

Bioelectronics directory. S.B. Sells and Helen F. Sells, editors

Fort Worth, Tex. : Texas Christian University Press, 1963.

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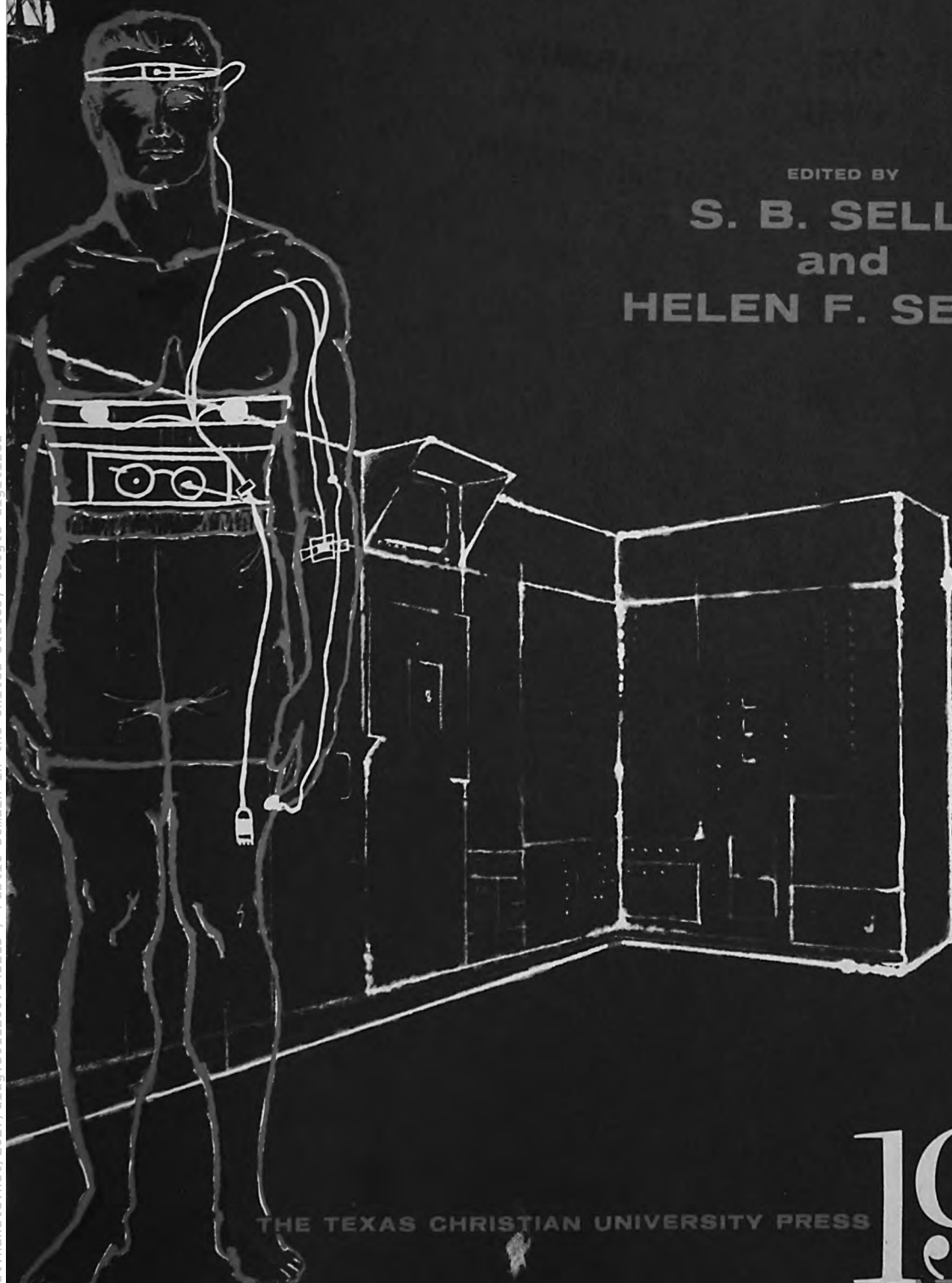
1963 BIOELECTRONICS DIRECTORY



BIOELECTRONIC DIRECTORY

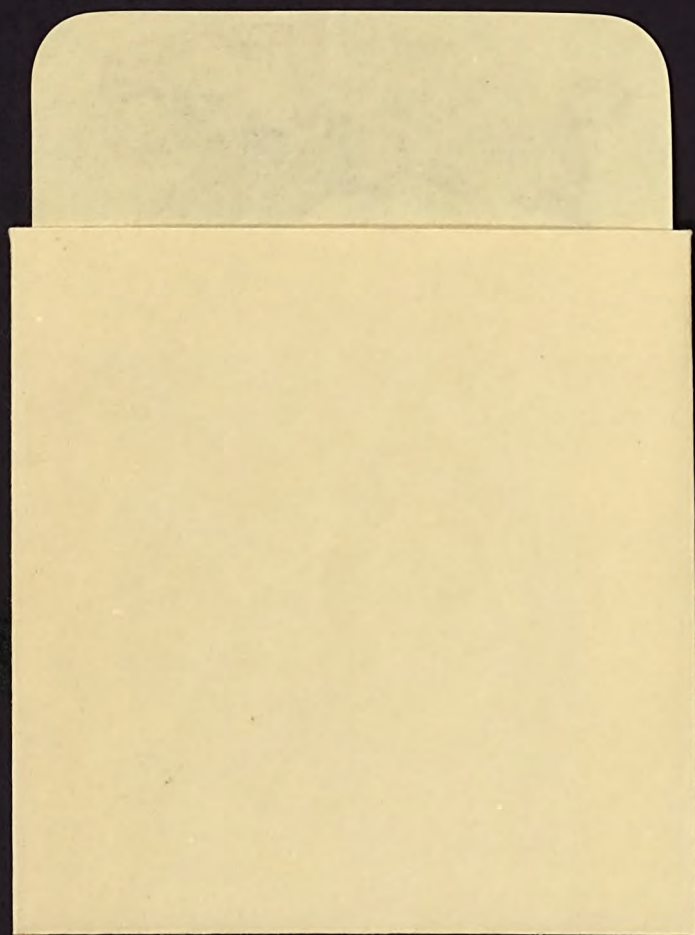
SECOND EDITION

EDITED BY
S. B. SELLS
and
HELEN F. SELLS



THE TEXAS CHRISTIAN UNIVERSITY PRESS

1963



BIOELECTRONICS DIRECTORY
Second Edition

S. B. SELLS and HELEN F. SELLS
Editors

INSTITUTE OF BEHAVIORAL RESEARCH
TEXAS CHRISTIAN UNIVERSITY

BIOELECTRONICS REPORT NO. 3
Supported by the **HUMAN ECOLOGY FUND**
201 East 57 Street, New York 22, N.Y.



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PREFACE

The Second Edition of the BIOELECTRONICS DIRECTORY brings this useful volume up to date with a greatly expanded number of listings, including current addresses, and a new, improved format. The 1280 listings represent virtually every aspect of the entire spectrum of research involving the recording and interpretation of electrical potentials from living organisms and include scientists from a wide range of scientific disciplines and occupations. Twenty-five countries in addition to the United States are represented among the listees and in the geographic index.

This new edition presents the listees in alphabetic order, with the geographic arrangement in the index. This format facilitates the location of individual listees and at the same time indexes the names of all listees alphabetically by country, state, and city. Each listing contains the name, title, affiliation, location, and current research interests and activities of a scientist who was either listed in the First Edition or who returned a questionnaire for the Second Edition.

A number of sources was used to locate scientific personnel to be listed in this edition, and the cooperation of many individuals and scientific societies must be acknowledged. The editors are grateful to the following individuals and organizations for furnishing selected mailing lists or membership directories: Dr. Jozef Zwislocki and Mr. Wallace Waterfall for the Acoustical Society of America, Dr. William J. Kennard for the Aerospace Medical Association, Mr. Curtis A. Bartholomew for the American College of Medical Technologists, Dr. Kenneth A. Kooi for the American Electroencephalographic Society, Dr. Ray G. Daggs for the American Physiological Society, Dr. Sherman Ross for the American Psychological Association, Dr. S. A. Talbot for the Biophysical Society, Dr. Charles W. Simon for the Human Factors Society, Dr. Milton O. Lee for the Federation of American Societies for Experimental Biology, Dr. E. L. Powers for the Radiation Research Society, Mr. C. Craig Harris and Mr. Samuel N. Turiel for the Society of Nuclear Medicine, and Dr. Albert F. Ax for the Society for Psychophysiological Research.

Appreciation is expressed to the editors of Aerospace Medicine, the Human Factors Society Bulletin, Nuclear News, and the IRE Transactions on Biomedical Electronics for publishing notices calling the attention of the preparation of the Second Edition of the Directory to prospective listees.

Col. Joseph M. Quashnock, USAF, MC of the Aerospace Medical Laboratory, Dr. Richard H. Wilcox of the Office of Naval Research, Drs. John A. Stern and George A. Ulett of Washington University School of Medicine and Mr. Walter P. Pasternak of the Human Ecology Fund gave invaluable assistance in the planning of the mailing list. Additional names were obtained systematically by screening published symposia, current journals, programs of current and recent scientific meetings, and by nominations of persons returning listee questionnaires. Questionnaires were mailed to all individuals located from the sources listed, and all who reported current bioelectronics research interest or work in progress were included in the Directory.

Immediately following the main body of listings and preceding the Geographic Index there is a SUPPLEMENT which includes additional listings received too late for inclusion in the main body. The SUPPLEMENT also includes a few listings that were held up editorially for checking of spelling, abbreviations, addresses, and the like. Names included in the SUPPLEMENT are indicated by an asterisk (*) in the Geographic Index to facilitate location.

Some listings are identified by the abbreviation Ed. 1 following the listee's name. These are repeated from the First Edition without change. In the absence of replies to the questionnaires sent to them, it was assumed that no changes were required.

A copy of the Listee Questionnaire is included at the back of this book. Readers are invited to send new and revised information to the editors, to be kept on file for the next edition.

The publication of this Second Edition of the BIOELECTRONICS DIRECTORY was made possible by the continued support of the Human Ecology Fund, 201 East 57 Street, New York 22, New York. The editors are deeply indebted to Mr. David A. Rhodes, Executive Secretary, Mr. James L. Monroe, former Executive Secretary, Mr. Walter P. Pasternak, Editor, and Dr. Samuel Lyerly for their encouragement and help in the continuation of this activity. Appreciation is also acknowledged for the devoted work of Miss Patricia Mueller, Editorial Assistant, for handling the mailing and control of questionnaires and the secretarial work.

S. B. Sells, Ph.D.
Helen F. Sells, B.A.
Editors

A

- AAS, ARVID, Ph.D., Lecturer in Psychology, Department of Humanities, Institute of Psychology, University of Oslo, Karl Johans gt. 47, Oslo, Norway. Psychophysiological methods in connection with research in hypnosis.
- ABAJIAN, JOHN, M.D., Professor of Anesthesia, Department of Surgery, University of Vermont College of Medicine, Burlington, Vermont. Cardiovascular effects of halothane (fluothane) anesthesia (USPH Grant H5512-C1).
- ABBOTT, BERNARD C., Ph.D., Professor of Biophysics and Physiology, Department of Physiology and Biophysics, University of Illinois, Urbana, Illinois. Electrical and mechanical activity in muscle; energetics of nerve activity, and action of dinoflagellate toxins on excitable tissues.
- ABBOTT, HENRY E., Jr., Ed.D., Program Director, Applied Psychology Corporation, 4113 Lee Highway, Arlington 7, Virginia. Automotive safety and other studies involving use of bioelectrical devices and methods to measure and record various aspects of subjects' internal or external behavior. Current research for Bureau of Public Roads concerns drivers' following distance under stress induced by selected traffic maneuvers.
- ABOOD, LEO G., M.D., Associate Professor of Neurophysiology and Biological Chemistry and Director of Research (Department of Psychiatry), Department of Psychiatry and Biological Chemistry, University of Illinois College of Medicine, 912 South Wood Street, Chicago 12, Illinois. Effect of various substances on phosphorylation and bioelectric phenomena of excitable tissues and inhibition of phosphorylation during electrical excitation of frog nerves.
- ACHENBACH, KARL E., Research Associate, Department of Surgery, Division of Neurosurgery, College of Medicine, University of Florida, Gainesville, Florida. Implantation of depth and surface electrodes in monkeys, and stimulation to disrupt performance of complex learning tasks.
- ADAMS, HENRY B., Ph.D., Research Clinical Psychologist, Department of Psychology, Veterans Administration Hospital, Richmond, Virginia. Use of pre-recorded stimulus tape messages presented to psychiatric patients during sensory deprivation as a therapeutic device facilitating personality change.
- ADELMAN, WILLIAM J., Jr., Ph.D., Associate Professor of Physiology, Department of Physiology, University of Maryland School of Medicine, Greene and Lombard Streets, Baltimore 1, Maryland. Voltage clamp studies on squid giant axons internally perfused with artificial axoplasm; studies on the rapid ionic conductances of invertebrate axon membranes; studies on the relation of equilibrium potentials to ionic gradients in membranes; studies on delayed and instantaneous rectification in nerve, and analysis of above in terms of neural mechanisms.
- ADES, HARLOW W. (Ed. 1), Head, Department of Neurophysiology and acoustics, U.S. Naval School of Aviation Medicine, U.S. Naval Aviation Medical Center, Pensacola, Florida. Stress due to high intensity noise; electroencephalography of Naval aviators and flight students; airborne electroencephalography; audiology, and acoustics.
- ADEY, WILLIAM ROSS, M.B., B.S., M.D., Professor of Anatomy and Physiology, Medical Center, University of California, Los Angeles 24, California. Neurophysiology of behavioral mechanisms with special reference to information transfer in the brain using micro-electrode techniques and implanted electrodes; analysis of information aspects of wave discharges using computer techniques of correlation analysis; feasibility studies of brain wave recording from animals and man in space flight. (Member, Neuro-communication and Biophysics Panel of International Brain Research Organization of UNESCO. Member, Space Science Board, National Academy of Sciences. Member, Advisory Committee on Computers in Research, National Institutes of Health. Member, National Administrative Committee of IRE Professional Group on Biomedical Electronics.)
- ADLER, BERNARD C., Research Associate, Department of Otolaryngology, The Jewish Hospital of St. Louis, 216 South Kingshighway, St. Louis 10, Missouri. Electronystagmographic evaluation of vestibular function in head trauma.
- AGALIDES, EUGENE, Ph.D., D.E., Senior Research Staff Member, General Dynamics/Electronics, Research Division, 1400 North Goodman Street, Rochester 9, New York. Experimental and theoretical research on information and communication theory aspects of the nervous system (sponsored by AFOSR and GD/E); experimental investigation of the transmitting capabilities and receiving ability of magnetic or electric stimuli of the electric and magnetic sensitive fish (sponsored by ONR and GD/E); experimental research on peltier effect cooling electrodes for brain (for treatment of Parkinson disease); and the propositional calculus and the algebra of functors applied to data-disease complexes. (Theoretical joint research with Dr. Scott Swisher, University of Rochester Medical School.)
- AGRANOFF, B. W., M.D., Biochemist, Mental Health Research Institute, University of Michigan, Ann Arbor, Michigan. Lipide nature of membranes; relationship to ion transport (generation of potentials).
- AIRD, ROBERT B., M.D., Professor and Chairman, Department of Neurology, University of California Medical Center, San Francisco 22, California. Studies on "Pacemaker" of brain; physiological evaluation of cerebrovascular insufficiency; propagation of epileptic discharge; electroencephalographic basis of cerebral localization, and electrolyte activation of CNS.
- AKERT, KONRAD, M.D., Director, Brain Research Institute, University of Zürich, August-Forel-Strasse 1, Zürich, Switzerland. Hypothalamic receptor regions; physiology of sleep; eye movements and attention; cortical control of gamma system; physiology of thalamus and integration of cerebellar, vestibular and pallidal influences.
- ALBERTS, W. WATSON, Ph.D., Research Associate, Biophysics, Mount Zion Hospital and Medical Center, 1600 Divisadero Street, San Francisco 15, California. Biophysics and neurophysiology with particular reference to the central nervous system of man. Current Research: Determining relationship of subcortical and cortical electrical activity to parkinsonian tremor utilizing computer techniques; determining parameters for the production of conscious sensory responses elicited by electrical stimulation of the sensory cortex; the relation of electrical activity of the sensory cortex to conscious sensory responses elicited by cortical and peripheral stimulation; stimulation of areas of the globus pallidus and lateral thalamus where thermal lesions are made in the treatment of parkinsonism; stimulation of areas of PVL, PVM, parafascicularis, intralaminar, and centromedian where thermal lesions are made for relief of intractable pain; production of controlled thermal lesions using radiofrequency current to relieve symptoms; studies of pre- and post-operative clinical states of Parkinson patients treated for parkinsonism with thermal lesions of the globus pallidus and thalamus; attempts to find relatively convenient and objective methods of characterizing incapacity, with a view towards statistical evaluation of surgical results, and development of new physical methods for the production of reversible and irreversible cerebral lesions.
- ALEXANDER, A. A., Ph.D., Post Doctoral Fellow, Department of Psychiatry, University Hospitals, University of Wisconsin, 1300 University Avenue, Madison 6, Wisconsin. Analyses of physiological periodicity (high frequency rhythms in peripheral nervous systems) with a view to quantification and psychological concomitants.
- ALLEN, MARSHALL B., Jr., M.D. (Ed. 1), Resident in Neurosurgery, Department of Neurosurgery, University Hospital, Jackson, Mississippi. Currently working on clinical cases involving vascular supply, tumors, spinal discs; planning long-term study on development of vascular supply of brain, involving EEG changes and various problems of vascularity.
- ALPERT, LOUIS K., Professor, Department of Medicine, The George Washington University, 2300 K Street, N.W., Washington 7, D.C. Radioisotope studies of thyroid function.
- ALVAREZ, JAIME, (Ed. 1), Assistant Professor, Laboratorio de Neurofisiologia, Universidad Catolica de Chile, Casilla 114-D, Santiago, Chile. Heterogeneous nerve regeneration and its synaptic problems.
- AMATO, CHARLES G., B.S., Research Physicist, Industrial Reactor Laboratories, AMF Atomics, Plainsboro, New Jersey. The in-vivo determination of radiation intensity and cumulative exposure in humans and live or sacrificed animals due to exposure to x-rays, gamma rays, neutrons and mixed radiation.
- AMBRUS, JULIAN L., Ph.D., M.D., Principal Cancer Research Scientist, Department of Health, State of New York, Roswell Park Memorial Institute, 666 Elm Street, Buffalo 3, New York. Tissue oxygen tension in normal and pathologic conditions measured with polarography; use of polarography in the localization of intra arterial thrombi and in the evaluation of fibrinolytic therapy; evaluation of ataractic and analgesic agents in man using a battery of stimuli and EEG, EKG, electromyography, psychogalvanic reflex, etc.
- AMES, ADELBERT, III, M.D., Research Associate, Department of Neurosurgery, Massachusetts General Hospital, Fruit Street, Boston 14, Massachusetts and Department of Biological Chemistry, Harvard Medical School, Boston 15, Massachusetts. Measurement of function in an in vitro preparation of rabbit retina to establish

correlations between electrophysiology and electrolyte metabolism.

ANDERSON, DON NEIL, B.S., Senior Human Factors Specialist, Operations Development Department, Systems Development Corporation, 2500 Colorado Avenue, Santa Monica, California. Member of human engineering project staff for back-up interceptor control (BUIC) air defense system; preparation of task analysis and flow charting weapons function; concerned with operator-program interface in computer-based command control systems.

ANDERSON, WILLIAM W., M.D., Assistant Professor of Neurology, Department of Neurology, University of California Medical Center, San Francisco 22, California. EEG with special reference to electrocorticograms and deep electrodes.

ANDY, ORLANDO JOSEPH, M.D., Professor and Chief, Department of Neurosurgery, University of Mississippi Medical Center, 2500 North State Street, Jackson 6, Mississippi. Electrophysiology, and behavioral physiology.

ANGELAKOS, E. T., M.D. (Ed. 1), Associate Professor of Physiology, Department of Physiology, Boston University School of Medicine, 80 East Concord Street, Boston 18, Massachusetts. Electrophysiology of the heart: evaluation of rate of recovery of excitability at different parts of the ventricle; and evaluation of the effects of acetylcholine and other drugs on atrial excitability; excitability and refractoriness of the heart under hypothermia; experimental electrocardiography and vectocardiography, and use of analog computer techniques in cardiovascular research.

ANGER, HAL O., B.S., Engineer and Research Associate, Donner Laboratory and Lawrence Radiation Laboratory, University of California, Berkeley 4, California. Imaging the distribution of gamma ray and positron emitting radioisotopes as a diagnostic aid.

ANTUNES-RODRIGUES, JOSÉ, M.D., Assistant in Physiology, Department of Physiology, Faculty of Medicine of Ribeirão Preto, University of São Paulo, São Paulo, Brazil. Hypothalamic control of selective intake of water and NaCl; limbic system and neuro-vegetative functions.

ARCHER, VICTOR EUGENE, M.D., Chief, Epidemiology Services, Occupational Health Field Station, United States Public Health Service, Fort Douglas Station, Salt Lake City, Utah. Epidemiologic and other studies attempting to demonstrate biologic effects of radiation among uranium miners, and various pulmonary function measurements, and electronic devices for blood counting and cytological study.

ARMINGTON, JOHN C., Ph.D., Sensory Psychology, Walter Reed Army Institute of Research, Washington 12, D. C. Retinal processes in man examined through the electroretinogram; microelectrode recording from visual pathways of the frog; EEG and sleep deprivation in man; reduction of ERG and EEG data by average response computer and harmonic analysis.

ARONOW, SAUL, M.D. Associate Physicist, Physics Research Laboratory, Massachusetts General Hospital, Boston 14, Massachusetts. Production of lesions in brain, using radio frequencies, and study of effects, sensory, pain relief, etc., and applications of radioisotopes to diagnostic instrumentation.

ASDOURAIN, DAVID, Ph.D., Assistant Professor, Department of Psychology, Wayne State University, Detroit 2, Michigan. Recording of subcortical potentials in lower mammals during conditions of physiological imbalance.

ASERINSKY, EUGENE, Ph.D., Associate Professor of Physiology, Department of Physiology, Jefferson Medical College, 1025 Walnut Street, Philadelphia 7, Pennsylvania. Electro-oculography under conditions of sleep and dark adaptation; frequency analysis of electroencephalogram by analog auto-correlation technique; recording and analysis of high frequency components of EEG; study of effects of the oculocardiac reflex on diaphragm muscle action potentials; skin resistance levels correlated with stages of sleep, and the effect of various types of auditory nerve trauma on cochlear microphonics.

AULD, FRANK, Jr., Ph.D., Professor, Department of Psychology, Wayne State University, Detroit 2, Michigan. Study of relationships between behavior (including verbal behavior) in psychotherapy interview and measures of physiological responses (electrical skin resistance); see Auld, Dreyer, and Dollard, *Psychol. Rep.*, 1958, 4, 11-15.

AX, ALBERT F., Ph.D., Head, Psychophysiology Laboratory, Department of Psychophysiology, The Lafayette Clinic, 951 East Lafayette, Detroit 7, Michigan. Simultaneous recording (direct and by telemetry) of physiological variables from humans during natural and stimulated emotion and stress; application of high speed digital computer to direct analysis of physiological data via magnetic tape. The psychophysiological method is being applied to the study of

mental disorder and to emotional patterning and conditioning in children and adults.

B

BABCOCK, MURRAY L., Research Assistant Professor, Electrical Engineering, University of Illinois, Urbana, Illinois. The simulation of neurons and their use in networks for analysis and interpretation of stimuli, particularly as it might apply to the central nervous system, and the analysis, in particular, of sound waves as seen by the auditory cortex.

BACH, L. MATTHEW N., Ph.D., Professor of Physiology, Department of Physiology, Tulane University School of Medicine, Tulane University Station, New Orleans 18, Louisiana. Development of microminiaturized amplifier and FM broadcasting circuits for implantation within experimental animals to permit broadcasting of cortical subcortical potentials over distances of several thousand feet.

BAER, REUBEN A., Ph.D., Principal Scientist, Chief, Crew Performance, Human Factors-Life Sciences Department, Space and Information Systems, North American Aviation, Torrance Facility, 12214 Lakewood Boulevard, Downey, California. Biomedical indexes of stress and behavioral pathology; automated prognosis of performance capability, and recording of multi-variate indexes of physiological compensation.

BAGCHI, B. K., Ph.D., Professor of Electroencephalography, Department of Psychiatry, Medical School, University of Michigan, Ann Arbor, Michigan. Electroencephalographic localization of brain tumors; effect of metrazol block on evoked potentials of nerves; effect of metrazol on spontaneous electrical activity of isolated ganglia; spontaneous and activated potential distribution in the brains of animals with implanted electrodes, and convulsive disorder--pre- and post- temporal lobectomy EEG and electrocorticogram.

BAGINSKY, ROLF G., M.D., Assistant Chief, Physical Medicine and Rehabilitation Service, Veterans Administration Hospital, 200 Spring Street, Bedford, Massachusetts. Transmission of excitation in nerve and muscle, and histological, histochemical and neurochemical correlates of bioelectrical recordings.

BAIRDAIN, EDITH MUNRO, Ph.D., Senior Specialist, Department of System Utilization, International Electric Corporation, Paramus, New Jersey. Perceptual factors and information transfer from large scale wall displays, electronic displays, and color in displays.

BAKER, DONALD W., E.E., Senior Electronic Engineer, Department of Physiology and Biophysics, University of Washington, Seattle 5, Washington. Instrumentation development for measurement of pressure dimensions and flows in intact animals, and systems design for acquisition, storage and analysis of cardiovascular variables.

BALDWIN, HOWARD A., M.Sc., Director, Laboratory for the Study of Sensory Systems, 4242 East Speedway, Tucson, Arizona. Implant telemetry of physiological variables; muscle-like structures, and vision theory.

BALIN, HOWARD, M.D., M.Sc., Associate in Obstetrics and Gynecology, Department of Obstetrics and Gynecology, Graduate School of Medicine, and Director and Chief of Infertility and Ovarian Physiology Department, Pennsylvania Hospital, 8th and Spruce Street, Philadelphia, Pennsylvania. Examination of ovarian function by means of temperature and potential difference measurements which are telemetered from the ovary and other portions of the reproductive tract, and direct visualization confirmation by endoscopic cinematography.

BALK, O., Dipl. Phys., Institut für Strahlenschutzforschung, Versuchs- und Ausbildungsstätte für Strahlenschutz, Ingolstädter Landstrasse 1, Neuherberg bei München, West Germany. Generation of electrical potentials from the organisms; analysis of bioelectronic data; measurement of bioelectronic data of nerve cells, and influence of radiation on bioelectronic data.

BARLOW, JOHN S., M.D., Neurophysiologist, Neurology Service, Massachusetts General Hospital, Boston 14, Massachusetts. Study of the nature of the electroencephalogram by means of computer techniques, and design of small analog computers for the above purpose.

BARNARD, GEORGE W., M.D., Chief, Psychophysiological Stress Section, 6570th Aerospace Medical Research Laboratories, Wright-Patterson Air Force Base, Ohio. Multivariate assessment of the psychophysiology of stress and homeostasis, and the modification of thermal adaptability by hypnosis.

BARNES, H. W., Ph.D., Research Associate, Department of Neurochemistry, Cleveland Psychiatric Institute, 1708 Alken Avenue, Cleveland 9, Ohio. Neurophysiology; brain mechanism and

behavior; sensory processes, and psychopharmacology.

BARNES, ROBERT H., M.D., Executive Director, Greater Kansas City Mental Health Foundation, 2200 McCoy Street, Kansas City, Missouri. Investigations on how psychotherapeutic drugs (phenothiazines) affect physiological responses (such as GSR, heart rate, body-sensing movements) and behavioral states (as determined by various tests and rating schedules), and the correlation of temporal lobe disturbance (found in the EEG recordings of some elderly persons) with disease of the carotid artery. Antecedent to this, is the necessary identification of carotid pulse waveforms indicative of carotid artery disease.

BARNHARD, HOWARD J., M.D., Professor and Chairman, Department of Radiology, University of Arkansas Medical Center, Little Rock, Arkansas. Application of the digital computer in medicine, particularly in regard to extrapolation of results in cancer therapy and in information retrieval.

BARR, Norman Lee, M.D., (Ed. 1), Head, Biological Sciences and Systems Department, Defense Systems Division, General Motors Corporation, Warren, Michigan. The development of instruments and computers for biological measurements in stress and disease.

BARRATT, ERNEST S., Ph.D., Research Associate Professor and Director of Behavior Science Laboratory, Department of Neurology and Psychiatry, University of Texas Medical Branch, Galveston, Texas. Neuroanatomical and neurophysiological correlates of behavior and personality measures; peripheral ANS and CNS correlates of intra-individual variability of behavior; neurophysiological correlates of tonic immobility in the opossum, and effect of ultrasonic stimulation on electrical self stimulation in the cat.

BARRER, LESTER A., M.S., M.Sc., Director of Research, New Jersey State Department of Health, 11 Washington Street, West Orange, New Jersey. Epidemiological follow-up of individuals with body burdens of radio-active materials; coding of medical and dental observations, findings, and diagnoses; coding systems for human pathology inventory, and statistical analyses of medical data, vital statistics information, and radioactivity measurements.

BARRY, JOHN J., Jr., Ph.D., Boston University School of Medicine, East Concord Street, Boston, Massachusetts. Effect of intense noise on behavior of cats; effect of ultrasonic irradiation on cats and monkeys, and the anatomy and physiology of the auditory system and rhinencephalon.

BARTLETT, ROSCOE G., Jr., (Ed. 1), Supervising Physiologist, Department of Research, United States Naval School of Aviation Medicine, United States Aviation Medical Center, Pensacola, Florida. Pulmonary function evaluation with V-V loop and tidal CO₂ monitoring as a hyperventilation warning device, and in-flight continuous pulmonary function from routine and special breath velocity trace.

BARTLEY, S. HOWARD, Ph.D., Professor of Psychology, Department of Psychology, Michigan State University, East Lansing, Michigan. Studies involve the temporal manipulation of stimulation (intermittent stimulation) which produces certain known variation in temporal discharge patterns in the optic pathway (on, on-off, and off discharges) and ultimately produces certain end results. The sensory variables at present include those of color desaturation, hue shifts, and brightness enhancement. All experimentation is designed to relate to bioelectric phenomena.

BARTON, JOHN R., Project Thermodynamics Engineer, Department of Thermodynamics, McDonnell Aircraft Corporation, P. O. Box 516, St. Louis 66, Missouri. Design and development of the environmental control systems for projects Mercury and Gemini.

BARTOSHUK, ALEXANDER KARL, Ph.D., (Ed. 1), Assistant Professor, Department of Psychology, Institute for Research in Health Sciences, Brown University, Providence 12, Rhode Island. Recording of fetal electrocardiogram to evaluate possible fetal distress due to maternal hypotension in some Cesarean section cases following spinal anesthesia; recording of EKG, EEG, and other measures from human neonates in order to study their responsiveness to stimuli.

BATSON, RANDOLPH, M.D., Professor, Department of Pediatrics, School of Medicine, Vanderbilt University, Nashville 5, Tennessee. Various phases of medical electronics.

BATTIG, CHARLES G., M.S., E.E., M.D., Research Specialist, Department of Life Sciences, Aerospace Medicine Group, Space and Information Systems Division, North American Aviation, 12214 Lakewood Boulevard, Downey, California. Development of biosensors and telemetry equipment for use in astronaut monitoring, and also for animal instrumentation (including chronic implants); investigation of computer applications to aid in biologically oriented research programs, i.e., automated diagnostic devices, automatic readout systems for EKG, EEG, etc., and basic research in bionics (study of self organizing systems).

BAUER, HERBERT J., Ph.D., Senior Research Psychologist, Human Factors Group, Engineering Mechanics Department, General Motor Research Laboratories, 12 Mile and Mound Roads, Warren, Michigan. The primary activities center about the measurement of acceleration forces of various parts of the human anatomy under conditions of low frequency vibration; correlation between these various measures and subjective experience; measurement of behavior of vehicle drivers under various conditions of "alertness," and correlation between system behavior measures and physiologic states are being examined.

BAUM, GILBERT, M.D., Assistant Clinical Professor of Ophthalmology, Department of Ophthalmology, Bronx Veterans Administration Hospital, Albert Einstein College of Medicine, Eastchester Road and Morris Park Avenue, New York 61, New York. Application of ultrasonic techniques to ophthalmology; diagnostic and surgical applications.

BAUMGARTNER, GÜNTHER, Dr. Med., Abteilung für Klinische Neurophysiologie, Universität Freiburg/Br., Freiburg/W. Germany, Hansastraße 9a. Microelectrode studies of the visual system; information on nervous system, and electromyography.

BAXTER, BRUCE L., Ph.D., Research Associate in Neuropharmacology and Psychopharmacology, Department of Pharmacology, Mead Johnson Research Center, Evansville 21, Indiana. Electrophysiological correlates of behavior and of drug action upon the central nervous system, and investigation of the action of psychotropic compounds upon behavior induced via electrical stimulation of the brain in the chronically implanted animal.

BAXTER, CLAUDE FREDRICK, Ph.D., Senior Research Biochemist, Department of Biochemistry, City of Hope Medical Research Institute, Duarte, California. Correlation of biochemical phenomena with electrical phenomena in the central nervous system, including changes during growth and development, comparative aspects as related to evolution, and pharmacological aspects as related to metabolic inhibitors and modifiers.

BEAUPEURT, J. E., Human Factors Chief, Department of Engineering, Boeing Military Aircraft Systems Division, Wichita, Kansas. Effects of unusual environments on human performance. (Currently, Office of Naval Research Contract Nonr 2994(00) "Effects of Low Frequency Vibration on Human Performance.")

BECK, EDWARD C., Ph.D., Director, Neurophysiology Laboratories, Assistant Research Professor, Division of Neurology and Departments of Psychiatry and Pharmacology, Medical School, University of Utah, Salt Lake City, Utah, and Veterans Administration Hospital, 500 Foothill Drive, Salt Lake City 13, Utah. Electroencephalography; cathode-ray oscilloscope, and various kinds of psychophysical testing apparatus.

BECKER, DAVID V., M.D., Associate Professor of Medicine and Radiology; Director of Radiolotope Laboratory, New York Hospital, Cornell Medical Center, 525 East 68 Street, New York 21, New York. Medical instrumentation and computer application in biology and medicine.

BEHAN, RICHARD A., Ph.D., Human Factors Scientist, Bio-Medical Systems Department, System Development Corporation, 2500 Colorado Avenue, Santa Monica, California. Consulting on the use of quantitative techniques and computers in the analysis of medical research data, design of experiments, evaluation of human performance in computer based information processing systems, and evaluation of system performance in simulated environments.

BEHRENS, MILDRED E., B.S., Research Associate, Masonic Medical Research Laboratory, Utica, New York. Study of the functional relationship between the eccentric cell and the retinula cells in the lateral eye of *Limulus* by means of a dual electrode technique.

BEIDLER, LLOYD M., Ph.D., Professor of Physiology, Department of Biological Sciences, Florida State University, Tallahassee, Florida. The mechanism of stimulation and receptor function associated with the taste and olfactory system, using electrophysiological, anatomical and isotopic techniques.

BEISCHER, D. E., Ph.D. (Ed. 1), Head, Department of Physical Chemistry, United States Naval School of Aviation Medicine, United States Naval Aviation Medical Center, Pensacola, Florida. Development of biotransducers.

BEKEY, GEORGE A., Ph.D., Assistant Professor, Department of Electrical Engineering, University of Southern California, Los Angeles 7, California. Computer simulation of circulation in the fetus and newborn; analog computer models of physiological processes, and mathematical models of human operator behavior in closed-loop tracking and other tasks.

BÉLANGER, DAVID, Ph.D. (Ed. 1), Professor of Experimental Psychology, Institut de Psychologie, Université de Montreal, Montreal,

Beliles

Quebec, Canada. The measurement of electrocardiographic activity in animals (rats) placed in experimental situations, free of restraint; the object is to study the relations between motivation, activation, and physiological measures such as HR; also interested in the measurement of muscular potential, skin, resistance, etc.

BELILES, ROBERT P., (Ed. 1), Instructor, Veterinary Physiology and Pharmacology, Iowa State University, Ames, Iowa. Electronic analysis and simulation of the glucose-insulin feed-back mechanism; telemetering of biological information; development of blood oxygen analyzing device; development of internal blood pressure transducer.

BELL, GEORGE E., M.D., Director Medical Services, Columbus State Hospital, 1960 West Broad Street, Columbus, Ohio. Cerebral circulation.

BELL, ROBERT LLOYD, M.D., Chief Neurological Surgery, Department of Surgery, United States Veterans Administration Consolidated Center Hospital, Wadsworth Division, Wadsworth, Kansas. Cerebral circulation time.

BELLET, SAMUEL, M.D., Professor of Clinical Cardiology, Graduate School of Medicine, University of Pennsylvania, 19th and Lombard Streets, Philadelphia, Pennsylvania. Radio-telemetering devices for recording electrocardiograms and other physiologic parameters by means of radio transmission, which enables the physician to record those data during exercise of various types of everyday stresses, and device for electrically stimulating the heart beat.

BELMONT, IRA, Assistant Professor (Research), Program on Normal and Aberrant Behavioral Development, Department of Pediatrics, Albert Einstein College of Medicine, 1300 Morris Park Avenue, Bronx 61, New York. Conditioning processes in normal and neuropsychiatric patients.

BENDER, MORRIS B., M.D., Director, Department of Neurology, The Mount Sinai Hospital, Fifth Avenue and 100th Street, New York, New York. The oculomotor system and body postural mechanisms.

BENFORADO, JOSEPH M. (Ed. 1), Associate Professor, Department of Pharmacology, School of Medicine, University of Buffalo, 3435 Main Street, Buffalo 14, New York. Effects of drugs on cardiac electrograms and action potentials; electrocardiograms.

BENJAMIN, FRED B., D.M.D., Ph.D., Senior Research Coordinator, Department of Life Science, Republic Aviation, Farmingdale, Long Island, New York. Biomedical monitoring of man in space, and methods of monitoring blood pressure.

BENNETT, A. LAWRENCE, M.D., Assistant Chairman, Department of Physiology and Pharmacology, University of Nebraska, College of Medicine, 42nd and Dewey Streets, Omaha 5, Nebraska. Experimental and clinical electromyography; experimental electrocardiography on the isolated mammalian heart, and microelectrode studies of the effects of drugs and ions upon skeletal and cardiac muscle.

BENNETT, MICHAEL V. L., Ph.D., Associate Professor, Department of Neurology, College of Physicians and Surgeons, Columbia University, 630 West 168th Street, New York 32, New York. Neurophysiology and microelectrode studies of single cells.

BENSON, ROBERT W., President, Robert W. Benson & Associates, Inc., 633 Thompson Lane, Nashville 4, Tennessee. Electronic instrumentation, and physical research with emphasis on ultrasonics.

BENSON, STEPHEN D., M.A., Personnel Subsystems Representative, Weather Systems Center, United Aircraft Corporation, East Hartford 8, Connecticut. Problems concerning man-machine interface, and determination of informational requirements for optimal systems operation where man functions as the prime decision maker.

BERGER, SEYMOUR M., Ph.D., Assistant Professor, Department of Psychology, Indiana University, Bloomington, Indiana. Social learning study involving conditioning of the galvanic skin response: basically, the procedure requires that the subject observe someone else receive an electric shock following the presentation of a buzzer; the GSR's of the observer are recorded continuously. Test trials are interspersed among the conditioning trials to determine whether the observer's GSR becomes conditioned to the buzzer; at this stage the research is directed toward identifying conditions which facilitate this type of learning.

BERGMAN, PHILIP S., M.D., Attending Neurologist, Department of Neurology, The Mt. Sinai Hospital, New York 29, New York. Recording of extraocular movements by means of corneo-retinal potential under various conditions of stimulation, and measurement of thresholds of perception of vibration using electrically controlled parameters of stimulation.

BERKLEY, CARL, Scientific Director, Foundation for Medical Technology, Great Neck, New Jersey. Ingestible endoradiosondes, medical

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electronics, implantable stimulators and pacemakers, control of physiological function, cell counting and sizing, cytology, fluorescence microscopy, scanning techniques, bibliography, computer data processing, and transducers.

BERMAN, MAXWELL, B.S., E.E., Engineer, Department of Diversified Products, Douglas Aircraft Company, 3000 Ocean Park Boulevard, Santa Monica, California. Design of an electronic stethoscope, and the recording and reproduction of heart sounds, and design of a salinity monitoring system.

BERNAL, MARTHA ESTELLA, Ph.D., Post-doctoral Fellow in Psychophysiology, Department of Psychiatry, University of California Los Angeles Medical Center, Los Angeles 24, California. Investigations of the effects of sustained alcohol intake in the alcoholic using autonomic and EMG measures of reactivity and resting levels.

BERNARDINI, JORGE E., B.S., Research Staff Member, Department of Research, General Dynamics/Electronics, 1400 North Goodman Street, Rochester 9, New York. Information and communication theory aspects of the nervous system, and sensitivity of certain fishes to magnetic and electric fields.

BERNHARD, ROBERT, B.S., Research Engineer, Research Department, Grumman Aircraft Engineering Corporation, Bethpage, New York. Nonlinear control in cell systems and the role of rhythmic processes in control, and the origins of self-organizing capacities in living machines through theoretical studies of thermodynamic coupling of irreversible processes.

BERNSTEIN, ALVIN J., Ph.D., Manager--Human Factors Unit, Defense Systems Department, General Electric Company, 208 South Geddes Street, Syracuse, New York. Studies of human performance in large-scale ground electronics control systems.

BERRIDGE, HAROLD L., Ed.D., Director, Electronic Control Test, Deputy for Bioastronautics, Air Proving Ground Center, Eglin Air Force Base, Florida. Personnel subsystems for the following: Frequency Diversity Radars--416L--SAGE Integration, Air Weapons Control System 412L, EMSS--482L, and SPADATS--496L.

BERRY, RICHARD N., Ph.D., Professor, Department of Psychology, University of Indiana, Bloomington, Indiana. The relation between task performance measures and various somatic measures obtained from surface electrodes; the relation between external "reinforcing events" and two somatic measures, palmar skin resistance and finger volume.

BERTONE, C. M., B.S., Senior Engineering Psychologist, Personnel Sub-system K Group, Lockheed Missile and Space Company, Sunnyvale, California. Effects of noise on console operators, interpretation of communications in "noisy" environments; development of man-machine systems; design of simulation experiments in data processing laboratories; development of projective techniques for the diagnosing of mental illnesses, and research into age regression under hypnosis for the purpose of determining physiologic and psychologic phenomenal changes.

BEUTNER, REINHARD H., M.D., Ph.D., Professor (retired), Department of Pharmacology, Medical Research Laboratory, Greentown, Pennsylvania. Origin of electric currents in living tissues; electromotive forces generated by systems, set up of solids salts, using elevated temperature; so-called "electromotive effect of concentration," and electrical action of drugs as the cause of their toxicity.

BICE, RAYMOND C., Ph.D., Associate Professor of Psychology, and Principal Investigator, Department of Psychology, University of Virginia, Charlottesville, Virginia. Vibrotactile sensitivity, vibrotactile and electrical communication via the skin, and design of stimulators and associated circuitry for studying skin sensitivity.

BICKFORD, REGINALD G., M.D., Professor of Physiology, Head of EEG Laboratory, Department of Physiology, Mayo Foundation and Clinic, 200 First Street, Southwest, Rochester, Minnesota. Computer programs in pattern recognition in the EEG; recording and stimulating human brain by implanted depth electrodes; telemetry of the EEG, and research on pattern recognition in the human and animal by study of electrical correlates in pattern sensitive individuals and animal models.

BIERSDORF, WILLIAM R., Ph.D., Experimental Psychologist, Sensory Psychology, Walter Reed Army Institute of Research, Washington 12, D. C. The human electroretinogram and stimulus factors influencing it: luminance, duration, color, light and dark adaptation, and physiological correlates of size and distance perception.

BILLOW, BENNETT W., M.D., Director of Medical Research and Chief, Thyroid and Radiosotope Clinic, Harlem Hospital Center, Lenox Avenue and 136th Street, New York, New York. Radioactive I 131 treatment in refractory heart failure and angina; re-evaluation of the "suppression test" in hyperthyroidism, and the role (if any) of thyroid in geriatrics--prevention of arterio or atherosclerosis.

- BINDRA, DALBIR, Ph.D.**, Professor of Psychology, Department of Psychology, McGill University, Montreal 2, Quebec, Canada. Study of the effects of drugs on muscle tension, brain tissues, and behavior; measurement of reactions to novelty, and measurement of galvanic skin response under exposure to different degrees of stimulus change.
- BIRKBECK, M. Q., Dr. (Ed. 1)**, Consultant in Physical Medicine, Northampton/Kettering Group Hospitals, Department of Physical Medicine, Kettering, Northants, England. Clinical electrodiagnosis in hospital practice.
- BLACK, A. H., Ph.D.**, Assistant Professor of Psychology, Department of Psychology, McMaster University, Hamilton, Ontario, Canada. Conditioning of autonomic responses under curare-like drugs in rat and dog.
- BLACK, RICHARD G., M.D., B.A.Sc.**, Research Associate, Department of Banting and Best Medical Research, University of Toronto and Demonstrator in Physiology, Department of Physiology, University of Toronto, Toronto 5, Ontario, Canada. Neuroanatomical and electrophysiological study of the fifth cranial nerve as an example of a system processing afferent information; quantization of the clinical measurement of muscle tone, and general biological instrumentation.
- BLAIR, JOHN H. (Ed. 1)**, Research Scientist, Research Facility, Rockland State Hospital, Orangeburg, New York. Polygraph recordings of schizophrenic patients and normal controls including changes in physiological patterns with the various current drugs and some work with hypnotic abreaction.
- BLANDAU, R. J., M.D. (Ed. 1)**, Professor of Anatomy and Assistant Dean, Department of Anatomy, University of Washington, Seattle 5, Washington. Bioelectronic characteristics of heart muscle myofibrils growing in tissue culture.
- BLINKS, JOHN R., M.D.**, Associate in Pharmacology, Department of Pharmacology, Harvard University Medical School, 25 Shattuck Street, Boston 15, Massachusetts. Biophysics of contraction in heart muscle.
- BLINN, KENNETH A., M.D.**, Consultant to industry, 1349 Stone Canyon Road, Los Angeles 24, California. Bioastronautics; design and application of computers in clinical EEG, EKG and related fields of electrophysiology, and application of three dimensional stereovectorencephalography to study of certain EEG patterns.
- BLISS, JAMES C., Ph.D.**, Research Engineer, Control Systems Laboratory, Engineering Sciences Division, Stanford Research Institute, Menlo Park, California. Psychological experimentation on tactile perception of complex spatial temporal patterns in humans; behavioral experiments and microelectrode recording studies on visual perception in insects, and sensory aids for the blind.
- BLOCK, H. D.**, Professor of Applied Mathematics, Department of Engineering Mechanics and Materials, Cornell University, Thurston Hall, Ithaca, New York. Brain models and mechanisms.
- BLOCK, JACK, Ph.D.**, Professor, Department of Psychology, University of California, Berkeley 4, California. Factor Analysis of skin resistance measures to determine the dimensional structure of skin resistance fluctuations, and psychophysiological correlates (GSR, heart rate, etc.) of various emotional states as these relate to personality characteristics.
- BLOCK, JAMES D., Ph.D. (Ed. 1)**, Assistant Professor of Psychology, Department of Psychiatry, Albert Einstein College of Medicine, Eastchester Road and Morris Park Avenue, New York 61, New York. Skin resistance changes related to psychological states; methods of overcoming polarization potentials in skin resistance measurements, and in vivo measurement of action potentials of autonomic nerves during behavior.
- BLOOM, SAMUEL W., Ph.D. (Ed. 1)**, Assistant Professor of Sociology, Department of Psychiatry, Baylor University College of Medicine, 1200 M. D. Anderson Boulevard, Houston 25, Texas. Sociophysiological correlates of small group interaction.
- BLUM, HARRY, M.E.E.**, Research Engineer (Electronic), Computer and Mathematical Sciences Laboratory, Air Force Cambridge Research Laboratories, L. G. Hanscom Field, Bedford, Massachusetts. Models and machines for dealing with pattern vision and related problems of cognition, perception and search, and the applicability of these models for understanding these capabilities in biological organisms.
- BLUMENTHAL, IRVING J., M.D.**, Associate Chief of Staff, Electroencephalography, Veterans Administration Hospital, Northport, New York. Photic stimulation and maturation in the kitten.
- BOGACZ, JAIME, M.D. (Ed. 1)**, Instituto de Neurologia y Servicio de Fisica-Medica, Hospital de Clinicas, Facultad de Medicina, Montevideo, Uruguay. Habituation and conditioning in man; vegetative aspects of the centrencephalic epilepsies, and reactivity in comas.
- BOGDANSKI, DONALD F. (Ed. 1)**, Research Associate, Department of Surgery and Department of Otolaryngology, University of Maryland, School of Medicine, Lombard and Greene Streets, Baltimore, Maryland. Single unit responses to auditory stimuli in the auditory cortex of the cat; evoked potentials in various parts of the monkey brain under conditions of Pavlovian conditioning, and the influence of drugs on these potentials.
- BOLIE, VICTOR W., M.S., Ph.D.**, Chairman, Department of Biomedical Electronics, Iowa State University, Ames, Iowa. Molecular phenomena; transducer designs; measurement systems, theoretical models; pattern recognition; radiotelemetry, and cardiopulmonary studies.
- BONDURANT, STUART, M.D. (Ed. 1)**, Assistant Professor of Medicine, Department of Medicine, Indiana University Medical Center, 1100 West Michigan Street, Indianapolis 7, Indiana. Vectorcardiography, and galvanic skin resistance.
- BONNEY, JAMES O., B.S.**, Mechanical Engineering Degree, Operations Research Scientist, Bio-Medical Systems Department, System Development Corporation, 2500 Colorado Avenue, Santa Monica, California. Modeling of information processing functions of clinical laboratories in the setting of a large hospital; system analysis and synthesis; system maintenance, and job skills and training requirements for system operators.
- BOR, NACI M., M.D. (Ed. 1)**, Assistant Professor of Physiology, Department of Physiology, Emory University, Atlanta 22, Georgia. Electrocardiographic alterations during cardiopulmonary bypass, and local oxygen tension and electrocardiogram.
- BORKO, HAROLD, Ph.D.**, Project leader of Information Retrieval and Linguistics Unit, Research Department, System Development Corporation, 2500 Colorado Avenue, Santa Monica, California. Application of high speed computers to problems of human communication, classification of concepts, indexing by association, meaning equivalence, and effectiveness of report summaries.
- BORUCKI, ARTHUR JOHN, B.S.**, Supervisor of Physiology and Medical Research Laboratory Blodgett Memorial Hospital, 1840 Wealthy Street, Southeast, Grand Rapids 6, Michigan. Electrophysiological data concerning the EEG changes in anesthesia during open heart surgery; electrophysiological data involving pulmonary diseases, and electrophysiological data in fetal EKG.
- BOSTROM, ROLAND C., B.S.E.E.**, Section Head, Department of Medical and Biological Physics, Cutler-Hammer, AIL Division, Comac Road, Deer Park, New York. Instrumentation of systems for the measurement of physiological and psychological data and the subsequent analysis of the data, particularly quantitative cytological techniques.
- BOSWELL, REED S. (Ed. 1)**, Research Psychologist (Physiological and Experimental), Veterans Administration Hospital, Salt Lake City, Utah, and Research Instructor, Division of Neurology, College of Medicine, University of Utah, Salt Lake City, Utah. Visual perception and response to photic stimulation; visual perception and excitability cycle of alpha rhythm; reaction time, alpha and low voltage fast activity; programming of bioelectric data for the Datatron 705 digital computer, and development of electronic data conversion systems for computer analyses of bioelectric data.
- BOUMAN, HARRY D., M.D.**, Professor of Physical Medicine, University of Wisconsin Medical School, Madison 6, Wisconsin. Physiology of muscle; electrophysiology of nerve and muscle, and physiology of hearing.
- BOX, HAROLD C., Ph.D. (Ed. 1)**, Associate Cancer Research Scientist, Biophysics Department, Roswell Park Memorial Institute, 666 Elm Street, Buffalo 3, New York. Paramagnetic absorption spectroscopy of biological materials (particularly irradiated materials).
- BOYARSKY, LOUIS L., Ph.D.**, Professor, Department of Physiology, College of Medicine, University of Kentucky, Lexington, Kentucky. Electrical responses of neural units; patterned stimulation of the brain, and radioactivity and detection of central transmitters.
- BRADLEY, DAN FORDHAM, Ph.D.**, Chief, Section of Physical Chemistry, Laboratory of Neurochemistry, National Institutes of Health, Bethesda 14, Maryland. Research on biological systems and problems: principally, the molecular structure and properties of polyelectrolytes such as DNA and heparin; physical-chemical basis of metachromasy; kinetics of metabolizing systems; treatment of ionic transport across membranes by irreversible thermodynamics, and

the mechanism by which light absorbed by membrane-bound methylene blue photoactivates certain nerve cells.

- BRADY, ALLAN J., M.D., Established Investigator for American Heart Association and Associate Professor, Department of Physiology and Medicine (Medical Center), University of California, Los Angeles 24, California. Intracellular recording of electrical potentials from single fibers of heart and skeletal muscle; membrane properties determined with applied current pulses; muscle tension measured with various types of mechano-electrical transducers, and ion fluxes in muscle tissue using Geiger and scintillation counting techniques.
- BRADY, JOSEPH V., Ph.D. (Ed. 1), Chief, Department of Experimental Psychology, Walter Reed Army Institute of Research, Washington 12, D. C. Reinforcing effects of electrical stimulation of brain tissue in laboratory primates; electro-physiological recording of changes following brain stimulation and behavioral stress, and neuroendocrinological changes related to electrical stimulation of brain tissue.
- BRADY, ROSCOE O. (Ed. 1), Section Chief, Laboratory of Neurochemistry, National Institute of Neurological Diseases and Blindness, National Institutes of Health, Bethesda 14, Maryland. Studies on the formation of the myelin sheath of nerves (radioactivity counting, fluorescence measurements); Redox phenomena in non-myelinated nerves; U-V spectral changes.
- BRAMSON, M. L., A.C.G.I. (British), Consulting Engineer, Department of Cardio-Vascular Surgery, Institute of Medical Sciences, Presbyterian Medical Center, Clay and Webster Streets, San Francisco, California. Development of electronically controlled heart-lung machine embodying a membrane oxygenator, and synchronous electrocardiac massage machine for resuscitation of cardiac arrest and for support of the failing heart (developed jointly with Dr. George A. Harkins of Childrens' Hospital Medical Center, Boston, Massachusetts).
- BRANCH, CHARLES L., M.D., Assistant Professor and Assistant Neurosurgeon, Department of Neurology and Neurosurgery, McGill University, Montreal Neurological Institute, 3801 University Street, Montreal, Quebec, Canada. Microelectrode recording from individual cell within human cortex during surgical procedures under local anesthesia.
- BRAY, PATRICK F., M.D., Associate Professor of Pediatrics and Assistant Professor of Neurology, Departments of Pediatrics and Neurology, University of Utah College of Medicine, 1940 South 2nd East, Salt Lake City 15, Utah. Longitudinal study of genetic patterns of epilepsy.
- BRAZIER, MARY A. B., D.Sc. (Ed. 1), Neurophysiologist, Massachusetts Institute of Technology, Harvard Medical School, and Massachusetts General Hospital, Boston 14, Massachusetts. Generation of electrical potentials by the organism; recording of electrical potentials from the organism; analysis of electrophysiological data, and medical and behavioral correlates of electrophysiological recordings.
- BRECHNER, VERNE L., M.D. (Ed. 1), Assistant Professor of Surgery and Anesthesiology, Department of Surgery (Medical Center), University of California, Los Angeles 24, California. Electroencephalographic effect during anesthesia of: hypercarbia; hypocarbia; hypoxia, and increased cerebral venous pressure in the human.
- BREDON, ALAN D., B.S., Senior Research Engineer, Department of Research, Spacelabs, Inc., 15521 Lanark Street, Van Nuys, California. Research on and development of a device for the continuous measurement and recording of pulse wave velocity; research on hearing and communication including cochlear microphonics and electrophonic hearing; study of speech transducers and methods of use, and development of internally implantable telemeters to pick up and transmit ECG, EMG, respiration, blood pressure, etc. to a remote receiver.
- BRELAND, KELLER B., M.A., President, Animal Behavior Enterprises, Inc., Route 6, Hot Springs, Arkansas. Neurological models; consultant to Veterans Administration, Fort Roots Neuropsychiatric Laboratory on research concerning patterns of electric potentials during classical conditioning, and to the United States Navy on porpoise sonar research.
- BRICKER, LEO, M.B.A., Supervisor, Human Factors Engineering, General Engineering Division, American Machine and Foundry Company, Stamford, Connecticut. Application of human factors engineering principles into the design and development of equipment for weapon systems, vehicles, commercial equipment, and medical instrumentation (oxygen regeneration, EEG analyzer, etc.); specific emphasis on the physiological, psychological, and anthropometric considerations in design; human performance under conditions of stress; maximum torque exorable by personnel performing a continuous cranking operation, and relationship of pressure (switch)

versus frequency of operation.

