Topical Index and Bibliography of U.S. Geological Survey Trace Elements and Related Reports

By Diane Curtis and Shirley S. Houser

Trace Elements Investigations Report 301

UNITED STATES DEPARTMENT OF THE INTERIOR GEOLOGICAL SURVEY
UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

TOPICAL INDEX AND BIBLIOGRAPHY

OF U. S. GEOLOGICAL SURVEY

TRACE ELEMENTS AND RELATED REPORTS*

Compiled by

Diane Curtis and Shirley S. Houser

December 1952

Trace Elements Investigations Report 301

This preliminary report is distributed without editorial and technical review for conformity with official standards and nomenclature. It is not for public inspection or quotation.

*This report concerns work done chiefly on behalf of the Division of Raw Materials of the U. S. Atomic Energy Commission.

When separated from Part 1, handle Part 2 as UNCLASSIFIED.

OFFICIAL USE ONLY
Distribution (Series A)  

<table>
<thead>
<tr>
<th>Organization</th>
<th>No. of copies</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Cyanamid Company, Winchester</td>
<td>1</td>
</tr>
<tr>
<td>Argonne National Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>Atomic Energy Commission, Washington</td>
<td>1</td>
</tr>
<tr>
<td>Battelle Memorial Institute, Columbus</td>
<td>1</td>
</tr>
<tr>
<td>Carbide and Carbon Chemicals Company, Y-12 Area</td>
<td>1</td>
</tr>
<tr>
<td>Division of Raw Materials, Grants</td>
<td>1</td>
</tr>
<tr>
<td>Division of Raw Materials, Denver</td>
<td>1</td>
</tr>
<tr>
<td>Division of Raw Materials, Hot Springs</td>
<td>1</td>
</tr>
<tr>
<td>Division of Raw Materials, New York</td>
<td>6</td>
</tr>
<tr>
<td>Division of Raw Materials, Salt Lake City</td>
<td>1</td>
</tr>
<tr>
<td>Division of Raw Materials, Richfield</td>
<td>1</td>
</tr>
<tr>
<td>Division of Raw Materials, Butte</td>
<td>1</td>
</tr>
<tr>
<td>Division of Raw Materials, Washington</td>
<td>3</td>
</tr>
<tr>
<td>Division of Research, Washington</td>
<td>1</td>
</tr>
<tr>
<td>Dow Chemical Company, Pittsburgh</td>
<td>1</td>
</tr>
<tr>
<td>Exploration Division, Grand Junction Operations Office</td>
<td>2</td>
</tr>
<tr>
<td>Grand Junction Operations Office</td>
<td>6</td>
</tr>
<tr>
<td>Technical Information Service, Oak Ridge</td>
<td>6</td>
</tr>
<tr>
<td>Tennessee Valley Authority, Wilson Dam</td>
<td>1</td>
</tr>
<tr>
<td>U.S. Bureau of Mines (M. H. Kline), Washington</td>
<td>1</td>
</tr>
<tr>
<td>G. W. Bain, Amherst</td>
<td>1</td>
</tr>
<tr>
<td>Clifford Frondel, Cambridge</td>
<td>1</td>
</tr>
<tr>
<td>J. W. Gruner, Minneapolis</td>
<td>1</td>
</tr>
<tr>
<td>P. F. Kerr, New York</td>
<td>1</td>
</tr>
<tr>
<td>V. K. LaMer, New York</td>
<td>1</td>
</tr>
<tr>
<td>P. B. Stockdale, Knoxville</td>
<td>1</td>
</tr>
<tr>
<td>T. F. Bates, State College, Pennsylvania</td>
<td>1</td>
</tr>
<tr>
<td>Farrington Daniels, Madison</td>
<td>1</td>
</tr>
<tr>
<td>H. S. Brown, Pasadena</td>
<td>1</td>
</tr>
<tr>
<td>U.S. Geological Survey:</td>
<td></td>
</tr>
<tr>
<td>Mineral Deposits Branch, Washington</td>
<td>30</td>
</tr>
<tr>
<td>Geochemistry and Petrology Branch, Washington</td>
<td>50</td>
</tr>
<tr>
<td>Geophysics Branch, Washington</td>
<td>3</td>
</tr>
<tr>
<td>Alaskan Geology Branch, Washington</td>
<td>10</td>
</tr>
<tr>
<td>Fuels Branch, Washington</td>
<td>8</td>
</tr>
<tr>
<td>V. E. McKelvey, Washington</td>
<td>1</td>
</tr>
<tr>
<td>L. R. Page, Denver</td>
<td>15</td>
</tr>
<tr>
<td>R. P. Fischer, Grand Junction</td>
<td>10</td>
</tr>
<tr>
<td>A. E. Weissenborn, Spokane</td>
<td>1</td>
</tr>
<tr>
<td>J. B. Cathcart, Plant City</td>
<td>1</td>
</tr>
<tr>
<td>Distribution (Series A)</td>
<td>No. of copies</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>U. S. Geological Survey:</td>
<td></td>
</tr>
<tr>
<td>J. F. Smith, Jr., Denver</td>
<td>3</td>
</tr>
<tr>
<td>N. M. Denson, Denver</td>
<td>4</td>
</tr>
<tr>
<td>R. W. Swanson, Spokane</td>
<td>1</td>
</tr>
<tr>
<td>L. S. Gardner, Albuquerque</td>
<td>1</td>
</tr>
<tr>
<td>A. H. Koschmann, Denver</td>
<td>1</td>
</tr>
<tr>
<td>E. H. Bailey, San Francisco</td>
<td>1</td>
</tr>
<tr>
<td>A. F. Shride, Tucson</td>
<td>1</td>
</tr>
<tr>
<td>W. P. Williams, Joplin</td>
<td>1</td>
</tr>
<tr>
<td>C. E. Dutton, Madison</td>
<td>1</td>
</tr>
<tr>
<td>R. A. Laurence, Knoxville</td>
<td>1</td>
</tr>
<tr>
<td>R. J. Roberts, Salt Lake City</td>
<td>1</td>
</tr>
<tr>
<td>R. S. Cannon, Washington</td>
<td>1</td>
</tr>
<tr>
<td>W. A. Fischer, Washington</td>
<td>1</td>
</tr>
<tr>
<td>J. D. Love, Laramie</td>
<td>1</td>
</tr>
<tr>
<td>Lincoln Dryden, Bryn Mawr</td>
<td>1</td>
</tr>
<tr>
<td>P. D. Snavely, Portland</td>
<td>1</td>
</tr>
<tr>
<td>Paul Richards, Billings</td>
<td>1</td>
</tr>
<tr>
<td>J. M. Schopf, Columbus</td>
<td>1</td>
</tr>
<tr>
<td>L. C. Conant, University, Alabama</td>
<td>1</td>
</tr>
<tr>
<td>J. D. Huddle, Lexington</td>
<td>1</td>
</tr>
<tr>
<td>C. B. Hunt, Denver</td>
<td>1</td>
</tr>
<tr>
<td>T. S. Lovering, Denver</td>
<td>1</td>
</tr>
<tr>
<td>E. B. Eckel, Denver</td>
<td>1</td>
</tr>
<tr>
<td>W. C. Overstreet, Shelby</td>
<td>1</td>
</tr>
<tr>
<td>F. A. McKeown, Washington</td>
<td>1</td>
</tr>
<tr>
<td>TEPCO, Washington</td>
<td>44</td>
</tr>
<tr>
<td>(Including master)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>250</td>
</tr>
</tbody>
</table>
CONTENTS

Introduction ......................................................... 6
Part 1 Topical index of U. S. Geological Survey Trace Elements and related reports ......................................................... 7
   I. Analytical methods for determining radioactive and associated elements ......................................................... 7
   II. Petrographic methods and instruments ......................................................... 12
   III. Mineralogy and petrology of radioactive minerals and rocks ......................................................... 14
   IV. Geochemistry of uranium, thorium, and other elements ......................................................... 18
   V. Geobotanical prospecting for uranium ......................................................... 21
   VI. Geophysical methods and instruments for prospecting for radioactive elements ......................................................... 22
   VII. Isotope geology ......................................................... 26
   VIII. Geology of uranium deposits .............................................................................. 27
      A. General ......................................................... 27
      B. Regional reconnaissance studies ......................................................... 29
      C. Igneous rocks, pegmatites, veins and related deposits ......................................................... 32
         1. Alaska ......................................................... 32
         2. Arizona ......................................................... 36
         3. California ......................................................... 37
         4. Colorado ......................................................... 38
         5. Montana ......................................................... 42
         6. New Mexico ......................................................... 43
         7. Utah ......................................................... 44
         8. Other states and general ......................................................... 46
      D. Sandstone-type deposits ......................................................... 49
         1. Arizona and New Mexico ......................................................... 49
         2. Colorado ......................................................... 54
         3. Utah ......................................................... 64
         4. Other states and general ......................................................... 68
      E. Black shale, lignite, and coal ......................................................... 70
         1. States east of the Mississippi River ......................................................... 70
         2. States west of the Mississippi River and elsewhere ......................................................... 72
      F. Phosphate rocks ......................................................... 75
         1. Southeastern phosphate field ......................................................... 75
         2. Northwestern phosphate field ......................................................... 80
         3. Other areas and general ......................................................... 83
      G. Uraniferous placers ......................................................... 84
      H. Miscellaneous sedimentary rocks ......................................................... 85
      I. Natural waters ......................................................... 86
      J. Radioactive natural gas and oil ......................................................... 87
   IX. Geology of thorium deposits .............................................................................. 88
      A. Igneous rocks, pegmatites, veins and related deposits ......................................................... 88
      B. Placers ......................................................... 89
   X. Geology of beryllium deposits .............................................................................. 91
   XI. Photogeologic maps .............................................................................. 93
      A. Arizona and New Mexico ......................................................... 93
      B. Utah and Colorado ......................................................... 94
   XII. Miscellaneous .............................................................................. 98
## Part 2. Bibliography of U. S. Geological Survey Trace Elements and related reports

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Reports released in open file.</td>
<td>99</td>
</tr>
<tr>
<td>A. Trace Elements Investigations Reports</td>
<td>99</td>
</tr>
<tr>
<td>B. Trace Elements Memorandum Reports</td>
<td>102</td>
</tr>
<tr>
<td>C. Miscellaneous</td>
<td>107</td>
</tr>
<tr>
<td>II. Trace Elements Reports issued by the U. S. Atomic Energy Commission,</td>
<td>108</td>
</tr>
<tr>
<td>Technical Information Service, Oak Ridge</td>
<td></td>
</tr>
<tr>
<td>A. Trace Elements Investigations Reports</td>
<td>110</td>
</tr>
<tr>
<td>B. Trace Elements Memorandum Reports</td>
<td>114</td>
</tr>
<tr>
<td>A. Trace Elements Investigations Reports</td>
<td>116</td>
</tr>
<tr>
<td>B. Trace Elements Memorandum Reports</td>
<td>118</td>
</tr>
<tr>
<td>IV. Circulars</td>
<td>119</td>
</tr>
<tr>
<td>V. Bulletins</td>
<td>121</td>
</tr>
<tr>
<td>VI. U. S. Geological Survey Oil and Gas Maps and Strategic Minerals</td>
<td>122</td>
</tr>
<tr>
<td>Investigations Preliminary Maps and Reports</td>
<td></td>
</tr>
<tr>
<td>VII. Publications in scientific journals</td>
<td>123</td>
</tr>
</tbody>
</table>
TOPICAL INDEX AND BIBLIOGRAPHY OF U. S. GEOLOGICAL SURVEY

TRACE ELEMENTS AND RELATED REPORTS

Compiled by

Diane Curtis and Shirley S. Houser

INTRODUCTION

Part 1, the topical index, lists the titles of reports prepared from 1941 to December 1952, in conjunction with the Geological Survey's program of investigations of uranium and other elements of related interest. It includes not only completed Trace Elements reports and those now in preparation, but also Survey publications, publications by Survey personnel in scientific journals, and open-file releases.

The titles are grouped topically under the headings listed in the table of contents. Entries in each category are listed alphabetically, by author, and numbered consecutively. Many of the reports have been cross-indexed, where appropriate.

The classification of the Trace Elements reports, insofar as it is known, has been indicated after the title of the report. The classification of some of the earlier Trace Elements reports is uncertain.

