<table>
<thead>
<tr>
<th>REPOSITORY</th>
<th>DOE-OHRE</th>
</tr>
</thead>
<tbody>
<tr>
<td>COLLECTION</td>
<td>PLUTONIUM INJECTION</td>
</tr>
<tr>
<td>BOX NO.</td>
<td>3</td>
</tr>
<tr>
<td>FOLDER</td>
<td>Cal3/40-003</td>
</tr>
</tbody>
</table>
Name: 
Hospital No.: 
Date of birth: 
Date of injection: July 18, 1947, 0.1 mg U-265 Pa IM 
Age at injection: 56 
Date of death: 
Age at death: 
Time after injection: 2 h. 20 min. 
Death certificate No.: 

8005135
APPENDIX 2, CONT'D.

Case Cal-3

This case, a 73.3-kg, 36-yr old Negro male, was diagnosed from biopsy as having an osteo-fibro myxochondrosarcoma involving the distal femur, patella and proximal tibia. He was injected 7/18/47 with 0.095 μCi $^{238}$Pu(VI) nitrate intramuscularly at an ink-marked location on the gastrocnemius muscle. A mid-thigh amputation was performed four days p.i. Alive and well 7/17/68, 21 yr. p.i.

<table>
<thead>
<tr>
<th>Samples</th>
<th>Wet wt. (g)</th>
<th>Ash wt. (g)</th>
<th>% of absorbed dose</th>
<th>% of absorbed dose/g</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tumor</td>
<td>29.5</td>
<td>0.37</td>
<td>0.60</td>
<td>0.0203</td>
</tr>
<tr>
<td>Bone and tumor $^b$</td>
<td>31.5</td>
<td>12.6</td>
<td>0.144</td>
<td>0.0046</td>
</tr>
<tr>
<td>Marrow</td>
<td>4.0</td>
<td>0.05</td>
<td>0.063</td>
<td>0.0158</td>
</tr>
<tr>
<td>Normal cortex</td>
<td>50.5</td>
<td>20.0</td>
<td>0.063</td>
<td>0.00124</td>
</tr>
<tr>
<td>Muscle from normal bone</td>
<td>27.5</td>
<td>0.345</td>
<td>0.025</td>
<td>0.0009</td>
</tr>
<tr>
<td>Injection site</td>
<td>69.5</td>
<td>0.87</td>
<td>46.6 $^c$</td>
<td></td>
</tr>
</tbody>
</table>

Whole femur reconstruction:

$$\frac{(\text{Bone + tumor}) + (\text{marrow}) + (\text{normal cortex})}{g}{\%} = 0.00313%/g$$

$^a$ unpublished.

$^b$ Part of distal femur, patella, and proximal tibia.

$^c$ % of administered dose.
SUMMARY REPORT - CHEMICAL ANALYSES
Center for Human Radiobiology

Name ____________________________  Case No. 40.003  Sample No. 04

Event _EXCEPTION_  Time, Date 0800 6/15 - 0800 6/16/73  Mean Time, Date 0022, 6-15-73

Sample Description FRESH URINE

Collected at UNIV. OF ROCHESTER  Other Information ____________________________

Sample Size (Unit) 1.00 (DAY)  Chem Lab. No. 1130

Analyses Requested for: 238Pu, 239Pu  by: Initials/Date RPL/6-15-73

SUMMARY OF RESULTS (at time of event)

<table>
<thead>
<tr>
<th>Nuclide, Element or Ratio</th>
<th>Method of Analysis</th>
<th>Unit</th>
<th>Amount in Whole Sample ± SE</th>
<th>Concentration or Rate ± SE Unit/DAY</th>
<th>Comments and Assumptions</th>
<th>Laboratory Documents</th>
<th>Initials and Date</th>
<th>To CHR File</th>
</tr>
</thead>
<tbody>
<tr>
<td>238Pu, Pu</td>
<td>Pu</td>
<td>pCi</td>
<td>0.051 ± 0.04</td>
<td>0.051 ± 0.04</td>
<td>RC-28-PS</td>
<td>FPL 11-30-73</td>
<td>12-1-73</td>
<td>PP 12/31/73</td>
</tr>
<tr>
<td>239Pu, Pu</td>
<td>Pu</td>
<td>pCi</td>
<td>0.0620 ± 0.0051</td>
<td>0.0620 ± 0.0051</td>
<td>REANALYZED USING 1/10X AS MUCH SAMPLE</td>
<td>RC-29-20</td>
<td>FPL 2-19-74</td>
<td>2-19-74</td>
</tr>
</tbody>
</table>

Additional Comments:

CHR Form 11/7/73
SUMMARY REPORT - CHEMICAL ANALYSES
Center for Human Radiobiology

Name

Case No. 40003 Sample No. 171

Event EXCRETION
Time, Date 0800 6/8 - 0800 6/19/73 Mean Time, Date

Sample Description FRESH URINE

Collected at UNIV. OF ROCHESTER Other Information

Sample Size (Unit) 1.00 (DAYS) Chem Lab. No. 1133

Analyses Requested for: $^{239}$Pu

by: Initials/Date

SUMMARY OF RESULTS (at time of event)

<table>
<thead>
<tr>
<th>Nuclide, Element or Ratio</th>
<th>Method of Analysis</th>
<th>Unit</th>
<th>Amount in Whole Sample ± SE</th>
<th>Concentration or Rate ± SE Unit/DAY</th>
<th>Comments and Assumptions</th>
<th>Laboratory Documents</th>
<th>Initials and Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>$^{238}$Pu</td>
<td>Pul</td>
<td>pCi</td>
<td>0.014 ± 0.02</td>
<td>0.014 ± 0.02</td>
<td>RC-28-P5</td>
<td>KPL</td>
<td></td>
</tr>
<tr>
<td>$^{238}$Th</td>
<td>Pul</td>
<td>pCi</td>
<td>1.1 ± 0.2</td>
<td>1.1 ± 0.2</td>
<td>RC-29-RE</td>
<td>KPL</td>
<td>YP 12/1/73</td>
</tr>
</tbody>
</table>

Additional Comments:

CHR Form 11/7/73

8005738
### SUMMARY REPORT - CHEMICAL ANALYSES
Center for Human Radiobiology

**Name** ________________________________  **Case No.** 40,003  **Sample No.** 07

**Event** EXECUTION  **Time, Date** 0800 7/16 - 0800 7/17/73  **Mean Time, Date**

**Sample Description** FRESH URINE

**Collected at** UNIV. OF ROCHESTER  **Other Information**

**Sample Size (Unit)** 1.00 (DAYS)  **Chem Lab. No.** 1133

**Analyses Requested for:** ^238^Pu

**SUMMARY OF RESULTS** (at time of event)

<table>
<thead>
<tr>
<th>Nuclide, Element or Ratio</th>
<th>Method of Analysis</th>
<th>Unit</th>
<th>Amount in Whole Sample ± SE</th>
<th>Concentration or Rate ± SE Unit/DAY</th>
<th>Comments and Assumptions</th>
<th>Laboratory Documents</th>
<th>Initials and Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>^238^Pu</td>
<td>Pu</td>
<td>pCi</td>
<td>0.014 ± 0.002</td>
<td>0.014 ± 0.02</td>
<td></td>
<td>RC-28-PS</td>
<td>RPL/12-3-73</td>
</tr>
<tr>
<td>^238^Th</td>
<td>Pu</td>
<td>pCi</td>
<td>1.1 ± 0.2</td>
<td>1.1 ± 0.2</td>
<td></td>
<td>RC-29-RO</td>
<td>RDO/2-11-74</td>
</tr>
</tbody>
</table>

**Additional Comments:**

CHR Form 4-14-73 8005739
### SUMMARY REPORT - CHEMICAL ANALYSES
Center for Human Radiobiology

**Name:**

**Case No.:** 40,003  
**Sample No.:** 11

**Event:** EXCRETION  
**Time, Date:** 0600 2/2 - 0600 2/27/73  
**Mean Time, Date:**

**Sample Description:** FRESH URINE

**Collected at:** UNIV. OF ROCHESTER  
**Other Information:**

**Sample Size (Unit):** 1.00 (DAYS)  
**Chem Lab. No.:** 1137

**Analyses Requested for:** 238Pu

---

### SUMMARY OF RESULTS (at time of event)

<table>
<thead>
<tr>
<th>Nuclide, Element or Ratio</th>
<th>Method of Analysis</th>
<th>Unit</th>
<th>Amount in Whole Sample ± SE</th>
<th>Concentration or Rate ± SE Unit/ DAY⁻¹</th>
<th>Comments and Assumptions</th>
<th>Laboratory Documents</th>
<th>Initials and Date</th>
</tr>
</thead>
</table>
| 238Pu                     | Pul               | PCI  | 0.000 ± 0.052              | 0.000 ± 0.052                        | REANALYZED USING  
IDR AS NULL SAMPLE  | RC-28-PS          | RC-2B-PS  |
|                           | Pul               | PCI  | 0.0596 ± 0.0052            | 0.0596 ± 0.0052                      |                          | 11/30/73         | 12/21/73        |

