714197

Herman M. Roth, Director
Research and Development Division

December 4, 1962

C. S. Sheup, Chief, Biology Branch
Research and Development Division

AEC BIOMEDICAL DIRECTORS' MEETING, BROOKHAVEN NATIONAL LABORATORY, NOVEMBER 26-27, 1962

ORB:CSS

The fall meeting of the Biomedical Directors was held at BNL, November 26-27, 1962, and a program of 24 papers was presented from the Medical and Biology departments. Highlights of this meeting follow:

The meeting was opened by Victor Bond, M.D., Chairman of the Medical Department, who introduced Dr. Maurice Goldhaber for welcoming remarks. The remainder of the program comprised:

1. J.B.H. Kuper. A review of work and interests in instrumentation and health physics. BNL is getting a 50,000 ft.^{2} HP building.

2. G. L. Miller. This was a discussion of the use of semiconductor detectors. These detectors operate at room temperature and are small in size but thick enough to stop 5 Mev electrons and have been developed with a technique for drifting lithium into the silicon so that thicker depletion layers could be achieved.

3. W. A. Higinbotham discussed instrumentation in general.

4. S. Rankowitz, spoke on scanners for brain tumors which involved 32 scintillation detectors arranged around the head.

5. R. J. Spinrad spoke on optical pattern recognition. This was a mixed-up presentation on how to find images in terms of patterns or number for computer use.

6. F. P. Cowan. Cowan gave a general review of HP at BNL. Their major interests are in HP at the cyclotron, in medical dosimetry, ground water studies, and I-131 monitoring. BNL has 70 people in Hp and 6-7 in waste disposal.

74/31(A)

Disp. 12-4-62

OFFICE ▶						
SURNAME ▶			[redacted]		CF-326-6 (Bio-med)	
DATE ▶						

AEC-318 (Rev. 9-53) U. S. GOVERNMENT PRINTING OFFICE 16—62761-3

7. L. Phillips. Phillips spoke on dosimetry at the Synchrotron but he talked so low no one could hear him.

8. C. Meinhold. Meinhold of the Biology Department spoke on the dosimetry of the ecology radiation field which involves a 9000 curie Cs-137 source. The outside perimeter fence is at about 500 meters to meet the MPL for the general public. Interesting point is that it appears the dose rate from the source will markedly increase on a warm day. In addition they found that the actual dose measured 10 meters from the source is about 20% more than the calculated rate.

9. M. E. Smith, who gave a general review of the meteorological program, including studies on particulate deposition, dispersion of hot clouds, low-level micrometeorology and forest diffusion in presence and absence of foliage.

10. G. M. Woodwell, spoke on the forest gamma field in which radiation of the natural environment causes readily detectable dose effects ranging from 700 r/day to 2 r/day. Killing occurred, depending on species, up to dose rates of 60 r/day so far. There is greater insect damage in the radiation-injured vegetation. One table given is as follows:

Total kill	358 r/day	63,000 r
Carex	150-350 r day	27,000 - 63,000 r
Heath spp	60-150 "	11,000 - 27,000 r
Oak forest	20-60 "	3,600 - 11,000 r
Pines	"	1,000 r

Program continued after lunch on November 26 in the Medical Department, opened by a review of the work of the Medical Department by V. P. Bond.

11. V. P. Bond. Bond covered the status of the neutron capture therapy program, reporting that a thorough review left them with the conclusion that no further brain tumor exposures are indicated. Instead, BNL will review the dosimetry of neutron therapy, means of improvement of dosimetry, will continue histology studies, and the disposition of neutron-capture compounds.

12. E. P. Cronkite, discussed a means of extra corporeal irradiation of the circulating blood. In blood from a cow or calf, it is found that a single radiation cycle of the irradiated blood will produce a cycle wherein the body will remove damaged lymphocytes and hasten mobilization of new lymphocytes. Hans Cottier, an associate of Cronkite, presented the histology in the spleen and other tissues as a result of the irradiation of circulating blood.