- BRILLER, STANLEY A., M.D. (Ed. 1), Assistant Professor, Department of Medicine, Medical School and Hospital of the University of Pennsylvania, 3400 Spruce Street, University of Pennsylvania, Philadelphia, Pennsylvania. Effect upon dipolarity of the heart's blood; multipole components of the human electrocardiogram, and impedance variation in the cell membrane of muscle with depolarization.
- BROGAN, FRANCIS A., Electronics Engineer, ENT Audiology, Box SAM 2842, United States Air Force Aerospace Medical Center, Brooks Air Force Base, Texas. Psychoacoustical research, and audiology and vestibular research instrumentation.
- BROMBERGER-BARNEA, B., Ph.D., Associate Professor, Department of Environmental Medicine, Johns Hopkins University School of Hygiene, 615 North Wolfe Street, Baltimore, Maryland. Cardiac electrophysiology; contractility, and circulatory and pulmonary dynamics.
- BROOKSHIRE, KENNETH H., Ph.D., Assistant Professor and Chairman, Department of Psychology, Franklin and Marshall College, Lancaster, Pennsylvania. EEG and EKG changes in response to peripheral stress and midbrain stimulation.
- BROUSSARD, IRVIN G., M.A., Research Psychologist, Electronic Control Systems Directorate--Deputy for Bioastronautics, Air Proving Ground Center, Eglin AFB, Florida. Frequency diversity radar human engineering; air weapons control system human engineering, and mobile air traffic control system human engineering.
- BROWN, ARTHUR C. (Ed. 1), Instructor, Department of Physiology and Biophysics, Medical School, University of Washington, Seattle 5, Washington. Electrical potential and ionic flux across biological membranes, particularly intestinal mucosa and frog skin.
- BROWN, CLINTON C., Pavlovian Laboratory, Johns Hopkins Hospital, Baltimore, Maryland. Classical conditioning techniques in animals on problems of cardiac reactivity to stress; physiologic indices of conditioning, retention, drug effects, etc.; routine use EKG, cardiometer, GSR, EEG, respiration, EMG; working on problems of standardization of stimulus parameters, magnetic tape recording and computer analysis of data; biotelemetry, and education in bioelectronics.
- BROWN, FRANK A., Jr., Morrison Professor of Biology, Department of Biological Sciences, Northwestern University, Evanston, Illinois. Organismic responses to terrestrial magnetism and electrostatic fields.
- BROWN, GEORGE WALLACE, Ph.D., Principal Scientist, General Medical Research Laboratory, Veterans' Administration Hospital, Iowa City, Iowa. Dynamic impedance fluctuation within sub-cortical structures.
- BROWN, JAMES RANDOLPH, M.D. Director of Nuclear Medicine, Department of Nuclear Medicine, United States Naval Hospital, St. Albans, New York. Activation analysis of tissues; medical uses of radioisotopes and their monitoring, and photoscanning.
- BROWN, ROBERT CHARLES, M.D., Internal Medicine, Suite 307, 5700 Northwest Grand Boulevard, Oklahoma City 12, Oklahoma, and Director In Vivo Radioisotope Laboratory, Baptist Memorial Hospital, Oklahoma City, Oklahoma. Use of radioisotopes in medical diagnosis on a practical scale, and use of radioisotopes for research cell life span studies in selected pathological conditions.
- BROWNING, IBEN, Ph.D., Biophysicist, Panoramic Research, Inc., 3946 Fabian Way, Palo Alto, California. Simulation on digital computers models of neurone nets, and the sensors and effectors with which the neural net is attached; simulating the above with solid state electronic analog equipment; engineering activities with the intent of utilizing biological designs to solve technological problems; biological principles to achieve self-organizing systems, and studying intelligence per se with the intent of applying the above methods to achieve intelligent inorganic systems.
- BROZEK, JOSEF, Ph.D., Professor and Chairman, Department of Psychology, Lehigh University, Bethlehem, Pennsylvania. Psychophysiological characteristics of brief and all-night sleep, and of vigilance performance.
- BRUCH, ERNEST, Ph.D., M.D., Director of Isotope Laboratory, Department of Nuclear Medicine, St. Anthony Hospital, East State Street, Rockford, Illinois. Clinical applications of radioisotopes in diagnosis and therapy.
- BRUST, MANFRED, Ph.D., Assistant Member, Division of Physiology, Institute for Muscle Disease, Inc., 515 East 71st Street, New York 21, New York. Basic muscle physiology, and disease-related changes in muscle physiology.

Bryant

BRYANT, S. H., Ph.D., Associate Professor of Pharmacology, Department of Pharmacology, College of Medicine, University of Cincinnati, Eden and Bethesda Avenues, Cincinnati 19, Ohio. Electrophysiological and pharmacological studies on muscle fibers from myotomic goats; intracellular recording and stimulation of single intercostal muscle fibers from the goats, both normal and myotomic; the effects of ions, drugs and other parameters on the membrane potentials; experiments to elucidate the mechanisms by which certain drugs (e.g., aconitine or D.D.T.) produce abnormal repetitive firing of excitable cells, and the electrical properties and potentials of muscle fibers and squid giant axons.

BUCHWALD, JENNIFER S., Ph.D., Assistant Research Anatomist, Department of Anatomy (Medical Center), University of California, Los Angeles 24, California. Conditioned responses in the gamma efferent system: acute recordings of potentials from gamma efferent units made during classical conditioning procedure (tone paired with shock), and the conditioned gamma efferent response which develops is being studied for its significance to the overt motor conditioned response.

BUCHWALD, NATHANIEL A., Ph.D., Associate Professor, Department of Anatomy (Medical Center), University of California, Los Angeles 24, California. Study of the electrophysiological correlates of behavior, which involves the use of the techniques related to generation of electrical potentials, recordings and analyzing.

BUDIN, WILLIAM, B.S., Human Factors Scientist, Bio-Medical Systems Department, System Development Corporation, 2500 Colorado Avenue, Santa Monica, California. System analysis and synthesis; design of displays and controls; study of various hospital segments (e.g., wards, admissions service) as information processing systems, and problems of perceptual vigilance, decision making, and learning.

BUEL, JACK, Ph.D., Principal Scientist, Chief, Military Systems, Human Factors, Life Sciences Department, Space and Information Systems, North American Aviation, Torrance Facility, 12214 Lakewood Boulevard, Downey, California. Instrumentation of space vehicle mockups and simulators for the measurement of behavior and physiological functions in simulated space missions, and measurement of physiological and behavioral variations in sensory-perceptual functions, and under stress conditions.

BURCH, NEIL R., M.D., Associate Professor of Psychiatry, Department of Psychiatry, Baylor University, College of Medicine, 1200 M. D. Anderson, Texas Medical Center, Houston 25, Texas. Automatic period analysis of the electroencephalogram and galvanic skin response; small group psychophysiology; behavioral coding and psychophysiological studies of day hospital patients, and psychophysiological studies of sleep.

BURGESS, KENT, M.A., Training Director, Animal Behavior Enterprises, Route 6, Hot Springs, Arkansas. Consultant to Veterans Administration project on electrical potentials during conditioning in dogs and to United States Navy on sonar research in porpoises.

BURKLE, JOSEPH S., M.D., Director, Radiation Exposure Evaluation Laboratory, Department of Radiology, United States Naval Hospital, Bethesda 14, Maryland. Use of whole body counters in evaluation of radiation accidents, and use of isotopes in clinical diagnostic studies.

BURNS, NEAL M. (Ed. 1), Head, Environmental Stress Branch, Life Sciences Research Division, Air Crew Equipment Laboratory, Naval Air Material Center, Philadelphia 12, Pennsylvania. Recording and storing EEG, EKG, GSR, and recording techniques for blood pressure (systolic), and respiration as physiological indicants with performance measures to make stress determinations on aviators and astronauts.

BURROWS, ALAN A., Head, Life Sciences, Systems Research Section, Douglas Aircraft Company, Inc., Long Beach, California. Bioelectronics as a tool in physiological and psychological monitoring during human factors research in connection with man-machine systems; research to determine the relationship between physiological responses and imposed psychological and physiological stress, and development of sensing devices, information transmitting units, receiving stations and monitoring consoles.

BURTON, ROBERT M., Ph.D., Assistant Professor, Department of Pharmacology, Washington University School of Medicine, 640 South Kingshighway, St. Louis 10, Missouri. Bioelectronics; cerebral lipids, metabolism and function, including physical studies in relation to the nature and function of the myelin sheath and other membranes.

BUYNISKI, EDWARD F., M.D., Medical Director, Flight Propulsion Division, General Electric Company, Medical Department, Cincinnati 15, Ohio. Determination of characteristics which make up a "normal productive worker;" developing a "quality control"

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system for an industrial medical practice, and developing mortality experience applicable to an industrial practice as a means of identifying those employees who can benefit from a health examination.

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CACERES, CESAR A., M.D., Chief, Instrumentation Unit, Heart Disease Control Program, Department of Health, Education and Welfare, United States Public Health Service, 2204 I Street, N.W., Washington 7, D. C. The F.M. recording of electrocardiograms for routine processing by digital computer; the design of associated equipment for heart sound recording/screen programs, with the aim of computer detection, and diagnosis of abnormal heart murmurs.

CAHN, HAROLD A., Ph.D., Assistant Professor of Biology, Division of Science and Mathematics, Utica College of Syracuse University, Utica, New York. Systems analog approach to research simulation of biosystems.

CALESNICK, BENJAMIN, M.D., Associate Professor in Pharmacology and Director of the Laboratory of Human Pharmacology, Department of Pharmacology, Hahnemann Medical College and Hospital, 235 North 15th Street, Philadelphia, Pennsylvania. Human pharmacological studies including the use of EEG, ECG, various electronic devices for measuring and monitoring radioactive materials and transducers in connection with cough experiments, and use of various laboratory equipment such as pH meter, photofluorometer, and the auto-analyzer.

CALLAWAY, ENOCH, M.D., Chief of Research, Langley Porter Neuropsychiatric Institute, Parnassus and First Avenues, San Francisco 22, California. Computer calculation of averages and transients of EEG signals, and averaging with respect to other biological events (such as EKG, alpha phase, etc.) as well as to external events as in classically evoked response averaging.

CAMOUIGIS, GEORGE, Ph.D., Associate Professor of Physiology, Department of Biology, Clark University, Worcester 10, Massachusetts. Study of the electrical activity of the crayfish nervous system, especially the counting of nerve impulses; study of the electrical activity and behavior of electric fishes, and the electron microscopy of nerve in general.

CAMPBELL, BERRY, Ph.D., Professor of Experimental Neurology, Laboratory of Neurological Research, Loma Linda University, 1200 North State Street, Los Angeles 33, California. Research into the conduction in the small fiber systems of the peripheral nerves and spinal cord with particular reference to the problem of intractable surgical pain.

CARBERRY, WILLIAM J. (Ed. 1), Biophysicist, Research Engineer, Medical and Biological Physics, Airborne Instruments Laboratories, Deer Park, Long Island, New York. Electrocardiography during exercise; computers as aids in the diagnosis of heart disease; computers for aerospace medical data processing; alternating current methods for measuring GSR, and automatic scanning pupilometer.

CARDON, P. V., Jr., M.D., Chief, Unit on Psychosomatics, Laboratory of Clinical Science, National Institute of Mental Health, National Institutes of Health, Bethesda 14, Maryland. Psychophysiology; Hg strain gage, and impedance plethysmography.

CARDONA, VICTOR S., Assistant Professor, Department of Pharmacology, School of Medicine, San Juan 22, Puerto Rico. Peripheral electrophysiology; the neuromuscular junction, and dynamics of sensory organs.

CARMICHAEL, ROBERT L., M.S., E.E., Head, Program Plan Study Branch, Bio-Medical Systems Department, System Development Corporation, 2500 Colorado Avenue, Santa Monica, California. Director of long-range Program Plan Study to determine how data processing and information handling needs of the Veterans Administration Department of Medicine and Surgery can be served by a future integrated information processing system.

CARPENTER, F. G., Ph.D. (Ed. 1), Associate Professor of Physiology, Department of Physiology, Dartmouth University Medical School, Hanover, New Hampshire. Activity metabolism of immature nerve fibers; excitation of smooth muscle cells, and instability and blockade in mammalian myelinated nerve fibers produced by lipid soluble agents.

CARPENTER, RUSSELL L., Ph.D. (Ed. 1), Professor of Zoology, Department of Biology, Tufts University, Medford 55, Massachusetts. Investigations on the biological effects of microwave radiation, in particular the induction of cataracts in the crystalline lens by exposure of the eye to microwave radiation, and effect of microwave radiation on the developing chick embryo, as well as on other systems of proliferating and differentiating cells. (Work being

performed under a contract with the Rome Air Development Center, Air Research and Development Command, U. S. Air Force.)

CARSTENSEN, EDWIN L. (Ed. 1), Physicist, Physical Science Division, U. S. Army Chemical Corps, Biological Laboratories, Fort Detrick, Frederick, Maryland. Electrical properties of microorganisms.

CASTILLO, HORACE T., Electronic Engineer, Bioinstrumentation Branch, Aeromedical Research Laboratory, USAF, Holloman Air Force Base, Alamogordo, New Mexico. Design of electronic systems for detection, recording measurement and analysis of physiological data relating to bioastronautical research and development.

CHAMBERS, JAY L., Ph.D., Director, Department of Research, Charles L. Mix Memorial Fund, Inc., Georgia Southwestern Campus, Americus, Georgia. The correlation of Picture Identification Test scores with psychogalvanic reactions to visually presented items of the Picture Identification Test.

CHAMPION, RICHARD A., M.A., Visiting Fellow, Department of Psychology, Yale University, E 39, IHR, 333 Cedar Street, New Haven, Connecticut. Studies of muzzle temperature as a measure of arousal in dogs under the following conditions: partial vs. complete reinforcement, extinction, difficult discrimination (Konorski technique), approach-avoidance conflict, and the conditioning of the muzzle-temperature response to food.

CHANCE, BRITTON, Ph.D., D.Sc., Director, Johnson Research Foundation; Professor and Chairman, Department of Biophysics and Physical Biochemistry, University of Pennsylvania, Philadelphia 4, Pennsylvania. Specialized instruction and facilities devoted to spectrophotometric, fluorometric and magnetometric studies of enzyme systems; mathematical studies of these systems using analog and digital computer programs as well as electronic and optical instrumentation, and computer representations of nerve networks and ecological systems.

CHAPMAN, ROBERT M., Ph.D., Research Associate, Institute of Behavioral Research, Building DD, University of Maryland, College Park, Maryland. Electrophysiology of visual system, including single-unit and gross recording, and EEG and behavior.

CHARDACK, WILLIAM M., M.D. (Ed. 1), Chief, Surgical Service and Associate Professor of Surgery, University of Buffalo School of Medicine, and Veterans Administration Hospital, 3495 Bailey Avenue, Buffalo 15, New York. Correction of chronic atrio-ventricular block by an implantable, transistorized, and self-contained pacemaker; initial experimental work on this project has been completed and clinical experience with nine (9) patients has been accumulated; basic problems in electrode design (with Wilson Greatbatch, Clarence, New York); design of a square wave electromagnetic flowmeter of high sensitivity, and application of this instrument to the study of the flow of blood in the unopened coronary vessels (with Francis A. Giori, Cornell Aeronautical Laboratories, Buffalo, New York).

CHATRIAN, GIAN EMILIO, M.D., Assistant Professor in Neurosurgery and Neurology and Director, EEG Laboratories, Department of Surgery and Medicine, University of Washington Medical School, Seattle 5, Washington. Electroencephalographic investigation of patients suffering from neurological and neurosurgical diseases with special emphasis on recordings by means of implanted intracerebral electrodes.

CHERIN, ALVIN A., M.S., Appl. Math. and Mech., Senior Electronic Systems Engineer, Bio-Medical Systems Department, System Development Corporation, 2500 Colorado Avenue, Santa Monica, California. Cybernetics, digital computer engineering, logical design, system testing; analysis and design of medical information processing systems; information storage and retrieval techniques; adaptive systems; philosophy of science; anthropology, and mathematics.

CHESSICK, RICHARD D., M.D., Assistant Professor of Neurology and Psychiatry, Northwestern University Medical School and Chief of Psychiatry Service, Veterans Administration Research Hospital, 333 East Huron Street, Chicago 11, Illinois. Psychiatry; psychopharmacology, and mind-brain problems.

CHILDERS, HAROLD E., Ph.D., Assistant Professor of Biophysics, Department of Psychiatry, Baylor University College of Medicine, 1200 M. D. Anderson Boulevard, Houston 25, Texas. Automatic period analysis of the EEG; development of EEG amplifier systems for use in aircraft and missiles; study of EEG electrode systems, unipolar reference; automatic analysis of the GSR; automatic analysis of the EKG, and general psychophysiological electronics.

CHOLVIN, NEAL R., D.V.M. (Ed. 1), Research Fellow, U. S. Public Health Service, Department of Veterinary Physiology and Pharmacology, Iowa State University, Ames, Iowa. Instrumentation for

cardiology of the dog, and applications of bioelectronics in clinical research.

CHOW, KAO LIANG, Ph.D., Associate Professor of Medicine (Neurology), Division of Neurology, Stanford Medical School, Palo Alto, California. EEG recordings of chronically isolated hemisphere in cats; the production of cortical negative potentials by the interaction of low and high frequency tetanic shocks in cats; DC recording of the above; DC polarization to produce cortical negative potentials in response to low frequency tetanic shocks, and effect of DC polarization on learning.

CHRISTENSEN, JULIEN M., Ph.D., Chief, Human Engineering Branch, Behavioral Sciences Laboratory, Aerospace Medical Research Laboratories, Wright-Patterson AFB, Ohio. Human engineering (assessment of human performance capabilities and limitations as they relate to the design and use of occupational aerospace equipment and systems).

CHRISTENSON, GILBERT ROLAND, M.D., Assistant Chief, Department of Anesthesiology, National Institutes of Health Clinical Center, National Institutes of Health, Bethesda 14, Maryland. Auditory and visual electrocardiography; electroencephalography; arterial oximetry, and direct studies of human myocardial contractile force as determined with an arch strain-gauge.

CHURCHILL, JOHN A., M.D. (Ed. 1), Associate Neurologist, Department of Neurology and Psychiatry, Henry Ford Hospital, 2799 West Grand Boulevard, Detroit 2, Michigan. Clinical research on brain damaged children.

CLARK, MERVIN L., M.D., Associate Professor of Medicine, Department of Medicine, University of Oklahoma Medical Center, 800 N. E. 13th Street, Oklahoma City, Oklahoma. Psychopharmacology; utilizing measures of skin conductance and hemoglobin reduction time in an over-all program directed toward the study of schizophrenia and drugs.

CLARK, ROBERT KENLEY, Ph.D., Associate, Department of Neurology and Psychiatry, Northwestern University Medical School, and Systems Physicist, Psychiatry Service, Veterans Administration Research Hospital, 333 East Huron, Chicago 11, Illinois. Development and implications of a general theory of human behavior based upon Feedback Control Systems, and psychophysiological experimentation, from the standpoints of experimental design, instrumentation and data reduction, including high speed electronic technology.

CLARK, WILLIAM G., Ph.D., Director, Psychopharmacology Research Laboratories, Veterans Administration Hospital, Sepulveda, California. EEG correlates of learning and behavior and effects of psychotropic drugs, in conscious behaving cats with 26 chronically implanted electrodes.

CLAUSEN, JOHS., Ph.D., Research Administrator, Department of Research, The Training School at Vineland, Vineland, New Jersey. Electrical phosphores, and autonomic functions in retarded children.

CLOWES, GEORGE H. A., Jr., M.D., Professor and Chairman, Department of Surgery, Medical College of South Carolina, Charleston, South Carolina. Electromagnetic flow meter; membrane blood oxygenator, and problems of hemodynamics, metabolism, and trauma.

CLYNES, MANFRED, Director, Biocybernetics Research Laboratory, Rockland State Hospital, Orangeburg, New York. Biocybernetics; biological control systems, control of heart rate, of pupillary dynamics, time perception; motor control system dynamics; on-line computers for auto and cross correlation, average response, histograms and amplitude and frequency spectra, and ultrasonic probing of internal structure.

COHEN, HARVEY D., A.B., Research Associate (Medical Instrumentation), Department of Psychiatry, Clinical Research Center, Psychophysiology Laboratory, State University of New York, Building "J", Albany Avenue and Winthrop Street, Brooklyn 3, New York. Psychophysiological research involving the two person interaction; studies on the nature of sleeping and dreaming, and automatic data collection and processing for computer analysis.

COHEN, JEROME, Ph.D., Associate Professor, Department of Neurology and Psychiatry, Northwestern University Medical School, 303 East Chicago Avenue, Chicago 11, Illinois. Electroencephalography; physiological and sensory psychology, and computer applications to psychophysiology.

COHEN, MELVIN JOSEPH, Ph.D., Associate Professor of Biology, Department of Biology, University of Oregon, Eugene, Oregon. Electrophysiological studies of proprioceptive and equilibrium sense organs in Crustacea, and study of the integration of sensory information in invertebrate central nervous systems.

- COHEN, SANFORD I., M.D., Associate Professor of Psychiatry, Head, Division of Psychophysiological Research, Department of Psychiatry, Medical Center, Duke University, Durham, North Carolina. Psychophysiological correlates of urinary neurohormonal substances (adrenaline and noradrenaline); cardio-respiratory, skin resistance, EEG and plethysmographic response to conditioned avoidance "training;" response to low sensory input environments; bioelectrical measures of CNS arousal; urinary measures of neurohormonal excretion; evaluation of sensory discriminatory functions, and emotional, cognitive and perceptual functions, and studies in autonomic conditioning, learning, CNS arousal and physiological correlates.
- COLE, KENNETH S., Ph.D., Sc.D., Chief, Laboratory of Biophysics, National Institute of Neurological Diseases and Blindness, National Institutes of Health, Bethesda 14, Maryland. Structure and function of living cell membranes, primarily by electrical experiment and analysis, and emphasis on membrane capacity and ion permeability of squid axon under voltage clamp.
- COLEMAN, D. JACKSON, M.D., Physician, Instrumentation Unit, Heart Disease Control Program, U. S. Public Health Service, 2204 I Street, N.W., Washington 7, D. C. Cardiovascular-physiology, especially acoustic analysis.
- COLEMAN, PAUL D., Ph.D., Associate Professor, Department of Physiology, University of Maryland, School of Medicine, Baltimore 1, Maryland. Auditory psychophysiology, and neuroanatomical correlates of behavior.
- COLESTOCK, HARRY E., B.S.E.E., System Planning Engineer, System Planning, Bendix Systems Division, 3300 Plymouth Road, Ann Arbor, Michigan. Bioinstrumentation; extraterrestrial life detection systems; space ecology and life support systems, and bionics.
- COLMANO, GERMILLE, D.V.M., Ph.D., Professor of Veterinary Science, Department of Veterinary Science, Virginia Polytechnic Institute, Blacksburg, Virginia. Basic research approach to structure-function relationship, at molecular level, with mono- and multi-molecular layer models of artificial and biological interfaces; molecular interaction, related to molecular orientation, site of reactivity, visible absorption spectra, oxidation-reduction, and energy transfer capabilities, while in the film status as compared to solution in solvents; control in closed systems of molecules between gas-liquid and liquid-liquid phases, in absence or presence of magnetic and electric fields and light of different frequency; exploration of possibilities to adapt above approaches to study the behavior of toxic (endotoxins) and cancerogenic components, with their trace elements and enzymes, at the cellular and tissue level, and extension of above knowledge to electrophysiological level.
- COLSON, KENNETH R., M.S., Human Factors Engineer, Research Group, Nortronics Division of Northrop Corporation, 500 Orange-thorpe, Anaheim, California. Analysis of physiological data relating to human factors problems, and physiological and psychological correlates of electrophysiological research.
- CONRAD, JOHN TERRY, M.D. (Ed. 1), Instructor and Research Assistant, Department of Physiology and Internal Medicine, School of Medicine, Yale University, 333 Cedar Street, New Haven 11, Connecticut. Microelectrode studies of dystrophic and normal mice, single muscle cells; the effect of ions on the veratrine response of single muscle cells of the frog; clinical and experimental studies involving EMG.
- COOK, LOVELLA (Ed. 1), Research Staff Member, Biophysics Group-Science Department, IBM Research Center, Box 218, Yorktown Heights, New York. Computer studies of neurophysiological problems in man and machine; computer teaching machines, and somatosensory coding.
- COOKE, TERENCE (Ed. 1), Psychology Trainee, Department of Psychology, Veterans Administration Hospital, Coral Gables, Florida. Effects of manifest anxiety on recovery from minor surgery; Taylor Manifest Anxiety Scale and galvanic skin response used as predictors of length of recovery from surgery, and comparison of Wolpe's techniques with standard psychotherapeutic GSR's used to measure level of emotionality.
- COOPER, R., Dr. (Ed. 1), Electrophysiologist, Burden Neurological Institute, Stoke Lane, Stapleton, Bristol, England. Research into electrophysiological recording and analysis; investigation into physical properties of brain tissue in vivo, and physiological aspects of learning and conditioned reflexes.
- COOPER, THEODORE, M.D., Ph.D., Director, Center for Cardiovascular Research, Department of Surgery, St. Louis University School of Medicine, 1325 South Grand Boulevard, St. Louis 41, Missouri. Radiotelemetry of cardiovascular events; implantable stimulators--"pacemaker;" electron skin resonance for analysis of vascular materials; electromagnetic blood flow meters; electrical anesthesia, and thermal dilution techniques for measuring blood flow.
- CORDEAU, J. P., Dr., Associate Professor, Laboratoire des Sciences Neurologiques, P. O. Box 6128, Université de Montréal, Montréal, Québec, Canada. Unit activity in cortical and subcortical structures in the monkey with an experimental postural tremor; visually evoked potentials and unit activity as influenced by reticular formation stimulation, and effect of local microinjection of drugs into the brain stem on the behavior and electrocortical activity of the cat.
- CORNSEWET, TOM N., Ph.D., Associate Professor, Department of Psychology, University of California, Berkeley 4, California. Relation of light intensity and duration to magnitude of receptor generator potential, and perceptual correlates of retinal inhibition.
- CORRELL, EDWARD G., Electronic Development Technician (Instrumentation), Medical Electronics Section, Biophysics Branch, 6570th Aerospace Medical Research Laboratories, Wright-Patterson Air Force Base, Ohio. Personal telemetry systems and other forms of medical electronics to monitor active individuals, and medical electronics for clinical applications.
- COSTILOE, J. PAUL, M.S., Research Associate, Department of Medicine, University of Oklahoma School of Medicine, 800 N.E. 13th Street, Oklahoma City, Oklahoma. Studies in olfaction, and psychophysiology.
- COULTER, NORMAN A., Jr., M.D., Associate Professor of Physiology and Biophysics, Department of Physiology (Biophysics Division), Ohio State University, 1645 Neil Avenue, Columbus 10, Ohio. Experimental and theoretical analysis of physiological control systems, including a servoanalytic study of the myostatic reflex system, respiratory regulation of heart rate; transfer function of vascular networks, transfer operator analysis of nonlinear biophysical systems, and computer simulation of passive transfer operator of skeletal muscle.
- COVIAN, MIGUEL ROLANDO, M.D., Professor of Physiology, Department of Physiology, School of Medicine, Ribeirão Preto, São Paulo, Brazil. Sensory motor interaction.
- COVINO, BENJAMIN G., Dr., Assistant Professor, Department of Physiology, Medical School, University of Buffalo, 3435 Main Street, Buffalo 14, New York. Recording of surface action potentials and transmembrane potentials from mammalian cardiac muscle subjected to low temperatures.
- COX, D. R., Professor of Statistics, Birkbeck College, University of London, Malet Street, London, W.C1, England. Statistical methods for analysis of series of events.
- COYNE, JOHN M., Ph.D., Coordinator, Behavioral Science Research, Life Sciences Laboratories, General Dynamics/Astronautics, P. O. Box 1128, San Diego 12, California, and Associate Professor, Department of Neuropsychology, California Western University, San Diego 6, California. Developing computer and electronic analogs of primate neural functions; applying hypnotic, psychopharmacological and other heightened concentration techniques for quickening or damping human performance in the man/machine/environment system; application of neuropsychological research data to the design and development of advanced manned space systems; conduction of co-variant behavioral/biological science research projects related to the neuropsychological correlates of human performance, and basic research on self-organizing, self-adapting, and self-regulating (homeostatic) systems.
- CRAIN, STANLEY M., Ph.D., Assistant Professor of Anatomy, Assigned to Neurology Department, College of Physicians and Surgeons, Columbia University, 630 West 168th Street, New York 32, New York. Electrophysiological studies of nerve and muscle cells grown in tissue cultures; membrane resting and action potentials, and complex bioelectric activity in cultures of CNS tissues.
- CRAMER, R. L., Ph.D. (Ed. 1), Chief, Vestibular Laboratory, ENT Branch, Clinical Medicine Department, Box SAM 2075, USAF Aerospace Medical Center, Brooks AFB, Texas. Physiology of the vestibular system, involving electrical stimulation and recording of single nerve cell potentials from moving preparations, and recording and analysis of bioelectronic potentials as nystagmograms EEG, ECG, and EMG.
- CRANFIELD, PAUL F., Ph.D., Senior Fellow, Department of Psychiatry, Albert Einstein College of Medicine, 1300 Morris Park Avenue, New York 61, New York. Excitation and conduction in cardiac muscle; cellular nature of atrio-ventricular nodal delay; excitability characteristics peculiar to cardiac muscle, and ventricular fibrillation.
- CREUTZFELDT, OTTO D., M.D., Neuropsychologist and Neurologist,

Deutsche Forschungsanstalt für Psychiatrie (German Research Institute for Psychiatry), Max-Planck-Institut, 8 München 23, Kraepelinstrasse 2, Germany. Electrophysiology of the brain, and electrophysiology of single neurons of the central nervous system.

CROW, LOWELL T., Ph.D., Assistant Professor of Psychology, Department of Psychology, Western Washington State College, Bellingham, Washington. EEG changes in specific brain structures as a result of bodily water imbalance; EEG, EKG, and EMG changes after electrical and chemical stimulation of specific brain structures, and behavioral effects of intercranial stimulation.

CRUMP, JESSE F., B.S.E.E., M.D., Assistant Professor of Electrical Engineering, Department of Electrical Engineering, Brooklyn Polytechnic Institute, 333 Jay Street, Brooklyn 1, New York. Instrumentation problems; construction of physical and mathematical analogues of biological systems, and data analysis of biological signals such as EKG, EEG, EMG.

CUNNINGHAM, A. W. B., M.D. (Ed. 1), Associate Professor, Department of Pathology, University of Texas, Medical Branch, Galveston, Texas. Physiological studies of cardiac tissue in vitro; spontaneous activity of brain tissue in vitro, and spontaneous activity of paraganglia in vitro.

CURRY, GEORGE M. (Ed. 1), Assistant Professor, Department of Biology, Tufts University, Medford 55, Massachusetts. Phototropism, and potentials induced by light.

CUTLER, ROBERT R., Biophysicist and Regional Manager, Atomium Corporation, 20575 Center Ridge Road, Cleveland 16, Ohio. Instrumentation development and sales, and radiation detection instruments and computer systems for nuclear medicine and industry.

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DACQUISTO, MICHAEL PAUL, M.D., Chief, Medical Division, Tropical Research Medical Laboratory, San Juan, Puerto Rico. Use of electronics to detect radioactivity in biological specimens; both high and very low levels, and nature of energy transfer responsible for the biological damage caused by exposure to ionizing radiations.

DALTON, JOHN C. (Ed. 1), Assistant Professor, Department of Biology, University of Buffalo, Buffalo 14, New York. Measurement of transmembrane potentials from the lobster (and other invertebrate) giant axon, and experiments concerning ionic involvement in the production and maintenance of transmembrane potentials.

DALY, DAVID D., M.D., Ph.D., Chairman, Department of Neurology, Barrow Neurological Institute of St. Joseph's Hospital, 350 West Thomas Road, Phoenix, Arizona. Electroencephalography and epilepsy.

DANAHER, JAMES WILLIAM, M.A., Senior Scientist, Courtney & Company, Division of The Matrix Corporation, 1630 Pine Street, Philadelphia 3, Pennsylvania. Human factors in air traffic control; human factors in military aviation; activity analysis of ATC controllers; development and conducting of operational evaluations of displays, control consoles, and other equipment components and systems.

DANFORD, ROY, Jr., Audiologist (Acoustics), SMKEA, ENT Audiology, USAF School of Aerospace Medicine, Brooks AFB, Texas. Use of electro-acoustic equipment and testing instruments to administer hearing, research and consultation test programs and evaluate results of tests administered.

DANIEL, ROBERT S., Ph.D., Professor, Department of Psychology, University of Missouri, Columbia, Missouri. Principal investigator of USPHS research grant M-2553, "Electronic data processing of the EEG;" analysis of EEG records by several different electronic processes (autocorrelation, digital reduction, etc.) in order to evaluate each system, and related EEG and EMG research in progress.

DARROW, CHESTER W., Ph.D., Director of Laboratory, Psychophysiological Division of the Research Department, Institute for Juvenile Research, 907 South Wolcott Avenue, Chicago 12, Illinois. Research in psychophysiology including cerebral functions; studies of integrative, emotional and adaptive responses; relations of sensory and electrical to secretory changes of the skin; relations of electroencephalographic to other organic and emotional changes, and differences in timing indicated by phase relationships between EEG's of different brain areas.

DAVIDOFF, ROBERT A., M.D., Research Neurologist, Psychophysiology Branch, United States Naval Medical Neuropsychiatric Research Unit, San Diego, California. Analysis of functioning of electroencephalographic and autonomic nervous system.

DAVIES, R. E., Ph.D., D.Sc., Professor of Biochemistry, Chairman, Department of Animal Biology, and Chairman, Graduate Group on

Molecular Biology, School of Veterinary Medicine, University of Pennsylvania, 39th and Pine Streets, Philadelphia 4, Pennsylvania. The mechanism of muscle contraction; the source of the trans-gastric mucosal potential difference, and the mechanism of hydrochloric acid production by the stomach.

DAVIS, EDWARD H., M.D., Director, EEG Department--Adjunct in Neurology, EEG Department, Cedars of Lebanon Hospital, 4833 Fountain Avenue, Los Angeles 29, California. EEG in coma states.

DAVIS, JOHN F., M.D., Director, Electrophysiology Laboratory and EEG Laboratory, McGill University, Allen Memorial Institute of Psychiatry, 1025 Pine Avenue West, Montreal 2, Quebec, Canada, and Director, International Institute for Medical Electronics and Biological Engineering, 47 Blvd. de l'Hopital, Paris 13, France. EEG research on frequency analysis, integrating methods, averaging of responses, drug effects; and electrophysiology in general, EMG, blood pressure, skin resistance and voltage, stomach physiology, etc.

DAVIS, THOMAS P., Ph.D., Assistant Professor, Department of Radiation Biology, The University of Rochester School of Medicine and Dentistry, Rochester 20, New York. Development of nuclear instrumentation for in vivo localization of radioactive tracers.

DAVISON, FRED C., D.V.M., Assistant Professor, Department of Physiology and Pharmacology, College of Veterinary Medicine, Iowa State University, Ames, Iowa. Comparative toxicity of stable rare earth metals.

DAWE, ALBERT R., Ph.D., Chief Scientist, Office of Naval Research, Branch Office, Department of the Navy, 86 East Randolph Street, Chicago 1, Illinois. Electrocardiography in small mammals, developed foot-treadle devices for pick up of ECG's in active mammals of many sizes and degrees of activity, and together with Mr. Samuel Battista (A. D. Little Co.) developed an electronic device utilizing thermistors in a Wheatstone bridge circuit whereby respiration can be detected at exceedingly small amplitudes (breath rate in hibernating mammals cited as an example wherein the device was effective when other devices were not usable).

DAY, J. L., B.S., Psychologist (Physiological and Experimental), Department of Physiology, School of Aerospace Medicine, Department of Air Force, SAM 1016, Brooks AFB, Texas. All psychophysiological parameters, and telemetering psychophysiological parameters.

DAYHOFF, MARGARET O., Ph.D., Senior Research Scientist, National Biomedical Research Foundation, 8600 - 16th Street, Silver Spring, Maryland. The application of digital computers to the analysis of the structures of very large molecules such as proteins DNA, etc., and development of aids to both the primary and tertiary structure of proteins.

DEAN, SANFORD J., Ph.D., Associate Professor, Department of Psychology, Syracuse University, 125 College Place, Syracuse, New York. Multiple recording of electrical potentials concurrent with verbal conditioning with emphasis on discrepancies between verbal and autonomic responses and the potential mediational role of language in modifying autonomic responses.

DEATHERAGE, BRUCE H., Ph.D., Special Lecturer in Physiological Psychology, Department of Psychology, University of Texas, Austin 12, Texas, and Project Director, TRACOR, Inc., 1701 Guadalupe Street, Austin 1, Texas. Research in the neurophysiology of hearing involving the recording of cochlear and central nervous system potentials and responses, and correlation of behavioral and psychophysical results with electrophysiological results.

DEBONS, ANTHONY, (Col., USAF), Ph.D., Director, Directorate of System Design, Electronic Systems Division, Hanscom Field, Bedford, Massachusetts. Simulation techniques; design of electronic systems, and engineering psychology.

DECKERT, GORDON H., M.D., Clinical Research Associate in Psychiatry, Behavioral Science Laboratory, Veterans Administration Hospital (Oklahoma City) and Department of Psychiatry, Neurology, and Behavioral Science, University of Oklahoma Medical School, 921 N.E. 13th Street, Oklahoma City, Oklahoma. Induced hallucinations and psychophysiological responses, including EEG, GSR, and eye movement monitoring of subjects in profound isolation, in hypnosis, and in sleep and dream states.

DEFLORIO, GEORGE P., M.A., Research Staff Scientist, Research Directorate, System Development Corporation, 2500 Colorado Avenue, Santa Monica, California. Artificial intelligence research using real time digital computer simulation techniques; simulation and empirical exploration of information processing models of both total organisms and particular sensory systems, and instrumentation, automatic data reduction, and monitoring system design for physiological variables correlated with human performance measures.

DEGREENE, KENYON BRENTON, Ph.D., Scientist, Behavioral Sciences

- Laboratories, Northrop Space Laboratories, 1111 East Broadway, Hawthorne, California. Literature survey in bionics as Phase I of three-phase bionics research activity in process; other phases to include bioinstrumentation, computer simulation of biological and psychological processes and measurement of physiological and psychological variables during manned space missions.
- DEL CASTILLO, JOSÉ, M.D., Chairman, Department of Pharmacology, School of Medicine, University of Puerto Rico, San Juan 22, Puerto Rico. Neurophysiology: synaptic transmission, and neuropharmacology.
- DELGADO, JOSÉ M. R., M.D., D.Sc., Associate Professor of Physiology, Department of Physiology, Yale University School of Medicine, 333 Cedar Street, New Haven, Connecticut. Electrical and chemical stimulation of the brain in monkey colonies; recording of individual and social behavior by time-lapse photography and telemetry, and collection of samples of cerebral fluids by radio control.
- DEMOTT, DONALD W., Ph.D., Research Associate, Department of Psychology, University of Rochester, Rochester 20, New York. Examination of the changes in cortical activity in chronic monkeys undergoing various training procedures; recording by 400 channel toposcope, and analysis by analog techniques.
- DENARDO, GERALD L. (Capt. M.C.), M.D., Chief, Radioisotope Section, Fitzsimons General Hospital, Department of Radiology, Denver 30, Colorado. Applications of radioisotope scanning to medicine, and radioisotope applications to pulmonary function.
- DENNIS, WARREN HOWARD, Ph.D., Assistant Professor of Biophysics, Department of Physiology, University of Louisville, 101 West Chestnut, Louisville 2, Kentucky. Determination of electrical impedance and its variations in ion transporting tissues, and effects of RF and microwave fields on biological systems.
- DENNISTON, ROLLIN H. II, Ph.D., Senior Professor of Physiology, Department of Zoology and Physiology, University of Wyoming, Box 3166, University Station, Laramie, Wyoming. Electrophysiology of subcortical limbic system; peripheral nerve stimulation and monitoring.
- DENSLOW, J. S., D.O., Director, Biomechanics Laboratory, Kirksville College of Osteopathy and Surgery, Kirksville, Missouri. Electromyography and reflex activity of the spinal column.
- DERBYSHIRE, ARTHUR J., Ph.D., Director, Physiological Research, and Assistant Director, Parly Hearing Institute, Loyola University, 6525 North Sheridan Road, Chicago 26, Illinois. A study of the evoked potentials recorded from the human scalp in response to acoustic stimulation; use of electronic averaging devices and integrators for the analysis of these tracings, and a psychophysiological description of the hearing process at the cortical level.
- DERRICK, WILLIAM S., M.D. (Ed. 1), Professor, Department of Anesthesiology, The University of Texas M. D. Anderson Hospital and Tumor Institute, 6723 Bertner Avenue, Houston 25, Texas. Control of carbon dioxide levels in closed anesthetic systems; maintenance of circulatory homeostasis in surgery for cancer; neurochemical aspects of anesthesia, and pulmonary function related to anesthesia and surgery.
- DESMEDT, JEAN EDOUARD, M.D., Professor and Director, Laboratory of Pathophysiology of Nervous System, University of Brussels, 115, Boulevard de Waterloo, Brussels 1, Belgium. Electrophysiology and biophysics of central nervous system.
- DE THERY, GUY P. (Ed. 1), Physicist, Optics, Code 961, Material Laboratory, New York Naval Shipyard (USN), Brooklyn 1, New York. Investigation of time-temperature combinations that are lethal to HeLa cells; study of temperatures associated with burns induced on blackened rat skin by thermal radiation.
- DETTBARN, WOLF-DETRICH, M.D. (Ed. 1), Department of Neurology, Columbia University, College of Physicians and Surgeons, 630 West 168 Street, New York 32, New York. Underlying mechanism of nervous activity; correlation between electrical activity and acetylcholinesterase; metabolism of C^{14} labeled glucose during nervous activity, and chemical mechanism involved in conduction.
- DEUTSCH, SID, D.E.E., Affiliate, Electronics Laboratory, Rockefeller Institute, 66 Street and York Avenue, New York 21, New York. Amplification of bioelectric potentials; methods for automatic data calculation and display; electronic control of biological stimuli, chemical processes and instruments, and application of engineering theory in biological measurements and models.
- DEWAN, EDMOND MAURICE, Ph.D., Physicist, Electromagnetic Radiation Laboratory, Air Force Cambridge Research Laboratories, L. G. Hanscom Field, Bedford, Massachusetts. Study of possible mathematical phenomenological schemes to "explain" macroscopic electroencephalographic data in terms of nonlinear oscillatory phenomena in order to organize data and suggest new experiments.
- DIAMANTIDES, NICK D., Engineering Scientist, Logical Sciences Section, Goodyear Aircraft Corporation, Advanced Avionics Systems Engineering Department, Akron 15, Ohio. Human dynamics; space environments; pattern recognition; behavioral models; perceptual models, and geopolitics.
- DIAMOND, SEYMOUR, M.D., President, Samuel H. Flamm Research Foundation, 5214 North Western Avenue, Chicago 25, Illinois. Blood volume and interstitial volume in its relationship to hypertension with the use of radioisotopes.
- DIAMOND, SIDNEY P., M.D. (Ed. 1), Head, Laboratories, Clinical Neurophysiology, Department of Neurology, The Mount Sinai Hospital, Fifth Avenue and 100th Street, New York, New York. Computer analysis of sensory interaction effects.
- DIECKE, FRIEDRICH P. J., Dr. rer. nat., Associate Professor, Department of Physiology, George Washington University School of Medicine, 1339 H Street N.W., Washington 5, D. C. Bioelectric phenomena of nerve, and sensory physiology.
- DIGIOVANNI, CLETO, Jr., M.D., Research Fellow (USPHS), Psychophysiology Laboratory, The Lafayette Clinic, 951 East Lafayette, Detroit, Michigan. Study of physiological and biochemical responses of the human to emotional and selected physical stress, particularly angular acceleration involving the attempt to define stress response profiles useful in selecting and training high performance personnel for military and paramilitary missions, and the investigation of stress responses in the psychiatric versus normal subject; psychophysiological studies in hypodynamic environments, using impedance plethysmography, telemetry, and high speed computers.
- DIKSTEIN, SHABTAY, Ph.D., M.Sc., Instructor, Department of Applied Pharmacology, Hebrew University, School of Pharmacy, Jerusalem, Israel. Potential difference between inside and outside of small intestine in vitro and its connection with the active transfer of sodium, and bioelectronics of smooth muscle in regard to its connection with drug-receptor interaction and excitation-contraction coupling.
- DIMASCIO, ALBERTO (Ed. 1), Principal Investigator, Psychopharmacology Research Project, Massachusetts Mental Health Center, 74 Fenwood Road, Boston 15, Massachusetts. Psychophysiology of psychotropic drugs, and psychophysiology of emotional states.
- DIPALMA, JOSEPH R., M.D., Professor and Chairman, Department of Pharmacology, Hahnemann Medical College and Hospital, 235 North 15th Street, Philadelphia 2, Pennsylvania. Intracellular potentials, microelectrodes, electricity in plants, and pressure sensitive transducer for intramyocardial pressure.
- DITCHBURN, R. W., Professor, Department of Physics, University of Reading, J. J. Thomson Physical Laboratory, Whiteknights Park, Reading, England. Research on eye movements and vision with stabilized retinal image.
- DITMAN, KEITH S., M.D. (Ed. 1), Director, Alcoholism Research Clinic and Assistant Clinical Professor, Department of Psychiatry (Medical Center), University of California, Los Angeles 24, California. Electrographic measurement of the autonomic nervous system activity in humans (principal investigator: Dr. Richard F. Docter); behavior indices of alcohol addiction in rats, and using the Olds technique of brain implanted electrodes, areas of alcohol action (principal investigator: Dr. Herbert Moskowitz).
- DITTMAN, PAUL E., M.S., Bolt Beranek and Newman, Inc., 50 Moulton Street, Cambridge 38, Massachusetts. Human factors engineering research and systems development programs.
- DOCTER, RICHARD F., Ph.D., Assistant Professor of Medical Psychology, in residence, Neuropsychiatric Institute (Medical Center), University of California, Los Angeles 24, California. Autonomic, muscular, and behavioral studies of the effects of ethyl alcohol; day-to-day variability in autonomic measures; and relationships between personality and various indices of "lability" and "stability."
- DOEHRING, DONALD G., Ph.D., Assistant Professor (Neurology) and Research Associate (Psychophysiology), Institute of Psychiatric Research, Indiana University Medical Center, Indianapolis 7, Indiana. Investigation of psychophysiological responses associated with reinforcement in a human operant situation, and investigation of the relation between EEG and autonomic activity in epileptic patients (with Dr. Peter P. Morgan at New Castle State Hospital).
- DOENGES, F. EUGENE, Ph.D., Associate Professor of Anatomy, Department of Anatomy, University of Missouri School of Medicine, Columbia, Missouri. Study of the minute inter-connections of the peripheral nerves of the autonomic nervous system of cats with the aid of bioelectronics equipment, including an attempted correlation

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of induced responses in this system with other concomitant physiological responses in the animal.

DOMINO, EDWARD F., M.D., Professor, Department of Pharmacology, 6440 Medical Science Building, University of Michigan, Ann Arbor, Michigan. Effects of drugs on the electrical activity of the central nervous system.

DORDICK, HERBERT S., M.D. (Ed. 1), Graduate Hospital of the University of Pennsylvania, 19th and Lombard Streets, Philadelphia, Pennsylvania. Ovarian physiology: examination of ovarian function by means of conductivity, potential difference, and surface strain measurements which are telemetered from the ovary, and other portions of the reproductive tract.

DORMAN, HOMER L., Dr., Associate Professor of Physiology, Department of Physiology, Baylor University College of Dentistry, 800 Hall Street, Dallas 10, Texas. Electrophysiology of the odontoblasts; microelectrode recordings from single odontoblasts in order to determine the possible role of these cells in pain conduction from sensitive areas in the region of the dentino-enamel junction to the nerve fibers of the pulp.

DORN, GERHARDT G., Ph.D., Head, Biotechnology Laboratory, Department of Advanced Development, Westinghouse Electronics Division, Baltimore 3, Maryland. Biosensing techniques; relationship between speech and EEG; pattern recognition; bioelectric data analysis; microminiaturization of neuron models, and bionics.

DOS REMEDIOS, LEONARDO V., M.D., Chief, Radioisotope Laboratory, Department of Radioisotopes, Kaiser Foundation Hospital, 280 West MacArthur Boulevard, Oakland 11, California. Radio-iodinated tri-iodo-thyronine uptake by erythrocytes and resin.

DOTY, ROBERT W., Ph.D., Professor, Center for Brain Research, University of Rochester, Rochester 10, New York. Electrophysiology of central visual system; and electrophysiological analysis of conditioned reflexes and complex, stereotyped behavior such as swallowing and facio-vocal activity.

DOUGLAS, DAVID W. (Ed. 1), Senior Research Engineer, Department of Research, Spacelabs, Inc., 14819 Aetna Street, Van Nuys, California. An external transducer for sensing continuous systolic and diastolic blood pressure; a sensor for oxygen partial pressure in living tissue; multi-channel physiological telemetry systems for humans and animals; transducer for respiration rate, depth, and volume; research in physiological effects of multi-environmental stress.

DOWD, PATRICK J., M.A., Research Psychologist, Vestibular Section, ENT Department, Clinical Medicine, USAF Aerospace Medical Center, Brooks AFB, Texas. Recording of corneoretinal potential differences to induced mechanical stimulation, rotary acceleration, deceleration, and tilting; interactions of electrical activity of the medial vestibular nucleus in the medulla oblongata in cat due to electrical stimulation of the round window, tilting or accelerating; EEG and EKG readings taken in regard to vestibular disturbances; nystagmus recordings on humans; research in neural pathways connecting the superior colliculi with the vestibular nuclei in cat, and chronic electrode for recording nystagmus or EEG in animals.

DOWER, GORDON E., M.B., Assistant Professor, Department of Pharmacology, University of British Columbia, Vancouver, B.C., Canada. General instrumentation in electrocardiography and cardiology.

DRESEL, PETER E. (Ed. 1), Assistant Professor, Department of Pharmacology and Therapeutics, University of Manitoba, Faculty of Medicine, Winnipeg, Manitoba, Canada. Electrocardiograms for study of genesis of cardiac arrhythmias, and intracellular microelectrode recording to study induction of cardiac (ventricular) automaticity.

DROOGLEEVER, FORTUYN J., M.D., Professor in Neurology, Department of Neurology, State University of Groningen, Academisch Ziekenhuis, Groningen, The Netherlands. Electrical recording of cortical and subcortical epilepsy in cats; correlation studies of behavior and electrical potentials with special reference to the initial state of the animal, and measurement of rate of action potential in electromyography.

DUCHARME, RAYMOND, Dr., Psychologie Experimentale, Institut de Psychologie, University of Montreal, Montreal, Quebec, Canada. Effect of intensity of electrical stimulation administered immediately prior to insertion into a Skinner Box on cardiac frequency and level pressing frequency of rats deprived of water for 23 hours.

DUFFY, ELIZABETH, Ph.D., Professor of Psychology, Psychology Department, Woman's College of the University of North Carolina, Greensboro, North Carolina. Activation and Behavior including studies of muscle tension, electrical resistance of the skin, the EEG, etc.

DUN, FWU TARNG, Ph.D., Professor of Physiology, Department of Physiology, Kirksville College of Osteopathy and Surgery, 315 East

Edmunds

Harrison Street, Kirksville, Missouri. Intercellular transmission and interaction of nerve impulses.

DUNN, ARTHUR LOVELL, Ph.D., Assistant Chief and Principal Scientist, Radioisotope Service, Veterans Administration Hospital, 4101 Woolworth Avenue, Omaha 5, Nebraska. Physiologic telemetry; blood flow meters; computer applications to bioelectronics, and electrophysiology.

DUNN, F. LOWELL, M.D., M.S., Professor of Internal Medicine, Associate Professor of Clinical Physiology and Chief, Division of Cardiovascular Research and Biomedical Engineering, Eppley Memorial Institute, University of Nebraska College of Medicine, Omaha, Nebraska. Portable pump for ambulant injection; radio telemetry; study of blood oxygenators, and low frequency characteristics of clinical electrocardiographs.

DUNN, FLOYD, Ph.D., Associate Professor, Department of Electrical Engineering and Biophysics, University of Illinois, Urbana, Illinois. Absorption of high frequency sound by biological materials, and mechanisms of the interaction of ultrasound and biological structures.

DUREMAN, INGMAR E., Ph.D., Acting Head, Department of Psychology, University of Uppsala, St. Larsgatan 2, Uppsala, Sweden. Autonomic reactivity and dystonia in different depressive states before, during and after antidepressive treatment, and autonomic reactivity during prolonged periods and stressful mental work trying to find at the same time psychopharmacological means of reducing stress impact on mental efficacy.

DYKMAN, ROSCOE A., Ph.D., Professor and Director of Behavioral Science Laboratory, Department of Psychiatry, University of Arkansas, Little Rock, Arkansas. Recording a variety of electrical potentials from the organism (EEG, EKG, muscle potentials, and skin resistance along with certain other autonomic measures such as skin temperature, blood volume), and studying the variation in autonomic responsivity in relation to different stress events over long periods of time in animals and humans.

E

EASON, ROBERT G. Ph.D. (Ed. 1), Research Psychologist, Human Factors Division, Navy Electronics Laboratory, San Diego 52, California. Electromyographic studies of muscular tension during mental and physical work; the ways in which motivation, fatigue, stress, task difficulty, and other variables affect muscular tension level (as measured electromyographically), and how the latter relates to performance.

EASTON, DEXTER M., Ph.D., Associate Professor of Physiology, Department of Biological Sciences, Florida State University, Tallahassee, Florida. Recording action currents and injury currents from nerve ends by means of a hydraulic holding device that measures the longitudinal current while the nerve remains completely immersed in physiological solution, and general interests in comparative neurophysiology, especially in nerve, neuromuscular junction and spinal cord.

EBRIGHT, EUGENE F., M.S., Research Specialist, Human Factors Engineering, D/69-11, Advanced System Development, Lockheed Missiles and Space Company, 7701 Woodley Avenue, Van Nuys, California. Applications to aerospace ground equipment checkout systems; physiological monitoring systems, and design.

ECHLIN, FRANCIS A., M.D., Professor of Clinical Neurosurgery, New York University, Department of Neurosurgery and Attending Neurosurgeon, Bellevue and Lenox Hill Hospital, 164 East 74 Street, New York, New York. Hyperexcitability of isolated (denervated) cerebral cortex in relation to epilepsy.

EDELBERG, ROBERT, Ph.D., Associate Professor of Biophysics, Department of Psychiatry, Baylor University College of Medicine, 1200 M. D. Anderson Boulevard, Houston 25, Texas. Biophysics of the galvanic skin response with special attention to its peripheral mechanism: current studies emphasize the membrane characteristics of the effector in the GSR; animal studies of relation of foot-pad GSR to neural pattern by direct stimulation of sympathetic nerves; micro-electrode studies of the skin aimed at elucidating the relative roles of sweat glands and epidermis in the GSR, and the relationship of autonomic activity to emotional state and personality.