**Additional Comments:**

---

**IR Form 11/7/73**  
**8005740**
CHR Exams

1973 ANL

Medical Reports from Physicians and Hospitals

Correspondence

X ANL

MIT

NJRRP

8005741
**SUMMARY REPORT - CHEMICAL ANALYSES**
Center for Human Radiobiology

**Case No.** 40,003  **Sample No.** 03

**Event** EXCEPTION  **Time, Date** 0800 6/14 - 0800 6/15/73  **Mean Time, Date**

**Sample Description** FRESH URINE

**Collected at** UNIV. OF ROCHESTER  **Chem Lab. No.** 1129

**Sample Size (Unit)** 1.00 (DAYS)

**Analyses Requested for:** $^{238}\text{Pu}$  **by:** Initials/Date RPL/8-15-73

**SUMMARY OF RESULTS (at time of event)**

<table>
<thead>
<tr>
<th>Nuclide, Element or Ratio</th>
<th>Method of Analysis</th>
<th>Unit</th>
<th>Amount in Whole Sample ± SE</th>
<th>Concentration or Rate ± SE Unit/Day</th>
<th>Comments and Assumptions</th>
<th>Laboratory Documents</th>
<th>Initials and Date</th>
<th>To CHR File</th>
</tr>
</thead>
<tbody>
<tr>
<td>$^{238}\text{Pu}$</td>
<td>Pu l</td>
<td>PCi</td>
<td>0.021 ± 0.08</td>
<td>0.021 ± 0.08</td>
<td></td>
<td>RC-28-PS</td>
<td>RPL 11-30-73</td>
<td>11-30-73</td>
</tr>
</tbody>
</table>

**Additional Comments:**
### SUMMARY REPORT - CHEMICAL ANALYSES
Center for Human Radiobiology

**Case No.** 40.003  **Sample No.** 01

**Vent** Excretion  **Time, Date** 0800 6/15 - 0800 6/16/73  **Mean Time, Date**

**Sample Description** Fresh Urine

**Collected at** Univ. of Rochester  **Other Information**

**Sample Size (Unit)** 1.00 (Days)  **Chem Lab. No.** 1130

**Analyses Requested for:** 

<table>
<thead>
<tr>
<th>Nuclide, Element Ratio</th>
<th>Method of Analysis</th>
<th>Unit</th>
<th>Amount in Whole Sample ± SE</th>
<th>Concentration or Rate ± SE Unit/</th>
<th>Comments and Assumptions</th>
<th>Laboratory Documents</th>
<th>Initials and Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>^238Pu</td>
<td>Pu</td>
<td>pCi</td>
<td>0.051 ± 0.04</td>
<td>0.051 ± 0.04</td>
<td></td>
<td>RC-28-PS</td>
<td>RFL 11/30/73</td>
</tr>
</tbody>
</table>

**Additional Comments:**

**Summary of Results (at time of event)**

**Received**

DEC 21 73  **CHR RECORD**
**SUMMARY REPORT - CHEMICAL ANALYSES**
Center for Human Radiobiology

Name: ___________  Case No.: 40.003  Sample No.: .05

Event: EXCRETION  Time, Date: 0800 1/6 - 0800 1/7/73  Mean Time, Date: ___________

Sample Description: FRESH URINE  Other Information: ___________

Collected at: UNIV. OF ROCHESTER  Chem Lab. No.: 1131

Sample Size (Unit): 1.00 (DAYS)  Analyses Requested for: 238Pu  by: Initials/Date: RPL/1/6-15-73

**SUMMARY OF RESULTS** (at time of event)

<table>
<thead>
<tr>
<th>Radioisotope</th>
<th>Method of Analysis</th>
<th>Unit</th>
<th>Amount in Whole Sample ± SE</th>
<th>Concentration or Rate ± SE Unit/</th>
<th>Comments and Assumptions</th>
<th>Laboratory Documents</th>
<th>Initials and Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>$^{238}\text{Pu}$</td>
<td>Pu</td>
<td>pCi</td>
<td>$0.062 \pm 0.07$</td>
<td>$0.062 \pm 0.07$</td>
<td>RC-28-PS</td>
<td>KPL 11-30-73</td>
<td>PPL 12-3-73</td>
</tr>
</tbody>
</table>

Form 11/7/73  8005744
### SUMMARY REPORT - CHEMICAL ANALYSES

**Center for Human Radiobiology**

**Case No.** 40.003  **Sample No.** 106

**Event:** EXCE15710N  **Time, Date:** 0800 6/17 - 0800 6/18/73  **Mean Time, Date:***

**Sample Description:** FRESH URINE

**Collected at:** UNIV. OF ROCHESTER  **Chem Lab. No.:** 1132

**Sample Size (Unit):** 1.00 (DAYS)

**Analyses Requested for:** 238 Pu

#### SUMMARY OF RESULTS (at time of event)

<table>
<thead>
<tr>
<th>Nuclide, Element or Ratio</th>
<th>Method of Analysis</th>
<th>Unit</th>
<th>Amount in Whole Sample ± SE</th>
<th>Concentration or Rate ± SE Unit/</th>
<th>Comments and Assumptions</th>
<th>Laboratory Documents</th>
<th>Initials and Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>238 Pu</td>
<td>Pu, Pu</td>
<td>PCl</td>
<td>0.003 ± 0.002</td>
<td>0.003 ± 0.002</td>
<td>RC-28-PS</td>
<td>RPL 11/30-73</td>
<td>10/3/6-73</td>
</tr>
</tbody>
</table>

**Initials and Date:** RPL 6/18-73

**Additional Comments:**

---

**RECEIVED**

DEL 2/173

CHR RECORDS

IR Form 11/7/73  8005745
**SUMMARY REPORT - CHEMICAL ANALYSES**
Center for Human Radiobiology

Name: ____________________________  Case No.: 40.003  Sample No.: 0.7
Event: Excretion  Time, Date: 0800 6/18, 0800 6/19/73  Mean Time, Date: __________
Sample Description: Fresh Urine
Collected at: Univ. of Rochester  Other Information: __________
Sample Size (Unit): 1.00 (DAYS)  Chem Lab. No.: 1133
Analyses Requested for: $^{238}\text{Pu}$  by: Initials/Date: RPL/8-15-73

**SUMMARY OF RESULTS** (at time of event)

<table>
<thead>
<tr>
<th>Nuclide, Element or Ratio</th>
<th>Method of Analysis</th>
<th>Unit</th>
<th>Amount in Whole Sample ± SE</th>
<th>Concentration or Rate ± SE Unit/</th>
<th>Comments and Assumptions</th>
<th>Laboratory Documents</th>
<th>Initials and Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>$^{238}\text{Pu}$</td>
<td>$^{238}\text{Pu}$</td>
<td>pCi</td>
<td>0.014 ± 0.02</td>
<td>0.014 ± 0.02</td>
<td>RC-28-PS</td>
<td>RPL 11-30-73, RPL 12-3-73, 12/21/73</td>
<td></td>
</tr>
</tbody>
</table>

Additional Comments: ____________________________

HR Form 11/7/73 800574b
### SUMMARY REPORT - CHEMICAL ANALYSES
Center for Human Radiobiology

<table>
<thead>
<tr>
<th>Nuclide, Element or Ratio</th>
<th>Method of Analysis</th>
<th>Unit</th>
<th>Amount in Whole Sample ± SE</th>
<th>Concentration or Rate ± SE Unit/ DAY</th>
<th>Comments and Assumptions</th>
<th>Laboratory Documents</th>
<th>Initials and Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>$^{238}$Pu</td>
<td>Pu</td>
<td>PCl</td>
<td>$0.003 \pm 0.04$</td>
<td>$0.003 \pm 0.04$</td>
<td></td>
<td>RC-28-PS</td>
<td>RPL/11-2-73</td>
</tr>
</tbody>
</table>

