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DIVISION OF BIOLOGY AND MEDICINE

MARCH, 1951

This document consists of [redacted] pages
No. 4 of [redacted] Series A

Research Projects Approved During March 1951

The following research projects were approved for negotiation or renewal during the month:

	No. of Projects	Amount
Biology	22	$329,196
Biophysics	1	12,960
Medicine	19	274,358
Totals	42	$616,514

BEST COPY AVAILABLE

Biology

Texas A&M College - $17,955 (1 year)
Investigator: Dr. J. H. Quisenberry
Title: "Effects of X-Ray Irradiation on Reproduction of The Domestic Fowl"

Johns Hopkins University Medical School - $7,482 (1 year)
Investigator: Dr. Curt P. Richter
Title: "Part Played by the Adrenals in the Ability of Rats to Withstand Radiation Effects"

University of Illinois - $8,395 (1 year)
Investigator: Dr. I. C. Gunsalus
Title: "Metabolic Pathways in Microorganisms"

OPENNET ENTRY
☐ Authorized for Public Release By: [signature] Date: 7/18/95
Entered in OpenNet By: Date:
☐ Not Authorized for Public Release By: Date:

Brown University - $19,958 (1 year)
Investigator: Dr. J. Walter Wilson
Title: "The Role of the Intestinal Flora in Radiation Injury"

Harris Research Lab., Washington, D.C. (Contract AT(30-1)-915) $15,590. (Renewal)
Investigator: Dr. Milton Harris
Title: "The Chemistry and Biosynthesis of Isotopically Labeled Cellulose and Allied Polysaccarides"

Iowa State College (Contract AT(11-1)-107) (Supplement) $35,700
Investigators: Drs. John W. Gowen and Janice Stadler
Title: "The Effects of Continuous Radiation"

Columbia University - $9,565 (1 year)
Investigators: Drs. H. B. Burch and C. G. King
Title: "The Metabolism of Ascorbic Acid, Glucuronic Acid and Glucose Labeled with C^{14} in Known Positions"

DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW
SINGLE REVIEW AUTHORIZED BY: AA Sinisgalli 11/2/94
REVIEWER (ADD): NAME: ML Kolbay DATE: 11/4/94
DETERMINATION [CIRCLE NUMBER(S)]
1. CLASSIFICATION RETAINED
2. CLASSIFICATION CHANGED TO:
3. CONTAINS NO DOE CLASSIFIED INFO
4. COORDINATE WITH:
5. CLASSIFICATION CANCELLED
6. CLASSIFIED INFO BRACKETED
7. OTHER (SPECIFY):

[redacted]

B&M monthly Prog. Rpt.

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Syracuse University - $7,750 (1 year)
Investigator: Dr. Joseph Loin
Title: "The Study of Intermediate Carbohydrate Metabolism in Neurospora Using Radioactive Carbon and Biochemical Mutants"

Smithsonian Institution, Washington D. C. - $10,368 (1 year)
Investigator: Dr. Robert B. Withrow"
Title: "Biochemical Investigation of Photomorphogenesis in Green Plants"

State College of Washington (Contract AT(45-1)-213 Part I) - $13,446
Renewal
Investigator: Dr. Orlin Biddulph
Title: "The Absorption, Translocation and Deposition of Various Elements in Plants"

Tennessee Agricultural and Industrial State College - $8,456 (1 year)
Investigator: Dr. Hubert B. Crouch
Title: "Radiation and Tracer Element Studies on Certain Pathogenic Protozoa and Nematodes on Rodents"

Utah State Agricultural College (Contract AT(11-1)-80 Project #2)
$7,560 (Renewal)
Investigator: Dr. D. W. Thorne
Title: "The Use of Radioisotopes in Studying Lime-Induced Chlorosis"

University of Missouri (Contract AT(11-1)-73 Project #3) - $2,530
(Renewal)
Investigator: Dr. J. Levitt
Title: Translocation of Mineral Substances in Plants"

