

STATE OF SOUTH DAKOTA  
Nils Boe, Governor

SOUTH DAKOTA STATE GEOLOGICAL SURVEY  
Duncan J. McGregor, State Geologist

CIRCULAR NO. 33

BIBLIOGRAPHY OF REPORTS CONTAINING MAPS ON SOUTH DAKOTA GEOLOGY  
published before January 1, 1959

by  
Merlin J. Tipton, Cleo M. Christensen, and Allen F. Agnew

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## INTRODUCTION

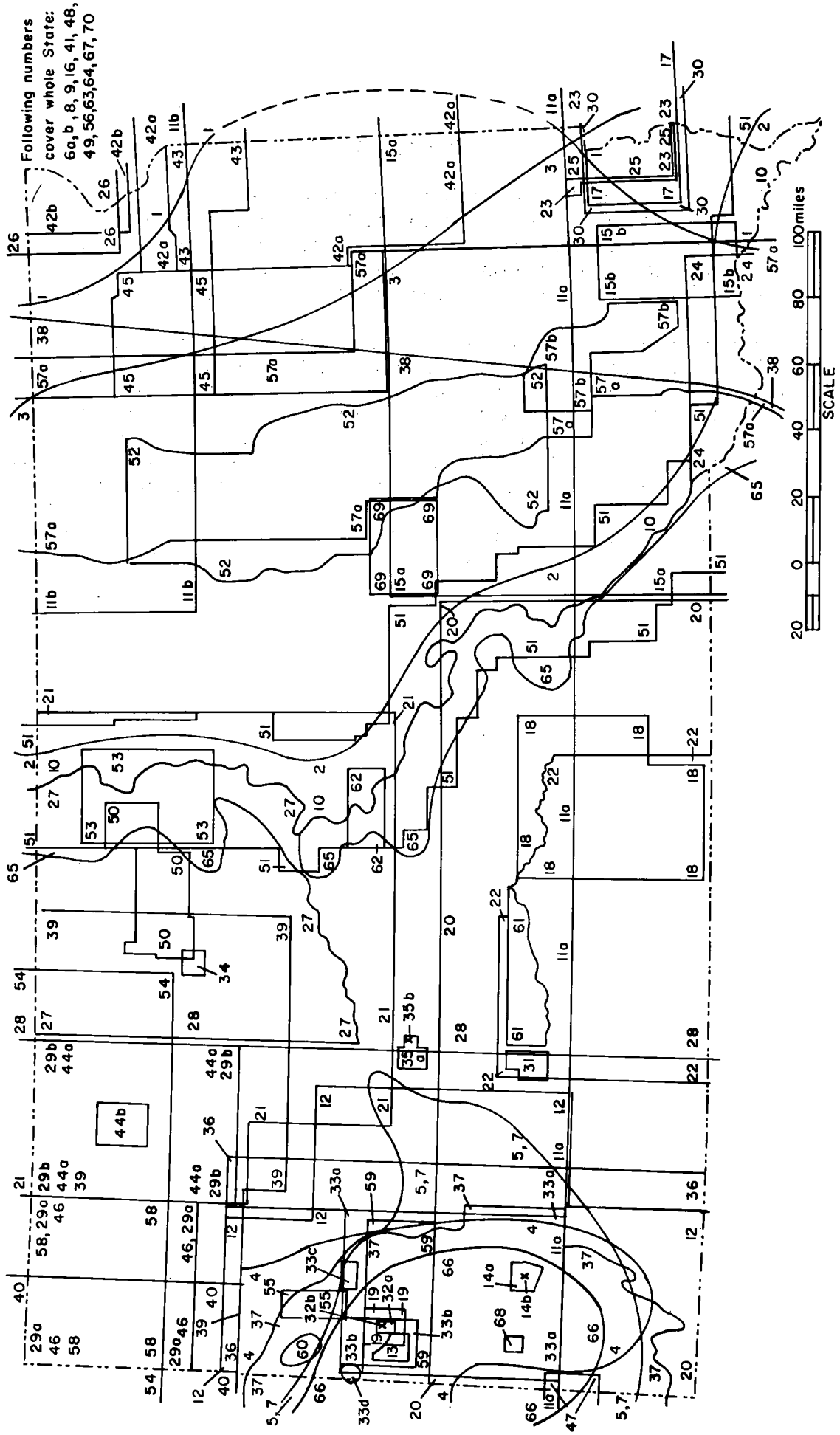
This circular makes available to the public a complete bibliography of reports (except textbooks, and maps of North America) containing maps on South Dakota geology published before January 1, 1959. It should be emphasized that these are only the reports containing geologic maps. Reports of the South Dakota Geological Survey are included through January 1, 1963.

Because this report is designed to be used as an easy reference, Part I has been subdivided into general sections according to subject matter. Each section in Part I contains a figure showing the location of the geologic map referred to in each of the publications mentioned. Part II is an alphabetical listing by author of all references found in Part I.

Reports that contain geologic maps that were published previously are not included in this compilation unless the map was in some way modified.

It would be appreciated if any errors or omissions were reported to the senior author for future publication of a supplement to this report.

**Figure 1**  
 MAP SHOWING PUBLISHED GEOLOGIC REPORTS ON SOUTH DAKOTA RECONNAISSANCE AND  
 PLEISTOCENE GEOLOGY



PART I--BIBLIOGRAPHY OF REPORTS CONTAINING MAPS ON SOUTH DAKOTA  
GEOLOGY SUBDIVIDED INTO GENERAL SECTIONS BY SUBJECT MATTER

Published Geologic Reports on South Dakota  
Reconnaissance and Pleistocene Geology