**Additional Comments:**

**SUMMARY OF RESULTS (at time of event)**

**Nuclide, Element or Ratio:** $^{238}$Pu  
**Method of Analysis:** Pu  
**Unit:** PCl  
**Amount in Whole Sample ± SE:** $0.003 \pm 0.04$  
**Concentration or Rate ± SE Unit/ DAY:** $0.003 \pm 0.04$  
**Comments and Assumptions:**  
**Laboratory Documents:** RC-28-PS  
**Initials and Date:** RPL/11-2-73
**SUMMARY REPORT - CHEMICAL ANALYSES**

Center for Human Radiobiology

Name _____________________
Case No. 40.003
Sample No. 109

Event **EXCRETION**
Time, Date 0800 6/20 - 0800 6/21/73
Mean Time, Date ____________________

Sample Description **FRESH URINE**

Collected at **UNIV. OF ROCHESTER**
Other Information _______________________

Sample Size (Unit) 1.00 (DAYS)
Chem Lab. No. 1135

Analyses Requested for: **239 Pu**
by: Initials/Date RPL 6-15-73

---

**SUMMARY OF RESULTS (at time of event)**

<table>
<thead>
<tr>
<th>Nuclide, Element or Ratio</th>
<th>Method of Analysis</th>
<th>Amount In Whole Sample ± SE</th>
<th>Concentration or Rate ± SE Unit/DAY</th>
<th>Comments and Assumptions</th>
<th>Laboratory Documents</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>239 Pu</strong> <strong>Pu</strong></td>
<td><strong>PC</strong></td>
<td>0.000 ± 0.01</td>
<td>0.000 ± 0.01</td>
<td></td>
<td>RC-28-PS</td>
</tr>
</tbody>
</table>

Initials and Date Entered | Checked | To CHR File |
--------------------------|---------|-------------|
RPL | 11/30/73 | 12/31/73 |

Additional Comments: 8005148
CHR Form 11/7/73
**MMARY REPORT - CHEMICAL ANALYSES**

Center for Human Radiobiology

Name: ____________________________ Case No. **40.003** Sample No. **10**

Event: **EXCRETION**  Time, Date **0800 6/21 - 0800 6/22/73**  Mean Time, Date  

Sample Description: **FRESH URINE**

Collected at: **UNIV. OF ROCHESTER** Other Information

Sample Size (Unit): **1.00 (DAYS)**  Chem Lab. No. **1136**

Analyses Requested for: **238 Pu**

**SUMMARY OF RESULTS** (at time of event)

<table>
<thead>
<tr>
<th>Nuclide, Element or Ratio</th>
<th>Method of Analysis</th>
<th>Unit</th>
<th>Amount in Whole Sample ± SE</th>
<th>Concentration or Rate ± SE Unit/ Day</th>
<th>Comments and Assumptions</th>
<th>Laboratory Documents</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>238 Pu</strong></td>
<td>Pu</td>
<td>pCi</td>
<td><strong>0.000 ± 0.03</strong></td>
<td><strong>0.000 ± 0.03</strong></td>
<td></td>
<td>RC-28-PS</td>
</tr>
</tbody>
</table>

Initials and Date:  

**Comments and Assumptions:**

**Laboratory Documents:**

- **Entered:** RPL 11/30/73
- **Checked:** RPL 12/3/73
- **To CHR File:** 9P 11/21/73

**Additional Comments:**

**CHR Form 11/7/73**

**CHR Records**

8005749

**REC**

DEC 21/73
SUMMARY REPORT - CHEMICAL ANALYSES
Center for Human Radiobiology

Sample Description: FRESH URINE

Sample Size (Unit): 1.00 (DAYS)

Sample Taken at: UNIV. OF ROCHESTER

Chem Lab. No.: 1137

Sample No.: 11

Case No.: 40.003

Time, Date: 0600 6/2-0600 6/3/73

Mean Time, Date: ____________

SUMMARY OF RESULTS (at time of event)

<table>
<thead>
<tr>
<th>Isotope</th>
<th>Method of Analysis</th>
<th>Unit</th>
<th>Amount in Whole Sample ± SE</th>
<th>Concentration or Rate ± SE Unit/DAY</th>
<th>Comments and Assumptions</th>
<th>Laboratory Documents</th>
<th>Initials and Date</th>
<th>To CHR File</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pu</td>
<td>Pu</td>
<td>PuC</td>
<td>0.000 ± 0.002</td>
<td>0.000 ± 0.002</td>
<td>RC-28-PS</td>
<td>RPL</td>
<td>RPL</td>
<td>9/12/73</td>
</tr>
</tbody>
</table>

Form 11/7/73 8005750
<table>
<thead>
<tr>
<th>Nuclide, Element or Ratio</th>
<th>Method of Analysis</th>
<th>Amount in Whole Sample ± SE</th>
<th>Concentration or Rate ± SE Unit/Day</th>
<th>Comments and Assumptions</th>
<th>Laboratory Documents</th>
<th>Initials and Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>$^{238}$Pu</td>
<td>Pu</td>
<td>$0.069 \pm 0.04$</td>
<td>$0.069 \pm 0.04$</td>
<td>REANALYZED USING 10X AS</td>
<td>RC-28-PS</td>
<td>RPL 11-30-73</td>
</tr>
<tr>
<td>$^{238}$Pu</td>
<td>Pu</td>
<td>$0.055 \pm 0.01$</td>
<td>$0.055 \pm 0.01$</td>
<td>MAXI SAMPLE</td>
<td>RC-28-P</td>
<td>RPL 11-30-73</td>
</tr>
</tbody>
</table>

Additional Comments: RECEIVED DEC 17, 73

Case No. 40,003 Sample No. 12

Event: Excretion

Time, Date: 6/23 0800-0800 6/24/73 Mean Time, Date: 

Sample Description: FRESH URINE

Collected at: UNIV. OF ROCHESTER

Sample Size (Unit): 1.00 (DAYS)

Chem Lab. No.: 1138

Analyses Requested for: $^{238}$Pu

by: Initials/Date RPL/8-15-73

HR Form 11/7/73
### SUMMARY OF RESULTS (at time of event)

<table>
<thead>
<tr>
<th>Nuclide, Element or Ratio</th>
<th>Amount in Whole Sample ± SE</th>
<th>Concentration or Rate ± SE Unit/day</th>
<th>Comments and Assumptions</th>
<th>Laboratory Documents</th>
<th>Initials and Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>$^{239}$Pu</td>
<td>$0.010 \pm 0.001$</td>
<td>$0.010 \pm 0.002$</td>
<td></td>
<td>RC-26-PS</td>
<td>RPL/8-15-73</td>
</tr>
</tbody>
</table>

Additional Comments:
Name of Patient:

CHR #: 40-003

Personal Physician:

Phone:

Date of Medical Evaluation: June 11, 1973

Date of Birth:

Present Health Status: This patient, en route to Strong Memorial Hospital, Rochester, N.Y., for specific metabolic studies, was seen at the Center for preliminary interview, studies of hematology and blood chemistries, skeletal X-ray survey and examination for body radioactivity. His regular medical workup was deferred to the Clinical Research Center at the University of Rochester. A few additional data are supplied here.

Past Medical History: Early in 1946, while employed as a Pullman porter, he was thrown along a railway car corridor in Union Station, Chicago, due to deceleration of the Train, and injured the lateral aspect of the left knee. About a year later, when examined by a company physician in Oakland, a tumor was found in this area and a mid-Thigh amputation was performed at the University of California Hospital in July 1947. A 5 x 3 cm. tumor mass, extending up the femur from the distal end, was identified as a chondromyxosarcoma. The physician told him the prognosis was bad. He worked with an artificial limb until 2 years ago, when this was discarded because of severe skin irritation. He sometimes has cramps in the phantom leg. He has been taking medication for hypertension for one or two years (hydropres?) and has occasionally "blackout" recently.

Marital History: He was married to [illegible] in September 1944; previously had a brief, unsuccessful marriage. His wife is a school teacher, healthy except for hypertension for which she takes Aldomet, and has a mild allergic history (hayfever). One daughter, born in 1945, had 2 miscarriages and then adopted a girl; a son, born in 1947, has one daughter.
Family History: Mother died in the 1930's of undetermined cause; father was separated and is believed not to be living. A brother and a sister are living and well in Chicago.

Occupational History: He was a Pullman Porter from and "wound up" in Since operation he has done mostly farm and other outdoor work until he abandoned the artificial leg; and now uses crutches and has a small shop where he repairs furniture.

