Minutes of the Meeting of the

SUBCOMMITTEE ON INSTRUMENTS AND TECHNIQUES

of the

COMMITTEE ON NUCLEAR SCIENCE

of the

NATIONAL RESEARCH COUNCIL

NAV1.941208.064

June 23, 1950
New York, N.Y.

I. GENERAL

The Subcommittee on Instruments and Techniques of the National Research Council Committee on Nuclear Science held a meeting at 9:30 A.M., Friday, June 23, 1950, at the offices of the American Institute of Physics in New York City. Attendance at the meeting was as follows:

Members Present:

R.L. Butenhoff, Radiation Instruments Branch, U.S.A.E.C., Washington, D.C.
L.F. Curtiss, Radioactivity Section, National Bureau of Standards, Washington, D.C.
W.C. Elmore, Swarthmore College
A.H. Jaffey, Argonne National Laboratory
J.B.H. Kuper (Chairman), Brookhaven National Laboratory
R.J. Moon, Institute of Radiobiology and Biophysics, University of Chicago
W.C. Peacock, Sloan-Kettering Institute
E.P. Steinberg, Argonne National Laboratory

G.S. Hurst, Oak Ridge National Laboratory (for K.Z. Morgan)
E.L. Weiss, Brookhaven National Laboratory (Editorial Secretary)

Members Absent:

K.Z. Morgan, Oak Ridge National Laboratory (represented)
H.M. Parker, Hanford Engineer Works
J.E. Rose, Argonne National Laboratory
M.L. Sands, California Institute of Technology
F.R. Shonka, Argonne National Laboratory
V.C. Wilson, G.E., Schenectady

II. SUBCOMMITTEE MEMBERSHIP

A. Reorganization of Subcommittee

The topics discussed at the last meeting of the Subcommittee included the modification of the Subcommittee membership. It was felt that the Subcommittee was too large for efficiency, but that it would be desirable to retain many of the less active members as consultants because of their special experience. As the result of a mail inquiry, the Subcommittee has been realigned as follows:

Members: R.L. Butenhoff; A.H. Jaffey; J.B.H. Kuper (Chairman); R.J. Moon; K.Z. Morgan; H.M. Parker; W.C. Peacock; J.E. Rose.

Consultants: W.C. Elmore; M.L. Sands; F.R. Shonka; E.P. Steinberg; V.C. Wilson.

B. Rotation of Subcommittee Membership

In accordance with the proposal passed at a meeting of the Committee on Nuclear Science last fall, Dr. Kuper, as Chairman, plans to operate on a three-year tenure basis for both himself and the members of this Subcommittee, with provision for rotating membership at the rate of one-third of the committee members per year. The primary purpose of this plan is to maintain an efficient working group. However, it was pointed out that this system of rotation cannot be automatic, particularly for the Chairmanship.

Dr. Kuper mentioned that he has held the position of Chairman of the Subcommittee on Instruments and Techniques for two years, and suggested that the group start to consider possible candidates for this office.

Dr. Curtiss suggested that the group allow at least a six month's start for consideration in this direction.

III. RELEVANCE OF MANUSCRIPTS TO HANDBOOK

Dr. Kuper remarked that although the incoming manuscripts make excellent Preliminary Reports for the Nuclear Science Series, they are not equally as well suited for the Handbook.

Dr. Curtiss pointed out the value of these manuscripts, and urged that as many of these reports as possible be issued in preliminary form, and be revised for the Handbook at a later date.

However, in order to bring these manuscripts closer to the type required for the Handbook, it was suggested by Dr. Jaffey that the prospective author be given a model (e.g., a comparison with John Strong's book, "Procedures in Experimental Physics"), or some

set of rules from which he can evolve his manuscript.

IV. SOLICITATION OF AUTHORS

It was pointed out that what is needed for many of the Handbook chapters is a detailed compilation — graphs and tables; and this can probably be handled efficiently by an industrious graduate student or a new Ph.D. who might be motivated for the sake of prestige. Such prospective authors could perhaps be reached through the Universities.

