UNITED STATES ATOMIC ENERGY COMMISSION

RMO-679

RECONNAISSANCE OF CERTAIN URANIUM DEPOSITS IN ARIZONA

By
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Division of Raw Materials
Exploration Branch

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ABSTRACT

Fourteen uranium-bearing mineral deposits in Arizona were investigated briefly. Three additional deposits received more extensive study. The deposits show a considerable range in geologic character but four general types can be recognized:

1. Vein deposits with associated base and precious metals,
2. Vein deposits in granite with minor metallic metals,
3. Deposits in sedimentary rocks near intrusive contacts,
4. Deposits within broad shear zones in volcanic rocks.

Several of the uranium-bearing deposits are localized in a comparatively limited area in Santa Cruz County and southern Pima County.

INTRODUCTION

During the summer of 1950 field investigations of a number of uranium-bearing deposits were made in Arizona. This work grew from an attempt in 1949 to organize and evaluate all possible information about uranium mineral occurrences in the State 1. In the 1949 report two possible approaches to the discovery of uranium ores were considered: first, geologic examination of areas from which radioactive material has been submitted; second, geologic and radiometric reconnaissance of areas which, from the standpoint of general geology, appear to provide favorable environments for uranium mineral concentrations.

During the summer of 1950 field work followed the first of these approaches. A list of some 80 localities in Arizona from which uranium-bearing samples had been submitted to the U. S. Atomic Energy Commission, the U. S. Bureau of Mines, and the U. S. Geological Survey was compiled. From this list, 36 localities were selected for field examination. Five additional occurrences of interest were added during the summer, making a total of 41, of which 17 were examined.

Since the investigation was essentially of reconnaissance nature, no detailed work on individual deposits was planned. For this reason only a single day was spent in examination of most prospects. However, it became advisable to give somewhat more attention to three properties. Hence approximately three weeks were spent in preparation of a radiometric survey of the Annie Laurie claim, Santa Cruz County. This work was undertaken in order to provide a guide for exploration and sampling done there by American Smelting and Refining Company. Several days were spent at the Papago Chief mine, Pima County, and in the examination of the Red Bluff prospect, Gila County.

Reconnaissance geologic reports are in the Commission's files for all 17 localities visited. Since these reports embody the details of each examination, those data are not repeated in the present report. Rather, an effort is made here to assemble and integrate the information.


SELECTION OF DEPOSITS FOR EXAMINATION

In planning the field work an effort was made to focus first attention on what appeared to be the most significant samples. As a guide toward this objective, three criteria were applied:

1. Samples that were reported to contain more than 0.10% \( U_3O_8 \) were chosen.

2. Samples which, from the mineralogic information available, appeared to be of pegmatitic origin were eliminated.

3. Areas within the Colorado Plateau were not examined; hence localities in Apache, Coconino, and Navajo Counties were not visited.

Table 1 lists the properties which were visited. Table 3 (in Appendix) lists properties which furnished samples containing more than 0.1% \( U_3O_8 \) but were not visited for one reason or another.
### Table I

List of Localities Visited

<table>
<thead>
<tr>
<th>Name of Claim or Mine</th>
<th>Location</th>
<th>Owner</th>
<th>Date of Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cochise County</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gila County</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Red Bluff claims</td>
<td>Sec. 31, T5N, R14E Young Route, Globe, Ariz.</td>
<td>Ethel S. Larsen.</td>
<td>August 1</td>
</tr>
<tr>
<td><strong>Graham County</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mohave County</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Big Ledge claims</td>
<td>Cottonwood Mountains</td>
<td>Bert Gaylord. Box 204</td>
<td>July 24</td>
</tr>
<tr>
<td><strong>Pima County</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Lena claims</td>
<td>Sec. 7 T18S, R11E Tucson, Ariz.</td>
<td>Manuel Obregon. S15 S. Park Avenue</td>
<td>June 3</td>
</tr>
<tr>
<td>9. Papago Chief mine</td>
<td>Sec. 21, T20S, R7E</td>
<td>Arthur Kistler.</td>
<td>June 4</td>
</tr>
</tbody>
</table>