Physical Examination: Not done.

Laboratory Examination: Reports are attached. All findings are negative and consistent with those reported at Rochester. (The slightly low inorganic phosphate and borderline elevated alkaline phosphatase are consistent with results being reported on normal patients from our laboratory. No abnormal body radioactivity was detected.

Radiologic Examination: Report is attached. Findings are consistent with degenerative arthritis in a number of areas, and scattered radiolucencies suggestive of gouty deposits (however, the uric acid level is quite normal).

Clinical Summary: No abnormalities other than those noted in the report from Strong Memorial Hospital, plus a moderate degree of degenerative arthritis.

Recommendations: Returned to the care of his personal physician.

Austin M. Brues, M. D.
## Clinical Laboratory Report

### Chemistry II

<table>
<thead>
<tr>
<th>Test</th>
<th>Normal</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salicylates</td>
<td>0.50 mg%</td>
<td></td>
</tr>
<tr>
<td>Total Acid Phosphatase</td>
<td>0.13 mg%</td>
<td></td>
</tr>
<tr>
<td>Total Prostatic Acid Phosphatase</td>
<td>0.05-0.15 mg%</td>
<td></td>
</tr>
<tr>
<td>Iron</td>
<td>65-175 mcg%</td>
<td></td>
</tr>
<tr>
<td>Iron Binding Capacity</td>
<td>250-400 mcg%</td>
<td></td>
</tr>
<tr>
<td>Ammonia</td>
<td>18-48 mg%</td>
<td></td>
</tr>
</tbody>
</table>

### Chemistry I

<table>
<thead>
<tr>
<th>Test</th>
<th>Normal</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Protein</td>
<td>6.0-8.0 g/dl</td>
<td></td>
</tr>
<tr>
<td>Albumin</td>
<td>3.4-4.6 g/dl</td>
<td></td>
</tr>
<tr>
<td>Alpha Globulin</td>
<td>0.3 g/dl</td>
<td></td>
</tr>
<tr>
<td>Beta Globulin</td>
<td>0.2 g/dl</td>
<td></td>
</tr>
<tr>
<td>Gamma Globulin</td>
<td>1.4 g/dl</td>
<td></td>
</tr>
</tbody>
</table>

### Other Tests

- **SMA-12**
- **Fasting**
- **Calcium**
- **Phosphorus**
- **Sodium**
- **Potassium**
- **Chloride**
- **CO2**
- **CPK**

---

### Laboratory Notes

- Other tests:
- Laboratory Notes:

---

© 1970 T & T Technology, Inc.

Omega Medical Laboratories
Downers Grove, Illinois (312) 994-6552

---

Community Memorial General Hospital
La Grange, Illinois 60525

---

# 600358

CHART COPY
# ARGONNE NATIONAL LABORATORY
**HEALTH DIVISION**

## URINE

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>4/11</td>
</tr>
<tr>
<td>Reaction</td>
<td>5.0</td>
</tr>
<tr>
<td>Sp. Gr.</td>
<td>1020</td>
</tr>
<tr>
<td>Albumin</td>
<td>0</td>
</tr>
<tr>
<td>Reduct.</td>
<td>0</td>
</tr>
<tr>
<td>Occult Blood</td>
<td></td>
</tr>
<tr>
<td>Micro. WBC/HPF</td>
<td>2</td>
</tr>
<tr>
<td>RBC/HPF</td>
<td></td>
</tr>
<tr>
<td>RBC/LPF</td>
<td></td>
</tr>
<tr>
<td>Epith. cells</td>
<td>4</td>
</tr>
<tr>
<td>Mucus</td>
<td></td>
</tr>
<tr>
<td>Bacteria</td>
<td></td>
</tr>
<tr>
<td>Asmorph. Sed.</td>
<td></td>
</tr>
<tr>
<td>Initialed by</td>
<td></td>
</tr>
</tbody>
</table>

## BLOOD

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>4/11</td>
</tr>
<tr>
<td>Hgb (gms)</td>
<td>15.6</td>
</tr>
<tr>
<td>Hematocrit</td>
<td>47</td>
</tr>
<tr>
<td>RBC</td>
<td></td>
</tr>
<tr>
<td>WBC</td>
<td>7200</td>
</tr>
<tr>
<td>Polys %</td>
<td>57</td>
</tr>
<tr>
<td>Stabs %</td>
<td>1</td>
</tr>
<tr>
<td>Lymphs %</td>
<td>30</td>
</tr>
<tr>
<td>Mono. %</td>
<td>8</td>
</tr>
<tr>
<td>Eosin. %</td>
<td>2</td>
</tr>
<tr>
<td>Baso. %</td>
<td></td>
</tr>
<tr>
<td>Imm. Cells</td>
<td></td>
</tr>
<tr>
<td>RBC normal</td>
<td></td>
</tr>
<tr>
<td>Anisoctosis</td>
<td></td>
</tr>
<tr>
<td>Polkilocytosis</td>
<td></td>
</tr>
<tr>
<td>Hypochromasia</td>
<td></td>
</tr>
<tr>
<td>Baso. stippling</td>
<td></td>
</tr>
<tr>
<td>Plasma cells</td>
<td></td>
</tr>
<tr>
<td>Reticulocytes</td>
<td></td>
</tr>
<tr>
<td>Platelets</td>
<td></td>
</tr>
<tr>
<td>Sed. Rate 60 min.</td>
<td></td>
</tr>
<tr>
<td>Corrected</td>
<td></td>
</tr>
<tr>
<td>Blood Type</td>
<td>O+</td>
</tr>
<tr>
<td>Initialed by</td>
<td></td>
</tr>
</tbody>
</table>

## SEROLOGY

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td></td>
</tr>
<tr>
<td>VDLR</td>
<td></td>
</tr>
<tr>
<td>Kahn</td>
<td></td>
</tr>
<tr>
<td>Wass.</td>
<td></td>
</tr>
</tbody>
</table>

8005758
### Clinical Laboratory Report

**Patient Information**

- **Date of Birth**: 23:7-6-11
- **Identification Number**: 600358

**Tests Performed**

<table>
<thead>
<tr>
<th>Test</th>
<th>Normal Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Osmolal Gap</td>
<td>3.3-11.2</td>
</tr>
<tr>
<td>Lactic Acid</td>
<td>0.18-1.00</td>
</tr>
<tr>
<td>Glucose</td>
<td>010.00-025.00</td>
</tr>
<tr>
<td>Creatinine</td>
<td>10.00-20.00</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>02.50-06.00</td>
</tr>
<tr>
<td>Urea Nitrogen</td>
<td>05.00-10.00</td>
</tr>
<tr>
<td>Calcium</td>
<td>08.50-10.50</td>
</tr>
<tr>
<td>Potassium</td>
<td>02.50-06.00</td>
</tr>
<tr>
<td>Sodium</td>
<td>03.50-04.50</td>
</tr>
</tbody>
</table>

**Other Tests**

<table>
<thead>
<tr>
<th>Test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea Nitrogen</td>
<td>10.00</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>05.00</td>
</tr>
<tr>
<td>Calcium</td>
<td>08.50</td>
</tr>
</tbody>
</table>

**Laboratory Notes**

- Community Memorial General Hospital, Downers Grove, Illinois
- Date Reported: 6/14/73
- Chart Copy

---

**Chemistry II**

<table>
<thead>
<tr>
<th>Test</th>
<th>Normal Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Osmolal Gap</td>
<td>3.3-11.2</td>
</tr>
<tr>
<td>Lactic Acid</td>
<td>0.18-1.00</td>
</tr>
<tr>
<td>Glucose</td>
<td>010.00-025.00</td>
</tr>
<tr>
<td>Creatinine</td>
<td>10.00-20.00</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>02.50-06.00</td>
</tr>
<tr>
<td>Urea Nitrogen</td>
<td>05.00-10.00</td>
</tr>
<tr>
<td>Calcium</td>
<td>08.50-10.50</td>
</tr>
<tr>
<td>Potassium</td>
<td>02.50-06.00</td>
</tr>
<tr>
<td>Sodium</td>
<td>03.50-04.50</td>
</tr>
</tbody>
</table>

**Laboratory Notes**

- Community Memorial General Hospital, Downers Grove, Illinois
- Date Reported: 6/14/73
- Chart Copy

