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U. S. ATOMIC ENERGY COMMISSION
Oak Ridge Operations Office

STATEMENT OF AUTHORITY
(Assignment of Contract for Administration)

Contract No. AT-(40-1)-2862, with Dr. Charles Durward Van Cleave
(Name of Contractor)

a. is assigned to _____, effective _____
(Title of Official) (Date)

for administration in accordance with Statement of Authority No. _____.

b. will be administered by the Contracting Officer, effective June 13, 1961 See Statement of
(Date)

Authority No. 7

(Name) R. C. Humphries
Director, Contract Division
Oak Ridge Operations
(Title)

June 13, 1961
(Date)

Distribution:

Original and one to official designated
in line 2, above.

Copies to:

- Contract Division
- ~~Chief Counsel~~
- Organization and Personnel Division
- Finance Division

Dr. Charles Durward Van Cleave

REPOSITORY Oak Ridge Operations
Records Holding Area
 COLLECTION Documents 1944-94
Contracts AT-(40-1)-2769-
 BOX No. 2 of 2 Bldg. 2714-H 2873
Contract No. AT-(40-1)-2862
 FOLDER Dr. Charles Durward Van
Cleave

(Contracting Officer completes either a. or b.)

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TYPED SM
PREPARED SM
APPROVED W. H. C.
9-23-61
W. H. C.
W. H. C.

Contract No. AT-(40-1)-2862

THIS CONTRACT, entered into this 23rd day of September, 1961, by RETURN TO MAIL and between the UNITED STATES OF AMERICA (hereinafter called the "Government" SECTION represented herein by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter called the "Commission"), and DR. CHARLES DURWARD VAN CLEAVE, located at the School of Medicine, University of North Carolina, Chapel Hill, North Carolina (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, one of the stated purposes of the Atomic Energy Act of 1954 (Section 3. b.) is to provide a program for the dissemination of unclassified scientific and technical information so as to encourage scientific and industrial progress; and

WHEREAS, the said Act (Section 141. b.) further provides that it shall be Commission policy to permit and encourage the dissemination of unclassified scientific and technical information relating to atomic energy so as to enlarge the fund of technical information; and

WHEREAS, pursuant to the aforementioned provisions of said Act, the Contractor is willing to prepare, furnish and deliver to the Commission a manuscript and art work suitable for use in connection with the preparation of a book to be entitled "The Effects of Ionizing Radiation on the Nervous System"; and

WHEREAS, the Commission certifies that this negotiated contract is authorized by and executed under the Atomic Energy Act of 1954;

NOW, THEREFORE, the parties hereto do mutually agree as follows:

ARTICLE I - SCOPE OF WORK

1. The Contractor will perform all work necessary to prepare, furnish and deliver to the Commission at Oak Ridge, Tennessee, a manuscript and art work suitable for the preparation of a book on the subject of "The Effects of Ionizing Radiation on the Nervous System". The manuscript and accompanying art work are hereinafter called the "manuscript". The manuscript will comprehensively survey and critically evaluate past and present work (including that of the USSR) performed and published in the above subject matter field. The manuscript will total 310 to 335 pages, consisting of 260 to 275 pages of typewritten text, tables and illustrations and 50 to 60 pages of references (a page of type is considered to contain approximately 500 words). The manuscript shall be prepared by the Contractor himself and shall be prepared substantially in accordance with the proposal of January 17, 1961, submitted by Dr. Van Cleave to Joseph G. Grotton, Chief, Technical Book and Monograph Section, Office of Technical Information, United States Atomic Energy Commission, Washington, D. C. A copy of the proposal is attached hereto and herewith made a part hereof. The scope of

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CERTIFIED A TRUE COPY
BY Glenn Brown

the work may be modified by mutual consent of the Contractor and the Commission. In connection with his performance hereunder the Contractor shall:

a. Begin work immediately upon execution of this contract and exert his best efforts to furnish an acceptable final manuscript with finished illustrations within twelve (12) months thereafter. The Contractor agrees to complete the performance of the work not later than eighteen (18) months after the date of execution of this contract, including indexing and the reading and editing of galley and page proofs.

b. Perform the work in accordance with the following stages and requirements:

(1) Prepare and submit to the Commission fifteen (15) copies of an acceptable detailed outline. This outline is to be an expansion with scope notes of the tentative outline which accompanied Contractor's informal proposal of January 17, 1961. It will also note illustrations to the extent possible. The Contractor will modify the outline to take into account comments of his reviewers and consultants as well as Commission reviews and comments.

(2) Furnish to the Commission for review fifteen (15) copies of the first draft of each chapter. Each copy shall contain illustrations, which may be inexpensive reproductions of preliminary or other rough forms of art work. Two (2) carbon copies of the first two chapters shall be furnished the Commission before they are mimeographed or otherwise reproduced. The Commission will give these copies a quick but detailed editorial review and return them to the Contractor with corrections and comments intended to contribute generally toward the preparation of the manuscript. The Contractor is encouraged to submit, at intervals prior to the scheduled dates set forth in Article II, chapters in batches convenient for technical review, each chapter accompanied by an outline of the chapter and by a reasonably up-to-date outline of the entire book to facilitate the review.

(3) Furnish to the Commission an acceptable final manuscript and art work. The final manuscript and art work shall incorporate, to a reasonable extent, the revisions called for by technical and editorial reviews of the draft and shall be prepared in a form satisfactory to the Commission.

(4) The following subparagraphs are applicable to the performance of (2) and (3) above:

(a) The first draft and final manuscript shall contain an author's preface, table of contents, text (including tables) for all chapters, illustrations, keyed references, glossary, appendices, and other matter where applicable.

(b) Prior to submission of the first draft manuscript to the Commission, as provided by (2) above, the Contractor shall obtain from prominent authorities comments and suggestions aimed at improving his text and, to the extent feasible, shall incorporate them into the first draft.

(5) Read galley and page proofs and prepare an index from page proofs.

2. In connection with the performance of the work described in 1. above, the Contractor shall:

a. Be responsible for locating and obtaining reference and illustrative materials and arrange for contributions thereof from private sources. The Commission shall cooperate with and furnish the Contractor reasonable assistance in obtaining this type of material from its own sources, if available, and at no expense to the Government.

b. Obtain written permission to quote from or use illustrations, tables, or other materials from copyrighted sources and furnish the Commission with copies of all writings granting such permission.