EDEN, MURRAY, Ph.D., Associate Professor of Electrical Engineering, Department of Electrical Engineering, Massachusetts Institute of Technology, Room 26-341, 77 Massachusetts Avenue, Cambridge, Massachusetts. Structure and neuromuscular control of handwriting; visual perception of three dimensional optical ambiguities, and pattern recognition.

EDMUNDS, ARTHUR B., Jr. (Ed. 1), Physiologist, Space Medicine Section, Boeing Airplane Company, Seattle 24, Washington. Design and application of miniaturized physiological sensors, transducers

and amplifiers for space and aeromedical applications.

EFRON, ROBERT, M.D., Neurophysiologist, Department of Neurology, Boston Veterans Administration Hospital, 150 South Huntington Avenue, Boston 30, Massachusetts. Impedance measurements on brain; temporal summation in visual cortex, and single unit studies of motor cortex.

EHRlich, DAN (Ed. 1), Research Associate, Institute for Psychosomatic and Psychiatric Research and Training, Psychophysiology Laboratory, Michael Reese Hospital, 29th Street and Ellis Avenue, Chicago 16, Illinois. Electrophysiological correlates of operant conditioning and discrimination learning.

EICHLER, MYRON F., M.D., Instructor, Department of Psychiatry, University of Maryland Medical School, Psychiatric Institute, 645 West Redwood Street, Baltimore 1, Maryland. Correlation of behavioral performance with electroencephalographic changes in induced hyperammonemia in human subjects, and other aspects of correlation of electrical disturbances in the brain and behavioral abnormalities.

EICHORN, DOROTHY H., Ph.D., Associate Research Psychologist, Institute of Human Development, and Administrator, Child Study Center, University of California, Berkeley, 2425 Atherton Street, Berkeley 4, California. Discrimination learning in infants and pre-school children, and conditioning of heart rate and GSR (CS-VCS internal in relation to alpha blocking time).

EIDELBERG, E., M.D., Chairman, Division of Neurobiology, Barrow Neurological Institute, 350 West Thomas Road, Phoenix 13, Arizona. Electrophysiology of the nervous system.

EISENBERG, LAWRENCE, M.E.E., Research Associate in Electronics, Electronic Laboratory, Rockefeller Institute, 66 Street and York Avenue, New York 21, New York. Development of transistorized RF coupled tissue, and stimulating devices including an RF coupled cardiac pacemaker.

ELDRED, EARL, M.D., Associate Professor of Anatomy, Department of Anatomy, University of California School of Medicine, Los Angeles, 24, California. Histology, pharmacology, and physiology of muscle spindles in mammalian muscle; studies include supraspinal control, behavior in conditioned learning, effects of succinyl choline, distribution in muscles and deformation with stretch of muscle.

ELKIND, JEROME I., Sc.D., Department Head, Engineering Psychology Department, Bolt Beranek and Newman, Inc., 50 Moulton Street, Cambridge, Massachusetts. Mathematical models of the motor coordination system, and techniques for analyzing the characteristics of biological control systems.

ELLINGSON, ROBERT J., Ph.D., Associate Professor of Medical Psychology, Department of Neurology and Psychiatry, University of Nebraska, College of Medicine, 602 South 44th Avenue, Omaha 5, Nebraska. Development of EEG patterns in human premature and full-term infants; evoked cortical potentials in human infants, and EEG's in metastatic carcinoma of the brain.

ELLIOTT, K. A. C., Dr., Professor of Biochemistry and Neurochemist, McGill University, Montreal Neurological Institute, 3801 University Street, Montreal, Quebec, Canada. Electronic equipment used only for recording of potentials from crayfish stretch receptor neuron in bioassay of Factor I, and in ordinary biochemical instruments.

ELLIOTT, LOIS L., Ph.D., Research Psychologist, Department of ENT Audiology, USAF School of Aerospace Medicine, Box 2096, School of Aerospace Medicine, Brooks AFB, Texas. Psychoacoustics; visual perception, and time parameters in perception.

ELLMAN, GEORGE L., Ph.D., Research Specialist-Biochemistry, Department of Research, Langley Porter Neuropsychiatric Institute, 401 Rarassus Avenue, San Francisco 22, California. Excitation of hypothalamus and related areas.

EMUS, HAROLD, B.S.E.E., Member of Technical Staff, Electro-Mechanical Laboratory, ITT Federal Laboratories, 15151 Bledsoe Street, San Fernando, California. Design of physiological monitoring equipment, for experimental situations and for hospital patient monitoring, and exploration of problems involved in transducers, data processing display media, and adaptation of monitoring techniques to hospital routines.

ENGEL, BERNARD T., Ph.D., Associate Research Psychologist, Medicine (Cardiovascular Research Institute), University of California Medical Center, San Francisco 22, California. Psychophysiological studies of patients with high blood pressure; facilities and equipment exist for recording blood pressure, pulse rate, skin temperature, breathing rate, stomach motility, palmar skin (electrical conductance), surface electromyography and electroencephalography and speech.

ENGEL, RUDOLF C. H., M.D., Associate Professor of Pediatrics, University of Oregon Medical School, Portland 1, Oregon. Electroencephalography in newborn and young infants, and latency measurements of the response to photic and acoustic stimulation and its correlation with maturation.

ENGEL, W. KING, M.D., Associate Neurologist, National Institute of Neurological Diseases and Blindness, National Institutes of Health, Bethesda 14, Maryland. Histo and cytochemistry of skeletal muscle as applied to neuromuscular disease, and tissue culture of skeletal muscle.

ENGLE, JAMES L., B.S.E.E. (Ed. 1), Department of Genetics, Institute for Cancer Research, Philadelphia 11, Pennsylvania. Design and construction of a monochromatic ultraviolet flying spot microscope for non-destructive observation and absorption measurement of living cells.

ERICKSON, ROBERT P., Ph.D., Assistant Professor, Department of Psychology, Duke University, Durham, North Carolina. Analysis of afferent neural code for sensory quality and intensity discrimination.

ERVIN, FRANK R., M.D., Assistant Professor, Department of Psychiatry, Harvard Medical School, Massachusetts General Hospital, Box 449 MGH, Boston, Massachusetts. Neuroelectric signal analysis, and behavioral research.

ESCH, LYND J., Ph.D., Head, Technical Applications, Electronic Products Division, Astropower, Inc., 1958 Fullerton Avenue, Costa Mesa, California. Aircraft malfunction analysis and warning systems.

ESCOBAR, MIGUEL A., M.D., Assistant Professor of Medicine, Department of Medicine-Hematology, Universidad del Valle College of Medicine, Hospital Universitario, Cali, Columbia, South America, (Apertado aereo No. 2188). Iron metabolism; iron absorption using Fe59 and Fe55 in normals and patients with hematological diseases; blood volume determinations in children with malnutrition before and after treatment, using Cr51 and I131, and blood volume determinations in pregnant females, before and after delivery, using Cr51 and I131.

ESSLER, WARREN ORVEL, Ph.D., Professor and Chairman, Department of Electrical Engineering, University of Vermont, Burlington, Vermont. Radio telemetry of physiological variables.

ETHERTON, BUD, Ph.D., N.S.F. Fellow (Post Doctoral) with Dr. J. Dainty, Biophysics Department, University of Edinburgh, Edinburgh, Scotland. Measuring potentials with microelectrodes in the cells of higher plants and relating these potentials to ion accumulation.

ETTELSON, BEN L. (Ed. 1), President, Spacelabs, Inc., 14819 Aetna Street, Van Nuys, California. Transmission of physiological data from within chronically instrumented animals using telemetry techniques (sponsored by USAF), and transmission of physiological data from external electrodes on humans using telemetry (sponsored by USAF).

EVANS, GRANT, General Manager, Animal Behavior Enterprises, Inc., Route 6, Hot Springs, Arkansas. Consultant to Veterans Administration project on electrical potentials during conditioning in dogs and consultant to U. S. Navy on sonar research in porpoises, and central nervous system implanted electrode research.

EVERETT, J. W., M.D., Professor, Department of Anatomy, Duke University School of Medicine, Durham, North Carolina. Relationship of the central nervous system to control of gonadotropin secretion; stimulation experiments, lesioning and recording.

F

FAHEY, ROBERT P., B.S. Ind. Eng., Operations Research Analyst, Bio-Medical Systems Department, System Development Corporation, 2500 Colorado Avenue, Santa Monica, California. Operations research and analysis in problems of medical supply and administration, and computer based aids to managers of medical institutions.

FAIRWEATHER, M. JEANNE, M.D., Chief, General Medical Out Patient Clinics, Department of Internal Medicine, Brooke General Hospital, Fort Sam Houston, Texas. Electrophoresis of serum from normals and patients with malignancies; comparison of serum, pleural and ascetic fluid from patients with cirrhosis and various malignancies, and electromyography in endocrinopathies.

FALK, GERTRUDE, Ph.D., Post-Doctoral Fellow, Department of Biophysics, University College, London W. C. 1, England. Electrical impedance of muscle.

FARR, MARSHALL J., M.A., Head, Mass Communication Branch, Communication Psychology Division, Human-Factors Department, U.S. Naval Training Device Center, Port Washington, New York. Behavioral correlates of electrophysiological recordings, and intra-indi-

vidual consistency of perceptual-motor/motor performance as measured by bioelectronic means.

FEINSTEIN, BERTRAM, M.D., Assistant Chief in Neurosurgery, Neurosurgery Research Project, Mount Zion Hospital and Medical Center, 1600 Divisadero Street, San Francisco 15, California. Production of controlled thermal lesions using radiofrequency current to relieve symptoms of parkinsonism, cerebral palsy, and other dyskinesias; stimulation studies of areas of the globus pallidus and lateral thalamus where therapeutic thermal lesions are made in the treatment of parkinsonism, and similar studies in areas where thermal lesions are made for relief of intractable pain; studies to determine the parameters for the production of conscious sensory responses elicited by electrical stimulation of the sensory cortex, and to determine the relationship of electrical activity of the sensory cortex to conscious sensory responses elicited by cortical and peripheral stimulation; studies of pre- and post-operative clinical states of patients treated for parkinsonism and other dyskinesias with thermal lesions of the globus pallidus and lateral thalamus, and attempts to find relatively convenient and objective methods of characterizing incapacity, with a view towards eventual statistical evaluation of surgical results.

FERGUSON, JOHN L., B.S. in C.E., Chief, Research Instrumentation Section, 6570 Aerospace Medical Research Laboratory, Air Force Systems Command, USAF, Wright-Patterson Air Force Base, Ohio. Design and development of psychological bioinstrumentation in support of in-house behavioral sciences research program of 6570 Aerospace Medical Research Laboratory, including stimulus devices, response mechanisms, timers, counters, etc.

FERNANDEZ, CÉSAR (Ed. 1), Research Associate in Otolaryngology, University of Chicago, 950 East 59th Street, Chicago 37, Illinois. Neurophysiology of cochlear and vestibular systems.

FERNANDEZ-MORAN, HUMBERTO, M.D., Ph.D., Professor of Biophysics, Department of Biophysics, The University of Chicago, 5640 Ellis Avenue, Chicago 37, Illinois. Nerve ultrastructure research; electron microscopy; molecular biology, radiation biology, and correlative studies of nerve ultrastructure and function.

FIELDS, THEODORE, M.S., Chief, Physics Section, Radioisotope Service, Veterans Administration Hospital, Hines, Illinois. Neutron activation analysis; multichannel analysis of electrophysiological information; transistorized biomedical devices, and use of solid state detectors for radiation monitors.

FIGHTMASTER, WALTER JOHN, M.A., Head, Life Sciences, Flight Sciences Department, Bendix Systems Division, The Bendix Corporation, 3300 Plymouth Road, Ann Arbor, Michigan. Crew condition monitoring and biomedical instrumentation studies for extra-terrestrial systems and manned lunar surface vehicles.

FINK, MAX, M.D., Director, Missouri Institute of Psychiatry, 5400 Arsenal Street, St. Louis 39, Missouri. Frequency analyses of EEG recordings made under conditions of drug administration and electroshock in psychiatric patients. Equipment is a Ulett-Loeffel modification of the Grey-Walter analyzer, and F-M tape recording. Digital conversion and computer analyses are to begin in Institute in 1963.

FISHER, HERBERT T., M.A., Systems Engineering Psychologist, Systems Engineering--Apollo Support Department, General Electric Company--Defense Systems, 4150 Broadway, Apartment #3, Houston 17, Texas. Project Apollo system analyses to determine feasibility of simulating human performance (flight crew) through utilization of electromechanical techniques. Studies include analysis of rendezvous and navigation measures, checkout (hardware and biological), human mobility in space and lunar environments, human performance requirements and capabilities, etc., current research interests are in the area of man-in-space systems analysis leading to the identification of pre-flight simulation techniques.

FISHER, SEYMOUR, Ph.D., Professor, Department of Psychiatry, State University of New York, Upstate Medical Center, Syracuse, New York. Relationships of attitudes toward various sectors of the body, body image measures, and personality indices, to the basal skin resistance level of those sectors.

FITZHUGH, RICHARD, Ph.D., Biophysics Laboratory, National Institute of Neurological Diseases and Blindness, National Institutes of Health, Bethesda 14, Maryland. Use of the commercial analog computer to study mathematical models of the nerve membrane.

FLAX, HERMAN J., M.D. (Ed. 1), Acting Chief, Bureau of Research, San Patricio Veterans Administration Hospital, San Juan, Puerto Rico. The use of ultrasonic diathermy to modify shoulder calcifications; reflex peripheral vasodilation by means of lumbar applied short-wave diathermy.

FLEMING, DAVID G., Ph.D., Associate Professor of BioEngineering, Engineering Division, Case Institute of Technology, Cleveland 6,

Ohio. Electrophysiological correlates of behavior; dynamic analysis of eye movements, and dynamic analysis at homeostatic mechanisms.

FLOM, MERTON C. (Ed. 1), Assistant Professor of Physiological Optics and Optometry, School of Optometry, University of California, Berkeley 4, California. Determining the empirical longitudinal horopter in subjects with strabismus by psychophysical means and simultaneously recording the position of each eye from the potential generated by a germanium photodiode which is aimed at the temporal limbus and detects an increase or decrease in reflected infrared radiation.

FLOOD, MERRILL M., Ph.D., Professor and Senior Research Mathematician, Mental Health Research Institute, University of Michigan, MHR, 205 North Forest Avenue, Ann Arbor, Michigan. Study of learning behavior in rats having electrodes implanted in the hypothalamus, including digital computer simulation of behavioral models.

FLORY, LESLIE E., Member, Technical Staff, RCA Laboratories, Princeton, New Jersey. Scanning techniques applied to medical and biological problems, and physiological telemetering and stimulation, particularly with implanted or ingested sensors.

FORBES, ALEXANDER, M.D. (Ed. 1), Professor of Physiology (Emeritus), Biological Laboratories, Harvard University, 16 Divinity Avenue, Cambridge 38, Massachusetts. Electrophysiology of the vertebrate retina in relation to color vision.

FORD, ADELBERT, Private Consultant (Bioelectronics), 4672 Adair Street, San Diego 7, California. Electro-oculography project (with C. T. White) used EOG in servo-control of mechanical pointers, such as guns or telescopes (simulated).

FOSHEE, DONALD P., Ph.D., Chief, Laboratory of Experimental Behavior, Department of Neurosurgery, University of Mississippi Medical Center, 2500 North State Street, Jackson, Mississippi. Neurophysiological research relating to the role of hippocampal mechanisms in learning developmental behavior following infant brain damage, and the use of computer techniques in such research.

FOSTER, GEORGE H., Ph.D., Acting Manager, Bionics Unit, and Director, Biological Laboratory, Advanced Electronics Center, General Electric, Ithaca, New York. Behavioral effects of electromagnetic radiation.

FOX, SAMUEL MICKLE, III, M.D., Assistant Director, National Heart Institute, National Institutes of Health, Bethesda 14, Maryland. Computation of blood velocity and acceleration and vascular impedance in intact man.

FOX, STEPHEN S., Ph.D., Associate Research Psychobiologist, Mental Health Research Institute, and Assistant Professor, Department of Psychology, University of Michigan, Ann Arbor, Michigan. Stimulation and recording from brain of chronically implanted cats (spontaneous and evoked potentials); recording of EKG during behavior, of respiratory changes during behavior, and of gross potentials from macroelectrodes and of single cell responses with microelectrodes in response to stimulation of functionally related brain structures; use of computers in data reduction of biological data recorded from the brain, and brain lesions and behavior.

FRANCIS, J. E., B.S., Physicist, Thermonuclear Department, Oak Ridge National Laboratory, P. O. Box Y, Oak Ridge, Tennessee. Design and development of instruments for the use of radioisotopes in nuclear medicine.

FRANK, GEORGE B., M.D., Associate Professor, Department of Pharmacology and Therapeutics, University of Manitoba, Faculty of Medicine, Emily and Bannatyne, Winnipeg 3, Canada. Effects of drugs on isolated slabs of cerebral cortex; effects of drugs which stimulate respiration; effects of drugs on membrane and action potentials in skeletal muscle using intracellular microelectrodes; role of calcium as a link between electrical and mechanical events in contraction; denervation sensitization in skeletal muscle.

FRANK, JOE H., Ph.D., Senior Engineering Psychologist, System Utilization Department, International Electric Corporation (ITT), Paramus, New Jersey. Personnel subsystem test and evaluation of mobile medium range ballistic missile system; qualitative and quantitative personnel requirements; optimum color displays, command control personnel subsystem tests for Strategic Air Command control system closed circuit and airborne television for interceptor pilot training.

FRANK, KARL, Ph.D. (Ed. 1), Chief, Spinal Cord Section, Laboratory of Neurophysiology, National Institute of Neurological Diseases and Blindness, National Institutes of Health, Bethesda 14, Maryland. Neurophysiology of single cells.

FRANKE, ERNST K., Dr., Professor of Biophysics, Department of

Franklin

Physics, University of Cincinnati, Cincinnati 21, Ohio. Power spectrum analysis of the electrocardiogram; applications of digital computation to electrocardiography, and biological applications of lasers.

FRANKLIN, DEAN L., Research Associate, Chief, Bio-Medical Engineering, Institute for Cardiopulmonary Diseases, Scripps Clinic and Research Foundation, 476 Prospect Street, La Jolla, California. Research and development of bio-medical instrumentation including ultrasonic blood flowmeters, ultrasonic organ dimension gauges, pressure gauges, ratemeters, and analogue computers and data storage and retrieval systems for application to cardiovascular research in intact animals and humans; research and development of ultrasonic soft tissue visualization techniques, and cardiovascular research in ambulatory dogs, primates, and humans.

FRANKS, CYRIL M., Ph.D., Director, Psychology Service and Research Center, Neuro-Psychiatric Institute, Princeton, New Jersey. Psychophysiological measurements and classical and instrumental conditioning studies in normal and abnormal populations; the effects of drugs on these and the relationships between performance on these measures and certain clinical, personality and behavioral measures and observations, especially eyelid and GSR conditioning.

FREEBERG, NORMAN E., Ph.D., Head, Human Factors Research Group, Medical and Biological Physics, Airborne Instruments Laboratory, Deer Park, Long Island, New York. Presentation of visual information with electronic imaging techniques, and monitoring systems for physiological and behavioral data.

FREED, JEROME J., Research Associate, Department of Biology, Institute for Cancer Research, Philadelphia 11, Pennsylvania. Ultraviolet absorption studies on living cells (cytochemistry) using flying spot microscope.

FREEDMAN, SANFORD J., Ph.D., Research Associate, Institute for Psychological Research, Tufts University, 490 Boston Avenue, Medford 55, Massachusetts. Studies of perception under atypical conditions involving electroretinography and electroencephalography.

FREEMAN, LESLIE W., M.D., Ph.D., Professor of Surgery and Director, Surgical Experimental Laboratories, Department of Surgery, Indiana University, School of Medicine, 1100 West Michigan Street, Indianapolis 7, Indiana. Measurements in central nervous system of regenerating and degenerating pathways and axons; electromyography; electroencephalography; radioactive isotope tracers, and electrophoresis.

FREEMAN, WALTER J., III, M.D., Associate Professor, Department of Physiology, University of California, Berkeley 4, California. Correlation of evoked and spontaneous electrical activity of prepyriform cortex with behavior.

FREIBERGER, HOWARD, Electronics Engineer, Research and Development Division, Prosthetic and Sensory Aids Service, Veterans Administration, 252 Seventh Avenue, New York 1, New York. Instrumentation of a bioengineering laboratory where studies of human locomotion and other muscular functions are conducted to aid in development of improved prostheses; the application of external power to such devices and their control; pattern recognition as it applies to reading machines for the blind, and guidance systems applicable to mobility problems of the blind, and problems of hearing and hearing aids.

FRENCH, JOHN D., M.D., Director, Brain Research Institute (Medical Center), University of California, Los Angeles 24, California. Effects of brain irradiation on behavior; non-specific brain mechanisms for certain behavior patterns; neural correlates of mental activity and behavior; the electrical characteristics and anatomical configuration of selected neurophysiological areas of the CNS; rhinencephalon, neuro-endocrine function and behavior; rhinencephalon paths to striatum and subcortex; behavioral and electrical signs of caudate activity; neural correlates of behavior in unanesthetized animals, and functional correlates of lamination in the cerebral cortex.

FRENKEL, EUGENE PHILLIP, M.D., Assistant Professor and Chief, Hematology Service, Department of Internal Medicine, Southwestern Medical School (University of Texas), 5323 Harry Hines Boulevard, Dallas 35, Texas. Studies in the patterns of incorporation of isotopically labeled pyrimidine nucleoside precursors of DNA in normal and leukemic cells before and following cytotoxic injury.

FREYGANG, WALTER H., M.E., M.D., Chief, Section on Membrane Physiology, National Institute of Mental Health, Laboratory of Neurophysiology, National Institutes of Health, Bethesda 14, Maryland. Electrical properties of muscle membrane.

FRIED, CHARLES, M.A., Research Psychologist, Supporting Research Laboratory, Human Engineering Laboratories, Aberdeen Proving Ground, Maryland. Data acquisition through visual processes; digital readout selection, visibility of radar displays and presenta-

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tion of three dimensional information, and depth loss in optical magnification and studies in movement thresholds.

FRIEDE, REINHARD L., M.D., Chief, Neuromorphology Section; Assistant Professor, Department of Psychiatry, University of Michigan, Mental Health Research Institute, 205 North Forest Avenue, Ann Arbor, Michigan. Experimental neuropathological studies on the pathogenesis of cerebral concussion and contusion; systematic histochemical mappings of the distribution of various enzymes, particularly oxidative enzymes, in the central nervous system; application of enzyme histochemistry to the study of neuropathological material, both human and experimental; cytochemical studies of neuroglia cells, and correlation of cytochemical changes with functional changes.

FRIEDLANDER, WALTER J., M.D., Professor of Neurology, Albany Medical College, Albany, New York. Studies in clinical electroencephalography.

FRIEDMAN, MILTON, M.D., Professor of Clinical Radiology, Department of Radiology, New York University School of Medicine, 550 First Avenue, New York 16, New York. Localization and treatment of metastatic retroperitoneal nodes by intralymphatic injection of radioactive ethiodol; metabolic pathways of anti-cancer drugs (radioactive methotrexate and 5-fluorouracil) by autoradiography of serial biopsy specimens; fluorod dosimetry; development of brain tumor and liver scanners; treatment of cancer with six million volt linear accelerator, and distribution of absorbed doses in super-voltage irradiation of cancer.

FRY, DONALD L., M.D., Chief, Section on Clinical Biophysics, National Heart Institute, National Institutes of Health, Bethesda 14, Maryland. Establishment of realistic mathematical models of the human vascular and pulmonary system. To this end the current research projects are concerned with the measurement of pulmonary and vascular geometry, dimensions and physical properties. The bioelectronics involved consist of obtaining these measurements accurately with pressure transducers, various displacement transducers and electromagnetic flowmeters, all of which are recorded on multi-channel FM tape systems suitable for feeding analog and digital computers.

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GAFFEY, CORNELIUS THOMAS, Ph.D., Research Biophysicist, Medical Physics Division of the Physics Department, University of California, Donner Laboratory, Berkeley 4, California. Influence of anisotropic solutions on the bioelectric properties of nerve; action of irradiation on the CNS; average apparatus (measured with an analog-digital computer) of the visual system (optic tract, lateral geniculate nucleus, and visual cortex) as influenced by pharmaceutical agents; 910-mev alpha particles and correlation between the molecular structure of growth plant hormones and growth plant stimulants and the bioelectric properties of nitella.

GALAMBOS, ROBERT, Ph.D., M.D., Eugene Higgins Professor of Psychology and Physiology, Department of Psychology, Yale University, 333 Cedar Street, New Haven, Connecticut. Electro-physiology of brain in learning.

GALLER, S. R., Dr., Head, Biology Branch, Biological Sciences Division, Office of Naval Research, Department of Navy, Washington 25, D. C. This office is supporting a rapidly expanding program in biological orientation aimed at an understanding of the ability of organisms to locate themselves in space and time. This involves studies in sensory mechanisms and the development of instrumentation to measure responses to stimuli.

GALLETTI, PIERRE M., M.D., Ph.D., Associate Professor of Physiology, Department of Physiology, Emory University, Atlanta 22, Georgia. Recording of EEG from chronically implanted electrodes in animals submitted to long periods of artificial circulation, and design and miniaturization of external and internal artificial organs.

GANGLOFF, HANNS, M.D. (Ed. 1), Department of Neurophysiology, Strahlenbiologisches Institut, Universität München, Bavariaring 19, München 15, West Germany. Effects of ionizing radiation (especially at low dose levels) on brain electrical activity; biochemical and behavioral correlates of brain electrical activity within specific brain systems following exposure to ionizing radiation, and neuropharmacology; electrophysiological evaluation of the action mechanisms of CNS drugs with special reference to radiation protection.

GARCIA-AUSTT, ELIO (Ed. 1), Associate Professor of Physiology, Laboratory of Neurophysiology, Instituto de Neurologia, Facultad de Medicina, Hospital de Clínicas, Montevideo, Uruguay. Ontogenic development of nervous functions; methods for detecting and studying evoked potentials in man, and learning in man and animals studied by electrophysiological methods.

GARFINKLE, DAVID R., A.B., Research Assistant, Department of Engineering, University of California (Los Angeles), 405 Hilgard Avenue,

Los Angeles 24, California. Investigation of the parameters, both human and machine, of large scale, high inertia tracking platform, and tabulation of results for future design.

GAROUTTE, BILL CHARLES, M.D., Ph.D., Associate Professor, Department of Anatomy and Neurology, University of California Medical Center, San Francisco 22, California. The origin and control of the electroencephalogram of mammalia, and clinical correlations of the human EEG.

GASTAUT, HENRI, M.D. (Ed. 1), Professor, Faculty of Medicine, University of Marseilles, Marseilles, France. EEG and other bioelectrical techniques (EMG, electrodermography, rheoencephalography, etc.), including topographic and chronographic display for the study of brain activity in relation to behavior and pathology.

GAULT, FREDERICK PAUL, Ph.D., Assistant Professor, Department of Psychology, Yale University, 333 Cedar Street, New Haven 11, Connecticut. Attempts to relate changes in evoked potentials in the CNS to behavioral variables such as discrimination (e.g., by "conditioning" shocks to various CNS loci); factors which will modify the sensory input to the CNS, and the relationship between rhinencephalic activity and behavior, specifically the high frequency synchronous activity of the amygdala and the theta activity of the hippocampus.

GEDDES, LESLIE A., M.E.(E.E.), Ph.D., Director, Laboratory of Biophysics and Associate Professor of Physiology, Department of Physiology, Baylor Medical College, 1200 M. D. Anderson Boulevard, Houston, Texas. Design and development of biomedical instrumentation for research and teaching in medicine and physiology; transduction of physiological events to electrical signals, and cardiovascular and neurophysiology.

GEISLER, C. DANIEL, Sc.D., Assistant Professor, Department of Electrical Engineering and Neurophysiology, University of Wisconsin, Madison 6, Wisconsin. Determination of information carried by single units located in various centers of the auditory nervous system.

GELBER, BEATRICE, Ph.D. (Ed. 1), President, Basic Health Research Institute, 509 North Santa Rita Avenue, Tucson, Arizona. Electrophoresis for analysis of proteins; incorporation studies involving radioactive labeling, e.g., C_{14} and H_3 , and possible use of a scintillation counter or flowmeter in evaluating our material.

GELDARD, FRANK A., Ph.D., Stuart Professor of Psychology, Department of Psychology, Eno Hall, Princeton University, Princeton, New Jersey. Cutaneous sensitivity, especially influence of vibratory forces on the skin and sensitivity of skin to direct electrical stimulation.

GELL, CHARLES FREDRIC, M.D., D.Sc.Med., Director of Life Sciences, Department of Engineering, Astronautics Division, Chance Vought Corporation, Box 6267, Dallas 29, Texas. Biological monitoring of man in a space simulator, and video-microscopy telemetering of biological specimens.

GERARD, RALPH W., M.D., Ph.D., Professor of Physiology and Psychiatry, Director of Laboratories, Mental Health Research Institute, University of Michigan, Ann Arbor, Michigan. Physiological, electrical, chemical, and morphological studies on the brain and spinal cord, especially in connection with learning and memory traces; the action of drugs, and the biological and psychological attributes of mental patients.

GERATHEWOHL, SIEGFRIED J., Ph.D. (Ed. 1), Chief, Biotechnology Division, NASA Ames Research Center, Mountain View, California. Research and development activities on animal payloads for rockets and satellites including design and construction of life support systems, environmental and biomedical sensors, control and monitoring of physiologic processes and performance, and development and operation of bioelectronic equipment adequate for manned space flight.

GERKEN, GEORGE M., Ph.D., Assistant Professor, Department of Psychology, University of Virginia, Charlottesville, Virginia. Electrical stimulation of auditory system; evoked potentials--sensory systems, and brain stimulation.

GERMAIN, LLOYD M., M.E.E., Senior Research Engineer, Advanced Development Group, Galton Industries, 212 Durham Avenue, Metuchen, New Jersey. Development of solid state diastolic systolic monitoring system from a finger.

GESCHWIND, NORMAN, M.D., Department of Neurology, Boston Veterans Administration Hospital, 150 South Huntington Avenue, Boston 30, Massachusetts. Physiology of muscle.

GESELOWITZ, DAVID B., Ph.D., Assistant Professor of Electrical Engineering and Research Associate, Electrical Engineering Medicine, Electromedical Laboratory, The Moore School of Electrical

Engineering, University of Pennsylvania, Philadelphia 4, Pennsylvania. Electrocardiography: applications of potential theory, especially to evaluation of quadrupole component of human electrocardiogram, and signal analysis including evaluation of high frequency content and first derivative of electrocardiogram.

GESTELAND, ROBERT C., Ph.D., Staff, Scientific Engineering Institute, 140 Fourth Avenue, Waltham 54, Massachusetts and Research Associate, Department of Biology, Massachusetts Institute of Technology, Cambridge, Massachusetts. Neurophysiology.

GETTY, ROBERT, D.V.M., M.S., Ph.D., Professor and Head, Department of Veterinary Anatomy, Iowa State University, College of Veterinary Medicine, Ames, Iowa. Permanent member of the Administrative Committee for the program of Biomedical Electronics at Iowa State University. The program itself is an interdisciplinary approach involving the Departments of Veterinary Anatomy, Electrical Engineering, and Veterinary Physiology and Pharmacology; interdisciplinary graduate program in biomedical electronics, and instruction and research in biomedical electronics.

GIBBS, FREDERIC A., M.D. (Ed. 1), Professor of Neurology, Neurology and Neurosurgery Departments, University of Illinois, School of Medicine, 912 South Wood Street, Chicago 12, Illinois. EEG in epilepsy, in behavior disturbances, and in psychosis; improvement of EEG as a general neurological technique; as an indicator of acute and chronic brain disorder, and EEG for the anesthesiologist and surgeon.

GIBBY, ROBERT G., Ph.D., Chief Psychologist, Veterans Administration Hospital, Richmond 19, Virginia. Sensory deprivation, and decision making.

GIDDINGS, C. BLAND, M.D., Director, Department of Nuclear Pathology and Medicine, Southwest Cancer Institute and Memorial Hospital, 1200 South Fifth Avenue, Phoenix 3, Arizona. Use of radioisotopes in the diagnosis of abnormal pathological states and neoplasms by scintillation scanning techniques.

GIFFORD, EDMUND C., B.A., Research Psychologist, Air Crew Equipment Laboratory, Naval Air Material Center, Philadelphia 12, Pennsylvania. Correlation of human performance decrement with physiological changes, and physiology of dark adaptation.

GILLEN, H. WILLIAM, M.D., Associate Attending Neurologist, Department of Neurology, Edward J. Meyer Memorial Hospital, 462 Grider Street, Buffalo 15, New York. EEG; electrophysiology; study of effects of high barometric pressure environments on the function of the nervous system, and design of analogs of neural circuitry.

GILSON, ALBERT J., M.D., Assistant Professor of Radiology, Director Division of Nuclear Medicine, Department of Radiology, Emory University School of Medicine, Atlanta, Georgia. Radiation Instrumentation; data storage and display; instrumentation for in vivo determination of bone density, and instrumentation for trace metal determination in biologic samples.

GLASER, GILBERT H., M.D. (Ed. 1), Associate Professor of Neurology and Chief of Section of Neurology, School of Medicine, Yale University, 333 Cedar Street, New Haven 11, Connecticut. Electroencephalography in relation to newborn human, epilepsy, metabolic disorders, and drug effects; bioelectric properties of mammalian muscle, normal and dystrophic, and analysis of motor system control and abnormalities such as spasticity, ataxia, tremors.

GLASSNER, HARVEY F. (Ed. 1), Research Engineer, Equipment and Safety Research, Douglas Aircraft Company, Inc., 827 Lapham, El Segundo, California. Design of a real time psychophysiological--environmental monitoring console for sensing, analyzing, recording, and display of data from ground stimulation studies and high performance aircraft studies, and relationships between performance levels and physiologic responses.

GLOOR, PETER, M.D., Ph.D., Assistant Professor of Experimental Neurology; Electroencephalographer, Department of Neurology and Neurosurgery and Montreal Neurological Institute, McGill University, 3801 University Street, Montreal, P.Q., Canada. Clinical electroencephalography; mechanism of epileptic discharge, and electrophysiology of limbic system.

GLUCK, HENRY, Ph.D. (Ed. 1), Research Fellow, Assistant Clinical Professor, School of Medicine, Department of Psychology, Western Reserve University, Cleveland 6, Ohio. Wave width analysis in electrocorticograms; average response of brain waves, and quantitative analysis of brain potentials in conditioning.

GODWIN, JOHN THOMAS, B.S., M.D., Director of Laboratories, Department of Pathology, St. Joseph's Infirmary, Atlanta, Georgia. Clinical and experimental use of radioisotopes.

GOLDBERG, BERNARD, M.D., Head of Radioisotope Division, Department of Research, New York Eye and Ear Infirmary, 218 Second

Avenue, New York 3, New York. The use of radioisotopes in the diagnosis of ocular tumors, and to characterize blood-aqueous barrier dynamics.

GOLDBERG, JAY M., National Science Foundation Post-Doctoral Fellow, Department of Neurophysiology, 283 Medical Sciences Building, University of Wisconsin, Madison 6, Wisconsin. Effects of subcortical lesions on auditory evoked potentials recorded at cortex, and single-unit analyses at various synaptic regions of auditory system.

GOLDENSOHN, ELI S., M.D., Associate Professor in Neurology, Department of Neurology, Columbia University, College of Physicians and Surgeons, 630 West 168th Street, New York 32, New York. Direct current potentials of the brain; measurement of respiration by impedance changes, and induced electrical abnormalities in the brain associated with experimental seizures.

GOLDMAN, DAVID E., Ph.D., Commander, Medical Service Corps, United States Navy, Head, Biophysics Division, Naval Medical Research Institute, Bethesda 14, Maryland. Electrophysiology of nerve fibers and cell membranes, and effects of vibration, impact, and blast on man and animals.

GOLDMAN, DOUGLAS, M.S., M.D., Chairman, Department of Psychiatry, Good Samaritan Hospital, Cincinnati, Ohio. Electroencephalography in psychotic patients and in convulsive disorder.

GOLDSTEIN, ALVIN G., Ph.D., Professor, Department of Psychology, University of Missouri, McAlester Hall, Columbia, Missouri. Analysis of EEG by data analysis process and comparison of several methods of electronic analysis: cross correlation, autocorrelation, power spectrum analysis and two or three other newly developed methods.

GOLDSTEIN, IRIS BALSHAN, Ph.D., Physiological Psychologist, Psychosomatic and Psychiatric Institute, Michael Reese Hospital, 2959 South Ellis, Chicago 16, Illinois. Study of the autonomic nervous system and muscle tension as they relate to emotions in human beings.

GOLDSTEIN, LEONIDE, D.Sc. (Ed. 1), Associate Professor of Pharmacology, Department of Pharmacology, School of Medicine, Emory University, Atlanta 22, Georgia. Quantitative electroencephalographic studies; transformation of EEG signals in order to ascertain by statistical methods the significance of changes produced by drugs on the brain; studies on the mechanism of depression and stimulation phenomena, and in general, use of quantitative methods in the measurement of drug action on biological systems.

GOLDSTEIN, ROBERT, Ph.D., Director, Audiology Section, Department of Otolaryngology, The Jewish Hospital of St. Louis, 216 South Kingshighway, St. Louis 10, Missouri. Individual differences in electrophysiologic responsiveness; development and refinement of electrophysiologic tests of hearing, and electronystagmographic evaluation of normal and abnormal vestibular function.

GOLDSTONE, SANFORD, Ph.D., Associate Professor, Department of Psychiatry, Baylor University College of Medicine, 1200 M. D. Anderson Boulevard, Houston 25, Texas. Absolute judgments of time and space with controlled auditory, visual and tactile signals with particular emphasis upon psychophysical and psychophysiological parameters, and perceptual limits and the effects of sub-threshold anchors upon absolute judgments of intensity.

GONIK, URI, Ph.D., Instructor in Psychiatry, Department of Psychiatry, The University of Texas Southwestern Medical School, 5323 Harry Hines Boulevard, Dallas 35, Texas. Psychophysiology; behavioral and medical correlates of electrophysiological recordings, and recording and analysis of bioelectrical signals obtained from intact humans.

GOODHILL, VICTOR, M.D. (Ed. 1), Director, Deafness Research Laboratory, Children's Hospital, 4614 Sunset Boulevard, Los Angeles 27, California. Cochlear potentials and cochlear electrophysiology in general; hypoxia studies in brain and cochlea.

GOODMAN, DONALD C., M.D. (Ed. 1), Associate Professor of Anatomy, Department of Anatomy, College of Medicine, University of Florida, Gainesville, Florida. Stimulation of unanesthetized animals by means of implanted electrodes; stimulation of reticular formation and cerebellar and midbrain regions; comparative approach utilizing submammalian (Amphibia Reptilia) and mammalian species, and correlating anatomy as determined by Nauta silver method for degenerating axis cylinders with function as determined from electrode results.

GOODMAN, LESTER, Ph.D., Assistant Professor of Engineering, and Assistant Director of the Systems Research Center, Case Institute of Technology, University Circle, Cleveland 6, Ohio. Analysis of energy production and control in physiological systems; homeostasis and physiological control systems in intact animals and

man, and interface problems in man-machine systems.

GOODRICH, JACK KNIGHT, M.D., Assistant Professor, Radiology-Isotope Center, University of Mississippi Medical Center, Jackson, Mississippi. Isotope scanning of brain, kidney and heart, and labeled tracers for clinical applications.

GORDON, ERNEST S., B.S.E.E., Research Engineer, Electronics Research Division, Armour Research Foundation, 10 West 35th Street, Chicago 16, Illinois. Design and development of physiological monitoring sensors, circuits, and systems; study of state-of-the-art in bio-space (bio-dynamics) electronics, and bibliographic and quantitative research in this field.

GOTTESMAN, IRVING I., Ph.D., Lecturer on Child Psychology, Department of Social Relations and Psychology, Harvard University, 5 Divinity Avenue, Cambridge 38, Massachusetts. Telemetering of biological signals which may correlate with personality and individual differences in autonomic nervous system reactions and their genetic component, as revealed by contrasting identical with fraternal twin within-pair differences.

GOULD, LOUIS N., M.D., Chief, Mental Hygiene Clinic, Outpatient Section, Veterans Administration Hospital, 1200 Anastasia Avenue, Coral Gables, Florida. Study of electric potential of speech musculature of patients with auditory hallucinations; study of subvocal speech by means of electric potential of vocal musculature, and study of tension states and of hypnotic states by means of electric muscle potential.

GRADY, EDGAR D., M.D., General Surgeon, Piedmont Hospital, 1938 Peachtree Road N.W., Atlanta 9, Georgia. Particulate radio-isotopes injected intra-arterially to treat cancer.

GRAETZ, ROBERT E., Ph.D., Program Director, Psychiatric Data Automation, Research Department, Camarillo State Hospital, Camarillo, California. Study of information processing and communications in a large mental hospital to determine what efficiencies can be realized from utilizing modern electronic data processing equipment, and experimental evaluation of system design to include information processing requirements for psychophysiological data.

GRAFSTEIN, BERNICE, Ph.D., Assistant Professor, Department of Developmental Biology, Rockefeller Institute, New York 21, New York. Organization of nervous tissue during embryonic development, growth and regeneration.

GRAHAM, DAVID TREDWAY, M.D., Associate Professor, Department of Medicine, University of Wisconsin, 1300 University Avenue, Madison, Wisconsin. Investigation of the hypothesis that there is a specific and unique set of physiological components in each emotion, and the application of this hypothesis to disease.

GRAHAM, FRANCES K., Ph.D., Research Associate, Lecturer, Departments of Pediatrics and Psychology, University of Wisconsin, University Hospitals, Madison 6, Wisconsin. Manipulation of stimulus conditions affecting responses under autonomic nervous system control.

GRANDA, ALLEN MANUEL, Ph.D., Research Physiological Psychologist, Walter Reed Army Institute of Research, Walter Reed Army Medical Center, Washington 12, D. C. Study of generated potentials in neural tissue with primary emphasis on the sensory systems; recording of potentials in central nervous system to various sensory input stimuli, and correlation between electrophysiological measures and behavior.

GRANT, RONALD, Ph.D., Professor of Physiology, Department of Physiology, Stanford University, Stanford, California. Study of electrical potentials in cerebral cortex and deep cerebral structures, associated with: (1) administration of drugs having behavioral effects, e.g., monoamine oxidase inhibitors, catechol amine precursors; (2) stimulation of structures (mostly septum) that yield auto-stimulatory behavior in rats and rabbits; (3) central nervous system response of animals to environmental stimuli (e.g., temperature change) and stimulation calculated to produce a behavioral response, e.g., "emotional" stress, recorded through implanted electrodes.

GRASS, ALBERT M., B.S., President and Chief Engineer, Grass Instrument Company, 101 Old Colony Avenue, Quincy 69, Massachusetts. Development of electroencephalographs, biological recorders and instruments for use in neurology, physiology and pharmacology.

GRAYBIEL, ASHTON, Capt., MC, USN, (Ed. 1), Director of Research, Department of Research, U.S. Naval School of Aviation Medicine, U.S. Naval Aviation Medical Center, Pensacola, Florida. The effects of bizarre stimulation of the semicircular canals as indicated by nystagmography; ECG telemetry, and electroencephalography in actual flight.

Greatbatch

GREATBATCH, WILSON, Electronics Consultant, Wilson Greatbatch, Inc., 10647 Main Street, Clarence, New York. Commercial and military bioinstrumentation ("transmed") systems; cardiac pacemakers for implantation in the body; implantable electronic devices for phrenic and bladder stimulation, and hospital monitoring devices. (Active consultant to Massa-Cohn, Inc., Sierra Research Corporation, USAF Scientific Advisory Board and Wilson Greatbatch Electronics, Inc.)

GRIFFIN, DONALD R., Ph.D., Professor of Zoology, Department of Biology, Harvard University, 16 Divinity Avenue, Cambridge 38, Massachusetts. Studies of the acoustic orientation of bats, including analysis of auditory discrimination by means of electrophysiological recordings from bat brains in response to high frequency sounds.

GRIFFITHS, ROY, Ph.D., Assistant Professor of Medical Psychology, Department of Psychiatry and Mental Health, University of Louisville, School of Medicine, 101 West Chestnut Street, Louisville 2, Kentucky. Electrophysiological correlates of behavior in animals.

GRINGS, WILLIAM W., Ph.D. Professor of Psychology, Chairman, Department of Psychology, University of Southern California, University Park, Los Angeles 7, California. Conditioning of autonomic responses with human and animal subjects, particularly the GSR, EKG, and digital plethysmograms.

GROSS, LEONARD D., B.S., Electronic Systems Engineer, Bio-Medical Systems Department, System Development Corporation, 2400 Colorado Boulevard, Santa Monica, California. Design and implementation of automated hospital information systems, and application of EDP equipment and techniques to hospital clinical and administrative procedures.

GROSSMAN, CHARLES C., M.D., Director, Department of Electroencephalography, West Penn Hospital, Friendship Avenue, Pittsburgh, Pennsylvania. Experimental electroencephalography.

GRUNZKE, MARVIN E., M.A., Major, USAF, Chief, Apparatus Development Section, Comparative Psychology Branch, Aeromedical Field Laboratory, USAF, Holloman AFB, New Mexico. Determination of performance decrement resulting from exposure to unusual environmental conditions, such as acceleration, vibration, temperature, pressure, toxic gases, radiation, etc., and correlation of physiological states with behavior.

GUMNIT, ROBERT J., M.D., Senior Fellow, Department of Neurology, State University of Iowa Hospitals, Iowa City, Iowa. Direct current aspects of sensory and seizure phenomena; epilepsy; audition, and vision.

GUNTHEROTH, WARREN G., M.D., Associate Professor of Pediatrics, Department of Pediatrics, University of Washington School of Medicine, Seattle 5, Washington. Ultrasonic distance meter, used as a plethysmograph, both externally and internally in human and animal experiments; flow meters (ultrasonic, electromagnetic and thermistor) used in human and animal experiments, and analog to digital conversion (in development) to solve subtle relationships between pressure and flow in relation to respiration, exercise and other states of the intact animal.

GURIAN, BENNETT S., Independent Research Worker, Boston University School of Medicine, and Department of Neurosurgery, Massachusetts General Hospital, Boston 14, Massachusetts. Measurement of function in in vitro mammalian nervous tissue (retina and optic nerve) by means of gross and microelectrodes recording evoked potentials in response to visual stimuli.

GUSTAFSON, JOHN E., M.D., Director, United Heart Station, Iowa Methodist Hospital, 1200 Pleasant, Des Moines, Iowa. The use of computer techniques in the private practice of medicine--testing and diagnosis, and the evaluation of exercise tolerance testing for cardiac disease.

GUTTMAN, RITA, Ph.D. (Ed. 1), Associate Professor, Department of Biology, Brooklyn College, Brooklyn 10, New York. Study of electrical parameters of living membranes.

GUTTMANN, HENRY E., M.Sc., Senior Research Scientist, MPG Research Department, Human Factors Group, Honeywell, 2600 Ridgeway Road, Minneapolis 40, Minnesota. Physiological aspects of human factors investigations.

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HAGEDORN, ALBERT B., M.D., Associate Professor, University of Minnesota, Mayo Foundation, Consultant in Medicine, Mayo Clinic, Department of Medicine and Hematology, Mayo Clinic and Mayo Foundation, 200 First Street, S.W., Rochester, Minnesota. Absorption of Fe^{59} in rats, with emphasis on site of absorption utilizing whole body counter; excretion of Fe^{59} in rats with emphasis on site of excretion, and study of menstrual blood loss utiliz-

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ing erythrocytes tagged with Cr^{51} and Fe^{59} .

HAHN, JOHN F., Ph.D., Associate Professor, Department of Psychology, University of Virginia, Peabody Hall, University, Virginia. Electrical and adequate stimulation of cutaneous senses in man.

HALPERN, LAWRENCE M., Neuropharmacologist, Neurobiology Laboratory, Lederle Laboratories, Pearl River, New York. Stimulation and recording of evoked responses from both neuronally isolated and intact cerebral cortex; determination of the selective effects of antiepileptic drugs on such a preparation. (This work is being done using chronically implanted stimulation and recording electrodes and an independently variable biphasic square wave stimulator, with suitable low level recording techniques.)

HAMASAKI, DUCO I., Ph.D. (Ed. 1), Junior Research Physiological Opticist, Department of Optometry, University of California, Berkeley 4, California. Electrophysiological investigation of the posterior accessory optic tract--transpeduncular tract, and recording of electrical potentials from this visual pathway in order to learn the possible function of this pathway.

HAMBY, JAMES E., Jr., Bio-electronics Technician, Department of Psychiatry, College of Medicine, J. Hillis Miller Health Center, The University of Florida, Gainesville, Florida. Electroencephalograph and other bio-electric phenomena during sleep.

HANCE, ANTHONY J., Research Associate, Department of Pharmacology, Stanford University School of Medicine, Palo Alto, California. Studies on the action of drugs on the electrical activity of the central nervous system of the mammal; techniques involve recording of bioelectronic potentials from superficial and deep structures of the brain and electrical stimulation of similar areas, and attempts to quantify data to enable comparative drug effects to be assessed; this includes the initial design of an experiment to draw out the required data and later the analysis of material so obtained. (Statistical methods on measurements of amplitudes and latencies are presently the only feasible means of achieving our goal. Computer techniques are being investigated for the analysis of both evoked potentials and ongoing brain electrical activity.)

HANDLER, PABLO, Electronic Technician, Departamento de Biofísica, Facultad de Medicina, and Laboratorio de Neurofisiología, Instituto de Neurología, Hospital de Clínicas Piso 2, Montevideo, Uruguay. Magnetic tape recording of biological phenomena; evoked potential detection by averaging; correlation methods, and image processing using special scanning systems.

HANFF, GEORGE E., B.S., Human Factors Scientist, Human Engineering and Maintenance Design Department, Lockheed California Company, Burbank, California. Decompression studies to 45,000 to 50,000 feet; spacecraft environmental studies; space suit development, and algae system research.

HANIFAN, DONALD T., M.A., Assistant Vice President and Associate Director, Santa Monica Division, Dunlap and Associates, Inc., 1532 Third Street, Santa Monica, California. Work leading to the construction of a computer programmed, non-steady state mathematical model of the cardiovascular, respiratory and related systems, and a technique to provide a means of predicting response as a function of time to single or combined continuously varying gaseous tensions, acceleration and thermal stresses.

HANSON, JOHN A., Research Associate, Institute for Psychological Research, Tufts University, Medford 55, Massachusetts, Electromyography and its behavioral correlates.

HARGENS, C. W., Technical Director, Electrical Engineering Division, The Franklin Institute, Philadelphia 3, Pennsylvania. Glaucoma detection (determination of intraocular pressure by electronic means); vibration techniques to measure the viscoelastic moduli of the intact eye and other tissues; telemetry; sensors for various human and small animal body functions, and problems of the blind and rehabilitation developments involving the practice of engineering or the physical sciences generally.

HARRINGTON, ROBERT W., Ph.D., Manager, Bio-Medical Systems Department, System Development Corporation, 2500 Colorado Avenue, Santa Monica, California. The application of computer based information processing to technical and administrative problems in the life sciences and medicine; machine processing of epidemiological data for convenient storage and rapid retrieval, and training of the human operator in man-machine linked systems.

HARRIS, DOUGLAS H., Ph.D., Research Specialist, Advance Systems, Autonetics, A Division of North American Aviation, Autonetics Research Center, 3400 East Anaheim Road, Anaheim, California. Matching human capabilities with those of digital computers for optimally carrying out functions in complex systems, and development of aids and procedures for classifying targets obtained on

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sonar displays--development of an integrated classification console.

HARRIS, JOHN B., M.D. (Ed. 1), Assistant Clinical Professor of Medicine, Department of Medicine, University of California Medical Center, San Francisco 22, California. Transport of electrolytes across the gastric mucosa in vitro.

HARRIS, R., M.D., Consultant Physician, Physical Medicine Department, The Devonshire Royal Hospital, Buxton, Derbyshire, England. Radioactive sodium clearance studies from joints in human; electromyography and electrodiagnostic procedures in neurological disorders and in muscular dystrophy.

HARRIS, RUE W., Ed.D., Head, Experimental Medical Research Support Center, Bio-Medical Systems Department, System Development Corporation, 2500 Colorado Avenue, Santa Monica, California. Use of electronic instrumentation, mathematical modeling, and experimental design in medical research.

HARRISON, FRANK, M.D., Ph.D., Professor of Anatomy and Associate Dean, Department of Anatomy, The University of Texas Southwestern Medical School, Dallas 35, Texas. Studies in neurophysiology and neuropharmacology using electrical stimulating and recording techniques.

HARTMAN, BRYCE O., Ph.D. (Ed. 1), Chief, Medical Psychology, Neuropsychiatry Branch, School of Aviation Medicine, USAF Aerospace Medical Center, Brooks AFB, Texas. Proficiency upon sudden awakening; primary emphasis is on proficiency measurement, but bioelectrical measurements (GSR and body temperature) are used to assess arousal and sleep states, and bioelectrical techniques for assessing arousal states--a multi-element approach to bioelectric measurement, using GSR, EEG, EKG, EMG, eye movement, body temperature, etc., all being developed for telemetering.

HASWELL, DAVID B., B.S., Head, Physiological Monitoring Group, Bio-Dynamics, Inc., One Main Street, Cambridge, Massachusetts. Physiological instrumentation; life support studies; data acquisition systems, and telemetry.

HAWKINS, W. B. (Ed. 1), Entomologist, Communicable Disease Center, Technical Development Laboratories, U.S. Public Health Service, 15 Pinewood Avenue, Savannah, Georgia. Mode of action of insecticides as related to effect on nervous system.

HAYNES, RICHARD C., Electroencephalographic Technician, Spring Grove State Hospital Research Department, Spring Grove State Hospital, Box 3235, Catonsville 28, Maryland. EEG studies of activating agents and procedures involving experimental drugs.

HEADLEY, ROBERT N., M.D. (Ed. 1), Project Engineer, Protective Equipment Section WWRDL-1, Aerospace Medical Division, WADD, Wright-Patterson Air Force Base, Dayton, Ohio. Measurement of human response to brief acceleration, primarily to determine man's tolerance to abrupt deceleration as governed by magnitude, rate of onset, duration, body orientation, support and restraint.

HEATH, ROBERT GALBRAITH, M.D., Professor of Psychiatry and Neurology, and Chairman, Department of Psychiatry and Neurology, Tulane University School of Medicine, 1430 Tulane Avenue, New Orleans 12, Louisiana. Digital computer analyses of EEGs, and telemetering and processing of physiological data.

HEFFERLINE, RALPH F., Ph.D. (Ed. 1), Associate Professor, Department of Psychology, Columbia University, New York 27, New York. Covert response investigation (reinforcement theory application where the response is so small as to be detectable only with high amplification); "set" as measurable contraction in a number of muscles or muscle groups, and "consciousness" as operant response to stimuli produced by covert behavior.

HELVEY, T. C., Ph.D., Associate Professor (Biophysics), Department of Biological Sciences, University of South Florida, Tampa, Florida. Electronically induced sleep; development in "tattoo circuits," and feed-back of muscle action potentials into the brain and its effects on psychomotor and transfer functions.

HELVEY, WILLIAM N., M.D. (Ed. 1), Acting Chief, Space Environmental and Life Sciences, Applied Research and Development, Republic Aviation Corporation, Farmingdale, New York. Effect of simulated and actual space conditions (zero-gravity, acceleration, noise, vibration, psychological effects) on EEG, ECG, EMG, and GSR.

HENDLER, EDWIN, Ph.D., Superintendent, Life Sciences Research Division, Air Crew Equipment Laboratory, Naval Air Material Center, Philadelphia 12, Pennsylvania. Measurement of bioelectric potentials of subjects in simulated space and airborne environments; measurement of temperature sensation and thermal properties of tissues.

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HENNEMAN, ELWOOD, M.D., C.M., Assistant Professor, Department of Physiology, Harvard Medical School, 25 Shattuck Street, Boston 15, Massachusetts. Electrophysiology of spinal cord, nerve and muscle.

HENRY, CHARLES E., Director, EEG Laboratory, Institute of Living Hartford, Connecticut. Corticography and depth EEG; intensive clinical EEG; long term serial study of EEG in old age and behavior disorders in children and young adults.