---

**Chemistry I**

<table>
<thead>
<tr>
<th>Test</th>
<th>Normal Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Osmolal Gap</td>
<td>3.3-11.2</td>
</tr>
<tr>
<td>Lactic Acid</td>
<td>0.18-1.00</td>
</tr>
<tr>
<td>Glucose</td>
<td>010.00-025.00</td>
</tr>
<tr>
<td>Creatinine</td>
<td>10.00-20.00</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>02.50-06.00</td>
</tr>
<tr>
<td>Urea Nitrogen</td>
<td>05.00-10.00</td>
</tr>
<tr>
<td>Calcium</td>
<td>08.50-10.50</td>
</tr>
<tr>
<td>Potassium</td>
<td>02.50-06.00</td>
</tr>
<tr>
<td>Sodium</td>
<td>03.50-04.50</td>
</tr>
</tbody>
</table>

**Laboratory Notes**

- Community Memorial General Hospital, Downers Grove, Illinois
- Date Reported: 6/14/73
- Chart Copy
The chest shows no evidence of abnormality in the heart or lungs. There is atheromatous tortuosity of the descending aorta. The hands show small areas of absorption or lysis in the head of the right thumb-metacarpal and the base of the proximal phalanx of the right thumb, also the middle phalanx of the right middle finger and the heads of the left second and third metacarpals. There are some degenerative changes in the distal interphalangeal joints of the right second, third and fourth fingers and the left third and fourth. Small lucencies are also present in the navicular and capitale bone on each side. Both forearms are normal. The right humerus shows that there are definitely abnormal trabeculae in the region of the greater tuberosity of the humerus and the acromion. Dense spurs are present in the right acromioclavicular joint. The left humerus also shows abnormal trabeculae in the greater tuberosity of the humerus and the acromion, with degenerative changes in the acromioclavicular joint. The cervical spine shows marked spurring in the anterior aspects of the cervical vertebral bodies. The dorsal spine shows calcification in the anterior and lateral spinal ligaments. The lumbar spine shows large and dense spurs along the vertebral margins. The pelvis is normal. The right femur shows no evidence of any gross lesions but there are some very fine stippled densities in the intertrochanteric region. The left femur shows that there has been an amputation about 4" below the lesser trochanter. There are reactive changes of the usual kind at the amputation end. Few fine stippled densities are seen in the intertrochanteric region. The right knee shows evidence of degenerative arthritis. The right ankle shows a large spur on the dorsum of the astragalus. There is an os tri and also an accessory scaphoid. The right foot shows some small osteolytic areas in the head of the first metatarsal. The skull and sinuses show no evidence of abnormal trabeculae, with very small lucencies resulting, throughout this bone. Several teeth missing, but the remaining teeth appear grossly normal.

Impression: There is evidence of degenerative arthritis in a number of areas. There also a number of radiolucencies in the hands and carpal bones bilaterally which are suggestive of gouty deposits. In the proximal portions of both humeri as well as the adjacent acromions, there are some changes in the trabeculae which are consistent with findings in early radium deposition, but not yet completely specific. The mandible shows abnormal trabeculae, suggestive of damage due to radiation.

I. E. Kirsh, M.D.
A sample of peripheral blood was drawn from the patient into a sterile heparinized tube by the A.N.L. Health Division on the above date. Leucocytes were cultured, using standard culture techniques including PHA stimulation. The cultures were terminated after 50-53 hours. Slides were examined following standard Giemsa staining. Slides were scored on July 11, 1973 and a sample of 84 cells was obtained. The sample consisted of sufficiently well spread cells with 46 or more centromeres. A copy of the cytogenetic unit's score sheet is attached.

Results were as follows:

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cells with 46 centromeres</td>
<td>78</td>
</tr>
<tr>
<td>Cells with &gt;46 centromeres</td>
<td></td>
</tr>
<tr>
<td>% hyperdiploid cells</td>
<td>6.1</td>
</tr>
<tr>
<td>Rings + dicentrics (and associated fragments)</td>
<td>0</td>
</tr>
<tr>
<td>Chromosome minutes</td>
<td>0</td>
</tr>
<tr>
<td>Acentric fragments</td>
<td>2</td>
</tr>
<tr>
<td>Total chromosome aberrations per cell</td>
<td>0.2</td>
</tr>
<tr>
<td>Chromatid deletions</td>
<td>0</td>
</tr>
<tr>
<td>Gaps</td>
<td>7</td>
</tr>
<tr>
<td>Total chromatid aberrations per cell</td>
<td>1.0</td>
</tr>
<tr>
<td>Total aberrations per cell</td>
<td>1.2</td>
</tr>
</tbody>
</table>

Date of report 7/5/73 Submitted by L. F. Krugman
**Center for Human Radiobiology**

**Chromosome Study Case Summary Sheet**

**Case No. 40-003 Ra No. 377**

<table>
<thead>
<tr>
<th>Slide No.</th>
<th>Stain</th>
<th>Scored By</th>
<th>No. Cells Scored</th>
<th>Chromosome Aberrations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>S.F.H.</td>
<td>6/1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-3</td>
<td>E6</td>
<td>11/1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-2</td>
<td>S.F.H.</td>
<td>4/0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-1</td>
<td>F5</td>
<td>3/0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-2</td>
<td>F5</td>
<td>12/1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-1</td>
<td></td>
<td>7/0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-2</td>
<td></td>
<td>12/2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-3</td>
<td></td>
<td>13/1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>78/6</td>
<td>(84)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Chromosomal Aberrations**

- **460/Other**
- **Dicentrics**
- **Polycentrics**
- **Associated Fragments**
- **Centric Rings**
- **Acentric Rings**
- **Associated Fragments**
- **Minutes**
- **Translocations**
- **Inversions**
- **Total Two Hit Fragments**
- **Chromatid Deletions**
- **Gaps**
This modified version of the Radiologist's Report was
constructed by Dr. A. M. Brown
specifically for mailing to
along with
a copy of the final clinical
summary.

9/7/23,
00X
The chest shows no evidence of abnormality in the heart or lungs. There is atheromatous tortuosity of the descending aorta. The hands show small areas of absorption or lysis in the head of the right thumb-metacarpal and the base of the proximal phalanx of the right thumb, also the middle phalanx of the right middle finger and the heads of the left second and third metacarpals. There are some degenerative changes in the distal interphalangeal joints of the right second, third and fourth fingers and the left third and fourth. Small lucencies are also present in the navicular and capitate bone on each side. Both forearms are normal. The right humerus shows that there are definitely abnormal trabeculae in the region of the greater tuberosity of the humerus and the acromion. Dense spurs are present in the right acromioclavicular joint. The left humerus also shows abnormal trabeculae in the greater tuberosity of the humerus and the acromion, with degenerative changes in the acromioclavicular joint. The cervical spine shows marked spurring in the anterior aspects of the cervical vertebral bodies. The dorsal spine shows calcification in the anterior and lateral spinal ligaments. The lumbar spine shows large and dense spurs along the vertebral margins. The pelvis is normal. The right femur shows no evidence of any gross lesions but there are some very fine stippled densities in the intertrochanteric region. The left femur shows that there has been an amputation about 4" below the lesser trochanter. There are reactive changes of the usual kind at the amputation end. Few fine stippled densities are seen in the intertrochanteric region. The right knee shows evidence of degenerative arthritis. The right ankle shows a large spur on the dorsum of the astragalus. There is an os trigonum and also an accessory scaphoid. The right foot shows some small osteolytic areas in the head of the first metatarsal. The skull and sinuses show no evidence of abnormality. The right and left mastoids show that the cells are normal except for the presence of some larger cells than usual on each side. The mandible shows that there are abnormal trabeculae, with very small lucencies resulting, throughout this bone. Several teeth are missing, but the remaining teeth appear grossly normal.

Impression: There is evidence of degenerative arthritis in a number of areas. There are also a number of radiolucenty in the hands and carpal bones bilaterally which are suggestive of gouty deposits. In the proximal portions of both humeri as well as the adjacent acromions, there are some changes in the trabeculae which are consistent with findings in early radium deposition, but not yet completely specific. The mandible shows abnormal trabeculae, suggestive of damage due to radiation.