Tucson, Ariz.
<table>
<thead>
<tr>
<th>Claim</th>
<th>Section</th>
<th>Township</th>
<th>Range</th>
<th>Owner</th>
<th>Date</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glen claims</td>
<td>Sec. 30, T17S, R11E</td>
<td>Albert Ybarra</td>
<td>September 23</td>
<td>Fima County Court House, Tucson, Ariz.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black Dike claims</td>
<td>Sec. 23, T17S, R10E</td>
<td>Albert Ybarra</td>
<td>September 23</td>
<td>Fima County Court House, Tucson, Ariz.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iris claims</td>
<td>Sec. 26, T21S, R11E</td>
<td>Elmer Fernstrom</td>
<td>July 1</td>
<td>648 W. Oro St, Tucson, Ariz.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>St. Joe claims</td>
<td>9 mi. by road SW, not known; sample August 21 submitted by Arivaca</td>
<td>Not known; sample August 21 submitted by Arthur Eister, 2125 N. Treat, Tucson, Ariz.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kate No. 3 claim</td>
<td>Sec. 10, T4S, R13E</td>
<td>Leo Wall</td>
<td>June 23</td>
<td>Box 144, Ray, Ariz.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not known</td>
<td>Sec. 3, T24S, R12E</td>
<td>Not known; sample June 28 submitted by Elmer H. Spelbrink, 5or 12F3, Nogales, Ariz.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hillside mine</td>
<td>Sec. 21, T15N, R9W</td>
<td>Sample submitted by</td>
<td>July 27</td>
<td>Charles H. Dunning, State Dept. of Natural Resources, Phoenix, Ariz.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
A consideration of the localities examined suggests that the deposits may be classified into several general geologic types. Due to the reconnaissance nature of the work, and the limited amount of information in certain places, conclusions about the geology are of course preliminary; nevertheless, certain generalizations appear valid.

The deposits are grouped below according to geologic similarities. A description of each type follows later.

**Vein Types**

a. Base and precious metals deposits:

1. Hillside mine
2. Papago Chief mine
3. Jim Kane mine
4. Iris mine
5. Red Hills claims
6. St. Joe claim
7. "Spelbrink" claim

b. Deposits in granite with minor metallic minerals:

1. Big Ledge claims
2. Glen claims
3. Kate claims
4. Lena claims
5. "R. F. Howard" claim

**Other Types**

a. Deposits in sedimentary rocks near intrusive contacts:

1. Red Bluff claims
2. Valley View claims
3. Black Dike claims

b. Deposits within broad shear zones in volcanic rocks:

1. Annie Laurie claims
2. Golondrina claims
Base and precious metal vein deposits.

These are mesothermal deposits, carrying mixed sulphide ores with values in copper, lead, and (rarely) zinc, and commonly with trace amounts of gold and silver. Only one deposit, the Hillside, is worked at present.

Host rocks at five of the seven deposits in this group are volcanics. Commonly the rock is a felsic flow called, for field purposes, "rhyolite". The exceptions to this general rule are the Hillside mine in schist 4 and the Jim Kane mine in pre-Cambrian gneiss complex 5. Structural relations between vein and wall rock are clear in only a few places. At the Hillside and the Papago Chief mines, fissure filling appears to have been the primary method of vein emplacement. The gangue material is largely quartz with minor calcite and chlorite. Mineralization at the Jim Kane, St. Joe, and Iris deposits has followed tabular shear zones, and the gangue material is primarily fault gouge.

The primary uranium mineral in these vein deposits is presumed to be pitchblende. Unfortunately, present observations are limited largely to the near-surface zone of oxidation, and here the known uranium minerals are of secondary origin. Only in the Hillside, Jim Kane, and Papago Chief mines can samples be collected underground.


and only in the Hillside and Jim Kane has pitchblende been identified.
Sulphide ore from the S800 level of the Hillside mine yielded dark
uranium-bearing fluorite which contains gray inclusions that may be
pitchblende, according to tests in the Tucson laboratory of the U. S.
Bureau of Mines. Material collected from the N400 level of the Hill-
side mine and submitted to the Geological Survey's Washington labora-
tory was found to contain pitchblende. Small grains of a dark mineral
which has been identified as metamict uraninite have been separated
by the A. E. C. laboratory in New York from galena ore collected at
the Jim Kane mine.

Mineralogy of the secondary uranium minerals has received
only limited attention except at the Hillside mine. Here, study by
the Geological Survey resulted in the recognition of three new hydrous
uranium carbonates—Andersonite, Bayleyite, and Swartzite 6. Recent
work by the Survey reveals that other new hydrous uranium minerals
may be present as well 7. In other vein deposits the following sec-
ondary minerals have been identified:

- Kasolite - St. Joe and Iris claims,
- Uranophane - St. Joe claim,
- Metatorbernite - Papago Chief mine,
- Radioactive pyromorphite - "Spelbrink" claim.

