE, M. T.
Amplitude/frequency differences in a single-lead ECG of normal versus coronary heart disease males  
A75-36421

LAYHE, J.
Possible mechanisms of corona discharge involved in biogenesis  
A75-37000

LAVIN, P.
Time estimates in a long-term time-free environment  
A75-37171

LAYHE, P. J.
Amplitude/frequency differences in a single-lead ECG of normal versus coronary heart disease males  
A75-36421

I-29
HAITBA, S.
BAICKEL, B. t.
HADI1, J. A.
LUNDGBEH, P. B.
LIBHABT, J. B.
LIHD, A. B.
LIABDBR, B.
LBEOT, J.
BAHOHEY, T. A.
HABOIET, E. B.
LDTWAFE, L.
LE7EBETT, S. D., JB.
LESHKE7ICH, L. G.
LEE,  
LEACH, C.
LEACH, C. S.

The role of brain biogenic amines in the control
Personnel techniques necessary to maximize
Conduction cardiograph-bundle of His detector
Continuous cardiac output measurement - Aspects of
A concise parametric representation of
electrocardiograms

A75-36336
A75-27729
A75-27738
A75-37494
A75-26637
A75-38411
A75-36072
A75-27749
A75-37387
A75-26644
A75-37327
A75-36336
A75-27716
A75-36073
A75-26661
A75-36070
A75-26665
A75-27735
A75-36074

MACKAI, B. S.
Continuous cardiac output measurement - Aspects of
Doppler frequency analysis

A75-36073

MADIA, J. A.
A study of the personal value systems and job
satisfactions of United States Air Force officers

A75-26661

MAHERY, E. E.
Conduction cardiograph-bundle of His detector

A75-36070

MAHERY, T. A.
Personnel techniques necessary to maximize
bio-barrier integrity at a Martian receiving
laboratory

A75-26665

MAICHEL, B. P.
The role of brain biogenic amines in the control
of pituitary-adrenocortical activity

A75-27735

MAITA, S.
A concise parametric representation of
electrocardiograms

A75-36074

NACKE, B. S.
Propriolaxis of high-altitude decompression
sickness during flights in depressurized cabins

A75-36175

NAICKEL, B.
Peripheral vision artificial horizon display

A75-27703

NADLAMAL, M. S.
Changes in exercise heart rate in lowlanders after
prolonged stay at high altitude /4000 m/

A75-38414

MALONE, T. B.
Earth orbital teleoperator manipulator system
evaluation program

A75-26651

MALONE, T. B.
Earth orbital teleoperator visual system
evaluation program

A75-26652

MANN, D. B.
Efflux of gaseous hydrogen or methane fuels from
the interior of an automobile

A75-26650

MANNING, J. A.
Conduction cardiograph-bundle of His detector

A75-36070

MATEK, E. I.
Otorhinolaryngological problems in medical support
of space flights

A75-36331

MATEK, E. B.
An automated system to assess pilot performance in
a Link GAT-1 trainer

A75-27755

MATTES, R.
Hybrid calculators for the analysis of cardiac
arreathythias

A75-36538

MCBRIDE, G. G.
The fractional rate of change of ventricular power
during isovolumic contraction - Derivation of
haemodynamic terms and studies in dogs

A75-36669

MCCTECH, E. P.
Effects of vibration stress on the cardiovascular
system of animals

A75-27693

MCNITT, J. A.
On estimating and reducing the effect of
intersubject EEG variation on the performance of
EEG pattern recognition systems

A75-37436

MCPFLAND, R. A.
Selected medical problems in the field of human
factors or ergonomics

A75-37490

MCPFLAND, W. L.
Cerebral temperature changes in the monkey (Macaca
mulatta) after 2500 rads ionizing radiation

A75-27718

MCGOYER, D. E.
Factors affecting control allocation for augmented
remote manipulation

A75-26664

MCLEAGHLIN, B. J.
Skylab task and work performance /Experiment M-151 -
Time and motion study/

A75-36339

MELNET, D. C.
Breathing air quality under the fire proximity
nest hood

A75-27767

MICHAELSON, G. S.
Personnel techniques necessary to maximize
bio-barrier integrity at a Martian receiving
laboratory