ARTICLE II - SCHEDULE

1. The Contractor shall perform the work described in Article I in accordance with the following schedule:

a. Detailed Outline. Fifteen (15) copies of the detailed outline as required by Article I, 1. b. (1) shall be submitted to the Commission by June 30, 1961.

b. Draft of First Half of Manuscript. Fifteen (15) copies of the first half of the manuscript shall be submitted to the Commission by September 30, 1961.

c. Draft of Remainder of Manuscript. Fifteen (15) copies of the remainder of the manuscript shall be submitted to the Commission by January 31, 1962.

d. Final Manuscript and Art Work. The final manuscript and art work shall be submitted to the Commission by June 30, 1962.

e. Indexing and Reading of Galley and Page Proofs. The Contractor shall complete the reading of galley and page proofs and prepare and submit to the Commission an acceptable index, as required by Article I, 1. b. (5), not later than eighteen (18) months from the date of execution of this contract.

2. The Contractor shall deliver postpaid each of the submissions required by Paragraphs 1. a., 1. b., 1. c., 1. d., and 1. e. above to William E. Boardman, Office of Technical Information, U. S. Atomic Energy Commission, Washington 25, D. C.

ARTICLE III - TERM

This contract shall commence on the effective date hereof and the work to be performed hereunder shall continue expeditiously through completion, subject to the schedule, reviews and acceptances required by Article I and Article II; provided that the Commission may terminate said contract in whole or from time to time in part for the convenience of the Government, by written notice to the Contractor. If performance of the work is terminated for the convenience of the Government, the Government will pay the Contractor in connection with such work for which compensation has not previously been received pursuant to Article IV, for all reasonable costs actually incurred by the Contractor in connection with the terminated work, plus a reasonable profit thereon. Failure of the parties to agree on an amount to be paid to the Contractor in the event of termination for the convenience of the Government shall be deemed to be a dispute within the meaning of the article of this contract entitled "Disputes".

ARTICLE IV - CONSIDERATION AND PAYMENT

1. As full compensation for the work performed and the materials submitted in accordance with Article I, the Contractor shall be paid, as follows:

a. The lump sum amount of \$1,000.00, upon Commission acceptance of the detailed outline.

b. The lump sum amount of \$3,500.00, upon Commission acceptance of the draft of the first half of the manuscript.

c. The lump sum amount of \$3,500.00, upon Commission acceptance of the draft of the remainder of the manuscript.

d. The lump sum amount of \$6,000.00, upon Commission acceptance of the final manuscript and art work.

e. The lump sum amount of \$1,680.00, upon completion of proofreading and Commission acceptance of the index.

2. a. Title to Material and Work. When any progress payment is made under this contract, title to material acquired and work performed under this contract shall vest in the Government, and title to all like property thereafter acquired or produced by the Contractor and properly chargeable to this contract under generally accepted accounting practices shall vest in the Government. The Contractor shall repay to the Government an amount equal to that portion of the unliquidated progress payments allocable to material lost, stolen, destroyed or damaged. Upon completion of performance of all obligations of the Contractor under this contract, title to all property not delivered to and accepted by the Government under this contract and to which title had vested in the Government under this contract shall vest in the Contractor.

b. Records and Reports. The Contractor shall maintain reasonable controls for proper administration of this article and shall furnish such statements and information as may reasonably be requested by the Commission. The Government shall be afforded reasonable opportunity to examine the Contractor's books, records, and accounts.

c. Reservation of Rights. The rights and remedies of the Government provided in this article shall not be exclusive and are in addition to any other rights and remedies provided by law or under this contract.

ARTICLE V - PATENTS

1. Whenever any invention or discovery is made or conceived by the Contractor or its employees in the course of, in connection with, or under the terms of this contract, the Contractor shall furnish the Commission with complete information thereon; and the Commission shall have the sole power to determine whether or not and where a patent application shall be filed, and to determine the disposition of the title to and rights under any application or patent that may result. The judgment of the Commission on these matters shall be accepted as final; and the Contractor, for itself and for its employees, agrees that the inventor or inventors will execute all documents and do all things necessary or proper to carry out the judgment of the Commission.

2. No claim for pecuniary award or compensation under the provisions of the Atomic Energy Acts of 1946 and 1954 shall be asserted by the Contractor or its employees with respect to any invention or discovery made or conceived in the course of, in connection with, or under the terms of this contract.

3. Except as otherwise authorized in writing by the Commission, the Contractor will obtain patent agreements to effectuate the purposes of paragraphs 1 and 2 of this article from all persons who perform any part of the work under this contract, except such clerical and manual labor personnel as will not have access to technical data.

4. Except as otherwise authorized in writing by the Commission, the Contractor will insert in all subcontracts provisions making this article applicable to the subcontractor and its employees.

ARTICLE VI - COPYRIGHT

1. The Contractor (i) agrees that the Commission shall determine the disposition of the title to and the rights under any copyright secured by the Contractor or its employees on copyrightable material first produced or composed and delivered to the Government under this contract, and (ii) hereby grants to the Government a royalty-free, nonexclusive, irrevocable license to reproduce, translate, publish, use and dispose of, and to authorize others so to do, all copyrighted or copyrightable work not first produced or composed by the Contractor in the performance of this contract but which is incorporated in the material furnished under the contract, provided that such license shall be only to the extent the Contractor now has, or prior to the completion or final settlement of the contract may acquire, the right to grant such license without becoming liable to pay compensation to others solely because of such grant.

2. The Contractor shall give the Commission a statement to the effect that the manuscript and illustrations contain no copyrighted material except that for which permission has been obtained.

3. The Contractor agrees to report in writing to the Commission, promptly and in reasonable written detail, any notice or claim of copyright infringement received by the Contractor with respect to any material delivered under this contract.

ARTICLE VII - TAXES

Except as otherwise expressly provided herein, the contract price includes all applicable Federal, State and local taxes.

ARTICLE VIII - SECURITY

1. Contractor's Duty to Safeguard Restricted Data and Other Classified Information. In the performance of the work under this contract, the Contractor shall, in accordance with the Commission's security regulations and requirements, be responsible for safeguarding restricted data and other classified matter and protecting against sabotage, espionage, loss and theft, the classified documents, materials, equipment, processes, etc., as well as such other material of high intrinsic or strategic value as may be in the Contractor's possession in connection with performance of work under this contract. Except as otherwise expressly provided in the specifications, the Contractor shall, upon completion or termination of this contract, transmit to the Commission any classified matter in the possession of the Contractor or any person under the Contractor's control in connection with performance of this contract.

2. Regulations. The Contractor agrees to conform to all security regulations and requirements of the Commission.

3. Definition of Restricted Data. The term "Restricted Data", as used in this clause, means all data concerning (a) design, manufacture, or utilization of atomic weapons; (b) the production of special nuclear material; or (c) the use of special nuclear material in the production of energy, but shall not include data declassified or removed from the Restricted Data category pursuant to Section 142 of the Atomic Energy Act of 1954.