In certain mines—notably the Jim Kane and Papago Chief—
recent uranium-bearing salts coat some of the mine workings. The

---

6. Axelrod, J. M., Grimaldi, F. S., Milton, C., and Murata, K. J.,
The Uranium Minerals from the Hillside Mine, Yavapai County,

7. Michael Fleisher, personal communication.
salts are usually identified by their radioactivity and yellow-green fluorescence. In the lower portion of the Papago Chief mine, the waterline is marked by fluorescent rings on mine walls and part submerged fill. Since the water level had been lowered by pumping a few months prior to examination, it is apparent that deposition must occur rapidly.

In general, it appears that uranium is most closely associated with the copper minerals. For example, the Papago Chief, Iris, and St. Joe deposits are primarily copper prospects with small (but possibly economically significant) amounts of gold and silver. In the Jim Kane mine and "Spelbrink" claim, however, copper minerals are mainly lacking and the ores are dominantly those of lead. Uranium is closely associated with galena at the Jim Kane mine and with pyromorphite at the "Spelbrink" claim.

Vein deposits in granite with minor metallic minerals.

The five deposits of this type have two characteristics which distinguish them from the veins described above. Otherwise, the deposits have little in common. The distinguishing characteristics are:

1. Minerals containing base and precious metals are sparse.
2. The host rock is granite.

The Big Ledge deposit consists of red jasper breccia which is marginal, on the hanging wall, to a wide and persistent silicified zone in granite. The red jasper cements fragments of gray quartz which is cut by veinlets of white quartz. Minor pyrite and galena are present.
Only the red jasper is radioactive and it contains up to 0.15% U₃O₅.
Samples of the jasper studied in laboratories of the Atomic Energy Commission and the U. S. Bureau of Mines do not contain any recognizable uranium minerals.

The radioactive zone of the Glen claim, like the Big Ledge deposit, is marginal to a quartz-jasper breccia zone. The radioactive zone consists of weathered granite and gangue material containing iron oxides and scattered pyrite. One sample of this material assayed 0.008% U₃O₅.

On the Lena claim, a narrow fracture in granite is filled by clay gouge and red iron oxides. Minor pyrite and galena are found within the gouge and within the granite two inches on either side of the fracture. Pitchblende has been identified in samples submitted to the Atomic Energy Commission laboratory, and kasolite has been identified by the laboratory of the U. S. Bureau of Mines. One chip channel sample 4.5 feet long across the radioactive zone assayed 0.01% U₃O₅.
On a claim called to the writer's attention by R. F. Howard, abnormal radioactivity was detected in quartz-wolframite veins in granite. Metatorbernite flakes are scattered along the plane of a minor fault in the wall rock. In addition, flakes of metatorbernite are found on freshly broken surfaces of the granite.

Deposits in sedimentary rocks near intrusive contacts.

As elsewhere, uranium-bearing deposits of this type are not common in Arizona. Reconnaissance of most contact deposits, especially replacements of limestone, suggests that their general radioactivity is relatively low. However, three of the deposits examined in Arizona are believed to belong in this class. They share few characteristics in common.

On the Red Bluff claims, Gila County, a radioactive zone is in siltstone of the Gripping Springs formation which here is nearly flat-lying. Stratigraphic control is significant, for most of the radioactive material is found within a preferred bed some 20 or 30 feet thick. Preliminary observations suggest that radioactivity in the siltstone decreases to the east and to the west away from a steeply dipping diabase dike, which has been emplaced along a fault. The diabase itself is only normally radioactive, and it may be questioned whether the diabase was the source of mineralizing solutions or was emplaced along a fault which earlier had provided a conduit for solutions. Preliminary mineralogic study has revealed no primary uranium mineral. The radioactivity originates in uranophane, metatorbernite and other secondary minerals which not only coat fractures but also
are intimately distributed through the siltstone. Picked specimens of siltstone submitted to the Bureau of Mines Tucson Laboratory analyzed more than 1% $\text{U}_3\text{O}_8$.

Geologic relationships at the Black Dike prospect are obscure because the only material available for study came from the dump of a vertical shaft, now filled. The shaft must have been sunk as a speculative venture, for no mineral concentration can be seen at the surface; in fact, the surface is largely covered by alluvium. Granite forms the bulk of the dump. The radioactive material consists of mineralized greenstone which is cut by stringers of granite and veinlets of uraninite, greenstone making 10 to 15% of the dump.

On the Valley View claim, granite surrounds a small xenolith of radioactive rock which appears to be metamorphosed limestone or dolomite carrying pyrite, chalcopyrite, galena, and chlorite. No uranium minerals have been identified, although picked samples containing as much as 0.19% $\text{U}_3\text{O}_8$ have been collected for study.