I. E. Kirsh, M.D.
The chest shows no evidence of abnormality in the heart or lungs. There is atheromatous tortuosity of the descending aorta. The hands show small areas of absorption or lysis in the head of the right thumb-metacarpal and the base of the proximal phalanx of the right thumb, also the middle phalanx of the right middle finger and the heads of the left second and third metacarpals. There are some degenerative changes in the distal interphalangeal joints of the right second, third and fourth fingers and the left third and fourth. Small lucencies are also present in the navicular and capitate bone on each side. Both forearms are normal. The right humerus shows that there are definitely abnormal trabeculae in the region of the greater tuberosity of the humerus and the acromion. Dense spurs are present in the right acromioclavicular joint. The left humerus also shows abnormal trabeculae in the greater tuberosity of the humerus and the acromion, with degenerative changes in the acromioclavicular joint. The cervical spine shows marked spurring in the anterior aspects and lateral spinal ligaments. The lumbar spine shows large and dense spurs along the vertebral margins. The pelvis is normal. The right femur shows no evidence of any gross lesions but there are some very fine stippled densities in the intertrochanteric region. The left femur shows that there has been an amputation about 4" below the lesser trochanter. There are reactive changes of the usual kind at the amputation end. Few fine stippled densities are seen in the intertrochanteric region. The right knee shows evidence of degenerative arthritis. The right ankle shows a large spur on the dorsum of the astragalus. There is an os trigonum, and also an accessory scaphoid. The right foot shows some small osteolytic areas in the head of the first metatarsal. The skull and sinuses show no evidence of abnormality. The right and left mastoids show that the cells are normal except for the presence of some larger cells than usual on each side. The mandible shows that there are abnormal trabeculae, with very small lucencies resulting, throughout this bone. Several teeth are missing, but the remaining teeth appear grossly normal.

Impression: There is evidence of degenerative arthritis in a number of areas. There are a number of radiolucentcies in the hands and carpal bones bilaterally which are suggestive of gouty deposits. In the proximal portions of both humeri as well as the adjacent acromions, there are some non-specific changes in the trabeculae; the mandible shows similar changes.

I. E. Kirsh, M. D.
**Radiological and Environmental Research Division and Health Division**

**Argonne National Laboratory**

### CHR # 40-003 Radium Study Project

#### Date of Birth: 6/11/73

<table>
<thead>
<tr>
<th>Area</th>
<th>Position</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Chest &amp; Ribs</td>
<td>PA</td>
<td>0</td>
</tr>
<tr>
<td>2 Cervical Spine</td>
<td>AP &amp; LAT.</td>
<td>0</td>
</tr>
<tr>
<td>3 Thoracic Spine</td>
<td>AP &amp; LAT.</td>
<td>0</td>
</tr>
<tr>
<td>4 Lumbar Spine</td>
<td>AP &amp; LAT.</td>
<td>0</td>
</tr>
<tr>
<td>5 Pelvis</td>
<td>AP</td>
<td>0</td>
</tr>
<tr>
<td>6 R Shoulder &amp; Humerus</td>
<td>AP</td>
<td>1</td>
</tr>
<tr>
<td>7 L Shoulder &amp; Humerus</td>
<td>AP</td>
<td>1</td>
</tr>
<tr>
<td>8 R Elbow &amp; Forearm</td>
<td>AP</td>
<td>0</td>
</tr>
<tr>
<td>9 L Elbow &amp; Forearm</td>
<td>AP</td>
<td>0</td>
</tr>
<tr>
<td>10 R Wrist &amp; Hand</td>
<td>AP</td>
<td>0</td>
</tr>
<tr>
<td>11 L Wrist &amp; Hand</td>
<td>AP</td>
<td>0</td>
</tr>
<tr>
<td>12 R Femur</td>
<td>AP</td>
<td>0</td>
</tr>
<tr>
<td>13 L Femur</td>
<td>AP</td>
<td>0</td>
</tr>
<tr>
<td>14 R Knee &amp; Leg</td>
<td>AP</td>
<td>0</td>
</tr>
<tr>
<td>15 L Knee &amp; Leg</td>
<td>AP</td>
<td>0</td>
</tr>
<tr>
<td>16 R Ankle</td>
<td>AP</td>
<td>0</td>
</tr>
<tr>
<td>17 L Ankle</td>
<td>AP</td>
<td>0</td>
</tr>
<tr>
<td>18 R Foot &amp; Ankle</td>
<td>AP &amp; LAT.</td>
<td>0</td>
</tr>
<tr>
<td>19 L Foot &amp; Ankle</td>
<td>AP &amp; LAT.</td>
<td>NF</td>
</tr>
<tr>
<td>20 Skull</td>
<td>AP &amp; LAT.</td>
<td>0</td>
</tr>
<tr>
<td>21 Paranasal Sinuses</td>
<td>Mod. Waters</td>
<td>0</td>
</tr>
<tr>
<td>22 R Mastoid</td>
<td>Lat. &amp; Post.</td>
<td>0</td>
</tr>
<tr>
<td>23 L Mastoid</td>
<td>Lat. &amp; Post.</td>
<td>0</td>
</tr>
</tbody>
</table>

**TOTAL**: 0

### Criteria for Coding Radiographic Changes with Radium Deposition

1. **Questionable, barely detectable changes such as slight coarsening of trabeculation.**
   - Minimal areas of bone resorption (equal to or less than 10 mm. in longest diameter) in the cortex of long or flat bone, or isolated areas of patchy bone sclerosis, or definite coarsening of trabeculation.

2. **Large punched-out areas of bone resorption (greater than 10 mm. in longest diameter) in long or flat bone, or lesions of 2 severity, plus (a) some areas of bone sclerosis or (b) definite coarsening of trabeculation.

3. **Extensive changes of 3 severity plus (a) changes in trabecular pattern or (b) areas of bone sclerosis.

4. **Large areas of aseptic necrosis and pathologic fracture.

5. **Malignant changes.

**GENERAL IMPRESSION:** Negative for changes typical of radium deposition, c

**IMPRESSION:**

- **Minimal** (1-11)
- **Mild** (12-22)
- **Moderate** (23-34)
- **Advanced** (34+)

**Other Clinical Findings:**

**Date Films Read:** 6/11/73

**Interpretation by Radiologist:** M.D.
## CENTER FOR HUMAN RADIOBIOLOGY
### BODY RADIOACTIVITY MEASUREMENT

<table>
<thead>
<tr>
<th>Name</th>
<th>Case No.</th>
<th>40-003</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date Measured</td>
<td>11 June 1973 (73.162)</td>
<td>Height 180.3 cm, Weight 81.1 kg</td>
</tr>
<tr>
<td>Type of Exposure</td>
<td>238 Pu injection</td>
<td></td>
</tr>
<tr>
<td>Exposure Period</td>
<td></td>
<td></td>
</tr>
<tr>
<td>References</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Counting Geometry**
- Detector: 1 cm above liver region of supine subject
- Detector: 18-cm diameter proportional counter
- Analyzer: Nuclear Data
- Run No.: 73.16202 + 05
- Calibration: broad beam attenuation of 238 Pu source

### Energy Band (keV)

<table>
<thead>
<tr>
<th>CHANNEL NUMBERS</th>
<th>15.6 - 23.2</th>
<th>70 - 105</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Subject Gross CPM</th>
<th>7.81 ± 0.89</th>
</tr>
</thead>
<tbody>
<tr>
<td>Background CPM</td>
<td>4.15 ± 0.19</td>
</tr>
<tr>
<td>Control Subj. Net CPM</td>
<td>3.81 ± 0.89</td>
</tr>
<tr>
<td>Net Subject CPM</td>
<td>-0.15 ± 1.25</td>
</tr>
<tr>
<td>Net Subj. CPM From 238 Pu</td>
<td>-0.15 ± 1.25</td>
</tr>
</tbody>
</table>

### Remarks:
- Calibration factor for 238 Pu is 5403 cpm/μCi bare at 10 cm. Subject contaminant assumed to be point source in liver, 7 cm from surface of body, yielding 10.07 cpm/μCi.

### 238 Pu
- Body Burden: 0.00 ± 0.11 μCi
- Body Burden: |
- Body Burden: |

**005768**

Signed: Richard E. Osterh Date: 15 Aug 73
Personal History Form

Name: __________________________ Telephone: __________________________

Address: __________________________ Social Security #: __________________________

Date of Marriage __________________________ Zip __________________________

Date of birth: __________________________ Place of birth: __________________________

Maiden name: __________________________ Date of birth: __________________________

Spouse's name: __________________________ If not living, date of death: __________________________

Previous marriages: __________________________

Miscarriages: __________________________

Children: Name Date of birth Address


Parents: Name If not living, age and cause of death

Brothers and Sisters: Name Address

Occupational History: Years of employment Place of employment Nature of work
Medical History: Illnesses  Surgery Performed  Hospital

General feeling mediatin for hypotension - started medicatin 3-4 days ago: green face the day of intubation. Hypertension. Patient since March - died away. Following intubation

Adenoids: Removed along axilla of train, in Chicago.