1. Owen, D. D., 1852, Report of a geological survey of Wisconsin, Iowa, and Minnesota, and incidentally a portion of Nebraska Territory, made under instructions from the United States Treasury Department: Philadelphia, Lippincott, Grambo and Company, p. 196-213. Map in back, 1:31,680.
2. Hayden, F. V., 1857, Notes explanatory of a map and section illustrating the geological structure of the country bordering on the Missouri River, from the mouth of the Platte River to Ft. Benton: Philadelphia, Merrihew and Thompson, printers, 34 p. Map following p. 34.
3. \_\_\_\_\_ 1863, On the geology and natural history of the upper Missouri: Am. Phil. Soc. Trans., v. 12, Part I, 218 p. Map following p. 218, 1:4,600,000 (approx.).
4. Ludlow, William, and Winchell, N. H., 1875, Report on a reconnaissance of the Black Hills of Dakota made in the summer of 1874: U. S. Chief Eng. Ann. Rept., pt. 2, p. 1131-1172. Map, 1:375,000.
5. Newton, Henry, and Jenney, W. P., 1880, Report on the geology and resources of the Black Hills of Dakota: U. S. Geol. and Geog. Survey Rocky Mt. region (Powell), 556 p. Atlas, 1:250,000.
6. Chamberlin, T. C., 1883, Preliminary paper on the terminal moraine of the second glacial epoch: U. S. Geol. Survey Ann. Rept. 3, p. 291-402. (a) Pl. 28, 1:10,000,000; (b) pl. 35, 1:3,800,000.
7. Carpenter, F. R., 1888, Preliminary report on the geology, mineral resources, and mills of the Black Hills: S. Dak. School of Mines Bull. 1, 171 p. Map following p. 14, 1:375,000.
8. Chamberlin, T. C., 1888, The rock-scourings of the great ice invasions: U. S. Geol. Survey Ann. Rept. 7, p. 147-248. Pl. 8, 1:7,000,000.
9. Todd, J. E., 1894, Preliminary report of the geology of South Dakota: S. Dak. Geol. and Nat. Hist. Survey Bull. 1, 172 p. Map, 1:2,000,000.
10. \_\_\_\_\_ 1896, The moraines of the Missouri Coteau and their attendant deposits: U. S. Geol. Survey Bull. 144, 69 p. Pl. 1, 1:2,200,000.
11. Upham, Warren, 1896, The Glacial Lake Agassiz: U. S. Geol. Survey Mon. 25, 647 p. (a) Pl. 14, 1:12,500,000; (b) pl. 17, 1:2,500,000.
12. Scott, Samuel, 1897, Map of the Black Hills of South Dakota and Wyoming with full description of mineral resources: Philadelphia, E. P. Noll Co., 40 p. Map, 1:316,800.
13. Irving, J. D., 1899, Contribution to the geology of the northern Black Hills: New York Acad. Sci. Annals, v. 12, p. 187-340. Pl. 5, 1:30,000.



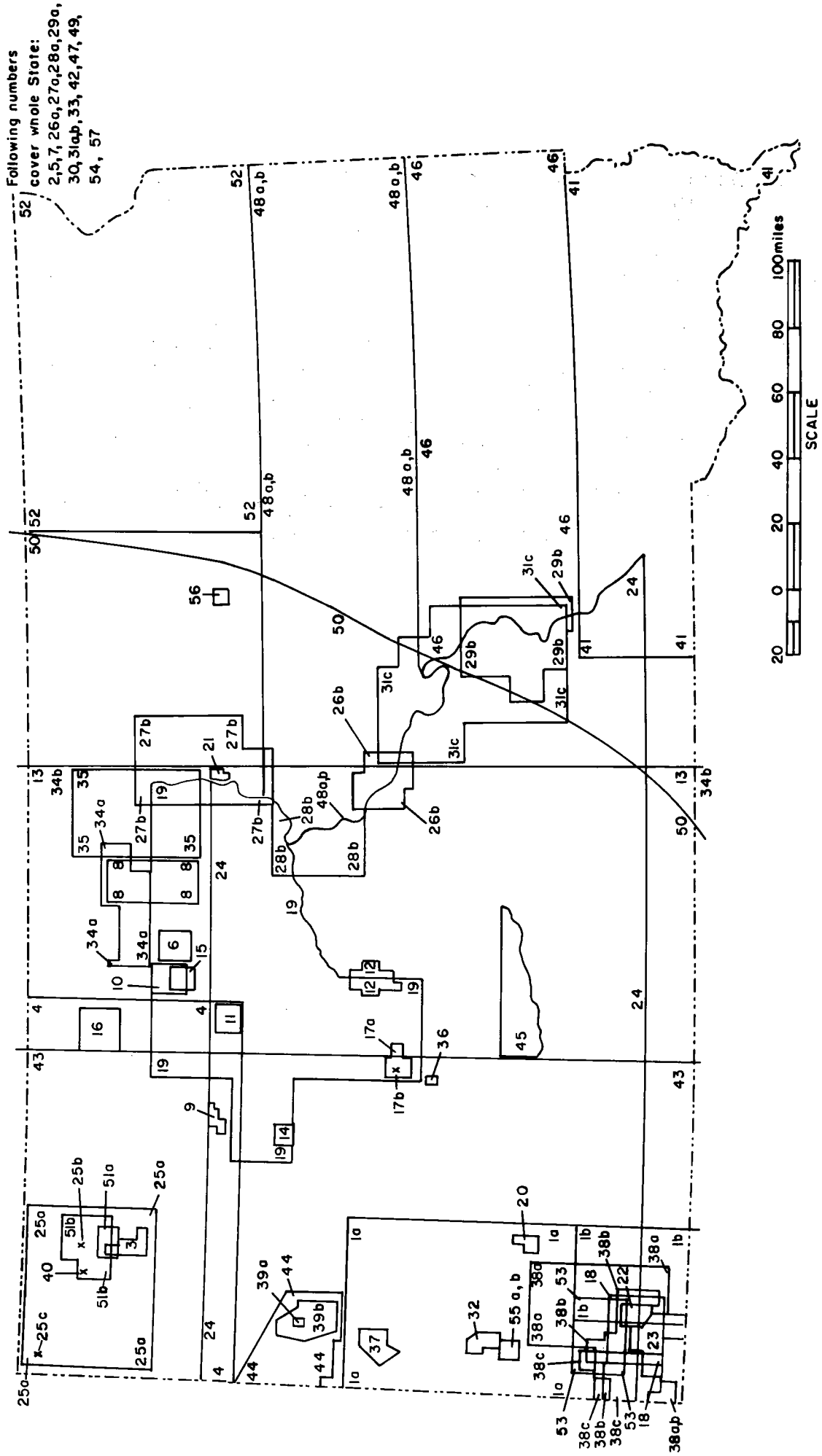
14. O'Harra, C. C., 1899, Notes on the geology and mineral deposits of a portion of the southern Black Hills: S. Dak. School of Mines Bull. 2, 41 p. (a) Fig. 4, 1:160,000; (b) map, p. 32, 1:7,200.
15. Todd, J. E., 1899, Moraines of southeastern South Dakota and their attendant deposits: U. S. Geol. Survey Bull. 158, 169 p. (a) Pl. 1, 1:2,000,000; (b) pl. 7, 1:450,000 (approx.).
16. \_\_\_\_\_ 1902, Hydrographic history of South Dakota: Geol. Soc. America Bull., v. 13, p. 27-40. Map, 1:1,500,000.
17. Bendrat, T. A., and Spencer, M. S., 1904, The geology of Lincoln County, South Dakota, and adjacent portions: Am. Geologist, v. 33, p. 65-94. Pl. 2, 1:316,800.
18. Reagan, A. B., 1905, Geological observations on the central part of the Rosebud Indian Reservation: Am. Geologist, v. 36, p. 229-243. Pl. 12, 1:375,000.
19. Mansfield, G. R., and Jaggard, R. A., Jr., 1906, Post Pliocene drainage modifications in the Black Hills and Big Horn Mountains: Harvard Coll. Mus. Comp. Zool. Bull. 49, p. 59-88. Pl. 1, 1:84,480.
20. Osborn, H. F., 1909, Cenozoic mammal horizons of western North America: U. S. Geol. Survey Bull. 361, 138 p. Pl. 2, 1:2,000,000.
21. Todd, J. E., 1910, Preliminary report on the geology of northwest-central portion of South Dakota: S. Dak. Geol. and Nat. Hist. Survey Bull. 4, p. 13-76. Map, 1:1,000,000.
22. Perisho, E. C., and Visser, S. S., 1912, Geography, geology and biology of southcentral South Dakota: S. Dak. Geol. and Nat. Hist. Survey Bull. 5, 152 p. Map 4, 1:1,375,000.
23. Shimek, Bohumil, 1912, Pleistocene of Sioux Falls, South Dakota, and vicinity: Geol. Soc. America Bull., v. 23, p. 125-154. Fig. 1, 1:312,500.
24. Todd, J. E., 1912, Pre-Wisconsin channels in southeastern South Dakota and northeastern Nebraska: Geol. Soc. America Bull., v. 23, p. 463-470. Map, 1:350,000.
25. Carmen, J. E., 1913, The Wisconsin drift-plain in the region about Sioux Falls: Iowa Acad. Sci. Proc., v. 20, p. 237-250. Fig. 3, 1:380,000.
26. Leverett, Frank, 1913, Early stages and outlets of Lake Agassiz in relation to the waning ice sheet: N. Dak. Agr. Coll. Survey 6th Bienn. Rept., p. 17-28. Map, 1:750,000.
27. Calvert, W. R., and others, 1914, Geology of the Standing Rock and Cheyenne River Indian Reservations, North and South Dakota: U. S. Geol. Survey Bull. 575, 49 p. Pl. 1, 1:500,000.
28. Todd, J. E., 1914, The Pleistocene history of the Missouri River: Science, v. 39, p. 263-273. Map, p. 264, 1:9,500,000 (approx.).
29. Winchester, D. E., Hares, C. J., Lloyd, E. R., and Parks, E. M., 1916, The lignite field of northwestern South Dakota: U. S. Geol. Survey Bull. 627, 169 p. (a) Pl. 1 (Harding County), 1:125,000; (b) pl. 2 (Perkins County), 1:125,000.