Deposits in broad shear zones in volcanic rocks.

Two deposits of this type were examined, both within porphyritic rhyolitic flows.

The Annie Laurie deposit is in broadly sheared and strongly silicified rhyolite. The rock is resistant to weathering, as evidenced by the fact that pitchblende occurs within five feet of the surface. The pitchblende occurs primarily within fragments of the country rock, which is cemented by calcite and mineralized by fluorite, galena, sphalerite, and chalcopyrite. The sheared silicified rhyolite extends
over considerable area, but exploration by American Smelting and Refining Company indicates that the metallized, radioactive part is narrowly limited in extent 8.

At the Golondrina claim secondary lead and copper minerals are distributed over a wide area on fracture surfaces in a sheared zone in volcanic flow rock. The only uranium-bearing mineral identified at present is powdery yellow pyromorphite. Samples of this material carry more than 0.5% $U_3O_8$.

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DEPOSITS IN SANTA CRUZ COUNTY AND SOUTHERN PIMA COUNTY

Of the deposits described in this report, a considerable number are within small portions of Santa Cruz County and Southern Pima County. Attention is called here to this apparent localization of uranium deposition.

The deposits concerned are located on the index map, Plate 2. Seven of these were examined and are described in the body of the present report. The now abandoned Happy Jack mine in the Patagonia area is also included in Plate 2 because pitchblende is reported as having been found here. The eight deposits are:

1. Annie Laurie claims
2. Black Dike claims
3. Glen claims
4. Lena claims
5. Natalia claims
6. Papago Chief mine
7. "Spelbrink" claim
8. Happy Jack mine

In addition to these eight known occurrences of uranium, uranium-bearing samples have been received from several other localities listed in Table 2 that are thought to be within this area. Unfortunately, the exact location of these samples is not known.


### Table 2
Deposits in Santa Cruz County and Southern Pima County

<table>
<thead>
<tr>
<th>Source</th>
<th>Location</th>
<th>Highest Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>John H. Bright, Jr.</td>
<td>Dry Springs, Ruby mining district</td>
<td>0.06% U₃O₈</td>
</tr>
<tr>
<td>3914 So. United States Ave.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tucson, Arizona</td>
<td></td>
<td></td>
</tr>
<tr>
<td>John H. Bright, Jr.</td>
<td>West side of Frigita Peak, Oro</td>
<td>0.28% U₃O₈</td>
</tr>
<tr>
<td>3914 So. United States Ave.</td>
<td>Blaco mining district</td>
<td></td>
</tr>
<tr>
<td>Tucson, Arizona</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Robert Fisher</td>
<td>Sierrita mountains</td>
<td>0.08% Uₑ</td>
</tr>
<tr>
<td>549 North 6 Ave.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tucson, Arizona</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L. D. Poor</td>
<td>Old Gold No. 1 claim, Annie</td>
<td>0.25% U₃O₈</td>
</tr>
<tr>
<td>Arivaca, Arizona</td>
<td>Laurie claim reported to be</td>
<td></td>
</tr>
<tr>
<td></td>
<td>south of</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Banner mine, Papago mining</td>
<td></td>
</tr>
<tr>
<td></td>
<td>district</td>
<td></td>
</tr>
<tr>
<td>A. T. Starlings</td>
<td></td>
<td>0.04% U₃O₈</td>
</tr>
<tr>
<td>Tucson, Arizona</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**General geology.**

Most of the deposits for which geologic information is available are enclosed within the series of volcanic rocks that are described by the geologic map of Arizona (1924) as "older volcanic rocks" of Tertiary and Cretaceous age. However, the Lena, Glen, and Black Dike deposits are within and on the edge of the mass of granite that forms the core of the Sierrita Mountains. The Happy Jack deposit is within Mesozoic granite. The associated base metals include primarily copper and lead.

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Conclusions.

An appraisal of the geologic significance of these uranium occurrences is premature at the present stage of investigation, but two facts already appear relevant:

1. Uranium occurs in trace amounts in a number of mineral deposits located within a relatively limited area.

2. Uranium appears to have been deposited in rocks of two general ages: Mesozoic (probably Cretaceous) and Tertiary. It is not known whether more than one period of mineralization is represented.
## APPENDIX

### Table 3

Samples containing more than 0.1% U₃O₈ from localities mostly not visited

#### Arizona - General

(County not designated)