Surgery: Performed at Hospital U.C.C. 1946. Patient was done later in England in 1947. He was admitted

Surgery: Performed 2 years ago. Same, same uncomfortable without.

Surgery: Has entered in phantom leg. Qtr and 2 weeks.

Surgery: fiancee.

Date: 09/10/20 12/13/71

For 15 years, 1 1/2 days, and 1 to 2 weeks.

CHR-ANL-07 Revised 12/13/71

8005710
Argonne National Laboratory  
9700 S. Cass Avenue  
Argonne, Illinois 60439

billing for hospitalization of research patient

June 21 to July 1, 1973

10 days at $132.29

$1,322.90

billing for hospitalization of research patient

June 13, to June 26, 1973

13 days at $132.29

1,719.77

shipping charges for frozen specimens relating to these patients

71.58

$3,114.25

your purchase order #762107 dated 1-11-73

send check to the attention of

Mr. David J. Fanning
June 28, 1973

Dear Dr

Enclosed are the admission and discharge summaries from your patient's admission to the Clinical Research Center at the University of Rochester. I think the notes are self-explanatory.

It was our feeling that the patient did have idiopathic grand mal epilepsy and should be carried on Dilantin. We did not put him back on his antihypertensive medication because at the time of his discharge, his blood pressures were well within normal range. However, I am certain as in most other cases, his blood pressure will rise again as he resumes his normal activities and probably in the future will require medication of this type. Other than the hypertension and related cardiac changes, the epilepsy and the hemorrhoidal bleeding, we found no evidence of disease in _________

I hope this summary will be of some benefit to you.

Sincerely yours,

Christine Waterhouse, M.D.
Professor of Medicine

Enclosures
ADMISSION NOTE:  
Admitted 6/13/73

The patient is a 62 year old, married, colored male who is admitted to SMH for first time for balance study of heavy metals.

PRESENT ILLNESS: The patient sustained an injury to his left knee while working for Pullman Co. outside of Chicago, in 1946. He states that the left knee was crushed at that time and that a year later he was told that he had a tumor of the leg and should have a mid-thigh amputation done. The tumor reportedly was an osteofibromyochordosarcoma and he was told at that time that he had less than 5 years to live. He was fitted with an artificial leg following surgery and although he never worked again for Pullman Co., he has worked at various jobs, perhaps the primary one being shoe repair. During the interval between the amputation and now, he has really had only two problems of any magnitude. He was told that he had high BP 1½ years ago and he has been taking pills of some type for this. He does not know the name of the pills and he has not taken them for a week's time. The other symptom that is present is difficult to evaluate. According to his wife, he has black-out spells where he does not hear what other people are saying and is out of contact for a few moments. He has never fallen in these, but she feels that he is not aware of what is going on. These have been evident for the 2-3 years and perhaps lasts about 5 minutes. The patient states that they occur when he is angry at someone, particularly his wife and that he really does know what is going on at these times. He has been given some pills by his doctor for these which he says calms down his nerves and lessens the number of "black-out spells".

PAST HISTORY AND ILLNESSES: The patient has had arthritis of particularly his elbows and shoulders for the past several years but this has been without any major deformity or major disability. There have been no other major illnesses - he did have a tonsillectomy several years ago and has had no further trouble with sore throats since then.

PERSONAL HISTORY: The patient has worked first as a Pullman Co. employee and later as many odd jobs following the amputation of his left leg. Two years ago, he had a good deal of skin irritation from the artificial leg and stopped wearing the artificial limb at that time. He now goes around on crutches but has been unable to work in the past years. The patient is married. His wife works and he receives Social Security. There are two children.

PHYSICAL EXAMINATION: BP - 160/80. The patient is well nourished and developed and appears to be in good health. He has a mid-thigh amputation of the left leg. There is no jaundice and the skin is clear. The eyes show a very pronounced arcus senilis and the eye grounds show moderate arteriolar narrowing. There is however no AV nicking and there are any hemorrhages and exudates. The disks are flat. The examination of the eye is negative. There is no sinus tenderness. The pharynx is clear. There are no lymph nodes in the neck, axillary or inguinal area. The thyroid is not enlarged. The lung fields are clear to P&A. The heart may be somewhat enlarged. I get the left border of cardiac dullness about 11 cm. from the mid-sternal line in the 5th interspace. There is considerable irregularity of the heart beat. Although I do not think he is fibrillating, there must be many extra systoles present. The heart sounds are of good quality however there are no murmurs. The examination of the abdomen is negative. I cannot feel the liver or spleen or kidneys. The peripheral pulses are good and there is no edema. On rectal, the prostate is of normal size and the stool obtained was guaiac negative.
FRESSION: #1 - Twenty-five years post chondrosarcoma without evidence of recurrence or metastasis.

#2 - By history, hypertensive cardiovascular disease. By current exam, the only manifestation noted is some irritability of the conduction system.

An EKG will be taken to document the arrhythmia and a chest x-ray will be done to determine precisely heart size.

Christine Waterhouse, M.D.
The admission history and physical examination are enclosed. The white count was 6 and 7.4, the hct. was 44 and 42%, the differential was normal with 6 monocytes, 42 lymphocytes, 1 basophil, 1 eosinophil, and 48 segmented cells. The platelet es was 4.9/oil immersion field. The urinalysis was negative and the stool guaiac was negative. The chemical screen was normal with a total protein of 6.6, serum album 3.3, calcium - 9, phosphorus - 2.9, cholesterol - 174, urea nitrogen - 10, uric ac 4.7, creatinine - 1.1, total bilirubin -.6, alkaline phosphatase - .77, and transaminase - less than 10. The sodium was 140, potassium - 4.2, CO₂ - 26, chloride - 10 The glucose was 88 mg%. At the time, of admission, an EKG was taken which showed frequent atrial prema contractions with runs of 2 or 3 consecutively. The voltage was diagnostic for a ventricular hypertrophy with ST abnormalities in 2,3, AVF, V6, which were suggesti strain or ischemia. The cardiac size by chest x-ray was WNL. It was, however, not that considerable tortuosity of the thoracic aorta was present. There were no pul lesions. An incidental finding was calcification of the anterior ligament of the spine.

The patient was placed on a standardized diet and urine and stool collections carried out. He was asymptomatic until 8 days after his admission at which time he found on the floor unconscious about 11 a.m. Some seizure activity was noted by a doctor on the floor. The patient remained comatose for about 15 min. following this but recovered without sequella gradually thereafter. The BP during the episode was 160/100 and the P was 72. It was our feeling in retrospect that this was one of the "blackout spells" which were described in the initial history. An EEG was taken the following morning and I enclose a copy of this report. A brain scan was also done which was negative. He was started on dilantin following what was probably a grand mal seizure and was given 100 mg. t.i.d. He was told to increase this to 4 times if there was further evidence of epileptic seizures.

The only other complication of the patient's hospital admission was the passag of a grossly bloody stool on 6/23. Rectal examination showed no abnormality at the time. He was sigmoidoscoped with negative findings except for hemorrhoids and a barium enema was negative.


ADDENDUM: The patient's BP throughout his hospital stay showed a diastolic pressure of no greater than 100 and a systolic pressure which was between 120 and 170. There seems to be no doubt of the diagnosis of hypertension but in protected surrounding the BP readings are reasonably good.

Christine Waterhouse, M.D.
Strong Memorial Hospital
Rochester, New York

E. E. G. No. 1949-A  UNIT NO.  

Name  

AGE 62  DIV. In, P-2  DATE 6-22-73  

Requested by  

Leads  

ment. emot. state  
Gen. Cond. coma, aphasia, etc.  

Drugs  

Description  
The patient was asleep at the start of the tracing, and at this time the background is somewhat slower from the left than the right hemisphere, especially from the more anterior leads, where medium voltage 2-3 cycles/sec. activity is seen initially. With increased inter-electrode distances, some high voltage sharp forms appear from the left fronto-temporal region.

Some EKG and other artifact is seen in the background, although an independent spike focus cannot be ruled out from the right.

The patient was transiently alert, and at this time the alpha representation is better from the right than from the left hemisphere.

Hyperventilation was not attempted in this case.

IMPRESSON: Abnormal EEG, chiefly on account of some increased slowing, with discharging features, from the left fronto-temporal region.

This EEG would tend to confirm a clinical suspicion of epilepsy.

