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- For Dr. Potts

RONGELAP PROGRAM

Program Status: Two types of surveys are being conducted at Rongelap, one medical the other ecological. The medical survey is annual and is led by Dr. Conard of Brookhaven; the ecological survey is semi-annual and led by Dr. Held of the University of Washington. The two groups join forces for the March survey.

The work of the medical group is outlined in the letter of July 15, 1958, from Dr. Conard to Dr. Bruner.

"The following plans and requirements are submitted for the proposed fifth year post exposure medical survey of the Marshallese, beginning about 1 March 1959. The anticipated schedule of medical examinations is as follows.

About two weeks will be spent at Rongelap where the exposed and unexposed comparison populations will be examined. About 200 people are involved. During this period complete histories and physical examinations will be done and laboratory examinations including two complete blood studies similar to those carried out last year. In addition whole body gamma spectroscopy will be carried out.

On completion of these examinations at Rongelap, it is planned to proceed to Utirik Island for the purposes of re-examining the children for growth and development studies, and carrying out a limted number of whole body gamma counts on a sample of the population. It is anticipated that these examinations at Utirik would be accomplished in about 3 days, after which the majority of the team would return to Kwajalein and the United States. A few should proceed to Majuro to re-examine the Rita Village children. This should require only about 2 days and would complete the mission. These latter plans are tentative at this time.

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Selection of personnel for participation is not complete. However, it seems likely that about an 18 man team will be required (as last year) plus the assistance of 3 - 4 Marshallese medical aides in the field."

The ecology program is directed towards research that will lead to an understanding of the distribution of radioisotopes in the plants, animals and soils of the atoll. As part of this program survey meter readings are taken and collections of plants and animals, especially food items, are made for the purpose of determining, quantitatively and qualitatively the presence of radioisotopes. The first field trip of this program was March, 1958 although radiobiological survey trips had been made earlier. The second field trip was completed in September.

Report Status: Report of the medical surveys are given in the following publications:

(1) WT-923, March-May, 1954. Study of Response of Human Beings Accidentall Exposed to Significant Fallout Radiation.

(2) BNL 384 (T-71). August 1955. Twelve Month Postexposure Survey on Marshallese Exposed to Fallout Radiation.

(3) BNL 412 (T-80), March 1956. Medical Survey of Marshallese Two Years After Exposure to Fallout Radiation.

(4) TID 5358, July 1956. Some Effects of Ionizing Radiation on Human Being

(5) BNL 501 (T-119), June 1958. March 1957. Medical Survey of Rongelap an Utirik People Three Years After Exposure to Radioactive Fallout.

The report of the most recent medical survey, March 1958, is scheduled for publication in the BNL series about January, 1959.

The biological data from collections made between March 26, 1954, and July 24, 1956, are summarized in the report by Dunning (August, 1957), "Radioactive Contamination of Certain Areas in the Pacific Ocean from Nuclear Tests". Since 1956 there have been three radiobiological surveys (the last two were part of the ecology program) one in July 1957, a second in March 1958 and the third in August - September 1958. A report for the three surveys will be prepared upon completion of analyses of samples from the most recent collection. Specific information has been provided upon request but the data have not been assembled in report form.

For the July 1957 collection the following data are on hand:

(1) Survey meter readings at Rongelap and Kabelle Islands.

(2) Average values by years for 1954, 1955, 1956 and 1957 for (1).

(3) Radioassay for Zn^{65}, Co^{57}, Co^{58}, Co^{60}, Fe^{55}, $Mn^{54}$and Sr^{90} of fish liver from Ailinginae Atoll.

(4) Gross radioactivity of land plants and algae from Rongelap and Ailingin

(5) Comparison of Sr^{90} levels-liver, muscle, skeleton - in land crabs collected in 1956 and 1957 and inter-laboratory comparisons (HASL-U. of

For the March, 1958 collection the following data are on hand:

(1) A summary report of the soil studies which was the major effort of the first field trip for the ecology program.

(2) Survey meter readings at Rongelap Atoll.

(3) Strontium units in bone samples from 13 Rongelap I. rats.

(4) Strontium units in one bone sample from a pig Rongelap I.

(5) Strontium units in skeleton and muscle of land crabs from Rongelap (5), Eniaetok (2) and Rabelle (5).

(6) Strontium units in Scaevola leaves, Rongelap I.

(7) Gross B activity in soil samples, by 1 inch increments, Rongelap, Eniaetok and Kabelle Islands.

In addition there are two reports awaiting publication on the Rongelap surveys (1) UWFL-55 Radiobiological studies of the fish collected at Rongelap and Ailinginae atolls July, 1957 and March, 1958 and (2) the occurrence of antimony-125 and europium-155, iron-55 and other radionuclides in Rongelap Atoll soil April, 1958.

For the August-September, 1958 collection we know that:

(1) Coconut crabs were collected at Rongelap, Kabelle, and Eniaetok (5,5 & 1) but are becoming difficult to find on Rongelap.

(2) A duplicate sample of the food intake by 9 natives for 24 hours (and urine sample for same period) has been collected.

(3) Survey meter readings were taken and the regular collection of plants and animals were made. The survey meter readings in August (after Hardtack) were about the same as in March.

The list of food items in (2) is being forwarded from the University of Washington. In addition, Dr. Conard is forwarding some of his notes about the dietary habits of the natives.

Synopsis. The heavy fallout at Rongelap occurred in March, 1954. Since that time there has been relatively little fallout and the rate of decline of radioactivity of any specific tissue has been fairly linear on a plot of the logarithum of time (beginning with March, 1954) vs. the logarithum of activity. There was a slight but measurable increase in radioactivity of Rongelap samples following the 1956 test series. In 1958 the survey meter readings were about the same following the test series as they were before the series indicating little fallout if any.

Sr-90 in any appreciable amount is found only in the land crabs. The level of Sr-90 activity has remained rather constant since May 1954 although there may be considerable individual variation in samples from one place at one time.

The radioisotopes present in a July 1957 Kabelle Island soil sample were as follows: Ce^{144}-Pr^{144}, 42%; Fe^{55}, 41%; Ru^{106}-Rh^{106}, 9%; Sb^{125}, 3.7%; Eu, 1.4%; Sr^{90}-Y^{90}, 1.3%; Cs^{137}, 41%; Mn^{54}, 1%; Co^{60}, 1%; Zr^{95}-Ng^{95}, 1%.

In land plants most of the gamma activity is due to Cs^{137} but in coconut milk and meat there is a trace of Zr^{95}-Ng^{95}. In the algae most of the activity is due to Ce^{144}-Pr^{144} with a low amount of Ru^{106}-$Rh^{106}$$Zr^{95}$-$Ng^{95}$ and a trace of Zn^{65}.

The only Sr^{90} found in fish tissues have been traces (maximum value 14 s.u.) in the reef fish from the July 1957 collection and one bonito from the 1955 collection. Zn^{65}, Co^{57}, $Co^{60}$and Mn^{54} were common in all soft tissues. For a fish liver about 40% of the total activity was due to Zn^{65}; 28% to Co^{57}, Co^{58}, and Co^{60}; 26% to Fe^{55}; and about 6% to unidentified radioisotopes.

In the liver of the coconut crab (Birgus) and the kidney of the clam (Tridacn Zn^{65} and Co^{60} account for a large part of the total activity.

Food samples collected by Dr. Conard have been sent to HASL for analysis and the food samples collected at Rongelap this month (see Page 4) will be analyze upon arrival at the University of Washington.

The reports listed on pages 2 and 4 and the data made reference to on pages 3, 4 and 5 are available if needed.