A75-26665

MICHALEK, F.
The visual aptitude of inspection personnel for
magnetic-particle and penetrant testing

A75-36634

MICHEL, R. L.
Skylab experiment M-171 'Metabolic Activity' -
Results of the first manned mission

A75-36340

MINTS, G. S.
Left ventricular volume measurement by
echocardiography - Fact or fiction

A75-37387
A mathematical analysis of the mortality kinetics of Drosophila melanogaster exposed to gamma radiation

Effects of oxygen-nitrogen /1:1/ at 760 Torr on the life span and fine structure of Drosophila melanogaster

Peripheral vision artificial horizon display

Recent studies of physiological factors involved in the regulation of serotonin content and turnover in the brain

The matrix organization in ASD: A study in collocation of engineers

Heat sterilizable patient ventilator

Influence of bicycle ergometer work and oral glucose administration on the human muscle-hexokinase activity

The effect of stimulus orientation on the visual evoked potential in human subjects

Study of man's physiological response to exposure to infra-sound levels of 130 dB

Study of water-salt metabolism and renal function in cosmonauts

Origin of life - Clues from relations between chemical compositions of living organisms and natural environments

Effects of motion on the parameters of the human operator engaged in a roll axis tracking task

Subatmospheric decompression - Neurological and behavioral studies

Skylab experiment M-092 - Results of the first manned mission

Cardiopulmonary effects of combined exercise and +Gz acceleration

The feasibility of dermatologic consultation to remote areas via 2-way color satellite transmission

Evaluation of a water-cooled helmet liner

On random and target-oriented search

On hemispheric differences in evoked potentials to speech stimuli

Mineral and nitrogen balance study - Results of metabolic observations on Skylab II 28-day orbital mission

A review of the toxicology of colored chemical smokes and colored smoke dyes

The respiratory and metabolic effects of constant amplitude whole-body vibration in man

Effect of low frequency aerial vibrations on nocturnal activity of a rat

Variations in the activity of some brain and plasma enzymes under the influence of +Gz acceleration

The influence of posture on isometric strength and endurance, forearm blood flow, and the blood pressure and heart rate response to isometric exercise

Application of luciferase assay for ATP to antimicrobial drug susceptibility testing

The effect of the individual and combined stresses of vibration and sustained G on pilot performance

On the classification of multivariate time dependent patterns in view of their process structure

The control of posture and movements during REM sleep - Neurophysiological and neurochemical mechanisms

Manipulator robots

Multiparameter vision testing apparatus

Parathyroid hormone, calcitonin, and vitamin D - Present status of physiological studies and analysis of calcium homeostasis

Diver performance and physiology in rapid decompression to 31 atmospheres

Neon decompression

Studies of decompression phenomena

Mineral and nitrogen balance study - Results of metabolic observations on Skylab II 28-day orbital mission

Effects of hypoxia on early pregnancy and embryonic development in the mouse

Aircrew assessment of the vibration environment in helicopters
The transmission of angular acceleration to the head in the seated human subject N75-27689

BATTEN, B. A.
Effects of hypoxia on early pregnancy and embryonic development in the mouse A75-38415

RAYMOND, L. W.
Abstracts Biomedical Research and Underwater Breathing Apparatus Evaluation Volumes 10 to 1600 Foot Conference [AD-A003472] N75-26669

RAWINS, V. E.
Degradation of mitochondria in yeast induced by anaerobiosis at different growth phases [NASA-TP-P-16458] N75-27716

REIFPEK, E.
The driving seat. Its adaptation to functional and anthropometric requirements [NAS-L-THS-1981] N75-27746

REID, J.
Mineral and nitrogen balance study - Results of metabolic observations on Skylab II 28-day orbital mission A75-36336

RICHARDSON, B.
Prevention of decompression sickness during a simulated space docking mission A75-38018

RITBLING, F.
A multi-factorial design of computer supported research of human sleep under the influence of various thermal conditions N75-27725

RIEPIHART, J. S.
The influence of posture on isometric strength and endurance forearm blood flow, and the blood pressure and heart rate response to isometric exercise [AD-A009332] N75-27749

RIOCH, D. M.
Effects of microwave irradiation on embryonic brain tissue A75-26641