Comment:

800577b 

MC/td/jr  

Signed  

Maurice Charlton, M.D.
Christine Waterhouse, M.D.
Director, Metabolic Unit
Strong Memorial Hospital
260 Crittenden Boulevard
Rochester, New York 14620

Dear Dr. Waterhouse:

This is a summary of our findings on*

Thank you very much for your cooperation.

Faithfully yours,

Austin M. Brues, M.D.
Medical Director

AMB/jt
Enc.
August 22, 1973

Dear Mr.:

I have sent our own summary of the examinations and tests to Doctor. They do not add anything of importance to the detailed report that Dr. Waterhouse has already sent you.

I must say it was a delightful pleasure to all of us to meet you and your wife. It would be nice to hear from you once in a while.

Faithfully yours,

Austin M. Brues, M. D.
Medical Director
August 22, 1973

M. D.

Dear Doctor,

I am sending you herewith a copy of our own record on . This adds little to the report you have already received from Dr. Waterhouse at Rochester.

We greatly appreciate your cooperation with our studies, and it was a pleasure to meet the .

Faithfully yours,

Austin M. Brues, M. D.
Medical Director

AMB/1c
Encl.
To market, to market,
   To buy a fat pig,
Home again, home again,
   Jiggety-jig.

To market, to market,
   To buy a fat hog,
Home again, home again,
   Jiggety-jig.

To market, to market,
   To buy a plum bun,
Home again, home again,
   Market is done.

July 14, 1973

Hi Betty,

Well, the trip is done, and
did we have a grand time!

We left Rochester Wednesday,
June 27 at 6:30 A.M. and arrived
in Washington, D.C. at 5:55 P.M. the
We can assure you that this trip has been a rewarding experience which will be a lasting memory.

Thank you very kindly for making this trip the most wonderful we've ever taken.

We hope that this study will be rewarding to you. We were happy to cooperate.

Thanks again for everything.

Sincerely.
the same day. We left Monday, July 2, at 9:00 A.M. and arrived in
at 9:30 P.M. the same
day. Our son met us and we
motored by car to. We
left at 6:00 A.M. July 9
and arrived in the
same morning. We got a trip
on our way to the
five o'clock.
We were very comfortable and
our accommodations were won-
derful. Dr. Waterhouse and her
staff at Strong Memorial were
the best.
I had to stay two days
longer in Rochester than were
allotted for me. The cab fare
was within our means so
we're not sending any more
receipts.
We met so many wonderful
people that we shall never
forget.
May 18, 1973

Dear Mr. & Mrs,

The enclosed check for $100.00 should cover the cost of your trip to the Ft. Worth Train Station, meals on the train, and any other expenses you may incur until we meet you here.

We have arranged to have train tickets mailed directly to you. If they do not arrive in a week or so, please call me collect.

After you arrive at Argonne we will give you tickets for the Greyhound Bus trip to Rochester.

Please keep all receipts for your expenses while on this trip. If you do not get a receipt, say for a taxi fare, kindly keep a record so that we may reimburse you while you are at Argonne. As we had explained, there will be other monies due you which we will handle while you are here.

The attached itinerary is enclosed in duplicate so you may leave a copy with someone in your family.

If you should have any questions, please do not hesitate to call.

Sincerely yours,

(Mrs.) Betty C. Patten
Medical Assistant
Center for Human Radiobiology
Mr. & Mrs [____] itinerary:

Saturday
June 9  6:10 p.m.

Sunday
June 10  Arrive at Amtrak Counter where you will be met by a uniformed driver who will take you to the _______. In the event the driver does not contact you within 10 minutes of your arrival at the Amtrak Counter, please call the _______. We have arranged to have the _______ charged to the Center; if the driver should charge you, please get a receipt.

Monday
June 11  I will pick up Mr. _______ at 9:00 a.m. at your room and bring him to Argonne. After the tests are completed, around 4 p.m., I will take Mr. _______ back to the _______.

Tuesday
June 12  A day of rest until 6:00 p.m. at which time a _______ will arrive to take you to the _______ in Chicago. We will give you the bus tickets. Check with Customer Service for early boarding privilege.

Tuesday
June 12  Board the _______ bus for Rochester, New York.

Wednesday
June 13  Arrive Rochester, New York. Take a cab to Strong Memorial Hospital. Check Mr. _______ into the Metabolic Ward in charge of Dr. Christine Waterhouse. When Mr. _______ is settled, Mrs. _______ may take a cab to _______. Phone: _______. These accommodations reserved through the morning of June 25th.
Monday
June 25
At the leaves for Chicago. Get there early and request early boarding.

Arrive at Chicago Station. A room has been reserved for you at the _______________. The hotel is approximately 1 1/2 blocks away from the bus station, take a taxi from the bus station. When you check in at the hotel, please remind them that you will not be checking out until 3:30 p.m. on Tuesday, June 26th. (We have arranged for this room to be billed to Dr. Stehney at Argonne National Laboratory).

Tuesday
June 26
At 3:30 p.m. take a taxi to the Union Station to board the ________ which departs for _______ at _______.

Reservations:

Wednesday
June 27
At _______ arrive at _______ Train Station.

All times quoted are local times.

Please mail us all receipts that you may have obtained and a listing of all expenses not covered by the $13.00 per diem. We hope that you will find this a rewarding experience and we thank you again for your cooperation.
May 8, 1973

Mr. & Mrs

c/o Dr.

Dear Mr. & Mrs.

I talked to Dr. and learned from him that you are planning to drive. We would very much like to have you spend one day here at Argonne on your way to Rochester. Therefore, we have set up the following itinerary:

Sunday, June 10 Arrive at Hinsdale.

Monday, June 11 Examination at Argonne. I will pick Mr. up at 8:30 Monday morning.

Tuesday, June 12 Leave for Rochester, New York.

Wednesday, June 13 Arrive Rochester, New York. Mr. to check in Strong Memorial Hospital preferably between 10 a.m. and 2 p.m. Mrs. has reservations at and should check in before 6 p.m.

We will pay you:

(1) The equivalent of round trip coach air fare for two to cover traveling costs. This will be approximately $456.00.

(2) Motel bill at.

(3) Payment of $13 per day each to cover meals and incidentals while at Argonne.
(4) Mrs. will be allowed $13 per day for meals and incidentals during her stay at Rochester.

(5) Mr. , hospital bill plus $140.00 for participating in the study.

I would suggest that you consult with a Motor Club as to the best route to follow because of the flooded areas along the Mississippi. I am enclosing a map of Illinois and a map showing Argonne's location.

If I can be of any help or you have any questions please call me collect. My card is enclosed.

Sincerely yours,

(Mrs.) Betty C. Patten
Medical Assistant
Center for Human Radiobiology

dk

tencl:
7/22/47
Surgery Log

M. Z., 118. Die...
Fed. 9-7
Surgery - 2950
H.22.407 -
36 yrs. Male
U 142240 record #
Chondrosarcoma of femur
7/14 biopsy  7/21 amp.
from
still living 7/17/68
At phn.

Tumor registry
Dr.

Male age 36. Injured to left hip and left knee 1 year earlier.

Non-Mid-Tissue amputation. Soft reddish granular area resembling cancellous bone lateraled femoral condyle. A soft mucoid material can be expressed. Tumor process midius 2.5 x 3 cm and adherent and extends up proximal shaft 8 cm.

Micro.


Bone replaced by tumor cells. Marrow infil.

Tumor cells.

Chondrosarcoma.

J. W. Hamlin.

SP 1801

30g of fragment of soft tissue + cancellous bone. - same micro as 1863.

Path. Serve.

8005790.
March 7, 1973

Dear Doctor,

We are trying to locate a patient of yours by the name of [Name], in order to do a follow-up study on treatment he received for a sarcoma in July, 1947.

We are especially interested in cases of this sort, and his is of particular interest since he has this unusual malignant tumor and has shown such a long survival time.

If he is able and willing we would like him to participate in a metabolism study at Strong Memorial Hospital in Rochester, New York for about ten days. Please assure him it would only be for observation and collection of excreta.

We will take care of his transportation and hospital costs, and he will receive about $140.00 participation reimbursement for cooperating in this study. If it is necessary for him to have someone accompany him, we will take care of the transportation and lodging of that individual and allow them $13.00 a day for meals and other incidental expenses.

If Mr. [Name] is unable to come at this time, please advise us of his condition and convey to him our interest.

Faithfully yours,

Austin M. Brues, M.D.
Medical Director
Center for Human Radiobiology