The Geological Survey does not have additional copies of most of the reports listed, but copies of some of the completed reports can be loaned on request to organizations officially cooperating with the Atomic Energy Commission.

Many Trace Elements reports have been made available to the public, either by open-file release, reproduction by Technical Information Service, Oak Ridge (referred to as TIS), by publication as a Geological Survey circular or bulletin or by publication in a scientific journal. This information is given, following the title of the report. If the abstract of a Trace Elements report has been published in Nuclear Science Abstracts, it is noted by the initials NSA following the title of the report.

Part 2 is a reference guide to information on the Trace Elements program that is available to the public. This information is categorized according to the type of publication or release.
PART 1. TOPICAL INDEX OF U. S. GEOLOGICAL SURVEY TRACE ELEMENTS AND RELATED REPORTS

(TEI - Trace Elements Investigations Report)
(TEM - Trace Elements Memorandum Report)

I. ANALYTICAL METHODS FOR DETERMINING RADIOACTIVE AND ASSOCIATED ELEMENTS


2. Butler, A. P., Jr., and Stead, F. W., Present investigations of radioactive raw materials by the Geological Survey and a recommended program for future work: TEI-36, Apr. 1947, (Secret)


7. Fahey, J. J., and Foster, M. D., The determination of small amounts of thorium in rocks and minerals: TEI-31D, 1946, (Confidential) TIS.


11. Fletcher, M. H., A study of critical factors in the "direct" fluorimetric determination of uranium: TEI-130, Oct. 1950, (Unclassified) TIS.

12. Fletcher, M. H., Addendum to a study of critical factors in the "direct" fluorimetric determination of uranium: TEI-130(Addendum), Apr. 1952, (Unclassified) NSA.

I. ANALYTICAL METHODS--Continued


16. Foster, M. D., Stevens, R. E., Grimaldi, F. S., Schlecht, W. G., and Fleischer, Michael, Methods for the complete decomposition of rock and ore samples to be analyzed for very small amounts of uranium and thorium: TEI-31A, 1946, (Confidential) TIS.

17. Foster, M. D., and Stevens, R. E., The determination of very small amounts of uranium in naturally occurring materials: TEI-31B, 1946, (Confidential) TIS.


I. ANALYTICAL METHODS—Continued


34. McKelvey, V. E., Page, L. R., Fischer, R. P., and Butler, A. P., Jr., Domestic resources of uranium and thorium—a summary based on investigations by the U. S., Geological Survey: TEI-150, June 1951, (Secret)


41. Rabbitt, J. C., Numerical summary of the analytical work of the Trace Elements Section, Geochemistry and Petrology Branch, for the fiscal year 1950: TEM-174, Oct. 1950, (Unclassified)

42. Rabbitt, J. C., The first annual report of the Trace Elements Section for the fiscal year 1949: TEI-101, Jan. 1950, (Unclassified)

43. Rabbitt, J. C., Summary of the research work of the Trace Elements Section, Geochemistry and Petrology Branch, for the period April 1, 1948--December 31, 1950: TEI-148, Jan. 1951, (Confidential)
44. Rabbitt, J. C., Summary of the research work, Trace Elements Section, Geochemistry and Petrology Branch, for the period April 1, 1948--December 31, 1950: TEI-148-A, June 1951. (Unclassified) TIS; NSA; Open file.

45. Rabbitt, J. C., Summary of the research work of the Trace Elements Section, Geochemistry and Petrology Branch, for the period January 1--March 31, 1951: TEI-151, May 1951. (Unclassified) TIS; NSA; Open file.

46. Rabbitt, J. C., Numerical summary of the analytical work of the Trace Elements Section, Geochemistry and Petrology Branch, for fiscal year 1951: TEM-250, Aug. 1951. (Unclassified)

47. Rabbitt, J. C., Summary of the research work of the Trace Elements Section, Geochemistry and Petrology Branch, for the period January 1--June 30, 1951: TEI-167, Oct. 1951. (Unclassified)

48. Rabbitt, J. C., Summary of the research work of the Trace Elements Section, Geochemistry and Petrology Branch, for the period July 1--September 30, 1951: TEI-182, Nov. 1951. (Unclassified)

49. Rabbitt, J. C., edited by, Summary of the research work of the Trace Elements Section, Geochemistry and Petrology Branch, for the period October 1--December 31, 1951: TEI-218, Feb. 1952. (Unclassified)


52. Rowe, J. J., Noninterference of arsenate ion in the volumetric determination of uranium using the Jones reductor: TEM-316, Oct. 1951. (Unclassified)

53. Schlecht, W. G., Control chart method applied to errors in radioactive counting: TEI-28, June 1946. (Unclassified) TIS.

54. Schlecht, W. G., Control chart method applied to radioactive counting: TEI-31G, 1946. (Confidential)


I. ANALYTICAL METHODS—Continued


60. Waring, C. L., and Worthing, Helen, A spectrographic method for determining trace amounts of lead in zircon and other minerals: TEI-216, Mar. 1952. (Unclassified) TIS.

61. Waring, C. L., and Mela, Henry, Jr., The determination of small amounts of rare earths in phosphate rocks: TEI-239, June 1952. (Unclassified) TIS.
II. PETROGRAPHIC METHODS AND INSTRUMENTS


6. Rabbitt, J. C., Summary of the research work of the Trace Elements Section, Geochemistry and Petrology Branch, for the period April 1, 1948--December 31, 1950: TEI-148, Jan. 1951. (Confidential)

7. Rabbitt, J. C., Summary of the research work, Trace Elements Section, Geochemistry and Petrology Branch, for the period April 1, 1948--December 31, 1950: TEI-148A, July 1951. (Unclassified) TIS; NSA; Open file.

8. Rabbitt, J. C., Summary of the research work of the Trace Elements Section, Geochemistry and Petrology Branch, for the period January 1--March 31, 1951: TEI-151, July 1951. (Unclassified) TIS; NSA; Open file.

9. Rabbitt, J. C., Summary of the research work of the Trace Elements Section, Geochemistry and Petrology Branch, for the period January 1--June 30, 1951: TEI-167, Oct. 1951. (Unclassified)

10. Rabbitt, J. C., Summary of the research work of the Trace Elements Section, Geochemistry and Petrology Branch, for the period July 1--September 30, 1951: TEI-182, Nov. 1951. (Unclassified) TIS; NSA.

11. Rabbitt, J. C., edited by, Summary of the research work of the Trace Elements Section, Geochemistry and Petrology Branch, for the period October 1--December 31, 1951: TEI-218, Feb. 1952. (Unclassified) TIS.


13. Stieff, L. R., Carnotite mineralogical research: TEM-57, Apr., 1948. (Confidential)


16. Stieff, L. R., A combined air scrubber and electrostatic precipitator for the concentration of carnotite: U. S. Geol. Survey Trace Elements report in preparation. Title subject to change.


III. MINERALOGY AND PETROLOGY OF RADIOACTIVE MINERALS AND ROCKS


11. Berman, Robert, Summary report on public samples received during 1951, Trace Elements Section, Washington Laboratory, Geochemistry and Petrology Branch: TEM-475, Aug., 1952 (Official Use Only)


15. Botinelly, Theodore, Summary report of the project "Mineralogy of the Chattanooga shales": TEM-474, Sept., 1952. (Official Use Only)

III. MINERALOGY AND PETROLOGY -- Continued

17. Butler, A. P., Jr., and Stead, F. W., Present investigations of radioactive raw materials by the Biological Survey and a recommended program for future work: TEI-36, Apr. 1947. (Secret)

18. Deul, Maurice, Summary report on public samples received 1949-50, Trace Elements Section Washington Laboratory, Geochemistry and Petrology Branch: TEM-124, June 1951. (Unclassified)

19. Deul, Maurice, Summary of cooperative investigations Dakota uraniumiferous lignites, TEM-342 in preparation, Title subject to change.


26. McKelvey, V. E., Page, L. R., Fischer, R. P., and Butler, A. P., Jr., Domestic resources of uranium and thorium - a summary based on investigations by the U.S. Geological Survey: TEI-150, June 1951. (Secret)


29. Phair, George, and Onoda, Kiyoko, Hydrothermal uranothorite in fluorite breccias from the Blue Jay mine, Jamestown, Boulder County, Colorado: TEI-144, Mar. 1951. (Unclassified) Open file; TIS; NSA; published.


31. Rabbitt, J. C., Summary of the research work of the Trace Elements Section, Geochemistry and Petrology Branch, for the period April 1, 1948--December 31, 1950: TEI-148, Jan. 1951. (Confidential)
III. MINERALOGY AND PETROLOGY --Continued

32. Rabbitt, J. C., Summary of the research work, Trace Elements Section, Geochemistry and Petrology Branch, for the period April 1, 1948--December 31, 1950: TEI-148A, July 1951, (Unclassified) TIS; NSA; Open file.

33. Rabbitt, J. C., Summary of the research work of the Trace Elements Section, Geochemistry and Petrology Branch, for the period January 1--March 31, 1951: TEI-151, July 1951, (Unclassified) TIS; NSA; Open file.

34. Rabbitt, J. C., Summary of the research work of the Trace Elements Section, Geochemistry and Petrology Branch, for the period January 1--June 30, 1951: TEI-167, Oct. 1951, (Unclassified)

35. Rabbitt, J. C., Summary of the research work of the Trace Elements Section, Geochemistry and Petrology Branch, for the period July 1--September 30, 1951: TEI-182, Nov. 1951, (Unclassified) TIS; NSA.

36. Rabbitt, J. C., edited by, Summary of the research work of the Trace Elements Section, Geochemistry and Petrology Branch, for the period October 1--December 31, 1951: TEI-218, Feb. 1952, (Unclassified) TIS.


42. Stieff, L. R., A progress report on some methods of study of the mineralogy of the Colorado Plateau carnitites: TEM-68, Sept. 1948, (Unclassified)

43. Stieff, L. R., Program of study for the carnitite ores of the Colorado Plateau: TEI-92, Mar. 1949, (Unclassified)

44. Stieff, L. R., Progress on carnitite mineralogy: TEM-90, Dec. 1949.

III. MINERALOGY AND PETROLOGY -- Continued

46. Stieff, L. R., and Stern, T. W., The identification and lead-uranium ratio ages of massive uraninite from the Shinarump conglomerate, Utah: TEM-317, Oct 1951, (Unclassified) Published,

47. Thompson, M. E., Distribution of uranium in rich phosphate beds of the Phosphoria formation: TEI-142, Feb, 1951, (Unclassified)


IV. GEOCHEMISTRY OF URANIUM, THORIUM, AND OTHER ELEMENTS


5. Fleischer, Michael, and Harder, J. O., Trace elements investigations; The occurrence of indium: TEI-10, Apr., 1946. (Unclassified)


7. Fleischer, Michael, and Harder, J. O., Trace elements investigations; The occurrence of columbium and tantalum: TEI-14, 1945. (Unclassified)

8. Fleischer, Michael, and Cameron, E. N., Geochemistry of beryllium: TEI-29, June 1946. (Unclassified)

9. Fleischer, Michael, and Harder, J. O., Geochemistry of indium: TEI-31H, 1946. (Confidential)

10. Fleischer, Michael, and Harder, J. O., Geochemistry of germanium: TEI-31H, 1946. (Confidential)

11. Fleischer, Michael, and Harder, J. O., Geochemistry of columbium and tantalum: TEI-31L, 1946. (Confidential)

12. Fleischer, Michael, and Cameron, E. N., Geochemistry of beryllium: TEI-31K, 1946. (Confidential)


IV. GEOCHEMISTRY --Continued


20. McKelvey, V. E., Page, L. R., Fischer, R. P., and Butler, A. P., Jr., Domestic resources of uranium and thorium - a summary based on investigations by the U. S. Geological Survey: TEI-150, June 1951, (Secret)


22. Phair, George, Radioactive Tertiary porphyries in the Central City district, Colorado, and their bearing upon pitchblende deposition: TEI-247, Aug. 1952, (Unclassified) TIS.

23. Phair, George, and Levine, Harry, Notes on the differential leaching of uranium, radium, and lead from pitchblende in H$_2$SO$_4$ solutions: TEI-262, Sept. 1952, (Unclassified) TIS.