30. Carman, J. E., 1917, Pleistocene geology of northwestern Iowa: Iowa Geol. Survey, v. 26, p. 233-445. Pl. 18, 1:375,000.
31. Ward, Freeman, 1922, Geology of a portion of the Badlands: S. Dak. Geol. and Nat. Hist. Survey Bull. 11, p. 1-59. Pl. 1, 1:62,500.
32. Paige, Sidney, 1924, Geology of the region around Lead, South Dakota, and its bearing on the Homestake ore body: U. S. Geol. Survey Bull. 765, 58 p. (a) Pl. 1, 1:31,680; (b) pl. 8 and figs. 1-8, 1:8,000.
33. Darton, N. H., and Paige, Sidney, 1925, Central Black Hills, South Dakota: U. S. Geol. Survey, Geol. Folio 219, 34 p. (a) Map, 1:125,000; (b) Lead Quadrangle, 1:62,500; (c) fig. 10, 1:48,000; (d) fig. 31, 1:48,000.
34. Wilson, R. A., 1925, The Ragged Butte structure: S. Dak. Geol. Survey Circ. 24, 7 p. Fig. 2, 1:70,000.
35. Russell, W. L., 1926, Structures in western Haakon and eastern Pennington Counties: S. Dak. Geol. and Nat. Hist. Survey Circ. 28, 24 p. (a) Fig. 2, 1:190,000; (b) fig. 4, 1:45,000.
36. Fillman, Louise, 1929, Cenozoic history of the northern Black Hills: Univ. Iowa Studies in Nat. Hist., v. 13, no. 1, 50 p. Pl. 4, 1:1,500,000.
37. Kansas Geological Society, 1929, Black Hills: Kans. Geol. Soc. 3rd Ann. Field Conf. Guidebook, 100 p. Map, 1:250,000.
38. Osborn, H. F., 1929, The Titanotheres of ancient Wyoming, Dakota, and Nebraska: U. S. Geol. Survey Mon. 55, v. 1, p. 1-698. Fig. 35, 1:12,350,000.
39. Searight, W. V., 1930, A preliminary report of the coal resources of South Dakota: S. Dak. Geol. Survey Rept. Inv. 3, 46 p. Map, 1:750,000.
40. Alden, W. C., 1932, Physiography and glacial geology of eastern Montana and adjacent areas: U. S. Geol. Survey Prof. Paper 174, 133 p. Pl. 1, 1:500,000.
41. Kirby, M. E., 1932, Geologic map, State of South Dakota: S. Dak. Geol. Survey Map, 1:750,000.
42. Leverett, Frank, 1932, Quaternary geology of Minnesota and parts of adjacent states: U. S. Geol. Survey Prof. Paper 161, 149 p. (a) Figs. 11 and 12, 1:500,000; (b) pl. 5, 1:62,500.
43. Rothrock, E. P., 1934, Geology of Grant County: S. Dak. Geol. Survey Rept. Inv. 20, 40 p. Maps, p. 40, 1:137,500 (surficial geology); p. 17, 1:312,500 (bedrock geology).
44. Searight, W. V., 1934, Geology of central Perkins County: S. Dak. Geol. Survey Rept. Inv. 21, 52 p. (a) Fig. 1, 1:500,000; (b) pl. 1, 1:62,500.
45. Rothrock, E. P., 1935, Geology and water resources of Day County, South Dakota: S. Dak. Geol. Survey Rept. Inv. 25, 42 p. Map, 1:148,000.
46. \_\_\_\_\_ 1937, Structural conditions in Harding County: S. Dak. Geol. Survey Rept. Inv. 28, 30 p. Map following p. 30, 1:250,000.
47. Northrop, J. D., 1939, Reconnaissance map of the Dewey area, Wyoming and South Dakota: U. S. Geol. Survey Map, 1:79,200.