HENRY, JAMES F., M.D., Ph.D. (Lt. Col., USAF, MC), Head, Biomedical Branch, NASA Manned Spacecraft Center, Houston, Texas. Electrocardiography and electroencephalography with both superficial and deep electrodes in animals exposed to rocket flights.

HENSCHKE, ULRICH K., M.D., Ph.D., Associate Attending Radiation Therapist and Associate Professor of Clinical Radiology, Department of Radiation Therapy, Memorial Sloan-Kettering Cancer Center, 444 East 68th Street, New York 21, New York. Therapeutic and diagnostic use of radioisotopes.

HERON, WOODBURN, Ph.D., Associate Professor, Department of Psychology, McMaster University, Hamilton, Ontario, Canada. Micro-electrode studies of visual perception, and studies of sleep in fish and birds.

HERTZLER, EMANUEL C., Ph.D., Professor of Biology, Department of Biology, University of Michigan, Dearborn, 4901 Evergreen Road, Dearborn, Michigan. Peripheral nerve, sucrose gap, and sympathetic ganglia.

HERVEY, JOHN P., M.S., Senior Electronic Engineer, Electronics Laboratory, Rockefeller Institute, Box 85, Woods Hole, Massachusetts. Amplifiers for bio-electric potentials; systems for data display and recording, and systems for programming stimuli.

HEWITT, WILLIAM F., Ph.D., Professor of Pharmacology, Director of Research Affairs, College of Osteopathic Medicine and Surgery, 720 Sixth Avenue, Des Moines 9, Iowa. Electrocardiography (as sign of defective metabolism of fat in rat); possible fat-metabolism participation in electrogenesis (muscle, nerve), and electromyography as emotional correlate and as sign of segmental structural abnormality.

HICHAR, JOSEPH K., Ph.D., Dean of Science and Professor of Biology, Department of Biology, Parsons College, Fairfield, Iowa. Multi-channel pulse height analysis of nervous system electrical activity; effects of picrotoxin and related compounds on spontaneous electrical activity of the crustacean central nervous system.

HIGINBOTHAM, NOE, Professor, Department of Botany, Washington State University, Pullman, Washington. Measurement of transmembrane electropotentials of cells of higher plants as related to ionic regulation.

HILL, RICHARD M., Assistant Professor, Department of Physiological Optics and Optometry, University of California, Berkeley 4, California. Single cell responses of the visual system of the rabbit to monochromatic light on the retina, and the receptive field characteristics of retinal ganglion cells of the animal.

HILLE, HARALD K., E.E., Electronic Engineer, Aerospace Medical Laboratories, Bio Acoustic Branch, Wright-Patterson Air Force Base, Ohio. Investigation of biodynamic environments experimentally and theoretically, and design and development of special instrumentation to study interactions of man with his biodynamic environment during all phases of aerospace flight operations.

HINCHLIFFE, H. A. (Ed. 1), Senior Electronic Technician, Biomechanics Laboratory, University of California Medical Center, San Francisco 22, California. Electromyography; electroneurophysiology; energy expenditure, and motion studies.

HIND, J. E., M.D., Associate Professor of Neurophysiology, Laboratory of Neurophysiology, University of Wisconsin Medical School, Madison 6, Wisconsin. Electrophysiology of the auditory nervous system including studies with microelectrodes and implanted arrays of macroelectrodes; instrumentation for auditory stimulus generators and a digital counter system for measurement of the latency and number of spikes discharged by single neurons, and the use of general purpose digital computers (CDC 160 and 1604) for analysis of single neuron data is currently being implemented.

HIRSCH, FREDERIC G., M.D., Associate Physician, Health and Biomedical Divisions, Argonne National Laboratory, 9700 South Cass Avenue, Argonne, Illinois. Response of various ocular tissues to electromagnetic radiation and comparison with the response of the same tissues to ionizing radiations, and correlation of various types of cataract produced by various portions of EM spectrum.

- HIRSCH, JACOB I., M.D., Instructor, Department of Medicine, New York University School of Medicine, 550 First Avenue, New York 16, New York. Electrical conductivity of the torso; sound conduction in the torso, and computer diagnosis of cardiovascular diseases.
- HISS, ROLAND G., Capt., USAF (MC), (Ed. 1), Chief, USAF, ECG Library, Internal Medicine, Box SAM 2327, USAF Aerospace Medical Center, Brooks AFB, Texas. Analysis of serial electrocardiograms involving assessment of QRS and T forces by spatial methods to validate the premise that the total quantitative voltage of myocardial excitation and recovery decreases dramatically with age.
- HIKSON, W. CARROLL, Electronic Scientist, Head, Medical Electronics Branch, U.S. Naval School of Aviation Medicine, U. S. Naval Aviation Medical Center, Pensacola, Florida. Design and development of Aerospace Bioinstrumentation systems involving the collection, signal-conditioning, telemetry, display, storage, and analysis of electrophysiological data; development of theoretical and experimental techniques to mathematically describe the biophysics of the human labyrinth; development of nystagmus data collection and analysis techniques, and design of instrumentation systems for ballistocardiography measurements in a weightless environment.
- HOAGLAND, HUDSON, Ph.D. (Ed. 1), Executive Director, Worcester Foundation for Experimental Biology, 222 Maple Avenue, Shrewsbury, Massachusetts. Direction of investigations of biochemical aspects of the psychoses with special reference to the mechanism of action of drugs of interest in psychopharmacology, including studies of electrical properties of the mammalian C.N.S. and of effects of serotonin and other biogenic amines on both spontaneous and evoked potentials at various levels of the brain in cats and rabbits. Other bioelectric studies involve local radiation damage on brain areas and also a systematic investigation of evoked cerebellar potentials. These studies are being carried out by Dr. Werner Koella and Dr. Charles Levy and students.
- HOCKADAY, WILLIAM J., M.D., Assistant Professor, Department of Psychiatry, University of Louisville, School of Medicine, 323 East Chestnut Street, Louisville 2, Kentucky. Electrophysiological correlates of behavior in animals; characteristics of evoked potentials in auditory system (using tones).
- HOFFMAN, BRIAN F., M.D. (Ed. 1), Professor, Department of Physiology, State University of New York, Downstate Medical Center, 450 Clarkson Avenue, Brooklyn 3, New York. Transmembrane potentials of single cardiac fibers; ionic basis of electrical activity of cardiac muscle, and electrical activity of specialized cardiac fibers (sinoatrial) and atrioventricular nodes, and His-Purkinje system.
- HOFFMAN, JOSEPH G. (Ed. 1), Professor, Department of Physics, University of Buffalo, 3435 Main Street, Buffalo 14, New York. Measurement of induced emf during flow of liquids through a magnetic field; thermal noise in aqueous solutions.
- HOFFMAN, JULIUS, M.D., Associate Professor, Graduate School, Ohio State University, 318 East State Street, Columbia 15, Ohio. Electron microscopy of nervous system elements and genetics.
- HOGAN, TERENCE P., M.A., Psychology Trainee, Psychology Service, Veterans Administration, Richmond, Virginia. The effect of the reduction of sensory input on decision-making under conditions of risk in an effort to ascertain whether performance will show an increment or decrement after sensory deprivation.
- HOGGATT, AUSTIN C., Ph.D., Professor of Business Administration, Business School, University of California, Berkeley 4, California. Digital recording and computer analysis of galvanic skin response (GSR) in laboratory experiments involving economic games.
- HOLDEN, EDWARD ATWILL, Jr., M.A., Research Associate, Psychological Research in Mental Retardation, Edward R. Johnstone Training and Research Centre, Psychological Research Department, Bordentown, New Jersey. Research on vigilance, retinal rivalry, tracking, temporal-spatial stimulus integration, autonomic temporal stability studies, cross-modal concept formation. Assist in switching circuit design and operant programming required for above and for Necker Cube reversal studies with pigeons; personal research interests with intravenous reinforcement, interoceptive discrimination, and subcortical recording under differential motivation; research instrumentation; surgical, physiological and pharmacological techniques, both academic and industrial, and USN electronics school.
- HOLDEN, GEORGE R., B.S., Research Scientist, Human Performance Requirements Branch, Biotechnology Division, Ames Research Center, N.A.S.A., Moffett Field, California. Instrumentation in field of respiration, visual, and cardiovascular systems with the subject under acceleration stress in a centrifuge.

- HOLLANDER, PHILIP B., Ph.D., Senior Engineer, Radio Corporation of America, Astro-Electronic Division, Advanced Systems and Analysis, Man-Machine Integration, Box 800, Princeton, New Jersey. Cellular potentials of cardiac and adipose tissue, and bioelectric measurements of "life" processes; programming the interpretation and its recordings into computers to automatize and accelerate its definition, and the machine analysis of medically oriented bioelectric potentials in order to adequately monitor man in "real-time."
- HOLMES, JOSEPH H., M.D., D.Med.Sc., Professor of Medicine, Department of Medicine, University of Colorado School of Medicine, 4200 East Ninth Avenue, Denver 20, Colorado. Ultrasonic diagnostic echo techniques for visualization primarily of soft tissue structures within the body, including the echoencephalograph, echocardiograph, and somascope.
- HOLMES, WILLIAM S. (Ed. 1), Staff Scientist, Physics Division, Cornell Aeronautical Laboratory, Inc., 4455 Genesee Street, P.O. Box 235, Buffalo 21, New York. Perceptron concepts and applications research.
- HOLTER, NORMAN J., M.S., M.A., Research Director, The Holter Research Foundation, Inc., 25 West Sixth Avenue, Helena, Montana. Telemetry of biological data; long term continuous electrocardiography of active subjects; methods for the rapid analysis of voluminous electrocardiographic data; electronic and magnetic nerve field phenomena, and general electrophysiology.
- HON, EDWARD H., M.D., Professor, Department of Obstetrics and Gynecology, Loma Linda University, 1720 Brookline Avenue, Los Angeles 33, California. Fetal electrocardiography and fetal heart rate; uterine potentials during labor, and data reduction and correlation methods.
- HOPKINS, ROBERT C., M.S.E.E., M.E., Electronics Systems Engineer Senior, Bio-Medical Systems Department, System Development Corporation, 2500 Colorado Avenue, Santa Monica, California. Techniques of system simulation; formalization of the procedures (description, analysis, and synthesis) in the system design process; application of these procedures to various segments of hospital information processing; system design and test; electronic instrumentation, and computer based modeling of management control systems.
- HOROWICZ, PAUL, Ph.D., Associate Professor of Physiology, Department of Physiology, Duke University Medical Center, Durham, North Carolina. Electrical, ionic, mechanical, and chemical properties of muscle as effected by the physical and chemical state of muscle.
- HORTON, GRANVILLE EUGENE, M.D., Director, Radioisotope Laboratories, Radioisotope and Nuclear Medical Department, Caney Valley Memorial Hospital, 503 North Resident, Wharton, Texas. Absorption and metabolism of carbohydrates using C^{14} labeled compounds as tracers; cerebral blood flow studies and the effects of various drugs (such as isoxuprine) on cerebral circulation using I^{131} labeled diiodase as a tracer, and myocardial blood flow and the influence on blood supply to the myocardium by various drugs (particularly the nitrates).
- HORVATH, FRED E. (Ed. 1), Research Assistant, Department of Psychology, Mental Health Research Institute, University of Michigan, Ann Arbor, Michigan. Recording from chronically implanted electrodes in subcortical areas. (The situation is Pavlovian-type with an aversive stimulus of an air puff to the cat's face, and a CS of a flashing light.)
- HORVATH, WILLIAM J., (Ed. 1), Research Physicist, Mental Health Research Institute, University of Michigan, Ann Arbor, Michigan. Measurement of response variance in single nerve fibers to determine information channel capacity of a neuron.
- HOSHIO, TOMUO, Ph.D., Assistant Professor, Department of Physiology, Western Reserve University School of Medicine, Cleveland 6, Ohio. Microelectrode studies of transmission in cardiac muscle; automatic short-circuiting of epithelial membranes, and analog simulation of physiological models.
- HOUSEKNECHT, THOMAS R., M.D., Psychiatric Research Resident, Department of Basic Research, Eastern Pennsylvania Psychiatric Institute, Henry Avenue and Abbottsford Road, Philadelphia 29, Pennsylvania. Correlation techniques in the study of peripheral nerve activity (sensory and autonomic systems), and EEG studies during sleep.
- HOWLAND, DANIEL, Ph.D., Director, Systems Research Group, Engineering Experiment Station, The Ohio State University, Columbus 10, Ohio. Development and testing of a theoretical measure of patient care; information about patient states, and changes in these states in time, and measurement and recording of these states electronically to reduce the problem of observer bias.

Howland

- HOWLAND, WILLARD J., M.D., Director, Department of Radioisotopes, Ohio Valley General Hospital, Wheeling, West Virginia. Detection of esophageal varices through radioisotopic methods.
- HOYLE, GRAHAM, D.Sc., Professor of Biology, Department of Biology, University of Oregon, Eugene, Oregon. Elucidation of mechanism of excitation-contraction coupling, especially in arthropod muscle; neuromuscular transmission in invertebrates studied with intracellular electrodes, and elucidation of neural mechanisms underlying behavior in insects using implanted leads.
- HUBEL, DAVID H., M.D., Associate Professor in Neurophysiology and Neuropharmacology, Department of Pharmacology, Harvard Medical School, 25 Shattuck Street, Boston 15, Massachusetts. Neurophysiology of mammalian visual systems; microelectrode recording from retina, lateral geniculate body, and cerebral cortex of cats and monkeys.
- HUFFNER, JACK R., M.A., Manager, Human Factors Engineering, Department of Engineering, ACF Electronics Division, ACF Industries, Inc., Riverdale, Maryland. Human performance measurement; human decision making, and training research.
- HUG, OTTO, M.D., Professor für Strahlenbiologie, Direktor des Strahlenbiologischen Instituts, Universität München, Bavaria 19, Munich 15, Germany. Effects of ionizing radiation on electrical properties of cells.
- HUGHES, JOHN R., M.A., Ph.D., Chief, EEG and Neurophysiology and Assistant Professor, Department of Neurology, Meyer Memorial Hospital, State University of New York at Buffalo, 462 Grider Street, Buffalo 15, New York. Frequency analysis of rhythmic activity from olfactory bulb of mammals; recording of evoked potentials from mammalian cerebral cortex.
- HUME, DAVID M., M.D. (Ed. 1), Professor, Department of Surgery, Medical College of Virginia, 1200 East Broad Street, Richmond, Virginia. Recording fetal EKG's and EEG's (with Drs. Benjamin Jackson and Richard Egdahl).

I

- INGRAM, W. R., M.D. (Ed. 1), Professor and Head, Department of Anatomy, State University of Iowa, College of Medicine, Iowa City, Iowa. Experimental EEG; evoked potential recording; microelectrode recording; recording devices for behavioral apparatus, and stimulation.
- IOWA STATE UNIVERSITY, Ames, Iowa. Iowa State University has developed what is believed to be the first and most comprehensive academic program in Biomedical Electronics of its kind in the world. This program has been in operation as a formal effort since 1957, and it includes special graduate courses of instruction, numerous special research projects, and the construction of a new \$400,000 laboratory building. The design of the laboratory building was reported at the first U. S. Conference on "Educational Frontiers in Biomedical Engineering" at Burlington, Vermont, in May, 1960. Some details of the overall program were presented at the "Third International Conference on Medical Electronics" at London, England, in July, 1960. (Victor W. Bolie, Chairman, Medical Electronics.)

J

- JACOBI, THOMAS H., Ph.D., Research and Development Project Director, Medical Electronics, Department of Research, Advanced Concepts Laboratory, The Emerson Electric Manufacturing Company, 8100 West Florissant Avenue, St. Louis 36, Missouri (Station 2614). Digital blood pressure sensor; intensive care patient monitoring system; development of electron spin resonance equipment for clinical and research use; applications research with electron spin resonance equipment; telemetry of electrocardiographs, temperature, pulse rate, and respiration rate, and effects of laser radiation on biological specimens.
- JACOBS, JOHN E., Ph.D., Professor, Department of Electrical Engineering, Northwestern University, Evanston, Illinois. Transducers, bionics, and instrumentation.
- JACOBMEYER, HAROLD T., Head Electronic Engineer, Electronics and Space Division, Emerson Electric Manufacturing Company, 8100 West Florissant Avenue, St. Louis 36, Missouri. Physiological and psychophysiological instrumentation with applications to patient monitoring and diagnostic implementation, principally involving the use of telemetry in clinical and experimental physiology.
- JACOBSON, AHREN, M.S., Assistant Professor of Radiological Physics, Department of Radiology, University of Louisville School of Medicine, 323 East Chestnut Street, Louisville 2, Kentucky. Dosimetry and x- and gamma ray spectroscopy in radiological physics, and health physics.

Jones

- JAHN, THEODORE L., Ph.D., Professor, Department of Zoology, University of California at Los Angeles, 405 Hilgard Avenue, Los Angeles 24, California. Mechanism of origin of bioelectromotive force, and effect of electric current on micro-organisms.
- JAIMET, CHARLES H., M.D., Professor of Nuclear Medicine, Department of Medical Research, McMaster University and Head, Department of Radioisotopy, St. Joseph's Hospital, Hamilton, Ontario, Canada. Activation analyses (neutrons from nuclear reactor) on human blood and urine, and tracer studies on malignancy, using anticarcinogenic drugs--short-lived isotopes.
- JANJIGIAN, EDWARD R., Ph.B., M.D., Chief, Neurology and Psychiatry Service, Veterans Administration Hospital, Wilkes-Barre, Pennsylvania. Electrophysiologic status of neuropsychiatric patients; evaluation of a wide range of objective psychophysiological measurements in a variety of controlled situations to appraise the interrelationships of human functional and electrophysiologic phenomena; and designs of additional electronic systems for detection, recording, and measurement and analysis of these electrophysiologic data.
- JASPER, HERBERT H., Ph.D., D.ésc., M.D., Professor of Experimental Neurology, Department of Neurology and Neurosurgery, McGill University, 3801 University Street, Montreal, P.Q., Canada. The electrical activity of the central nervous system in man and in experimental animals.
- JERVIS, GEORGE A., M.D. (Ed. 1), Director of Psychiatric Research, Department of Mental Hygiene, New York State, Letchworth Village, Thiells, Rockland County, New York. Electroencephalographic changes in topotomized patients; study of electromyogram in certain forms of mental retardation, and experimental study of brain potential in animals given aromatic metabolites.
- JOHN, E. ROY., Ph.D., Professor and Director, Center for Brain Research, The University of Rochester, River Campus Station, Rochester 20, New York. Recording from chronically implanted electrodes during elaboration of differential conditioned responses to peripheral stimuli; studies of changes in propagation of direct electrical stimuli to various brain areas as conditioned responses are established to such stimuli, and development of data analysis methods based on factor analytic treatment of configurations of average response waveforms.
- JOHNSON, GEORGE L. (Ed. 1), Psychophysiological Research Assistant, Department of Psychiatry, School of Medicine, University of North Carolina, Chapel Hill, North Carolina. Galvanic skin response and EEG correlations in sedation thresholds; galvanic skin response as a measure of patient-therapist interaction; EEG studies of psychotic children under normal behavioral conditions; galvanic skin responses of mentally retarded children; polygraphic studies of drug action, and polygraphic studies of heart disease.
- JOHNSON, LAVERNE C., Ph.D., Head, Psychophysiology Branch, U.S. Navy Medical Neuropsychiatric Research Unit, San Diego 52, California. The role of abnormal cortical activity with respect to cognitive, motor, perceptual functioning and the relationship of C.N.S. and A.N.S. activity; cognitive functioning and autonomic activity will be measured during photically induced abnormal EEG activity and during spontaneous inter-seizure abnormal discharge, and future research on cortical and autonomic adaptation and the relationship levels of "arousal" to performance in a psychiatric and nonpsychiatric population.
- JOHNSTON, EUGENE B., D.O., Senior Member Technical Staff, Bioelectronics Department, ITT Federal Laboratories, 15151 Bledsoe Street, San Fernando, California. Development, design, and test of physiological transducers for a monitoring system for critical patients, medical or surgical, for hospitals; development of electrical phoresis techniques for ion membrane transport in an artificial kidney to dialyze human blood, and electronic modeling of sensory pathways, such as the eye and ear, for property sensing and identification as used with a self-organizing computer.
- JOHNSTON, GEORGE I., B.S., Director, Research Instrument Service, University of Oregon Medical School, 3181 S.W. Sam Jackson Park Road, Portland 1, Oregon. Design of instrumentation for support of clinical and biological research programs.
- JOHNSTON, JOSEPH B., M.D., Guest Scientist, Division of Microbiology, Naval Medical Research Institute, Bethesda, Maryland. Radiation biology with specific interest in the influence of provirus infection upon cellular resistance to radiation damage.
- JONES, ELIZABETH, M.D., Instructor in Neurology, Department of Neurology, University of Michigan Medical Center, 1405 East Ann Street, Ann Arbor, Michigan. Electroencephalographic research with special electrodes.
- JONES, FRANK PIERCE, Ph.D., Research Associate, Institute for Psychological Research, Tufts University, Medford 55, Massachusetts. The electromyography of posture; the role of neck muscles in

postural responses.

JOST, HUDSON, Ph.D. (Ed. 1), Professor, Department of Psychology, Arizona State University, Tempe, Arizona. Electroencephalography; autonomic nervous system, and energy levels.

JOYNT, ROBERT J., M.D., Associate Professor, Department of Neurology, State University of Iowa, College of Medicine, Iowa City, Iowa. Microelectrode studies of the supraoptic and paraventricular nuclei of the hypothalamus of the cat, and evoked potential studies of the human cerebral cortex.

JUNG, RICHARD, M.D., Professor, Abteilung für Klinische Neurophysiologie, Universität Freiburg/Br., Hansastr. 9a, Freiburg, Germany. Microelectrode recordings from the visual system (cortex, retina, geniculate) and its relation with visual sensations; microphysiology of the cortex in sleep and arousal and its relation with subcortical structures; electronystagmography in man, its disturbances in neurological diseases and their relation with vestibulo-visual functions, and EEG recordings in normal and abnormal conditions.

JURKO, MARION F., Ph.D., Research Associate, Department of Neurosurgery, Laboratory: Clinical Neurophysiology, University of Mississippi Medical Center, Jackson, Mississippi. Electrophysiological studies during and after stereotaxic surgery, and study of physiological and perception parameters in alcoholism.

JURSS, C. DARWIN, M.D., 2011 West Capital Drive, Milwaukee 6, Wisconsin. Nuclear medicine directed at thyroid gland.

JUSTISS, WILL A., Ph.D., Director, Psychophysiology Laboratory, The Justiss Psychology Center, River Road, Orange Park, Florida. Problems of obtaining EEG's on adult chimpanzees (Yerkes Laboratories of Primate Biology); treatment of lipochondrodystrophy with hydrocortisone; personality correlates of the electroencephalogram, including intellectual growth and decline, and perceptual, personality, and electrophysiological correlates of stress.

K

KADETZ, WILLIAM (Ed. 1), Supervisor, Mechanical, Electrical and Electronic Equipment, Aeromedical Laboratory, 840 South Wood Street, University of Illinois, School of Medicine, Chicago 12, Illinois. Emphasis on electronic design of components for: electromagnetic blood flowmeters, polarographic determination of oxygen, transistorized amplifier for telemetering physiological phenomena, pressure measurements, respiratory volume flow measurements, telemetry of physiological measurements.

KADO, RAYMOND T., Engineer, Anatomy (Medical Center), University of California, Los Angeles 24, California. Electrical activity of deep brain structures during environmental stress; electromagnetic flowmeter principle applications to circulation, and electrical impedance characteristics of nervous tissue.

KAHLSON, DONALD ERIC, B.Sc., Engineer, U.S. Atomic Energy Commission, Oak Ridge, Tennessee. Cancer therapy utilizing radioisotopes; medical and surgical apparatus, instruments, and hardware.

KAHN, ALAN R., M.D., Director of Physiological Research, Offner Division, Beckman Instruments, Inc., 3900 River Road, Schiller Park, Illinois. Direction of a program to develop techniques and instrumentation for testing and monitoring physiologic and pathologic responses during a great variety of activities and in extremes of environment; automatic monitoring devices for the cardiovascular system; techniques for measuring vestibular responses, and instrumentation for clinical, research, and aerospace applications.

KAHN, ARTHUR, Ph.D., Advisory Psychologist, Computation and Control, Westinghouse Electric Corporation, P.O. Box 746, Baltimore 3, Maryland. Muscle potentials as variables in tracking behavior.

KAMIYA, JOE, Ph.D. (Ed. 1), Assistant Professor, Department of Psychology, University of Chicago, 5728 Ellis Avenue, Chicago 37, Illinois. EEG of sleep and waking; magnetic tape recording of bioelectric signals (EEG, GSR, respiration, eye movement) using low cost AM techniques; response rate analysis (operant rate), and EEG frequency analysis.

KANNO, YOSHIOBU, M.D., Assistant, Department of Physiology, Tokyo Medical and Dental University, 3 Chome 1, Bunkyo-Ku, Tokyo, Japan. Analysis of the evoked potential by sound stimulation from the primary auditory cortex in cat.

KANTER, STANLEY S., M.D., Senior Psychiatrist, Massachusetts Mental Health Center, 74 Fenwood Road, Boston, Massachusetts. Psychophysiological correlates of psychotherapy.

KANTROWITZ, ADRIAN, M.D., Director, Cardiovascular Surgery, Department of Surgery, Maimonides Hospital of Brooklyn, 4802 Tenth

Avenue, Brooklyn 19, New York, and Associate Professor of Surgery, Department of Surgery, State University of New York, College of Medicine, 450 Clarkson Avenue, Brooklyn, New York. Electronic instrumentation for automation of pump oxygenator for open heart surgery; electronic circuitry in physiologic systems, and a completely implantable cardiac pacemaker, currently used in clinical medicine.

KAO, CHIEN-YUAN, Associate Professor, Department of Pharmacology, State University of New York, Downstate Medical Center, 450 Clarkson Avenue, Brooklyn 3, New York. Bioelectric properties of smooth muscles.

KAPLAN, ERVIN, M.D., Chief, Radioisotope Service, Veterans Administration Hospital, Hines, Illinois. Neutron activation analysis of biologic material; use of multichannel analyzer to determine volume of human blood cells, and development of a continuous flow perfusion dialysis system.

KAPLAN, HARRY LELAND, M.D., Staff Consultant, Diagnostic Clinic of Houston, and Clinical Associate Professor of Medicine, Baylor University, College of Medicine, Houston, Texas. Endocrinology with especial interest in diseases of the thyroid, use of radioisotopes, etc.

KAPLAN, SOLOMON D., Ph.D., Chief Psychologist, Psychology Department, Lincoln State Hospital, Box 271, Lincoln, Nebraska. Continuous electronic monitoring of systolic blood pressure and simultaneous recording of brightness of light in a visual test of effects of autonomic medication on warm and cool colors.

KARP, ERIC, B.S. (Ed. 1), Research Assistant, Department of Experimental Psychiatry, Hillside Hospital, 75-59 263 Street, Glen Oaks, Long Island, New York. Relations between motor and perceptual patterns and EEG patterns in psychiatric patients, especially with chronic administration of drugs.

KARRER, RATHE, M.A., Research Psychologist, Research Department, The Training School at Vineland, Vineland, New Jersey. Relations between autonomic functions and behavior, both sensory and motor, and generation of electrical potentials by the organism.

KATSUKI, YASUJI, M.D., Professor, Department of Physiology, Tokyo Medical and Dental University, Bunkyo-Ku, Tokyo, Japan. Single neuron activity at several levels of auditory pathway of cat; electric activity of cortical auditory neurons of unanesthetized cat and monkey; physiology of hearing in insect, and activity of cortical neurons of cat during sleep.

KATZ, MILTON S., Ph.D., Head, Communications Psychology Division, Department of Human Engineering, U.S. Naval Training Device Center, Port Washington, New York. Recording and processing human surface electrical potentials, including electro-oculogram and electromyogram; research into behavioral correlates of evoked potentials and the applicability of biopotential signals to control circuits.

KATZ, RUTH A., Laboratory Supervisor, Psychophysiology Laboratory, Department of Medical Research, Spring Grove State Hospital, Catonsville 28, Maryland. Solving the problems of instrumentation and technique for the precise recording of parotid flow in man; verification of the Pavlovian theory with respect to higher nervous activity in man; development of an objective method of evaluating changes in the mental and emotional state of the individual, and devising a mathematical model that will represent variations in the parotid flow and thus provide indices of the internal milieu.

KATZMAN, ROBERT, M.D., Associate Professor, Department of Neurology, Albert Einstein College of Medicine, Eastchester Road and Morris Park Avenue, New York 61, New York. Relationship of electrolytes of mammalian nervous system to electrical activity; D. C. potentials of cortex: study of mechanisms of origin; personality correlates of EEG, and use of evoked response recorded from scalp to study perceptual mechanism, and localization of lesions in sensory pathways.

KAUFMAN, ROGER A., M.A., Senior Scientist, Training Systems, Bolt Beranek and Newman, 101 Park Avenue, Room 301, New York, New York. Training and learning simulators.

KAWIN, BERGENE, Ph.D., Principal Scientist and Assistant Chief, Radioisotope Service, Veterans Administration Hospital, Fort Howard, Maryland. Transmission and evaluation of radioisotope scanner intelligence by computer techniques.

KEASLING, HUGH H., Ph.D. (Ed. 1), Professor, Department of Pharmacology, State University of Iowa, College of Medicine, Iowa City, Iowa. Anticonvulsant drugs and cortical after-discharge, and influence of analgesics on potentials in C.N.S.

KELLER, DANIEL M., M.D., Ph.D. (Ed. 1), Assistant Professor, Department of Physiology, University of Tennessee Medical School,

Kennington

894 Union Avenue, Memphis 3, Tennessee. Suitable electrodes for prolonged wear; electrical potentials of renal tubule cells; nerve and muscle action potentials and chemical correlates.

KENNINGTON, GARTH S., Ph.D., Professor of Zoology, Department of Zoology, University of Wyoming, Laramie, Wyoming. Radiation biology, particularly radiation ecology involving effects of chronic irradiation on invertebrate populations.

KERR, FREDERICK W. L., M.D., Assistant Professor of Neurosurgery, Section of Neurological Surgery, Mayo Clinic, 200 First Street, Southwest, Rochester, Minnesota. Evoked potential and single unit studies of craniofacial pain pathways; autonomic pathways in the spinal cord, and electrophysiologic studies.

KIANG, NELSON YUAN-SHENG, Ph.D., Staff Member, Research Laboratory of Electronics, Massachusetts Institute of Technology, 20B-221, Cambridge, Massachusetts. Electrophysiology of the auditory system.

KILLAM, KEITH F., Jr., Ph.D., Associate Professor, Department of Pharmacology, Stanford University Medical School, Palo Alto, California. Research directed toward an understanding of the mechanisms by which the brain receives, correlates and acts upon information and of the site and mechanism of action of pharmacological agents which alter central neural function; methods include recording of electrical potentials, analysis of bioelectric data and studies of behavioral correlates of bioelectric phenomena.

KIMMEL, H. D., Ph.D., Associate Professor, Department of Psychology, University of Florida, Gainesville, Florida. Human conditioning (both classical and instrumental) of the galvanic skin response.

KIMURA, ROBERT (Ed. 1), Research Assistant, Department of Otolaryngology, University of Chicago, 950 East 59th Street, Chicago 37, Illinois. Effect of mild and intense sound on blood flow in the cochlea of the guinea pig; blood flow is recorded with a movie camera, and cochlear microphonics, EEG, EKG, blood pressure, and respiration are recorded simultaneously on a Grass polygraph.

KING, BRIAN D., S.M., Research Engineer, Engineering Division, Stanford Research Institute, Menlo Park, California. Tactile perception; mobility aid; insect vision, and information processing.

KING, FREDERICK A., M.D., Assistant Research Professor, Division of Neurosurgery, University of Florida, College of Medicine, Gainesville, Florida. Electrical stimulation of cortex and subcortical brain structures during learning and performance; recording of cortical and subcortical events during learning and performance.

KING, H. E., Ph.D., Chief, Experimental Psychology, Department of Psychiatry, University of Pittsburgh School of Medicine, Western Psychiatric Institute, 3811 O'Hara Street, Pittsburgh 13, Pennsylvania. Electromyographic concomitants of psychomotor function; relation of EEG to sensory parameters in vision and audition, and stimulus generalization with autonomic dependent variables of heart rate, galvanic skin response and respiration.

KING, RICHARD A., Ph.D. (Ed. 1), Assistant Professor, Department of Psychology, University of North Carolina, Chapel Hill, North Carolina. Relationship between GSR and classical conditioning, and eye movements in dreams.

KIPP, JOHN E., M.S., M.E., Assistant Professor, Department of Applied Mechanics, School of Engineering and Architecture, Kansas State University, Manhattan, Kansas. Fluid dynamics and heat transfer in extra corporeal circulation, and flow of blood in thin sheets (USPHS Grant H-5913).

KIRKEGAARD, ROGER S., M.D. (Ed. 1), Resident, Department of Ophthalmology, State University of Iowa, College of Medicine, Iowa City, Iowa. Evoked retinal and intracranial responses in the cat during vitamin A deficiency.

KLEIN, RICHARD L., Ph.D., Associate Professor, Department of Pharmacology, University of Mississippi Medical Center, 2500 North State Street, Jackson, Mississippi. Ontogenesis of transmembrane potentials from single ventricular fibers of the embryonic chick heart; the effects of physical and chemical variations in the environment, and transmembrane potentials in single cells of isolated rabbit atria with special reference to atrial fibrillation and mechanism of action of pharmacological agents.

KLEINFELD, MORRIS, M.D., Clinical Associate Professor, Department of Medicine, State University of New York, Downstate Medical Center, 450 Clarkson Avenue, Brooklyn, New York. The effect of antimetabolites on the electrical and mechanical activities of the isolated perfused heart; interested in relating metabolism to action potential; study of properties of cell membrane and its relationship to arrhythmias.

Krauthamer

KNOTT, J. R., Ph.D. (Ed. 1), Professor, Department of Psychiatry, State University of Iowa, College of Medicine, Iowa City, Iowa. Neural bases of behavior; subcortical electrical correlates of learning; autonomic and EEG variables in psychiatric disorders, and sensory deprivation.

KNOWLTON, G. CLINTON, Ph.D., Director of Research, Georgia Warm Springs Foundation, Warm Springs, Georgia. Electromyography and neuromuscular physiology.

KOELLA, WERNER P., M.D., Senior Scientist, Department of Neurophysiology and Neuropharmacology, Worcester Foundation for Experimental Biology, 222 Maple Avenue, Shrewsbury, Massachusetts. Reaction of animals to a variety of centrally active drugs; use of evoked potential techniques; patterns of feedback systems to and from cerebral cortex using evoked responses, and sensory inflow into the cerebellum using evoked responses as well as micro-electrodes.

KOENIG, HAROLD, M.D., Ph.D., Chief, Neurology Service, Veterans Administration Research Hospital, 333 East Huron Street, Chicago 11, Illinois. Electrophysiologic abnormalities induced by pyrimidine analogs in spinal cord and cerebral cortex.

KOHN, ANTHONY, M.D., Chief, Radioisotope Service, and Consulting Endocrinologist, Central Islip State Hospital, Central Islip, New York. Radioisotope diagnosis and therapy, and electronic testing of thyroid function.

KOKETSU, KYOZO, M.D., Ph.D., Associate Professor, Department of Psychiatry, University of Illinois College of Medicine, 912 South Wood Street, Chicago 12, Illinois. Studies on the fundamental mechanism of the maintenance of the resting potential as well as the production of the action potential; research work includes not only electrophysiological studies but also biochemical and biophysical studies.

KOLER, ROBERT DONALD, M.D., Professor of Medicine, Department of Experimental Medicine, University of Oregon Medical School, 3181 S.W. Sam Jackson Park Road, Portland 1, Oregon. Research in hematology and genetics.

KONECCI, EUGENE B., Ph.D., Director of Biotechnology and Human Research, Office of Advanced Research and Technology, National Aeronautics and Space Administration, 400 Maryland Avenue, SW, Washington 25, D. C. Physiological monitoring; environmental monitoring (closed ecology), and medical electronics.

KOOI, KENNETH A., M.S., M.D., Associate Professor of Electroencephalography, Department of Psychiatry, University of Michigan Medical School, Ann Arbor, Michigan. Studies of visual evoked responses in man, and electroencephalographic correlates of normal and disordered brain function.

KOPPITZ, WERNER JOSEPH, Ph.D., Research-Psychologist, Department of Pattern Recognition, IBM Research Center, Box 218, Yorktown Heights, New York. Pattern recognition; contrast phenomena; stimulation of visual processes, and application of computers in language instruction.

KORNBLUEH, IGHO HART, M.D., Medical Director, Department of Physical Medicine, The Graduate Hospital of the University of Pennsylvania, 19th and Lombard Streets, Philadelphia 46, Pennsylvania. Biometeorology; atmospheric electricity; ionization of the air, etc.; continuous recording of blood pressure; effects of static electricity, and diagnostic application of ultrasound.

KORNHUBER, HANS HELMUT, M.D., Department of Clinical Neurophysiology, University of Freiburg 1. Br., Hansastrasse 9a, Freiburg 1. Br., Germany. Cybernetics of the vestibular and optokinetic systems in man; neuronal basis of multimodal sensory convergence in the cerebral cortex of cat (microelectrode recording), and psychophysical investigations of the retinal field organization.

KORR, IRVIN M., Ph.D., Professor of Physiology and Chairman, Division of Physiological Sciences, Department of Physiology, Kirksville College of Osteopathy and Surgery, Kirksville, Missouri. Neurophysiology (autonomic nervous system); cutaneous circulation; electrical skin resistance (autonomic and thermoregulatory reflexes); somatic-autonomic reflexes, and mechanisms of trophic influence of nerves.

KRAFT, JACK A., Ed.D., Consulting Scientist--Company Planning, Department of Scientific and Product Planning, Lockheed Missiles and Space Company, D15-20, Sunnyvale, California. Development of bioastronautics/life sciences program; manned space system program planning, and advise management on life sciences matters.

KRAUTHAMER, GEORGE M., Ph.D., (Ed. 1), Research Associate, Department of Experimental Psychiatry, Hillside Hospital, 75-59 263 Street, Glen Oaks, Long Island, New York. Basic problems of neurophysiology (C.N.S., cat), and EEG recording and automatic

analysis.

KREMEN, IRWIN, Ph.D., Assistant Professor of Psychology, Department of Psychology, Michigan State University, East Lansing, Michigan. Psychophysiology of sleep and dreams, and experimental manipulation of the sleep-dream cycle.

KRIVOY, WILLIAM A., Ph.D., Assistant Professor, Department of Pharmacology, Baylor University College of Medicine, Texas Medical Center, Houston 25, Texas. Actions of drugs on d-c potentials of spinal cord and the influence of these potentials on nervous integration.

KROEGER, DONALD C., Ph.D., Associate Professor of Pharmacology, Department of Physiology - Pharmacology, Dental Branch, University of Texas, P.O. Box 20068, 6516 John Freeman, Houston 25, Texas. Membrane potentials of odontoblasts and related cell in dental pulp in vivo and in tissue culture; dorsal root potentials (cat) as influenced by drugs; depth electrode stimulation and recording in cat and monkey, and recording of autonomic and somatic correlates in animals with chronic electrode implants.

KROHMER, JACK S., Ph.D., Professor of Radiology (Physics), Department of Radiology, University of Texas, Southwestern Medical School, 5323 Harry Hines Boulevard, Dallas 35, Texas. Radiation quality and quantity measurement; spectral distributions in biological materials, and lasers and their effects on biological materials.

KROPEL, WALTER J. (Ed. 1), Electronic Engineer, Department of Experimental Psychology, Forest Glen Section, Walter Reed Army Institute of Research, Washington 12, D. C. Setting up a general purpose computer facility for processing neurological data.

KRYTER, KARL D., Ph.D., Supervisory Psychologist, Psychoacoustic Department, Bolt, Beranek, and Newman, Inc., 50 Moulton Street, Cambridge 38, Massachusetts. Effects of noise of sleep EEG responses; being used to assess the depth of sleep and reaction to sound.

KUBICEK, WILLIAM G., Ph.D., Professor, Department of Physical Medicine and Rehabilitation, University Hospitals, 860 Mayo, Minneapolis 14, Minnesota. Cardiac output; oxygen consumption rate; blood pressure; pulse rate; peripheral circulation, and electromyography.

KUBIS, JOSEPH F., Ph.D., Professor of Psychology, Department of Psychology, Graduate School, Fordham University, New York 58, New York. Evaluation of physiological indices in the detection of deception.

KUEHNENGER, WALTER, Head of Bio-Engineering Laboratories, Northrop Space Laboratories, 1111 East Broadway, Hawthorne, California. Instrumentation to observe the state of man or specimen under static, dynamic and environmental exposure.

KUMNICK, LILLIAN S., Ph.D., Research Assistant in Ophthalmology, Department of Ophthalmology, Lenox Hill Hospital, 100 East 77 Street, New York, New York. Autonomic functions, sensory processes, and pupillography.

KUPFERMANN, IRVING, (Ed. 1), Pre-doctoral Research Fellow (NIH), Department of Psychology (Biopsychology), University of Chicago, 1414 East 59th Street, Chicago 37, Illinois. Evoked potentials; recording and processing of EEG, and cochlear potentials.

KURLAND, ALBERT A., M.D., Director of Research, Department of Mental Hygiene, Spring Grove State Hospital, Box 3235, Catonsville 28, Maryland. The study of new, activating agents in electroencephalography; use of a drop recorder analogue computer research recorder in carrying out salivary flow studies in man as influenced by Pavlovian techniques; use of telemetric devices in studying physiological parameters.

KVEIM, KOLBJORN BERG, Research Assistant, Department of Psychology, Indiana University, Bloomington, Indiana. Sensitivity of somatic variables to threshold stimulation; effects of stress on stomach motility, and electrical correlates of stomach secretion.

KWASNIIEWSKI, GEORGE A., M.S., Senior Scientist, Bolt Beranek and Newman, Inc., 50 Moulton Street, Cambridge, Massachusetts. Conceptual and electromechanical design of aircraft instruments; instrumentation design for commercial and military jet aircraft; conceptual aspects of ballistic missile and manned space flight systems, e.g., Minuteman and DynaSoar, and human engineering and engineering aspects of manned space flight systems, theoretical and engineering feasibility of data flow and display, environmental control and physiological monitoring aspects for Dyna Soar.

L

LACEY, JOHN I., Ph.D., Chairman, Department of Psychophysiology - Neurophysiology, Fels Research Institute, Yellow Springs, Ohio.

Transducing, recording (both analog and digital) and computer analysis of bioelectric signals from autonomic effector organs, skeletal muscle, and EEG, in both animals and humans.

LADWIG, HAROLD A., M.D., Assistant Professor, and Director, EEG Laboratory, Creighton Memorial, Saint Joseph's Hospital, Children's Memorial Hospital, Omaha, Nebraska. Electroencephalographic studies, hypsarrhythmia and alteration of the EEG following cortisone therapy, and electroencephalographic studies of patients receiving a new anticonvulsant (M-3).

LAMBERT, EDWARD H., M.D., Ph.D., Professor of Physiology, Consultant in Physiology, Department of Physiology, Mayo Foundation and Clinic, 200 First Street, Southwest, Rochester, Minnesota. Research generally oriented toward study of neuromuscular diseases; electrical potentials of nerve and muscle are recorded for study of conduction velocity of nerves, neuromuscular transmission and derangements of muscle fibers in animals and man.

LANDA, JORGE F. (Ed. 1), B.S., M.S., Research Associate, Department of Pharmacology, Medical School, University of Washington, Seattle 5, Washington. Studies on the effect of ions and drugs on the excitation-contraction relationship in muscle.

LANDMESSER, CHARLES M., M.D. (Ed. 1), Anesthesiologist-in-Chief and Professor of Anesthesiology, Chairman of the Department of Anesthesiology, Albany Hospital and Albany Medical College, Albany, New York. EKG, EEG, arterial and venous pressures associated with cardiopulmonary by-pass and hypothermia, and blood gas and pH determinations related to these and other anesthesia problems involving cardiorespiratory functions.

LANGSLEY, DONALD G., M.D. (Ed. 1), PHS Career-Teacher in Psychiatry and Clinical Instructor in Psychiatry, Department of Psychiatry, Langley Porter Neuropsychiatric Institute, 401 Parnassus Avenue, San Francisco 22, California. Medical and behavioral correlates of bioelectronic recordings, i.e., a study of process of supervision in psychotherapy involving vocal behavior analysis, and analysis of autonomic responses on polygraph equipment with correlation study involving judgments of changes in emotional tension during supervision.

LARKS, SAUL DAVID, Professor, Department of Electrical Engineering, Marquette University, College of Engineering (Biomedical Engineering), Milwaukee, Wisconsin. Electrical activity of the uterus (electrohysterography); fetal electrocardiography; physiology of the fetus; bioelectric studies on the organ level; electrical phenomena in the embryo; computer applications to biological problems, computer-aided medical diagnosis; data processing and data transmission, and artificial organs.

LAURICELLA, JOHN W., B.S.E.E., Assistant Chief Engineer, Advanced Display Systems Laboratory of the Advanced Systems and Development Engineering Department, The Bendix Corporation, Eclipse-Pioneer Division (Department 9011), Teterboro, New Jersey. Utilization of bioelectronic signals to control servosystems and generate illusionary displays, and use of bioelectronic signals for evaluating new controls and displays.

LAW, O. THOMAS, Ph.D., Associate Professor, Department of Physiological Psychology, Baxter Science Laboratory, Claremont Graduate School, Claremont, California. All types of recording and stimulation of visual system; ultra-microelectrode recording from hypothalamus and limbic system with "physiologic" stimulation; stimulation via implanted electrodes; depth recording from chronically implanted subcortical electrodes; polygraphy, telemetering of autonomic responses, and neuroendocrinology.

LAWN, RAYMOND A., M.D., Chief, Aero Space Medicine, Boeing Company, Wichita, Kansas. Physiological monitoring of human subjects during human factors research vibration laboratory experiments.

LEAF, ALEXANDER, M.D., Chief, Cardiovascular Research Laboratory, Massachusetts General Hospital, Boston 14, Massachusetts, and Associate Professor of Medicine, Harvard Medical School, 25 Shattuck Street, Boston 15, Massachusetts. Measurement of membrane potentials across isolated urinary bladder of toads and explanation of the electrical activity on the basis of active ion transport.

LEBELL, DON, Ph.D., President, Don Lebell Associates, Department of Research and Development Engineering, 7923 Gloria Avenue, Van Nuys, California. Pattern recognition; data to voice conversion, and display systems.

LEDLEY, ROBERT S., D.D.S., President, National Biomedical Research Foundation, 8600 - 16th Street, Silver Spring, Maryland. Application of computers in biology and medicine; development of picture reading machine for direct reading of photographs into a digital computer for analysis; medical patient monitoring devices; special diagnostic measurements, and the theory required for programming a computer to aid medical diagnosis.

- LEE, HARRY, M.D., Assistant Clinical Professor, Department of Medicine and Radiology, University of California Medical School, San Francisco 22, California. Gastrointestinal absorption and anemia.
- LEESE, CHESTER E., Ph.D. (Ed. 1), Professor, Department of Physiology, George Washington University, School of Medicine, 1335 H Street, N.W., Washington 5, D.C. Study of the orienting reflex in humans; EEG responses are correlated with both somatic and visceral components of this reflex, and observation of impulse discharge into sympathetic and parasympathetic nerves following stimulation of various parts of the cerebral cortex (cat).
- LEFER, ALLAN M., Ph.D., Postdoctoral Fellow, Department of Physiology, Western Reserve University School of Medicine, Cleveland 6, Ohio. Electrophysiology of cardiac and vascular smooth muscle (influence of hormones); development of strain gauges for use in measuring muscle contraction, and comparative physiology of cardiac muscle.
- LEIDERMAN, P. HERBERT, M.D., Associate, Department of Psychiatry, Massachusetts Mental Health Center, 74 Fenwood Road, Boston 15, Massachusetts, and Harvard University Medical School, 25 Shattuck Street, Boston 15, Massachusetts. Physiological and behavioral studies of group interaction utilizing standardized electrophysiological techniques, and studies in basal level and specific response of the galvanic skin potential.
- LEPESCHKIN, EUGENE, M.D. (Ed. 1), Professor, Department of Experimental Medicine, College of Medicine, University of Vermont, Burlington, Vermont. Action potentials of heart muscle cells; the electrocardiograph, and heart sounds and cardiac dynamics (including instruments for their registration).
- LERMAN, GEORGE S., M.D., (Ed. 1), Group Manager, Aerospace Physiology, Department of Human Factors, McDonnell Aircraft Corporation, P.O. Box 516, St. Louis 66, Missouri. Monitoring of physiological states, such as EKG, respiratory rate, temperature, etc.; telemetering of these monitoring signals, and development of monitoring techniques not now available, such as blood pressure.
- LESSE, HENRY, M.D., Chief of Research, Neuropsychiatric Institute (Medical Center), and Associate Professor of Psychiatry, University of California, Los Angeles 24, California. Brain activity in relation to behavior.
- LEVINE, RAPHAEL B., Ph.D., Manager, Human Factors Research Department, Lockheed-Georgia Company, Marietta, Georgia. Weightlessness, physiological and psychological effects, studied by use of "Null-gravity Simulator," producing effects of prolonged weightlessness (bioelectronic measures taken include those in human performance studies and also EEG); electroencephalography, vector and scanned topographical, studied by use of special vector and scanned topographical EEG research instruments; human performance under stress, studied by use of a battery of automatic task presentation and scoring instruments, and concurrent measures of skin temperature, heart rate, skin resistance, and respiration movement are taken.
- LEVY, CHARLES KINGSLEY, Ph.D., Assistant Professor, Department of Biology, Boston University, Boston, Massachusetts. Neurophysiology--central nervous system--recording, stimulation, etc.; radiobiology monitoring and dosimetry irradiation with x-ray; effects of high energy 13Mev to 130 Mev protons on neural structures, and design of inexpensive classroom physiology equipment.
- LI, CHOH-LUH, M.D. (Ed. 1), Associate Neurosurgeon, Neurosurgical Branch, National Institute of Neurological Diseases and Blindness, National Institutes of Health, Bethesda 14, Maryland. Basic mechanisms of electrical discharges from excitable elements, and integrating function of brain.
- LIBBER, LEONARD M., Head, Physiology Branch, Biological Sciences Division, Office of Naval Research, Department of the Navy, Washington 25, D. C. The Office of Naval Research is a governmental granting agency. The Physiology Branch of ONR supports research in the following areas involving bioelectronics: neurophysiology, electromyography; free radical biophysics; infrared, microwave, and ultrasonic effects on biological materials; and bio-instrumentation.
- LIBERSON, W. T., M.D., Ph.D., Chief, Department of Physical Medicine and Rehabilitation, Veterans Administration Hospital, Hines, Illinois. Electrophysiological brace for hemiplegics; electromyographic investigation of gait; electromyographic investigation of spinal cord reflexes; electrophysiology of the brain, and application of electronics to cardiac rehabilitation.
- LIBET, BENJAMIN, Ph.D., Professor, Department of Physiology, University of California Medical Center, San Francisco 22, California. Generation of synaptic potentials in sympathetic ganglia; electrophysiological analysis of sensory and motor functions in the central nervous system (including the human brain, in collaboration with Neurosurgery Department at Mt. Zion Hospital, San Francisco).
- LICO, MARIA C., M.D. (Ed. 1), Department of Neurobiology, Instituto de Biología y Medicina Experimental, Obligado 2490, Buenos Aires, Argentina. Physiological psychology.
- LIFSHTITZ, KENNETH, M.D., Senior Psychiatrist and a Chief Investigator, Research Facility, Rockland State Hospital, Orangeburg, New York. Recording of physiological variables in various states; investigation of the technique of rheoencephalography (cerebral electrical impedance plethysmography), and use of averaging techniques.
- LINDSAY, JOHN R., M.D., Professor and Head, Department of Otolaryngology, University of Chicago, 950 East 59th Street, Chicago 37, Illinois. The effect of impaired metabolism upon the cochlear potentials (cochlear microphonics, action potentials, summing potentials, and D.C. resting potentials). Vestibular system: recording of nerve responses of the vestibular nerve to stimulation of the receptors, and recording of the corneoretinal potentials to vestibular stimulation.
- LINDSLEY, DONALD B., Ph.D., Professor, Departments of Psychology and Physiology, University of California, Los Angeles 24, California. Electrophysiological and behavioral study of man and animals, with special reference to perception, discrimination learning, attention and habituation; electrophysiological study of visual mechanisms in kittens and cats, and EEG study in man.
- LIPSCOMB, ALYS H., M.D., Associate Professor, Department of Medicine, University of Tennessee College of Medicine, Memphis, Tennessee. Radioactive Isotopes (medical applications) and thyroid disease.
- LIPTON, EARLE L., M.D., Assistant Professor, Department of Pediatrics, State University of New York, College of Medicine, 766 Irving Avenue, Syracuse 10, New York. Study of A.N.S. function in premature infants, neonates and young children.
- LIVERMORE, DAVID I., M.D., Chief, Bionucleonics Section, Office of the Surgeon General, Headquarters USAF, 3800 Newark Street, N.W., Washington 25, D.C. Air Force programs concerning electromagnetic and electronic effects on personnel related to areas of medical concern, both detrimental and utilitarian.
- LOEWENSTEIN, WERNER R., Ph.D., M.D. (Ed. 1), Associate Professor, Department of Physiology, Columbia University, College of Physicians and Surgeons, 630 West 168 Street, New York 32, New York. Mechanism of generation of electric activity in reception of nerve cells.
- LOMBROSO, CESARE T., M.D., Chief, Seizure Unit and EEG Laboratories, Department of Pediatric Neurology, Children's Hospital Medical Center and Harvard Medical School, 300 Longwood Avenue, Boston, Massachusetts. Study of electroencephalogram in various neurological, neurosurgical, and psychiatric diseases, and medical and behavioral correlates of electrophysiological recording.
- LORCH, STEPHEN, S.B., Director, Research Center for Mathematics in Medicine, Massachusetts General Hospital, Fruit Street, Box 595, Boston, Massachusetts. Computer simulation of radioisotope brain scans; mathematical analysis of electrophysiological data; information retrieval techniques for clinical and research data; mathematical analysis of clinical appointment systems.
- LORD, GEORGE F., M.D., Research Associate, Physiology, Medical Research Laboratory, U.S. Naval Submarine Base, Groton, Connecticut. Measurement of flow rate, pressure gradient and lung volumes.
- LOWELL, EDGAR L., Ph.D., Administrator and Director of Research, John Tracy Clinic, 806 West Adams Boulevard, Los Angeles 7, California. Development and utilization of a special purpose analog computer for the study of evoked auditory potentials in the intact human organism (Vannus I); development of improved model of above (Vannus II); plethysmographic responses to auditory stimulation; cortical conditioning, using photic stimulation, and galvanic skin responses in young deaf children.
- LOWENBERG, EDWIN, Associate Professor, Department of Electrical Engineering, University of Texas, Austin, Texas. Recording and analysis of biological measurements, especially analysis of EEG records.
- LUBKIN, YALE JAY, M.S., President, Med Tech Instruments, Inc., 33 Lewis Lane, Port Washington, New York. Biphasic stimulator; attenuators; miniature transmitters, and other research electronic instruments. Electronics consulting.
- LUCO, JOAQUIN V., M.D., Professor, Department of Neurophysiology, Laboratorio de Neurofisiología, Universidad Católica de Chile, Casilla 114-D, Santiago, Chile. Membrane sensitivity after denervation; trophic effects of nerve activity; interchange of nerve

innervation, and long lasting effect of neural activity.

LUDWIG, HARRY, M.S.E.E., Director, Medical Electronics Laboratory, University of Wisconsin, Medical Sciences Building, Madison 6, Wisconsin. Electronic instrumentation for biology and medicine.

LUFT, ULRICH C., M.D., Head, Physiology Department, Lovelace Foundation for Medical Education and Research, 4800 Gibson Boulevard, S.E., Albuquerque, New Mexico. Experimental and clinical physiology; environmental stress; physical exercise, and aerospace medicine.

LYKKEN, DAVID T., Ph.D., Associate Professor, Departments of Psychiatry and Psychology, University of Minnesota, Box 390, Mayo, Minneapolis 14, Minnesota. Electrodermal phenomena; measurement problems; physiological and psychological correlates; factors affecting subjective intensity of electric shock stimulation, and individual differences in emotional and autonomic reactivity.