V. DISCUSSION OF PRELIMINARY REPORT NO. 7 — ("Particle and Quantum Detectors," by R.R. Wilson, D.R. Corson, and C.P. Baker)

This manuscript was issued as a Preliminary Report during the early Spring 1950, but it was found to contain elements of advertising on two pages (8 and 14), and the report was withheld for revision. The group felt that these "elements of advertising" were minor reasons for delaying distribution of the report, and ascertained that it is necessary to mention manufacturers' names; compare commercial products; etc, in most of the chapters planned for the Handbook.

However, as explained in detail by Dr. Curtiss, the National Research Council can mention any commercial product merely for identification, but it cannot make any recommendations of specific items. Any advertising of products by the N.R.C. can be deemed libelous.

In order to avoid this problem, however, some of the following ideas were suggested: describe the item in great detail; the reason you used the item is because you found it to be satisfactory; or say, "among the places where it can be found," etc., giving the names and addresses; or else, a few words about this in the foreword would be appropriate.

It was suggested by Dr. Peacock that letters be circulated to the authors of the Handbook informing them of this problem and describing some of the accepted methods of conveying necessary information to the reader. Dr. Curtiss agreed to investigate this matter further, and to prepare a letter giving examples of permissible ways of handling this problem.

VI. DISCUSSION OF MANUSCRIPT -- ("Pile Neutron Research Techniques," by D.J. Hughes)

This report was scheduled to appear as an N.R.C. Preliminary Report in the Nuclear Science Series, and was prepared as such with

the assistance of the Subcommittee. However, it was published in a journal which pays an honorarium, and this poses a problem, since these preliminary reports will eventually be included in the Handbook to be published by a commercial publishing company desiring copyright privileges. Although it was agreed that this report should be given the usual treatment and eventually be included in the Handbook, it was decided that in the future, publication of preliminary papers in journals paying an honorarium will be discouraged.

With reference to the report itself, Dr. Kuper pointed out that although the first two parts of the paper belong with this Subcommittee, the last part belongs with the Subcommittee on Neutron Measurements and Standards.

Dr. Curtiss emphasized the importance of issuing these reports in preliminary form as soon as possible.

VII. HANDBOOK OF NUCLEAR INSTRUMENTS AND TECHNIQUES -- STATUS OF MANUSCRIPTS

This summary of the status of manuscripts follows the Outline prepared for the Handbook.

Part I - The Detection of Nuclear Radiations

Section I - 1 — Nuclear Radiations and their Properties
(A.H. Jaffey will contact E. Fermi for a graduate student to do this section.)

Section I - 2 — Radiation Detectors

Particle and Quantum Detectors - R.R. Wilson (Cornell), D.R. Corson (Cornell), C.P. Baker (Brookhaven).
This manuscript has been published (Preliminary Report No. 7), but it contained elements of advertising (pp. 8 and 14), and therefore delayed circulation.

DC Measurements with Ionization Chambers - W.P. Jesse (Argonne). Delayed due to illness; no definite deadline date set.

Pulse Ionization Chambers - W. Franzen (Princeton). Manuscript promised.

Crystal Counters - R. Hofstadter (Princeton). Manuscript almost completed; expected by mid-July.

Recent Applications of Electron Multiplier Tubes - J.S. Allen (Illinois).
Manuscript recently sent to Dr. Thompson for publication as next Preliminary Report in Nuclear Science Series.

Cloud Chambers - R.B. Brode (Berkeley).
Manuscript has been reviewed and is now being expanded.

Photographic Films - M.M. Shapiro (NRL).
Manuscript half completed.

Radioautographs - H. Yagoda (Nat'l. Inst. of Health).
Manuscript promised. (This chapter will be a supplement to M.M. Shapiro's manuscript on Photographic Films.)

Photomultipliers for Scintillation Counting - G.A. Morton (RCA Princeton).
His paper has appeared in RCA Review; will circulate reprints plus additional material.

Fluorescent Crystals - J.R. Irvine, Jr. (M.I.T.)
Manuscript should include section on liquids. - W.C. Peacock will contact him.

Section I - 3 — Auxiliary Electrical Equipment

DC Amplifiers — W.A. Higinbotham (Brookhaven)
Manuscript expected to be completed some time this fall.

Electrometer Techniques — no author assigned.
R.J. Moon suggested two of his graduate students, D. Egan and T. O'Donnell, as possible co-authors for this section.