The Rice Institute (Contract AT(11-1)-234) - $10,750 (Renewal)
Investigator: Dr. Roy V. Talmage
Title: "Physiological Action of Relaxin and Related Studies on Cellular Metabolism"

University of Minnesota (Contract AT(11-1)-42) $57,482 (Renewal)
Investigator: Dr. E. C. Stakman
Title: "The Effects of Radioactive Substances on Plant Pathogens and other Microorganisms"

The Rice Institute - $7,500 (1 year)
Investigator: Dr. Edgar Altenburg
Title: "The Effect of Ultraviolet Light on the Mutation Rate in Drosophila Melanogaster"

Columbia University - $17,496 (3 years)
Investigator: Dr. Theodore Dobzhansky
Title: "The Population Genetics of Species of Drosophila"

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Ohio Agricultural Experiment Station (Contract AT(11-1)-29) $3,888 (Renewal)

Investigator: Dr. R. S. Davidson
Title: "The Physiology and Genetics of Plant Pathogenic Microorganisms When Grown in the Presence of Various Radioisotopes"

Fordham University (Contract AT(30-1)-921) $30,780 (Renewal)
Investigator: Dr. F. F. Nord
Title: "Investigation of Enzymatic Degradation of Native and Chemically Modified Proteins"

Iowa State College (Contract AT(11-1)-69 Project #2) $15,555 (Renewal)
Investigators: Drs. C. H. Werkman and F. Schlenk
Title: "Studies of the Metabolism of Purine and Pyrimidine Bases of Nucleic Acids and Nucleotides"

Utah State Agricultural College (Contract AT(11-1)-80 Project #1) $4,815 (Renewal)
Investigator: Dr. Clyde Biddulph
Title: "Use of Radioisotopes in the Study of Reproduction"

University of Missouri - $38,565 (3 years)
Investigator: Dr. L. J. Stadler
Title: "The Genetic Nature of Induced Mutations"

Biophysics

Marquette University School of Medicine (Contract AT(11-1)-105) $12,960 (Renewal)

Investigator: Dr. W. A. D. Anderson
Title: "The Pathologic Effects of Calcium ^{45} and Strontium ^{89} on Bone and Soft Tissues."

Medical

University of Pittsburgh (Contract AT(30-1)-366 $13,958 (Renewal)
Investigators: Dr. C. Moses and Dr. A. J. Allen
Title: "Effects of Neutrons From a Cyclotron on Mammals With Particular Reference to the Development of Cataracts"

University of Chicago (Contract AT(11-1)-65) $16,500 (Renewal)
Investigator: Dr. Isidore Gersh
Title: "Histochemical Study of Cement Substances of the Normal and Abnormal Optic Lens"

University of California (Contract AT(11-1)-34 Project #2) $6,176 (Renewal)

Investigator: Dr. Hermann Becks
Title: " Investigations of Radioactive Strontium, Calcium and Phosphorus"

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Johns Hopkins University - School of Hygiene and Public Health
$18,792 (1 year)

Investigator: Dr. Thomas G. Ward
Title: "Metabolism of Phosphorus in Virus-Host Systems"

University of Colorado (Contract AT(29-1)-787) $8,802 (Renewal)
Investigators: Drs. John R. Lacher & Joseph D. Park
Title: "The Infrared Absorption Spectra of Nucleic Acids, Amino Acids, and Related Compounds"

Trudeau Foundation, Saranac Lake, N. Y. (Contract AT(30-1)-899
$2,200 (Renewal)

Investigator: Dr. Arthur J. Vorwald
Title: "Chemical Studies and Therapy of Chronic Pulmonary Granulomatosis (Beryllium)

Haskins Laboratories, New York City (Contract AT(30-1)-863) $15,400
(Renewal)

Investigators: Drs. S. H. Hutner and F. S. Cooper
Title: "The Microbiological Assay of Nucleic Acid Constituents Produced by Radiation Injury"

Montefiore Hospital, New York City (Contract AT(30-1)-880) $34,000
(Renewal)

Investigator: Dr. Daniel Lassle
Title: "Investigations of the Effect of Radioactive Lanthanum and Other Rare Earth Fission Products Upon Neoplastic and Normal Tissues".