LYMAN, JOHN, Ph.D., Associate Professor of Engineering and Psychology, Department of Engineering (Biotechnology), University of California Los Angeles, Los Angeles 24, California. Externally powered arm prosthesis research using electromyographic techniques with emphasis on the location of new control sites; human tracking including multimaneuver systems for missile and satellite tracking and mathematical models of the human operator, and exposure of humans to extreme heat environments for the purpose of studying performance and physiological changes.

M

McADAM, DALE W., Research Assistant Professor, Division of EEG, Department of Psychiatry, State University of Iowa, College of Medicine, Iowa City, Iowa. Correlation of brain potentials with the learning and performance of classical aversive, instrumental avoidance and instrumental approach responses.

McCANN, FRANCES V., Assistant Professor, Department of Physiology, Dartmouth Medical School, Hanover, New Hampshire. Microelectrode recordings from single cells having the property of myogenicity; studies now include fibrillar flight muscle of flying insects, heart tissue from insects and other invertebrates, and techniques involving direct stimulation of muscle cells are being used to study physical parameters of cell membranes.

MacCARTHY, JOHN DONALD, M.D., Director of Laboratories, Laboratory, Lawrence Memorial Hospital, 325 Maine Street, Lawrence, Kansas. Isotopes.

McCORD, WILLIAM M., M.D., Ph.D., Professor, Department of Chemistry, Medical College of South Carolina, 16 Lucas Street, Charleston, South Carolina. Colorimetry; polarimetry, and oxidation reduction potentials of biochemical reactions.

McCRUM, W. R., Ph.D. (Ed. 1), Chief, Division of EEG and Neurophysiology, Department of Neurology and Psychiatry, Henry Ford Hospital, 2799 West Grand Boulevard, Detroit 2, Michigan. Study of brain potentials with microelectrodes, implanted macroelectrodes, and scalp electrodes in monkeys.

McCULLOCH, WARREN STURGIS, M.D., Head, Neurophysiology Group, Division of Sponsored Research, Research Laboratory of Electronics, Massachusetts Institute of Technology, Cambridge 39, Massachusetts. Functional organization of the central nervous system, and facilitation, extinction and functional organization of the cerebral cortex.

MACEY, ROBERT I., Ph.D., Assistant Professor, Department of Physiology, University of California, Berkeley 4, California. Origin of membrane potentials, and active transport.

MCDONALD, DAVID G., Ph.D., Research Psychologist, Psychophysiology Branch, USN Medical Neuropsychiatric Research Unit, San Diego 52, California. EEG and autonomic measures of conditioning and response to stimulation in human and animal subjects; observation of these phenomena in sleeping subjects, and problems of instrumentation.

MCDONALD, MENIFEE S., M.D., Attending, Department of Medicine, Ventura General Hospital, 3291 Loma Vista Road, Ventura, California. Fetal electrocardiography.

McFADDEN, ERNEST B., M.S., Chief, Protection and Survival Equipment Section, Protection and Survival Branch, Civil Aeromedical Research Institute, Federal Aviation Agency, Aeronautical Center, Box 1082, Oklahoma City, Oklahoma. Determination of respiratory and blood gas at altitude in decompression chamber as well as cardiovascular response to negative and positive pressures, utilizing polarographic oxygen sensors and pressure transducers.

McFARLAND, ROBERT L., Ph.D., Research Coordinator, Psychiatry Service, Veterans Administration Hospital, 333 East Huron Street,

Chicago 11, Illinois. Psychophysiological measurement related to anxiety, psychopathology, sleep and deprivation experiences.

McFARLAND, WILLARD L., Ph.D., Post-doctoral Fellow, Section on Neuropsychology, National Institutes of Health, Bethesda 14, Maryland. Electrical stimulation of brain with chronic electrodes, and recording of brain potentials and autonomic variables.

McFEE, RICHARD, Ph.D., Professor of Electrical Engineering, Syracuse University, Syracuse, New York. Relation between voltages in electrocardiographic leads, and the electromotive forces of the heart, and the magnetic field of the heart.

McGUIGAN, FRANK JOSEPH, Ph.D., Professor and Head of the Psychology Department, Hollins College, Hollins College, Virginia. Silent speech during silent reading, and hallucinatory activity of paranoid schizophrenics.

MacINTYRE, WILLIAM J., Ph.D., Associate Professor of Biophysics, Department of Medicine and Psychiatry, Western Reserve University, 2040 Adelbert Road, Cleveland 6, Ohio. Interaction of electrical currents with the brain; analysis of electroencephalographic data, and application of radioactive tracers to physiological measurements.

MACKAY, R. STUART, Ph.D., Research Biophysicist and Clinical Professor, Department of Optometry, University of California, Berkeley 4, California. Biomedical engineering.

MACKWORTH, NORMAN HUMPHREY, Ph.D. (Ed. 1), Chief Psychologist, Human Factors Research Division, Dunlap and Associates, Inc., 429 Atlantic Street, Stamford, Connecticut. Recording of head and eye movements by television and photoelectric methods.

MacLEAN, PAUL D., M.D., Chief, Section on Limbic Integration and Behavior, Laboratory of Neurophysiology, National Institute of Mental Health, National Institutes of Health, Bethesda 14, Maryland. Cerebral stimulation and electroencephalographic recording, with attention focused particularly on the function of structures of the limbic system.

McLENNAN, MILES A., B.S.E.E., Chief, Medical Electronics Section, Biophysics Branch, 6570th Aerospace Medical Research Laboratories, Wright-Patterson Air Force Base, Ohio. Devising new and unexplored methods for transmission of physiological data from subjects in aerospace research programs, including selective monitoring systems and personal telemetry systems.

McMULLEN, FABER FRANCIS, M.D., Director, Cardio Respiratory Laboratory, Department of Internal Medicine, Hermann Hospital, Texas Medical Center, Houston 25, Texas. Detection of intra cardiac shunts using radio active isotopes; measuring cardiac output using radio active isotopes; differential cerebral blood flow using radio active isotopes, and central blood volume determinations using radio active isotopes.

MacNICHOL, EDWARD FORD, Jr., Ph.D., Associate Professor, Department of Biophysics, Johns Hopkins University, Baltimore 18, Maryland. Electrophysiology of the retina; microspectrophotometry of single retinal cones; design of electrophysiological and optical equipment for research, and editor of the IRE transactions on biomedical electronics.

MacPHERSON, CULLEN H., President, Argonaut Associates, Inc., Box 273, Beaverton, Oregon. Instrumentation for single nerve fiber and voltage clamp investigation; negative capacity electrometer instrumentation, and artificial neuron and analogue C.N.S. systems.

MACRAE, DONALD, M.D., Professor, Department of Neurology, University of California Medical Center, San Francisco 22, California. EEG in epilepsy, and in measurement of alpha response in visual disorders, e.g., non-suppression of alpha in visual agnosia.

MACY, JOSIAH, Jr., Ph.D., Associate Professor of Physiology (Mathematical Biophysics), Department of Physiology, Albert Einstein College of Medicine, Eastchester Road and Morris Park Avenue, New York 61, New York. Multiple micro-electrode recording in central nervous system; computer analysis of such data, and analog and digital computer techniques for mathematical models in biophysics.

MACZUK, JURIJ, Ph.D., Research Associate, University of Pennsylvania, Electromedical Division, Moore School of Electrical Engineering, 200 South 33rd Street, Philadelphia 4, Pennsylvania. Techniques to measure electrical relaxation phenomena of biological cells and colloidal particles at low frequencies, at room temperatures, and below zero degrees centigrade.

MADUELL, CHARLES RENÉ, Jr., B.Sc., Staff Physicist, Department of Therapeutic Radiology, Charity Hospital of Louisiana, 1532 Tulane Avenue, New Orleans, Louisiana. Biomedical instrumentation to measure and record phenomena in the field of radiation;

x-ray and nuclear physics; measurement and calibration of x-ray generating equipment, isotope and nuclear equipment, health and safety physics, and for measuring and recording biological phenomena, such as ECG, EEG, and physiological-electrical functions.

MAGLIOCCO, E. BRUNO, M.D., Psychiatrist, Menninger Foundation, Box 829, Topeka, Kansas. Medical and behavioral correlates of bioelectronic recordings and, more specifically, evaluation of the relationship of awareness of conflictual emotional experiences to abnormal brain waves; assessment of the importance of psychological conflicts in triggering epileptic seizures.

MALMO, ROBERT B., Ph.D., Director, Laboratory for Psychological Studies, McGill University, Allan Memorial Institute, 1025 Pine Avenue West, Montreal 2, Quebec, Canada. Brain stimulation and recording in animals with implanted electrodes, multiple recording (EEG, EMG, Autonomic, etc.) in human psychophysiological experiments.

MAISKY, STANLEY J., Ph.D., Chief, Radiophysics Research Section, Radiotherapy Service, Veterans Administration Hospital, 130 West Kingsbridge Road, Bronx 68, New York and New York University, Department of Science and Mathematics, Press 23, Washington Square, New York 3, New York. Solid state miniature dosimetry systems employed for gamma and x-ray measurements as well as for beta and neutron studies; radiophotoluminescence and thermoluminescence systems employed for human, animal and biological radiation dose levels, and investigation of liquid and other solids for in-vivo human and animal whole-body irradiation studies.

MANGELSDORF, JOHN E., Ph.D., Supervisor, Human Engineering, Department 61-93, Lockheed Missiles and Space Company, Sunnyvale, California. Psychophysiological correlates of objective performance measures of human operators employed in communications and control, and signal detection.

MANSBERG, H. P., Group Leader, Department of Medical and Biological Physics, Airborne Instruments Laboratories, Deer Park, Long Island, New York. Development of techniques for automatic analysis of visual fields, e.g., counting and sizing of particles and cells; microdensitometry and microspectrophotography, microscanning instrumentation, and development of high precision physiological temperature measurement systems.

MAR, PETER G., M.Sc., M.D., Officer-in-charge, Radiochemical Laboratory, Radiation Protection Division, Department of National Health and Welfare, Caldwell Avenue, Ottawa 3, Ontario, Canada. Measurement of radioactive fall-out in the Canadian environment, and survey of radiostrontium levels in Canadian milks, human bones, waters, diets, etc.

MARRARGER, JOHN P., Ph.D., Professor of Physiology, Director, Aeromedical Laboratory, University of Illinois, School of Medicine, 840 South Wood Street, Chicago 12, Illinois. Electromagnetic blood flowmeters; polarographic determination of oxygen; transistorized amplifier for telemetering physiological phenomena; pressure measurements; respiratory volume flow measurements, and telemetry of physiological measurements.

MARG, ELWIN, Ph.D., Professor of Physiological Optics and Optometry, School of Optometry, University of California, Berkeley 4, California. Physiology of the visual system.

MARKO, ADOLF R., Ph.D., Research Electronic Engineer, Medical Electronics Section, Biophysics Branch, 6570th Aerospace Medical Research Laboratories, Wright-Patterson AFB, Ohio. Research on bioinstrumentation to develop techniques for quantitative measurements of physiological activity on an unencumbered subject.

MARKS, WILLIAM BYRON, Biophysics Department, The Johns Hopkins University, Baltimore 18, Maryland. Absorption spectra of single visual photoreceptors, and recording electrophysiologically from many optic fibers simultaneously.

MAROTTA, S. F., Assistant Director, Aeromedical Laboratory, University of Illinois, School of Medicine, 840 South Wood Street, Chicago 12, Illinois. Electromagnetic blood flowmeters; polarographic determination of oxygen, and transistorized amplifiers for telemetering physiological phenomena.

MARRAZZI, AMEDEO S., M.D., Professor of Physiology and Pharmacology, University of Pittsburgh, and Director, Veterans Administration Research Laboratories in Neuropsychiatry, Leech Farm Road, Pittsburgh 6, Pennsylvania. Macro- and microelectrode recordings of evoked and spontaneous potentials in central nervous system used as indices of transmission, learning, and cerebral dysfunction e.g., psychosis, and their modification by drugs; analysis of electrical correlates of behavioral phenomena with the aid of electronic computers, and radioisotope tracer studies to help identify and localize cerebral processes.

MARSEILLAN, RICHARD F., M.D., Department of Physiology,

Faculdade de Medicina de Ribeirão Preto, Ribeirão Preto, São Paulo, Brazil. Central nervous system electrophysiology; physiology of hearing; effect of reticular formation stimulation on sensory systems techniques of radio-controlled brain stimulation, and study of cochlear potentials in the awake guinea pig.

MARSHALL, CURTIS, M.D., Associate Professor, Department of Neurological Surgery, The Johns Hopkins Hospital, 601 North Broadway, Baltimore 5, Maryland. Application of analogue computer techniques to the problems of objectively measuring the effects of drugs on the spontaneous EEG as well as on the evoked responses in EEG, involving only intact human subjects.

MARSHALL, JEAN M., Ph.D. (Ed. 1), Assistant Professor, Department of Pharmacology, Harvard University Medical School, 25 Shattuck Street, Boston 15, Massachusetts. Mechanisms involving the development and maintenance of pacemaker activity in single muscle fibers of the mammalian sinus node in the heart, and hormonal and ionic influences regulating the membrane activity in single uterine muscle fibers of the rat and rabbit.

MARSHALL, WADE H., Ph.D., Laboratory Chief, Laboratory of Neurophysiology, National Institutes of Health, Room 3D39, Building 10, Bethesda 14, Maryland. Electrical analysis of nervous system.

MARTÍNEZ-LAGE, J. M., M.D. (Ed. 1), Estudio General de Navarra, Escuela de Medicina, Laboratorio de Psicobiología, Apartado 177, Pamplona, Spain. Cerebral electrodynamics and human behavior based on the study of the electroencephalographic frontal and temporal conditioned rhythms by emotional and intellectual stimuli; and use of a special technique for EEG amplification of the records.

MASLAND, RICHARD L., M.D., Director, National Institute of Neurological Diseases and Blindness, National Institutes of Health, U.S. Public Health Service, Bethesda 14, Maryland. Research administration in the general area of clinical and basic neurology. Special interest in neurophysiology and electroencephalography.

MASON, HOWARD S., Ph.D., Professor, Department of Biochemistry, University of Oregon Medical School, 3181 S.W. Sam Jackson Park Road, Portland 1, Oregon. Electron spin resonance studies of biological systems.

MASOUREDIS, S. P., M.D., Ph.D., Associate Professor, Department of Medicine, University of California Medical School, San Francisco 22, California. Immunological and biophysical aspects of red cell agglutination.

MASSOPUST, L. C., Ph.D., Director, Laboratory of Neurophysiology, Research Department, Cleveland Psychiatric Institute, 1708 Aiken Avenue, Cleveland 9, Ohio. Electroretinography; auditory neurophysiology and discrimination; neurophysiology of the reticular formation; neurophysiology of the optic pathway; neurophysiology of hypothermia; electrocorticograms of experimental animals; biological telemetering, and brainwave analysis.

MATTHEWS, SIR BRYAN HAROLD CABOT, Sc.D., Professor of Physiology, Department of Physiology, University of Cambridge, Downing Street, Cambridge, England. Neurophysiology and electrophysiology.

MATTSON, ROY H., Ph.D. (Ed. 1), Associate Professor, Department of Electrical Engineering, Iowa State University, Ames, Iowa. Telemetering physiological information from the subject to a remote data recording station; by using a radio link this can be accomplished without interfering with the normal activities of the subject, and animal and human subjects will be used.

MAUDERLI, WALTER, D.Sc., Associate Professor, Division of Radiation Physics, Department of Radiology, J. Hillis Miller Health Center, University of Florida, Gainesville, Florida. X- and gamma ray dosimetry; automatic isodose plotting, and use of digital computers in x-ray treatment planning.

MAYNARD, DONALD M., Jr., Ph.D., Associate Professor of Zoology, Department of Zoology, The University of Michigan, Ann Arbor, Michigan. Electrical activity in arthropod nervous systems.

MAYO, ALFRED M., Manager, Advanced Systems Department, Chance Vought Corporation, Astronautics Division, P.O. Box 6267, Dallas 22, Texas. Measuring, recording and data processing of human parameters.

MAYS, LUTHER L., Ph.D., (Ed. 1), Chief, Neuropsychiatric Research, Veterans Administration Hospital, 2650 Wisconsin Avenue, N.W., Washington 7, D.C. Development of electronic equipment for controlled auditory stimulation of subjects; for the conversion of psychophysiological variables into the graphic form most suitable for immediate perceptual observation and interpretation and recording them on paper charts in the converted form; tape recording of psychophysiological data; wide scale recording and automatic print-out of such variables from data tape recordings; investigation of patterns

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of responses occurring in mental patients, including as items in the patterns studied psychophysiological responses to controlled stimulation (specifically EEG, respiration, skin conductance, pulse rate, muscle potentials from the jaw, muscle potentials from the arm); psychological test items (specifically Rorschach responses, sub-test and total scores on the Wechsler); items from rating scales filled in by a psychiatrist. The goal is to discover patterns of response characteristic of presently known or of as-yet-undiscovered mental disease syndromes.

MEDER, RONALD, B.A., B.S., Electronic Engineer, Department of Neurophysiology, Cleveland Psychiatric Institute, 1708 Aiken Avenue, Cleveland 9, Ohio. Instrumentation systems involving stimulation, telemetering, amplification, recording, reproduction and analysis, as related to brain mechanisms and behavior, hypothermia, and sensory processes.

MEEHAN, JOHN P. M.D., Associate Professor, Department of Physiology, School of Medicine, University of Southern California, 2025 Zonal Avenue, Los Angeles 33, California. Instrumenting both man and animals for long term monitoring of cardiovascular phenomena, such as blood pressure, the electrocardiogram, and venous distensibility as related to applied physical stress.

MEGEL, HERBERT, (Ed. 1), Senior Physiologist, Space Medicine Section, Aero-Space Division, Boeing Airplane Company, Seattle 24, Washington. The space medicine section is engaged in the development of miniaturized medical equipment applicable to manned space flight. Miniaturized instrumentation already developed includes a phonocardiograph, electroencephalograph, respirometer, electrocardiograph, and instruments for measuring internal body temperature and galvanic skin resistance. A miniaturized blood pressure apparatus and a miniaturized telemeter to function with the above mentioned biopack are in the developmental phase.

MEIER, GILBERT W., Ph.D. (Ed. 1), Laboratory of Perinatal Physiology, Box 5095, Puerta de Tierra Station, San Juan, Puerto Rico. EEG correlates of behavior during development: the studies include normative aspects as well as alterations from normality with the chronic administration of certain drugs, with alterations in the environment, with increased stimulation, and with the pharmacologic excision of parts of the developing nervous system, utilizing cats (Siamese) as the subject material.

MENA, ISMAEL, M.D., Associate Professor of Medicine and Head, Division of Nuclear Medicine, Department of Medicine, Catholic University School of Medicine, Casilla 114, Santiago, Chile. Determination of coronary blood flow by external scintillation detection and hemeodynamic studies on liver circulation in cirrhotic patients. The latter study is performed by means of correlation of external scintillation detection of radioactivity and direct hepatic vein flow and pressure analysis.

MENEAR, WALTER R., B.S.E.E., Senior Engineer, Transmission Engineering Department, Western Electric Company, Inc., 220 Church Street 11-149, New York 13, New York. Defense projects.

MERLIS, JEROME K., M.D. (Ed. 1), Professor of Neurology and Clinical Electroencephalography, Division of Neurology, Department of Medicine and Associate Professor, Department of Physiology, University of Maryland School of Medicine, Lombard and Greene Streets, Baltimore, Maryland. Studies of electrical activity of the brain, with specific reference to evoked potentials (both macro- and micro-electrode recording) and actions of various convulsant agents.

MERLIS, SIDNEY, M.D., Director of Psychiatric Research, Department of Mental Hygiene, Central Islip State Hospital, Carleton Avenue, Central Islip, New York. The use of EEG and averaging techniques to study the effects of psychopharmacological agents on brain wave patterns in patients with psychiatric disorders.

MESCHAN, I., M.D., Professor and Director, Department of Radiology, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, North Carolina. Radioisotopes and their applications to investigation of renal physiology, and the investigation of tissue extracts for suppression of growth phenomena.

METCALF, DAVID R., M.D., Assistant Professor and Director, Division of Electroencephalography, Department of Psychiatry, University of Colorado Medical Center, 4200 East Ninth Avenue, Denver 20, Colorado. Combined EEG and perception investigation; relationship between EEG and cognition; longitudinal study of human EEG--birth through maturity; development of infant EEG's--prematurity through early infancy; characteristics and development of infant sleep EEG patterns; transformation of analog ink-tracings to electrical form for computer analysis, and development and use of auto-correlation for EEG using continuously variable time-delay.

MEYER, ALVIN F., Jr., Col., B.S.C.E., Chief, Biomedical Engineering, Research Requirements and Biomedical Engineering Department, Aerospace Medical Division, Directorate of Professional Services,

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Office of Surgeon General, USAF, Washington 25, D.C. Research administration involving bioelectronic and biomedical engineering applications in aerospace medicine and occupational health programs.

MEYER, JOHN STIRLING, M.D., Professor and Chairman, Department of Neurology, Wayne State University, Detroit 2, Michigan. Cerebral circulation and metabolism of the brain in health and disease.

MEYERHOFF, GORDON R., M.D., Psychiatrist, 19 Hillside Avenue, Roslyn Heights, Long Island, New York. Study of human movement and voice tone as correlated with emotional states and psychiatric diagnoses.

MICHAELSON, SOL M., D.V.M., Chief, Radiation Physiology and Therapy Section and Assistant Professor, Department of Radiation Biology, University of Rochester School of Medicine and Dentistry, P.O. Box 287, Station #3, Rochester 20, New York. Characterization of biologic effects of microwaves; use of microwaves as a tool for studying physiologic responses of normal and x-irradiated animals, and biologic interaction of radiation energies, i.e., microwaves, infrared, and ionizing radiation.

MICHAUD, NORMAND J., Radiological Physicist, Department of Radiation Therapy, St. Luke's Hospital, 113th Amsterdam Avenue, New York 25, New York. How variations in time dose offset survival in animals receiving whole abdomen irradiation subjected to stress.

MICKLE, WALTER A., M.D., Director, EEG Department, Touro Infirmary, 3500 Prytanis Street, New Orleans, Louisiana. Clinical and experimental EEG; electrophysiology of hearing; behavioral correlates of cerebral electrical recording and stimulation, and application of computer techniques to neuroelectric data.

MILKMAN, NORMAN, B.E.E., Assistant Supervisor, Electronics Laboratory, Rockefeller Institute, East 66th Street and York Avenue, New York 21, New York. Study of the response characteristics of photoreceptors to light stimuli, and design of programmer and data processing equipment in connection with above purpose.

MILLER, CARLOS C., M.E., Manager, Product Operations, ITT Federal Laboratories, 15151 Bledsoe Street, San Fernando, California. Patient monitor systems; physiological parameter transducers, and electronic signal conditioners.

MILLER, JAMES DAVID, Ph.D., Research Associate, Department of Research, Central Institute for the Deaf, 818 South Kingshighway, St. Louis 10, Missouri. Psychoacoustics with both human and animal subjects; electrophysiology of the inner ear.

MILLER, NEAL E., Ph.D., James Rowland Angell Professor of Psychology, Department of Psychology, Yale University, 333 Cedar Street, New Haven 11, Connecticut. Elicitation of drives, such as hunger, by direct electrical or chemical stimulation of the brain; analysis of mechanism of rewarding effects of direct electrical stimulation of the brain; use of recording from brain to analyze process of learning and motivational responses; use of electronic methods for recording heart rate, temperature and other indices of physiological reaction or behavioral response.

MILLER, STEPHEN JOHN C., M.D., Pathologist and Director of Laboratories, Allegheny Valley Hospital, Carlisle Street, Natrona Heights, Pennsylvania. Enzyme chemistry: enolase, myokinase, hexokinase, abnormal hemoglobins; transaminase; fluorescence microscopy, and chemistry automation.

MILLER, WILLIAM B., Jr., B.S., Associate (Physics); Electronics Engineer, Department of Radiology, Emory University Medical School, Woodruff Building, Atlanta 22, Georgia. Design of electronic systems for the automatic recording and computation of data accumulated in the study of radiation exposure during routine x-ray fluoroscopic procedures; design of automatic diagnostic x-ray simulation equipment and the development of dosimetric measurement apparatus, and development of training programs in medical electronics for physicians.

MILSTEIN, VICTOR, Ph.D., Research Fellow, Department of Neurology, University of Oregon Medical School, Portland 1, Oregon. Normal and abnormal cerebral electrical activity.

MINNEY, ORVAL H., M.S., Staff Engineer - Biosystems, Space Systems Analysis Department, Hughes Aircraft Company, Ground Systems Group, Box 2097, Fullerton, California. Measurement and telemetry of physiological data from remote areas, such as space; data collection, analysis and display techniques and instrumentation, and command-control instrumentation for feedback of data and adjustment of the vehicle internal environment.

MIRSKY, ALLAN F., Ph.D., Assistant Research Professor of Neuropsychology, Division of Psychiatry, Boston University School of Medicine, Boston 18, Massachusetts. Measurement of EEG in humans in conjunction with behavioral and autonomic recording, and

measurement of EEG, behavioral and autonomic changes in animals as a consequence of brain stimulation, drug administration and sleep loss.

MISITI, RAFFAELLO, Professor and Ricercatore Psicologo, Istituto Nazionale di Psicologia, Consiglio Nazionale delle Ricerche, Piazzale delle Scienze 7, Rome. Collection of clinical and experimental data in an effort to confirm the existence of correlations between cerebral and muscular electrogenesis and intellectual level, affective disposition and type of personality; technical problems concerning the system for recording and processing psychophysiological and behavioral data; a highly flexible electronic system for recording and processing which will permit different types of research and diversified use of the collected material; transformation of the electronic signals into a graphic form, and analogic information into digital information (statistically tractable through high speed computers).

MITCHELL, HUGH B., M.D., Lt. Col., Medical Officer, Special Weapons, USAF, 416 Turrin Drive, Pleasant Hill, California. Medical physics (radiation biology).

MITCHELL, JAMES CURTIS, Psychology Department, Southern Illinois University, Carbondale, Illinois. Stimulation of cats with implanted chronic electrodes in order to produce after-discharges (with simultaneous EEG recording) and determine their effect on avoidance and escape responses, and similar stimulation of monkeys to determine effects of after-discharges on various schedules of reinforcement and visual discrimination problems.

MITCHELL, WALTER G. (Ed. 1), Physiologist, U.S. Health Education and Welfare, Communicable Disease Center, Public Health Service, Technical Development Laboratories, P.O. Box 769, Savannah, Georgia. Psychophysiology and neuropharmacology.

MOE, GORDON K., Ph.D., M.D., Director of Research, Masonic Medical Research Laboratory, Utica 2, New York. Studies of conduction and impulse generation in the mammalian heart, and studies of central nervous system control of cardiovascular function.

MOELLER, GEORGE, Ph.D., Head, Human Factors Engineering Branch, U.S. Navy Medical Research Laboratory, U.S. Navy Submarine Base New London, Groton, Connecticut. Bioelectronic correlates of psychomotor performance.

MOLESKO, NORMAN M., M.A., Senior Research Engineer, Life Systems, Apollo Engineering Crew Performance and Training Group, Space and Information Systems Division, North American Aviation, Inc., 12214 Lakewood Boulevard, Downey, California. Human performance under extraterrestrial environmental conditions relating to sensory, psychomotor, and kinesiological processes and their interface with equipment and tool design.

MONTGOMERY, L. H., Consultant on Medical Electronics and Research Associate, Departments of Anatomy and Surgery, School of Medicine, Vanderbilt University, Nashville 5, Tennessee. Muscle potential amplifiers for control of respirators, artificial limbs, cardiac stimulation in A-V block, etc.; research in neurology; research in audiology, and education.

MONTGOMERY, PHILIP O'BRYAN, Jr., M.D. (Ed. 1), Associate Professor, Department of Pathology, The University of Texas Southwestern Medical School, 5323 Harry Hines Boulevard, Dallas 35, Texas. Ultraviolet flying spot television microscopy; flying spot interference television microscopy; ultraviolet microbeam irradiation with closed circuit television microscopy, and flying spot centrifugation microscopy.

MOORE, JOHN W., Ph.D., Associate Professor, Department of Physiology, Duke University Medical Center, Durham, North Carolina. Measurement of ionic conductances of nerve membranes and study of effects of physical and chemical agents on these conductances; design of instrumentation required for these measurements.

MORAFF, HOWARD, M.S.E.E., Generic Engineer, Department of Bionics, General Electric Company, Advanced Electronics Center, Ithaca, New York. Electrophysiology of the central nervous system; effects of electromagnetic energy on the central nervous system, and neuron net research.

MOREHOUSE, LAURENCE C., Ph.D., Director of the Human Performance Laboratory, Department of Physical Education, University of California, Los Angeles 24, California. Electromyographic studies of strength training; modification of the Hoffman reflex by training; telemetering of physiological data in sport, and use of physiological inputs in ergometry.

MORGAN, PETER P., M.D., Research Director, Neurology Institution, New Castle State Hospital, 100 Van Nuys Road, New Castle, Indiana. Recording autonomic variables and EEG simultaneously, and the effect of vigilance and alertness tasks on spike wave activity in epileptics.

MORGANE, PETER J., Ph.D., Research Neurophysiologist, Life Sciences Research Group, Goodyear Aircraft Corporation, Akron, Ohio. Design and evaluation of electrophysiological instrumentation for recording evoked electrical potentials in several areas of the central nervous system for the specific purpose of tracing "physiological" pathways of preferential conduction; stimulation of the central nervous system, and the experimental analysis of observed behavioral changes correlated with such stimulation.

MORRELL, FRANK, M.D., Professor, Division of Neurology, Stanford University School of Medicine, Stanford Medical Center, Palo Alto, California. Neurophysiology; electrophysiological studies of learning, and data processing of neuroelectric signals.

MORRIS, ALTON CHESTER, Jr., M.S.E., Instrument Engineer, Department of Medical Physics, Medical Division, Oak Ridge Institute of Nuclear Studies, Box 117, Oak Ridge, Tennessee. Design and construction of nuclear-medical counting equipment for radioisotope tracer and therapeutic studies, and special instrumentation for high, medium, and low level whole-body counting of human subjects.

MORTON, GEORGE W. (Ed. 1), Project Engineer, Department of Medical and Biological Physics, Airborne Instruments Laboratories, Deer Park, Long Island, New York. Automatic data processing of electrocardiographic data and cytological smears; bioelectronic data telemetry, and hospital patient monitoring.

MOSTOFKY, DAVID I., Ph.D., Assistant Professor, Psychology Laboratory, Boston University, 700 Commonwealth Avenue, Boston 15, Massachusetts. Psychopharmacology; psychophysical and psychophysiological problems; problems of measurement; experimental design and EDFM methods.

MOULTON, D. G., Ph.D. (Ed. 1), Research Associate, Division of Physiology, Department of Biological Sciences, Florida State University, Tallahassee, Florida. Recording electrical activity in the olfactory bulb by means of chronically implanted electrodes in the conscious animal. General interests: Olfactory mechanism and neural basis of olfactory discrimination, correlation of bioelectrical potentials and behavior.

MOUSHEGIAN, GEORGE, Ph.D., Sensory Psychologist, Departments of Neurophysiology and Physiological Psychology, Walter Reed Army Institute of Research, Washington 12, D.C. Microelectrode studies of the eighth nerve and of medullary nuclei, and evoked potentials to sound input.

MOYER, KENNETH E., Ph.D., Professor, Department of Psychology, Carnegie Institute of Technology, Pittsburgh 13, Pennsylvania. Determination of electrophysiological changes resulting from stress and the variables underlying their habituation.

MOZELL, MAXWELL MARK, Ph.D. (Ed. 1), Post Doctoral Trainee, Department of Physiology, Florida State University, Tallahassee, Florida. Recording D.C. potentials from the olfactory mucosa and correlating these with A.C. potentials from the olfactory nerve and bulb.

MUELLER, GUSTAVE C. E., M.D. (Ed. 1), Capt. USAF (MC), Chief Cardiovascular Investigator, Acceleration Section, Aeromedical Laboratory, Biophysics Branch, Wright Air Development Division, 105 Spinning Road, Dayton 31, Ohio. Pulmonary diffusion and cardiac output; systemic blood distribution: cerebral, skin, muscle, bone, etc. in monkeys; pulmonary blood flow under static and g conditions; pulmonary blood distribution under static and g conditions.

MUENCH, LLOYD DAVID, B.S.E.E., Research Assistant, Department of Surgery, University of Missouri Medical Center, Columbia, Missouri. Cardiac pace-maker, and energy transport system for artificial heart.

MUENCH, LOUIS F., Consultant Engineer, Medical Research Instrumentation, University Medical Center, Little Rock, Arkansas. Data reduction techniques in continuously recorded autonomic response data.

MULLIN, ALBERT A., Research Mathematician, Department of Mathematics and Electrical Engineering, University of Illinois, Urbana, Illinois. Biological computer synthesis.

MUNDIE, J. R., M.D., Chief, Bionics and Neurophysiology Section, Bio-Acoustics Branch, 6570 Aerospace Medical Research Laboratories, Wright-Patterson Air Force Base, Ohio. Development of equipment and techniques for analysis of physiological data, including analog correlator, general purpose digital computer (PDP-1) with analog to digital converter, remote control, visual display of data, and analog computer simulation of biological systems, and development of specialized microelectrodes for recording of biological potentials.

MUNDY-CASTLE, A. C., Ph.D., Principal Research Officer, Head of Section of Biopsychology, National Institute of Health and Medical Research, National Research Council, P.O. Box M.32, Accra, Ghana. Study of EEG in relation to psychology, with emphasis on temperament, intelligence and the development of mental functions. In this context we are now investigating the effects of tropical disease on the development of brain and behavior in children.

MURATA, KEIICHI, M.D., Department of Physiology, Tokyo Medical and Dental University, Yushima 3-1, Bunkyo-Ku, Tokyo, Japan. Electrical activity in auditory pathway of cat and monkey, and activity of cortical neurons of unanesthetized cat during sleep.

MURPHY, TERENCE W., M.D., Research Anesthesiologist, Department of Anesthesia, Memorial Hospital for Cancer and Allied Diseases, 444 East 68th Street, New York 21, New York. Digital analogue computer.

MYER, ELLIS P., A.A., Computer Systems Specialist, Bio-Medical Systems Department, System Development Corporation, 2500 Colorado Avenue, Santa Monica, California. Design and construction of computer programs for automatic processing of hospital patient data, and design and construction of computer program compilers.

MYERS, RONALD ELWOOD, M.D., Ph.D., Director, Laboratory of Neurological Sciences, Friends of Psychiatric Research, Spring Grove State Hospital, Catonsville 28, Maryland. Brain recording and stimulation during various phases of perception and learning; ablation studies in relation to perception, functions of forebrain commissures, motor physiology, anatomy of corticocortical connections, etc.

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NADLER, GERALD, Ph.D., Professor of Engineering and Chairman, Human and Organization Factors Area, Washington University, St. Louis 30, Missouri. Human factors; hospital management systems, and physiological cost of work.

NAGAI, TERUO, M.D., Chief, Section of Radioisotopic Diagnosis, Division of Clinical Investigation, National Institute of Radiological Sciences, 250, Kurosuna-cho, Chiba, Japan. Liquid scintillation counting in nuclear medicine; electron microscopic radioautography in biology and medicine; in vivo counting using magnetic tape recording system; scintillation scanning using magnetic tape analyser; scintillation scanning using scintillation camera, and human whole body counting using human counter.

NAITOH, PAUL, M.A., Research Fellow, Department of Veterinary Medicine (Veterinary Anatomy), University of Minnesota, St. Paul 1, Minnesota. Effects of external radiation (and other stress agents) on EEG's, BP's, EKG's, and other psychophysiological indicants; effects of electric convulsions on various psychophysiological indicants; creation of a reliable instrument for delivery of constant current electroconvulsive shock (under the guidance of Dr. Ralph L. Kitchell, head of the Department of Veterinary Anatomy and electrosarcosis).

NASTUK, WILLIAM L., Ph.D., Professor of Physiology, Department of Physiology, Columbia University, College of Physicians and Surgeons, 630 West 168th Street, New York 32, New York. Neuromuscular transmission; chemical agents active at the neuromuscular junction; myasthenia gravis, and neurosecretion from nerve terminals.

NEFF, WILLIAM D., Ph.D. (Ed. 1), Professor of Psychology, Department of Psychology, University of Chicago, Chicago 37, Illinois. Electrical recording from and stimulation to sensory pathways in unanesthetized behaving animals, and tracing anatomical connections in anesthetized animals after ablation of sensory centers or transection of sensory pathways in the central nervous system.

NELSON, GORDON KENNETH, M.A. (Ed. 1), Senior Research Officer, Division of Neuropsychology, National Institute of Personnel Research, South African Council for Scientific and Industrial Research, P.O. Box 10319, Johannesburg, South Africa. Electroencephalographic studies of perception, temperament, personality, intelligence, development, malnutrition, effect of alcohol and psychotomimetic drugs; topographic studies of brain rhythms.

NELSON, THOMAS MORGAN, Ph.D., Research Associate, Department of Psychology, Michigan State University, East Lansing, Michigan. Flicker-fusion, brightness, color, acuity discriminations specifically, and sensory effects induced by intermittent photic stimulation in general.

NELSON, WILLIAM A., M.D., Radiologist, Department of Radiology, East Tennessee Baptist Hospital, Blount Avenue, Knoxville, Tennessee. Diagnostic and therapeutic radiology in a 285 bed general hospital.

NENCINI, RODOLFO, M.D., Researcher, Psychophysiology and

Psychology, Istituto Nazionale Psicologia del Consiglio Nazionale Ricerche, Piazzale Delle Scienze 5, Rome, Italy. Psychological correlations of electrical activity in brain and muscle, and EEG in stress situations, hypnosis and sleep, and in spatial situations.

NERTNEY, ROBERT JAMES, Ph.D., Consulting Biophysicist, Pathology Laboratory, Idaho Falls (LDS) Hospital, Idaho Falls, Idaho. Clinical bioelectricity including bioelectrical diagnosis and bioelectrical-biochemical correlations; nuclear instrumentation for nuclear diagnostic tests, and electronic instruments for conventional in vitro laboratory tests.

NEUHAUSER, ROBERT G. (Ed. 1), Engineering Leader, Camera Tube Design, Electron Tube Division, Radio Corporation of America, Lancaster, Pennsylvania. Development of image orthicon and vidicon camera tubes having ultra-violet sensitivity for the study of living cell tissue and other biological phenomena.

NEVILLE, J. RYAN, Ph.D., Chief, Department of Research and Development, Chemtronics, Inc., 8531 North New Braunfels Street, San Antonio 6, Texas. Design and application of techniques and devices for the detection and measurement of biomedical phenomena.

NEVINS, RALPH G., Ph.D., Professor and Head, Department of Mechanical Engineering and Director, Institute for Environmental Research, Kansas State University, Manhattan, Kansas. Study of the effect of floor surface temperatures on comfort, and study of the flow of blood in sheets.

NEVIS, ARNOLD H., M.D., Ph.D. (Ed. 1), Assistant Professor of Medicine (Neurology), Department of Medicine, College of Medicine, University of Florida, Gainesville, Florida. Nerve impulse conduction and water and electrolyte metabolism; electroencephalography.

NEVISON, THOMAS O., Jr., M.D., Department of Aerospace Medicine and Bioastronautics, Lovelace Foundation for Medical Education and Research, 4800 Gibson, S.E., Albuquerque, New Mexico. Bioinstrumentation for manned space operations (information gathering and exchange, development and evaluation of miniaturized transducers and unconventional techniques for physiological monitoring), and application of advances in aerospace technology to clinical problems.

NEWELL, ROBERT REID, Ph.D., Scientific Consultant, Bio Medical Department, U.S. Naval Radiological Defense Laboratory, San Francisco 24, California. Gamma ray scanning; collimators; the x-ray phosphor, and clinical dosimetry.

NEWGARD, PETER M., M.S., Research Engineer, Department of Engineering, Stanford Research Institute, Menlo Park, California. External blood pressure measurement, and analog computer modeling of the cardiovascular system.

NEWMAN, PAUL H., B.S., Staff Member, Command Control Division, System Development Corporation, 45 Hartwell Avenue, Lexington 73, Massachusetts. Operational specifications and positional analyses of NORAD 425L command control system.

NEWSOM, SAMUEL JAMES, M.A., M.D., Col., MC, USA, Senior Medical Advisor (to The Surgeon General, Republic of Korea Army), Headquarters, Korean Military Advisory Group, APO 102, San Francisco, California. Post encephalitis abnormalities including their convulsive states and therapeutic management; electron microscopy, viral challenges, viral culture (tissue) and fluorescent antibody studies in the pathology of Japanese encephalitis; the biologic effects of radar frequencies on the living human organism, including tolerances, and effect of summary modalities, and effect of wave length and wave intensity and human histopathologic effects of exposure.

NEWTON, JOSEPH E. O., M.D., Instructor in Psychiatry, Pavlovian Laboratory, Johns Hopkins University, School of Medicine, 725 North Wolfe Street, Baltimore 5, Maryland. Heart rate changes as manifestations of conditional reflexes in dogs; comparison of cardiac (heart rate) conditioning and motor conditioning in dogs and opossums; correlation of muscle action potentials with movements and heart rate in dogs, and effects of drugs and biochemicals on cardiac and motor orienting reflexes and conditional reflexes in dogs and opossums.

NIEDER, PHILIP C., Ph.D., Department of Psychophysiology, Bolt, Beranek and Newman, Inc., Cambridge, Massachusetts. Computer analysis of gross and microelectrode recordings of C.N.S. activity.

NIEDERMEYER, ERNST, M.D., Assistant Professor, Department of Psychiatry, State University of Iowa, Iowa City, Iowa. EEG and vertebro-basilar artery insufficiency; positive spikes (14 and 6 per second) and their clinical correlates; epilepsy in aged individuals, and cranial rheography (rheoencephalography).

NOBLE, FRANK W., M.E.E., Electronics Engineer, Laboratory of

Technical Development, National Heart Institute, National Institutes of Health, Bethesda 14, Maryland. Design and development of electronic instrumentation for use in cardiovascular research.

NOELL, WERNER K., M.D., Professor, Department of Physiology, School of Medicine, University of Buffalo, 3435 Main Street, Buffalo 14, New York. Electrophysiology of the retina; electroretinography, and electroencephalography.

NOORDERGRAAF, ABRAHAM, Ph.D., Wetenschappelijk Hoofdbanbenaar, Department of Medical Physics, Physics Laboratory, University of Utrecht, Bijhouwerstraat 6, Utrecht, The Netherlands. Development and application of analog computers in the study of the mammalian circulatory system; use of digital computers in this field; ballistocardiography; determination of stroke volume and left ventricular ejection curve, and flow measurement.

NORRIS, FORBES H., M.D., Assistant Professor (Neurology), Department of Medicine, University of Rochester School of Medicine, Rochester 20, New York. Biophysics of muscle membrane potential; unstable membrane potentials in muscle and brain cells; muscle membrane potentials in human diseases of muscle; physics of contraction by muscle, and study of the different physics in contraction and relaxation of muscle; action potentials (extracellular) of brain and muscle, and clinical nerve conduction and neuromuscular function studies.

NUNNALLY, RICHARD M., M.D., Pathologist, Pathology Laboratories, Our Lady of the Lake Hospital, 1600 North Third Street, Baton Rouge, Louisiana. Blood counts using Coulter counter; radioisotope studies, and biochemical determinations using Beckmann, Coleman, etc. electronics equipment.

NYBORG, WESLEY L., Ph.D., Professor, Department of Physics, University of Vermont, Burlington, Vermont. High amplitude sound and ultrasound as related to biology.

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O'BRIEN, ROBERT E., President, Bio Dynamics, Inc. One Main Street, Cambridge, Massachusetts. Alertness of control system operation; remote respiration monitoring; design of integrated physiological monitoring system; instrumentation for monitoring performance of automobile driver; automated teaching of complex system tasks, and sensory aids development.

OBRIST, PAUL A., Ph.D., Assistant Professor, Department of Psychiatry, School of Medicine, University of North Carolina, Chapel Hill, North Carolina. Cardiovascular and sudomotor correlates of learning (conceptual-sensory); autonomic stereotypy; cardiovascular changes to different types of sensory stimulation; cardiovascular and sudomotor correlates of reaction time and behavioral impulsivity, and differential autonomic conditioning and its relation to autonomic stereotypy.

OBRIST, WALTER D., Ph.D., Associate Professor of Medical Psychology, Department of Psychiatry, Medical Center, Duke University, Durham, North Carolina. EEG in old age; relation of senescent EEG changes to cardiovascular disease; relation of senescent EEG changes to senile learning and memory impairment, and longitudinal study of EEG changes in old age.

O'CONNELL, DONALD NEIL, (Ed. 1), Research Associate, Studies in Hypnosis Project, Massachusetts Mental Health Center, 74 Penwood Road, Boston, Massachusetts. Evaluation of physiological variable in hypnosis; development of electrode systems for the recording of potential measures of physiological activity, and evoked cortical potentials.

O'CONNELL, EUGENE R., M.S., Associate in Physical Education, Department of Physical Education, University of California Los Angeles, Los Angeles 24, California. Levels of human performance related to strength, flexibility and endurance in normal healthy subjects utilizing: telemetry for heart rate, respiration rate, and body temperature; load cells and strain gauges for joint torque of the various muscle groups; potentiometers for determining joint angles as the subject is moving, and other electronic components associated with the measurement of physiological stress imposed by exercise.

ODDIE, THOMAS HAROLD, D.Sc., Associate Professor, Department of Radiology, University of Arkansas Medical Center, Little Rock, Arkansas. Clinical application of radioisotopes, and ecology of thyroid metabolism.

OESTER, Y. T., M.D., Ph.D., Professor, Department of Pharmacology and Therapeutics, Stritch School of Medicine of Loyola University, 706 South Wolcott Avenue, Chicago 12, Illinois. Bioelectric potentials produced by muscle, including drug studies (animals) and clinical studies (human); vector cardiography, and mechanical model for experimental investigation of circulation and techniques for physical medicine.

OESTERREICH, ROGER E., Ph.D., Research Associate, Department of Research, Illinois State Psychiatric Institute, 1601 West Taylor Street, Chicago 12, Illinois. Sensory psychophysiology; sensory interaction, and investigation of cerebral modulation of sensory excitability by psychophysical, electrophysiological and behavioral techniques.

OETTINGER, LEON, Jr., M.D., Assistant Clinical Professor, Department of Pediatrics, University of Southern California, Los Angeles and Chief, EEG Department, St. Luke Hospital, Pasadena, 1405 San Marino, California. Electroencephalography in normal and abnormal children.

OFFNER, FRANKLIN F., Ph.D., Manager, Offner Division, Beckman Instruments, Inc., 3900 River Road, Schiller Park, Illinois. Development of various bioelectronic measuring techniques.

OKADA, ROBERT H. (Ed. 1), Associate Professor, University of Pennsylvania, Electromedical Division, Moore School of Electrical Engineering, 200 South 33rd Street, Philadelphia 4, Pennsylvania. Electrocardiography; theoretical studies utilizing potential theory, and experimental studies on animals and humans.

O'KELLY, LAWRENCE I., Ph.D., Professor, Department of Psychology, Laboratory of Comparative Psychology, University of Illinois, 129 North Race Street, Urbana, Illinois. Electrical recording from subcortical loci in connection with studies of water regulation, and clinical EEG recording.

OLDENDORF, W.H., M.D., Associate Chief, Neurology Section, Veterans Administration Center, Los Angeles 25, California. Use of radioisotopes for studying human cerebral circulation; absorption and scattering of ionizing radiation; electronic improvement of x-ray images, and instrumentation of nervous system.

O'LEARY, JAMES L., M.D., Professor of Neurology, Department of Neurology, Washington University School of Medicine, 640 South Kingshighway, St. Louis 10, Missouri. Study of resting and evoked potentials from central nervous system of human and experimental animal with their modification by drugs, metabolic states and disease in an attempt to analyze the source and nature of such potentials.

OLSON, RICHARD E., B.S.E.E., Project Assistant, Medical Electronics Laboratory, Medical School, University of Wisconsin, Madison 6, Wisconsin. Design, development, and maintenance of electronic systems for medical research, particularly in the field of neurophysiology.

O'MALLEY, BENEDICT B., Ph.D., Chairman, Department of Biology, St. John Fisher College, 3690 East Avenue, Rochester, New York. Bioelectric potentials of resting and stimulated muscle, under the influence of acetylcholine; use of transducers to effect precise recordings of changes in blood pressure and transmission at the myoneural junction; the study of tagged erythrocytes and their movement through cell membranes (with Professor Quinlan), and the uptake of iodine 131 by thyroid cells.

ORNSTEIN, GEORGE N., Ph.D., Chief, Advanced Systems Research, Department of Engineering, North American Aviation, Inc., 4300 East Fifth Avenue, Columbus 16, Ohio. Adaptive pattern classification systems; mathematical models of human/system performance, and research in target identification, control, and decision making systems.

OSTOW, MORTIMER, M.D., 5021 Iselin Avenue, New York 71, New York. Diagnostic electroencephalography.

OVERALL, JOHN E., Ph.D., Associate Professor, Department of Psychology, Kansas State University, Manhattan, Kansas. Applications of computer technology to problems of medical and psychiatric diagnostic classification.

OVERTON, RICHARD K., Ph.D., Research Specialist, Department of Research and Development, Autonetics, P.O. Box R-3, Anaheim, California. Design of machines capable of taking in information appearing in a variety of forms, abstracting that information (going from the specific to the general), and storing the abstracted information in some reasonably efficient manner.

OZKAPTAN, HALIM, M.A., Engineering Psychologist, Weapon Systems, Grumman Aircraft Corporation, Bethpage, Long Island, New York. Human dynamics; open and closed loop, and statistical human transfer functions for computer simulation of man integrated systems.

P

PAGANELLI, CHARLES V., (Ed. 1), Assistant Professor, Department of Physiology, School of Medicine, University of Buffalo, 3435 Main Street, Buffalo 14, New York. Measurement of potential difference across the isolated frog skin.

- PAGE, DONALD E., M.A., Human Factors Manager, Human Factors Services, ITT Federal Laboratories, 390 Washington Avenue, Nutley 10, New Jersey. Developing an encoder and perspective display for vector cardiographic data and applying same in physiological monitoring systems, and evaluating bioelectronic indices for monitoring vigilance during prolonged watch-standing tasks and selecting operators for such tasks.
- PARKER, JAMES W., M.S., Assistant Branch Head, Personnel Assessment Research Branch, U.S. Naval Medical Research Laboratory, Box 100, U.S. Naval Submarine Base New London, Groton, Connecticut. Use of bioelectronics in evaluation of personnel for duty in submarines, and autonomic indicators in adaptability to unusual environments, stress research.
- PARTRIDGE, LLOYD D., Associate Professor of Physiology, Department of Physiology, Medical School, University of Tennessee, Memphis 3, Tennessee. Studies of the control of movement including the contributions of reflexes; involves neuroelectrical recording, electronic analysis of the data and electronic analog simulation of the systems involved including studies of possible causes of disorders of movement, and biological signal processing and central systems.
- PASKUSZ, G. F., Ph.D., Associate Professor, Department of Electrical Engineering, University of Houston, Houston 4, Texas. Equivalent circuit study of the effect of varying parameters of the human ear on hearing.
- PATTEN, BERNARD C., Ph.D., Associate Professor of Marine Science, Virginia Institute of Marine Science, College of William and Mary, Gloucester Point, Virginia. Implementation of a program of analogue computer simulation of energy-depth models for plankton.
- PATTON, HARRY D., Ph.D., M.D. (Ed. 1), Professor, Department of Physiology and Biophysics, Medical School, University of Washington, Seattle 5, Washington. Single unit recording from cortical neurons.
- PATTON, TAD L., (Ed. 1), Associate Biochemist, Department of Experimental Medicine, The University of Texas M. D. Anderson Hospital and Tumor Institute, 6723 Bertner Avenue, Houston 25, Texas. Correlation of biological activities with molecular structure, particularly estrogens, and synthesis of new steroids and alkylating agents.
- PAUL, MILTON HOLIDAY, M.D., Director, Cardiovascular Laboratory, Department of Pediatric Cardiology, Children's Memorial Hospital, 707 Fullerton Avenue, Chicago 14, Illinois. Blood flow measurements; sound generation and analysis (cardiovascular), and cardiovascular transducer development.
- PAUL, WILLIAM, Ph.D., Associate Professor, Department of Pathological Chemistry, University of Toronto, 100 College Street, Toronto 5, Ontario, Canada. Photoelectric colorimetry of blood, and measurement of radioactivity in various in vivo conditions.
- PAULY, HELMUT W., M.D., Ph.D., Max-Planck Institut für Biophysik, Frankfurt a.M., Forsthausstr. 70, Germany. Impedance of cells, cell suspensions and cell particles; dielectric properties of biological membranes; electrical conductivity of protein solutions and protoplasm; membrane potentials, and effect of ionizing radiation on enzymes and metabolism.
- PEARLMAN, WILLIAM (Ed. 1), Electronic Engineer, Instrument Engineering and Development Branch, National Institutes of Health, Bethesda 14, Maryland. Instrumentation to investigate effects of radio frequency energy on animals, cells, proteins and other chemicals and chemical systems.
- PENDLETON, R. BRIAN, Ph.D., Assistant Professor, Department of Psychology, San Jose State College, San Jose, California. Correlating transient fluctuations in brain frequencies with reaction time; electrical activity from bipolar depth electrodes in cats monitored by frequency filters so that a visual or auditory stimulus can be triggered at the first half cycle of a preselected frequency, and latencies of secondary response waves in EEG patterns in relation to brain frequencies.
- PENNYS, RAYMOND, M.D., Assistant Professor of Medicine, University of Pennsylvania School of Medicine, University Hospital, Philadelphia 4, Pennsylvania. Polarography of oxygen tension of tissues; electronic plethysmography; oximeter, ballistocardiography, and electrophoresis of enzymes.
- PERETZ, BERTRAM, Associate Research Engineer, Mental Health Research Institute, University of Michigan, Ann Arbor, Michigan. Coding in the visual system by means of single nerve fiber recording; recording from single units as well as gross recording from animal brains, and measurement of drug effects on GSR, EKG and respiration.
- PEREZ-BORJA, CARLOS, M.D., Fellow, Wayne State University, College of Medicine, Neurology Unit, Harper Hospital, Brush Street, Detroit, Michigan. Electroencephalography using intracerebral electrodes, and clinical and experimental research in neurophysiology.
- PEREZ-CRUET, JORGE, M.D., B.S., Instructor in Psychiatry, Department of Psychiatry, Pavlovian Laboratory, Johns Hopkins University School of Medicine, 725 North Wolfe Street, Baltimore 5, Maryland. Electroencephalogram; electrocardiogram; skin resistance; optic plethysmography; brain stimulation (electrical), and telemetry.
- PEREZ-REYES, MARIO, M.D., Research Associate, Department of Psychiatry, University of North Carolina, School of Medicine, Chapel Hill, North Carolina. Studies on the GSR Inhibition Threshold (an objective index of sedation), useful in the differential diagnosis of depressive patients; involves continuous recording of the basal skin resistance and GSR activity as bioelectrical measures and the progressive intravenous injection of Na Thio-pental, and investigation of the neurophysiological control of the GSR activity.
- PEROT, PHANOR L., Jr., M.D. (Ed. 1), Senior Resident, Department of Neurosurgery, McGill University, Montreal Neurological Institute, 3801 University Street, Montreal, Quebec, Canada. Mechanism of the electrogenesis of the three cycle-per-second bilaterally synchronous "spike and wave" EEG pattern of petit mal epilepsy.
- PERRYMAN, JAMES HARVEY, Ph.D., Associate Professor, Department of Physiology and Pharmacology, New York University, 342 East 26th Street, New York 10, New York. Electrophysiology; intra and extracellular brain stem and spinal cord potentials in relation to afferent stimulation and muscle feedback; taped records for time expansion-contraction studies, average transient, and digital analysis and correlation for electronic transducers of physiological signals, and EMG, tension, and brain stem implanted electrodes for extraocular muscle coordination studies.
- PETERS, GEORGE A., Head, Human Factors Staff, Engineering Department (596-181), Rocketdyne, 6633 Canoga Avenue, Canoga Park, California. Bioelectronics as applied to human performance evaluation during space flight; rocket propellant exposure, and weapon systems evaluation.
- PETERS, JOSEPH J., Ph.D., Professor, Department of Biology, Xavier University, Cincinnati 7, Ohio. Investigation of the onset of patterns of electrical activity in the brain, eyes, and muscles of developing chicks, and correlation of this electrical activity with changes in behavior.
- PETERSON, JAMES ROBERT, M.A., Development Engineer (Human Factors), Aeronautical Division, Minneapolis Honeywell Regulator Company, 2600 Ridgway Road, Minneapolis 40, Minnesota. Human information processing; stimulus-response compatibility; choice reaction-time, and man-machine interface design.
- PETROVICK, MATHEW L., E.E., Manager, Biomedical Instrumentation Laboratory, Northwestern University Medical School, 303 East Chicago Avenue, Chicago, Illinois. Design and development of "Psychosensory Communications System" as applied to clinical analysis of psychoneurologic and communicative disorders, and automatic acquisition of electrophysiologic data such as "glossal motion" through digital circuitry.
- PIFFMANN, CARL, Ph.D. (Ed. 1), Professor, Department of Psychology, Brown University, Providence, Rhode Island. Basic electrophysiological studies of taste and smell including peripheral and central neural structures; these studies to be correlated with behavioral process making use of different behavioral procedures including psychophysics.
- PHILLIPS, JAMES D., Jr., Ph.D., Assistant Professor, Department of Psychology, Arlington State College, Arlington, Texas. Sensory psychophysiology and studies of emotion and motivation.
- PIERCE, CHESTER M., M.D., Assistant Professor, Department of Psychiatry, Neurology and Behavioral Sciences, University of Oklahoma, Medical Center, 800 NE 13th, Oklahoma City 4, Oklahoma. Biochemistry of dreams, and psychophysiology of enuresis.
- PINNEO, LAWRENCE R., Ph.D., Research Associate, Yerkes Laboratories of Primate Biology, Inc., Emory University, Orange Park, Florida. Investigation of the spontaneous activity of the central nervous system and its role in perception and learning, and overall activity of the visual system of primates (recorded with chronic implanted electrodes) in relation to the psychophysically determined brightness discrimination function.
- PIPBERGER, HUBERT V., M.D., Chief, Research Support Center, Veterans Administration Hospital, Washington 7, D.C. Electronic

data processing.