48. Petsch, B. C., 1942, The Medicine Butte anticline: S. Dak. Geol. Survey Rept. Inv. 45, 30 p. Fig. 2, 1:2,787,000.
49. Reeside, J. B., Jr., 1944, Maps showing thickness and general character of the Cretaceous deposits in the western interior of the United States: U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 10; 10 maps, 1:14,250,000.
50. Morgan, R. E., and Petsch, B. C., 1945, A geological survey in Dewey and Corson Counties, South Dakota: S. Dak. Geol. Survey Rept. Inv. 49, 53 p. Map, 1:160,000 (structure map showing some outcrops).
51. Petsch, B. C., 1946, Geology of the Missouri Valley in South Dakota: S. Dak. Geol. Survey Rept. Inv. 53, 78 p. Map, 1:375,000 (three parts).
52. Rothrock, E. P., 1946, Surface of a portion of the James Basin in South Dakota: S. Dak. Geol. Survey Rept. Inv. 54, 21 p. Two glacial maps, 1:285,000.
53. \_\_\_\_\_ 1947, Geology of the Missouri Valley and vicinity near Mobridge: S. Dak. Geol. Survey Rept. Inv. 58, 29 p. Map, 1:145,000.
54. Brown, R. W., 1949, Paleocene deposits of the Rocky Mountains and plains: U. S. Geol. Survey Prelim. Map, 1:1,000,000.
55. Petsch, B. C., 1949, North part of the Whitewood anticline: S. Dak. Geol. Survey Rept. Inv. 65, 30 p. Fig. 3, 1:125,000.
56. Darton, N. H., 1951, Geologic map of South Dakota: U. S. Geol. Survey Map, 1:500,000.
57. Gwynne, C. S., 1951, Minor moraines in South Dakota and Minnesota: Geol. Soc. America Bull., v. 62, p. 233-250. (a) Fig. 1, 1:2,500,000; (b) fig. 2, 1:385,000.
58. Baker, C. L., 1952, Geology of Harding County: S. Dak. Geol. Survey Rept. Inv. 68, 39 p. Map, 1:562,500.
59. Billings Geological Society, 1952, Black Hills--Williston Basin: Guidebook, 3rd Ann. Field Conf., 178 p. Map, 1:125,000.
60. Stevenson, R. E., 1952, Structures and stratigraphy of southwestern Butte County: S. Dak. Geol. Survey Rept. Inv. 69, 32 p. Pl. 4, 1:126,000.
61. Baker, C. L., 1953, Geology of southern Jackson County and vicinity: S. Dak. Geol. Survey Rept. Inv. 73, 14 p. Map, 1:250,000.
62. Crandall, D. R., 1953, Pleistocene geology of part of central South Dakota: Geol. Soc. America Bull., v. 64, no. 5. Pl. 1, 1:125,000.
63. Petsch, B. C., 1953, Geologic map of South Dakota: S. Dak. Geol. Survey, Map, 1:562,500.
64. Gries, J. P., 1954, Cretaceous rocks of Williston Basin: Am. Assoc. Petroleum Geologists Bull., v. 38, no. 4, p. 443-454. Fig. 2, 1:8,500,000.
65. Flint, R. F., 1955, Pleistocene geology of eastern South Dakota: U. S. Geol. Survey Prof. Paper 262, 173 p. (a) Pl. 1, 1:500,000; (b) fig. 4, 1:2,250,000.

66. Gries, J. P., and Tullis, E. L., 1955, Geologic history of the Black Hills: N. Dak. Geol. Soc., Black Hills Field Conf. Guidebook, 90 p. Map, p. 32, 1:1,000,000 (map of same area at same scale on p. 83).
67. Horberg, Leland, and Anderson, R. C., 1956, Bedrock topography and Pleistocene glacial lobes in central United States: Jour. Geology, v. 64, no. 2, p. 101-116. Fig. 1, 1:850,000.
68. Braddock, W. A., 1957, Stratigraphic and structural controls of uranium deposits on Long Mountain, South Dakota: U. S. Geol. Survey Bull. 1063-A, p. 1-11. Pl. 1, 1:6,000.
69. White, E. M., 1957, A relocation of part of the Mankato Drift boundary in Hand County, South Dakota: Iowa Acad. Sci. Proc., v. 64, p. 413-415. Fig. 1, 1:42,000.
70. Cox, E. J., and others, 1962, Geology of selected highway strips in South Dakota: S. Dak. Geol. Survey Rept. Inv. 93, 184 p., 53 geologic strip maps (various scales).

Figure 2  
 MAP SHOWING PUBLISHED GEOLOGIC REPORTS ON SOUTH DAKOTA STRUCTURAL GEOLOGY



Published Geologic Reports on South Dakota  
Structural Geology

1. Darton, N. H., 1901, Preliminary description of the geology and water resources of the southern half of the Black Hills and adjoining regions in South Dakota and Wyoming: U. S. Geol. Survey Ann. Rept. 21, pt. 4, p. 489-599. (a) Pl. 89, 1:900,000; (b) fig. 290, 1:650,000.
2. \_\_\_\_\_ 1909, Geology and underground waters of South Dakota: U. S. Geol. Survey Water-Supply Paper 227, 156 p. Pl. 13, 1:2,500,000.
3. Winchester, D. E., 1913, Cross bedding in the White River formation of northwestern South Dakota: Jour. Geology, v. 21, p. 550-556. Fig. 1, 1:125,000.
4. Winchester, D. E., Hares, C. J., Lloyd, E. R., and Parks, E. M., 1916, The lignite field of northwestern South Dakota: U. S. Geol. Survey Bull. 627, 169 p. Fig. 3, 1:760,320.
5. Darton, N. H., 1918, The structure of parts of the central Great Plains: U. S. Geol. Survey Bull. 691-A, p. 1-26. Pls. I, III, 1:2,500,000.
6. Ward, Freeman, and Wilson, R. A., 1922, The possibilities of oil in western Dewey County: S. Dak. Geol. and Nat. Hist. Survey Circ. 9, 10 p. Fig. 2, 1:200,000.
7. Wilson, R. A., 1922a, The possibilities of oil in South Dakota, a preliminary discussion: S. Dak. Geol. and Nat. Hist. Survey Bull. 10, 97 p. Map, 1:1,500,000.
8. \_\_\_\_\_ 1922b, The possibilities of oil in northern Dewey County: S. Dak. Geol. Survey Circ. 10, 7 p. Fig. 2, 1:443,000.
9. Moulton, G. F., 1923, Oil and gas prospects in southern Perkins County: S. Dak. Geol. and Nat. Hist. Survey Circ. 14, 12 p. Fig. 2, 1:97,000.
10. Wilson, R. A., and Ward, Freeman, 1923, The possibilities of oil in northern Ziebach County: S. Dak. Geol. and Nat. Hist. Survey Circ. 13, 11 p. Fig. 3, 1:240,000.
11. Russell, W. L., 1925, The possibilities of oil in western Ziebach County: S. Dak. Geol. and Nat. Hist. Survey Circ. 20, 25 p. Fig. 3, 1:79,000.
12. Ward, Freeman, 1925a, Structures in northern Haakon County: S. Dak. Geol. Survey Circ. 22, 25 p. Fig. 2, 1:433,000.
13. \_\_\_\_\_ 1925b, The structure of western South Dakota: S. Dak. Geol. Survey Circ. 25, 7 p. Map, 1:500,000.
14. Wilson, R. A., 1925a, Oil and gas possibilities in northeastern Meade County: S. Dak. Geol. and Nat. Hist. Survey Circ. 23, 14 p. Fig. 2, 1:100,000.
15. \_\_\_\_\_ 1925b, The Ragged Butte structure: S. Dak. Geol. Survey Circ. 24, 7 p. Fig. 3, 1:70,000.
16. Russell, W. L., 1926a, The possibilities of oil in western Corson County: S. Dak. Geol. and Nat. Hist. Survey Circ. 27, 18 p. Fig. 4, 1:160,000.