4. Security Clearance of Personnel. Except as the Commission may authorize, in accordance with the Atomic Energy Act of 1954, the Contractor shall not permit any individual to have access to Restricted Data until the designated investigating agency shall have made an investigation and report to the Commission on the character, associations, and loyalty of such individual and the Commission shall have determined that permitting such person to have access to Restricted Data will not endanger the common defense and security. As used in this paragraph,

the term "designated investigating agency" means the United States Civil Service Commission or the Federal Bureau of Investigation, or both, as determined pursuant to the provisions of the Atomic Energy Act of 1954. Access to classified information other than Restricted Data shall not be granted unless the recipient possesses appropriate security clearance.

5. Criminal Liability. It is understood that disclosure of information relating to the work or services ordered hereunder to any person not entitled to receive it, or failure to safeguard any Restricted Data or any Top Secret, Secret, or Confidential matter that may come to the Contractor or any person under the Contractor's control in connection with work under this contract, may subject the Contractor, his agents, employees, and subcontractors to criminal liability under the laws of the United States. (See the Atomic Energy Act of 1954, 68 Stat. 919), (see also Executive Order 10104 of February 1, 1950, 15 F. R. 597).

6. Subcontracts and Purchase Orders. Except as otherwise authorized in writing by the Contracting Officer, the Contractor shall insert provisions similar to the foregoing in all subcontracts and purchase orders under this contract.

ARTICLE VIII - GENERAL PROVISIONS

Standard Form 32, October 1957 Edition, as amended by the sheets entitled "Changes in Standard Form 32, General Provisions" (March 22, 1961) and "Additional Changes in Standard Form 32, General Provisions" (March 22, 1961) which are attached hereto are hereby incorporated in and made a part of this contract and designated Article VIII hereof.

IN WITNESS WHEREOF, the parties hereto have executed this contract the day and year first above written.

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY COMMISSION

BY: _____
Contracting Officer, CECS

WITNESSES:

/s/ George B. Hilsch

513 Longwood Blvd., N. S.
(Address)

DR. CHARLES DURWARD VAN CLEAVE

BY: _____

/s/ _____

513 Longwood Blvd., N. S.
(Address)

TITLE: _____

ADDITIONAL CHANGES IN STANDARD FORM 32, GENERAL PROVISIONS
(March 22, 1961)

18. NONDISCRIMINATION IN EMPLOYMENT

In connection with the performance of work under this contract, the contractor agrees as follows:

(a) The contractor will not discriminate against any employee or applicant for employment because of race, creed, color, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, creed, color, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.

(b) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, or national origin.

(c) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided by the agency contracting officer, advising the said labor union or workers' representative of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(d) The contractor will comply with all provisions of Executive Order No. 10925 of March 6, 1961, and of the rules, regulations, and relevant orders of the President's Committee on Equal Employment Opportunity created thereby.

(e) The contractor will furnish all information and reports required by Executive Order No. 10925 of March 6, 1961, and by the rules, regulations, and orders of the said Committee, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Committee for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(f) In the event of the contractor's non-compliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be cancelled in whole or in part and the contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 10925 of March 6, 1961, and such other sanctions may be imposed and remedies invoked as provided in the said Executive order or by rule, regulation, or order of the President's Committee on Equal Employment Opportunity, or as otherwise provided by law.

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(g) The contractor will include the provisions of the foregoing paragraphs (a) through (f) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the President's Committee on Equal Employment Opportunity issued pursuant to section 303 of Executive Order No. 10925 of March 6, 1961, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing such provisions, including sanctions for non-compliance: Provided, however, that in the event the contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

(The last sentence of paragraph (a) of this clause and the above paragraph (g) shall be applicable only if the amount of this order exceeds \$5,000.00.) .

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CHANGES IN STANDARD FORM 32, GENERAL PROVISIONS

(March 22, 1961)

22. ALTERATIONS AND ADDITIONS

The following alterations in or additions to the provisions of Standard Form 32, General Provisions, of this contract were made prior to execution of the contract by the parties:

Delete clause 1, entitled Definitions, and substitute the following therefor:

1. DEFINITIONS

As used throughout this contract, the following terms shall have the meanings set forth below:

(a) The term "Secretary" means the Secretary, the Under Secretary, or any Assistant Secretary of the Department, and the head or any assistant head of the Federal agency; and the term "his duly authorized representative" means any person or persons or board (other than the Contracting Officer) authorized to act for the Secretary.

(b) The term "Contracting Officer" means the person executing this contract on behalf of the Government and includes his successors or any duly authorized representative of any such person.

(c) The term "Commission" means the United States Atomic Energy Commission or any duly authorized representative thereof, including the Contracting Officer except for the purpose of deciding an appeal under the clause entitled "Disputes."

(d) Except as otherwise provided in this contract, the term "subcontracts" includes purchase orders under this contract.

Make the following changes in Clause 10 entitled Examination of Records:

10. EXAMINATION OF RECORDS

Delete the sentence in parentheses at the beginning of the clause and substitute the following therefor:

(The following clause is not applicable to (a) contracts with any foreign Government or agencies thereof or in contracts with foreign producers; (b) purchase orders not exceeding \$2500; (c) contracts or purchase orders for public utilities services at rates established for uniform application to the general public, or (d) contracts awarded as a result of formal advertising.)

In the last sentence of paragraph (b) of the clause delete the amount "\$1000" and substitute therefor the amount "\$2500."

Add the following clause entitled Patent Indemnity.

23. PATENT INDEMNITY

The contractor agrees to indemnify the Government, its officers, agents, servants and employees against liability of any kind (including costs and expenses incurred) for the use of any invention or discovery and for the infringement of any Letters Patent (not including liability, arising pursuant to Section 183, Title 35, (1952) U. S. Code, prior to the issuance of Letters Patent) occurring in the performance of this contract or arising by reason of the use or disposal by or for the account of the Government of items manufactured or supplied under this contract.

Add the following clause entitled Reporting of Royalties.

24. REPORTING OF ROYALTIES

If this contract is in an amount which exceeds \$10,000 and if any royalty payments are directly involved in the contract or are reflected in the contract price to the Government, the contractor agrees to report in writing to the Commission (Chief, Patent Branch) during the performance of this contract and prior to its completion or final settlement the amount of any royalties or other payments paid or to be paid by it directly to others in connection with the performance of this contract together with the names and addresses of licensors to whom such payments are made and either the patent numbers involved or such other information as will permit identification of the patents or other basis on which the royalties are to be paid. The approval of the Commission of any individual payments or royalties shall not estop the Government at any time from contesting the enforceability, validity or scope of, or title to, any patent under which a royalty or payments are made.

Add the following clause entitled Renegotiation.