25. Rabbitt, J. C., Summary of the research work of the Trace Elements Section, Geochemistry and Petrology Branch, for the period April 1, 1948--December 31, 1950: TEI-148, Jan. 1951. (Confidential)

26. Rabbitt, J. C., Summary of the research work of the Trace Elements Section, Geochemistry and Petrology Branch, for the period April 1, 1948--December 31, 1950: TEI-148A, July 1951, (Unclassified) TIS; NSA; Open file.

27. Rabbitt, J. C., Summary of the research work of the Trace Elements Section, Geochemistry and Petrology Branch, for the period January 1--March 31, 1951: TEI-151, July 1951, (Unclassified) TIS; NSA; Open file.

28. Rabbitt, J. C., Summary of the research work of the Trace Elements Section, Geochemistry and Petrology Branch, for the period January 1--June 30, 1951: TEI-167, Oct. 1951, (Unclassified)

29. Rabbitt, J. C., Summary of the research work of the Trace Elements Section, Geochemistry and Petrology Branch, for the period July 1--September 30, 1951: TEI-182, Nov. 1951, (Unclassified) TIS; NSA.

30. Rabbitt, J. C., edited by, Summary of the research work of the Trace Elements Section, Geochemistry and Petrology Branch, for the period October 1--December 31, 1951: TEI-218, Feb. 1952, (Unclassified) TIS.

IV. GEOCHEMISTRY--Continued


33. Staff, Fundamental research on geology and geochemistry of uranium proposed for fiscal year 1952: U. S. Geol. Survey administrative memorandum, June 1951,

34. Suess, H. E., An outline of a research program on the cosmic abundance of nuclear species: TEM-312, Sept. 1951, (Unclassified)

35. Thompson, M. E., Distribution of uranium in rich phosphate beds of the Phosphoria formation: TEI-142, Feb. 1951, (Unclassified)
V. GEOBOTANICAL PROSPECTING FOR URANIUM


11. McKelvey, V. E., Page, L. R., Fischer, R. P., and Butler, A. P., Jr., Domestic resources of uranium and thorium - a summary based on investigations by the U. S. Geological Survey: TEI-150, June 1951. (Secret)
VI. GEOPHYSICAL METHODS AND INSTRUMENTS FOR PROSPECTING
FOR RADIOACTIVE ELEMENTS


2. Bell, K. G., Semiquantitative determination of uranium and stratigraphic correlation by gamma-ray logging of drill holes in carnotite deposits: TEI-87, Aug., 1949. (Unclassified)

3. Bell, K. G., and Rogers, A. S., Experimental gamma-ray logging of drill holes in the Calamity area, Mesa County, Colorado: TEI-84, Feb., 1950. (Unclassified)


5. Bell, K. G., Progress in development of gamma-ray logging instruments and techniques: TEM-311, Oct., 1951. (Unclassified)


9. Cook, Kenneth L., and Moss, Calvin, K., Geophysical observations in parts of the Grants district, McKinley County, New Mexico: TEI-244, Aug., 1952. (Part 1-Unclassified; Part 2-Official Use Only) TIS.


VI. GEOPHYSICAL METHODS—Continued


22. McKelvey, V. E., Page, L. R., Fischer, R. P., and Butler, A. P., Jr., Domestic resources of uranium and thorium—a summary based on investigations by the U.S. Geological Survey: TEI-150, June 1951. (Secret)


30. Phoenix, D. A., Preliminary report on correlation between the gamma-ray logs and permeability of the ore-bearing sandstone in the Morrison formation, Calamity Mesa, Mesa County, Colorado: TEM-270, Oct. 1951. (Unclassified)
VI. GEOPHYSICAL METHODS--Continued


34. Staff, Extent of investigations by the Geological Survey of various types of materials suggested by Mr. Wallace E. Pratt, consultant to the Atomic Energy Commission: TEM-78, May 1949, (Confidential)

35. Staff, Progress on airborne radiation detection: TEM-87, Dec., 29, 1949, (Unclassified)


37. Staff, Progress on carbon radiation detection: TEM-88, Dec., 1949, (Unclassified)


40. Stead, F. W., Investigation of gamma-ray well logs: TEM-52, Feb., 1948, (Confidential)


42. Stead, F. W., Evaluation of ratemeter type 1011: TEM-84, Sept. 1949, (Unclassified)

43. Stead, F. W., Progress on detection of radioactivity by airborne equipment: TEI-83, Sept., 1949, (Official Use Only)


VI. GEOPHYSICAL METHODS—Continued

47. Stead, F. W., Airborne radioactivity survey in the vicinity of Grants, McKinley, and Valencia Counties, New Mexico: TEM-161, July 1951. (Unclassified)


49. Stead, F. W., Progress in airborne radioactivity surveying: TEM-314, Apr., 1952. (Official Use Only)


VII. ISOTOPE GEOLOGY

1. Brown, Harrison, Ingraham, M. G., Larsen, E. S., Jr., Patterson, Claire, and Tilton, George, isotopic composition of lead and the ages of minerals in a pre-Cambrian granite (abs.): Geol. Soc. America, abstracts of November 1951 meeting.


9. Rabitt, J. C., edited by, Summary of the research work of the Trace Elements Section, Geochemistry and Petrology Branch, for the period October 1--December 31, 1951: TEI-218, Feb. 1952. (Unclassified) TIS.

10. Stieff, L. R., Use of isotopes in geological investigations: TEM-74, Mar. 1949. (Unclassified)


VIII. GEOLOGY OF URANIUM DEPOSITS

A. General


3. Hall, M. L., and Butler A. P., Jr., Compilation of data on the uranium and equivalent uranium content of samples analyzed by U. S. Geol. Survey during a program of sampling mine, mill, and smelter products: TEI-242, Aug. 1952. (Official Use Only)


8. McKelvey, V. E., Page, L. R., Fischer, R. P., and Butler, A. P., Jr., Domestic resources of uranium and thorium - a summary based on investigations by the U. S. Geological Survey: TEI-150, June 1951. (Secret)


13. Staff, Memorandum discussing some considerations of the production potential of vanadium and uranium ore in the Colorado Plateau and related mill capacity: TEM-37, Apr. 1947. (Secret)

14. Staff, Extent of investigations by the Geological Survey of various types of materials suggested by Mr. Wallace E. Pratt, consultant to the Atomic Energy Commission: TEM-78, May 1949, (Confidential)
VIII. GEOLOGY OF URANIUM DEPOSITS

A. General--Continued


18. Staff, Search for and geology of radioactive deposits, semiannual progress report June 1 to November 30, 1952. December 1952. (Confidential-Security Information)


VIII. GEOLOGY OF URANIUM DEPOSITS

B. Regional reconnaissance studies


VIII. GEOLOGY OF URANIUM DEPOSITS

B. Regional reconnaissance studies—Continued


17. Lovering, T. G., and others, Uranium deposits of New Mexico: TEI-174 in preparation. Title subject to change.


25. Nolan, T. B., Investigation of the rare-element content in mill and smelter products and in raw materials planned for fiscal year 1948: TEM-40, July 1948. (Confidential)


27. Nolan, T. B., Mill sampling program, memorandum to AEC (AEC-274/8): TEM-61, June 1948. (Confidential)


VIII. GEOLOGY OF URANIUM DEPOSITS

B. Regional reconnaissance studies--Continued


32. Staff, Colorado Front Range area, progress report: TEM-97, Jan., 1950. (Unclassified) TIS; open file; NSA.

33. Staff, Summary of Alaskan reconnaissance investigations in the 1949 field season and proposals for field season of 1950: TEM-91, Dec., 1949. (Unclassified)


VIII. GEOLOGY OF URANIUM DEPOSITS

C. Igneous rocks, pegmatites, veins, and related deposits

1. Alaska


VIII. GEOLOGY OF URANIUM DEPOSITS

C. 1. Igneous rocks, etc., in Alaska--Continued


VIII. GEOLOGY OF URANIUM DEPOSITS

C. 1. Igneous rocks, etc., in Alaska—Continued


35. West, W. S., Radioactivity investigations in the Darby Mountains, Seward Peninsula, Alaska: TEI-53, in preparation, Title subject to change.

36. West, W. S., and Benson, P. D., Radiometric reconnaissance on the Mountain View mining property and adjacent areas, Hyder district, southeastern Alaska: TEI-73, in preparation, Title subject to change.


VIII. GEOLOGY OF URANIUM DEPOSITS

C. 1. Igneous rocks, etc., in Alaska--Continued


VIII. GEOLOGY OF URANIUM DEPOSITS

C. Igneous rocks, pegmatites, veins, and related deposits

2. Arizona


5. Kaiser, E. P., Radioactivity at the Jim Kane mine, Mohave County, Arizona: TEM-216, Jan. 1951, (Unclassified)

VIII. GEOLOGY OF URANIUM DEPOSITS

C. Igneous rocks, pegmatites, veins, and related deposits

3. California


3. Hewett, D. F., Uranium occurrence at the Hoerner-Ross pegmatite, Cady Mountains, San Bernardino County, California: TEM-144, July 1950. (Unclassified)


8. Wyant, D. G., Live Oak Tank area, Joshua Tree National Monument, Riverside County, California: TEM-14, June 1949. (Official Use Only)

VIII. GEOLOGY OF URANIUM DEPOSITS

C. Igneous rocks, pegmatites, veins, and related deposits

4. Colorado


VIII. GEOLOGY OF URANIUM DEPOSITS

C. 4. Igneous rocks, etc., in Colorado—Continued


VIII. GEOLOGY OF URANIUM DEPOSITS

C. 4. Igneous rocks, etc., in Colorado--Continued


29. Phair, George, and Onoda, Kiyoko, Verification of uraninite in fluorite breccias from the Blue Jay mine, Jamestown, Colorado: TEM-173, Oct. 1950. (Official Use Only)

30. Phair, George, and Onoda, Kiyoko, Hydrothermal uranothorite in fluorite breccias from the Blue Jay mine, Jamestown, Boulder County, Colorado: TEI-144, Mar. 1951, (Unclassified). TIS; open file; NSA; published.


C. 4. Igneous rocks, etc., in Colorado—Continued


VIII. GEOLOGY OF URANIUM DEPOSITS

C. Igneous rocks, pegmatites, veins, and related deposits

5. Montana


8. Vhay, J. S., Reconnaissance examination for uranium at six mines and properties in Idaho and Montana: TEM-30, Nov. 1950. (Unclassified)
VIII. GEOLOGY OF URANIUM DEPOSITS

C. Igneous rocks, pegmatites, veins, and related deposits

6. New Mexico

1. Bauer, H. L., Jr., Radioactive ilmenite, Virginia claim, Hillsboro mining district, Sierra County, New Mexico: TEM-139, Oct. 1950. (Unclassified)


3. Bauer, H. L., Jr., Apache Trail uranium prospect, White Signal district, Grant County, New Mexico: TEM-121, June 1951. (Official Use Only)


5. Granger, H. C., and Bauer, H. L., Jr., Results of diamond drilling, Merry Widow claim, White Signal, Grant County, New Mexico: TEM-146, July 1950. (Unclassified). TIS: NSA.