Pulse Amplifiers and Shapers — W.C. Elmore (Swarthmore).
J.B.H. Kuper, W.A. Higinbotham, and M.L. Sands will prepare an outline upon which W.C. Elmore can base this section.

Pulse Amplitude Selectors — no author assigned to date.
Perhaps R. Chase (Brookhaven) will prepare this section under the supervision of W.A. Higinbotham.

Scalers and Registers — no author assigned.
It was suggested by A.H. Jaffey that J. Lerner (Argonne) might prepare this section.

Rate Meters -- M.L. Sands (Cal. Inst. of Technology).
Unable to prepare this chapter; will locate another author. W. Jordan was suggested.

Timing Circuits, Coincidence, and Anti-coincidence Circuits -- M.L. Sands (Cal. Inst. of Technology).
No definite date promised.

Oscilloscopes and Test Equipment -- no author assigned.

Power Supplies -- W.A. Higinbotham (Brookhaven).
Manuscript expected by mid-summer.

Insulators and High Resistors -- no author assigned.
G.S. Hurst will contact Glass (Oak Ridge) to do this section.

Section I - 4 — Applications to Radiation Measurements
(Authors are needed for this section.)
(Note: A suggestion was made to include a section on Absolute Beta Counting.)

Section I - 5 — Analysis and Treatment of Data

The Statistical Nature of Radioactivity — R.W. Dodson (Brookhaven)

Pending

Counter Losses, Pulse Pile-Up, etc. — no author assigned. A.H. Jaffey suggested that R. Keyes (Argonne) might write this chapter.

Corrections for Back Scatter, etc. — no author assigned. E.P. Steinberg will locate an author for this section.

Part II - Special Techniques in Nuclear Physics
(This part is incomplete. New chapters will be needed.)

Special Techniques Associated with Positive Ion Accelerators - J.H. Williams (Minnesota), C.L. Bailey (Minnesota). Summary of Subcommittee reviews returned to author for slight revision.

Special Techniques for Cyclotrons -- no author assigned. It was suggested that Havens might prepare this chapter.

Special Techniques for Linear Accelerators -- no author assigned.

Special Techniques for Electron Accelerators and Gamma Ray Machines -- J.L. Lawson (GE), L. Skaggs (Chicago). No progress reported. R.J. Moon plans to see L. Skaggs.

Magnetic Moment Techniques -- no author assigned. Question of whether this topic should be included.

Pile Neutron Research Techniques -- D.J Hughes (Brookhaven). First part of manuscript completed; second part is now being reviewed by subcommittee.

Alpha, Beta, and Gamma Ray Spectrometers -- G.J. Hine (M.I.T.) Manuscript promised. Should also cover scintillation spectrometers.

Mass Spectrometers -- M.R. Inghram (Argonne). Manuscript expected soon.

Part III - Special Techniques in Radiochemistry
(This part has been outlined and handled by E.P. Steinberg (Argonne)).

Liquids and Solutions for Pile Irradiations -- J.O. Allen (Brookhaven).
Manuscript received; but it will have to be expanded.

Use of Tracer Chemistry for Investigating the Tracer Nuclide -- B.B. Cunningham (Berkeley)
Manuscript promised.

Criteria of Radiochemical Purity -- B.B. Cunningham (Berkeley).
Manuscript promised.

Microchemical Techniques -- B.B. Cunningham (Berkeley).
(Revision of Nucleonics article.)

Determination of Half-life -- W. Rubinson (Brookhaven).
Manuscript received.

The Choice of an Instrument -- E.P. Steinberg (Argonne).
Partially completed; no definite date promised.

Determination of Disintegration Schemes -- no author assigned.
It was suggested that Siebalm (Nobel Institute) or L. Elliot (Chalk River) might prepare this section.

Part IV - Special Techniques in Radiobiology -- R.J. Moon (Chicago).
(Rose and Marinelli (Argonne) will assist; plans to send an outline showing progress.)

Part V - Tracer Techniques -- T.H. Davies (Chicago)
(E.P. Steinberg plans to see T.H. Davies regarding this manuscript. No progress reported to date.)

Part VI - Health Physics -- K.Z. Morgan (Oak Ridge)
(Revised copy to be circulated to Subcommittee.)

The meeting was adjourned at 3:00 P.M.

Minutes prepared by:

E.L. Weiss, Editorial Secretary