<table>
<thead>
<tr>
<th>Originator</th>
<th>Highest analysis</th>
<th>Reported by</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fred W. Carlson</td>
<td>0.13% U₃O₈</td>
<td>USBM, Tucson</td>
<td>Letter to Mr. Carlson was returned by P.O. &quot;present address unknown.&quot;</td>
</tr>
<tr>
<td>132 Chestnut Ave.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long Beach, Calif.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Charles H. Dunning</td>
<td>3.32% U₃O₈</td>
<td>USBM, Tucson</td>
<td>Samples originated at several localities in the Colorado Plateau.</td>
</tr>
<tr>
<td>Dept. of Mineral Reserves</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phoenix, Ariz.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. F. Stewart</td>
<td>0.89% U₃O₈</td>
<td>USBM, Rolla</td>
<td>Sample believed to originate in the Colorado Plateau.</td>
</tr>
<tr>
<td>P. O. Box 870</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Joplin, Mo.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Maricopa County

<table>
<thead>
<tr>
<th>Originator</th>
<th>Highest analysis</th>
<th>Reported by</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>J. E. Busch</td>
<td>0.73% U₃O₈</td>
<td>USBM, Tucson</td>
<td>Sample originated at Red Bluff claim which was visited.</td>
</tr>
<tr>
<td>30 East 6 Street</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tempe, Ariz.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. F. George</td>
<td>0.22% U₃O₈</td>
<td>USBM, Tucson</td>
<td>Micro. exam. by USEM shows quartz and microcline, apparently pegmatitic.</td>
</tr>
<tr>
<td>919 Kallister Ave.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tempe, Ariz.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>John Herr</td>
<td>0.26% U₃O₈</td>
<td>USBM, Tucson</td>
<td>According to Mr. Herr, the source of this sample is unknown.</td>
</tr>
<tr>
<td>Wickenburg Ore Mkt.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wickenburg, Ariz.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roland D. Ptak</td>
<td>0.10% U₃O₈</td>
<td>USAEC, New York</td>
<td>Sample originated in the Colorado Plateau; locality examined by</td>
</tr>
<tr>
<td>738 E. Myrtle Ave.</td>
<td></td>
<td></td>
<td>R. Ninninger.</td>
</tr>
<tr>
<td>Phoenix, Ariz.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Mohave County

J. A. Carrara, Sr.
Box 1005
Kingman, Ariz.

L. W. Downs
General Delivery
Kingman, Ariz.

H. Thompson
115 South Third St.
Las Vegas, Nev., and
R. S. Schnure
231 N. Seventh St.
Las Vegas, Nev.

0.13% U$_3$O$_8$

USBM, Tucson

Sample from Big
Ledge claim, which
was examined.

0.56% U$_3$O$_8$

Radioactive mineral
is allanite which
suggests pegmatitic
origin.

0.30% U$_3$

Sample consists of
pegmatitic granite
containing "a radio-
active iron titanate
(ilmenite?)"

Pima County

L. E. Elgart
Route 2, Box 870
Tucson, Ariz.

0.23% U$_3$O$_8$

USBM, Tucson

Sample contains
quartz, microcline,
and muscovite and
appears to be
pegmatitic.

R. Y. Vanover
Route 2, Box 905
Tucson, Ariz.

0.27% U$_3$

USBM, Tucson

Sample from locality
which furnished
sample submitted by
L. E. Elgart, above.

F. L. P. Gonia
3236 Harrison St.
Chicago, Ill.

0.22% U$_3$

USGS, Washington

Sample from Kids
Sample pegmatite near
Ajo, Ariz.

Pinal County

John A. Rose
511 Cherokee
Tucson, Ariz.

0.42% U$_3$O$_8$

USBM, Tucson

After submitting the
sample, Mr. Rose
learned that it had
been salted with
carnotite.

W. W. Simon

0.14% U$_3$O$_8$

USAEC, New York
USBM, Tucson
USGS, Washington
(Lee Wall)

Samples from the
Kate claim, which
was examined.
Santa Cruz County

John A. Richards
Mammoth-St. Anthony Mining & Developing Co.
Tiger, Ariz.

0.13% $\text{U}_3\text{O}_8$

No reply from Mr. Richards in response to a request for further information.

John H. Bright, Jr.
3914 S. United States Avenue
Tucson, Ariz.

0.28% $\text{U}_3\text{O}_8$

Not examined, at suggestion of Mr. Bright, holder of the Annie Laurie claim.

Yavapai County

David Fulton
Box 1268
Jerome, Ariz.

0.46% $\text{U}_3\text{O}_8$

Radioactivity in this sample is due to carnottite; presumed to have originated in the Colorado Plateau.

Yuma County

George M. Robbins
352 Madison Ave.
Yuma, Ariz.

0.29% $\text{U}_3\text{O}_8$

Material appears to be pegmatitic.