7. Granger, H. C., and Bauer, H. L., Jr., A radiometric examination of the Tunnel Site No. 1 claim, Grant County, New Mexico: TEM-134, Dec. 1950. (Unclassified)


9. Granger, H. C., and Bauer, H. L., Jr., Uranium occurrences on the Blue Jay claim, White Signal district, Grant County, New Mexico: TEM-117, June 1951. (Part 1, Unclassified; Part 2, Official Use Only)


VIII. GEOLOGY OF URANIUM DEPOSITS

C. Igneous rocks, pegmatites, veins, and related deposits

7. Utah


2. Bauer, H. L., Jr., and Klinger, F. L., Monzonite in Dry Creek Canyon, Sevier Plateau, Sevier County, Utah: TEM-151, Oct. 1950. (Unclassified)


4. Granger, H. C., and Bauer, H. L., Jr., The Eureka and Happy Landing (Cooper-Sands) groups of claims, Uintah County, Utah—a preliminary report: TEM-32, May 1950. (Part 1, Unclassified; Part 2, Official Use Only)

5. Granger, H. C., and Bauer, H. L., Jr., Preliminary examination of uranium deposits near Marysvale, Piute County, Utah: TEM-33, Sept. 1950. (Part 1, Unclassified; Part 2, Official Use Only)


7. Osterwald, F. W., Preliminary notes on 1951-52 investigations of the Thomas Range fluorite district, Juab County, Utah: TEM-534, Nov. 1952. (Restricted, Security Information)

8. Staatz, M. H., Uranium prospect, Jan Group, Juab County, Utah: TEM-162, Sept. 1950. (Unclassified)


VIII. GEOLOGY OF URANIUM DEPOSITS

C. 7. Igneous rocks, etc., in Utah—Continued


15. Wilmarth, V. R., Preliminary report on carnotite at the Yellow Canary claims, Daggett County, Utah: TEM-313, Sept. 1951. (Official Use Only)


21. Wyant, D. G., Proposed exploration, Papsy's Hope No. 2 uranium prospect, Piute County, Utah: TEM-221, Jan. 1951. (Official Use Only)

22. Wyant, D. G., The East Slope No. 2 uranium prospect, Piute County, Utah: TEM-211, Jan. 1951. (Part 1.—Unclassified; Part 2.—Official Use Only)

VIII. GEOLOGY OF URANIUM DEPOSITS

C. Igneous rocks, pegmatites, veins, and related deposits

8. Other states and general


VIII. GEOLOGY OF URANIUM DEPOSITS

C. 8. Igneous rocks, etc., in other states and general--Continued


25. Stugard, Frederick, Jr., Nickel and cobalt prospect, Cobalt, Middlesex County, Connecticut: TEM-143, Nov. 1950. (Unclassified)


27. Thurston, R. H., Trites, A. F., Uranium, tin, and copper deposits at Majuba Hill, Pershing County, Nevada: TEI-171, in preparation. Title subject to change.


VIII. GEOLOGY OF URANIUM DEPOSITS

C. 8. Igneous rocks, etc., other states and general—Continued


35. Wyant, D. G., Majuba Hill mine, Pershing County, Nevada, preliminary report: TEM-2, Nov. 1948. (Restricted)


VIII. GEOLOGY OF URANIUM DEPOSITS

D. Sandstone-type deposits

1. Arizona and New Mexico


VIII. GEOLOGY OF URANIUM DEPOSITS

D. 1. Sandstone-type deposits in Arizona and New Mexico—Continued


VIII. GEOLOGY OF URANIUM DEPOSITS

D. 1. Sandstone-type deposits in Arizona and New Mexico—Continued


34. Staff, Memorandum discussing some considerations of the production potential of vanadium and uranium ore in the Colorado Plateau and related mill capacity: TEM-37, Apr. 1947, (Secret)


37. Stead, F. W., Airborne radioactivity survey in the vicinity of Grants, McKinley and Valencia Counties, New Mexico: TEM-161, July 1951, (Unclassified)

38. Stokes, W. L., Carnotite deposits in the Carrizo Mountains area, Navajo Indian Reservation, Apache County, Arizona, and San Juan County, New Mexico: Circular 111.

39. Strobell, J. D., Jr., Preliminary appraisal of the carnotite resources of the Carrizo Mountains area, San Juan County, New Mexico and Apache County, Arizona: TEM-300, May 1952, (Confidential-Security Information)

40. Strobell, J. D., Jr., Dinne Mesa NW, preliminary geologic map of part of the Carrizo Mountains area, northeastern Arizona: TEM-415, June 1952, (Unclassified)

41. Strobell, J. D., Jr., Dinne Mesa, SW, preliminary geologic map of part of the Carrizo Mountains area, northeastern Arizona: TEM-416, June 1952, (Unclassified)
VIII. GEOLOGY OF URANIUM DEPOSITS

D. 1. Sandstone-type deposits in Arizona and New Mexico—Continued

42. Strobell, J. D., Jr., Los Gigantes NW, preliminary geologic map of part of the Carrizo Mountains area, northeastern Arizona: TEM-417, June 1952. (Unclassified)

43. Strobell, J. D., Jr., Los Gigantes NE, preliminary geologic map of part of the Carrizo Mountains area, northeastern Arizona: TEM-418, June 1952. (Unclassified)

44. Strobell, J. D., Jr., Red Rock Valley NW, preliminary geologic map of part of the Carrizo Mountains area, northeastern Arizona: TEM-419, June 1952. (Unclassified)

45. Strobell, J. D., Jr., Red Rock Valley NE, preliminary geologic map of part of the Carrizo Mountains area, northeastern Arizona and northwestern New Mexico: TEM-420, June 1952. (Unclassified)

46. Strobell, J. D., Jr., Red Rock Valley SE, preliminary geologic map of part of the Carrizo Mountains area, northeastern Arizona and northwestern New Mexico: TEM-421, June 1952. (Unclassified)

47. Strobell, J. D., Jr., Red Rock Valley SW, preliminary geologic map of part of the Carrizo Mountains area, northeastern Arizona: TEM-422, Aug. 1952. (Unclassified)

48. Strobell, J. D., Jr., Dinne Mesa NE, preliminary geologic map of part of the Carrizo Mountains area, northeastern Arizona: TEM-423, Aug. 1952. (Unclassified)

49. Strobell, J. D., Jr., Dinne Mesa SE, preliminary geologic map of part of the Carrizo Mountains area, northeastern Arizona: TEM-424, Aug. 1952. (Unclassified)

50. Strobell, J. D., Jr., Pastora Peak NE, preliminary geologic map of part of the Carrizo Mountains area, northeastern Arizona and northwestern New Mexico: TEM-425, Aug. 1952. (Unclassified)

51. Strobell, J. D., Jr., Pastora Peak NW, preliminary geologic map of part of the Carrizo Mountains area, northeastern Arizona: TEM-426, Aug. 1952. (Unclassified)

52. Strobell, J. D., Jr., Pastora Peak SE, preliminary geologic map of part of the Carrizo Mountains area, northeastern Arizona and northwestern New Mexico: TEM-427, Aug. 1952. (Unclassified)

53. Strobell, J. D., Jr., Pastora Peak SW, preliminary geologic map of part of the Carrizo Mountains area, northeastern Arizona: TEM-428, Aug. 1952. (Unclassified)

54. Strobell, J. D., Jr., Los Gigantes SE, preliminary geologic map of part of the Carrizo Mountains area, northeastern Arizona: TEM-429, Aug. 1952. (Unclassified) NSA.

55. Strobell, J. D., Jr., Los Gigantes SW, preliminary geologic map of part of the Carrizo Mountains area, northeastern Arizona: TEM-430, Aug. 1952. (Unclassified)

VIII. GEOLOGY OF URANIUM DEPOSITS

D. 1. Sandstone-type deposits in Arizona and New Mexico--Continued


VIII. GEOLOGY OF URANIUM DEPOSITS

D. Sandstone-type deposits

2. Colorado


2. Bell, Henry, III, Carnotite resources of the Lower group of claims, San Miguel County, Colorado: TEM-114, Apr., 1950, (Official Use Only)


VIII. GEOLOGY OF URANIUM DEPOSITS

D. 2. Sandstone-type deposits in Colorado--Continued.


20. Brasher, G. K., and Jobin, D. A., Results of diamond-drill exploration and plans for additional drilling on Outlaw Mesa, Mesa County, Colorado: TEM-202, Apr., 1951. (Official Use Only)


23. Brasher, G. K., Preliminary report on diamond-drill exploration on Outlaw Mesa, Mesa County, Colorado: TEM-293, Jan., 1952. (Confidential)


VIII. GEOLOGY OF URANIUM DEPOSITS

D. 2. Sandstone-type deposits in Colorado--Continued


41. Finch, W. I., Preliminary report on diamond-drill exploration of part of Blue Mesa, Mesa County, Colorado: TEM-269, Aug. 1951. (Official Use Only)

42. Finch, W. I., Carnotite resources of part of Blue Mesa, Mesa County, Colorado: TEI-154, Feb. 1952. (Restricted-Security Information)

VIII. GEOLOGY OF URANIUM DEPOSITS

D. 2. Sandstone-type deposits in Colorado--Continued


56. Fischer, R. P., and Butler, A. P., Jr., Memorandum recommending physical exploration and geologic studies in the Colorado Plateau uranium region TEM-38, June 1947. (Secret)
VIII. GEOLOGY OF URANIUM DEPOSITS

D. 2. Sandstone-type deposits in Colorado--Continued


64. Hilpert, L. S., and Fischer, R. P., Problems relating to ore recently discovered on Outlaw Mesa: TEM-77, Apr. 1949. (Confidential)

65. Hilpert, L. S., Additional drilling on the Upper group and on the Ellison and Burro claims, San Miguel County, Colorado: TEM-82, July 1949. (Unclassified)


VIII. GEOLOGY OF URANIUM DEPOSITS

D. 2. Sandstone-type deposits in Colorado—Continued


74. McKay, E. J., Large scale geologic guides to carnitite deposits in the Uravan and Gateway districts, Montrose and Mesa Counties, Colorado: TEM-271, Sept. 1951, (Unclassified)

75. McKay, E. J., Geology of the carnitite-bearing sandstone in the Uravan and Gateway districts, Montrose and Mesa Counties, Colorado: TEM-302, in preparation, Title subject to change.

76. Meuschke, J. L., Aeromagnetic survey of Uravan mineral belt: TEM-359, in preparation, Title subject to change.


79. Rogers, A. S., Distribution of leached radioactive material in the Legin group area, San Miguel County, Colorado: TEM-171, Nov. 1950, (Unclassified) TIS.


82. Sample, R. D., and Albee, H. F., Claim map, Atkinson Creek quadrangle, Montrose County, Colorado: TEM-266, Aug. 1951, (Official Use Only)


84. Sample, R. D., and Albee, H. F., Claim map, Calamity mesa quadrangle, Mesa County, Colorado: TEM-207, Aug. 1951, (Official Use Only)

85. Sample, R. D., and Albee, H. F., Claim map, Davis Mesa quadrangle, Montrose County, Colorado: TEM-267, Aug. 1951, (Official Use Only)
VIII. GEOLOGY OF URANIUM DEPOSITS

D. 2. Sandstone-type deposits in Colorado--Continued

86. Sample, R. D., and Albee, H. F., Claim map, Pine Mountain quadrangle, Mesa County, Colorado: TEM-206, Aug. 1951, (Official Use Only)


95. Sample, R. D., and Albee, H. F., Claim map, Juanita Arch quadrangle, Mesa County, Colorado: TEM-348, in preparation. Title subject to change.


98. Sample, R. D., and Albee, H. F., Claim map, Rock Creek quadrangle, Montrose County, Colorado: TEM-349, in preparation. Title subject to change.


VIII. GEOLOGY OF URANIUM DEPOSITS

D. 2. Sandstone-type deposits in Colorado—Continued

101. Scott, J. B., Development drilling on the Contact No. 4 claim, San Miguel County, Colorado: TEM-455, in preparation. Title subject to change.


109. Staff, Memorandum discussing some considerations of the production potential of vanadium and uranium ore in the Colorado Plateau and related mill capacity: TEM-37, Apr. 1947. (Secret)

110. Staff, Carnotite deposits on government-owned claims Calamity Mesa, Mesa County, Colorado: TEM-79, May 1949. (Unclassified)


112. Stager, H. K., Results of diamond-drill exploration in 1949 and plans for additional drilling on Outlaw Mesa and vicinity, Mesa County, Colorado: TEM-103, Feb. 1950. (Official Use Only)

113. Stager, H. K., Carnotite resources of the Maverick group area, Mesa County, Colorado: TEI-117, June 1950. (Official Use Only)

VIII. GEOLOGY OF URANIUM DEPOSITS

D. 2. Sandstone-type deposits in Colorado—Continued

115. Stager, H. K., Carnotite resources of the Calamity group area, Mesa County, Colorado: TEM-146, July 1951. (Official Use Only)


123. Stewart, N. H., Carnotite Resources of the Moon Mesa and Horse Mesa area, Mesa County-Montrose County, Colorado: TEI-165, in preparation. Title subject to change.