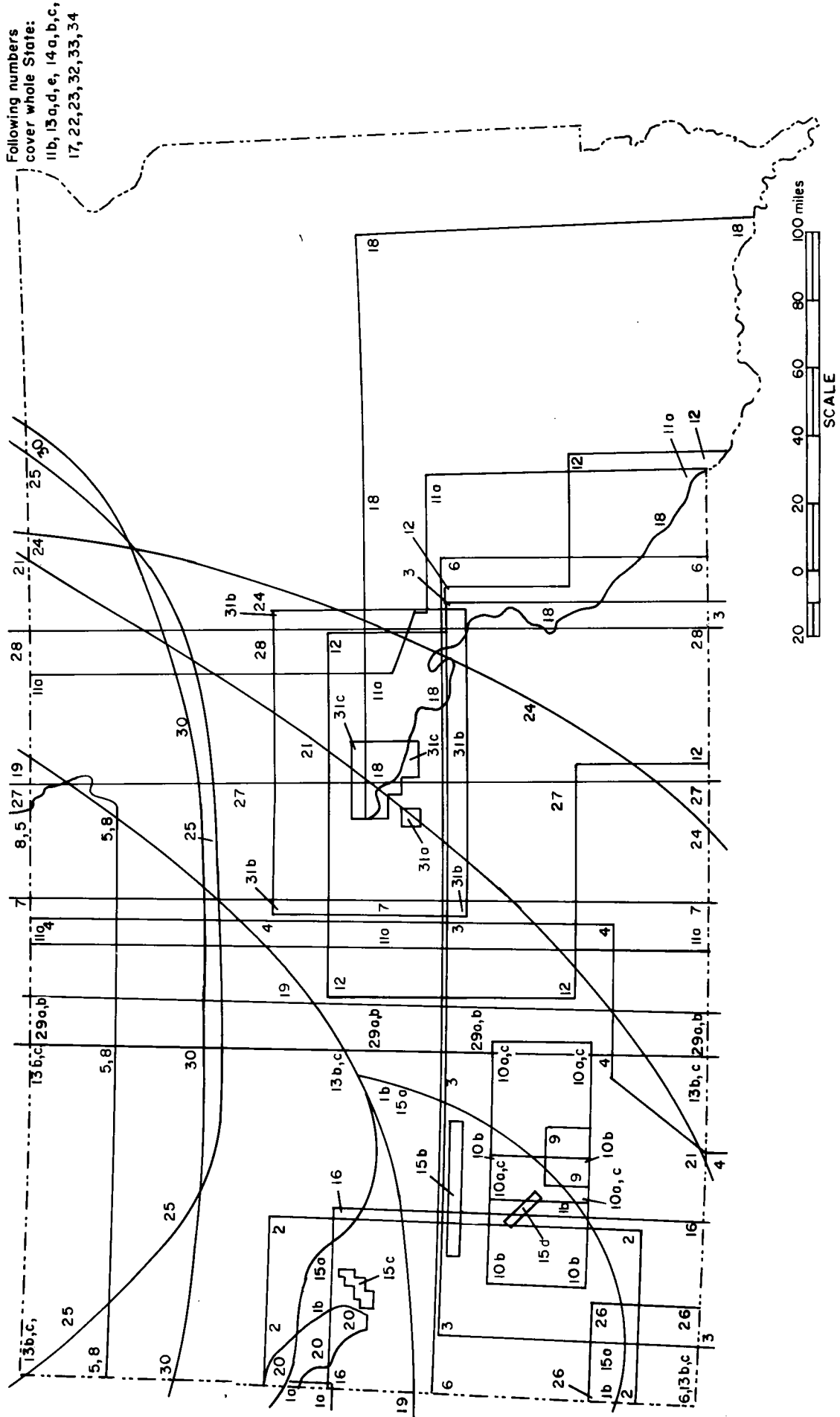
17. Russell, W. L., 1926b, Structures in western Haakon and eastern Pennington Counties: S. Dak. Geol. and Nat. Hist. Survey Circ. 28, 24 p. (a) Fig. 3, 1:190,000; (b) fig. 4, 1:45,000.
18. \_\_\_\_\_ 1927a, Origin of sandstone dikes of the Black Hills region: Am. Jour. Sci., 5th ser., v. 14, p. 402-408. Fig. 1, two areas, 1:625,000.
19. \_\_\_\_\_ 1927b, The oil possibilities of South Dakota: S. Dak. Geol. and Nat. Hist. Survey Pamphlet II, 6 p. Map in pocket, 1:500,000.
20. Rothrock, E. P., 1930, The Fairburn structure: S. Dak. Geol. Survey Rept. Inv. 6, 12 p. Fig. 1, 1:31,250.
21. Russell, W. L., 1930, The possibilities of oil and gas in western Potter County: S. Dak. Geol. Survey Rept. Inv. 7, 15 p. Fig. 4, 1:95,000.
22. Rothrock, E. P., 1931a, The Cascade anticline: S. Dak. Geol. Survey Rept. Inv. 8, 19 p. Map, 1:63,360.
23. \_\_\_\_\_ 1931b, Chilson anticline: S. Dak. Geol. Survey Rept. Inv. 9, 26 p. Map preceding p. 1, 1:31,680 and map following p. 1, 1:126,720. (both cover same area).
24. Rothrock, E. P., and Robinson, T. W., Jr., 1936, Artesian conditions in west-central South Dakota: S. Dak. Geol. Survey Rept. Inv. 26, 93 p. Map (in pocket), 1:750,000.
25. Rothrock, E. P., 1937, Structural conditions in Harding County: S. Dak. Geol. Survey Rept. Inv. 28, 30 p. (a) Map following p. 30, 1:250,000; (b) map following p. 28, 1:63,360; (c) map following p. 27, 1:62,500.
26. Wing, M. E., 1938, A structural survey of the Pierre gas field, South Dakota: S. Dak. Geol. Survey Rept. Inv. 29, 20 p. (a) Map following p. 18, 1:2,500,000; (b) map following p. 20, 1:95,000.
27. Gries, J. P., 1939, A structural survey of part of the upper Missouri Valley in South Dakota: S. Dak. Geol. Survey Rept. Inv. 31, 38 p. (a) Pl. III, 1:2,500,000; (b) map in pocket, 1:126,720.
28. \_\_\_\_\_ 1940, Structural survey of northeastern Stanley County: S. Dak. Geol. Survey Rept. Inv. 34, 52 p. (a) Pl. V, 1:2,500,000; (b) map in pocket, 1:120,000.
29. Wing, M. E., and Gries, J. P., 1941, Stratigraphy and structure of the Chamberlain section of the Missouri River Valley: S. Dak. Geol. Survey Rept. Inv. 39, 72 p. (a) Pl. IV, 1:2,500,000; (b) map in back, 1:125,000.
30. Ballard, Norval, 1942, Regional geology of Dakota Basin: Am. Assoc. Petroleum Geologists Bull., v. 26, no. 10, p. 1557-1584. Fig. 2, 1:6,000,000.
31. Petsch, B. C., 1942, The Medicine Butte anticline: S. Dak. Geol. Survey Rept. Inv. 45, 30 p. (a) Fig. 3, 1:10,000,000; (b) fig. 4, 1:2,787,000; (c) map in pocket, 1:190,000.
32. Runner, J. J., 1943, Structure and origin of Black Hills Precambrian granite domes: Jour. Geology, v. 51, no. 7, p. 431-457. Fig. 3, 1:62,500.