25. RENEGOTIATION

If this contract is subject to the Renegotiation Act of 1951, as amended, the following provisions shall apply:

(a) This contract is subject to the Renegotiation Act of 1951, as amended (65 Stat. 7; P. L. 764, 83rd Congress; Act of August 3, 1955, P. L. 218, 84th Congress) and shall be deemed to contain all the provisions required by Section 104 of said Act.

(b) The Contractor agrees to insert the provisions of this clause including this paragraph b, in all subcontracts specified in Section 103(g) of the Renegotiation Act of 1951; provided, that the Contractor shall not be required to insert the provisions of this clause in any subcontract exempted by or pursuant to Section 106 of the Renegotiation Act of 1951, as amended.

Add the following clause entitled Federal, State, and Local Taxes.

26. FEDERAL, STATE, AND LOCAL TAXES

(a) As used throughout this clause, the term "tax inclusive date" means the date of negotiated contracts and the date set for the opening of bids for contracts entered into through formal advertising. As to additional supplies or services procured by modification to this contract, the term "tax inclusive date" means the date of such modification.

(b) Except as may be otherwise provided in this contract, the contract price includes all Federal, State, and local taxes and duties in effect and applicable to this contract on the tax inclusive date, except taxes (other than Federal transportation taxes) from which the Government, the Contractor, or the transactions or property covered by this contract are then exempt. Unless specifically excluded, duties are included in the contract price, and, if freight is included in the contract price, Federal transportation taxes are likewise included.

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(c) (1) If the Contractor is required to pay or bear the burden (i) of any tax or duty, which either was not to be included in the contract price pursuant to the requirements of paragraph (b), or was specifically excluded from the contract price by a provision of this contract; or (ii) of an increase in rate of any tax or duty, whether or not such tax or duty was excluded from the contract price; or of any interest or penalty thereon, the contract price shall be correspondingly increased: Provided, that the Contractor warrants in writing that no amount for such tax, duty, or rate increase was included in the contract price as a contingency reserve or otherwise: And provided further, That liability for such tax, duty, rate increase, interest, or penalty was not incurred through the fault or negligence of the Contractor or its failure to follow instructions of the Contracting Officer.

(2) If the Contractor is not required to pay or bear the burden, or obtains a refund or drawback, in whole or in part, of any tax, duty, interest, or penalty which (i) was to be included in the contract price pursuant to the requirements of paragraph (b), (ii) was included in the contract price, or (iii) was the basis of an increase in the contract price, the contract price shall be correspondingly decreased or the amount of such relief, refund, or drawback shall be paid to the Government, as directed by the Contracting Officer. The contract price also shall be correspondingly decreased if the Contractor, through its fault or negligence or its failure to follow instructions of the Contracting Officer, is required to pay or bear the burden, or does not obtain a refund or drawback of any such tax, duty, interest, or penalty. Interest paid or credited to the Contractor incident to a refund of taxes shall inure to the benefit of the Government to the extent that such interest was earned after the Contractor was paid or reimbursed by the Government for such taxes.

(3) Invoices or vouchers covering any adjustment of the contract price pursuant to this paragraph (c) shall set forth the amount thereof as a separate item and shall identify the particular tax involved.

(4) Nothing in this paragraph (c) shall be applicable to social security taxes; not income taxes; excess profit taxes; capital stock taxes; Federal transportation taxes, except changes in the rate thereof, including repeal, pertaining to shipments from the Contractor to the Government; unemployment compensation taxes; or any State and local taxes, except those levied on or measured by the contract or sales price of the services or completed supplies

furnished under this contract, including gross income taxes, gross receipts taxes, sales and use taxes, excise taxes, or franchise or occupation taxes measured by sales or receipts from sales.

(5) No adjustment of less than \$100 shall be made in the contract price pursuant to this paragraph.

(d) Unless there does not exist any reasonable basis to sustain an exemption, the Government agrees upon request of the Contractor, without further liability except as otherwise provided in this contract, to furnish evidence appropriate to establish exemption from (i) any Federal tax, which the Contractor warrants in writing was excluded from the contract price, or (ii) any State or local tax: Provided, That evidence appropriate to establish exemption from duties will be furnished, and Government bills of lading will be issued, only at the discretion of the Contracting Officer. In addition, the Contracting Officer may furnish evidence appropriate to establish exemption from any tax that may, pursuant to this clause, give rise to either an increase or decrease in the contract price.

(e) (1) The contractor shall promptly notify the Contracting Officer of all matters pertaining to Federal, State, and local taxes and duties that reasonably may result in either an increase or decrease in the contract price.

(2) Whenever an increase or decrease in the contract price may be required under this clause, the Contractor shall take action as directed by the Contracting Officer, and the contract price shall be equitably adjusted to cover the costs of such action, including any interest, penalty, and reasonable attorney's fees.

(f) Pursuant to paragraph (b), the prices herein do not include any amount for sales or use tax levied under the Tennessee Retailers' Sales Tax Act.

Add the following clause entitled Procurement in Labor Surplus Areas:

27. PROCUREMENT IN LABOR SURPLUS AREAS

It is the policy of the Government to place supply contracts with suppliers who will perform such contracts substantially in areas of current labor surplus where this can be done at prices no higher than are obtainable elsewhere. The Contractor agrees to use his best efforts to place his subcontracts in accordance with this policy to the extent consistent with the efficient performance of the contract.

Delete Clause 18 entitled "Nondiscrimination in Employment" and substitute therefor: Clause 18 contained on the attached sheet entitled "Additional Changes in Standard Form 32, General Provisions" dated March 22, 1961.

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Attachment:

Additional Changes in Standard Form 32, General Provisions, dated March 22, 1961

USAEC Office of Technical Information Extension, Oak Ridge, Tennessee

GENERAL PROVISIONS

(Supply Contract)

1. DEFINITIONS

As used throughout this contract, the following terms shall have the meanings set forth below:

- (a) The term "Secretary" means the Secretary, the Under Secretary, or any Assistant Secretary of the Department, and the head or any assistant head of the Federal agency; and the term "his duly authorized representative" means any person or persons or board (other than the Contracting Officer) authorized to act for the Secretary.
- (b) The term "Contracting Officer" means the person executing this contract on behalf of the Government, and any other officer or civilian employee who is a properly designated Contracting Officer; and the term includes, except as otherwise provided in this contract, the authorized representative of a Contracting Officer acting within the limits of his authority.
- (c) Except as otherwise provided in this contract, the term "subcontracts" includes purchase orders under this contract.