127. Trace, R. D., Results of drilling on the Radium group and associated claims near Egnar, San Miguel County, Colorado: TEM-80, Mar. 1949. (Confidential)

VIII. GEOLOGY OF URANIUM DEPOSITS

D. 2. Sandstone-type deposits in Colorado--Continued

129. Trace, R. D., Carnotite resources in the Radium group area, San Miguel County, Colorado: TEI-113, Apr. 1950. (Official Use Only)

130. Trace, R. D., Preliminary reserve statement 1, Reserve Block 1, Club Mesa, Montrose County, Colorado: TEM-176, Sept. 1950. (Official Use Only)

131. Trace, R. D., Preliminary reserve statement 2, Reserve Blocks 3 and 4, Club Mesa, Montrose County, Colorado: TEM-177, Sept. 1950. (Official Use Only)

132. Trace, R. D., Preliminary reserve statement 3, Reserve Block 5 (east part), Club Mesa, Montrose County, Colorado: TEM-178, Sept. 1950. (Official Use Only)

133. Trace, R. D., Preliminary reserve statement 4, Reserve Block 5 (west part), Club Mesa, Montrose County, Colorado: TEM-179, Sept. 1950. (Official Use Only)

134. Trace, R. D., Preliminary reserve statement 6, Reserve Blocks 1, 2, and 3, Veta Mad and Veta Glad claims, Georgetown group, San Miguel County, Colorado: TEM-181, Sept. 1950. (Official Use Only)

135. Trace, R. D., Preliminary reserve statement 7, Reserve Blocks 5, 6, and 7, Georgetown claim, Georgetown group, San Miguel County, Colorado: TEM-182, Sept. 1950. (Official Use Only)

136. Trace, R. D., Preliminary reserve statement 8, Reserve Block 2, Club Mesa, Montrose County, Colorado: TEM-184, Oct. 1950. (Official Use Only)

137. Trace, R. D., Preliminary reserve statement 9, Reserve Block A., Outlaw Mesa, Mesa County, Colorado: TEM-185, Oct. 1950. (Official Use Only)


140. Wilmarth, V. R., and Smith, L. E., Results of diamond drilling and geologic investigation of the Shirley May (Gar) deposit, Park County, Colorado: TEI-277, Nov. 1952. (Official Use Only)


144. Withington, C. F., Carnotite resources of the Upper group area, San Miguel County, Colorado: TEI-145, July 1951. (Official Use Only)
VIII. GEOLOGY OF URANIUM DEPOSITS

D. Sandstone-type deposits

3. Utah

1. Alvord, D. C., Interim report on exploration in the Yellow Cat area, Grand County, Utah: TEM-352, Sept. 1952. (Restricted-Security Information)


7. Cannon, H. L., and Rove, L. C., Jr., Content and distribution of metallic elements in the carnotite deposits and sandstone beds of the Yellow Cat area, Grand County, Utah, and in other selected carnotite deposits of the Colorado Plateau area: U. S. Geol. Survey Trace Elements Memo­randum report in preparation. Title subject to change.


VIII. GEOLOGY OF URANIUM DEPOSITS

D. 3. Sandstone-type deposits in Utah—Continued


VIII. GEOLOGY OF URANIUM DEPOSITS

D. 3. Sandstone-type deposits in Utah—Continued


37. Shoemaker, E. M., Preliminary geologic map of part of the Sinbad Valley-Fischer Valley anticline, Colorado and Utah; structure map and sections of the Sinbad Valley-Fischer Valley anticline, Colorado and Utah: Open file.

38. Smith, J. F., Jr., Preliminary report on geologic studies in the Capitol Reef area, Wayne County, Utah: TEM-247, Nov. 1951. (Unclassified)


VIII. GEOLOGY OF URANIUM DEPOSITS

D. 3. Sandstone-type deposits in Utah--Continued

41. Staff, Memorandum discussing some considerations of the production potential of vanadium and uranium ore in the Colorado Plateau and related mill capacity: TEM-37, Apr., 1947, (Secret)

42. Stager, H. K., Plans for the Geological Survey's development drilling program, Colorado Plateau: TEM-332, Jan., 1952, (Official Use Only)


47. Trimble, D. E., Unclaimed mineralized area in the Shinarump conglomerate, northwest of Oljeto Trading Post, Utah: TEM-353, June 1952, (Official Use Only)


49. Wyant, D. G., Uranium-vanadium deposits at Shinarump Mesa and some adjacent areas, Temple Mountain district, Emery County, Utah: TEI-51, in preparation. Title subject to change.
VIII, GEOLOGY OF URANIUM DEPOSITS

D. Sandstone-type deposits

4. Other states and general


10. McKeown, F. A., Preliminary report of uranium deposits near Mauch Chunk, Pennsylvania; TEM-19, June 1949. (Restricted)


VIII. GEOLOGY OF URANIUM DEPOSITS

D. 4. Sandstone-type deposits, other states and general--Continued


VIII. GEOLOGY OF URANIUM DEPOSITS

E. Black shale, lignite, and coal

1. States east of the Mississippi River


2. Brown, Andrew, Experimental drilling in Chattanooga shale: TEM-63, July 1948. (Confidential)

3. Brown, Andrew, Experimental adit in the Chattanooga shale: TEI-93, Mar. 1949. (Confidential)


12. Hendricks, T. A., Shale of approximately 0.009 percent uranium content in eastern Tennessee with regard to tonnage, grade and some factors relative to mining: TEM-43, Aug. 1947. (Confidential)


15. Narten, P. F., Crawford, J. E., and Butler, A. P., Jr., Summary review of analytical data pertaining to the uranium content or radioactivity of domestic shales: TEM-240, Mar. 1951. (Confidential)
VIII. GEOLOGY OF URANIUM DEPOSITS

E. 1. Black shale, etc., states east of the Mississippi River—Continued


18. Robeck, R. C., and Brown, Andrew, Black shale investigations, Block 3, Tennessee: TEI-63, Mar. 1950. (Confidential)

19. Robeck, R. C., and Conant, L. C., Reconnaissance search in parts of Kentucky, Tennessee, Indiana, Virginia, and Ohio for areas where uraniumiferous black shale may be mined by stripping: TEI-64, May 1951. (Confidential)


21. Staff, Characteristics of radioactive carbonaceous and bituminous shales: TEI-78, Jan. 1950. (Confidential)


VIII. GEOLOGY OF URANIUM DEPOSITS

E. Black shale, lignite, and coal

2. States west of the Mississippi River, and elsewhere


VIII. GEOLOGY OF URANIUM DEPOSITS

E. 2. Black shale, etc., states west of the Mississippi River, and elsewhere—Continued


15. Hail, W. J., Jr., Gill, J. R., and Duncan, D. C., Radioactive carbonaceous shale and lignite deposits in the Goose Creek district, Cassia County, Idaho: TEM-272, in preparation. Title subject to change.


17. Love, J. D., Uranium content of middle Pennsylvanian black shales penetrated in wells in southeastern Wyoming: TEM-122, June 1951. (Unclassified)


19. Narten, P. F., Crawford, J. E., and Butler, A. P., Jr., Summary review of analytical data pertaining to the uranium content or radioactivity of domestic shales: TEM-240, Jan. 1951. (Confidential)

20. Read, C. B., Recent discoveries of radioactive carbonaceous shale, Sandoval County, New Mexico: TEM-278, Jan. 1952. (Official Use Only)


23. Staff, Results of radioactivity determinations on Green River oil shale: TEM-53A, Aug. 1948. (Confidential)

24. Staff, Characteristics of radioactive carbonaceous and bituminous shales: TEM-78, Jan. 1950. (Confidential)


E. 2. Black shale, etc., states west of the Mississippi River, and elsewhere.--Continued


30. Zeller, H. D., Results of core-drilling of uranium-bearing lignite deposits in Harding and Perkins Counties, South Dakota, and Bowman County, North Dakota: TEI-238, in preparation. Title subject to change.
VIII. GEOLOGY OF URANIUM DEPOSITS

F. Phosphate rocks

1. Southeastern phosphate field

1. Altschuler, Z., S., Jaffe, E., B., and Dwornik, E., The stratigraphy of the upper part of the Bone Valley formation and its relation to the leached zone: TEM-237, May 1951, (Official Use Only)


7. Cathcart, J. B., Distribution of uranium in the Florida phosphate field: TEI-85, Aug., 1949. (Confidential)

8. Cathcart, J. B., Results of mine sampling program, Florida pebble phosphate field: TEM-85, Oct., 1949. (Secret)


11. Cathcart, J. B., Reserves of uranium in the leached zone in the Gooch, Carlton Helms tract of the International Minerals and Chemical Corporation, Polk County, Florida: TEM-130, May 1950. (Official Use Only)


13. Cathcart, J. B., Extent, thickness, and grade of the leached zone in the land-pebble phosphate field, Polk and Hillsborough Counties, Florida, a progress report: TEM-157, Nov. 1950, (Secret)
VIII. GEOLOGY OF URANIUM DEPOSITS

F. 1. Phosphate rocks, Southeastern field—Continued


15. Cathcart, J. B., and McGinley, F. E., Reserves of leached-zone material that will be mined prior to January 1957, land-pebble phosphate field, Florida: TEM-464, July 1952. (Confidential-Security Information)

16. Cathcart, J. B., and McGinley, F. E., Drilling program for lands owned by the American Agricultural Company in the Boyette and South Pierce areas, land-pebble phosphate district, Florida: TEM-505, Nov., 1952. (Official Use Only)


23. Cathcart, J. B., and Davidson, D. F., Distribution and origin of phosphate in the land-pebble phosphate district of Florida: TEM-212, June 1952. (Unclassified) TIS; Published.


VIII. GEOLOGY OF URANIUM DEPOSITS

F. 1. Phosphate rocks, Southeastern field—Continued


30. Davidson, D. F., Results of drilling on the Lowe property, Citrus County, Florida: TEM-279, Jan, 1952, (Official Use Only)

31. Davidson, D. F., Relation of the "topography" of the Hawthorn formation to size of phosphate particles in the deposits, and to topography, in the northern part of the land-pebble phosphate field, Florida: TEM-337, May 1952, (Unclassified) TIS.


33. Davidson, D. F., and Wayland, T. E., Uranium and phosphate in the eastern part of the Bonny Lake mine, Polk County, Florida: TEM-123, May 1951, (Official Use Only)

34. Davidson, D. F., Uraniferous phosphate rock near Charleston, Charleston County, South Carolina: TEM-246, May 1951, (Part 1=Unclassified; Part 2=Official Use Only)


VIII. GEOLOGY OF URANIUM DEPOSITS

1. Phosphate rocks, Southeastern field—Continued

41. Ketner, K. B., Correlation between uranium and $P_2O_5$ in a coarse pebble phosphate deposit, Florida: TEM-315, Feb, 1952, (Official Use Only)

42. Ketner, K. B., and Cathcart, J. B., U, $P_2O_5$, and other elements in the phosphate products of the matrix and leached zone: U, S, Geol, Survey Trace Elements report in preparation, Title subject to change.


44. McKelvey, V. E., Cathcart, J. B., and Worthing, H. W., Preliminary note on the minor-metal content of Florida phosphate rock: TEM-236, Jan, 1951, (Unclassified) TIS.

45. Petersen, R. G., Areal distribution, thickness, and uranium content of the leached zone in the Clear Springs and Homeland areas, Polk County, Florida: TEI-284, Sept, 1952. (Restricted—Security Information)

46. Petersen, R. G., Uranium and phosphate in the western part of the Bonny Lake mine, Polk County, Florida: TEM-231, May 1951, (Official Use Only)

47. Petersen, R. G., Distribution of iron and alumina in the phosphate products and relations to uranium distribution: U, S, Geol, Survey Trace Elements report in preparation, Title subject to change.

48. Staff, Preliminary notes on distribution of uranium in the Florida pebble phosphate field and suggestions for study and sampling: TEM-73, Jan, 1949, (Confidential)

49. Staff, Tonnage and grade of slime ponds and washer debris areas, Florida phosphate field: TEI-97, Sept, 1949, (Secret)

50. Staff, A tentative estimate of tonnage and grade of the leached zone and slime ponds in the Florida phosphate field: TEM-83, Sept, 1949, (Unclassified)


52. Staff, Results of recent drilling in the Peace River Valley, Polk County, Florida: U, S, Geol, Survey Trace Elements report in preparation, Title subject to change.