Reed College - $17,000 (1year)
Investigators: Drs. Arthur F. Scott & Arthur H. Livermore
Title: "The Effects of Ionising Radiation on Biochemical Compounds"

Reed College (Contract AT(45-1)-229) $9,774 (Renewal)
Investigator: Dr. Arthur H. Livermore
Title: "The Biochemical Synthesis of the Peptide Bond"

Tulane University of Louisiana, School of Medicine (Contract AT(40-1) 233)
$9,180 (Renewal)

Investigator: Dr. George E. Burch, Jr.
Title: "Turnover Rates of Chlorine and Rubinium Under Controlled Dietary and Therapeutic Conditions in Patients with Chronic Congestive Heart Failure and in Control Subjects"

University of Chicago - $19,000 (1 year)
Investigator: Dr. W. H. Taliaferro
Title: "The Effect of Localized X-irradiation on Antibody Formation and Antigen Localizations. The Site of Antibody Formation"

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University of Minnesota (Contract AT(11-1)-106) - $6,050 (Renewal
Investigator: Dr. W. D. Armstrong
Title: "The Effect of Ionizing Radiation on Electrolyte and Water Metabolism".

Columbia University (Contract AT(30-1)-1119) - $2,400 (Supplement)
Investigators: Drs. F. B. Hudson and J. M. Reiner
Title: "The Turnover of Specific Proteins, Protein Fractions, and Nucleic Acids in Normal and Malignant Human Testis and Kidneys".

New York University (Contract AT(30-1)-1046) - $1,500 (Supplement)
Investigator: Dr. William S. Tillett
Title: "The Influence of Ionizing Radiation on Enzyme Systems".

The Greenmoor Institute for Psychobiologic Studies, New York - $21,500. (1 year)
Investigators: Drs. Ce Tud & John M. Converse
Title: "Investigation on the Relationship of Human Skin Types to Blood Types and Related Studies in the Mechanism of Thermal Injury."

Washington University - St. Louis, Mo. - $8,000 (1 year)
Investigator: Dr. I. L. Sheehmeister
Title: "Investigations of the Relationship Between Radiation Damage and the Immune State."

University of Michigan (Contract AT(11-1)-55) - $24,700 (Renewal)
Investigators: Drs. Reuben L. Kahn and Fred T. Hodges
Title: "Investigation of the Changes in the Universal Serologic Reaction Resulting from Irradiation of Human Beings and Animals."

University of Kansas (Contract AT(29-1-Gen-141) - $39,420 (Renewal)
Investigator: Dr. Robert E. Stowell
Title: "Cytochemical, Microchemical and Biophysical Studies of Tumors and Effects of Radiation Upon Cells."

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Advisory Committee for Biology and Medicine

The twenty-sixth meeting of the Advisory Committee for Biology and Medicine was held at the Atomic Energy Commission in Washington, D.C. on Friday and Saturday, March 9 and 10, 1951.

Governor Millard Caldwell, Administrator of Federal Civil Defense Administration, and several members of his staff met with the Committee to discuss civil defense problems.

The problems emanating from the work of the Atomic Bomb Casualty Commission in Japan were again considered. The Committee, "...in its continued appraisal of the situation" and "in light of the willingness of the National Academy of Sciences and the expressed interest and cooperation of the Department of State, voted to continue operation of the ABCC work in Japan, and recommends to the Commission that the contract with the Academy be renewed and that the general scope of the work - so far as conditions permit - be continued as currently defined, namely: general medical survey, leukemia survey, cataract studies, genetic studies. These may be modified from time to time by joint consultation by representatives of the AEC and NAS. In formulating this the Committee believes that the work must be carried out to its logical conclusion and must necessarily be pursued over a considerable period of time. It is recognized that short time operation would be wasteful scientifically and financially and that the study must be continued for a period of years."