2. CHANGES

The Contracting Officer may at any time, by a written order, and without notice to the sureties, make changes, within the general scope of this contract, in any one or more of the following: (i) Drawings, designs, or specifications, where the supplies to be furnished are to be specially manufactured for the Government in accordance therewith; (ii) method of shipment or packing; and (iii) place of delivery. If any such change causes an increase or decrease in the cost of, or the time required for, the performance of any part of the work under this contract, whether changed or not changed by any such order, an equitable adjustment shall be made in the contract price or delivery schedule, or both, and the contract shall be modified in writing accordingly. Any claim by the Contractor for adjustment under this clause must be asserted within 30 days from the date of receipt by the Contractor of the notification of change: *Provided, however,* That the Contracting Officer, if he decides that the facts justify such action, may receive and act upon any such claim asserted at any time prior to final payment under this contract. Where the cost of property made obsolete or excess as a result of a change is included in the Contractor's claim for adjustment, the Contracting Officer shall have the right to prescribe the manner of disposition of such property. Failure to agree to any adjustment shall be a dispute concerning a question of fact within the meaning of the clause of this contract entitled "Disputes." However, nothing in this clause shall excuse the Contractor from proceeding with the contract as changed.

3. EXTRAS

Except as otherwise provided in this contract, no payment for extras shall be made unless such extras and the price therefor have been authorized in writing by the Contracting Officer.

4. VARIATION IN QUANTITY

No variation in the quantity of any item called for by this contract will be accepted unless such variation has been caused by conditions of loading, shipping, or packing, or allowances in manufacturing processes, and then only to the extent, if any, specified elsewhere in this contract.

5. INSPECTION

(a) All supplies (which term throughout this clause includes without limitation raw materials, components, intermediate assemblies, and end products) shall be subject to inspection and test by the Government, to the extent practicable at all times and places including the period of manufacture, and in any event prior to acceptance.

(b) In case any supplies or lots of supplies are defective in material or workmanship or otherwise not in conformity with the requirements of this contract, the Government shall have the right either to reject them (with or without instructions as to their disposition) or to require their correction. Supplies or lots of supplies which have been rejected or required to be corrected shall be removed or, if permitted or required by the Contracting Officer, corrected in place by and at the expense of the Contractor promptly after notice, and shall not thereafter be tendered for acceptance unless the former rejection or requirement of correction is disclosed. If the Contractor fails promptly to remove such supplies or lots of supplies which are required to be removed, or promptly to replace or correct such supplies or lots of supplies, the Government either (i) may by contract or otherwise replace or correct such supplies and charge to the Contractor the cost occasioned the Government thereby, or (ii) may terminate this contract for default as provided in the clause of this contract entitled "Default." Unless the Contractor corrects or replaces such supplies within the delivery schedule, the Contracting Officer may require the delivery of such supplies at a reduction in price which is equitable under the circumstances. Failure to agree to such reduction of price shall be a dispute concerning a question of fact within the meaning of the clause of this contract entitled "Disputes."

(c) If any inspection or test is made by the Government on the premises of the Contractor or a subcontractor, the Contractor without additional charge shall provide all reasonable facilities and assistance for the safety and convenience of the Government inspectors in the performance of their duties. If Government inspection or test is made at a point other than the premises of the Contractor or a subcontractor, it shall be at the expense of the Government except as otherwise provided in this contract: *Provided,* That in case of rejection the Government shall not be liable for any reduction in value of samples used in connection with such inspection or test. All inspections and tests by the Government shall be performed in such a manner as not to unduly delay the work. The Government reserves the right to charge to the Contractor any additional cost of Government inspection and test when supplies are not ready at the time such inspection and test is requested by the Contractor or when reinspection or retest is necessitated by prior rejection. Acceptance or rejection of the supplies shall be made as promptly as practicable after delivery, except as otherwise provided in this contract; but failure to inspect and accept or reject supplies shall neither relieve the Contractor from responsibility for such supplies as are not in accordance with the contract requirements nor impose liability on the Government therefor.

(d) The inspection and test by the Government of any supplies or lots thereof does not relieve the Contractor from any responsibility regarding defects or other failures to meet the contract requirements which may be discovered prior to acceptance. Except as otherwise provided in this

contract, acceptance shall be conclusive except as regards latent defects, fraud, or such gross mistakes as amount to fraud.

(e) The Contractor shall provide and maintain an inspection system acceptable to the Government covering the supplies hereunder. Records of all inspection work by the Contractor shall be kept complete and available to the Government during the performance of this contract and for such longer period as may be specified elsewhere in this contract.

6. RESPONSIBILITY FOR SUPPLIES

Except as otherwise provided in this contract, (i) the Contractor shall be responsible for the supplies covered by this contract until they are delivered at the designated delivery point, regardless of the point of inspection; (ii) after delivery to the Government at the designated point and prior to acceptance by the Government or rejection and giving notice thereof by the Government, the Government shall be responsible for the loss or destruction of or damage to the supplies only if such loss, destruction, or damage results from the negligence of officers, agents, or employees of the Government acting within the scope of their employment; and (iii) the Contractor shall bear all risks as to rejected supplies after notice of rejection, except that the Government shall be responsible for the loss, or destruction of, or damage to the supplies only if such loss, destruction or damage results from the gross negligence of officers, agents, or employees of the Government acting within the scope of their employment.

7. PAYMENTS

The Contractor shall be paid, upon the submission of proper invoices or vouchers, the prices stipulated herein for supplies delivered and accepted or services rendered and accepted, less deductions, if any, as herein provided. Unless otherwise specified, payment will be made on partial deliveries accepted by the Government when the amount due on such deliveries so warrants; or, when requested by the Contractor, payment for accepted partial deliveries shall be made whenever such payment would equal or exceed either \$1,000 or 50 percent of the total amount of this contract.

8. ASSIGNMENT OF CLAIMS

(a) Pursuant to the provisions of the Assignment of Claims Act of 1940, as amended (31 U. S. Code 203, 41 U. S. Code 15), if this contract provides for payments aggregating \$1,000 or more, claims for monies due or to become due the Contractor from the Government under this contract may be assigned to a bank, trust company, or other financing institution, including any Federal lending agency, and may thereafter be further assigned and reassigned to any such institution. Any such assignment or reassignment shall cover all amounts payable under this contract and not already paid, and shall not be made to more than one party, except that any such assignment or reassignment may be made to one party as agent or trustee for two or more parties participating in such financing. Notwithstanding any provisions of this contract, payments to an assignee of any monies due or to become due under this contract shall not, to the extent provided in said Act, as amended, be subject to reduction or set-off. *(The preceding sentence applies only if this contract is with the Department of Defense, the General Services Administration, the Atomic Energy Commission, or any other department or agency of the United States designated by the President pursuant to clause 4 of the proviso of section 1 of the Assignment of Claims Act of 1940, as amended by the Act of May 15, 1951, 65 Stat. 41.)*

(b) In no event shall copies of this contract or of any plans, specifications, or other similar documents relating to work under this contract, if marked "Top Secret," "Secret," or "Confidential," be furnished to any assignee of any claim arising under this contract or to any other person not entitled to receive the same: *Provided*, That a copy of any part or all of this contract so marked may be furnished, or any information contained therein may be disclosed, to such assignee upon the prior written authorization of the Contracting Officer.