53. Stewart, R. H., Preliminary results of prospecting of the "leached" zone over phosphate deposits in NW1/4 of Sec, 9, T, 31, S., R, 25 E., Polk County, Florida: TEI-100, Dec, 1949, (Official Use Only)
VIII. GEOLOGY OF URANIUM DEPOSITS

F. 1. Phosphate rocks, Southeastern field—Continued


55. Wayland, T. E., Preliminary report on drilling in the eastern part of the Bonny Lake mine, Polk County, Florida: TEM-230, Dec., 1950. (Official Use Only)
VIII. GEOLOGY OF URANIUM DEPOSITS

F. Phosphate rocks

2. Northwestern phosphate field


14. Lowell, W. R., Geology of the Small Horn Canyon, Daly's Spur, Cedar Creek, and Dell areas, southwestern Montana: Open file.
VIII. GEOLOGY OF URANIUM DEPOSITS


VIII. GEOLOGY OF URANIUM DEPOSITS

F. 2. Phosphate rocks, Northwestern field--Continued

29. Nolan, T. B., Status of the Northwest Phosphate project with respect to areas for intensive exploration: TEM-62, June 1948. (Secret)


33. Staff, Some factors related to western phosphate development: TEM-64, June 1948. (Secret)

34. Staff, Western phosphate program, sampling and mill studies: TEM-65, Aug. 1948. (Secret)

35. Staff, Samples for metallurgical testing from the Anaconda Copper Mining Company's phosphate mine at Conda, Idaho: TEM-70, Oct. 1948. (Confidential)

36. Swanson, R. W., Geology of a part of the Virginia City and Eldridge quadrangles, Montana: Open file.

37. Swanson, R. W., Uranium content of phosphate rock mined in Powell County, Montana, and treated in Canada: TEM-245, Apr. 1951. (Official Use Only)


41. Thompson, M. E., Distribution of uranium in rich phosphate beds of the Phosphoria formation: TEI-142, Feb. 1951. (Unclassified) TIS; NSA-B Bulletin 988-D.

42. Thompson, M. E., Further studies of the distribution of uranium in rich phosphate beds of the Phosphoria formation: TEI-275, in preparation. Title subject to change.
VIII. GEOLOGY OF URANIUM DEPOSITS

F. Phosphate rocks

3. Other areas and general

1. Altschuler, Z., S., The petrography and uranium content of phosphates from Morocco: TEM-238, Nov, 1951. (Official Use Only)


VIII. GEOLOGY OF URANIUM DEPOSITS

G. Uraniferous placers


6. Harder, J. O., and Reed, J. C., Preliminary report on radioactivity of some Alaskan placer samples: TEI-6, Feb. 1945. (Unclassified)


12. Robinson, G. D., Wedow, Helmuth, Jr., and Lyons, J. B., Trace elements investigations in the Cashe Creek–Upper Peters area, Yentna district, Alaska: TEI-26, Mar. 1946. (Unclassified)


15. White, M. G., Radioactivity and mineralogy of placer concentrates from the Wiseman and Chandalar districts, upper Yukon region, northeastern Alaska: TEM-327, Jan. 1952. (Unclassified)
VIII. GEOLOGY OF URANIUM DEPOSITS

H. Miscellaneous sedimentary rocks


VIII. GEOLOGY OF URANIUM DEPOSITS

I. Natural waters


2. Butler, A. P., Jr., Memorandum on analysis of water samples from the Salton Sea, California: TEM-42, July 1947. (Confidential)

3. Fix, P. F., Progress report on uranium in natural waters: TEM-476, Aug. 1952. (Confidential, Security Information; Restricted Data)


5. Gott, G. B., Radioactive springs near Jamestown, Colorado: TEM-1A, Nov. 1948. (Restricted)


9. Staff, Radioactivity of recent sediments, salt and fresh water: TEM-59, May 1948. (Confidential)

VIII. GEOLOGY OF URANIUM DEPOSITS

J. Radioactive natural gas and oil


8. McNeal, R. P., Reconnaissance in oil fields in Lea County, New Mexico: TEM-107, June 1950. (Unclassified)


IX. GEOLOGY OF THORIUM DEPOSITS

A. Igneous rocks, pegmatites, veins, and related deposits


8. Olson, J. C., Preliminary report to accompany geologic map of the Mountain Pass district, San Bernardino, California; open file.


11. Sharp, W. N., and Olson, J. C., Geologic map of the baritic carbonate body near Mountain Pass, San Bernardino County, California; open file.


IX. GEOLOGY OF THORIUM DEPOSITS

B. Placers


7. Harder, J. O., and Reed, J. C., Preliminary report on radioactivity of some Alaskan placer samples: TEM-6, Feb. 1945. (Unclassified)


10. Mertie, J. B., Jr., Heavy minerals in the Pleistocene terrace deposits of South Carolina and Georgia: TEM-23, June 1951. (Unclassified)


16. Staff, Monazite in concentrates from Idaho placer operations: TEM-56, Mar. 1948. (Unclassified)
IX. GEOLOGY OF THORIUM DEPOSITS

B. Placers—Continued


21. Wyant, D. G., Live Oak Tank area, Joshua Tree National Monument, Riverside County, California: TEM-14, June 1949. (Official Use Only)
X. GEOLOGY OF BERYLLIUM DEPOSITS


2. Butler, A. P., Metallurgical research on beryllium-bearing rocks other than pegmatites: TEM-76, Apr. 1949, (Restricted)


6. Holser, W. T., Beryllium minerals in the Victorio Mountains, Luna County, New Mexico: TEI-166, Jan. 1952, (Unclassified)


10. Norton, J. J., Beryllium resources of the world: TEI-149, June 1951, (Confidential)


X. GEOLOGY OF BERYLLIUM DEPOSITS—Continued

18. Page, L. R., Proposed beryllium program: TEM-254, June 1951, (Official Use Only)


27. Staff, Beryl deposits of the Mt. Antero region, Chaffee County, Colorado: TEM-69, Sept., 1948, (Unclassified)


XI. PHOTOGEOLoGIC MAPS

A. Arizona and New Mexico

1. Eckstein, W. H., Photogeologic map, Agathla Peak-4 quadrangle, Navajo Indian Reservation, Navajo County, Arizona: TEM-411, Sept. 1952. (Unclassified)


8. Ray, R. G., Photogeologic map, Agathla Peak-1 quadrangle, Navajo Indian Reservation, Navajo County, Arizona: TEM-441, Sept. 1952. (Unclassified)

XI. PHOTOGEOLOGIC MAPS

B. Utah and Colorado


XI. PHOTOGEOLoGIC MAPS

B. Utah and Colorado--Continued


XI. PHOTO GEOLOGIC MAPS

B. Utah and Colorado--Continued


41. Hackman, R. J., Photogeologic map, Mt. Peale-15 quadrangle, San Juan County, Utah: TEM-447, Nov. 1952. (Unclassified)

42. Hackman, R. J., Photogeologic map, Mt. Peale-16 quadrangle, Utah-Colorado: TEM-448, Sept. 1952. (Unclassified)


47. Hackman, R. J., Photogeologic map, Mt. Peale-7 quadrangle, San Juan County, Utah: TEM-466, Oct. 1952. (Unclassified)

XI. PHOTOGEOLOGIC MAPS

B. Utah and Colorado—Continued


XII. MISCELLANEOUS


PART 2. BIBLIOGRAPHY OF U. S. GEOLOGICAL SURVEY TRACE ELEMENTS
AND RELATED REPORTS

I. REPORTS RELEASED IN OPEN FILE

These reports may be consulted at the U. S. Geological Survey Library, Room 1033, GSA Bldg.,
Washington 25, D. C., and at various field offices. The addresses of the latter are indicated immediately after the date of open file, either by symbol, or complete address. The symbols are used for the most prominent depositories. These are as follows:

B - Office of the Director, Montana Bureau of Mines and Geology, Butte, Montana

D - Information Office, Room 468 New Customhouse, Denver, Colorado

GJ - Geological Survey, Grand Junction, Colorado

IM - Idaho Bureau of Mines and Geology, Moscow, Idaho

SF - Geological Survey, 100 Old Mint Bldg., San Francisco, California

SL - Distribution Office, Room 504, Federal Bldg., Salt Lake City, Utah

T - Arizona Bureau of Mines, University of Arizona, Tucson, Arizona


A. Trace Elements Investigations Reports

TEI


129. Stern, T. W., A catalog of study material of radioactive minerals: Oct. 19, 1951: SL; T; D.


139. Thurstin, W. R., Pegmatites of the Crystal Mountain district, Larimer County, Colorado: July 15, 1952: D; SL; Columbia University Library, New York, N. Y.

144. Phair, George, and Onoda, Kiyoko, Hydrothermal uranathorite in fluorite breccias from the Blue Jay mine, Jamestown, Boulder County, Colorado: Oct. 19, 1951: SL; T; D.

148A. Rabbitt, J. C., Summary of the research work of the Trace Elements Section, Geochemistry and Petrology Branch, for the period April 1, 1948--December 31, 1950: Oct. 19, 1951: SL; T; D.

151. Rabbitt, J. C., Summary of the research work of the Trace Elements Section, Geochemistry and Petrology Branch, for the period January 1--March 31, 1951: Oct. 19, 1951: SL; T; D.

152. Cuttita, Frank, A photometric method for the estimation of the oil yield of oil shale: Oct. 19, 1951: SL; T; D.


259. Meyers, W. B., Geology and mineral deposits of the northwest quarter Willis quadrangle and adjacent Brown's Lake area, Beaverhead County, Montana: July 25, 1952: W; B; IM.


B. Trace Elements Memorandum Reports


96. Staff, Wamsutter (Red Desert) area, Wyoming, progress report: Oct. 19, 1951: SL; T; D.

97. Staff, Colorado Front Range area, progress report: Oct. 19, 1951: SL; T; D.


183. Page, L. R., Interim report of geologic investigation, Lost Creek schroeckingerite deposits, Sweetwater County, Wyoming: Oct. 19, 1952: SL; T; D.

205. Fischer, R. P., MacKallor, Jules, and Brown, C. N., Base maps of a part of the Thompsons district, Grand County, Utah: May 26, 1952: D; GJ; SF; W; SL.

212. Wyant, D. G., and Stugard, Frederick, Jr., Indian Creek uranium prospects, Beaver County, Utah: Nov. 30, 1951: SL; D.

214. Stugard, Frederick, Jr., Uranium resources in the Silver Reef (Harrisburg) district, Washington County, Utah: Oct. 8, 1951: W; SL; D; Office of Utah State Geologist, School of Mineral Industries, University of Utah, Salt Lake City, Utah.


251. Weeks, A. D., Red and gray clay underlying ore-bearing sandstone of the Morrison formation in western Colorado: Oct. 19, 1951: SL; T; D.
TEM


364. Hackman, R. J., Photogeologic map, Aneth-2 quadrangle, San Juan County, Utah: Aug. 25, 1952: SL; D; GJ.

365. Hackman, R. J., Photogeologic map, Aneth-3 quadrangle, San Juan County, Utah: Aug. 25, 1952: SL; D; GJ.

366. Hackman, R. J., Photogeologic map, Aneth-4 quadrangle, San Juan County, Utah: Aug. 25, 1952: SL; D; GJ.

367. Hackman, R. J., Photogeologic map, Aneth-7 quadrangle, San Juan County, Utah: Aug. 25, 1952: SL; D; GJ.

368. Hackman, R. J., Photogeologic map, Aneth-8 quadrangle, San Juan County, Utah: Aug. 25, 1952: SL; D; GJ.

369. Hackman, R. J., Photogeologic map, Bluff-1 quadrangle, San Juan County, Utah: Aug. 25, 1952: SL; D; GJ.

370. Hackman, R. J., Photogeologic map, Bluff-8 quadrangle, San Juan County, Utah: Aug. 25, 1952: SL; D; GJ.


372. Tolbert, G. E., Photogeologic map, Carlisle-1 quadrangle, San Juan County, Utah: Aug. 25, 1952: SL; D; GJ.

373. Tolbert, G. E., Photogeologic map, Carlisle-8 quadrangle, San Juan County, Utah: Aug. 25, 1952: SL; D; GJ.

374. Tolbert, G. E., Photogeologic map, Carlisle-9 quadrangle, San Juan County, Utah: Aug. 25, 1952: SL; D; GJ.

375. Tolbert, G. E., Photogeologic map, Carlisle-16 quadrangle, San Juan County, Utah: Aug. 25, 1952: SL; D; GJ.
TEM

376. Hackman, R. J., Photogeologic map, Elk Ridge-13 quadrangle, San Juan County, Utah: Aug. 25, 1952: SL; D; GJ.

377. Hackman, R. J., Photogeologic map Elk Ridge-16 quadrangle, San Juan County, Utah: Aug. 25, 1952: SL; D; GJ.

378. Tolbert, G. E., Photogeologic map, Mt. Peale-5 quadrangle, San Juan County, Utah: Aug. 25, 1952: SL; D; GJ.

379. Tolbert, G. E., Photogeologic map, Mt. Peale-6 quadrangle, San Juan County, Utah: Aug. 25, 1952: SL; D; GJ.

380. Tolbert, G. E., Photogeologic map, Mt. Peale-11 quadrangle, San Juan County, Utah: Aug. 25, 1952: SL; D; GJ.

381. Tolbert, G. E., Photogeologic map, Mt. Peale-12 quadrangle, San Juan County, Utah: Aug. 25, 1952: SL; D; GJ.

382. Tolbert, G. E., Photogeologic map, Mt. Peale-14 quadrangle, Wayne County, Utah: Aug. 25, 1952: SL; D; GJ.

383. Ray, R. G., Photogeologic map, Stinking Spring Creek-11 quadrangle, Emery County, Utah: Aug. 25, 1952: SL; D; GJ.

384. Fischer, W. A., Photogeologic map, Stinking Spring Creek-12 quadrangle, Emery County, Utah: Aug. 25, 1952: SL; D; GJ.