33. Rothrock, E. P., 1944, A geology of South Dakota, part III: Mineral resources: S. Dak. Geol. Survey Bull. 15, 255 p. Fig. 13, 1:4,000,000.
34. Morgan, R. E., and Petsch, B. C., 1945, A geological survey in Dewey and Corson Counties, South Dakota: S. Dak. Geol. Survey Rept. Inv. 49, 53 p. (a) Map, 1:160,000; (b) fig. 7, 1:2,000,000.
35. Rothrock, E. P., 1947, Geology of the Missouri Valley and vicinity near Mobridge: S. Dak. Geol. Survey Rept. Inv. 58, 29 p. Map, 1:145,000.
36. Baker, C. L., 1948, The Pennington-Haakon County central boundary area with general discussion of its surroundings: S. Dak. Geol. Survey Rept. Inv. 64, 28 p. Map, 1:62,500.
37. Noble, J. A., Harder, J. O., and Slaughter, A. J., 1949, Structure of a part of the northern Black Hills and the Homestake Mine: Geol. Soc. America Bull., v. 60, no. 2, p. 321-352. Fig. 5, 1:125,000.
38. Rothrock, E. P., 1949, Structures south of the Black Hills: S. Dak. Geol. Survey Rept. Inv. 62, 52 p. (a) Map following p. 38, 1:380,000; (b) map in back, 1:250,000; (c) map in back, 1:158,000.
39. Petsch, B. C., 1949, North part of the Whitewood anticline: S. Dak. Geol. Survey Rept. Inv. 65, 30 p. (a) Fig. 10, 1:23,000; (b) map in pocket, 1:62,500.
40. Baker, C. L., 1952, Geology of Harding County: S. Dak. Geol. Survey Rept. Inv. 68, 39 p. Map in back, 1:160,000.
41. Barkley, R. C., 1952, Artesian conditions in southeastern South Dakota: S. Dak. Geol. Survey Rept. Inv. 71, 71 p. Map, 1:450,000.
42. Gries, J. P., 1952, Williston Basin area defined: Oil, v. 11, no. 12, Map on p. 38, 1:6,500,000.
43. Noble, J. A., 1952, Structural features of the Black Hills and adjacent areas developed since pre-Cambrian time: Billings Geol. Soc., 3rd Ann. Field Conf., p. 31-37. Figs. 1, 2, and 5, 1:1,700,000.
44. Stevenson, R. E., 1952, Structures and stratigraphy of southwestern Butte County: S. Dak. Geol. Survey Rept. Inv. 69, 32 p. Pl. 4, 1:126,000.
45. Baker, C. L., 1953, Geology of southern Jackson County and vicinity: S. Dak. Geol. Survey Rept. Inv. 73, 14 p. Map, 1:250,000.
46. Barkley, R. C., 1953, Artesian conditions in area surrounding the Sioux Quartzite ridge: S. Dak. Geol. Survey Rept. Inv. 72, 68 p. Map (in pocket), 1:450,000.
47. Petsch, B. C., 1953, Structure map of South Dakota (Greenhorn datum): S. Dak. Geol. Survey, map, 1:140,000.
48. Erickson, H. D., 1954, Artesian conditions in east-central South Dakota: S. Dak. Geol. Survey Rept. Inv. 74, 116 p. (a) Map, p. 113, 1:1,400,000; (b) map (in pocket), 1:600,000.
49. Kunkel, R. P., 1954, Structure contour map of the base of Mississippi rocks in the Williston Basin and adjoining areas of Montana, North Dakota, and Wyoming: U. S. Geol. Survey Oil and Gas Inv. Map, OM 165. 1:1,000,000.