9. ADDITIONAL BOND SECURITY

If any surety upon any bond furnished in connection with this contract becomes unacceptable to the Government, or if any such surety fails to furnish reports as to his financial condition from time to time as requested by the Government, the Contractor shall promptly furnish such additional security as may be required from time to time to protect the interests of the Government and of persons supplying labor or materials in the prosecution of the work contemplated by this contract.

10. EXAMINATION OF RECORDS

(The following clause is applicable if the amount of this contract exceeds \$1,000 and was entered into by means of negotiation, but is not applicable if this contract was entered into by means of formal advertising.)

(a) The Contractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under this contract, have access to and the right to examine any directly pertinent books, documents, papers, and records of the Contractor involving transactions related to this contract.

(b) The Contractor further agrees to include in all his subcontracts hereunder a provision to the effect that the subcontractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under the subcontract, have access to and the right to examine any directly pertinent books, documents, papers, and records of such subcontractor, involving transactions related to the subcontract. The term "subcontract" as used in this clause excludes (i) purchase orders not exceeding \$1,000 and (ii) subcontracts or purchase orders for public utility services at rates established for uniform applicability to the general public.

11. DEFAULT

(a) The Government may, subject to the provisions of paragraph (c) below, by written notice of default to the Contractor, terminate the whole or any part of this contract in any one of the following circumstances:

(i) if the Contractor fails to make delivery of the supplies or to perform the services within the time specified herein or any extension thereof; or

(ii) if the Contractor fails to perform any of the other provisions of this contract, or so fails to make progress as to endanger performance of this contract in accordance with its terms, and in either of these two circumstances does not cure such failure within a period of 10 days (or such longer period as the Contracting Officer may authorize in writing) after receipt of notice from the Contracting Officer specifying such failure.

(b) In the event the Government terminates this contract in whole or in part as provided in paragraph (a) of this clause, the Government may procure, upon such terms and in such manner as the Contracting Officer may deem

appropriate, supplies or services similar to those so terminated, and the Contractor shall be liable to the Government for any excess costs for such similar supplies or services: *Provided*, That the Contractor shall continue the performance of this contract to the extent not terminated under the provisions of this clause.

(c) Except with respect to defaults of subcontractors, the Contractor shall not be liable for any excess costs if the failure to perform the contract arises out of causes beyond the control and without the fault or negligence of the Contractor. Such causes may include, but are not restricted to, acts of God or of the public enemy, acts of the Government in either its sovereign or contractual capacity, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather; but in every case the failure to perform must be beyond the control and without the fault or negligence of the Contractor. If the failure to perform is caused by the default of a subcontractor, and if such default arises out of causes beyond the control of both the Contractor and subcontractor, and without the fault or negligence of either of them, the Contractor shall not be liable for any excess costs for failure to perform, unless the supplies or services to be furnished by the subcontractor were obtainable from other sources in sufficient time to permit the Contractor to meet the required delivery schedule.

(d) If this contract is terminated as provided in paragraph (a) of this clause, the Government, in addition to any other rights provided in this clause, may require the Contractor to transfer title and deliver to the Government, in the manner and to the extent directed by the Contracting Officer, (i) any completed supplies, and (ii) such partially completed supplies and materials, parts, tools, dies, jigs, fixtures, plans, drawings, information, and contract rights (hereinafter called "manufacturing materials") as the Contractor has specifically produced or specifically acquired for the performance of such part of this contract as has been terminated; and the Contractor shall, upon direction of the Contracting Officer, protect and preserve property in possession of the Contractor in which the Government has an interest. Payment for completed supplies delivered to and accepted by the Government shall be at the contract price. Payment for manufacturing materials delivered to and accepted by the Government and for the protection and preservation of property shall be in an amount agreed upon by the Contractor and Contracting Officer; failure to agree to such amount shall be a dispute concerning a question of fact within the meaning of the clause of this contract entitled "Disputes."

(e) If, after notice of termination of this contract under the provisions of paragraph (a) of this clause, it is determined that the failure to perform this contract is due to causes beyond the control and without the fault or negligence of the Contractor or subcontractor pursuant to the provisions of paragraph (c) of this clause, such notice of default shall be deemed to have been issued pursuant to the clause of this contract entitled "Termination for Convenience of the Government," and the rights and obligations of the parties hereto shall in such event be governed by such clause. (*Except as otherwise provided in this contract, this paragraph (e) applies only if this contract contains such clause.*)

(f) The rights and remedies of the Government provided in this clause shall not be exclusive and are in addition

to any other rights and remedies provided by law or under this contract.

12. DISPUTES

(a) Except as otherwise provided in this contract, any dispute concerning a question of fact arising under this contract which is not disposed of by agreement shall be decided by the Contracting Officer, who shall reduce his decision to writing and mail or otherwise furnish a copy thereof to the Contractor. The decision of the Contracting Officer shall be final and conclusive unless, within 30 days from the date of receipt of such copy, the Contractor mails or otherwise furnishes to the Contracting Officer a written appeal addressed to the Secretary. The decision of the Secretary or his duly authorized representative for the determination of such appeals shall be final and conclusive unless determined by a court of competent jurisdiction to have been fraudulent, or capricious, or arbitrary, or so grossly erroneous as necessarily to imply bad faith, or not supported by substantial evidence. In connection with any appeal proceeding under this clause, the Contractor shall be afforded an opportunity to be heard and to offer evidence in support of its appeal. Pending final decision of a dispute hereunder, the Contractor shall proceed diligently with the performance of the contract and in accordance with the Contracting Officer's decision.

(b) This "Disputes" clause does not preclude consideration of law questions in connection with decisions provided for in paragraph (a) above: *Provided*, That nothing in this contract shall be construed as making final the decision of any administrative official, representative, or board on a question of law.

13. NOTICE AND ASSISTANCE REGARDING PATENT INFRINGEMENT

The provisions of this clause shall be applicable only if the amount of this contract exceeds \$5,000.

(a) The Contractor shall report to the Contracting Officer, promptly and in reasonable written detail, each notice or claim of patent infringement based on the performance of this contract of which the Contractor has knowledge.