385. Hackman, R. J., Photogeologic map, Verdure-9 quadrangle, Colorado-Utah: Aug. 25, 1952: SL; D; GJ.

386. Hackman, R. J., Photogeologic map, Verdure-10 quadrangle, San Juan County, Utah: Aug. 25, 1952: SL; D; GJ.

387. Hackman, R. J., Photogeologic map, Verdure-11 quadrangle, San Juan County, Utah: Aug. 25, 1952: SL; D; GJ.

388. Hackman, R. J., Photogeologic map, Verdure-12 quadrangle, San Juan County, Utah: Aug. 25, 1952: SL; D; GJ.

389. Hackman, R. J., Photogeologic map, Verdure-13 quadrangle, San Juan County, Utah: Aug. 25, 1952: SL; D; GJ.

390. Hackman, R. J., Photogeologic map, Verdure-14 quadrangle, San Juan County, Utah: Aug. 25, 1952: SL; D; GJ.

391. Hackman, R. J., Photogeologic map, Verdure-15 quadrangle, San Juan County, Utah: Aug. 25, 1952: SL; D; GJ.
TEM
392. Hackman, R. J., Photogeologic map, Verdure-16 quadrangle, Colorado-Utah: Aug. 25, 1952: SL; D; GJ.
393. Hackman, R. J., Photogeologic map, Aneth-5 quadrangle, San Juan County, Utah: Oct. 8, 1952: SL; D; GJ.
394. Bates, C. E., Photogeologic map, Stinking Spring Creek-14 quadrangle, Emery County, Utah: Oct. 8, 1952: SL; D; GJ.
395. Hackman, R. J., Photogeologic map, Verdure-7 quadrangle, San Juan County, Utah: Oct. 27, 1952: SL; D; GJ.
396. Hackman, R. J., Photogeologic map, Elk Ridge-12 quadrangle, San Juan County, Utah: Oct. 8, 1952: SL; D; GJ.
397. Bates, C. E., Photogeologic map, Stinking Spring Creek-13 quadrangle, Emery County, Utah: Oct. 8, 1952: SL; D; GJ.
398. Tolbert, G. E., Photogeologic map, Mt. Peale-13 quadrangle, Wayne County, Utah: Oct. 8, 1952: SL; D; GJ.
399. Hackman, R. J., Photogeologic map, Verdure-1 quadrangle, Colorado-Utah: Oct. 27, 1952: SL; GJ; D.
400. Hackman, R. J., Photogeologic map, Aneth-6 quadrangle, San Juan County, Utah: Oct. 8, 1952: SL; D; GJ.
401. Ray, R. G., Photogeologic map, Bluff-14 quadrangle, Navajo Indian Reservation, San Juan County, Utah: Oct. 27, 1952: SL; D; GJ.
402. Ray, R. G., Photogeologic map, Setsiltsos Sprinngs-3 quadrangle, Navajo Indian Reservation, Apache County, Arizona: Oct. 27, 1952: SL; D; GJ; T.
403. Hackman, R. J., Photogeologic map, Verdure-8 quadrangle, Colorado-Utah: Oct. 27, 1952: SL; D; GJ.
404. Ray, R. G., Photogeologic map, Setsiltsos Springs-4 quadrangle, Navajo Indian Reservation, Apache County, Arizona: Nov. 24, 1952: D; GJ; T.
405. Hackman, R. J., Photogeologic map, Verdure-6 quadrangle, San Juan County, Utah: Nov. 24, 1952: D; GJ; SL.
406. Hackman, R. J., Photogeologic map, Verdure-2 quadrangle, San Juan County, Utah: Nov. 24, 1952: D; GJ; SL.
407. Hackman, R. J., Photogeologic map, Elk Ridge-8 quadrangle, San Juan County, Utah: Nov. 24, 1952: D; GJ; SL.
408. Hackman, R. J., Photogeologic map, Verdure-5 quadrangle, San Juan County, Utah: Oct. 8, 1952: SL; D; GJ.
409. Fischer, W. A., Photogeologic map, Clay Hills-13 quadrangle, Navajo Indian Reservation, San Juan County, Utah: Oct. 8, 1952: SL; D; GJ.
410. Hackman, R. J., Photogeologic map, Elk Ridge-1 quadrangle, San Juan County, Utah: Oct. 27, 1952: SL; D; GJ.

412. Hackman, R. J., Photogeologic map, Agathla Peak-4 quadrangle, Navajo Indian Reservation, Navajo County, Arizona: Oct. 8, 1952: D; GJ; T.

413. Fischer, W. A., Photogeologic map, Clay Hills-12 quadrangle, Piute Indian Reservation, San Juan County, Utah: Oct. 27, 1952: D; GJ; SL.

414. Eckstein, W. H., Photogeologic map, Clay Hills-15 quadrangle, Navajo Indian Reservation, San Juan County, Utah: Oct. 27, 1952: D; GJ; SL.

433. Hackman, R. J., Photogeologic map, Verdure-3 quadrangle, San Juan County, Utah: Oct. 8, 1952: D; SL; GJ.

438. Hackman, R. J., Photogeologic map, Verdure-4 quadrangle, San Juan County, Utah: Oct. 27, 1952: D; SL; GJ.

439. Ray, R. G., Photogeologic map, Setsiltso Springs-5 quadrangle, Navajo Indian Reservation, Apache County, Arizona: Oct. 27, 1952: D; GJ; T.

440. Ray, R. G., Photogeologic map, Agathla Peak-8 quadrangle, Navajo Indian Reservation, Navajo County, Arizona: Nov. 24, 1952: D; GJ; T.

452. Hackman, R. J., Photogeologic map, Aneth-1 quadrangle, Utah-Colorado: Aug. 25, 1952: D; GJ; SL.

453. Hackman, R. J., Photogeologic map, Elk Ridge-9 quadrangle, San Juan County, Utah: Aug. 25, 1952: D; GJ; SL.
C. Miscellaneous


Kennedy, G. C., Preliminary report on the geology of a portion of the SE 1/4 Lyon quadrangle, Montana-Idaho: June 14, 1949: W; IM; B.

Lowell, W. R., Geology of the Small Horn Canyon, Daly's Spur, Cedar Creek and Dell areas, southwestern Montana: Dec. 8, 1949: B; W.


Olson, J. C., Preliminary report to accompany geologic map of the Mountain Pass District, San Bernardino County, California: Mar. 14, 1952: SL; D.

Sharp W. N., and Olson, J. C., Geologic map of the barite carbonate body near Mountain Pass, San Bernardino County, California: June 26, 1951.


Shoemaker, E. M., Preliminary Geologic map of part of the Sinbad Valley - Fischer Valley anticline, Colorado and Utah; Structure map and sections of the Sinbad Valley - Fischer Valley anticline, Colorado and Utah: Aug. 25, 1952: SL; D.

Swanson, R. W., Geology of a part of the Virginia City and Eldridge quadrangles, Montana: Mar. 8, 1951: W; B; Geol. Library, Princeton University, Princeton, N. J.; Geol. Library, University of Minnesota, Minneapolis, Minn.

Trace Elements reports that have been issued by the Technical Information Service (referred to as TIS), are listed by Trace Elements Investigations and Trace Elements Memorandum Report numbers. The asterisk indicates that the report has been sent to TIS for reproduction but has not been issued. If TIS issued a Trace Elements Report under a different number, the TIS number is given after the title. (i.e., TEI-23 was issued as AECD-1815). The year listed is the TIS issuance date.

These reports are on file at the U.S. Geological Survey Library, Room 1033, GSA Bldg., Washington 25, D.C., and at the following AEC depository libraries:

CALIFORNIA
Berkley, University of California General Library
Los Angeles, University of California Library

COLORADO
Denver, Denver Public Library

CONNECTICUT
New Haven, Yale University Library

DISTRICT OF COLUMBIA
Washington, Library of Congress

GEORGIA
Atlanta, Georgia Institute of Technology Library

ILLINOIS
Chicago, John Crerar Library
Chicago, University of Chicago Library
Urbana, University of Illinois Library

INDIANA
Lafayette, Purdue University Library

IOWA
Ames, Iowa State College Library

KENTUCKY
Lexington, University of Kentucky Library

LOUISIANA
Baton Rouge, Louisiana State University Library

MASSACHUSETTS
Cambridge, Harvard University Library
Cambridge, Massachusetts Institute of Technology Library

MICHIGAN
Ann Arbor, University of Michigan Library
Detroit, Detroit Public Library

MINNESOTA
Minneapolis, University of Minnesota Library

MISSOURI
Kansas City, Linda Hall Library
St. Louis, Washington University Library
NEW JERSEY
Princeton, Princeton University Library

NEW MEXICO
Albuquerque, University of New Mexico

NEW YORK
Buffalo, Rockwood Memorial Library
Ithaca, Cornell University Library
New York, Columbia University Library
New York, New York Public Library
Troy, Rensselaer Polytechnic Institute

NORTH CAROLINA
Durham, Duke University Library
Raleigh, North Carolina State College Library

OHIO
Cleveland, Cleveland Public Library
Columbus, Ohio State University Library

OKLAHOMA
Stillwater, Oklahoma Agricultural and Mechanical College Library

OREGON
Corvallis, Oregon State College Library

PENNSYLVANIA
Philadelphia, University of Pennsylvania Library
Pittsburgh, Carnegie Library of Pittsburgh

TENNESSEE
Knoxville, University of Tennessee Library
Nashville, Joint University Libraries

TEXAS
Austin, University of Texas Library

UTAH
Salt Lake City, University of Utah Library

WASHINGTON
Seattle, University of Washington Library

WISCONSIN
Madison, University of Wisconsin Library
A. Trace Elements Investigations Reports


28. Schlecht, W. G., Control chart method applied to errors in radioactive counting: 1946; MDDC-695.

29. Fleischer, Michael, and Cameron, E. N., Geochemistry of beryllium: 1946; MDDC-643.

31A. Foster, M. D., Stevens, R. E., Grimaldi, F. S., Schlecht, W. G., and Fleischer, Michael, Methods for the complete decomposition of rock and ore samples to be analyzed for very small amounts of uranium and thorium: 1946; AECD-1782.

31B. Foster, M. D., and Stevens, R. E., The determination of very small amounts of uranium in naturally occurring materials: 1946; AECD-2630.

31C. Grimaldi, F. S., The determination of very small amounts of uranium in rocks and minerals: 1946; AECD-2631.


31H. Fleischer, Michael, and Harder, J. O., Geochemistry of Indium: 1946; MDDC 646

31I. Fleischer, Michael, and Harder, J. O., Geochemistry of germanium: 1946; MDDC 645

31J. Fleischer, Michael, and Harder, J. O., Geochemistry of columbium and tantalum: 1946; AECD 1823


TEI


130. Fletcher, M. H., A study of critical factors in the "direct" fluorimetric determination of uranium: 1950.


142. Thompson, M. E., Distribution of uranium in rich phosphate beds of the Phosphoria formation: 1951.


144. Phair, George, and Onoda, Kiyoko, Hydrothermal uranothorite in fluorite breccias from the Blue Jay mine, Jamestown, Boulder County, Colorado: 1951.

148A. Rabbitt, J. C., Summary of the research work of the Trace Elements Section Geochemistry and Petrology Branch, for the period April 1, 1948--December 31, 1950: 1951.