ROBERTSON, B.
Effect of hyperbaric helium on vitamin uptake and utilization by micro-organisms A75-38012

ROGHI, H.
Venous and capillary blood hematocrit at rest and following submaximal exercise A75-36713

ROOD, R.
Oculometer measurement of air traffic controller visual attention [AD-A006965] N75-27753

BOSCON, G. W.
Incremental transfer and cost effectiveness of flight training simulators A75-37588

ROSENAUER, G.
Optimization of control signal gain by self-adjustment [PB-13] N75-26668

RUEBES, J. A.
Skylab experiment E-171 'Metabolic Activity' - Results of the first manned mission A75-36340

S

SABBAH, H. B.
The fractional rate of change of ventricular power during isovolumic contraction - Derivation of haemodynamic terms and studies on dogs A75-38669

SAITO, I.

SALVAGNIAC, J.
Rapid flight vibration phenomena and spine fractures N75-27696

SASAKI, K.

SAYNS, C. P.
Skylab experiment E-171 'Metabolic Activity' - Results of the first manned mission A75-36340

SCARPETZ, M.
Investigation on the possible role of a work factor in thermoregulatory behavior of man A75-37025

SCHEFFER, C.
Influence of bicycle ergometer work and oral glucose administration on the human muscle-berokinase activity A75-36712

SCHNEIDER, P. G.
The influence of posture on isometric strength and endurance forearm blood flow, and the blood pressure and heart rate response to isometric exercise [AD-A004332] N75-27749

SCHULTZ, T. C.
Access: Diver performance and physiology in rapid compression to 31 atmospheres [AD-A003518] N75-26645

SCHREIBER, M.
On the directed monitoring of sterilization [NASA-TP-P-16459] N75-27714

SCHROEDER, R. C.
A gas flow indicator for portable life support systems [NASA-CR-181892] N75-26667

SCHUMANN-GALABOS, C.
On hemispheric differences in evoked potentials to speech stimuli [NASA-CR-181337] N75-27744

SCHWEIGER, H.
Hybrid calculators for the analysis of cardiac arrhythmias A75-38538

SEGA1, B. L.
Left ventricular volume measurement by echocardiography - Fact or fiction A75-37387

SETHI, S. L.
Biological indicators for monitoring water quality of WPP canals system [NASA-CR-181378] N75-27717

SHABD, C. L.
A bibliography of published information on combustion toxicity A75-37250

SHARP, G. B.
The respiratory and metabolic effects of constant amplitude whole-body vibration in man N75-27698

SHIELDS, D. E., JR.
Earth orbital teleoperator manipulator system evaluation program [NASA-CR-183874] N75-26651
Earth orbital teleoperator visual system evaluation program [NASA-CR-183875] N75-26652

SHINDELL, D. S.
Cardiopulmonary effects of combined exercise and 4Gz acceleration A75-38409

SHNEUFR, B. D.
Measurement of flight performance in a flight simulator [AD-A004668] N75-27756

SHINASSHER, T.

SHIRKOTMER, E. A.
Assessment of aerobic and anaerobic capacity of athletes in treadmill running tests A75-36714

SHISHIKINA, S. K.
The composition of urine and feces in healthy subjects [NASA-TP-P-16420] N75-27740
STABIKOVICH, S.

STADTBAOS, B.

STIVIVASULO, N.

SPADE, B. B.

SOFGE, C. T.

SHITH, R. C.

SBITB, B.

SODLATGES, D.

SBITB, T. S.

SBITB, A. B.

SBEDLEI, D. C.

SKOLHICK, A.

SINK, F. I.

SINGLETON, G.

SIBBOBDS, R. C.

SBDTE, D. I.

SIEGEL, I.

SILLS, I. V.

SBOBATE, B. B.

SHOEHBBRGEB, 8. W.

SHOEHBERGEH, R. B.