PIRCHER, FELIX J., M.D., Department of Radiology, Radioisotope Section, Duke University Medical Center, Box 3304, Durham, North Carolina. Dosimetry of systematic internal radiation; cardiovascular studies with radioisotopes, and radioisotope scanning.

PISHKIN, VLADIMIR, Ph.D., Assistant Professor, Department of Psychiatry, Neurology, and Behavioral Sciences, University of Oklahoma, and Chief Research Psychologist, Behavioral Science Laboratory, Veterans Administration Hospital, Oklahoma City, Oklahoma. Information processing; concept identification, and perception in psychopathology.

PLONSEY, ROBERT, Ph.D., Associate Professor of Electrical Engineering, Engineering Division, Case Institute of Technology, Cleveland 6, Ohio. Analysis of bioelectric signals; application of field theory to bioelectric phenomena, and problems in electrocardiography.

PLUTCHIK, ROBERT, Ph.D., Special Fellow, Section on Neuropsychology, National Institute of Mental Health, Bethesda 14, Maryland. Measurement of autonomic changes and EEG changes; use of frequency analysis of EEG and other quantitative indices, and electrical stimulation of the brain in animals.

POLLACK, MAX, Ph.D. (Ed. 1), Senior Research Associate, Experimental Psychiatry Department, Hillside Hospital, 75-59 263 Street, Glen Oaks, Long Island, New York. Relation of EEG variables to psychological variables and behavior patterns; effect of somatic treatment (drugs, EST) on the above relationships.

POLLEY, EDWARD H., Ph.D., Branch Chief, Experimental Medicine and Neuropharmacology Branch, Clinical Research Division, Directorate of Medical Research, U.S. Army Edgewood Arsenal, Edgewood Arsenal, Maryland. Neurophysiological research investigation on visual systems, and electroencephalography methods of analysis.

POLLIN, WILLIAM, M.D. (Ed. 1), Chief, Section on Psychiatry, Laboratory of Clinical Science, National Institute of Mental Health, National Institutes of Health, Bethesda 14, Maryland. Exploration of possible study of correlation between changes in level of psychoses and ego disruption, on the one hand, and physiological state as measured by GSR, skin temperature, pulse rate, etc., on the other. (In the past we have explored the possible relationships between personality patterns and certain EEG characteristics.)

POLLOCK, GEORGE H., M.D., Ph.D., Associate Professor, Department of Psychiatry, University of Illinois, Office: 664 North Michigan Avenue, Chicago 11, Illinois. Neurophysiology; neuropharmacology, and recording of interviews.

POTOR, GEORGE, M.D., Capt., USAF MC, Project Engineer, Biophysics Branch, Medical Electronics Section, 6570th Aerospace Medical Research Laboratories, Wright-Patterson AFB, Ohio. Research on electronic devices of physiological measurements of subjects.

POTTS, ALBERT M., M.D., Professor of Ophthalmology, Department of Surgery, University of Chicago, 950 East 59th Street, Chicago 37, Illinois. Electroretinography; bioelectric potentials in all of visual system; television ophthalmoscopy, and electromechanical models of ocular motility.

POWERS, SAMUEL R., Jr., M.D., Professor of Surgery, Experimental, Director of Surgical Research, Department of Surgery, Albany Medical College of Union University, Albany 8, New York. Development of impedance plethysmograph for continuous measurement of resistive and reactive components of total impedance in biologic tissue, and development of various polarographs for the measurement of oxygen tension in biologic tissues and fluids.

PRENTISS, ROBERT J., M.D., Active Staff and Member Executive Committee, Department of Urology, San Diego County Hospital, North End Front Street, San Diego 3, California. Development of high frequency current to cut tissue without stimulating nerves, and renography and renal scanning.

PRESSMAN, GERALD L., M.S., Research Engineer, Engineering Sciences Division, Stanford Research Institute, Menlo Park, California. Instrumentation of physiologic parameters, specifically the measurement and recording of arterial blood pressure by external methods.

PRIBRAM, KARL H., M.D., USPHS Research Professor, Departments of Psychiatry and Psychology, Stanford University, Stanford Medical Center, Pasteur Drive, Palo Alto, California. Electrophysiological and neurobehavioral research, using automated equipment.

PRICE, HENRY CLAY, Ph.D., Associate Professor of Nuclear Physics,

Department of Physics, Emory University, Atlanta, Georgia. Manned space flight: Shielding living organisms from nuclear radiations from both natural and artificial sources.

PRICHARD, JOHN STOBO, M.D., Assistant Professor, Department of Pediatrics, University of Toronto and Hospital for Sick Children, 555 University Avenue, Toronto, Canada. Electroencephalography in human new-born.

PRITIKIN, ROLAND I., M.D., Col. MC, USAR, Research and Development Command Project, Department of Surgery, Rockford Memorial Hospital, Office: 1211 Talcott Building, Rockford, Illinois. Handling of eye casualties due to radiological, radio-optical, chemical and biological warfare.

PROCTOR, LORNE D., M.D., Chairman, Department of Neurology and Psychiatry, Henry Ford Hospital, 2799 West Grand Boulevard, Detroit 2, Michigan. Effect of stimulation of the limbic and reticular formations on behavior of the Rhesus monkey; effect of some aspects of space travel on performance and its electro-neurophysiological correlates, and study of electrical discharges occurring in the limbic-hypothalamic and reticular areas as a result of electrical stimulation in these systems or elsewhere in the brain.

PURPURA, DOMINICK P., M.D. (Ed. 1), Associate Professor, Department of Neurological Surgery, Columbia University, College of Physicians and Surgeons, 630 West 168 Street, New York 32, New York. Nature of brain waves; properties of dendrites; organization of central synaptic systems, and ontogenesis of cerebral cortical activities.

Q

QUICK, RAYMOND S., B.Sc., Physicist-in-Chief, Department of Radiology, Radiation Therapy Center, Strong Memorial Hospital, Rochester 20, New York. Dosimetry and dose distributions from x and gamma ray sources and radioisotopes.

R

RAAB, DAVID, Ph.D., Professor, Department of Psychology, Brooklyn College, Brooklyn 10, New York. Psychophysiology of the auditory and visual systems.

RALSTON, H. J., Ph.D., Research Physiologist, Biomechanics Laboratory, University of California Medical Center, San Francisco 22, California. Human electromyography, especially as related to posture and locomotion.

RANDALL, JAMES E., Ph.D., Associate Professor of Physiology and Biophysics, Department of Physiology and Pharmacology, Medical Center, University of Missouri, Columbia, Missouri. Analog computer analysis of pulsatile pressure-flow relationships, and statistical properties of physiological time series.

RASMUSSEN, THEODORE, M.D., Director of Institute and Professor, Department of Neurology and Neurosurgery, McGill University, Montreal Neurological Institute, 3801 University Street, Montreal, Quebec, Canada. Cortical stimulation and electrographic analysis of cortical activity during craniotomies for focal epilepsy; use of depth recording at operation, and use of intracarotid injections of sodium amylal in the analysis of primary and secondary bilateral synchrony in the EEG.

RAY, CHARLES DEAN, M.D., Research Associate, Department of Neurophysiology, and Lecturer, Medical Electronics, Department of Physiology, Mayo Clinic, Rochester, Minnesota. Neurophysiology and behavioral correlates, surface and depth electrodes, animal and human; biophysics and physiology of tissue impedance and polarography (D.C. and A.C.); impedance plethysmography, and stereotaxic surgery.

RAY, THOMAS S., Ph.D., Chief Psychologist, Assistant Professor of Medical Psychology, Experimental Therapeutics Unit and Department of Psychiatry, Neurology and Behavioral Sciences, University of Oklahoma Medical Center and Central State Griffin Memorial Hospital, Box 151, Norman, Oklahoma. Psychopharmacology with schizophrenia, using, among other measures of overt behavior, psychological testing, and biochemical variables, selected psychophysical variables in the assessment and prediction of drug effects, as well as in the study of relations between these variables and overt behavior.

RAZZAK, MUHAMMAD A., M.D., Tutor in Medicine, General Medicine and Section of Nuclear Medicine, Faculty of Medicine, Cairo University and A.E.E. United Arab Republic, 16 EL Nil Street, Gizah, United Arab Republic. Radiocardiography in health and disease; radioisotope photostaining, and hemodynamic pattern of the liver in bilharzial cirrhosis.

RECH, RICHARD H., Ph.D., Assistant Professor, Department of Pharmacology, Dartmouth Medical School, Hanover, New Hampshire.

Study of abnormal electrical activity of mammalian brain and effect of drugs thereon, and correlation of brain electrical activity and responses of peripheral somatic and autonomic effectors.

RECHTSCHAFFEN, ALLAN, Ph.D., Assistant Professor, Department of Psychiatry and Psychology, University of Chicago, Chicago 37, Illinois. Investigations of sleep and dreaming through the use of the EEG.

RECKLESS, JOHN BRIAN, M.B., Ch.B., Research Fellow and Instructor in Psychiatry, Department of Psychiatry, Duke University Medical Center, Durham, North Carolina. The adaptation of psychophysiological parameters to the study of psychopharmacological agents (controlled environmental studies and conditioning in human subjects).

REDHARDT, ALBRECHT, Assistant, Department of High-Frequency, Max-Planck Institut für Biophysik, Frankfurt a.M., Forsthausstr. 70, Germany. Measurement of dielectric constants of solutions of biological substances; electron spin resonance measurements on biological substances; construction of ESR-spectrometers, and absolute measurements of radical concentrations.

REEVES, JAMES A., B.S., Executive Vice President, Spacelabs, Incorporated, 15521 Lanark Street, Van Nuys, California. Acquisition of biological data which have been hitherto unattainable; advanced methods for processing, storage, and analysis of biological data, and identification of specific short and long range research projects for support of manned space flight.

REEVES, JOHNNIE L., D.V.M., Major, USAF (VC), (Ed. 1), Deputy Chief, Experimental Toxicology Branch, Department of Medical Sciences, USAF Aerospace Medical Center, Brooks Air Force Base, Texas. EEG and EKG correlates in evolution of the "death feign" of Virginia opossum.

REHMAN, IRVING, Ph.D., Consultant to U.S. Naval Ordnance, Test Station, China Lake, California, and Associate Professor of Anatomy, University of Southern California, School of Medicine, 2025 Zonal Avenue, Los Angeles 33, California. Biotelemetry of physiological data (skin temperature, EKG, bioacoustics, vascular flow, EMG of cetaceans [dolphins]) in normal environment; EEG studies of the dolphin, and peripheral vascular flow in humans.

REICHEL, HANS, Professor of Physiology, Chairman and Director of the Physiological Institute, University Hamburg Germany, Hamburg 20, Martinistrasse 52, Germany. Coupling mechanism between electrical and mechanical events in the heart and skeletal muscle.

REICKERT, ERICK A., B.S.E.E., Project Leader, Applications Engineer, Applications Engineering, Shure Brothers, Incorporated, 222 Hartrey Avenue, Evanston, Illinois. Development of physiological sound transducers of external and internal types; and heart sound pickups for detecting abnormal hearts in mass heart surveys and in esophageal microphones used to monitor the heart during operations.

REID, CYPRIAN B., B.Sc., Senior Clinical Physicist, Radiophysics Research Laboratory, Veterans Administration Hospital, 130 West Kingsbridge Road, Bronx 68, New York. Investigation of solid and liquid dosimetry systems for the measurement of gamma and x-rays, and development of electronic reader systems.

REID, JOHN M., Associate, University of Pennsylvania, Electromedical Division, Moore School of Electrical Engineering, 200 South 33rd Street, Philadelphia 4, Pennsylvania. Diagnosis and measurement of living systems using ultrasonic mapping. Current USPHS grant: "Heart wall motion studies with ultra sound."

REIFLER, CLIFFORD B., M.D., Research Psychiatrist, Psychophysiological Stress Section, Biophysics Branch, 6570th Aerospace Medical Research Laboratories, MRMBP, Wright-Patterson Air Force Base, Ohio. Personal telemetry of physiological parameters on subjects engaged in normal activity; multivariate analysis of physiological and biochemical reactions to stress and the correlates of these reactions with personality patterns and traits, and investigation of the use of hypnosis as a technique for the protection from and/or amelioration of adverse environmental stresses.

REINHARDT, CHARLES, Jr., Physicist, Medical Research Group, American Electronic Laboratories, Incorporated, 121 North Seventh Street, Philadelphia, Pennsylvania. Telemetering of body temperatures; ultrasonic measurement of blood velocity, and animal tracking.

REMENCHIK, ALEXANDER P., B.S., M.D., Assistant Professor, Department of Medicine, Stritch School of Medicine, Loyola University, 706 South Wolcott, Chicago 12, Illinois. Body composition; whole body counting, and biology of schizophrenia.

REMOND, ANTOINE, M.D. (Ed. 1), Chief of Laboratory, Laboratoire

d'EEG et de Neurophysiologie Appliquée, Hôpital de la Salpêtrière, 47, Boulevard de l'Hôpital, Paris, France. Clinical neurophysiology; electroencephalography, automatic analytical methods for recording and interpreting complex electrophysiological data, and stereotaxia.

RENNER, ROBERT R., M.D., Director, Nuclear Medicine Laboratory, Doctors Hospital, and Renner Clinic Foundation, 6760 Mayfield Road, Mayfield Heights 24, Ohio. Scanning body organs with radioisotopes; developing nuclear instrumentation, and developing new tests of value using radioisotopes.

RETZLAFF, ERNEST W., Ph.D., Research Neurophysiologist and Associate Professor, Columbus Psychiatric Institute, Research Division, The Ohio State University, 473 West 12th Avenue, Columbus 10, Ohio. Electrophysiology: neuronal excitatory and inhibitory mechanism of the VIIIth nerve-Mauthner's cell system in the catfish; Aging: systematic study of changes in nervous and cardio-vascular systems in albino rats; relationships of electrocorticogram, electrocardiogram and aortic blood pressure, and effect of exercise on above physiologic functions; Neurohistology: relationship of structure to physiologic function in the CNS of the albino rat.

REUBEN, JOHN PHILLIP, (Ed. 1), Research Associate (N.S. post-doctoral fellow), Department of Neurology, College of Physicians and Surgeons, Columbia University, New York 32, New York. Microelectrode recordings from single nerve and muscle cells, and electrophysiological studies concerned with membrane phenomena of a wide variety.

RICHARDS, NELSON G., M.D., Head, EEG Laboratory, Department of Neurology, Cleveland Clinic Foundation, 2020 East 93rd Street, Cleveland 6, Ohio. Clinical relationship of EEG abnormalities in patients with vascular and neoplastic infarction of the brain, and evaluation of serial EEG's in infants treated for hypsarrhythmia.

RICHARDSON, DAVID W., M.D. (Ed. 1), Assistant Director of Professional Services for Research, Department of Medicine, McGuire Veterans Administration Hospital, Richmond 19, Virginia. Use of thermistors for blood flow recording.

RICKLES, WILLIAM H., M.D., M.S., Investigator, Physiology Branch Biocommunication Section, USAF School of Aerospace Medicine, Brooks Air Force Base, Texas. Electrophysiology of the skin and biotelemetry techniques.

RIEHL, JEAN LOUIS, M.D. (Ed. 1), Neurophysiologist, Bioastronautics Branch, Department of Space Medicine, Brooks Air Force Base, Texas. Psychophysiological aspects of space flight: monitoring of man in space, neurology, EEG, GSR, BP, pulse, heart rate, etc.

RIESEN, AUSTIN H., Ph.D., Professor, Department of Psychology, University of California, Riverside, California. ERG and EEG correlates of alterations in the visual system produced by dark rearing and other special visual environments. These changes are also being monitored by cyto-chemical studies (Robert L. Ramsey, collaborator).

RIESZ, ROBERT R., M.A., Associate Professor, Department of Physics, Union College, Barbourville, Kentucky. Phonocardiography; frequency analysis of heart sounds; low frequency spectroscopy in physiological research, and design of stethoscopes.

RIGGS, L. A., Ph.D., Professor, Department of Psychology, Brown University, Providence 12, Rhode Island. Recording the electroretinogram in human eyes; recording impulses from single optic nerve fibers; recording eye movements, and cumulating response potentials with repetitive stimulation.

RITTER, RICHARD M., M.A., Research Scientist, Department of Psychology, Radiobiological Laboratory of The University of Texas, RFD 4, Box 189, Austin, Texas. Behavioral protection against ionizing radiation by electroconvulsive shock, and minimized interval between learning and "retrograde" interference by ECS through the use of implanted electrodes and a radio-controlled rat back-pack ECS stimulator.

RITTERRATH, F. ARTHUR, Manager, Contract Planning, Contract Planning and Programs Management, Babcock Electronics Corporation, Home: 2120 Seville Avenue, Balboa, California. Miniaturized solid state patient monitoring devices (temperature, blood pressure, cardiac characteristics); application of computers (analog and digital in interpreting telemetered patient data), and analog computers and control systems.

ROBB, JANE SANDS, Ph.D., Formerly Visiting Professor, Department of Pharmacology, Dartmouth College Medical School, Hanover, New Hampshire. Study of intracellular potentials in the heart of limulus, lymph hearts, and atria of frogs. (In collaboration with Richard H. Rech, Julius Schainbaum, and Jean Day.)

Roberts

- ROBERTS, EUGENE, Ph.D., Chairman, Biochemistry Department, (Medical Research Institute), City of Hope Medical Center, 1500 East Duarte Road, Duarte, California. Metabolism and physiology of gamma-amino-butyric acid in the nervous system, with emphasis on the developmental features of the glutamic acid decarboxylase and gamma-amino-butyric acid--a-ketoglutarate transaminase systems in various parts of the chick embryo brain, and physiological and behavioral effects of drug-induced alterations of the levels of gamma-amino-butyric acid and other potentially inhibitory naturally occurring agents on mammalian preparations.
- ROBERTS, LAMAR, M.D., Chief, Division of Neurosurgery and Professor of Surgery, Department of Surgery, Division of Neurosurgery, College of Medicine, University of Florida, Gainesville, Florida. Electrical stimulation of chronically implanted electrodes in brain of squirrel monkey while $\bar{S}$ is attempting to solve various visual, auditory and tactual discriminative problems.
- ROBERTS, WARREN W., Ph.D., Associate Professor, Department of Psychology, University of Minnesota, Minneapolis, Minnesota. Brain mechanisms of motivation and learning with emphasis on fear, aggression, hunger, and exploratory behavior.
- ROBERTSON, J. DAVID, M.D., Ph.D., Assistant Professor of Neuro-pathology, Harvard Medical School, and Associate Biophysicist, Department of Biophysics, McLean Hospital, Belmont 79, Massachusetts. Studies of ultrastructure of cell membranes and membranous organelles by electron microscopy, and studies of ultra-structure of peripheral nerve and invertebrate and vertebrate central nervous system synapses.
- ROBERTSON, JAMES S., M.D., Ph.D., Head, Division of Medical Physics, Medical Department, Brookhaven National Laboratory, Upton, Long Island, New York. Positron scanner for locating brain tumors; radiation dosimetry, and analog computers.
- ROBINS, KENNETH E., B.E.E., B.Sc., (Capt. USAF), Project Engineer, Medical Electronics Section, Biophysics Branch, 6570th Aerospace Medical Research Laboratories, Wright-Patterson Air Force Base, Ohio. Research on personal telemetry systems and other forms of medical electronics to monitor active subjects, and limited research on medical electronics for clinical research.
- ROBINSON, BRYAN W., M.D. (Ed. 1), Neurophysiologist, Laboratory of Psychology, National Institute of Mental Health, National Institutes of Health, Bethesda 14, Maryland. Neurobehavioral studies of feeding mechanism in the monkey; impedance technique of electrode localization; thermoelectric studies on cat cerebral cortex, and utility pulse-subtraction amplifier.
- ROBINSON, DAVID A., Dr.Eng., Instructor, Department of Medicine, The Johns Hopkins University, Baltimore 5, Maryland. The vestibulo-ocular reflex, and measurements of eye movements.
- ROBINSON, GORDON H., Ph.D., Assistant Professor, Department of Industrial Engineering, University of California, Berkeley 4, California. Human decision making; information processing systems involving stochastic inputs, and general man-machine systems.
- RODIN, ERNST A., M.D., Chief of Neurology, Department of Mental Health, Lafayette Clinic, 951 East Lafayette, Detroit 7, Michigan. Determination of relationships between electrical activity of the central nervous system and behavior in man, and study of evoked cerebral responses with the utilization of digital computers.
- ROESSLER, ROBERT L., M.D., Professor of Psychiatry, Wisconsin Psychiatric Institute and Department of Psychiatry, University of Wisconsin Medical Center, 1300 University Avenue, Madison 6, Wisconsin. Psychophysiology including the relation of measures of ego strength to the magnitude of heart rate, skin resistance, finger blood volume and muscle potential responses to sound of varying intensities.
- ROIG, JUAN A., B.R., Assistant Investigator, Laboratorio de Neuro-fisiología, Facultad de Medicina, Universidad de la Republica, Gral Flores 2325, Montevideo, R. O. del Uruguay. Bioelectronics changes in C.N.S. with learning process.
- ROSCOE, S. N., Ph.D., Associate Manager, Display Systems Department, Research and Development Division, Hughes Aircraft Company, Culver City, California. Display and control systems research; simulation, and design.
- ROSE, HEINRICH W., M.D., Senior Member Research Laboratories, Lockheed Missiles and Space Company, 3251 Hanover Street, Palo Alto, California. Imbedding of physiological sensors in animals, and gas analysis.
- ROSEN, PAUL, B.S., Research Associate, Department of Electronics, The Rockefeller Institute, 66 Street and York Avenue, New York 21, New York. Design and construction of automatic recording spectro-fluorometer and phosphorimeter, and gas chromatography apparatus.

Royer

- ROSENBAUM, JOSEPH, B.A., Technical Assistant to Management, Bio-Medical Systems Department, System Development Corporation, 2500 Colorado Avenue, Santa Monica, California. Operations research applied to scheduling and allocation problems in medical institutions; mathematical models in epidemiology, and mechanical data processing aids for the management of large medical facilities.
- ROSENBLATT, FRANK, Ph.D. (Ed. 1), Director, Cognitive Systems Research Program, Cornell University, Ithaca, New York. Analysis and simulation of theoretical brain models, and studies of neural nets and psychological properties of nerve nets.
- ROSENBLITH, WALTER A., Ph.D., Professor of Communications Biophysics, Research Laboratory of Electronics, Center for Communication Sciences, Institute of Technology, Room 20-B-221, Cambridge 39, Massachusetts. Broad research program ranging from certain aspects of applied mathematics to problems of instrumentation, especially those aspects of the electrical activity of the nervous system which relate to sensory function; the application of computer techniques to analytical studies of neuroelectric activity; responses from the auditory and visual systems, in some studies using a technique which is particularly sensitive to an organism's physiological macrostate; sensory discrimination in a given organism using compatible electrophysiological and behavioral techniques; analyses of a variety of biologically significant patterns; behavior of networks of neuronlike elements; catalog of the behavior of neurons in the auditory nerve and in the cochlear nucleus and coding of acoustic stimulus characteristics (in cooperation with the Eaton Peabody Laboratory for Auditory Physiology at the Massachusetts Eye and Ear Infirmary); and the relation of neuroelectric and behavioral events that are concomitant with sensory communication.
- ROSHAL, SOL M., Ph.D., Manager, Department of Training and Training Equipment, Humetrics Division, Thiokol Chemical Corporation, 6382 Arizona Circle, Los Angeles 45, California. Training methods and training equipment for physically handicapped, and sensory prosthetics.
- ROSS, DOUGLAS ALLEN, Ph.D., M.D., Chief, Medical Physics Section, Medical Division, Oak Ridge Institute of Nuclear Studies, P.O. Box 117, Oak Ridge, Tennessee. Radiation-measuring methods and instruments in nuclear medicine, and applications of radiation and radioactive materials in diagnosis, therapy and medical research.
- ROSS, SHERMAN, Ph.D., Executive Secretary, Education Training Board, American Psychological Association, Washington 6, D.C. Effects of drug on autonomic nervous system, performance and mood, and vigilance phenomena.
- ROSS, W. R. DAVID, Research Assistant (Instrumentation), Electrophysiology Laboratory, Department of Psychiatry, Allan Memorial Institute of McGill University, 1025 Pine Avenue W., Montreal 2, P.Q., Canada. Development of small computers for the study of evoked responses, and general electrophysiological instrumentation.
- ROTH, NILES, (Ed. 1), Graduate Student, Department of Physiological Optics, University of California, Berkeley 4, California. Investigation of electric potentials associated with accommodation of the human and of the rabbit eye.
- ROTHER, CARL F., Ph.D., Established Investigator, American Heart Association and Assistant Professor, Department of Physiology, Indiana University School of Medicine, Indianapolis 7, Indiana. Design and evaluation of instrument systems for the measurement of cardiac function and changes in venomotor activity; description of the control of venous volume in terms of a control system, and evaluation and design of equipment for medical, graduate and dental laboratory teaching.
- ROWLAND, GEORGE E., Ph.D., President, Rowland and Company, Inc., P.O. Box 61, Haddonfield, New Jersey. Research and consultation services in artificial intelligence; man-amplifier concepts and apparatus, and human servo-control of physical apparatus by means of biological control.
- ROWLEY, BLAIR A., B.S.E.E., Research Assistant, Department of Surgery, University of Missouri Medical Center, Columbia, Missouri. Preparation of the micromodule pacemaker system for clinical use; determination of the causes of pacemaker electrode deterioration and failure in current pacemaker systems, and determining the feasibility of techniques in transporting high level electromagnetic energy through the closed chest wall to furnish power for a mechanical heart.
- ROYER, FRED L., Ph.D., Chief, Animal Studies, Psychophysiological Research Laboratories, Veterans Administration Hospital, Perry Point, Maryland. Electrical activity of proteins (galvanic currents generated by bimetallic recording electrodes are of greater amplitude in protein than in control solutions), and central nervous

system control of electrocardiographic activity.

ROYS, CHESTER C., Research Associate, Department of Biology, Tufts University, Medford 55, Massachusetts. Study of the sense of taste in insects; recording of nerve impulses from appropriate structures and correlation with behavioral studies on feeding preferences.

RUBEN, ROBERT J., M.D., Director of Neurophysiology, Department of Otolaryngology, Johns Hopkins School of Medicine, Baltimore 5, Maryland. Communication theory; retrieval of data from high noise background; classical neurophysiology; auditory and acoustic physiology.

RUCK, PHILIP R. (Ed. 1), Assistant Professor, Department of Biology, Tufts University, Medford 55, Massachusetts. Electrophysiology of sense organs, particularly eyes of insects and crabs.

RUDENBERG, F. HERMANN, Ph.D., Assistant Professor of Physiology, Department of Physiology, The University of Texas Medical Branch, Galveston, Texas. Three dimensional electroencephalography in the unrestrained rat in association with chemical studies of calcium in the brain; effects of concussion on these electrical and chemical measurements, and the development of chronically implantable pressure microensors for studying the control of intracranial pressure and its relation to the EEG.

RUDKIN, GEORGE T., Ph.D., Associate Member, Department of Genetics and Cytochemistry, Division of Biology, The Institute for Cancer Research, 7701 Burholme Avenue, Philadelphia 11, Pennsylvania. Microspectrophotometry in the UV, visible, and interference microscopy fields.

RUDNICK, MARK, Ph.D. (Ed. 1), Post-doctoral Fellow, Children's Service, Menninger Foundation, 2221 West Sixth, Topeka, Kansas. Cortical and subcortical electrophysiological responses bridging the latent interval of delayed response.

RUPERT, ALLEN, Research Physiologist, Department of Neurophysiology, Walter Reed Army Institute of Research, Washington 12, D.C. Microelectrode studies of medullary nuclei, eighth nerve, and nuclei throughout auditory pathway, and evoked potential studies.

RUSH, STANLEY, Ph.D., Associate Professor, Department of Electrical Engineering, University of Vermont, Burlington, Vermont. Electrical properties of biological tissues, and source-surface potential relationships in electrocardiography.

RUSHMER, ROBERT F., M.D., Professor, Department of Physiology and Biophysics, University of Washington, Seattle 5, Washington. Research and development in new forms of recording techniques for studies of the heart and circulation, involving techniques for measuring dimensions, pressure and flow of blood in and out of the heart and peripheral circulation.

RUSSELL, GLENN V., Ph.D., Associate Professor of Anatomy, Department of Anatomy, University of Texas Medical Branch, Galveston, Texas. Neuroanatomic and neurophysiologic correlates; connections of basal ganglia structures, and effects of certain toxic materials on the EEG.

RUSSELL, ROGER W., Ph.D., D. Sc., Chairman and Professor, Department of Psychology, Indiana University, Bloomington, Indiana. Study of physiological and pharmacological factors affecting somatic reactions of human subjects to standardized test conditions as evidenced in bioelectric potential charges recorded by surface electrodes, including EEG, EKG, PGR, EMG, respiration and gastrointestinal motility.

RUTLEDGE, L. T., Ph.D., Associate Professor, Department of Physiology, University of Michigan, East Medical Building, Ann Arbor, Michigan. Analysis of slow wave and single unit discharges in association cortex evoked by peripheral and central stimulation; functional studies of inter- and intrahemispheric conducting systems in brain, and analysis of secondary responses in cortex.

S

SALATI, O. M., B.S.E.E., M.S.E.E., Assistant Professor of Electrical Engineering, The Moore School of Electrical Engineering, University of Pennsylvania, 200 South 33rd Street, Philadelphia 4, Pennsylvania. Studies of relative absorption cross sections of mankind exposed to electromagnetic fields (microwave radiation hazards studies).

SALMOIRAGHI, G. C., M.D., Ph.D., Chief, Section on Neurophysiology, CNRC, CI, IR, NIMH, National Institutes of Health, Saint Elizabeths Hospital, Washington 20, D.C. Physiological and pharmacological studies of individual nerve cells of mammalian central nervous system.

SALTZBERG, BERNARD, B.S., M.S., Senior Scientist, Systems Research, Bissett-Berman Corporation, 2941 Nebraska Avenue, Santa Monica, California. Remote physiological sensors; signal analysis; signal representations for physiological waveform analysis; automatic EEG analysis techniques, and special digital correlation techniques applied to physiological signals.

SANDEL, THOMAS T., Ph.D., Staff Member, Lincoln Laboratory and Research Laboratory of Electronics, Massachusetts Institute of Technology, 208-221, Cambridge 39, Massachusetts. Computer techniques in the study of the neurophysiology of brain.

SANTOSTEFANO, SEBASTIAN, Ph.D., Assistant Professor, Department of Psychiatry, University of Colorado Medical School, 4200 East Ninth Avenue, Denver, Colorado. The effects of drugs on children with behavior disorders and abnormal EEG's, and relationships between EEG activity and cognition.

SATTERFIELD, JAMES H., Research Assistant Professor, Department of Psychiatry, Washington University School of Medicine, 640 South Kingshighway, St. Louis 10, Missouri. Sensory interaction studies in animals, neurophysiological correlates of behavior in psychotic patients.

SATTERFIELD, MARION M., B.S., Associate Development Engineer, Thermonuclear Division, Oak Ridge National Laboratory, P.O. Box Y, Oak Ridge, Tennessee. Design and development of electronic equipment in the nuclear medicine field, primarily concerning instruments related to radioisotope scanning.

SAUNDERS, MICHAEL GRAHAM, M.D., M.Sc., Director, Electroencephalograph Department, The Winnipeg General Hospital, 700 William Avenue, Winnipeg 3, Manitoba, Canada. Use of digital computers in electroencephalograph analysis; waveform analysis and data reduction; neuro-electric phenomena, and fetal electrocardiography.

SAWYER, PHILIP NICHOLAS, M.D., Associate Professor, Department of Surgery, State University of New York, Downstate Medical Center, 450 Clarkson Avenue, Brooklyn 3, New York. Study of PD's across blood vessel walls, their relation to ion transport, thrombosis, electrical rectification, in vivo and in vitro, and application of direct electric currents to intravascular thrombosis, coagulation of blood and tissue hemostasis.

SCARBOROUGH, WILLIAM R., M.D., Medical Officer, Cardiovascular Research, Aviation Medical Service AM-130, Federal Aviation Agency, Washington 25, D.C. Varied types of research in the field of cardiovascular physiology and diseases which require a number of different kinds of electronic and electro-mechanical equipment, such as motion and pressure transducers, amplifier and recording equipment, electronic computers, data processing equipment, etc.

SCHACHTER, JOSEPH, M.D., Ph.D., Assistant Clinical Professor, Department of Psychiatry, College of Physicians and Surgeons, Columbia University, 722 West 168th Street, New York 32, New York. Relation between autonomic variability and both degree of anxiety and capacity for impulse control in adults; developmental study of autonomic variability in infants and relation to impulse control; measurement of end organ reactivity for one autonomic variable, digital vascular resistance.

SCHAEFER, KARL ERNST, M.D. (Ed. 1), Head, Physiology Branch, U.S. Navy Medical Research Laboratory, Submarine Base, New London, Connecticut. Study of the effect of changes in the composition of the atmosphere (increased CO₂, lowered O₂, different nitrogen concentrations) on the electroencephalograms.

SCHALLEK, WILLIAM B., Ph.D., Senior Physiologist, Department of Pharmacology, Hoffman-LaRoche, Inc., Nutley 10, New Jersey. Neuropharmacology.

SCHER, BRADLEY T., Ph.D., Professor and Head, Department of Biology, University of Oregon, Eugene, Oregon. Application of irreversible thermodynamics to problems in diffusion and bioelectric potentials; experimental studies of the relation of bioelectric potential in frog skin and similar membranes to active ion transport and to metabolism, and experimental studies of the control of active ion transport in animal membranes by hormones, in relation to the physiology of salt and water balance.

SCHIBEL, ARNOLD B., M.D., M.S., Associate Professor, Departments of Psychiatry and Anatomy, University of California Los Angeles Medical Center, 405 Hilgard, Los Angeles 24, California. Correlation of single unit recordings with circuit analyses via Golgi silver stains in reticular core of brain and cortex, and developmental studies of newborn chronically implanted animals (cats), correlating electrical records, Golgi histology and behavior (in collaboration with Madge E. Scheibel).

SCHIBEL, MADGE E., Department of Anatomy, University of California

- at Los Angeles, School of Medicine, 405 Hilgard, Los Angeles 24, California. Correlation of single unit recordings with circuit analysis via Golgi silver stains in reticular core of brain and cortex, and developmental studies of newborn chronically implanted animals (cats)--correlating electrical records, Golgi histology and behavior (in collaboration with Arnold B. Scheibel).
- SCHER, ALLEN M., Ph.D., Professor, Department of Physiology, University of Washington, Seattle 5, Washington. Pathway of depolarization of the heart; genesis of the electrocardiogram, and servo-analysis of blood pressure control system.
- SCHURER, GEORGE HAROLD, D.O., Director of EEG Laboratories, Department of Osteopathic Medicine, Kirksville College of Osteopathy and Surgery, 800 West Jefferson Street, Kirksville, Missouri. The production and conduction of electrical activity of the spinal cord; the spontaneous electrical activity of the spinal cord and its relation to neuromuscular reflex mechanisms, and the development of clinical electro-diagnostic procedures from basic electrophysiological measurements.
- SCHILLING, MYRON O., Associate Research Physicist, Department of Medicine (Medical Center), University of California, Los Angeles 24, California. Recording of electric potentials from isolated heart and skeletal muscle of mammals and invertebrates; determination of the active state in the above preparations; measurement of the heat production in the above preparations; measurement of work in the above preparations, and correlation of the chemical activity with all the above.
- SCHLIEP, HANS-JOCHEN, Dr. phil. nat. (Ed. 1), Strahlenbiologisches Institut der Universität München, Bavariaring 19, Munich 15, Germany. Generation of electrical potentials by the organism; recording of electrical potentials from the organisms, and analysis of bioelectronic data.
- SCHMALBACH, KURT, M.D., Assistant in Neurology, Laboratory of Clinical and Experimental Neurophysiology, Neurologische Universitätsklinik Eppendorf, 2 Hamburg 20 Schottmüllerstrasse 1, Germany. Syncopal seizures; experimental epilepsy in various animal species; neurophysiological studies in hypothyroid animals, and microelectrode work.
- SCHMIDT, HERMANN O., Ph.D., Director, Psychological Laboratories, Norwich Hospital, P.O. Box 508, Norwich, Connecticut. Psychological correlates of the 14 and 6 positive spike pattern on the EEG (in collaboration with Ralph Andrews, M.D.).
- SCHMIDT, KLAUS, Diplomphysiker, Doktor, Department of Electronics and Optics, Max Planck-Institut für Biophysik, Frankfurt a.M., Süd 10, Forsthausstr. 70, Germany. Biological effects of UV radiation, and radiation chemistry.
- SCHMIDT, RICHARD P., M.D., Professor of Medicine and Head, Division of Neurology, College of Medicine, University of Florida, Gainesville, Florida. Spontaneous and induced epileptic discharge in single cortical neurons using microelectrodes; distribution and spread of epileptic discharge induced in thalamus; functional anatomy of petit mal epilepsy, and clinical electroencephalography.
- SCHNEIDER, ROBERT A., M.D., Associate Professor, Departments of Medicine and Psychiatry, University of Oklahoma Medical Center, 800 N.E. 13th Street, Oklahoma City 4, Oklahoma. Peripheral autonomic measurements in man--long term follow-up of patients with coronary artery disease and matched controls (levels and variability, heart rate, blood pressure, respirations, and skin resistance).
- SCHOENFELD, ROBERT L., D.E.E., Head (with John P. Hervey) and Assistant Professor, Laboratory of Electronics, Rockefeller Institute, New York 21, New York. Amplification of bioelectric potentials; methods for automatic data calculation and display; electronic control of biological stimuli, chemical processes and instruments, and application of engineering theory in biological measurements and models.
- SCHOEPPLE, GORDON M., Ph.D. (Ed. 1), Associate Professor, Department of Physiology, Washington University School of Medicine, St. Louis 10, Missouri. Recording of single nerve fiber impulses; effect of metabolic inhibitors on Na conductance "h factor"; kinetics of change in spike with inhibitors, and effect of polarization on dendritic action potentials.
- SCHOLES, NORMAN WALLACE, Ph.D. (Ed. 1), Research Associate, Department of Neuropharmacology and Neurophysiology, City of Hope Medical Center, 1500 East Duarte Road, Duarte, California. Mechanism of action of suspected chemical transmitters and/or modulators in the central nervous system (conducted on unit and intracellular recordings, using microelectrodes from mammalian brain).
- SCHROEER, RUDI M., M.E., Vice President--Chief Scientist, Technical Adviser to the President, Westgate Laboratory, Inc., Box 63, Yellow Springs, Ohio. Development and design of helmet mounted eye movement camera, and differential pressure gauge for air flow measurement and measurement of particle contamination in air flow (extremely high sensitivity).
- SCHUDER, JOHN C., Ph.D., Associate Professor of Surgery (Biophysics), Department of Surgery, University of Missouri, Columbia, Missouri. Electromagnetic energy transport across the closed chest wall at levels required for energizing a permanently implanted artificial heart; development of a micromodule pacemaker receiver for direct attachment to the left ventricle, and systematic study of the comparative effectiveness of various current waveforms in the treatment of ventricular fibrillation.
- SCHUELLER, OTTO, (Ed. 1), Physicist, Protection Branch, Life Support Systems Laboratory, Aerospace Medical Division, WADD (WWRDLP), Wright-Patterson Air Force Base, Dayton, Ohio. Life support and protective systems for aerospace flight.
- SCHULLER, ED, M.D. (Ed. 1), A.I.H.P., Chef de Clinique à la Faculté de Médecine de Paris, Clinique des maladies du système nerveux, Hôpital de la Salpêtrière, Boulevard de l'Hôpital, Paris 13, France. Continuous chemical analysis correlated with EEG; chemical analysis in neurobiology, and tests for metabolic disturbances in neuropsychiatry.
- SCHULMAN, JACK H. (Ed. 1), Stanley Thompson Professor of Chemical Metallurgy, School of Mines, Faculty of Engineering, Columbia University, New York 27, New York. On the influence of amphoteric lipids on the selective flux of salts and ions through non-aqueous liquid membranes, with special relation to physical chemical models for the asymmetric biological membrane to sodium and potassium ions, and measurement of potentials across bimolecular leaflets of amphoteric lipids in the presence of aqueous systems containing salts and ions of biological interest.
- SCHULZE, PAUL EUGENE, M.S., Graduate Student, Department of Psychology, Yale University, 333 Cedar Street, New Haven, Connecticut. Correlation of rate of disruptions in speech fluency (and other extralinguistic speech variables) with galvanic skin potential, heart rate, volume pulse, skin temperature, etc.
- SCHWAB, ROBERT S., M.D., Director of Brain Wave Laboratory, Department of Neurology, Massachusetts General Hospital, Boston 14, Massachusetts. Developing a frequency analyzer and using it here largely on patients who have brain lesions; quantification of the various elements of involuntary movement such as tremor by the simultaneous use of the electromyogram with surface electrodes being registered on an ink-writing electroencephalograph and movement recorder consisting of a two-plane accelerometer which also registers on the same apparatus, and measuring involuntary fatigue curves produced by an electronic stimulator driving the muscle so that it works the ergograph in a patient with myasthenia, Parkinsonism and other forms of fatigue.
- SCHWAN, HERMAN P., Ph.D. (Ed. 1), Professor, University of Pennsylvania, Electromedical Division, Moore School of Electrical Engineering, Philadelphia 4, Pennsylvania. Alternating current spectroscopy of biological matter (tissue, cell suspensions, protein solutions); diagnostic applications of ultrasound; effects of microwaves on biomatter and man, and potential theory of the electrocardiogram and diagnostic implications.
- SCHWARTZ, ARTHUR S., Ph.D., Chief, Laboratory of Physiological Psychology, Division of Neurobiology, Barrow Neurological Institute, 350 West Thomas Road, Phoenix, Arizona. Electrophysiological correlates of behavior; simultaneous monitoring of behavior (perception, learning, emotion) and brain electro-potentials of implanted animals, and frequency analysis and signal detection of electrophysiological data using computer techniques.
- SCHWARTZ, MARVIN, Ph.D., Research Assistant Professor (Psychology), Department of Psychiatry, State University of Iowa, College of Medicine, Iowa City, Iowa. Evoked cortical potentials from intact human subjects (averaging procedures); intra-cranial electrical responses in animals--chronic implantations, and relation of both the above to behavioral correlates and motivation.
- SCHWARZ, BERTHOLD ERIC, M.D., Psychiatrist, 74 South Mountain Avenue, Montclair, New Jersey. Psychopathological and psychophysiological aspects of trance-like states and extrasensory perception studies with the electroencephalogram.
- SCHWARZ, GERHARD, (Ed. 1), Electromedical Division, Moore School of Electrical Engineering, University of Pennsylvania, Philadelphia 4, Pennsylvania. Dielectric behavior of solutions and suspensions of particles (such as cells, macromolecules, polyions, etc.), especially at low frequencies.
- SCOTT, JOHN W., M.D., Professor, Department of Physiology, University of Toronto, and Director of EEG Department, Toronto General

- Hospital, C. H. Best Institute, College Street, Toronto 2, Canada. Electrical activity of trigeminal nucleus; activity of vestibular apparatus, and evoked cortical potentials to auditory stimuli.
- SCRANTON, RICHARD S., B.S.E.E., Research Electronic Engineer, Technology, Inc., 3090 Richfield Center, Dayton 30, Ohio. Electronic measurement of gas flow rates; measurement and telemetry of physiological parameters, and general instrumentation and telemetry.
- SEGAL, JOHN R., (Ed. 1), Physiologist, Neurology Section, Veterans Administration Hospital, 150 South Huntington Avenue, Boston 30, Massachusetts. Electrophysiological principles of learning; electrophysiological study of Mauthner cells, and current-voltage relationships of excitable membranes.
- SELENKOW, HERBERT A., M.D., Director, Thyroid Laboratory, Department of Medicine, Peter Bent Brigham Hospital, 721 Huntington Avenue, Boston, Massachusetts. Effects of chemical compounds on thyroidal homogenesis; detection and assay of protein hormones with radioimmunochemical techniques; bio-assay of pituitary hormones with radioisotopes of iodine, and determination of protein binding properties with radioactive triiodothyronine.
- SELLS, S. B., Ph.D., Professor of Psychology and Director of the Institute of Behavioral Research, Department of Psychology, Texas Christian University, Fort Worth 29, Texas. General survey of bioelectronic techniques and psychological and medical uses; generation of electric potentials by systems of the organism; techniques of recording, amplification and analysis; laboratory procedures, and behavioral and medical correlates.
- SEM-JACOBSEN, CARL WILHELM, M.D., Director of Research and Medical Director, EEG Laboratory, Gaustad Sykehus, Oslo, Norway. Depth electrographic studies of the human brain by means of recording and electrical stimulation; bioelectrical recording in high performance aircraft and spacecraft with inboard recording and/or telemetry including development of submonitor equipment for this purpose; O_2 recording in the brain with chronic implanted electrodes, and "yes and no" data reduction in the automatic EEG analysis.
- SEVELIUS, GUNNAR GEORGE, M.D., Instructor, Department of Medicine, University of Oklahoma School of Medicine, 921 NE 13th, Oklahoma City, Oklahoma. Radioactive tracer studies of circulation, particularly cardiac output and myocardial blood flow by surface counting techniques.
- SEVERY, DERWYN MARLAND, M.S., Research Engineer and Project Engineer, Automotive Collision Research, Department of Engineering, Institute of Transportation and Traffic Engineering, University of California, Los Angeles Campus, 405 Hilgard Avenue, Los Angeles 24, California. Instrumentation of human and anthropometric dummy subjects with transducers for the purpose of obtaining force data during trauma, and use of high speed camera techniques and electronically time sequence photos synchronized with transducer data, obtained in connection with full scale automobile collision experiments.
- SHACKEL, B., M.A., Psychologist and Human Factors Specialist, Psychological Research Laboratory, EMI Electronics Ltd., Hayes, Middlesex, England. Recording of electrical potentials (especially very low frequency or d.c.) from the organism as indication of or in relation to medical and behavioral state and performance; EOG and EDG (eye and skin potentials), and oculomotor behavior.
- SHAFER, WILLIAM A., M.D., Bio Systems Engineer, Department of Engineering, Ryan Aerospace, Harbor Drive, San Diego, California. Sensors.
- SHAGASS, CHARLES, M.D., Professor, Department of Psychiatry, State University of Iowa, 500 Newton Road, Iowa City, Iowa. Studies of cortical evoked potentials in man using averaging techniques; comparison of different kinds of psychiatric patients and normals; animal studies of evoked potentials, and drug studies.
- SHANDS, HARLEY CECIL, M.D. (Ed. 1), Professor of Psychiatry, Psychiatric Research Center, State University of New York, Downstate Medical Center, J Building, 450 Clarkson Avenue, Brooklyn 3, New York. Study of GSR response in sedation threshold procedure to investigate the following in a selected group of schizophrenic and depressed patients and a group of normal controls; clinical diagnostic and prognostic studies in connection with an inpatient psychiatric service; levels of arousal as measured by psychophysiological techniques including GSR and RB as well as EEG and EMG; the relation of various patterns of arousal to clinical diagnostic impressions and psychological tests, and the use of pentothal as a substitute for amytal for this procedure.
- SHANZER, STEFAN, M.D., Assistant Attending Neurologist, Department of Neurology, The Mount Sinai Hospital, One East 100 Street, New York 29, New York. Study of vestibular, oculomotor and postural mechanisms in monkeys; intracerebral recordings during optokinetic and vestibular nystagmus, and investigation of the role of brain stem in postural and seizure phenomena.
- SHAPIRO, ARTHUR, M.D., Associate Professor of Medicine, Director of Laboratories, Chief, Psychophysiology Section, Psychiatric Research Center, Department of Psychiatry, State University of New York, Downstate Medical Center, J Building, 450 Clarkson Avenue, Brooklyn 3, New York. Instrumental monitoring of physiological and behavioral processes in sleep, dreaming and the psychiatric interview.
- SHARPLESS, SETH, Ph.D., Assistant Professor, Department of Pharmacology, Albert Einstein College of Medicine, Eastchester Road and Morris Park Avenue, New York 61, New York. Denervation supersensitivity in the brain.
- SHEARN, DONALD W., Ph.D. (Ed. 1), Department of Psychology, Indiana University, Bloomington, Indiana. Heart rate conditioning and other cardiovascular conditioning, and muscle action potentials.
- SHEATZ, GUY C. (Ed. 1), Neurophysiologist, Department of Neurophysiology, Walter Reed Army Institute of Research, Washington 12, D.C. Correlates between brain electrical phenomena and behavioral or attentive faculties (using drugs to accentuate certain correlates).
- SHEER, DANIEL E., Professor of Psychology, Director, Psychology Laboratory, Department of Psychology, University of Houston, Cullen Boulevard, Houston, Texas. Chronic stimulation and EEG and autonomic recording in monkeys; electrical stimulation and recording from subcortical structures; effects on learning and performance, and computer analysis of the EEG and behavior.
- SHEN, DAVID W. C., Ph.D., Associate Professor, Department of Electrical Engineering, Moore School of Electrical Engineering, University of Pennsylvania, 34th and Walnut Street, Philadelphia 4, Pennsylvania. Self-organizing systems and biological control mechanism, and mathematical models of human operator in control.
- SHEPARD, ROBERT S., Ph.D., Assistant Professor, Department of Physiology and Pharmacology, Wayne State University College of Medicine, 1401 Rivard, Detroit 7, Michigan. Nervous control of the heart: electrocardiography, cardiac output, heart size (x-ray, Hg-in-rubber strain gauge), and blood pressure in the unanesthetized dog.
- SHER, LAWRENCE D., Research Staff, University of Pennsylvania, Electromedical Division, Moore School of Electrical Engineering, 200 South 33rd Street, Philadelphia 4, Pennsylvania. Possibilities of non-thermal biological effects due to irradiation by microwave energy; experimental approach using simple physical analogues of the appropriate biological system, and A.C. microelectrophoresis.
- SHERIDAN, T. B., Sc.D., Assistant Professor, Department of Mechanical Engineering, Massachusetts Institute of Technology, Cambridge, Massachusetts. Studies in transducers and displays for artificial touch sensors and remote manipulators.
- SHERMAN, RALPH L., B.S., Owner, J. M. Richards Laboratory, 15224 Kercheval, Grosse Pointe Park 30, Michigan. Quantifying spike activity in the electroencephalogram.
- SHERWOOD, STEPHEN L., M.D., Physician, Illinois State Psychiatric Institute, 1601 West Taylor Street, Chicago 12, Illinois. Multi-channel microelectrode work; frequency analysis; EEG, evoked responses, and behavior studies in animals and man.
- SHIMBEL, ALFONSO, Ph.D. (Ed. 1), Medical Research Associate IV, Department of Biophysics, Illinois State Psychiatric Institute, Chicago 12, Illinois. Synaptic transmission in tissue culture; infrared radiation and absorption in neural tissue, and EEG.
- SHINABARGER, EDWARD W., B.S., Electronic Research Engineer, Department of Bionics, Aerospace Medical Research Laboratory, MRMB, Wright-Patterson Air Force Base, Ohio. Information processing by the nervous system, especially by the auditory system.
- SHIPTON, HAROLD W., A.M., Research Assistant Professor, Division of Medical Electronics, State University of Iowa, College of Medicine, Iowa City, Iowa. Development of electrophysiological display systems, and general medical instrumentation.
- SHMAVONIAN, BARRY M., Ph.D., Chief Psychologist, Division of Psychophysiology Research, Department of Psychiatry, Duke University Medical Center, Durham, North Carolina. Autonomic function and conditioning with particular interest in central, skeletal and hormonal components of autonomic responses, and use of EEG, EMG, GSR, photocrystal plethysmography.
- SHOCK, N. W., Ph.D., Chief, Gerontology Branch, Research Gerontology, National Heart Institute and the Baltimore City Hospitals, Baltimore 24, Maryland. Neuromuscular function studies; while measuring nerve conduction velocity and reflex time in subjects of

different ages and from different socio-economic groups; recording of muscle action potentials from skin surface electrodes; recording of potentials of the abductor digiti V muscles resulting from electrical stimulation of the ulnar nerve for conduction velocity estimates, and recording of potentials of the small muscles of the foot following tactile stimulation of the skin of the sole of the foot for reaction and reflex time estimates (scratching for reflex time and touch for reaction time) (with A. H. Norris).

SHOR, RONALD E., Ph.D., Research Associate in Psychology, Department of Psychiatry, Harvard Medical School, Massachusetts Mental Health Center, 74 Fenwood Road, Boston 15, Massachusetts. Psychophysiological correlates, and physiological effects of hypnotic analgesia during hypnotically-produced emotions, etc.

SHURLEY, JAY T., M.D., Senior Medical Investigator (Psychiatry), Department of General Medical Research, Veterans Administration Hospital, Oklahoma City 4, Oklahoma. Sensory isolation; concept identification; psychophysiology of dreams and hallucination; psychophysiology of hypnotic states; psychopharmacology; psychotherapy; and the psychophysiology and neurophysiology of perception generally, with emphasis on auditory and visual perception.

SIAS, FRED R., M.S.(EE), Research Associate, Department of Neurosurgery, University of Mississippi Medical Center, 2500 North State Street, Jackson, Mississippi. Application of systems engineering techniques to studies of the visual system and development of special instrumentation, and development of digital data handling equipment for neurophysiological and behavioral research.

SICHEL, F. J. M., Ph.D., Professor and Chairman, Department of Physiology and Biophysics, College of Medicine, University of Vermont, Burlington, Vermont. Studies of electro-mechanical coupling in cardiac and skeletal muscle.

SIEBERT, WILLIAM M., Sc.D., Associate Professor, Department of Electrical Engineering, Massachusetts Institute of Technology, Cambridge 39, Massachusetts. Study of mathematical models for the mechanical and neural parts of the auditory system.

SIEGEL, ARTHUR IRVING, Ph.D., Director, Applied Psychological Services, 114 North Wayne Avenue, Wayne, Pennsylvania. Measurement of a variety of physiological indices for judging efficiency of the operation in closed-loop systems.

SIEGEL, EDWARD, Special USPHS Fellow in Biophysics, Donner Laboratory, University of California, Berkeley 4, California. Cellular biophysics; peripheral utilization of thyroid hormone analogs by leukocytes; zinc 65 tracer studies; sulphur 35 tracer studies, and high resolution radioautography.