151. Rabbitt, J. C., Summary of the research work of the Trace Elements Section, Geochemistry and Petrology Branch, for the period January 1--March 31: 1951.


179. Myers, A. T., and Barnett, P. R., Contamination of rock samples during grinding as determined spectrographically: 1952.


182. Rabbitt, J. C., Summary of the research work of the Trace Elements Section, Geochemistry and Petrology Branch, for the period July 1--September 30, 1951: 1951.
TEI

203. Smith, J. F., Jr., Hinrichs, E. N., and Luedke, R. G., Progress report on geologic studies in the Capital Reef area, Wayne County, Utah: *


218. Rabbitt, J. C., Summary of the research work of the Trace Elements Section, Geochemistry and Petrology Branch, for the period October 1--December 31, 1951: 1952.

223. Cuttitta, Frank, The colorimetric determination of total iron with O-phenanthroline: a spectrophotometric study: *


244. Cook, K. L., and Moss, C. K., Geophysical observations in parts of the Grants district, McKinley County, New Mexico: 1952, (TEI-244, pt. 1).


247. Phair, George, Radioactive Tertiary porphyries in the Central City district, Colorado, and their bearing upon pitchblende deposition: 1952.

262. Phair, George, and Levine, Harry, Notes on the differential leaching of uranium, radium and lead from pitchblende in H,O,S, solutions: *

270. Staff, Trace Elements research quarterly progress report, January 1 to March 31, 1952: *

275. Thompson, M. E., Further studies of the distribution of uranium in rich phosphate beds of the Phosphoria formation: *

280. Staff, Trace Elements research quarterly progress report, April 1 to June 10, 1952: *

281. Vine, J. D., and Moore, G. W., Reconnaissance for uranium-bearing carbonaceous rocks in northwestern Colorado, southwestern Wyoming and adjacent parts of Utah and Idaho: *
B. Trace Elements Memorandum Reports

TEM

9. Wyant, D. G., Treasure Hill area, Larimer County, Colorado: 1951; TEM-9B.

10. Wyant, D. G., Lost Creek (Wamsutter) schroeckingerite deposit, Sweetwater County, Wyoming: 1952; TEM-10B.

13. King, R. U., Vein deposits of uranium at the Caribou mine, Boulder County, Colorado: 1952; TEM-13A.

24. King, R. U., and Granger, H. C., Torbernite occurrence at the Robineau claims, Clear Creek County, Colorado: 1952; TEM-24A.

30. Vhay, J. S., Reconnaissance examination for uranium at six mines and properties in Idaho and Montana: 1951; TEM-30A.


96. Staff, Wamsutter (Red Desert) area, Wyoming, progress report: 1951; TEM-96A.

97. Staff, Colorado Front Range area, progress report: 1951; TEM-97-A.


146. Granger, H. C., and Bauer, H. L., Results of diamond drilling, Merry Widow claim, White Signal, Grant County, New Mexico: 1951; TEM-146A.


165. Staatz, M. H., and Bauer, H. L., Jr., Preliminary examination of the uranium prospect at the Spider No. 1 claim, Honeycomb Hills, Juab County, Utah: 1950.

167. Staatz, M. H., and Bauer, H. L., Jr., A preliminary report on radioactive fluorite deposits, Thomas Range, Juab County, Utah: 1951; TEM-167A.

183. Page, L. R., Interim report of geologic investigation, Lost Creek schroeckingerite deposits, Sweetwater County, Wyoming: 1950; TEM-183A.
TEM


337. Davidson, D. F., Relation of the "topography" of the Hawthorn formation to size of phosphate particles in the deposits, and to topography in the northern part of the land-pebble phosphate field, Florida: 1952.


III. ABSTRACTS OF TRACE ELEMENTS REPORTS PUBLISHED IN NUCLEAR SCIENCE ABSTRACTS TO NOVEMBER 15, 1952

The abstracts are listed by Trace Elements Investigations and Trace Elements Memorandum Report numbers.

A. Trace Elements Investigations Reports

TEI


130. Fletcher, M. H., Addendum to a study of critical factors in the "direct" fluorimetric determination of uranium; vol. 5, No. 15, 1951.


142. Thompson, M. E., Distribution of uranium in rich phosphate beds of the Phosphoria formation: vol. 5, No. 20, 1951.

144. Phair, George, and Onoda, Kiyoko, Hydrothermal uranothorite in fluorite breccias from the Blue Jay mine, Jamestown, Boulder County, Colorado: vol. 6, No. 5, 1952.

148A. Rabbitt, J. C., Summary of the research work of the Trace Elements Section, Geochemistry and Petrology Branch, for the period April 1, 1948—December 31, 1950: vol. 5, No. 19, 1951.

151. Rabbitt, J. C., Summary of the research work of the Trace Elements Section, Geochemistry and Petrology Branch, for the period January 1—March 31, 1951: vol. 6, No. 5, 1952.


153A. Guttag, N. S., and Grimaldi, F. S., Fluorimetric determination of uranium in shales, lignites, and monazites after alkali carbonate separation: vol. 6, No. 4, 1952.
170. Waters, A. C., and Granger, H. C., Volcanic debris in uraniferous sandstones, and its possible bearing on the origin and precipitation of uranium: vol. 6, No. 20, 1952.

182. Rabbitt, J. C., Summary of the research work of the Trace Elements Section, Geochemistry and Petrology Branch, for the period July 1--September 30, 1951: vol. 6, No. 5, 1952.


B. Trace Elements Memorandum Reports

TEM


13A. King, R. U., Vein deposits of uranium at the Caribou mine, Boulder County, Colorado: vol. 6, No. 1, 1952.


97A. Staff, Colorado Front Range area, progress report: vol. 5, No. 22, 1951.


146A. Granger, H. C., and Bauer, H. L., Jr., Results of diamond drilling, Merry Widow claim, White Signal, Grant County, New Mexico: vol. 6, No. 5, 1952.


429. Strobell, J. D., Jr., Los Gigantes SE, preliminary geologic map of part of the Carrizo Mountains area, northeastern Arizona: vol. 6, No. 20, 1952.

IV. CIRCULARS

Free on application to the Geological Survey, Washington 25, D. C.

(* Indicates Circular in process)

<table>
<thead>
<tr>
<th>No.</th>
<th>Title</th>
<th>Author(s)</th>
<th>Date</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>74</td>
<td>A glossary of uranium- and thorium-bearing minerals</td>
<td>Frondel, J. W., and Fleischer, Michael</td>
<td>Apr. 1950</td>
<td>TEI-103</td>
</tr>
<tr>
<td>111</td>
<td>Carnotite deposits in the Carrizo Mountains area</td>
<td>Stokes, W. L.</td>
<td>May 1951</td>
<td></td>
</tr>
<tr>
<td>135</td>
<td>Abstracts of the literature on synthesis of apatites and some related phosphates</td>
<td>Jaffe, E. B.</td>
<td>Dec. 1951</td>
<td>TEI-132, pt. 1</td>
</tr>
<tr>
<td>142</td>
<td>Virgin Valley opal district, Humboldt County, Nevada</td>
<td>Staatz, M. H., and Bauer, H. L., Jr.</td>
<td>Dec. 1951</td>
<td>TEM-227</td>
</tr>
<tr>
<td>175</td>
<td>Carnotite prospects of the Craven Canyon area</td>
<td>Page, L. R., and Redden, J. A.</td>
<td>Mar. 1952</td>
<td>TEM-152</td>
</tr>
<tr>
<td>176</td>
<td>Preliminary report on uranium deposits in the Pumpkin Buttes area</td>
<td>Love, J. D.</td>
<td>Mar. 1952</td>
<td></td>
</tr>
<tr>
<td>185</td>
<td>Reconnaissance for radioactive deposits along the upper Porcupine and lower Coleen Rivers</td>
<td>White, M. G.</td>
<td>July 1952</td>
<td>TEM-55, TEM-57B</td>
</tr>
<tr>
<td>186</td>
<td>Pitchblende deposits at the Wood and Calhoun mines, Central City mining district</td>
<td>Moore, F. B., and Butler, C. R.</td>
<td>Oct. 1952</td>
<td>TEM-198</td>
</tr>
<tr>
<td>189</td>
<td>Uranium occurrences on the Merry Widow claim</td>
<td>Granger, H. C., and Bauer, H. L., Jr.</td>
<td>Oct. 1952</td>
<td>TEM-157</td>
</tr>
<tr>
<td>194</td>
<td>A glossary of uranium- and thorium-bearing minerals, second edition</td>
<td>Frondel, J. W., and Fleischer, Michael</td>
<td>June 1952</td>
<td>(Revision of Circular 74)</td>
</tr>
<tr>
<td>195</td>
<td>Radioactivity of selected rocks and placer concentrates from northeastern Alaska</td>
<td>White, M. G.</td>
<td>Oct. 1952</td>
<td>TEM-57C, TEM-327</td>
</tr>
</tbody>
</table>


212. Vine, J. D., and Moore, G. W., Uranium-bearing coal and carbonaceous rocks in the Fall Creek area, Bonneville County, Idaho, Nov. 1952 (TEM-340).


239. *Beroni, E. P., McKeown, F. A., Stugard, Frederick, Jr., and Gott, G. B., Uranium deposits on the Bulloch group of claims, Kane County, Utah (TEM-213).


245. *Lang, A. J., Jr., and Redden, J. A., Geology and pegmatites of part of the Fourmile area, Custer County, South Dakota (TEM-155, pt. 1).

V. BULLETINS


(* Indicates Bulletin in process)

Bull. No.

936. Strategic minerals investigations, 1942.
(Issued only in separate chapters)

(P) Fischer, R. P., Vanadium deposits of Colorado and Utah, a preliminary report, 1942. 30¢

982. Contributions to economic geology, 1952.
(Issued only in separate chapters)

*(D) Adams, J. W., Beryllium deposits of the Mt. Antero region, Chaffee County, Colorado (TEI-126).

988. Contributions to the geology of uranium, 1952.
(Issued only in separate chapters)

(A) Fischer, R. P., and Hilpert, L. S., Geology of the Uravan mineral belt, Sept. 1952 (Revised TEI-109). 35¢

(B) Weir, Doris Blackman, Geologic guides to prospecting for carnotite deposits on the Colorado Plateau, Aug. 1952 (TEI-119). 15¢

*(C) Staatz, M. H., and Bauer, H. L., Uranium in the East Walker River area, Lyon County, Nevada (TEM-228).

*(D) Thompson, M. E., Distribution of uranium in rich phosphate beds of the Phosphoria formation (TEI-142).

*(E) Gott, G. B., and Hill, J. W., Radioactivity in some oil fields of southeastern Kansas (TEI-121).


* Trites, A. F., Jr., and Tooker, E. W., Uranium and thorium deposits in east-central Idaho and southwestern Montana (TEI-140).


VI. U. S. GEOLOGICAL SURVEY OIL AND GAS MAPS AND STRATEGIC MINERALS INVESTIGATIONS PRELIMINARY MAPS AND REPORTS

If copies are available, they may be obtained by application to the Director, Geological Survey, Washington 25, D. C., or to the Distribution Section, Geological Survey, Denver Federal Center, Denver, Colorado.


Hunt, C. B., and others, Geologic map of the Henry Mountains region, Utah: U. S. Geol. Survey Oil and Gas Map Series, OM-131, May 21, 1952, $1.00


VII. PUBLICATIONS IN SCIENTIFIC JOURNALS

The publications are listed alphabetically by authors


Cathcart, J. B., and Davidson, D. F., Distribution and origin of phosphate in the land-pebble phosphate district of Florida (abs.): Econ. Geol., vol. 47, No. 1, p. 127, Jan.-Feb. 1952. (TEI-212)


Hanley, J. B., Economic geology of the Rincon pegmatites, San Diego County, California: California State Division of Mines Special Report 78, 1951. 35¢


Phair, George, and Shimamoto, Onoda Kiyoka, Hydrothermal uranothorite in fluorite breccias from the Blue Jay mine, Jamestown, Boulder County, Colorado: Am. Mineralogist, vol. 37, Nos. 7 and 8, pp. 659-666, July-Aug. 1952. (TEI-144)


Stead, F. W., Equipment for uranium prospecing (abs.): Electrical Engineer, vol. 69, No. 3, p. 254.