50. McCabe, W. S., 1954, Williston Basin paleozoic unconformities: Am. Assoc. Petroleum Geologists Bull., v. 38, no. 9, p. 1997-2010. Fig. 1, 1:11,500,000.
51. Petsch, B. C., 1954, Preliminary report on the Reva Gap anticline: S. Dak. Geol. Survey Rept. Inv. 76, 11 p. (a) Fig. 3, 1:45,000; (b) fig. 4, 1:158,000.
52. Erickson, H. D., 1955, Artesian conditions in northeastern South Dakota: S. Dak. Geol. Survey Rept. Inv. 77, 39 p. Map (in pocket), 1:450,000.
53. Bell, Henry III, Gott, G. B., Post, V. E., and Schnabel, R. W., 1956, Lithologic and structural control of uranium deposition in the southern Black Hills, South Dakota: U. S. Geol. Survey Prof. Paper 300, p. 345-349. Fig. 111, 1:110,000.
54. Gries, J. P., 1956, Tectonics of the Black Hills: Petroleum Information Geological Record (Rocky Mt. Sect. Amer. Assoc. Petroleum Geologists), p. 109-118, 9 figs. at various scales covering most of State.
55. Braddock, W. A., 1957, Stratigraphy and structural controls of uranium deposits on Long Mountain, South Dakota: U. S. Geol. Survey Bull. 1063-A, p. 1-11. (a) Fig. 2, 1:20,400; (b) fig. 3, 1:20,400.
56. Christensen, C. M., 1962, Water supply for the city of Faulkton: S. Dak. Geol. Survey Spec. Rept. 14, 23 p. Fig. 5, 1:62,500.
57. Perry, E. S., ?, Oil and gas in Montana: Montana School of Mines, Memoir, no. 35, ? p. Pl. 8, 1:5,700,000.

**Figure 3**  
**MAP SHOWING PUBLISHED GEOLOGIC REPORTS ON SOUTH DAKOTA STRATIGRAPHY AND PALEONTOLOGY**



Published Geologic Reports on South Dakota  
Stratigraphy and Paleontology

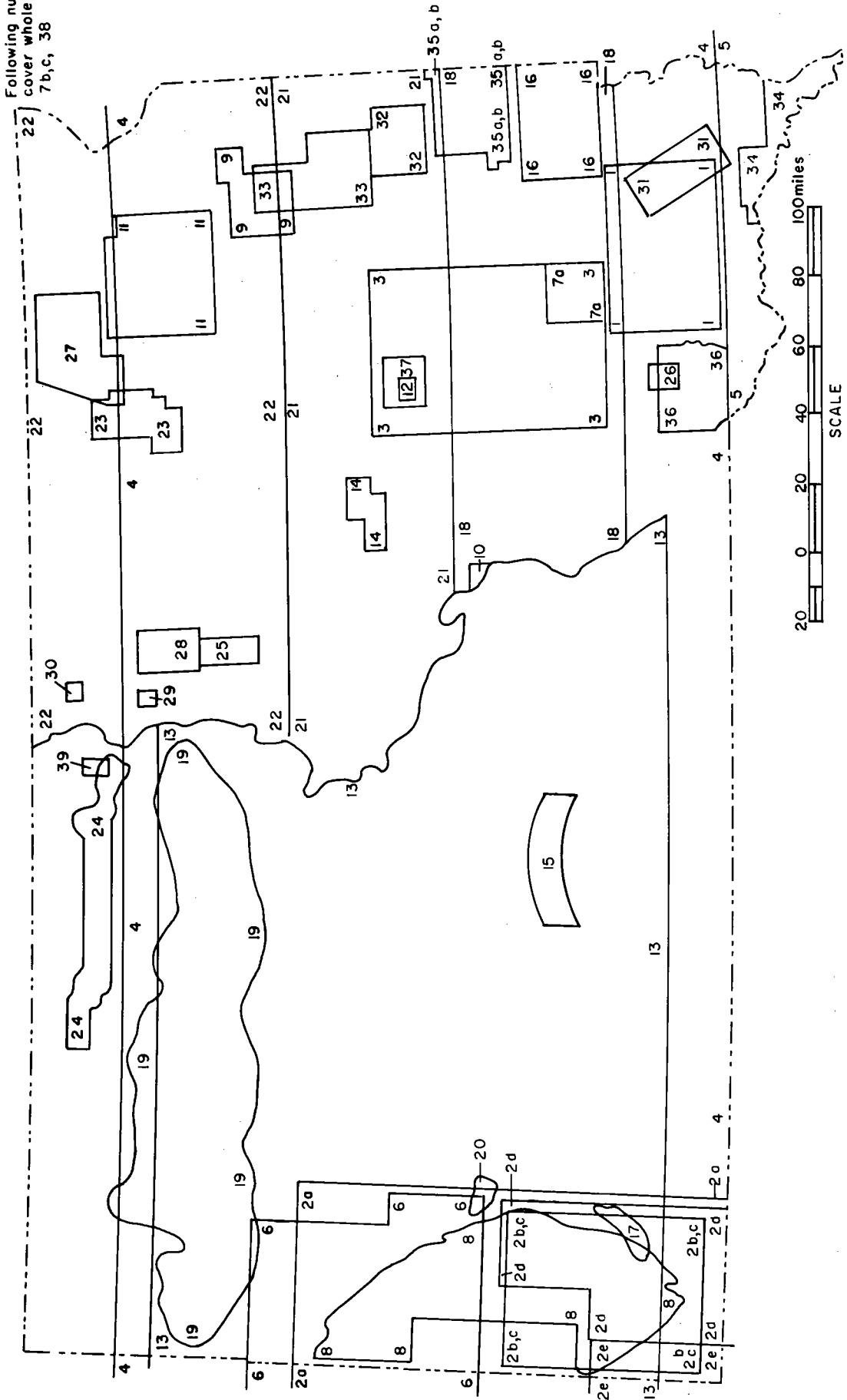
1. Ward, L. F., and others, 1899, The Cretaceous formation of Black Hills as indicated by the fossil plants: U. S. Geol. Survey 19th Ann. Rept., pt. 2-e, p. 521-946. (a) Pl. 56, 1:169,000; (b) pl. 53, 1:760,320.
2. Richardson, G. B., 1903, Upper red beds of the Black Hills: Jour. Geology, v. 11, no. 4, p. 365-393. Map, 1:1,250,000.
3. Osborn, H. F., 1909, Cenozoic mammal horizons of western North America: U. S. Geol. Survey Bull. 361, 138 p. Pl. 2, 1:2,000,000.
4. O'Harra, C. C., 1910, The Badland formations of the Black Hills region: S. Dak. School of Mines Bull. 9, 152 p. Pl. 2, 1:1,250,000.
5. Lloyd, E. R., and Hares, C. J., 1915, The Cannonball marine member of the Lance formation of North and South Dakota and its bearing on the Lance-Laramie problem: Jour. Geology, v. 23, p. 523-547. Fig. 1, 1:1,775,000.
6. Osborn, H. F., 1918, Equidae of the Oligocene, Miocene, and Pliocene of North America, Iconograph type revision: Am. Mus. Nat. Hist. Memoirs, new series, v. 2, Part I, 217 p. Fig. 8A, 1:2,750,000.
7. O'Harra, C. C., 1920, The White River Badlands: S. Dak. School of Mines Bull. 13, 175 p. Pl. 2, 1:1,450,000.
8. Stanton, T. W., 1921, The fauna of the Cannonball marine member of the Lance formation: U. S. Geol. Survey Prof. Paper 128-A, 66 p. Fig. 1, 1:1,425,000.
9. Wanless, H. R., 1923, The stratigraphy of the White River beds of South Dakota: Proc. Am. Phil. Soc., v. LXII, no. 4, p. 191-269. Fig. 7, 1:42,240.
10. Clark, John, 1937, The stratigraphy and paleontology of the Chadron formation in the Big Badlands of South Dakota: Carnegie Museum Annals, v. XXV, p. 261-350. (a) Fig. 2, 1:450,000; (b) fig. 3, 1:630,000; (c) fig. 4, 1:450,000.
11. Searight, W. V., 1937, Lithologic stratigraphy of the Pierre formation of the Missouri Valley in South Dakota: S. Dak. Geol. Survey Rept. Inv. 27, 63 p. (a) Pl. 1, 1:1,650,000; (b) pl. 4, 1:3,200,000.
12. Moxon, A. L., Olson, O. E., Searight, W. V., and Sandals, K. M., 1938, The stratigraphic distribution of selenium in the Cretaceous formations of South Dakota and the selenium content of some associated vegetation: Am. Jour. Botany, v. 25, p. 794-809. Map 1, 1:900,000.
13. Ballard, Norval, 1942, Regional geology of Dakota Basin: Am. Assoc. Petroleum Geologists Bull., v. 26, no. 10, p. 1557-1584. (a) Fig. 1, 1:6,000,000; (b) fig. 6, 1:1,300,000; (c) fig. 7, 1:1,300,000; (d) fig. 8, 1:6,000,000; (e) fig. 9, 1:6,000,000.
14. Perry E. S., and Sloss, L. L., 1943, Big Snowy group: Lithology and correlation in the northern Great Plains: Am. Assoc. Petroleum Geologists Bull., v. 27, no. 10, p. 1287-1304. (a) Fig. 1, 1:7,000,000; (b) fig. 2, 1:8,000,000; (c) fig. 7, 1:32,000,000.