13. R. D. Stoner, gave a brief paper on antibody responses in laboratory animals due to injections of antigen-antibody complexes.

14. W. L. Hughes spoke on incorporation of tritium labeled thymidine into intestine and other tissue, and found the DNA turnover fastest in blood, spleen and muscles.

15. J. S. Robertson, offered an interpretation of long-term turnover of Sr-85, Cs-137, Zn-65, and Sr-65 in man using the whole body counter up to 500 days. Cesium chloride was given as a 50 mc oral dose to one patient, who showed about 50% retention at 100 days. Zn-65 showed a longer biological half-life of 200-300 days. Sr-65 has a shorter biological half-life, 80 days being about the same as the physical half-life.

16. L. K. Dahl, spoke on the role of salt and hypertensions. Dahl found that about 2/3 of the rats made hypertensive by sodium chloride did not recover after being taken off salt, i.e., they maintained a self-sustaining induced hypertension, but this work has been carried out on only 35 animals. In patients the hypertensives have a longer retention power for salt, and Dahl believes the development of a salt-induced hypertension may be by a genetic factor since some patients and experimental animals are markedly influenced by salt and some are not.

17. G. C. Cotzias, spoke on identification of haemoglobin that will tend to bind manganese. He believes manganese goes to mitochondria and manganese clears from cells and tissues, controlled seperately and differently from potassium.

The meeting on Tuesday morning, November 27, was held in the Biology Department, introduced by H. J. Curtis, who gave a summary of the biological interests at BNL. This was followed by:

18. H. Quastler, who spoke on statistical problems in identification of the effects of cute and chronic irradiation in the mouse organic systems and tissues.

19. H. H. Smith, spoke on plant cytogenetics and effects of irradiation, and particularly on his studies of tumor production in the tobacco plant.

20. H. J. Curtis, spoke on chromosome aberrations in liver cells of the mouse in relation to aging.

OFFICE ▶						
SURNAME ▶						
DATE ▶						

21. J. Van't Hof spoke on radiation sensitivity in plant material as a function of the cell's nuclear structure, size, and other parameters. I was struck by the fact that he did not know, on questioning, the common names of the species in use in his experiments!

22. Don L. Shaver, spoke on chromosome size in relation to induced somatic mutation in soy beans. Radiation sensitivity is related to the amount of DNA at its peak 72 hours after initiation of germination.

23. J. B. Miksche, spoke on the cooperative plant and seed irradiation program at BNL which is similar in all respects to the cooperative program at UT-AEC. In reminding the audience of radiation-induced plant improvements, he mentioned Gregory's peanuts and hibiscus, noting that in the case of the hibiscus, now this plant can be grown 1000 miles further north and with earlier flowering. UT-AEC improvements are in cotton fibers, and the USDA has some new dwarf grasses.

24. M. Demerec, spoke on bacterial genetics with E. coli and Salmonella species. 700 cysteine mutants have been identified, controlled by 14 genes in 5 clusters in various parts of the chromosome in E. coli.

The Tuesday afternoon session for the Division of Biology and Medicine was presided over as usual by C. L. Dunham. Dr. Dunham, in his remakrs, noted that the FY 1963 funding is sufficient for DBM to get by with, but that if there are any installations anticipating underruns, the likelihood of returned funds should be reported to him by January 1, 1963. The outlook for money in FY 1964 is not good. The BOB markup is about what was expected, and DBM will appeal but without hope of success. The group was reminded of the next three meetings: (1) Salt Lake City, Feb. 11-12, 1963, (2) Western Reserve, Cleveland, April 22-23, and (3) Boston on October 14-15.

John Totter, James Liverman, and Walter Claus spoke on the subjects of 200-word summaries, adding a summary statement to 189's, and on contributions to the annual research report. Dunham then called on each representative from operations offices and installations: I reported on the PRNC accident, Whipple from Los Alamos reported on the LASL success with whole-body counting in the human for Zn^{65}, White of Lovelace reported on their preparations for a

OFFICE ▶						
SURNAME ▶						
DATE ▶						