"Greenhouse"

Representatives of the Division are aiding Dr. Graves and his staff with the biomedical test program.

Genetic Considerations in Building Design

Recent studies in the genetic effects of radiation have indicated the need for extreme caution in considering anything less than full protection against radioactive hazards in designing future plants and laboratories. While the results of genetic studies with mice cannot be extrapolated to man with absolute assurance at this time, nevertheless, reasonable correlation is possible. Recent data coming from Oak Ridge National Laboratory would suggest that the sounder policy is to plan for full-scale protection.

Chalk River Explosion

Four general lessons can be learned from the Chalk River explosion on December 13, 1950 which may have application to our civil defense and disaster planning: (a) All entrances but one should be sealed off when a hospital is admitting contaminated patients in order to avoid general and unnecessary contamination of other portions of the hospital; (b) Care should be exercised

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in the treatment of contaminated patients in order not to further contaminate sterilized utensils and laboratory equipment; (c) There appears to be a need for a surgical probe which can detect the presence and location of radioactive contamination in wounds; and (d) A loud speaker system from a central control point is needed in order to combat hysteria and expedite rescue operations.

Fellowships

Over thirty physicians applied for the Industrial Medicine Fellowships being offered by the AEC for the school year 1951-52. Eight fellowships will be awarded during April 1950.

The fellowship training program at Reed College, Portland, Oregon, will be reactivated this fall.

Representatives of the Division attended the Fellowship Panels of the NRC when selection of candidates for predoctoral and postdoctoral AEC fellowships were being considered.

A meeting was held on March 2 at the Oak Ridge Institute of Nuclear Studies to select 40 fellows from approximately 180 applicants for the program of Fellowships in Radiological Physics. The administration of this program was undertaken by ORINS a year ago. Under the plan, 20 fellows go to Rochester University and 20 go to Vanderbilt University for three semesters of academic training, which is then supplemented with three months of field practice at the Brookhaven and Oak Ridge National Laboratories. The first group of trainees will finish their training shortly. It appears that jobs in health physics will be readily available for all of them, but some of each group will be given a short extension of their fellowships to enable them to complete work for the Master's Degree.

Consideration is being given to the possibility of setting up within the Oak Ridge National Laboratory a small group of health physicists with facilities for evaluating the large number and variety of industrial products which are constantly being brought to the attention of the Biophysics Branch. Items of this nature are various fabrics and materials for protective clothing, soaps and detergents, decontaminating equipment, radiation shielding substances, and wall and floor materials, many of which may have real value in AEC operations or Civil Defense plans. At the present time, no satisfactory method of evaluation is available.

In June, 1950, the National Research Council Committee on Nuclear Science, through its Subcommittee for Radiobiology, and with the financial assistance of AEC and ONR, sponsored a very successful "Symposium on the Basic Aspects of Radiation Effects on Living Systems". Material from this symposium has been assembled and edited by Dr. J. J. Nickson of Memorial Hospital, N.Y., and is now ready for publication. A further proposal by the Subcommittee for

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[redacted] Radiobiology for another, but more restricted, conference has been considered and approved for joint support by AEC and ONR. The new conference will be supported entirely by unexpended funds from the previous contract, resulting from economical administration by the NRC and from the excellent cooperation of Oberlin College last summer.

Dr. G. Victor Beard has been appointed to the post of Health Physicist on the AEC staff of the Idaho Operations Office. Dr. Beard took the Ph.D. degree in physical chemistry at Purdue University in 1941, and has since been teaching at the University of Utah. He is presently undergoing intensive training in health physics in several AEC laboratories, and will soon undertake the duties of coordinating health protection measures among the various Idaho site contractors, as well as furnishing a number of central services.

Members of the Biophysics Branch represented AEC on a Subcommittee of the Interdepartmental Committee on Internal Security, which was charged with the preparation of recommendations for the protection of federal buildings and personnel against unconventional attack (sabotage, including chemical, biological and radiological agents). The studies of this Subcommittee have resulted in the presentation during March of its "Recommendations" to the parent Interdepartmental Committee.