A Month alone with chlorella

The visual aptitude of inspection personnel for

Changes in exercise heart rate in lowlanders after

Discrete time modelization of human pilot behavior

Prediction of performance and satisfaction of

On hemispheric differences in evoked potentials to

Vocational interests of air traffic control

Evaluation of a water-cooled helmet liner

Crew performance requirements in the vibration

environments of surface effect ships

Laboratory studies on chronic effects of vibration

Serum and urine changes in macaca mulatta

following prolonged exposure to 12 Hz, 1.5 g

vibration

Laboratory studies on chronic effects of vibration

Serum and urine changes in macaca mulatta

following prolonged exposure to 12 Hz, 1.5 g

vibration

Multifactorial vision testing apparatus

Occlusion measurement of air traffic controller

visual attention

Evaluation of a water-cooled helmet liner

breathing air quality under the fire proximity

suit hood

The prophylactic effect of head-cooling on coal

miner's cramps. Report 2: The effect of

head-cooling on coal miners under hot and humid

environment

Parathyroid hormone, calcitonin, and vitamin D

1974: Present status of physiological studies

and analysis of calcium homeostasis

Stress-induced changes in corticosteroid metabolism

Use of the BPG and BOD in evaluating the effect of

sleep deprivation on visual function in flying

personnel

Central inhibitory interactions in human vision

Temporal change in radiosensitivity of miniature

swine as evaluated by the split-dose technique

Temporal change in radiosensitivity of miniature

swine as evaluated by the split-dose technique

Information processing analysis of visual

perception: A review

Characteristics of metabolism during prolonged

water immersion

Miniatnrized electrode for on-line P02 measurements
PERSONAL AUTHOR INDEX

TEDICI, T. J.
Use of the ERG and EOG in evaluating the effect of sleep deprivation on visual function in flying personnel
A75-38420

TREHU, A.
Adaptive pattern processing in the visual system
A75-37618

TSIVILASHVILI, A. S.
Prophylaxis of high-altitude decompression sickness during flights in depressurized cabins
A75-36175

TURNER, R. A.
An automated system to assess pilot performance in a Link GAT-1 trainer
[AD-A008780] N75-27755

TOTTLE, S. A.
Application of luciferase assay for ATP to antimicrobial drug susceptibility testing
[NASA-CASE-GSC-12039-1] N75-26629

TIZZO, D. W.
PROMETHEUS, a user oriented program for human crash dynamics
[AD-A000456] N75-26671

USHAKOV, A. S.
The composition of urine and feces in healthy subjects
[NASA-TF-16420] N75-27740

VALIHAVI, E.
Arterial and tissue gas tensions in rats during development of pulmonary oxygen poisoning
A75-38410

VARNAUSKA, E.
A computerized system for optimal filtering of left ventricular pressure data
A75-36072

VELLEND, W.
Application of luciferase assay for ATP to antimicrobial drug susceptibility testing
[NASA-CASE-GSC-12039-1] N75-26629

VERHILST, L.
Modulating the pituitary-adrenal response to stress
N75-27730

VETTERS, B.
Action of low vibration frequencies on the cardiovascular system of man
N75-27692

VIBS, V.
Central inhibitory interactions in human vision
A75-38667

VLASOVA, T. P.
The composition of urine and feces in healthy subjects
[NASA-TF-16420] N75-27740

VOGT, L. H.
Effects of transient vibrations on human safety and performance
N75-27691

VOLOKOV, N. I.
Assessment of aerobic and anaerobic capacity of athletes in treadmill running tests
A75-36714

VON BAUGER, R. J.
Effects of prolonged weightlessness on the swimming pattern of fish aboard Skylab 3
A75-38413

VONHAGEN, H. E.
Vibration and combined stresses in advanced systems
[AGAB-CP-145] N75-27685

VYTSOISKII, V. G.
The composition of urine and feces in healthy subjects
[NASA-TF-16420] N75-27740

WAGNER, W. W., JR.
The effect of hypoxia on the pulmonary capillaries
N75-27723

WARD, D. N.
A review of the toxicology of colored chemical smokes and colored smoke dyes
[AD-A003827] N75-26643

WASSERMANN, D. E.
Laboratory studies on chronic effects of vibration exposure
N75-27694

SECS and urine changes in macaca mulatta following prolonged exposure to 12 Hz, 1.5 g vibration
N75-27695

WATTS, R. C.
A mechanical arm control system
[AD-A006672] N75-27768

WEBB, W. E.
Time estimates in a long-term time-free environment
A75-37717

WEINSTEIN, L.
Application of luciferase assay for ATP to antimicrobial drug susceptibility testing
[NASA-CASE-GSC-12039-1] N75-26629