(b) In the event of litigation against the Government on account of any claim of patent infringement arising out of the performance of this contract or out of the use of any supplies furnished or work or service performed hereunder, the Contractor shall furnish to the Government, upon request, all evidence and information in possession of the Contractor pertaining to such litigation. Such evidence and information shall be furnished at the expense of the Government except in those cases in which the Contractor has agreed to indemnify the Government against the claim being asserted.

14. BUY AMERICAN ACT

(a) In acquiring end products, the Buy American Act (41 U. S. Code 10 a-d) provides that the Government give preference to domestic source end products. For the purpose of this clause:

(i) "components" means those articles, materials, and supplies, which are directly incorporated in the end products;

(ii) "end products" means those articles, materials, and supplies, which are to be acquired under this contract for public use; and

(iii) a "domestic source end product" means (A) an unmanufactured end product which has been mined or

produced in the United States and (B) an end product manufactured in the United States if the cost of the components thereof which are mined, produced, or manufactured in the United States exceeds 50 percent of the cost of all its components. For the purposes of this (a) (iii) (B), components of foreign origin of the same type or kind as the products referred to in (b) (ii) or (iii) of this clause shall be treated as components mined, produced, or manufactured in the United States.

(b) The Contractor agrees that there will be delivered under this contract only domestic source end products, except end products:

- (i) which are for use outside the United States;
- (ii) which the Government determines are not mined, produced, or manufactured in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality;
- (iii) as to which the Secretary determines the domestic preference to be inconsistent with the public interest; or
- (iv) as to which the Secretary determines the cost to the Government to be unreasonable.

(The foregoing requirements are administered in accordance with Executive Order No. 10582, dated December 17, 1954.)

15. CONVICT LABOR

In connection with the performance of work under this contract, the Contractor agrees not to employ any person undergoing sentence of imprisonment at hard labor.

16. EIGHT-HOUR LAW OF 1912—OVERTIME COMPENSATION

This contract, to the extent that it is of a character specified in the Eight-Hour Law of 1912, as amended (40 U. S. Code 324-326) and is not covered by the Walsh-Healey Public Contracts Act (41 U. S. Code 35-45), is subject to the following provisions and exceptions of said Eight-Hour Law of 1912, as amended, and to all other provisions and exceptions of said Law:

No laborer or mechanic doing any part of the work contemplated by this contract, in the employ of the Contractor or any subcontractor contracting for any part of said work contemplated, shall be required or permitted to work more than eight hours in any one calendar day upon such work, except upon the condition that compensation is paid to such laborer or mechanic in accordance with the provisions of this clause. The wages of every laborer and mechanic employed by the Contractor or any subcontractor engaged in the performance of this contract shall be computed on a basic day rate of eight hours per day; and work in excess of eight hours per day is permitted only upon the condition that every such laborer and mechanic shall be compensated for all hours worked in excess of eight hours per day at not less than one and one-half times the basic rate of pay. For each violation of the requirements of this clause a penalty of five dollars shall be imposed for each laborer or mechanic for every calendar day in which such employee is required or permitted to labor more than eight hours upon said work without receiving compensation computed in accordance with this clause, and all penalties thus imposed shall be withheld for the use and benefit of the Government.

17. WALSH-HEALEY PUBLIC CONTRACTS ACT

If this contract is for the manufacture or furnishing of materials, supplies, articles, or equipment in an amount which exceeds or may exceed \$10,000 and is otherwise subject to the Walsh-Healey Public Contracts Act, as amended (41 U. S. Code 35-45), there are hereby incorporated by reference all representations and stipulations required by said Act and regulations issued thereunder by the Secretary of Labor, such representations and stipulations being subject to all applicable rulings and interpretations of the Secretary of Labor which are now or may hereafter be in effect.

18. NONDISCRIMINATION IN EMPLOYMENT

(a) In connection with the performance of work under this contract, the Contractor agrees not to discriminate against any employee or applicant for employment because of race, religion, color, or national origin. The aforesaid provision shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post hereafter in conspicuous places, available for employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of the nondiscrimination clause.

(b) The Contractor further agrees to insert the foregoing provision in all subcontracts hereunder, except subcontracts for standard commercial supplies or raw materials.

19. OFFICIALS NOT TO BENEFIT

No member of or delegate to Congress, or resident commissioner, shall be admitted to any share or part of this contract, or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

20. COVENANT AGAINST CONTINGENT FEES

The Contractor warrants that no person or selling agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the Contractor for the purpose of securing business. For breach or violation of this warranty the Government shall have the right to annul this contract without liability or in its discretion to deduct from the contract price or consideration, or otherwise recover, the full amount of such commission, percentage, brokerage, or contingent fee.

21. UTILIZATION OF SMALL BUSINESS CONCERNS

(a) It is the policy of the Government as declared by the Congress that a fair proportion of the purchases and contracts for supplies and services for the Government be placed with small business concerns.

(b) The Contractor agrees to accomplish the maximum amount of subcontracting to small business concerns that the Contractor finds to be consistent with the efficient performance of this contract.

THE UNIVERSITY OF NORTH CAROLINA
CHAPEL HILL

THE SCHOOL OF MEDICINE
DEPARTMENT OF ANATOMY

January 17, 1961

Joseph G. Gratten, Acting Chief
Technical Book Section
Industrial Information Branch
Office of Technical Information
U. S. Atomic Energy Commission
Washington 25, D. C.

Ref: TI:JGG

Dear Mr. Gratten:

Enclosed please find an informal outline concerning a proposed book on the effects of ionizing radiation on the nervous system. The outline follows the items suggested in your letter of November 30. I hope the material submitted can serve as a basis for further discussion.

Sincerely yours,

C. D. Van Cleave

Enc.

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The effects of ionizing radiation on the nervous system

1. Introduction

Definitions of general biological factors common in all radiobiology: dose, dose-rate, acute vs. chronic exposure, immediate vs. delayed effects. Factors in biological somatic variability: age at time of exposure, range in tissue sensitivity within the organism and importance of indices of measurement by which apparent sensitivity of a tissue is judged, relationship between amount of dose and its biological effect in terms of morphological as well as functional criteria, the lack of agreement on the linearity of dose-effect relationships for somatic effects. Anatomical definitions of CNS, peripheral and autonomic NS, the neurone, glia, etc. Discussion of definition of "high" and "low" exposure doses.

2. Historical survey of studies on the response of nervous tissue to x-radiation and radium. 1895-1940.

Human and experimental observations and studies. Many results vitiated by lack of precise physical measurement of dose. Early appearance of theory of relative radioinsensitivity of nervous tissue.

3. Effects of ionizing radiation on the developing nervous system.

CNS changes following exposure of embryos and fetuses to radiation in experimental animals and in man. Evidence for general acceptance that embryonic neuroblasts are far more vulnerable to radiation injury than adult nerve cells.