([redacted])

Members of the Biophysics Branch participated in conferences with the Reactor Development Division and its contractors relative to health hazards, shielding and instrumentation problems in the construction of submarine reactors. (End Confidential)

([redacted])

Cooperative studies were undertaken with AFSWP concerning the feasibility of underground tests which have been proposed for the continental United States. These studies are continuing, with considerable attention also to the Civil Defense training aspects of such a test. (End Secret)

Loan of Radiation Instruments and Radioisotopes

During the month, loans for civil defense training purposes under the joint AEC-FCDA program were made as follows:

Instruments -- Alabama, Connecticut, New Mexico, North Dakota
Radioisotopes -- Nebraska, West Virginia, Wyoming

Designation of AEC Civil Defense Representative

In response to the request of Governor Caldwell, FCD Administrator, that AEC appoint a staff member to work closely with FCDA in the discharge of mutual

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statutory responsibilities under the Civil Defense Act of 1950, Chairman Dean on March 30 designated Dr. Shields Warren, Director of the Division of Biology and Medicine to fulfill this function. Mr. Harry L. Bowman, head of the Civil Defense Liaison Branch, was named as alternate.

Briefing of Budget Bureau Representatives

On March 21, a meeting was held with the AEC and FCDA budget examiners to acquaint them with the activities of the Commission in the field of civil defense and to discuss inter-agency relationships under the Civil Defense Act.

Review of FCDA Publications

A manual on Decontamination was reviewed at the request of FCDA in the Branch and by other interested offices for technical accuracy prior to publication. Developments subsequent to this review have been in agreement with the AEC recommendations.

Technical Information to FCDA

The interim report "A Method and Apparatus for Reducing Radioactivity in Contaminated Liquids" describing the process recently developed by two ORNL employees was furnished FCDA on March 2. Copies were also provided to the Joint Committee on Atomic Energy and, upon request, to the Canadian Joint Staff and a number of private industrial firms.

Shelter Program

Designs for both underground and above-ground personnel shelters for AEC institutions are being developed by DuPont and the Hanford Operations Office.

Instrument Appraisal Program

As a service to AEC installations, the Radiation Instruments Branch maintains liaison with industry for the purpose, among others, of spotting promising new developments having possible use in the AEC program. Last month 110 radiation detection instruments, valued at $12,970, were received in stock, and 144 instruments, valued at $12,069, were shipped to AEC areas for inspection and evaluation.

AEC Sponsored Research and Development

Letters have been dispatched to each Operations Office to determine possible interest in an alpha survey meter, a neutron dosage rate meter, and a gamma scintillation survey meter. Response to the scintillation counter survey has been favorable and response to the other letters is expected in two or three weeks.

Carbide has indicated a willingness to initiate contracts for the neutron dosage rate meter and the alpha survey meter.

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An effort has been made to determine the military's interest in the UCLA Colorimetric Dosimeter, since it appears that the AEC will not be justified in supporting the development beyond the fiscal year.

Testing and Evaluation Program

A proposal to the National Bureau of Standards to undertake a comprehensive testing and evaluation program was submitted to the Division of Research for review and approval prior to initiating formal negotiations with the Bureau.

Under the present limited testing program with the Bureau, arrangements have been made at the request of the Chief of the Biophysics Branch to have calibration tests run on lithium floride crystals.

With the cooperation of the NBS, the Branch has investigated the feasibility of a new type of ionization chamber in the use of which employees contact only the potentials on the accelerating electrodes. Results to date indicate that these chambers offer no advantage over the conventional air ionization chamber and for most applications would actually be inferior.

At the request of the Branch, the NBS has tested and submitted a report on the Survey Meter which has been developed by the Kelley-Koett Company and is being marketed for civil defense monitoring. The instruments tested did not have the 30% accuracy required by the FCDA's specifications.

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