WENDRO, G. H.
A new formula for estimating oxygen consumption in man and animal
A75-36710

WEST, J. H.
Temporal change in radiosensitivity of miniature mice as evaluated by the split-dose technique
[AD-A008597] N75-27719

WHITTON, E.
Mineral and nitrogen balance study - Results of metabolic observations on Skylab II 20-day orbital mission
A75-36336

WILKINSON, R. T.
Effects of duration of vertical vibration beyond the proposed ISO "fatigue-decreased proficiency" time, on the performance of various tasks
N75-27702

WILLIS, J. A.
Cerebral temperature changes in the monkey (Macaca mulatta) after 2500 rads ionizing radiation
[AD-A008584] N75-27718

WIGER, C. H.
Significance of biorhythms in space flight
N75-27731

WIST, R. B.
Perceived distance and the perceived speed of self-motion - Linear vs. angular velocity
A75-36358

WITHEY, W. R.
The respiratory and metabolic effects of constant amplitude whole-body vibration in man
N75-27698

WOLTHOIS, B. A.
TECTAN II - A computer program for the spatial analysis of the vectorcardiogram
A75-38046

WOODARD, G.
Industry survey of test methods of potential health hazard
[PB-239040] N75-27750

WYMAN, S.
Assessment of rural health research: Executive summary
[PB-200271/7] N75-27751

YOSIBS, R. A.
The effects of malnutrition on the developing brain stem of the rat - A preliminary experiment using the lateral vestibular nucleus
A75-35900

YOSHIDA, S.
The effect of stimulus orientation on the visual evoked potential in human subjects
A75-38004

YAMADA, B.
Variations in the activity of some brain and plasma enzymes under the influence of +Gz acceleration
A75-38416
ZHELEZHOV, N.
The space watch in Salyut as on the earth
[NASA-TT-F-16468] N75-27765

ZINSER, E. A.
The feasibility of dermatologic consultation to remote areas via 2-way color satellite transmission
[AIAA PAPERS 75-896] A75-38031

ZUBATOV, A. S.
Degradation of mitochondria in yeast induced by anaerobiosis at different growth phases
[NASA-TT-F-16458] N75-27716

ZUCKER, S.
A concise parametric representation of electrocardiograms
A75-36074

I-34 NASA-Langley, 1975
This bibliography lists 223 reports, articles, and other documents introduced into the NASA scientific and technical information system in September 1975.
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.
### NASA CONTINUING BIBLIOGRAPHY SERIES

<table>
<thead>
<tr>
<th>NUMBER</th>
<th>TITLE</th>
<th>FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>NASA SP-7011</td>
<td>AEROSPACE MEDICINE AND BIOLOGY</td>
<td>Monthly</td>
</tr>
<tr>
<td></td>
<td>Aviation medicine, space medicine, and space biology</td>
<td></td>
</tr>
<tr>
<td>NASA SP-7037</td>
<td>AERONAUTICAL ENGINEERING</td>
<td>Monthly</td>
</tr>
<tr>
<td></td>
<td>Engineering, design, and operation of aircraft and aircraft components</td>
<td></td>
</tr>
<tr>
<td>NASA SP-7039</td>
<td>NASA PATENT ABSTRACTS BIBLIOGRAPHY</td>
<td>Semianually</td>
</tr>
<tr>
<td></td>
<td>NASA patents and applications for patent</td>
<td></td>
</tr>
<tr>
<td>NASA SP-7041</td>
<td>EARTH RESOURCES</td>
<td>Quarterly</td>
</tr>
<tr>
<td></td>
<td>Remote sensing of earth resources by aircraft and spacecraft</td>
<td></td>
</tr>
<tr>
<td>NASA SP-7043</td>
<td>ENERGY</td>
<td>Quarterly</td>
</tr>
<tr>
<td></td>
<td>Energy sources, solar energy, energy conversion, transport, and storage</td>
<td></td>
</tr>
<tr>
<td>NASA SP-7500</td>
<td>MANAGEMENT</td>
<td>Annually</td>
</tr>
<tr>
<td></td>
<td>Program, contract, and personnel management, and management techniques</td>
<td></td>
</tr>
</tbody>
</table>

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