4. Histopathological changes resulting from irradiation of nervous system.

Importance of intensity of dose in producing CNS damage. Pathogenesis of effects. Vascular reactions -- direct or indirect effect of radiation. Connective tissue infiltration and repair. Delayed reactions and similarity to latency in skin damage. Radiovulnerability of glial cells, particularly astrocytes. Range of variation in sensitivity of parts and of cells of CNS to radiation damage.

5. High intensity (supralethal) dose effects on CNS of x-rays, gamma rays, and neutrons.

Effects of BA 140-La 140 radiation on monkeys. Co 60 irradiation of monkeys. Betatron x-ray irradiation of man and monkeys. CNS effects of gamma-neutron irradiation in man (inc. ABCC data), donkeys, swine, etc.

6. Low level (sublethal) dose effects on CNS of various experimental animals and man.

8. Effects of x-irradiation on peripheral nerves and autonomic ganglia in animals.

In vivo and in vitro x-irradiation of peripheral nerves. Irradiation of the autonomic system is at present exclusively reported in Soviet work.

9. Particle irradiation of the CNS.

Neuropathological effects of directed beams of accelerated particles: protons, deuterons, alphas, and heavy ions. High altitude exposures. Laminar cortical lesions. Surgical ablation in the CNS by particle beams. Radon needles, yttrium pellets.

10. Enzymatic changes in neurones following irradiation. Electron microscopy of irradiated neurones.

11. The blood-brain barrier and its response to external and internal radiation.

12. Effects of irradiation of sensory receptors.

Visual, auditory, vestibular, and cutaneous changes following irradiation.

13. Functional changes in the nervous system resulting from irradiation.

Changes observed in spinal reflexes and neuronal pools, in conditional reflexes, and in electrical brain activity.

14. Behavioral changes resulting from irradiation.

Usually whole body irradiation effects on behavior of animals, including observed effects on psychological processes in both animals and man.

The effects of ionizing radiation on the nervous system.

1 and 2. The subject field is one of clinical interest because of its implications in the therapeutic and diagnostic use of ionizing radiations. As a legitimate field of inquiry in radio-biology it has recently become of more pressing importance. Historically, from the point of view of long-term radiation injury, it has long been held that radiation acts more on the rapidly dividing tissues and both the acute and the late effects of radiation are in large measure due to these direct effects. The adult nervous system has been regarded as one of the more radioinsensitive tissues of the body. At least one of the reasons for this view has been the almost exclusively morphological attention paid by neuropathologists to the effects of radiation.

Within the last 5-10 years Western scientists have become aware of Soviet work which places great emphasis on the deleterious effect of radiation on the nervous system, especially on the functional as opposed to the structural aspects of the induced changes. A considerable amount of work is now underway in this country, using more delicate technics than have previously been available to study functional as well as structural responses in the nervous system to ionizing radiation. The pertinent agencies of the government are encouraging further research in this field. The motivation behind the current interest is perhaps not so much competitive as recognition that here is an area of investigation in which the previous negative attitude may not be completely justified and deserves re-examination.

There is no publication available which adequately covers the subject

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field. Zeman's article on Elektrische Schaedigungen und Veranderungen durch ionisierende Strahlen in the Lubarsch-Henke Handbuch der Speziellen pathologischen Anatomie und Histologie, vol. 13, part 3, (1955) is a good historical summary with a fine bibliography but is written exclusively from a neuropathological standpoint. Webb Haymaker's Pathological effects of atomic radiation, NAS-NRC #452 (1956) includes more presently pertinent studies in greater detail than does Zeman but again emphasizes morphological effects with little reference to strictly functional studies. The Academic Press will publish in April, 1961, a collection of papers given at the International Symposium on the Response of the Nervous System to Ionizing Radiation held at Northwestern University Medical School, Sept. 7-8-9, 1960. These papers, with the discussions which followed, will provide an excellent selection of current studies in the subject field in its developmental, histopathological, functional, and behavioral aspects.

What is suggested in the present proposal as needed in this specialized area of radiobiology is a comprehensive survey of past and present work in all its aspects. Although full bibliographic coverage would be attempted, only such papers would get descriptive summaries as would serve to indicate what had been done in a particular area. The model for the type of presentation is that of the separate topics in the Annual Review of Physiology. Critical evaluation of the data would not be attempted nor would the data themselves be given, thereby eliminating the necessity of reproducing tables, figures, and illustrations.

The admittedly important Russian literature presents difficulties. The

approach contemplated is to treat each paper objectively in its proper topical sequence, avoiding argumentative and critical comment. The object here as elsewhere would be to inform the reader that such and such studies have been made under such and such general conditions and with such and such conclusions. Anyone interested in experimental details or the data themselves would naturally read the paper itself. As far as possible Russian papers would be quoted in their English translations. Where such do not exist, recourse will be had to existing reviews in English, such as Lifshits, Lebedinski, and Walter Stahl, from which a second-hand summary of the paper will be given along with the original Russian reference.

The potential users of such a publication as that proposed here would be radiologists, neurologists, and radiobiologists in general. Since this is subject which transcends departmental boundaries, neuro-surgeons, -pharmac-physiologists, and -anatomists, as well as physiologists and biochemists a broader sense would find aspects of this subject of interest to their wo:

A suggested topical outline is appended. Organization is essential but any system will contain elements of artificiality and arbitrariness. The only solution occurring to me is rather elaborate cross-indexing.

At the present time it can only be guessed that this publication would run to 200-300 pages.

Van Cleave, Charles Durward. Born Nebraska, [REDACTED]. [REDACTED]

[REDACTED] Teaching and research in
Departments of Anatomy of the respective Medical Schools:

University of Pennsylvania	1928-1938
Cornell University	1938-1940
University of North Carolina	1940 †

Research in Crocker Radiation Laboratory, University of California at Berkeley, Summer 1948. Research contractor, Division of Biology and Medicine, U.S.A.E.C. 1949-1957. Biologist in Medical Research Branch, DBM, U.S.A.E.C., Washington, D. C., 1957-1959, on leave of absence from University of North Carolina. During this period I became interested in the subject field and had the opportunity of visiting nearly all the U. S. laboratories where such work was underway or contemplated and of talking with nearly everybody in the country with experience or interest in the field. Included in this were all the national laboratories as well as the service installations such as School of Aviation Medicine and the Walter Reed Institutes. I saw all reports from European and Russian laboratories available. In September, 1960, I served as Chairman of the Section on Functional Changes in the Nervous System Resulting from Radiation Exposure at the International Symposium on the Response of the Nervous System to Ionizing Radiation. I am at present a consultant to the Division of Biology and Medicine, U.S.A.E.C. in this field.

I would expect to have a final draft completed in one calendar year.

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