SIEGEL, JEROME, Ph.D., Assistant Professor, Department of Psychology, University of Delaware, Newark, Delaware. Electrical stimulation and recording from chronically implanted electrode preparations and acute animal preparations toward the purpose of understanding the electrophysiological bases of sleep, motivated and learned behavior.

SIEMSEN, JAN K., M.D., Staff Physician, Medical Service, Veterans Administration Hospital, Long Beach, California. Radiolabelled study of blood and plasma volume and total body water and electrolytes in congestive heart failure; radiolabelled determination of myocardial blood flow; radiolabelled renal clearance studies; influence of hypoxic and other stimuli on red cell survival, and treatment of pulmonary insufficiency by thyroid ablation.

SILVERMAN, A. J., M.D., Associate Professor, Department of Psychiatry, Medical Center, Duke University, Durham, North Carolina. EEG and arousal; GSR and arousal; concomitants of above and endogenous chemistries with finger plethysmography; respirometry, myography; psychophysiological correlates of sensory deprivation, and psychophysiological and neurophysiological correlates of perceptual mode differences.

SILVERMAN, DANIEL, M.D., Associate Professor, Department of Neurology and Psychiatry, Graduate School of Medicine, University of Pennsylvania, Philadelphia, Pennsylvania. Use of electroencephalogram as a diagnostic tool in medicine.

SILVERMAN, HIRSCH LAZAAR, Ph.D., Professor of Psychology, Department of Educational and School Psychology, Graduate School of Education, Yeshiva University, 110 West 57th Street, New York 19, New York. Study of psychodiagnostic indicants related to the profession of the ministry.

SIMINOFF, ROBERT, Ph.D., Instructor, Department of Pharmacology, Woman's Medical College of Pennsylvania, 3300 Henry Avenue, Philadelphia 29, Pennsylvania. Neurophysiology and neuropharmacology: use of analog computers to determine the amount of activity on peripheral nerves; the use of microelectrodes to record activity from single neurons in the central nervous system, and the determination of their temporal patterning and how this is

influenced by physiological and pharmacological parameters.

SIMMERS, M. H., Ph.D., M.D., Coordinator, Cancer Training and Director, Oncology Laboratory, Department of Pathology, California College of Medicine, 1721 Griffin Avenue, Los Angeles 31, California. Incubated chicken eggs in magnetic fields; growth of radish seedlings in magnetic fields; study of magnetic fields on the sex ratio of *Drosophila*, and similar studies using electric fields.

SIMON, ARTHUR, B.S.E.E., Human Factors Engineer, Advanced Display Systems Laboratory of the Advanced Systems and Development Engineering Department (ASYDE), The Bendix Corporation, Eclipse-Pioneer Division, Teterboro, New Jersey. Utilization of bioelectric signals to control servosystems and generate illusionary displays, and use of bioelectric signals for evaluating new controls and displays.

SIMON, CHARLES W., Ph.D., Head, Man-Machine System Project, Department of Space Sciences, Hughes Research Laboratories, P.O. Box 338, Malibu, California. Quantification of sleep and the quality of sleep involving the study of relationships among bioelectric physiological measurements and behavioral conditions (limited to normal humans in states of naturally induced drowsiness and sleep).

SIMON, GEORGE B., Ed.D., Principal Scientist, Chief, Information Systems, Human Factors--Life Sciences, North American Aviation Space and Information Systems Division, Torrance Facility, 12214 Lakewood Boulevard, Downey, California. Monitor status of man in space; performance indexes of man's capability to perform in long space mission including predictive measures to identify impending or likely decrement in performance; telemetry (multivariate analysis of telemetered data for minimum sets of parameters needed; possible sampling as opposed to continuous readings); bionics (man-computer relations, automatic [or semi-automatic] techniques for pattern recognition; "learning" machines; computer input devices and displayed outputs), and automated instruction (single and multiple students, chaining, and using audio as well as video stimuli or presentations).

SIMONS, DAVID G., M.D. (Lt. Col., USAF, MC), Chief, Biocommunications Section, Department of Bioastronautics, School of Aerospace Medicine, SAM Box 2793, Brooks Air Force Base, Texas. Development of multichannel personalized telemetry techniques for monitoring the functional state of the CNS in operational aerospace situations including methods of data analysis, and EEG, EDR, heart and respiratory rate patterns of particular interest.

SIMONSON, ERNST, M.D., Professor, Department of Physiological Hygiene, University of Minnesota, Stadium, Gate 27, Minneapolis 14, Minnesota. Impedance plethysmography; computer analysis of ECG (vector analysis); orthogonal lead systems, ECG; electroretinogram in color vision, and critical flicker-frequency and chromatic fusion.

SINDBERG, RONALD M., Ph.D. (Ed. 1), Post-doctoral Fellow, Department of Neurophysiology, University of Wisconsin Medical School, Madison 6, Wisconsin. Auditory response fields in association and motor cortex of cat (with R. F. Thompson); auditory responses in ventral temporal cortex of cat (with R. F. Thompson); occipital alpha rhythm and the archimedes spiral afterimage (with J. Schein), and visual evoked potentials in auditory cortex of cat.

SINES, JACOB O., Ph.D. (Ed. 1), Research Assistant Professor, Department of Psychiatry, Washington University School of Medicine, 1420 Grattan, St. Louis 4, Missouri. Autonomic correlates of experimentally induced psychosomatic phenomena in animals and man; autonomic activity as measures of drive; techniques for sensing A.N.S. functions in laboratory animals, and relation between A.N.S. activity and patterns and psychiatric condition.

SINGER, ALVIN, M.D., Head, Medical Research Group, American Electronic Laboratory, Inc., 121 North Seventh Street, Philadelphia, Pennsylvania. Generation of potentials from gastric juices; respiratory movement; telemetering of body temperatures; and telemetering of EKG's.

SINGER, JEROME R., Ph.D., Associate Professor, Department of Electrical Engineering, University of California, Berkeley 4, California. Design and construction of a self-organized electronic visual pattern recognition system with size and tilt invariant recognition; blood flow measurement in intact limbs using nuclear magnetic resonance techniques, and self-organized electronic systems which stimulate human behavior.

SISON, RAMÓN C., M.D., Associate Pathologist, Department of Pathology, St. Mary Mercy Hospital, 540 Tyler Street, Gary, Indiana. Quantitative studies of various parameters of the isotope (Hg^{203}) renogram curve and their reliability in the diagnosis of specific renal anatomic and physiologic abnormalities, and improvement of renogram instrumentation (radiation detection and recording) and laboratory technique for reproducibility of results.

- SLATER, LLOYD EDWARD, B.S., Executive Director, Foundation for Instrumentation Education and Research, 335 East 40th Street, New York 17, New York. Organize and sponsor symposia and forums on bioelectronic instrumentation, and support graduate fellowship in bioelectronics.
- SLEIGHT, ROBERT B., Ph.D., President, Applied Psychology Corporation, 4113 Lee Highway, Arlington 7, Virginia. Fatigue and stress in aircraft pilots and automobile drivers, especially, related to mid-air collision avoidance and maintenance of following distance, respectively.
- SLOTE, LAWRENCE, Eng.Sc.D., Senior Research Scientist, Research Division, College of Engineering, New York University, University Heights 53, New York. The effects of ionized air on human performance.
- SMALL, JOYCE G., M.D., Assistant Professor of Psychiatry, Departments of Psychiatry and Neurology, Malcolm Bliss Mental Health Center, 1420 Grattan Street, St. Louis 4, Missouri. Clinical psychiatric, psychologic and EEG studies in populations of psychiatric and neurologic patients interrelating data obtained in these three areas; design and testing of data reduction methods in psychiatry and EEG; EEG activation techniques and thresholds in normal subjects, electroclinical studies of aggression, and EEG stability in schizophrenia.
- SMEDAL, HARALD A., Capt., (MC), USN, National Aeronautics and Space Administration, Ames Research Center, NASA - ARC, Moffett Field, California. Bio-instrumentation directed at monitoring and evaluating the functions of visual, respiratory, cardiovascular and central nervous system.
- SMITH, G. DALE, D.V.M. (Ed. 1), Deputy Assistant Director for Life Sciences, NASA Ames Research Center, Mountain View, California. Microinstrumentation for physiological and environmental monitoring in space craft.
- SMITH, H. MILLARD, M.D., Ph.D., Associate Professor, Department of Physiology, University of Arkansas Medical Center, 4301 West Markham Street, Little Rock, Arkansas. Structure and function in nerve.
- SMITH, JOHN P., M.A., Senior Specialist, System Utilization Department, International Electric Corporation, Paramus, New Jersey. Determination of adequate colors for military displays; influence of form parameters on visual perception.
- SMITH, JOSEPH R., Jr., B.E.E., Research Scientist, Human Performance Requirements, NASA - Ames Research Center, Moffett Field, California. Instrumentation for study of visual, respiratory, and cardiovascular functions of man in flight and on a centrifuge, and determination of quantities needed for monitoring well-being by use of telemetry.
- SMITH, ORVILLE A., Ph.D., Assistant Director, Regional Primate Research Center, School of Medicine, University of Washington, Seattle 5, Washington. CNS control of cardiovascular function, and CNS control of motivated behavior.
- SMITH, PHILIP A., Ph.D., Human Factors Scientist, Bio-Medical Systems Department, System Development Corporation, 2500 Colorado Avenue, Santa Monica, California. Analysis and preliminary design of computer based medical information processing systems; research in the use of quantitative techniques and digital computers in the behavioral sciences, and clinical psychology.
- SMYTH, MURRAY G., M.D., Director of Biomedical Research, Smith Kline - Percision Company, 1500 Spring Garden Street, Philadelphia 1, Pennsylvania. Medical uses of ultrasound with special attention to diagnostic techniques, and transducer and associated devices for processing, storing, and displaying biological information.
- SNELL, FRED M., Ph.D., Professor and Chairman, Department of Biophysics, School of Medicine, University of Buffalo, 3435 Main Street, Buffalo 14, New York. Mechanisms of ionic transport (that which is coupled with metabolic sources of energy and that which is dependent upon external supply of energy), and interrelations of transport and membranal potential differences.
- SNIDER, RAY S., Ph.D. (Med.Sc.), Professor, Department of Anatomy, Northwestern University, 303 East Chicago Avenue, Chicago 11, Illinois. Bioelectrical studies including paroxysmal discharges on single neurons in the cerebellar cortex and reticular formation.
- SOLYOM, LESLIE, M.D., Research Lecturer, Department of Psychiatry, Allan Memorial Institute, 1025 Pine Avenue, West, Montreal 2, Quebec, Canada. Conditioned reflex method for physiology of memory impairment (diagnostic purposes); current methods (eye-blink, plethysmograph, finger withdrawal conditioning), and GSR.

- SOMERS, JAMES EARL, M.D. (Ed. 1), Clinical Instructor, Department of Psychiatry, School of Medicine, University of North Carolina, Chapel Hill, North Carolina. Use of GSR in a feedback system set up to teach interviewing to medical students.
- SOUKUP, DAVID WAYNE, B.S., Biochemist, Experimental Therapeutic Unit, Department of Medicine, University of Oklahoma, Central State Hospital, Box 151, Norman, Oklahoma. Development of miniature GSR, EEG, EKG and blood pH apparatus for use in telemetry, and perfecting high accuracy in temperature, GSR and blood pH.
- SPANGLER, ROBERT ALAN, M.D., Research Associate, Department of Biophysics, University of Buffalo, Buffalo 14, New York. Computer studies of biophysical problems; chemical kinetics of model systems, and characteristics of model membranes.
- SPERELAKIS, NICK, Ph.D., Assistant Professor, Department of Physiology, Western Reserve University School of Medicine, Cleveland 6, Ohio. Electrophysiology of muscle and nerve; coupling between electrical and mechanical events in muscle, and transmission of excitation from cell to cell in cardiac and smooth muscles.
- SPIEGEL, ERNEST A., M.D., Professor and Head, Department of Experimental Neurology, Temple University, 3400 North Broad Street, Philadelphia 40, Pennsylvania. Recording of subcortical potentials in the brain of man and experimental animals by means of stereotextically inserted electrodes, and electrocorticogram.
- SPIELBERGER, CHARLES D., Ph.D., Associate Professor, Department of Psychology, Duke University, Durham, North Carolina. Studies of the effects of anxiety, situational variables, and stress on bio-electronic autonomic indices in learning and perceptual tasks.
- SPRING, MAXWELL, M.D., Assistant Clinical Professor, Department of Medicine, New York Medical College, 105 Street and Fifth Avenue, New York, New York. Automatic electronic sphygmomanometer, and Achilles reflex instrument.
- STAMM, JOHN S., Ph.D., Professor, Department of Psychology, Queens College, Flushing 67, New York. Brain research, electrical recording and stimulating from electric areas in brain of experimental monkeys, and behavioral training of monkeys on automotive equipment.
- STANDISH, JAY C., Executive Director, Standish Research Foundation, 6760 Mayfield Road, Cleveland 24, Ohio. Research in educational activities in biomedical instrumentation, including the test and development of industrial medical instrumentation, in conjunction with noted medical research centers and associated clinics and hospitals; measurement, monitoring and recording of reactions and characteristics of living systems; information retrieval and computer applications to perfect medical analysis and simulation, in conjunction with monitoring; prognostic equipment development; biochemical analysis equipment, and provision of hospital and clinical facilities to permit actual medical testing and monitoring by experienced technicians, under the supervision of attending physicians to assure the development of medically compatible instrumentation.
- STARK, LAWRENCE, M.D., Head, Neurology Section of Electronic Systems Laboratory and Biology Department, Massachusetts Institute of Technology, Cambridge, Massachusetts. Applying concepts of servoanalysis to study the normal functioning of the central nervous system, and abnormalities caused by disease processes, and in the general problem of applying information theory to biology.
- STARKWEATHER, JOHN A., Ph.D., Associate Professor of Medical Psychology, Department of Psychiatry, University of California School of Medicine, Langley Porter Neuropsychiatric Institute, 401 Parnassus Avenue, San Francisco 22, California. Development of spectrum analysis measures of vocal behavior as indications of emotional state (with Hargreaves), and the correlates of these measures with bioelectric response.
- STAUFFER, JOHN C., M.D., Instructor, Department of Medicine, University of Maryland School of Medicine, and Chief, Department of Radiolabels, Washington County Hospital, Hagerstown, Maryland. Cardiac output before and after exercise using isotope dilution technique with external counting, and program on transmission of electrocardiograms by telephone and analysis by electronic computer.
- STAUGAS, LEONARD WILLIAM, M.A., Human Factors Scientist Senior, Bio-Medical Systems Department, System Development Corporation, 2500 Colorado Avenue, Santa Monica, California. Development of procedures for encoding, storing, and processing data in large information files; application of digital computers and electronic accounting machines to statistical analysis in medicine, public health and the behavioral sciences; and psychometry.

- STAVRAKY, GEORGE W., M.D., C.M., M.Sc., Professor of Physiology, Medical Faculty, University of Western Ontario, 346 South Street, London, Ontario, Canada. Electrocardiograms and EEG recordings of effects of acetylcholine, epinephrine, and convulsant agents on normal and lesioned brains.
- STEELE, JACK ELLWOOD, M.D., Project Engineer, Bioacoustics Branch, Aerospace Medical Research Laboratories, Wright-Patterson Air Force Base, Ohio. Logical, mathematical and electronic models of nervous system, and bionics.
- STEINBERG, CHARLES A., Group Leader, Department of Medical and Biological Physics, Airborne Instruments Laboratories, Deer Park, Long Island, New York. Research in the application of automatic computation to medical diagnosis; information and communication theory as applied to psychophysiological problems, and design of special-purpose computer systems for medicine and biology.
- STEINBERGER, Wm. W., Ph.D., Assistant Professor, Department of Physiology, University of Michigan, E Medical Building, Ann Arbor, Michigan. Studying of factors in maintaining and controlling denervated muscle for long terms by electrical stimulation, and effects of CO₂ on nerve-muscle transmission.
- STEINER, SHELDON H., M.D., Clinical Investigator, Department of Medicine, Veterans Administration Hospital, 1481 West Tenth Street, Indianapolis, Indiana. Cerebral blood flow and dynamics using external radioisotope equipment, and pulmonary circulation with electric data recording.
- STERLING, THEODOR DAVID, Ph.D., Associate Professor and Director, Medical Computing Center, Department of Biometrics, College of Medicine, University of Cincinnati, Eden and Bethesda Avenues, Cincinnati 19, Ohio. Investigation of the application of computers to biological and medical, clinical, and research problems, ranging from statistical applications to real-time medical engineering problems.
- STERN, JOHN A., Ph.D., Professor of Medical Psychology, Department of Psychiatry, Washington University, School of Medicine, 1420 Grattan, St. Louis 4, Missouri. Processing of bioelectric data by use of analog and digital computer techniques, and conditioning of physiological systems and predictors of conditionability.
- STERN, ROBERT M., M.S., Research Assistant, Department of Psychology, Indiana University, Bloomington, Indiana. Bioelectrical potentials during sensory deprivation, and the relationship between EOG and the autokinetic effect.
- STERNBACH, RICHARD A., Ph.D., Special Research Fellow, Clinical Psychology Department, Massachusetts Mental Health Center, Boston 15, Massachusetts. Psychophysiology, including polygraphic recording of autonomic functions for studies of emotions and psychosomatic disease; magnetometric studies of gastric motility, and studies of relationships between electrical activity of brain and autonomic functions.
- STERNBERG, JOSEPH, M.D., Professor of Physiology and Nuclear Hygiene, Department of Physiology, and Chair of Nuclear Hygiene, Faculty of Medicine, School of Hygiene, University of Montreal, 2900 Mount Royal Boulevard, Montreal, Canada. Application of nuclear medicine techniques to physiology and diagnosis; radioisotope techniques in microbiology; placental permeability studies with radioactive elements, and metabolic changes during the infection and immunization.
- STEVENS, S. S., Ph.D., Professor of Psychophysics and Director of Laboratory of Psychophysics, Harvard University, Memorial Hall, Cambridge 38, Massachusetts. Stimulation and recording of responses in sensory systems.
- STEWART, LEVER F., M.D., Assistant Professor, Department of Neurology, University of Virginia School of Medicine, Charlottesville, Virginia. Developing a program of applied clinical investigation using the echo encephalograph, which has not previously been utilized in the country for the investigation of cerebral disorders.
- STEWART, MARK A., M.D. (Ed. 1), Chief Resident, Renard Hospital, Department of Psychiatry, 4940 Audubon, Washington University, St. Louis 10, Missouri. Studies of conditioning and habituation of the GSR in normal and psychiatrically ill subjects.
- STEWART, PETER A., Ph.D. (Ed. 1), Associate Professor, Department of Physiology, Emory University, Atlanta, Georgia. Galvanotaxis of slime mold plasmodia; impulse conductor velocities in Purkinje tissue of mammalian heart, and auditory analysis of EEG.
- STIEBER, ALEXANDER (Ed. 1), Staff Scientist, Operations Research, Physics Division, Cornell Aeronautical Laboratory, Inc. P.O. Box 235, Buffalo 21, New York. Decision making procedures for command and control of large, complex systems (military and industrial); automation of decision processes through the use of computer techniques such as the perceptron concept, and research and development of the perceptron concept.
- STOECKLE, HARRY E., M.D., Associate Professor, Department of Pediatrics, University of Missouri Medical School, Columbia, Missouri. Development of micromodule pacemaker for direct attachment to the left ventricle; effects of drugs on ventricular defibrillation; effect of various wave forms on ventricular defibrillation, and development of a counter-pulsating pump for respiratory distress in premature infants.
- STRUMWASSER, FELIX (Ed. 1), Department of Neurophysiology, Walter Reed Army Institute of Research, Washington 12, D.C. Electrophysiological changes in central nervous system and periphery associated with entry into hibernation and reawakening; development of remote control microelectrode advancer for study of single brain cells, and multiple microelectrode studies of simple invertebrate ganglia with computer analysis and simulation of neuronal action and interaction.
- STUCKI, JOHN F., M.D., Co-Director, Department of Radiology and Nuclear Medicine, Thomas D. Dee Memorial Hospital, 2440 Harrison Boulevard, Ogden, Utah. Nuclear medicine; recording methods of scintiscan data, and recording methods of electrokymograph.
- STURN, RALPH E., Staff Member and Consultant in Bioelectronics, Department of Physiology, Mayo Clinic, 200 First Street, S.W., Rochester, Minnesota. Image amplification and its application to roentgenography and astronomy, and biomedical instrumentation.
- SUGA, NOBUO, Department of Physiology, Tokyo Medical and Dental University, Bunkyo-Ku, Tokyo, Japan. Hearing in invertebrates and vertebrates by the use of the microelectrode technique; comparative analysis of hearing in the animal kingdom, and analysis of brain mechanisms of higher animals from a view point of hearing.
- SUGG, JAMES, Graduate Research Assistant, Department of Botany, Washington State University, Pullman, Washington. Measurement of transmembrane electro-potentials of cells of higher plants as related to ionic regulation.
- SULLIVAN, GEORGE H., M.D., B.S.E.E., Vice President and Medical Director, Medical Department, Spacelabs, Inc., 15521 Lanark Street, Van Nuys, California. Physiological Telemetry systems (up to 8 channels) for monitoring electrocardiogram, electromyogram, respiration, galvanic skin response, electroencephalogram, and voice (BIOTEL); advanced physiological data acquisition and display system - environmental and physiological monitoring (VIDAT); central cardiac monitoring system; pulse wave velocity computer; myoelectric servo-boost impedance oculogram.
- SUMMERFIELD, ANNE B., Ph.D., Operations Research Scientist, Senior, Bio-Medical Systems Department, System Development Corporation, 2500 Colorado Avenue, Santa Monica, California. Use of computers in medical research and education including continuing education for physicians, information theory, acoustics, quantitative methods in audiometry, cosmic rays, infrared radiation, experimental design and statistical analysis, and consultant to National Institutes of Health on use of computers in biomedical research.
- SURAWICZ, B., M.D., Associate Professor, Department of Medicine, University of Kentucky, Lexington, Kentucky. Recording of transmembrane (cardiac muscle) potentials with microelectrodes.
- SURWILLO, WALTER W., Ph.D., Psychophysiological, Gerontology Section, National Institutes of Health, Baltimore City Hospitals, Baltimore 24, Maryland. Recording of electrical potentials from the organism; analysis of electrophysiological data, and determination of behavioral correlates of electrophysiological recordings.
- SUTFIN, D. C., Ph.D., Research Physiologist, Department of Research, Honeywell--Holland Division, P.O. Box 8776, Denver 10, Colorado. Research and development of biomedical instrumentation including transducers and signal conditioning equipment.
- SUTHERLAND, GEORGE F., M.D., Chief Investigator, Psychophysiology Laboratory, Department of Medical Research, Spring Grove State Hospital, Catonsville 28, Maryland. Instrumentation and technique for the precise recording of parotid flow in man; verification of the Pavlovian theory with respect to higher nervous activity in man; development of an objective method of evaluating changes in the mental and emotional state of the individual, and devising a mathematical model that will represent variations in the parotid flow and thus provide indices of the internal milieu.
- SUTIN, JEROME, Assistant Professor, Department of Anatomy, Yale University Medical School, 333 Cedar Street, New Haven 11, Connecticut. EEG and evoked potential recording in chronic preparations; evoked potential and unit recording in acute preparations, and nervous system studies of limbic-hypothalamic relationships.

SWEENEY, JAMES W., Ph.D., Director, Biomedical Computing System, Tulane University, New Orleans 18, Louisiana. Linear programming techniques for dietary problems; electronic processing of the medical records, and computer processing and control of physiological information.

SWENEY, ARTHUR BARCLAY, Ph.D., Associate Professor, Department of Psychology, Texas Technological College, Lubbock, Texas. Physiological responses to psychological conflict, and cognitive measures of physiological drive states.

SWENSON, WENDELL M., Ph.D., Clinical Psychologist, Section of Psychiatry, Mayo Clinic, Rochester, Minnesota. Research in automation techniques in personality assessment, involving automated scoring and interpretation of structured personality tests for use in a medical center, and research on automated record keeping and diagnostic information in medicine.

SWETS, JOHN A., Ph.D., Associate Professor, Department of Psychology, Massachusetts Institute of Technology, Cambridge 39, Massachusetts, and Senior Scientist, Bolt Beranek and Newman, Inc., 50 Moulton Street, Cambridge 38, Massachusetts. Psychophysics; decision-making; computer teaching machines; information retrieval, and man-computer cooperation.

SWISHER, SCOTT N., M.D., Associate Professor of Medicine and Head, Hematology Unit, Department of Medicine, University of Rochester School of Medicine and Dentistry, 260 Crittenden Boulevard, Rochester 20, New York. Logical systems for medical diagnostic programs, and reduction of non-numerical biomedical data for processing systems.

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TABOWITZ, DAVID, B.A., Director, Biophysics Division, Research Department, New York Eye and Ear Infirmary, 218 Second Avenue, New York 3, New York. Electronystagmography on humans for diagnosis; electronystagmography on cats undergoing ultrasonic radiation of the labyrinth; electrocardiography on animal; study of nerve potentials on animals, and continuous monitoring of perfusion of animals with radio-activity.

TALBOT, RICHARD, D.V.M., Assistant Professor, Department of Physiology, College of Veterinary Medicine, Iowa State University, Ames, Iowa. Dye detection in the cardiovascular system; electrode implants in experimental animals.

TAMPLIN, ARTHUR R., Ph.D., Manager, Physiology and Bio-Engineering Department, Department of Physiology, Thiokol Chemical Corporation, Humetrics Division, 6382 Arizona Circle, Los Angeles 45, California. Development of electronic instruments to measure physiological parameters of significance to the practicing physician, especially those instruments that will allow physicians to determine the status of his patients' cardiovascular systems.

TANG, PEI CHIN, Ph.D., Chief, Neurophysiology Branch, Civil Aeromedical Research Institute, Federal Aviation Agency, P.O. Box 1082, AM-116, Oklahoma City, Oklahoma. Neural regulation of respiration involving use of low level amplifiers, integrators for phrenic nerve discharge, servo-spirometer, pneumograph, carbon dioxide analyzer, etc.; human evoked potential involving use of electronic averaging technique, EEG recorder, oscilloscopes, stimulators, etc., and EEG study on human performance involving use of EEG recorder, photostimulators, audio stimulators, frequency analyzer, etc.

TAPLITS, SOL, M.D., Physician in Chief, Radioisotope Unit, Jewish Hospital, Burnet and Ridgeway, Cincinnati 29, Ohio. Immediate rate uptake recording in thyrotoxicosis and thyroid hyperplasia; recordings in bilateral renograms and the application of principles of rates; a method of simultaneous recording the concentration and excretion of kidneys, and bilaterally with a single scintillation detector, spectrometer and recorder.

TAPP, JACK T., Ph.D., Assistant Professor, Department of Psychology, Vanderbilt University, Nashville, Tennessee. Psychopharmacology; behavioral concomitants of spreading cortical depression and recording of associated bioelectrical activity; electroencephalographic investigation of nervous function and behavior.

TASAKI, ICHII, M.D., Laboratory of Neurophysiology, National Institute of Mental Health, National Institutes of Health, Bethesda 14, Maryland. Generation of electric potentials by organism, and recording of electric potentials from organism.

TAUXE, W. NEWLON, M.S., M.D., Director, Diagnostic Radioisotope Laboratory, Section of Clinical Pathology, Mayo Clinic, 200 First Street, S.W., Rochester, Minnesota. Diagnostic procedures in area of renal physiology; erythrokinetics; cholesterol - metabolism, and kinetics of thyronine transport.

TAYLOR, J. D., Ph.D., Head, Department of Pharmacology, Abbott

Laboratories, North Chicago, Illinois. Telemetering; time series correlation of EEG; data processing; development of transducers, and analog simulation of drug kinetics.

TAYLOR, JUSTIN L., Jr. (Ed. 1), Electronics Technician, Acceleration Section, Biophysics Branch, Aerospace Medical Laboratory, WWRDMB-1, WADD, Wright-Patterson Air Force Base, Ohio. Cardiac output and related parameters using the dye dilution technique during forward acceleration on the human centrifuge with concurrent blood sampling and expired gas collection for post run analysis, and spatial vector electrocardiography during forward acceleration.

TEAS, DON C., Ph.D. (Ed. 1), Research Associate, Special Fellowship, NINDR, Department of Physiology, Central Institute for the Deaf, 818 South Kingshighway, St. Louis 10, Missouri. Recording electrical potentials from the inner ear of the guinea pig in response to acoustic stimulation; analysis of these responses in the context of the function of the inner ear, and on the basis of inferences thus made, verification or extension in psychoacoustic experiments.

TEMPLETON, McCORMICK (Ed. 1), Instructor, Department of Anatomy, Northwestern University Medical School, 303 East Chicago Avenue, Chicago 11, Illinois. Study of the acetylcholinesterase distribution in isolated cerebellum, and relation of acetylcholinesterase to the 300 cycle per second activity of cerebellum.

TENNEY, ASHTON M., (Ed. 1), Research Scientist, Research Facility, Rockland State Hospital, Orangeburg, New York. Muscle action potentials, and bioelectrical fields, D.C.

TEPAS, DONALD, B.A., MPG Research Department, Human Factors Group, Minneapolis-Honeywell Regulator Company, 2600 Ridgway Road, Minneapolis 40, Minnesota. Research in EKG, EMG, and ERG, and computer analysis of evoked potentials.

TERZUOLO, CARLO A., M.D., Professor, Department of Physiology, University of Minnesota Medical School, Minneapolis 14, Minnesota. Electrical activities in single nerve cells (vertebrate and invertebrate).

THACKRAY, RICHARD I., Ph.D., Research Psychologist, Environmental Stress Section, Behavioral Sciences Laboratory, Wright-Patterson Air Force Base, Ohio. Development of indices for the measurement of activation level, and correlation of activation level with performance changes under stress.

THALER, VICTOR H., M.S., Capt., Research Clinical Psychologist, Psychophysiology Section, Biophysics Branch, Aerospace Medical Research Laboratories, Wright-Patterson Air Force Base, Ohio. Multivariate studies on psychophysiology of stress, and multivariate studies on effects of hypnosis on physiology.

THELIN, ANDREA J., B.A., Physiologist, Physiology Branch, United States Naval Medical Research Laboratory, United States Naval Submarine Base New London, Box 100, Groton, Connecticut. pH determinations and gas analyses of blood and other body fluids prior to, during, and after acute and chronic exposure to altered environmental conditions, and EKG, EEG, body temperature, arterial and venous pressure responses to acute and chronic exposure to altered environmental conditions.

THOMAS, CLAYTON LAY, B.S., M.D., M.P.H., Medical Director, Tampax, Inc., Palmer, Massachusetts. Physiology of uterus and vagina, using pressure sensitive transducer capsule to detect changes in intrauterine pressure.

THOMAS, E. LLEWELLYN, M.D., Medical Research Associate, Department of Clinical Research, Ontario Hospital, 3131 Lakeshore Boulevard, W., Toronto 14, Ontario, Canada. Eye movements, liver blood flow, and tremor studies.

THOMAS, MADISON H., M.D., B.S., M.S., Director, EEG Department, Latter Day Saints Hospital, 330 Ninth Avenue, Salt Lake City, Utah. EEG study of effects of psychotropic drugs.

THOMAS, P. E., D.O., Associate Professor and Chairman, Department of Physiology, Kirksville College of Osteopathy and Surgery, Kirksville, Missouri. Recording of EMG, dorsal and ventral root potentials in studies on the effect of chronic irritation on viscerosomatic and somatovisceral reflex patterns.

THOMPSON, NOEL PAGE, M.D., M.S.E.E., Lecturer, Electrical Engineering Department, Stanford University, and Chief, Medical Electronics Division, Palo Alto Medical Research Foundation, 860 Bryant Avenue, Palo Alto, California. Instrumentation and signal analysis, and developing program in biomedical engineering.

THOMPSON, WILLIAM D., Jr., Ph.D., Department of Psychology, Baylor University, Waco, Texas. Bioelectric and gross behavioral changes under stimulation of low-intensity ultra high frequency

radio fields (USPHS grant # M-6067-A), and bioelectric measures as predictors of operant behavior decrement under stress (USAF contract AF29(600)-3310).

THOMSON, RODERICK A. E., Technical Associate, Department of Radiation Physiology and Therapy Section, University of Rochester School of Medicine and Dentistry, Rochester, New York. Study of the biological effects of microwaves, and the influence of microwaves on the response to ionizing radiation exposure.

TIMO-IARIA, CESAR, Assistant Professor, Department of Physiology, Faculdade de Medicina de Ribeirão Preto, Universidade de São Paulo, São Paulo, Brazil. The brain stem and cerebellar regulation of spinal reflexes, and physiology of sleep (cortical bio-electrogenesis).

TISCHLER, MORRIS, M.D. (Ed. 1), Research Associate in Experimental Surgery, Department of Surgery, University of Maryland, School of Medicine, Baltimore, Maryland. Cardiac stimulation; defibrillation; impedance measurements; blood oxygen, and instruments for audiometric measurements.

TOBIAS, CORNELIUS A., Ph.D., Vice-Chairman in Charge of Medical Physics, and Professor of Medical Physics, Division of Medical Physics, University of California, Room 103 Donner Laboratory, Berkeley 4, California. The effects of radiations on bioelectric phenomena, including the mechanism of action potentials, effects on brain function and stimulation of active processes.

TOBIAS, JULIAN M., M.D., Ph.D., Professor, Department of Physiology, University of Chicago 37, Illinois. Ultrastructure and function of nerve cells.

TOBIAS, LEONARD W., B.S.M.E., Project Engineer, Department 8011, Bendix Support Equipment, Teterboro, New Jersey. Panel, case, and chassis layout method involving optimum packaging for human use (ground support equipment).

TOENNIES, JAN FRIEDRICH, Dr.-Ing., Private Laboratory, 10, Schöneckstrasse, Freiburg/Baden, West-Germany. Synaptic transmission, especially spinal cord reflexes; electronystagmography of vestibular reflexes by precise acceleration on turning chairs; construction and production of special equipment for all kinds of polygraphic recording, microelectrode inputs, multiple oscilloscopes, stimulators and recording cameras.

TOKAY, ELBERT, Ph.D., Professor, Department of Physiology, Vassar College, Poughkeepsie, New York. Electroencephalographic and metabolic studies of the effects of cholinergic, adrenergic, hal-lucinogenic and other drugs upon the central nervous system with special reference to neuronal interaction.

TOLLES, WALTER E., Head, Department of Medical and Biological Physics, Airborne Instruments Laboratories, Deer Park, Long Island, New York. Quantitative cytology; analysis of dynamics of fetal heart rate, gastro-intestinal pressure, arterial pulse; use of computer methods in diagnosis (cardiovascular); physiological telemetry, and psychophysiological measurements.

TORRES, JOSEPH C. (Ed. 1), Senior Teaching and Research Fellow, Department of Physiology, Boston University School of Medicine, 80 East Concord Street, Boston 18, Massachusetts. Study of the electrophysiology of the hypothermic heart (this has included an analysis of the ECG, oscillographic projection and analysis of the VCG, as well as an analysis of the first derivative of the ECG); stimulation studies to quantify the processes of accommodation and excitability, as well as rate of recovery of excitability, and direct pick-up of potentials from the heart surface, which are projected on an oscilloscope and photographed, have enabled measurement of conduction velocities.

TOWE, ARNOLD L., M.D., Associate Professor, Department of Physiology and Biophysics, Medical School, University of Washington, Seattle 5, Washington. Electrical activity of nervous tissues, and single unit recording and gross potential activity, especially in the sensory systems.

TOWLER, MARTIN L., M.D., Director, Department of Electroencephalography, and Professor, Department of Neurology and Psychiatry, The University of Texas Medical Branch, Galveston, Texas. Changes in the electroencephalographic pattern induced by drugs.

TOWNSEND, JONATHAN, Ph.D., Associate Professor, Physics Department and Committee on Molecular Biology, Washington University, St. Louis 30, Missouri. Use of electron spin resonance and nuclear magnetic resonance in biology and medicine.

TRAVIS, ROBERT P., Jr., Assistant Professor, Department of Psychology, University of Alabama, Box 2687, University, Alabama. Research incorporating self-stimulation and recording methodologies, etc., and extensive use of spreading cortical depression in bio-electrical and behavioral studies of interhemispheric transfer of

conditioned behavior.

TREHUB, ARNOLD, Ph.D., Coordinator of Research, Psychology Service, Northampton Veterans Administration Hospital, Northampton, Massachusetts. Correlates of the b-component in the endosomatic galvanic skin response; psychophysiological response characteristics of psychiatric patients; electro-oculographic techniques, and intersensory effects.

TROBAUGH, FRANK E., Jr., M.D., Director, Section of Hematology and Blood Bank, Department of Medicine, Presbyterian-St. Luke's Hospital, 1753 West Congress Parkway, Chicago 12, Illinois. Research studies of Cr⁵¹, Fe⁵⁹, and Co⁵⁷ in persons with hematologic disorders.

TRUMBULL, RICHARD, Ph.D., Director, Psychological Sciences Division, Office of Naval Research, Department of Navy, Washington 25, D.C. Administration and coordination of research in psychology for the Navy; supporting research on neurological models; development of basic information on functions of neurological systems, measurement, prediction of behavior through function, and holding working group meetings and symposia on this and related areas.

TSCHIRGI, ROBERT D., M.D., Ph.D., Professor, Department of Physiology and Anatomy, School of Medicine, University of California, Los Angeles 24, California. Generation of electrical potentials in the central nervous system; relation of blood-brain barrier to central nervous system function, and correlation between behavior and brain chemistry.

TUMA, ARTHUR T., M.D., M.S., Assistant Chief, Department of Radiology and Chief, Isotope Service, Veterans Administration Hospital, Jackson, Mississippi. Development of isotope diagnostic testing procedures.

TUNTURI, ARCHIE R., M.D., Ph.D., Associate Professor, Department of Anatomy, University of Oregon Medical School, 3181 SW Sam Jackson Park Road, Portland 1, Oregon. Neuro-anatomy of the cortical areas, including their relation to the rest of the brain, their memories, and the representation of the external acoustical environment (speech) in these areas, using algebra of change variables, message space, statistical analysis, including time series analysis and communication theory, and a high speed 50 channel electronic data acquisition system and a data processing system (computer) for preparation of results.

TURNER, JOHN WILLIAM, M.D. Chief, Department of Radiology, Wes-sen Memorial Hospital, Springfield 5, Massachusetts. Medical applications of radio-isotopes; Application of scintillation scanning techniques in medicine, and absorption and retention of therapeutic doses of iodine 131 in hyperthyroid patients.

TURSKY, BERNARD, Instrumentation Engineer, Department of Psychiatry, Massachusetts Mental Health Center, and Harvard Medical School, 74 Fenwood Road, Boston 15, Massachusetts. Study of the parameters of electrical stimuli which lead to the most constant estimates of pain intensity; development of psychophysiological recording and data processing equipment, and telemetry of physiological information from schizophrenic patients on an experimental research ward.

U

UHR, LEONARD M., Ph.D., Research Psychologist, Mental Health Research Institute, University of Michigan, Ann Arbor, Michigan. Simulation of cognitive processes.

ULETT, GEORGE A., M.D. (Ed. 1), Commissioner of Mental Health, State of Missouri, and Professor of Psychiatry, Department of Psychiatry and Neurology, Malcolm Bliss Mental Health Center, 1420 Grattan, St. Louis 4, Missouri. Studies of drug action on the EEG; photic driving of EEG; analyzer studies, and conversion of EEG analyzer data for automatic data processing.

UTTAL, WILLIAM R., Ph.D., Manager, Behavioral Sciences, IBM Thomas J. Watson Research Center, Box 218, Yorktown Heights, New York. Computer analysis of potentials from the somatosensory system of man and from the caudal photoreceptor of the crayfish; computerized teaching machines, and the general man-machine interaction problem.

V

VALENSTEIN, ELLIOT S., Ph.D., Senior Research Associate, Department of Psychophysiology--Neurophysiology, Fels Research Institute, Yellow Springs, Ohio. Stimulus parameters for brain stimulation, and the central nervous system role in motivation and emotional behavior with ablation and stimulation techniques.

VAN ALLEN, MAURICE W., M.D., Program Director, Neurosensory Center, and Associate Professor, Department of Neurology, College of Medicine, University of Iowa, University Hospital, Iowa

- City, Iowa. Electromyography of extraocular and facial muscles with particular reference to abnormal synkineses, and nerve conduction velocity in neuropathy.
- VAN BUREN, JOHN M., M.D. (Ed. 1), Associate Neurosurgeon, National Institute of Neurological Diseases and Blindness, National Institutes of Health, Bethesda 14, Maryland. Physiological-anatomical correlations in the human thalamus and basal ganglia, and study of patients suffering from epilepsy and disorders of involuntary movement using depth electrodes directed to the sites of intended destructive lesions carried out for therapeutic purposes.
- VAN CITTERS, ROBERT L., M.D., Robert L. King Chair of Cardiovascular Research, Department of Physiology and Biophysics, University of Washington, Seattle, Washington. Cardiovascular physiology in ambulatory dogs and primates; transducers for direct measurement of blood flow and its distribution (pulsed ultrasonic flow meters), blood pressures, and organ dimensions are implanted during sterile surgery and data tape recorded subsequent to recovery, and electronic analog computers are employed for data processing; description of cardiovascular function and analysis of control systems, especially CNS.
- VAN DEN ENDE, HENDRIK, M.S.E.E., Electronics Engineer, Henry Ford Hospital, 2799 West Grand Boulevard, Detroit 2, Michigan. Techniques for the recording of electrical brain activity and its description in terms of signal analysis; development of miniature transmitters for telemetry of the electrical activity of the brain in monkeys and chimpanzees for research purposes, and development of an ultra-sound transducer to be used for destructive irradiation of structures of the inner-ear in cats.
- VAN LIERE, DONALD W., Ph.D., Electroencephalographer, Special Diagnostic Services, Bronson Methodist Hospital, 252 East Lovell Street, Kalamazoo, Michigan. Clinical electroencephalography, and recording electrophysiological changes during cardiac catheterization.
- VARADY, JOHN C., Jr., M.A., Mathematician Senior, Bio-Medical Systems Department, System Development Corporation, 2500 Colorado Avenue, Santa Monica, California. Development and analysis of mathematical models for physiological processes; design and analysis of experiments in medical research, and consultation with medical researchers in large scale epidemiological studies, decision-theoretic approaches to medical diagnosis.
- VERDEAUX, G., M.D. (Ed. 1), Chef de Laboratoire à la Faculté, Médecin-Assistant d'EEG des Hôpitaux de Paris, Department of Electroencephalography, Centre Psychiatrique Sainte-Anne, Clinique de la Faculté de Médecine de Paris 1, Rue Cabanis, Paris 14, France. Clinical EEG in psychiatry, polygraphy, and polygraphy under biochemical control (with a technicon autoanalyzer).
- VERSTANDIG, CHARLES C., B.S., M.D., Radiologist, 129 Whitney Avenue, New Haven 10, Connecticut. Radium and biophysics.
- VERZEANO, MARCEL, M.D., Associate Professor of Biophysics, Department of Biophysics and Nuclear Medicine (Medical Center), University of California, Los Angeles 24, California. Recording the electric activity of single cells and groups of cells in the brain and correlating it with brain function.
- VICTOROFF, VICTOR M., M.D., Director, Associates in Neuropsychiatry, 2231 Taylor Road, Cleveland 12, Ohio. Electroencephalographic study of behavior disorder in children, and electroencephalographic study in epilepsy.
- VIERNSTEIN, LAWRENCE, Senior Physicist, Adaptive Machines (CLM), Applied Physics Laboratory, 8621 Georgia Avenue, Silver Spring, Maryland. Extracellular recordings are made of single neurons while they are put in different states by natural stimuli, and studies of the pulse sequences are carried out with the aid of a digital computer.
- VILLANYI, ANDREW A., Physicist, Biology and Nuclear Sciences, The George M. Hollenback Research Associates, 17000 Ventura Boulevard, Encino, California. Measurement of radiation doses, biological effects of x-radiation, and methods for reduction of patient dose in chemistry.
- VILLEGAS, RAIMUNDO, M.D., Head, Department of Biophysics, Instituto Venezolano de Investigaciones Científicas, Apartado 1827, Caracas, Venezuela. Microelectrode recordings from single cells in the squid nerve fiber; Schwann cell and axon bioelectrical properties, and correlation with cell structure and membrane permeability.
- VONDERAHE, ALPHONSE R., M.D., Professor of Neuroanatomy, Department of Anatomy, University of Cincinnati, Eden and Bethesda Avenues, Cincinnati, Ohio. Electrical activity of developing brain of chick.
- VON FOERSTER, HEINZ, Professor, Department of Electrical Engineering, University of Illinois, Biological Computer Laboratory, Urbana, Illinois. Computational principles of living organisms as a point of departure for analysis and construction of cognitive systems (NSF Grant 17414); study of properties of systems with large numbers of local equilibria, to identify their general statistical features and to relate these to such behavioral phenomena as multistability and the conditioned reflex; the theory of functionally rigid, as well as adaptive, networks in connection with problems of preorganization, self-organization, and self-repair of complex systems; so-called "multi-valued" logical systems to adapt them to the requirements of computer theory as well as to present theories of "mind"; the design and construction of property detector nets which extract certain relevant characteristics from a n-dimensional pattern and encodes these properties in a manner which can be utilized for perception and recognition purposes; the construction of an instrument called Dynamic Signal Analyzer (the D.S.A. consists of several sets of parallel-connected, special purpose, continuous-variable computers which extract certain properties from the auditory signals) for the purpose of studying auditory signals, which may be considered as a special class of patterns, and use of the analyzer to investigate speech sounds such as phonemes and words in an attempt to discover correlations between these properties and the spoken sounds.
- VUREK, GERALD G. (Ed. 1), Electronics Engineer, Instrument Engineering and Developmental Branch, National Institutes of Health, Bethesda 14, Maryland. Transistorized low level clipper for EEG.

W

- WADA, JUHN A., Ph.D., Assistant Professor and Chief, Laboratories of EEG and Neurophysiology, Department of Neurological Research, University of British Columbia, Vancouver 8, B.C., Canada. Cerebral epileptogenic process; neurobiological analysis of behavior; electrophysiological correlates of learning; cerebral dynamics of hemispheric function; neurohumoral factors in normal and epileptic brain, and application of computer technique to the above.
- WAGMAN, IRVING H., Ph.D., Research Physiologist, Biomechanics Laboratory, University of California Medical Center, San Francisco 22, California. Neurophysiology, and sensory mechanisms and pain.
- WAINERDI, RICHARD ELLIOTT, Ph.D., Associate Dean of Engineering, and Head, Activation Analysis Research Laboratory, Dean of Engineering Office, Texas Agricultural and Mechanical College, College Station, Texas. Development of automated and computer coupled nuclear activation analysis, under contract to the AEC and NASA.
- WALCOTT, CHARLES (Ed. 1), Research Fellow in Biology, Department of Biology, Harvard University, Cambridge 38, Massachusetts. Vibration receptor of spiders, including the mechanism by which the receptor operates in order to understand how the spider uses receptor, and what information the spider can obtain from vibration.
- WALKE, NANCY DU VAL, B.S., Chief EEG Technician, Department of Neuropsychiatry, McGuire Veterans Hospital, Richmond 19, Virginia. Production of a lesion in the brain and with a depth electrode recording the electrical potentials from different levels.
- WALLS, WILLIAM L., M.D., Chief Radiologist, Radiology Department, USAF Hospital Keesler, Keesler Air Force Base, Mississippi. Renal function studies including radio renograms.
- WALTER, W. GREY, M.A., Sc.D., Head, Physiological Department, Burden Neurological Institute, Stoke Lane, Stapleton, Bristol, England. Analysis of EEG and autonomic variables by polygraphy; automatic frequency analysis and automatic average computation for correlation with behavioral patterns, temperament, learning and maturation in normal and clinical human subjects, and use of chronic implanted electrodes for depth recording in brain of intrinsic and evoked responses, oxygen availability, temperature, blood flow, cerebral excitability and effects of polarization and coagulation in cases of epilepsy, psychoneurosis and dyskinesia.
- WANG, GING HSI, Ph.D. (Ed. 1), Project Associate, Department of Neurophysiology, University of Wisconsin Medical School, Madison 6, Wisconsin. Galvanic skin reactions in cats.
- WARD, ARTHUR ALLEN, Jr., M.D., Professor and Head, Division of Neurosurgery, University of Washington Medical School, University Hospital, Seattle 5, Washington. Electrophysiology of cortical function in both animals and man involving techniques ranging from microelectrode through monitoring of DC fields, and applications of computer techniques to above.
- WARD, JAMES W., M.D., Professor (Acting Head), Department of Anatomy, School of Medicine, Vanderbilt University, Nashville 5, Tennessee. Electroencephalography; fetal electrocardiography; neuronography--pathway tracing, and interaction of neuron and

field spread potentials.

WARE, RAY W., B.A., M.D., Capt., USAF, Chief, Biomedical Monitoring Section, Department of Bioastronautics, USAF School of Aerospace Medicine, SAM Box 2344, Brooks Air Force Base, Texas. Development and evaluation of bioelectronic techniques for remote physiologic monitoring.

WARING, WORDEN, Ph.D., Manager, Chemistry Section, Department of Research and Development, Fairchild Semiconductor (a Division of Fairchild Camera and Instrument Corporation), 4001 Junipero Serra Avenue, Palo Alto, California. Exploration of uses of solid state devices especially in rehabilitation medicine; semiconductor strain gauges, photosensitive elements, microcircuitry, as sensing and control devices for orthotic and prosthetic appliances, other sensory aids, and for medicophysiological measurements and evaluation, and special circuit development.

WARRICK, MELVIN J., Ph.D., Assistant Chief, Human Engineering Branch, Behavioral Sciences Laboratory, Aerospace Medical Research Laboratories, Wright-Patterson Air Force Base, Ohio. Human engineering; assessment of human performance capabilities and limitations as they relate to the design and use of occupational aerospace equipment and systems.

WASMAN, MARVIN, Ph.D. (Ed. 1), Senior Instructor in Psychology, Department of Psychiatry, Western Reserve University, Cleveland, Ohio. Brain stimulation in chronic cats involving emotional changes in behavior; study of behavioral effects of electrically induced limbic after-discharges (recorded by EEG); threshold changes for after-discharge with repeated stimulation in chronic preparations, and changes in propagation patterns of after-discharges with repeated stimulation.

WASSERMAN, FRED, M.D., Associate Professor of Medicine and Chief of Medical Service, Department of Internal Medicine and Cardiology, University of Miami School of Medicine and Veterans Administration Hospital, Coral Gables, Florida. Effect of various trace metals on rhythmicity and conductivity of the heart, effect of alterations in blood gases, electrolytes of pH on electrophysiology of the heart, and relation of cardiotoxic and cardiac depressant drugs to abnormalities in electrolytes, gases and pH, and the combined effect on electrophysiology of the heart.

WATSON, PETER D., Co-Principal Investigator Factors Effecting Pain Due to Electric Shock, Department of Psychiatry, Massachusetts Mental Health Center, 74 Fenwood Road, Boston 14, Massachusetts, and Harvard University Medical School, 25 Shattuck Street, Boston 15, Massachusetts. Study of the parameters of electrical stimuli which lead to the most constant estimates of pain intensity, and factors such as wave form, frequency, and the relative relevance of voltage, current or power are being studied at threshold and suprathreshold levels.

WATTS, JOHN CADMAN, O.B.E., M.C., Professor of Military Surgery, Department of Surgery, Royal Army Medical College, Millbank, London SW1, England. A study of the effects on muscle of high velocity missile wounds.

WAY, JOHN S. (Ed. 1), Post-doctoral Trainee, Department of Anatomy, State University of Iowa, Iowa City, Iowa. The recording of evoked potentials from stimulation mostly within the brain of cats (stimulate anywhere in the brain and record from the hippocampus).

WAYNER, MATTHEW J., Jr., Ph.D., Associate Professor and Director, Physiological Psychology, Department of Psychology, Syracuse University, 125 College Place, Syracuse, New York. Electrophysiological properties of monosynaptic spinal reflexes in the rat; diencephalic recording in the rat following intravenous injections of various substances, and correlated changes in six psychophysiological measures in normal and schizophrenic persons in response to simple stimuli (Syracuse VAH).

WEBB, WILSE B., Ph.D., Professor and Chairman, Department of Psychology, University of Florida, Gainesville, Florida. Sleep and EEG.

WEBSTER, EDWARD W., Ph.D., Physicist, Department of Radiology, Massachusetts General Hospital, Boston 14, Massachusetts, and Assistant Professor of Physics in Radiology, Harvard Medical School, Boston, Massachusetts. Application of television and storage techniques to radio diagnosis; measurement techniques in nuclear medicine; radiation dosimetry, and effects of radiation on active transport through mammalian membranes.

WEIANT, ELIZABETH A. (Ed. 1), Arthur D. Little, Inc., 134 Main Street, Cambridge, Massachusetts. Neuromuscular mechanisms, and endogenous nerve activity and behavior.

WEIDNER, MICHAEL G., Jr., M.D., Associate Professor, Department of Surgery, Medical College of South Carolina, 55 Doughty Street, Charleston, South Carolina. Metabolic and hemodynamic aspects

of severe oligemia and trauma.

WEIL, ANDRE A., M.D., Chief, Division of Neurology and Laboratory for Clinical Neurophysiology, and Instructor, Department of Neurology, Western Reserve University (at Metropolitan General Hospital), Mailing Address: 322-326 Osborn Medical Building, Cleveland 15, Ohio. EEG and clinical neurophysiology; psychophysiological and electrophysiological studies in abnormal temporal lobe activity in man; EEG correlates in narcolepsy, and observations on "dysrhythmic" migraine.

WEINSTEIN, SIDNEY, Ph.D., Research Associate Professor, Department of Rehabilitation Medicine, Albert Einstein College of Medicine, Eastchester Road and Morris Park Avenue, Bronx 61, New York. Evoked potentials, and GSR in man.

WEIS, EDMUND B., Jr., M.D., M.S., Capt., USAF, General Medical Officer (Research), 6570th Aerospace Medical Laboratory, United States Air Force, MRMA, Wright-Patterson Air Force Base, Ohio. Vibration and impact response of the human body, and the application of the methods of systems engineering to biological research.

WEISS, BERNARD, Ph.D., Assistant Professor, Department of Pharmacology and Experimental Therapeutics, Johns Hopkins University Medical School, 725 Wolfe Street, Baltimore 5, Maryland. Psychopharmacology and operant behavior; automatic programming, recording, and data reduction in behavior experiments.

WEISS, HARRY A., B.S., M.D., Capt., MC, USN, Chief of Medicine and Chief of Research, U.S. Naval Hospital, Camp Pendleton, California. Various studies with radioactive isotopes, and determinations of circulatory hemodynamics (G.M. tubes, scintillation crystals, ECG, transducers, etc.).

WEISS, RICHARD C., B.A., School of Dentistry, University of Pennsylvania, 4001 Spruce Street, Philadelphia 4, Pennsylvania. Electrical characteristics of dental pulpal tissues during stimulation; electromyography of the muscles of mastication; white sound as an analgesic agent during electrical stimulation of the superior alveolar nerve, and recording and interpretation of occlusive sounds in relation to body position and masticatory muscle action.

WEISS, SAMUEL A., M.A., Ph.D., Associate Project Coordinator, Amputee Psychology Research, New York University, 252 Seventh Avenue (3rd Floor), New York 1, New York. Study and interest in the perceived length of phantom limbs in amputees; intensity and affective tone of phantom sensation, and relationship to central cortical and peripheral factors as related to amputation etiology.

WEITZMAN, ELLIOT D., M.D., Capt. USA (MC), Department of Neurology, Albert Einstein College of Medicine, Bronx 61, New York. Study of evoked and spontaneous electrical activity of C.N.S., and relation to auditory and "pain" input, and correlative with effect of drugs and behavior in monkeys.

WELFORD, NORMAN T., Ph.D., Research Associate, Department of Psychophysiology-Neurophysiology, Fels Research Institute, Livermore Street, Yellow Springs, Ohio. Relationship between autonomic activity and perceptual motor performance, with particular reference to reaction time and tracking tasks, also possible age and fatigue effects, and designing of data gathering and reduction systems so that the data is in a form suitable for analysis on digital computers.

WELLER, RICHARD I., Ph.D., Professor, Department of Physics, Franklin and Marshall College, Lancaster, Pennsylvania. Environmental radioactivity.

WENZEL, BERNICE M., Ph.D., Associate Professor, Department of Physiology (Medical Center), University of California, Los Angeles 24, California. Recording electroencephalograms from pigeon, cat, and goat in behavioral studies, and conditioning heart rate.

WERBOFF, JACK, Ph.D. (Ed. 1), Research Psychologist, Animal Behavior Laboratory, The Lafayette Clinic, 951 East Lafayette, Detroit, Michigan. Animal research involving recording of electrical potentials of cortical and subcortical cerebral structures, and recording autonomic physiological responses from unrestrained animal subjects.

WERMAN, ROBERT, A.B., M.D., Professor, Department of Psychiatry, Indiana University Medical School, 1100 West Michigan Street, Indianapolis 7, Indiana. Microelectrode studies of nerve, muscle, and synaptic function, and electrophysiology.

WESSEL, HANS U., M.D., Instructor and Trainee in Cardiovascular Research under USPHS Training Grant, Department of Medicine, Northwestern University Medical School, 323 Morton Building, 303 East Chicago Avenue, Chicago, Illinois. Development of extrapolating computer for indicator dilution techniques, and use of thermistors in physiologic measurements.

WEST, JAMES K., B.S.E.E., Research Assistant, Experimental Medical Shop, Electronics Division, University of Missouri Medical Center, Stadium Road (Room 158-A), Columbia, Missouri. Effectiveness of various waveforms in defibrillation; electromagnetic energy transfer through the chest wall; micromodule pacemaker receiver for direct attachment to the ventricles; sine wave electromagnetic blood flow meter; infant heart assist; finger tremor analysis; bacteria growth rate; neurophysiology and electro-encephalography; conductance measurements of protein solutions, and analog and digital computer techniques.

WEST, THEODORE C., Ph.D., Associate Professor, Department of Pharmacology, Medical School, University of Washington, Seattle 5, Washington. Microelectrode technique of recording transmembrane potentials primarily from cardiac cells, using isolated tissue and the isolated rabbit atrium; the transmembrane potentials that can be recorded from the sinoatrial node in the rabbit atrium; membrane potentials from the ventricles of intact open chest dogs under a variety of conditions including the changes occurring in such potentials with the progress of induced hypothermia, and isolated tissue and intact dog work, the latter involving the study of various types of cardiac arrhythmias and influence of such arrhythmias on the character of atrial and ventricular transmembrane potentials.

WESTHEIMER, GERALD (Ed. 1), Associate Professor of Physiological Optics, School of Optometry, University of California, Berkeley 4, California. Optics of the eye, and oculomotor responses.

WEVER, ERNEST GLEN, Ph.D., Professor, Department of Psychology, Princeton University, Princeton, New Jersey. The electrophysiology of the ear.

WEYBREW, BENJAMIN B., Ph.D., Head, Personnel Assessment Research Branch, U.S. Navy Medical Research Laboratory, Submarine Base, New London, Connecticut. Investigating autonomic nervous system (A.N.S.) reactions to experimentally-induced frustration as a predictor of ability to withstand the stresses of 60 to 90 days marine submergence.

WHITE, CARROLL T., Research Psychologist, U.S. Navy Electronics Laboratory, San Diego 52, California. Electromyography: the surface EMG as an index of subjective effort--thus a measure of fatigue, motivation, and task difficulty (with Dr. R. G. Eason); telemetering of EMG and other bioelectric phenomena; electro-oculography: ocular behavior in visual search situations of various kinds, and use of bioelectric potentials to control electro-mechanical devices.

WHITE, D. NALDRETT, M.D., Professor of Medicine (Neurology), Department of Medicine, Queen's University, Kingston, Ontario, Canada. Encephalometry by means of ultrasonic echos, and telemetered electroencephalogram.

WHITE, PHILIP TAYLOR, M.D., Professor, Department of Neurology, Indiana University School of Medicine, 1100 West Michigan Street, Indianapolis 7, Indiana. Electromyographic investigation of inherent muscle reactivity; intracranial structures as revealed by echo-encephalography, and changes in cardiovascular function and cerebral blood flow as correlated with recording from implanted depth electrodes during convulsive seizures.

WHITE, STANLEY C., Lt. Colonel, USAF (MC), M.D. (Ed. 1), National Aeronautics and Space Administration, Manned Spacecraft Center, Houston, Texas. Work electrocardiography; re-packaging and flight test of advanced primate; shock avoidance and reward psychomotor testing; space flight reliable blood pressure apparatus; single and multiple gas analyzers for atmosphere constituents; closed environmental systems, and man support and restraint systems for space vehicles.

WHITEMAN, JOHN R., Associate Research Worker, Instrumentation Unit, Heart Disease Control Program, Public Health Service (Department of Health, Education and Welfare), 2204 I Street, N.W., Washington 7, D.C. The F.M. recording of electrocardiograms for routine processing by digital computer and the design of associated equipment for heart sound recording/screening programs with the aim of computer detection and diagnosis of abnormal heart murmurs.

WHITESIDE, T.C.D., Wing Commander, M.B.E. (Ed. 1), Department of Neurobiology, Royal Air Force Institute of Aviation Medicine, Farnborough, Hants, England. Studies on the physiology of the vestibular apparatus and mechanisms of disorientation of vestibular origin, and changes in physiological variables during the performance of a simple task and under mental stress (involving the recording of muscle action potentials [voluntary somatic and cardiac], skin resistance changes, and corneoretinal potentials).

WHITMAN, JAMES R., Ph.D., Chief, Clinical Applications Section, Psychophysiological Laboratories, Veterans Administration Hospital, Perry Point, Maryland. Medical and behavioral correlates

of bioelectronic recordings.

WHITTEMBURY, GUILLERMO, Departamento de Biofísica, Instituto Venezolano de Investigaciones Científicas, IVIC, P.O. Box 1827, Caracas, Venezuela. The study of the origin of electrical potentials in the cells of the kidney and toad skin; measurements on Necturus kidney cells; kidney cells of other amphibia and mammalia, and the influence of ions particularly as to cell wall permeability.

WICKER, JAMES E., Research Scientist I, Department of Psychology, The Radiobiological Laboratory of the University of Texas and the United States Air Force, RFD 4, Box 189, Austin, Texas. Transmission of information concerning body temperature of the Rhesus monkey under conditions of free movement; EEG data on the Rhesus monkey, constant monitoring of body temperature, EEG, EKG, and EMG on the Rhesus while the animal is involved in an experimental conditioning situation; recording of potentials from implanted skull electrodes in the Rhesus; devices capable of transmitting information concerning body temperature, EEG, and EKG from the Rhesus, while receiving signals to turn on shock potentials, to send current to the lower brain stem, etc.; obtaining EEG potentials from implanted skull electrodes in the albino rat; remote control of shock to the rat, and the effect of ionizing radiation on these brain potentials.

WIELAND, BETTY A., Ph.D., Associate Professor, Department of Psychology, University of Houston, Cullen Boulevard, Houston 4, Texas. Longitudinal study of physiological, psychological and biochemical responses for the purposes of functional systems analysis.

WILBARGER, EDWARD S., Jr., Group Head, Bio-Instrumentation, Bio-Technology Section, Department of Biological Sciences, Defense Research Laboratories, General Motors Corporation, 1600 North Woodward Avenue, Birmingham, Michigan. Design and development of instrumentation for collecting and analyzing human physiological data under normal and abnormal conditions.

WILCOTT, R. C., Ph.D., Assistant Professor, Department of Psychology, Western Reserve University, Cleveland 6, Ohio. Problems of A.N.S. measurement, and psychophysiology of motivation and personality variables.

WILCOX, RICHARD H., Head, Information Systems Branch, Office of Naval Research, Department of the Navy, Washington 25, D.C. Machines which exhibit biological type behavior (self-organization), and the generation and measurement of electrical potentials from living organisms only as they suggest avenues of research or means of testing inorganic devices.

WILLIAMS, CLYDE M., M.D., Ph.D., Assistant, Department of Radiology, University of Florida College of Medicine, Gainesville, Florida. Models for medical diagnosis, and use of digital computers in the differential diagnosis of thyroid disease.

WILLIAMS, H. L., A.B., Design Engineer, Human Factors Section, The Martin Company, Orlando, Florida. Application of human factors in the design and development of air to surface missiles.

WILLIAMS, HAROLD L., Ph.D., Major, Chief, Department of Clinical and Social Psychology, Division of Neuropsychiatry, Walter Reed Army Institute of Research, Walter Reed Army Medical Center, Washington 12, D.C. Electrophysiological and cardiovascular correlates of performance in human subjects under stress, using automatic scoring equipment and analog and digital computer techniques for analysis of EEG rhythms, heart rate and peripheral vasoconstriction, and recording and analysis of average evoked electrical responses from human subjects during waking, drowsy states, and sleep.

WILLIAMS, JAMES G. L. (Ed. 1), Research Associate, Psychology Department, Indiana University, Bloomington, Indiana. Somatic responses to psychotherapeutic drugs; development of various bioelectronic methods.

WILLIAMS, ROBERT L., M.D., Professor of Psychiatry and Medicine (Neurology), Department of Psychiatry, University of Florida, Gainesville, Florida. Various neurophysiological correlates of mental function using EEG, GSR, and vital signs; incidence of alteration of consciousness; techniques to telemeter various phenomena from mental patients, and sleep and arousal patterns in humans.

WILSON, ARTHUR M., Ph.D., Assistant Professor, Department of Chemistry, Emory University, Atlanta 22, Georgia. Voltammetric membrane electrodes, and use of ion exchange membranes to develop selective electrodes for in vivo determinations.

WILSON, HAROLD HOLMES, B.S., M.S., Head, Patient Data Automation Branch, Bio-Medical Systems Department, System Development Corporation, 2500 Colorado Avenue, Santa Monica, California.

Management of Patient Data Automation Branch conducting research and analysis of hospital information system requirements leading to design and development of an Automated Patient Data System; large scale man-machine systems design, development and operation; general systems engineering and management; electro-mechanical instrumentation design and development, and business management-control systems design and development.

WILSON, WILLIAM PRESTON, M.D., Associate Professor, Department of Psychiatry, Duke University Medical Center, Durham, North Carolina. Electroencephalography; neurophysiology; psychophysiology; neuropharmacology; influence of endocrines on electrical activity and various systems in the brain, and effects of two psychotomimetic drugs on the activity of the particular system Caudate Nucleus and Hippocampal activity of the brain.

WINFIELD, DON L., Ph.D., Assistant Professor, Department of Psychiatry, University of Tennessee School of Medicine, Le Bonheur Hospital, 848 Adams, Memphis, Tennessee. Drug effects upon the EEG, and neonatal electroencephalography.

WINOKUR, GEORGE, M.D., Associate Professor of Psychiatry, Department of Psychiatry and Neurology, Washington University School of Medicine, 640 South Kingshighway, St. Louis 10, Missouri. GSR conditioning and habituation in controls and psychiatric patients; habituation to tone and shock in anxious and non-anxious subjects; effect of arousal on conditionability; differentiation of conditional GSR from a GSR due only to sensitization, and habituation patterns in a variety of psychiatric illnesses.

WISE, BURTON L., M.D., Assistant Professor, Department of Neurological Surgery, University of California Medical Center, San Francisco 22, California. Stimulation of areas of the brain stem, with study of the effects of stimulation on renal function and fluid and electrolyte metabolism; neuroendocrinology, and fluid and electrolyte metabolism and the nervous system.

WISE, SAMUEL P., III, M.D., Associate Chief of Staff for Research, Department of Research, Veterans Administration Hospital, Perry Point, Maryland, and Research Associate, Psychiatric Institute, Department of Psychiatry, University of Maryland School of Medicine, Baltimore 1, Maryland. Blockade of EEG activation of alpha-chloralase in man; "effect of person" on heart rate and blood pressure in dogs; effect of exertion on physiologic parameters in schizophrenia; comparison of radiocardiography, vectorcardiography and post-exercise ECG in diagnosis of coronary atherosclerosis, and psychophysiology of the skin-parameters involved.

WITT, JOSEPH A., M.D. (Ed. 1), Assistant Professor, Department of Neurological Surgery, University of California Medical Center, San Francisco 22, California. Use of extensive neurophysiological recording electronic equipment to record spontaneous and evoked electrical potential in conjunction with stereotaxic surgical procedures for relief of hyperkinetic manifestations of parkinsonism, athetosis, choreoathetosis, etc., and relief of intractable pain in order to elucidate pathways involved.

WOLBARSH, MYRON L., Ph.D., Head, Physical Biology Branch, Naval Medical Research Institute, Bethesda 14, Maryland. Electrophysiology of vertebrate and invertebrate visual systems, especially with reference to color vision and retinal organization; visual acuity measurements in animals; blood flow determination and nervous function in mammalian CNS, and electrophysiology of insect chemoreceptors.

WOLBERS, HARRY L., Ph.D., Chief, Systems Research, Engineering Department, Aircraft Division, Douglas Aircraft Company, Inc., 3855 Lakewood Boulevard, Long Beach, California. Development and validation of bioelectronic sensing and data transmission devices and information processing techniques, and investigation of behavioral correlates of electrophysiological data.

WOLDRING, SABBO, M.D. (Ed. 1), Visiting Assistant Professor, Department of Physiology and Biophysics, School of Medicine, University of Buffalo, Buffalo, New York. Clinical electromyography (recording of diaphragm-activity during anesthesia); theory of control and feedback as applied to respiratory activity (nervous regulation of breathing).

WOLF, ROBERT LAWRENCE, M.D., Research Assistant, and Clinical Assistant, Departments of Circulatory Physiology and Medicine, The Mount Sinai Hospital, Fifth Avenue and 100th Street, New York 29, New York. The study of the metabolism of polypeptides labeled with radioisotopes employing radioisotope detectors, counters and scanners.

WOLFF, ALLAN L., B.S.E.E., Manager, Medical Electronics Department, MEDICON (a division of Quality Precision Products, Inc.), 2800 North Figueroa Street, Los Angeles 65, California. Design of electromagnetic blood flowmeters following the gated sine-wave principle, and commercial manufacture of these devices.

WOOD, CHARLES DONALD (Ed. 1), Assistant Professor, Department of Pharmacology, University of Arkansas Medical School, Little Rock, Arkansas. Brain waves following selective ablation of specific sub-cortical areas; electrical activity of brain after injection of various drugs into discrete sub-cortical areas, and correlation of behavioral changes with any alteration of brain waves produced by the above procedure.

WOOD, EARL H., Ph.D., M.D., Professor, Department of Physiology, Mayo Foundation and Clinic, 200 First Street, Southwest, Rochester, Minnesota. Study of man's reactions to acceleration; cardiovascular physiology of man and animals, indicator dilution techniques, and cardiovascular instrumentation.

WOODS, H. D., B.S.E.E., Electronic Systems Engineer, Senior, Bio-Medical Systems Department, System Development Corporation, 2500 Colorado Avenue, Santa Monica, California. Basic investigation of the biomedical electronic and physical instrumentation needs and procedures required for a certain broad class of electrophysiological, psychophysiological, and clinical research laboratories, and as a member of an interdisciplinary research support team, specific instruments ranging from state-of-the-art transducers (data sensors) to specialized computers are designed or specified to meet the over-all system needs of certain individual and certain co-operative medical research laboratories.

WOOLSEY, CLINTON N., M.D., C. S. Slichter Professor of Neurophysiology, Laboratory of Neurophysiology, 283 Medical Sciences Building, University of Wisconsin Medical School, Madison 6, Wisconsin. Somatic sensory systems; auditory areas of cerebral cortex; visual areas of cerebral cortex, and limbic cortex.

WOOTTON, PETER, B.Sc., Physicist, Tumor Institute, Swedish Hospital, 1211 Marion Street, Seattle 4, Washington, and Department of Radiology, University of Washington Medical School Hospital, Seattle, Washington. Measurement of "in vivo" oxygen tension, rapid measurement of molecular size and conformation of synthetic and natural large molecules, and tissue permeability.

WORTIS, SAM BERNARD, A.B., M.D., Professor and Chairman, Department of Psychiatry and Neurology, New York University Schools of Medicine, 550 First Avenue, New York 16, New York. Brain neurophysiology and metabolism, and clinical neuropsychiatry.

WRIGHT, ELWOOD W., Jr., Research Associate, Medical Electronics, Department of Neurosurgery, Mount Zion Hospital and Medical Center, 1600 Divisadero Street, San Francisco 15, California. Biophysics and neurophysiology with reference to the central nervous system of man; determining relationship of subcortical and cortical electrical activity to parkinsonian tremor utilizing computer techniques; determining parameters for the production of conscious sensory responses elicited by electrical stimulation of the sensory cortex; the relation of electrical activity of the sensory cortex to conscious sensory responses elicited by cortical and peripheral stimulation, and stereotaxic procedures for the relief of dyskinesias, intractable pain, etc.

WRIGHT, ERNEST B., Ph.D., Professor of Physiology, Department of Physiology, J. Hillis Miller Health Center, University of Florida, College of Medicine, Gainesville, Florida. Research in bioelectrical phenomena, particularly concerned with excitation and conduction in nerve and muscle cells.

WU, WILLIAM L. S., A.B., M.S., M.D., Aerospace Medical Specialist, Life Sciences Section, Mail Zone 594-30, General Dynamics/Astronautics, Engineering P.O. Box 166, 5001 Kearney Villa Road, San Diego 12, California. Medical and life-support instrumentation systems for manned research spacecrafts, space stations, and space laboratories; metabolic approaches for the prevention of the chronic weightlessness syndrome, utilizing combined biochemical, biophysical, and bioelectrical and computer techniques, and physiological and environmental sensors or transducers, instrumentation or electronics, recording or telemetry, data processing or computer analysis, that is, bioastronautics subjects in general.

WULFF, VERNER J., Ph.D., Senior Investigator, Masonic Medical Research Laboratory, Utica 2, New York. Electrophysiology of visual systems; relation between activation of retinula and eccentric sense cells in Limulus eyes, and modification of impulse discharge patterns by synaptic relays in the brain of Limulus.

WYERS, EVERETT J., Ph.D. (Ed. 1), Associate Professor, Department of Psychology, University of Southern California, University Park, Los Angeles 7, California. Electrophysiological correlates of inhibitory phenomena, studying the processes involved in stimulus-selection and its control of behavior; the basal ganglia, the caudate nucleus in particular, and the diffuse thalamic system, and electrolytic lesion, electrical stimulus and electrographic recording techniques in conjunction with behavioral techniques.

WYNN, PARRY C. B., Principal Specialist in Physical Medicine R.A.F., R.A.F. Chessington, Surrey, Medical Rehabilitation Unit, Chessington, England. All aspects of electromyography including sensory conduction, and studies of reflex time in spinal cord.

Y

YAHN, GEORGE W. J., M.D., Ph.D. in P.H., J.C.D., P.O. Box 10712, San Diego 10, California (on leave of absence from University of San Diego). Electronic data processing of bio-medical data; feasibility studies for a national data processing service for physicians; hardware for intra-city and inter-city information transmission and communication from a national computer center; high speed data transmission from physicians' offices to and from national computer center; with office desk voice and video office desk interrogators and receivers, and electronic library of magnetic tapes of bio-medical indexed materials.

YAMAMOTO, Y. LUCAS, M.D., Research Associate, Neuro-Isotope Laboratory, Department of Neurosurgery, McGill University, and Montreal Neurological Institute, 3801 University Street, Montreal 2, P.Q., Canada. Use of radioisotope in neurological research including brain scanning, cerebral circulation study, and other diagnostic methods.

YEAGER, CHARLES LEVANT, M.D., Ph.D., Associate Clinical Professor of Psychiatry, Department of Electroencephalography, The Langley Porter Neuropsychiatric Institute, 401 Parnassus Avenue, San Francisco, California. Frequency and period analysis of brain waves, the application of electro-diagnostic methods to the investigation of mongolism; frequency and period analysis of Parkinsonian brain and muscle potentials via special telephone connection between Mt. Zion Hospital and Langley Porter Neuropsychiatric Institute; period and frequency analysis of EEG's taped from telemetering brain waves from children in play therapy; frequency and period analysis and averaging of evoked potentials in response to peripheral stimulation; frequency and period analysis and wave averaging in the study of levels of hearing in deafened persons determined by arousal response in the EEG, and IBM analysis of EEG in National Institutes of Health geriatric program.

YEN, CHIH-MIN, M.S., Research Staff Member, Research Department, General Dynamics Electronics/Rochester, 1400 North Goodman Street, Rochester, New York. Electrodes cooled by the Peltier-effect for temporary implantation in the brain, and sensitivity of certain electric fish to magnetic and electric fields.

YOUNG, TZAY Y., Dr. Engr., Research Associate, Radiation Laboratory, The Johns Hopkins University, Baltimore 18, Maryland. The use of digital computer for electrocardiogram analysis; representation of electrocardiograms by orthonormal exponential functions; statistical classification of electrocardiograms using multidimensional linear regression method, and basic theory of electrocardiography and vectorcardiography.

Z

ZABLOW, LEONARD, M.A., Research Associate, Department of Neurology, Columbia University, College of Physicians and Surgeons, 630 West 168th Street, New York 32, New York. Psychological testing equipment; respiratory measurements; electromyography; electroencephalography, and impedance spirometry.

ZACHAROPOULOS, GEORGE, Electronics Systems Specialist, Psychophysiology Laboratory, Lafayette Clinic, 951 East Lafayette, Detroit, Michigan. Design of electronic instruments and systems for the transduction, recording, and analysis of psychophysiological data, and automatic data handling techniques related to the NASA program in this area of research.

ZACHERT, VIRGINIA, Ph.D., Research Psychologist, Route 2, Norman Park, Georgia. Use of electronic instruments in the applications of programmed instruction; use of programmed material for education and rehabilitation of first offenders, and the Norman College "Pre-College Division" for students failing to gain admission to college.

ZAHN, THEODORE P., Ph.D., Research Psychologist, Laboratory of Psychology, National Institute of Mental Health, Bethesda 14, Maryland. Psychophysiological investigations of the orienting reaction and of psychomotor tasks, especially reaction time, in schizophrenic and normal subjects; conditioning, and psychophysiological changes related to clinical changes in schizophrenics.

ZASLAVSKY, SAM, M.E.E., Electronics Engineer, Instrumentation Supervisor, Department of Physiology, Institute for Muscle Disease, 515 East 71st Street, New York 21, New York. Myography, whole muscles and single muscle fibers, and intra and extracellular potentials in muscle.

ZELLE, MAX R., Director, Division of Biological and Medical

Research, Argonne National Laboratory, 9700 South Cass Avenue, Argonne, Illinois. Biological effects of radiation in its broadest sense; the immediate and long-term effects of both external and internally emitted radiation at various dose levels and dose rates; the fundamental aspects of the effects of radiation on biological systems, and much basic research in biochemistry, microbiology, cell morphology and fine structure, and related fields.

ZIERLER, KENNETH L., M.D., Associate Professor, Department of Medicine, The Johns Hopkins University, The Johns Hopkins Hospital, Baltimore 5, Maryland. Relation between work and metabolism in muscle; measurement of blood flow, and measurement of transcapillary and transcellular movement of substances.

SUPPLEMENT

- BRILL, A. BERTRAND, M.D., Ph.D., Chief of Epidemiology, Research Branch, Division of Radiological Health, United States Public Health Service, 1901 Chapman Avenue, Rockville, Maryland. Computer processing of biomedical data.
- BRYAN, FRED A., Jr., M.S., Senior Physicist, Research Engineering Department, Astra, Inc., P.O. Box 226, Raleigh, North Carolina. Development and use of radio-frequency electrical heating to increase the effectiveness of anti-cancer drugs in cancer chemotherapy.
- CLARK, LELAND C., Jr., Ph.D., Professor of Biochemistry, Department of Surgery, Medical College of Alabama, Birmingham 3, Alabama. Electrode systems for continuous monitoring of blood chemistry; oxygen tension sensors; heart-lung machines; ascorbic acid catheter electrodes; intravascular hydrogen electrodes; automatic analytical instrumentation, and neurochemistry.
- EGANA, ENRIQUE, M.D., Research Professor of Experimental Medicine, School of Medicine, University of Chile, Institute of Experimental Medicine, Hospital Clínico St. Vincent, Santiago, Chile. Effects of the radiations on the metabolism of the central nervous system, and radioisotopes studies on the action of a neurotrophic factor produced in the liver.
- GEORGE, E. PAUL, Ph.D., Director, Department of Physics, St. Vincent's Hospital, Sydney, Australia. Electrophysiology of cardiac muscle, and metabolic studies using tracer methods.
- HORST, WOLFGANG, M.D., Director, Department of Radiotherapy and Nuclear Medicine, University Hospital Hamburg, Hamburg-Eppendorf, Martinistrasse 52, Germany. Electronics for radiation measurements, human counting and radioisotope scanning, and application of computer techniques for in vivo-turnover and clearance studies.
- JAYSON, TEMA G. (Mrs.), A.B., Senior Human Factors Analyst, Human Factors Department, ITT Federal Laboratories, 390 Washington Avenue, Nutley, New Jersey. Evaluation of diagnostic and research applications of perspective vectorcardiograph, and exploration of use of operant behavior techniques in evaluation of human reaction to environmental and pharmacological factors.
- PAULIN, JOSÉ BATISTA, E.E., Electronic Engineer, Electronic Department, Faculdade De Medicina De Ribeirão Preto, P.O. Box 301, Ribeirão Preto, São Paulo, Brazil. Nervous systems response, and research in new equipment.
- SHEPARD, RICHARD BLOUNT, M.D., Assistant Professor of Surgery, Department of Surgery, Medical College of the University of Alabama, Birmingham 3, Alabama. Determination of clinically significant patterns in hemodynamic and chemical variables in cardiovascular patients; application of analog and digital computer techniques to clinical data, and determination of transfer characteristics of major arteries before and after gross surgical changes.
- TAYLOR, REGINALD M., M.D., Associate Professor, Department of Psychiatry, Columbia University, 722 West 168th Street, New York 32, New York. Neurophysiology, especially electrophysiology and electroencephalography; microwave spectroscopy; electron paramagnetic resonance spectroscopy of neural tissues and products, and logical functioning of nervous system.
- TOLBERT, BERT MILLS, Ph.D., Professor, Department of Chemistry, University of Colorado, Boulder, Colorado. Respiration pattern analysis of $C^{14}O_2$, CO_2 and O_2 in patients; precision assay of carbon-14 and tritium by vibrating reed electrometers; protein finger-printing with an automatic amino acid analyzer, and assay of various radioactive isotopes in biology and medicine.
- TOMPKINS, EDYTHALENE, Research Branch, Division of Radiological Health, United States Public Health Service, 1901 Chapman Avenue, Rockville, Maryland. Computer processing of biomedical data.
- WEINBERG, DANIEL I., M.Sc. E.E., Research Associate, Department of Medicine, Duke University Medical Center, Durham, North Carolina. Mechanism of ventricular fibrillation, electrical shock hazard, and electrical propagation in cardiac tissue.

GEOGRAPHIC INDEX
UNITED STATES
ALABAMA

Birmingham

Clark, Leland C., Jr. (*)
Shepard, Richard Blount (*)

University

Travis, Robert P., Jr.

ARIZONA

Phoenix

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Barrow Neurological Institute

Daly, David D.
Eidelberg, E.
Schwartz, Arthur S.

Tempe

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Baldwin, Howard A.
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ARKANSAS

Hot Springs

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Breland, Keller B.
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University of Arkansas

Barnhard, Howard J.
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Hamasaki, Duco I.
Hill, Richard M.
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Macey, Robert I.
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Culver City

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Downey

North American Aviation

Baer, Reuben A.
Battig, Charles G.
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City of Hope Medical Center

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Roshal, Sol M.
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Menlo Park

Stanford Research Foundation

Bliss, James C.
 King, Brian D.
 Newgard, Peter M.
 Pressman, Gerald L.

Moffett Field

Ames Research Center

Gerathewohl, Siegfried J.
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U.S. Navy Medical Neuropsychiatric Research Unit

Davidoff, Robert A.
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Emus, Harold
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Bramson, M. L.
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Langley Porter Neuropsychiatric Institute

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DeNardo, Gerald L.
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ILLINOIS

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Illinois State Psychiatric Institute

Oesterreich, Roger E.
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Derbyshire, Arthur J.
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Northwestern University

Cohen, Jerome
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Veterans Administration Research Hospital

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Veterans Administration Hospital

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Berger, Seymour M.
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Iowa State University

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State University of Iowa

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Baton Rouge

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New Orleans

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Tulane University

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Aberdeen Proving Ground

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Baltimore

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Kahn, Arthur
Shock, N. W.
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Newton, Joseph E. O.
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Ruben, Robert J.
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Young, Tzay Y.
Zierler, Kenneth L.

University of Maryland

Adelman, William J., Jr.
Bogdanski, Donald F.
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Merlis, Jerome K.
Tischler, Morris
Wise, Samuel P., III

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Bradley, Dan Fordham
Brady, Roscoe O.
Cardon, P. V., Jr.
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Naval Medical Research Institute

Goldman, David E.
Johnston, Joseph B.
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Catonsville

Spring Grove State Hospital

Haynes, Richard C.
Katz, Ruth A.
Kurland, Albert A.
Myers, Ronald Elwood
Sutherland, George F.

College Park

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Stauffer, John C.

Perry Point

Royer, Fred L.
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Rockville

Brill, A. Bertrand (*)
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Dayhoff, Margaret O.
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Vierstein, Lawrence

MASSACHUSETTS

Bedford

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Debons, Anthony
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Robertson, J. David

Boston

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Boston University

Angelakos, E. T.
Barry, John J., Jr.
Levy, Charles Kingsley
Mirsky, Allan F.
Mostofsky, David I.

MASSACHUSETTS - Continued

Boston University - Continued

Torres, Joseph C.

Harvard Medical School

Ames, Adelbert, III
Blinks, John R.
Ervin, Frank R.
Henneman, Elwood
Hubel, David H.
Leaf, Alexander
Marshall, Jean M.

Massachusetts General Hospital

Aronow, Saul
Barlow, John S.
Brazier, Mary A. B.
Gurian, Bennett
Lorch, Stephen
Schwab, Robert S.
Webster, Edward W.

Massachusetts Mental Health Center

DiMascio, Alberto
Kanter, Stanley S.
Leiderman, P. Herbert
O'Connell, Donald Neil
Shor, Ronald E.
Sternbach, Richard A.
Tursky, Bernard
Watson, Peter D.

Veterans Administration Hospital

Efron, Robert
Geschwind, Norman
Segal, John R.

Cambridge

Haswell, David B.
O'Brien, Robert E.
Weilant, Elizabeth A.

Bolt Beranek & Newman, Inc.

Dittman, Paul E.
Elkind, Jerome I.
Kryter, Karl D.
Kwasniewski, George A.
Nieder, P. C.
Swets, John A.

Harvard University

Forbes, Alexander
Gottesman, Irving I.
Griffin, Donald R.
Stevens, S. S.
Walcott, Charles

Massachusetts Institute of Technology

Eden, Murray
Kiang, Nelson Yuan-Sheng
McCulloch, Warren Sturgis
Rosenblith, Walter A.
Sandel, Thomas T.
Sheridan, T. B.
Siebert, William M.
Stark, Lawrence

Lexington

Newman, Paul H.

Medford

Tufts University

Carpenter, Russell L.
Curry, George M.
Freedman, Sanford J.
Hanson, John A.
Jones, Frank Pierce
Rois, Chester C.
Ruck, Philip P.

MASSACHUSETTS - Continued

Northhampton

Trehub, Arnold

Palmer

Thomas, Clayton Lay

Quincy

Grass, Albert M.

Shrewsbury

Hoagland, Hudson
Koella, Werner P.

Springfield

Turner, John William

Waltham

Gesteland, Robert C.

Woods Hole

Hervey, John P.

Worcester

Camougis, George

MICHIGAN

Ann Arbor

Colestock, Harry E.
Fightmaster, Walter John

University of Michigan

Agranoff, B. W.
Bagchi, B. K.
Domino, Edward F.
Flood, Merrill M.
Fox, Stephen S.
Friede, Reinhard L.
Gerard, Ralph W.
Horvath, Fred E.
Horvath, William J.
Jones, Elizabeth
Kool, Kenneth Ashley
Maynard, Donald M., Jr.
Peretz, Bertram
Rutledge, L. T.
Steinberger, William W.
Uhr, Leonard M.

Birmingham

Wilbarger, Edward S., Jr.

Dearborn

Hertzler, Emanuel C.

Detroit

Henry Ford Hospital

Churchill, John A.
McCrum, W. R.
Proctor, Lorne D.
van den Ende, Hendrik

Lafayette Clinic

Ax, Albert F.
DiGiovanni, Cleto, Jr.
Rodin, Ernst A.
Werboff, Jack
Zacharopoulos, George

Wayne State University

Asdourain, David
Auld, Frank, Jr.
Meyer, John Stirling
Perez-Borja, Carlos
Shepard, Robert S.

MICHIGAN - Continued

East Lansing

Michigan State University

Bartley, S. Howard
Kremen, Irwin
Nelson, Thomas Morgan

Grand Rapids

Borucki, Arthur John

Groose Pointe Park

Sherman, Ralph L.

Kalamazoo

Van Liere, Donald W.

Warren

Barr, Norman Lee
Bauer, Herbert J.

MINNESOTA

Minneapolis

Minneapolis-Honeywell Regulator Company

Guttmann, Henry E.
Peterson, James Robert
Tepas, Donald

University of Minnesota

Kubicek, William G.
Lykken, David T.
Roberts, Warren W.
Simonson, Ernst
Terzuolo, Carlo A.

Rochester

Mayo Foundation and Clinic

Bickford, Reginald G.
Hagedorn, Albert B.
Kerr, Frederick W. L.
Lambert, Edward H.
Ray, Charles Dean
Sturm, Ralph E.
Swenson, Wendell M.
Tauxe, W. Newlon
Wood, Earl H.

St. Paul

Naitoh, Paul

MISSISSIPPI

Biloxi (Keesler Air Force Base)

Walls, William L.

Jackson

Allen, Marshall B., Jr.
Tuma, Arthur T.

University of Mississippi Medical Center

Andy, Orlando Joseph
Foshee, Donald P.
Goodrich, Jack Knight
Jurko, Marion F.
Klein, Richard L.
Sias, Fred R.

MISSOURI

Columbia

University of Missouri

Daniel, Robert S.
Doenges, F. Eugene
Goldstein, Alvin G.
Muench, Lloyd David
Randall, James E.

MISSOURI - Continued

Columbia - Continued

University of Missouri - Continued

Rowley, Blair A.
Schuder, John C.
Stoeckle, Harry E.
West, James K.

Kansas City

Barnes, Robert H.

Kirksville

Kirksville College of Osteopathy and Surgery

Denslow, J. S.
Dun, Fwu Tarng
Korr, Irvin M.
Scheurer, George Harold
Thomas, P. E.

St. Louis

Adler, Bernard C.
Barton, John R.
Cooper, Theodore
Fink, Max
Goldstein, Robert
Jacobi, Thomas H.
Jacobsmeier, Harold T.
Lerman, George S.
Miller, James David
Small, Joyce G.
Teas, Don C.
Ulett, George A.

Washington University

Burton, Robert M.
Nadler, Gerald
O'Leary, James L.
Satterfield, James H.
Schoepfle, Gordon M.
Sines, Jacob O.
Stern, John A.
Stewart, Mark A.
Townsend, Jonathan
Winokur, George

MONTANA

Helena

Holter, Norman J.

NEBRASKA

Lincoln

Kaplan, Solomon D.

Omaha

Dunn, Arthur Lovell
Ladwig, Harold A.

University of Nebraska

Bennett, A. Lawrence
Dunn, Frank Lowell
Ellingson, Robert J.

NEW HAMPSHIRE

Hanover

Dartmouth Medical School

Carpenter, F. G.
McCann, Frances V.
Rech, Richard H.
Robb, Jane Sands

NEW JERSEY

Bordentown

Holden, Edward Atwill, Jr.

NEW JERSEY - Continued

Great Notch

Berkley, Carl

Haddonfield

Rowland, George E.

Metuchen

Germain, Lloyd M.

Montclair

Schwarz, Berthold Eric

Nutley

Jayson, Tema G. (*)
Page, Donald E.
Schallek, William B.

Paramus

International Electric Corporation

Bairdain, Edith Munro
Frank, Joe H.
Smith, John P.

Plainsboro

Amato, Charles G.

Princeton

Flory, Leslie E.
Franks, Cyril M.
Geldard, Frank A.
Hollander, Philip B.
Wever, Ernest Glen

Teterboro

Bendix Corporation

Lauricella, John W.
Simon, Arthur
Tobias, Leonard W.

Vineland

Clausen, Johs.
Karrer, Rathe

West Orange

Barrer, Lester A.

NEW MEXICO

Alamogordo (Holloman Air Force Base)

Castillo, Horace T.
Grunzke, Marvin E.

Albuquerque

Luft, Ulrich C.
Nevison, Thomas O., Jr.

NEW YORK

Albany

Albany Medical College

Friedlander, Walter J.
Landmesser, Charles M.
Powers, Samuel R., Jr.

Bethpage

Bernhard, Robert
Ozkaptan, Halim

Buffalo

Ambrus, Julian L.
Box, Harold C.
Chardack, William M.
Holmes, William S.

NEW YORK - Continued

Buffalo - Continued

Hughes, John R.
Stieber, Alexander

University of Buffalo

Benforado, Joseph M.
Covino, Benjamin G.
Dalton, John C.
Gillen, H. William
Hoffman, Joseph G.
Noell, Werner K.
Paganelli, Charles V.
Snell, Fred M.
Spangler, Robert Alan
Woldring, Sabbo

Central Islip

Kohn, Anthony
Merlis, Sidney

Clarence

Greatbatch, Wilson

Deer Park

Bostrom, Roland C.

Airborne Instruments Laboratories

Carbery, William J.
Freeberg, Norman E.
Mansberg, H. P.
Morton, George W.
Steinberg, Charles A.
Tolles, Walter E.

Farmingdale

Benjamin, Fred B.
Helvey, William N.

Flushing

Stamm, John S.

Glen Oaks

Hillside Hospital

Karp, Eric
Krauthamer, George M.
Pollack, Max

Ithaca

Block, H. D.
Foster, George H.
Moraff, Howard
Rosenblatt, Frank

New York City

Bronx

Kubis, Joseph F.
Malsky, Stanley J.
Reid, Cyprian B.

Albert Einstein College of Medicine

Baum, Gilbert
Belmont, Ira
Block, James D.
Crane, Paul F.
Katzman, Robert
Macy, Josiah, Jr.
Sharpless, Seth
Weinstein, Sidney
Weitzman, Elliot D.

Brooklyn

Crump, Jesse F.
de Thery, Guy P.
Guttman, Rita
Raab, David

NEW YORK - Continued

Brooklyn - Continued

State University of New York

Cohen, Harvey D.
Hoffman, Brian F.
Kantrowitz, Adrian
Kao, Chien-Yuan
Kleinfeld, Morris
Sawyer, Philip Nicholas
Shands, Harley Cecil
Shapiro, Arthur

Manhattan

Becker, David
Billow, Bennett W.
Brust, Manfred
Echlin, Francis A.
Freiberger, Howard
Goldberg, Bernard
Henschke, Ulrich K.
Kaufman, Roger A.
Kumnick, Lillian S.
Menear, Walter R.
Michaud, Normand J.
Murphy, Terence W.
Silverman, Hirsch Lazaar
Slater, Lloyd Edward
Spring, Maxwell
Tabowitz, David
Zaslavsky, Sam

Columbia University

Bennett, Michael V. L.
Crain, Stanley M.
Dettbarn, Wolf Dietrich
Goldensohn, Eli S.
Hefferline, Ralph F.
Loewenstein, Werner R.
Nastuk, William L.
Purpura, Dominick P.
Reuben, John Phillip
Schachter, Joseph
Schulman, Jack H.
Taylor, Reginald M. (*)
Zablow, Leonard

The Mount Sinai Hospital

Bender, Morris B.
Bergman, Philip S.
Diamond, Sidney P.
Shanzer, Stefan
Wolf, Robert Lawrence

New York University

Friedman, Milton
Hirsch, Jacob I.
Malsky, Stanley J.
Perryman, James Harvey
Slote, Lawrence
Weiss, Samuel A.
Wortis, Sam Bernard

Rockefeller Institute

Deutsch, Sid
Eisenberg, Lawrence
Grafstein, Bernice
Milkman, Norman
Rosen, Paul
Schoenfeld, Robert L.

Northport

Blumenthal, Irving J.

Orangeburg

Rockland State Hospital

Blair, John H.
Clynes, Manfred
Lifshitz, Kenneth
Tenney, Ashton M.

Pearl River

Halpern, Lawrence M.

NEW YORK - Continued

Port Washington

Farr, Marshall J.
Katz, Milton S.
Lubkin, Yale Jay

Poughkeepsie

Tokay, Elbert

Rochester

O'Malley, Benedict B.
Quick, Raymond S.

General Dynamics/Electronics

Agalides, Eugene
Bernardini, Jorge E.
Yen, Chih-Min

University of Rochester

Davis, Thomas P.
DeMott, Donald W.
Doty, Robert W.
John, E. Roy
Michaelson, Sol M.
Norris, Forbes H.
Swisher, Scott N.
Thomson, Roderick A. E.

Riverdale

Ostow, Mortimer

Roslyn Heights

Meyerhoff, Gordon R.

St. Albans

Brown, James Randolph

Syracuse

Bernstein, Alvin J.
Fisher, Seymour
Lipton, Earle L.

Syracuse University

Dean, Sanford J.
McFee, Richard
Wayner, Matthew J., Jr.

Thiells

Jervis, George A.

Upton

Robertson, James S.

Utica

Cahn, Harold A.

Masonic Medical Research Laboratory

Behrens, Mildred E.
Moe, Gordon K.
Wulff, Verner J.

Yorktown Heights

IBM Research Center

Cook, Louella
Koppitz, Werner Joseph
Uttal, William R.

NORTH CAROLINA

Chapel Hill

University of North Carolina

Johnson, George L.
King, Richard A.
Obriest, Paul A.
Perez-Reyes, Mario

NORTH CAROLINA - Continued

Chapel Hill - Continued

University of North Carolina - Continued

Somers, James Earl

Durham

Duke University

Cohen, Sanford I.
Erickson, Robert P.
Everett, J. W.
Horowicz, Paul
Moore, John W.
Obriest, Walter D.
Pircher, Felix J.
Reckless, John Brian
Shmavonian, Barry M.
Silverman, A. J.
Spielberger, Charles D.
Weinberg, Daniel I. (*)
Wilson, William Preston

Greensboro

Duffy, Elizabeth

Raleigh

Bryan, Fred A., Jr. (*)

Winston-Salem

Meschan, I.

OHIO

Akron

Diamantides, Nick D.
Morgane, Peter J.

Cincinnati

Buyniski, Edward F.
Goldman, Douglas
Peters, Joseph J.
Taplits, Sol

University of Cincinnati

Bryant, S. H.
Franke, Ernst K.
Sterling, Theodor David
Vonderahe, Alphonse R.

Cleveland

Cutler, Robert R.
Richards, Nelson G.
Standish, Jay C.
Victoroff, Victor M.

Case Institute of Technology

Fleming, David G.
Goodman Lester
Plonsey, Robert

Cleveland Psychiatric Institute

Barnes, H. W.
Massopust, L. C.
Meder, Ronald

Western Reserve University

Gluck, Henry
Hoshiko, Tomuo
Lefer, Allan M.
MacIntyre, William J.
Sperelakis, Nick
Wasman, Marvin
Well, Andre A.
Wilcott, R. C.

Columbus

Bell, George E.
Ornstein, George N.

OHIO - Continued

Columbus - Continued

Ohio State University

Coulter, Norman A., Jr.
 Hoffman, Julius
 Howland, Daniel
 Retzlaff, Ernest W.

Dayton

Scranton, Richard

Mayfield Heights

Renner, Robert R.

Wright-Patterson Air Force Base

Barnard, George W.
 Christensen, Julien M.
 Correll, Edward G.
 Ferguson, John L.
 Headley, Robert N.
 Hille, Harald K.
 McLennan, Miles A.
 Marko, Adolf R.
 Mueller, Gustave C. E.
 Mundie, J. R.
 Potor, George
 Reifler, Clifford B.
 Robins, Kenneth E.
 Schueller, Otto
 Shinabarger, Edward W.
 Steele, Jack Ellwood
 Taylor, Justin L., Jr.
 Thackray, Richard I.
 Thaler, Victor H.
 Warrick, Melvin J.
 Weis, Edmund B., Jr.

Yellow Springs

Schroeder, Rudi M.

Fels Research Institute

Lacey, John I.
 Valenstein, Elliot S.
 Welford, Norman T.

OKLAHOMA

Norman

Ray, Thomas S.

Oklahoma City

Brown, Robert Charles
 McFadden, Ernest B.
 Shurley, Jay T.
 Tang, Pei Chin

University of Oklahoma

Clark, Mervin L.
 Costiloe, J. Paul
 Deckert, Gordon H.
 Pierce, Chester M.
 Pishkin, Vladimir
 Schneider, Robert A.
 Sevelius, Gunner George
 Soukup, David Wayne

OREGON

Beaverton

MacPherson, Cullen H.

Eugene

University of Oregon

Cohen, Melvin Joseph
 Hoyle, Graham
 Scheer, Bradley T.

OREGON - Continued

Portland

University of Oregon Medical School

Engel, Rudolf, C. H.
 Johnston, George I.
 Koler, Robert Donald
 Mason, Howard S.
 Milstein, Victor
 Tunturi, Archie R.

PENNSYLVANIA

Bethlehem

Brozek, Josef

Greentown

Beutner, Reinhard H.

Lancaster

Brookshire, Kenneth H.
 Neuhauser, Robert G.
 Weller, Richard I.

Natrona Heights

Miller, Stephen John C.

Philadelphia

Aserinsky, Eugene
 Calesnick, Benjamin
 Danaher, James William
 Dipalma, Joseph R.
 Hargens, C. W.
 Houseknecht, Thomas R.
 Reinhardt, Charles, Jr.
 Siminoff, Robert
 Singer, Alvin
 Smyth, Murray G.
 Spiegel, Ernest A.

Institute for Cancer Research

Engle, James L.
 Freed, Jerome J.
 Rudkin, George T.

Naval Air Material Center

Burns, Neal M.
 Gifford, Edmund C.
 Hendler, Edwin

University of Pennsylvania

Balin, Howard
 Bellet, Samuel
 Briller, Stanley A.
 Chance, Britton
 Davies, R. E.
 Dordick, Herbert S.
 Geselowitz, David B.
 Kornblueh, Igbo Hart
 Maczuk, Jurij
 Okada, Robert H.
 Pennys, Raymond
 Reid, John M.
 Salati, O. M.
 Schwan, Herman P.
 Schwarz, Gerhard
 Shen, David W. C.
 Sher, Lawrence D.
 Silverman, Daniel
 Weiss, Richard C.

Pittsburgh

Grossman, Charles C.
 King, H. E.
 Marrazzi, Amedeo S.
 Moyer, Kenneth E.

Wayne

Siegel, Arthur Irving

Wilkes-Barre

Janjigian, Edward R.

RHODE ISLAND

Providence

Brown University

Bartoshuk, Alexander Karl
Pfaffmann, Carl
Riggs, L. A.

SOUTH CAROLINA

Charleston

Medical College of South Carolina

Clowes, George H. A., Jr.
McCord, William M.
Weidner, Michael G., Jr.

TENNESSEE

Knoxville

Nelson, William A.

Memphis

University of Tennessee Medical School

Keller, Daniel M.
Lipscomb, Alys H.
Partridge, Lloyd D.
Winfield, Don L.

Nashville

Benson, Robert W.

Vanderbilt University

Batson, Randolph
Montgomery, L. H.
Tapp, Jack T.
Ward, James W.

Oak Ridge

Francis, J. E.
Kahlson, Donald Eric
Morris, Alton Chester, Jr.
Ross, Douglas Allen
Satterfield, Marion M.

TEXAS

Arlington

Phillips, James D., Jr.

Austin

University of Texas

Deatherage, Bruce H.
Lowenberg, Edwin
Ritter, Richard M.
Wicker, James E.

College Station

Wainerdi, Richard Elliott

Dallas

Dorman, Homer L.
Gell, Charles Fredric
Mayo, Alfred M.

University of Texas Southwestern Medical School

Frenkel, Eugene Phillip
Gonik, Uri
Harrison, Frank
Krohmer, Jack S.
Montgomery, Philip O'Bryan, Jr.

Fort Worth

Sells, S. B.

TEXAS - Continued

Galveston

University of Texas Medical Branch

Barratt, Ernest S.
Cunningham, A. W. B.
Rudenberg, F. Hermann
Russell, Glenn V.
Towler, Martin L.

Houston

Fisher, Herbert T.
Kroeger, Donald C.
McMullen, Feber Francis
White, Stanley C.

Baylor University, College of Medicine

Bloom, Samuel W.
Burch, Neil R.
Childers, Harold E.
Edelberg, Robert
Geddes, Leslie A.
Goldstone, Sanford
Kaplan, Harry Leland
Krivoy, William A.

University of Houston

Paskusz, G. F.
Sheer, Daniel E.
Wieland, Betty A.

University of Texas M. D. Anderson Hospital and Tumor Clinic

Derrick, William S.
Henry, James P.
Patton, Tad L.

Lubbock

Sweney, Arthur Barclay

San Antonio

Neville, J. Ryan

Brooks Air Force Base

Brogan, Francis A.
Cramer, R. L.
Danford, Roy, Jr.
Day, J. L.
Dowd, Patrick J.
Elliott, Lois L.
Hartman, Bryce O.
Hiss, Roland G.
Reeves, Johnie L.
Rickles, William H.
Riehl, Jean Louis
Simons, David G.
Ware, Ray W.

Fort Sam Houston

Fairweather, M. Jeanne

Waco

Thompson, William D., Jr.

Wharton

Horton, Granville Eugene

UTAH

Ogden

Stucki, John F.

Salt Lake City

Archer, Victor Eugene
Thomas, Madison H.

University of Utah

Beck, Edward C.
Boswell, Reed S.
Bray, Patrick F.

VERMONT

Burlington

University of Vermont

Abajian, John
Essler, Warren Orvel
Lepeschkin, Eugene
Nyborg, Wesley L.
Rush, Stanley
Sichel, F. J. M.

VIRGINIA

Arlington

Abbott, Henry E., Jr.
Sleight, Robert B.

Blacksburg

Colmano, Germille

Charlottesville

University of Virginia

Bice, Raymond C.
Gerken, George M.
Hahn, John F.
Stewart, Lever F.

Gloucester Point

Patten, Bernard C.

Hollins College

McGuigan, Frank Joseph

Richmond

Hume, David M.

Veterans Administration Hospital

Adams, Henry B.
Gibby, Robert G.
Hogan, Terrence P.
Richardson, David W.
Walke, Nancy Du Val

WASHINGTON, D. C.

Alpert, Louis K.
Diecke, Friedrich P. J.
Konecni, Eugene B.
Leese, Chester E.
Livermore, David I.
Mays, Luther L.
Meyer, Alvin F., Jr.
Pipberger, Hubert V.
Ross, Sherman
Salmotraghi, G. C.
Scarborough, William R.

Department of the Navy

Galler, S. R.
Libber, Leonard M.
Trumbull, Richard
Wilcox, Richard H.

U.S. Public Health Service

Caceres, Cesar A.
Coleman, D. Jackson
Whiteman, John R.

Walter Reed Army Institute of Research

Armington, John C.
Biersdorf, William R.
Brady, Joseph V.
Granda, Allen Manuel
Kropel, Walter J.
Moushegian, George
Rupert, Allen
Sheatz, Guy C.
Strumwasser, Felix
Williams, Harold L.

WASHINGTON

Bellingham

Crow, Lowell T.

Pullman

Higinbotham, Noe
Sugg, James

Seattle

Edmunds, Arthur B., Jr.
Megel, Herbert

University of Washington

Baker, Donald W.
Blandau, R. J.
Brown, Arthur C.
Chatrian, Gian Emilio
Guntheroth, Warren G.
Landa, Jorge F.
Patton, Harry D.
Rushmer, Robert F.
Scher, Allen M.
Smith, Orville A.
Towe, Arnold L.
Van Citters, Robert L.
Ward, Arthur Allen, Jr.
West, Theodore C.
Wootton, Peter

WEST VIRGINIA

Wheeling

Howland, Willard J.

WISCONSIN

Madison

University of Wisconsin

Alexander, A. A.
Bouman, Harry D.
Geisler, C. Daniel
Goldberg, Jay M.
Graham, David Tredway
Graham, Frances K.
Hind, J. E.
Ludwig, Harry
Olson, Richard E.
Roessler, Robert L.
Sindberg, Ronald M.
Wand, Ging Hsi
Woolsey, Clinton N.

Milwaukee

Jurss, C. Darwin
Larks, Saul David

WYOMING

Laramie

Dennison, Rollin H., II
Kennington, Garth S.

OTHER COUNTRIES

Argentina

Lico, Maria C.

Australia

George, E. Paul (*)

Belgium

Desmedt, Jean Edouard

Brazil

Antunes-Rodrigues, José
Covian, Miguel Rolando
Marseillan, Ricardo F.
Paulin, Jose Batista (*)
Timo-Iaria, Cesar

OTHER COUNTRIES - Continued

CanadaHamilton, Ontario

McMaster University

Black, A. H.
Heron, Woodburn
Jalmet, Charles H.

Kingston, Ontario

White, D. Naldrett

London, Ontario

Stavraky, George W.

Ottawa, Ontario

Mar, Peter G.

Quebec, Quebec

McGill University

Bindra, Dalbir
Branch, Charles L.
Elliott, K. A. C.
Gloor, Peter
Jasper, Herbert H.
Malmo, Robert B.
Perot, Phanor L., Jr.
Rasmussen, Theodore
Ross, W. R. David
Solyom, Leslie
Yamamoto, Y. Lucas

Université de Montreal

Bélanger, David
Cordeau, J. P.
Ducharme, Raymond
Sternberg, Joseph

Toronto, Ontario

University of Toronto

Black, Richard G.
Paul, William
Prichard, John S.
Scott, John W.
Thomas, E. Llewellyn

Vancouver, British Columbia

Dower, Gordon E.
Wada, Juhn A.

Winnipeg, Manitoba

Dresel, Peter E.
Frank, George B.
Saunders, Michael Graham

Chile

Alvarez, Jaime
Egana, Enrique (*)
Luco, Joaquin V.
Mena, Ismael

Columbia

Escobar, Miguel A.

France

Davis, John F.
Gastaut, Henri
Remond, Antoine
Schuller, Ed.
Verdeaux, G.

Germany

Balk, O.
Baumgartner, Günter
Creutzfeldt, Otto D.
Gangloff, Hans
Horst, Wolfgang (*)
Hug, Otto

OTHER COUNTRIES - Continued

Germany - Continued

Jung, Richard
Kornhuber, Hans Helmut
Pauly, Helmut W.
Redhardt, Albrecht
Reichel, Hans
Schliep, Hans-Jochen
Schmalbach, Kurt
Schmidt, Klaus
Toennies, Jan Friedrich

Ghana

Mundy-Castle, A. C.

Great BritainEngland

Birkbeck, M. Q.
Cooper, R.
Cox, D. R.
Ditchburn, R. W.
Falk, Gertrude
Harris, R.
Matthews, Bryan Harold Cabot
Shackel, B.
Walter, W. Grey
Watts, John Cadman
Whiteside, T. C. D.
Wynn, Parry C. B.

Scotland

Etherton, Bud

Israel

Dikstein, Shabtay

Italy

Misiti, Raffaello
Nencini, Rodolfo

Japan

Kanno, Yoshiobu
Katsuki, Yasuji
Murata, Keichi
Nagai, Teruo
Suga, Nobuo

Netherlands

Droogleever, Fortuyn J.
Noordergraaf, Abraham

Norway

Aas, Arvid
Sem-Jacobsen, Carl Wilhelm

Puerto Rico

Cardona, Victor Sanchez
Dacquist, Michael Paul
Del Castillo, José
Flax, Herman J.
Meier, Gilbert W.

South Africa

Nelson, Gordon Kenneth

Spain

Martinez-Lage, J. M.

Sweden

Dureman, Ingmar E.

Switzerland

Akert, Konrad

United Arab Republic

Razzak, Muhammad A.

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