15. Plumbly, W. J., 1948, Black Hills terrace gravels: A study in sediment transport: *Jour. Geology*, v. 56, p. 526-577. (a) Fig. 1, 1:1,250,000; (b) fig. 2, 1:45,000; (c) fig. 5, 1:45,000; (d) fig. 7, 1:45,000.
16. Crowley, A. J., 1951, Possible lower Cretaceous uplifting of Black Hills, Wyoming, and South Dakota: *Am. Assoc. Petroleum Geologists Bull.*, v. 35, no. 1, p. 83-90. Fig. 1, 1:1,400,000.
17. Cobban, W. A., and Reeside, J. B., 1952, Correlation of the Cretaceous formations of the western interior of the United States: *Geol. Soc. America Bull.*, v. 63, p. 1011-1044. Fig. 1, 1:21,000,000.
18. Crandall, D. R., 1952, Origin of Crow Creek member of Pierre Shale in central South Dakota: *Am. Assoc. Petroleum Geologists Bull.*, v. 36, no. 9. Fig. 1, 1:1,500,000.
19. Rader, M. T., Jr., 1952, Ordovician and Silurian carbonates of the central Williston Basin: *Billings Geol. Soc.*, 3rd Ann. Field Conf., p. 48-55. Maps, p. 50, 52, and 54, 1:5,000,000.
20. Stevenson, R. E., 1952, Structures and stratigraphy of southwestern Butte County: *S. Dak. Geol. Survey Rept. Inv.* 69, 32 p. Pl. 4, 1:126,000.
21. Barnes, T. R., 1953, Williston Basin--new province for oil exploration: *Am. Assoc. Petroleum Geologists Bull.*, v. 37, no. 2, p. 340-354. Figs. 3, 4, 5, and 6, 1:7,000,000.
22. Brown, J. L., 1953, South Dakota--geology and stratigraphy: *Petroleum Eng.*, v. 25, no. 10, p. B-7 - B-13. Fig. 2, 1:3,600,000.
23. Gries, J. P., 1954, Cretaceous rocks of Williston Basin: *Am. Assoc. Petroleum Geologists Bull.*, v. 38, no. 4, p. 443-453. Figs. 1 and 2, 1:10,000,000.
24. McCabe, W. S., 1954, Williston Basin Paleozoic unconformities: *Am. Assoc. Petroleum Geologists Bull.*, v. 38, no. 9, p. 1997-2010. Figs. 3, 4, 6, and 8, 1:9,000,000; and figs. 5, 7, and 9, 1:11,500,000.
25. Baillie, A. D., 1955, Devonian system of Williston Basin: *Am. Assoc. Petroleum Geologists Bull.*, v. 39, no. 5, p. 575-629. Figs. 2, 8, 9, 10, 11, and 12, 1:7,600,000; and figs. 14, 15, and 16, 1:25,000,000 (approx.).
26. Bates, R. L., 1955, Permo-Pennsylvanian formations between Laramie Mountains, Wyoming, and Black Hills, South Dakota: *Am. Assoc. Petroleum Geologists Bull.*, v. 39, no. 10. Fig. 7, 1:1,000,000.
27. Moore, G. W., and Levish, Murray, 1955, Uranium-bearing sandstone in the White River Badlands, Pennington County, South Dakota: *U. S. Geol. Survey Circ.* 359, 7 p. Fig. 6, 1:4,750,000.
28. Young, R. C., and Waterman, J. L., 1955, Jurassic stratigraphy of Black Hills: *N. Dak. Geol. Soc. Black Hills Field Conf.*, p. 57-63. Fig. 3 and 4, 1:2,400,000.
29. Ziegler, D. L., 1957, Pre-Piper post-Minnekahta red beds in the Williston Basin: *First Int. Williston Basin Symposium*, p. 170-178. (a) Fig. 1, 1:5,700,000; (b) fig. 8, 1:4,450,000.

30. Carlson, C. G., 1958, The stratigraphy of the Deadwood-Winnipeg interval in North Dakota and northwestern South Dakota: N. Dak. Geol. Soc. 2nd Int. Williston Basin Symposium, p. 20-26. Figs. 5-8 and 10, 1:700,000.
31. Crandall, D. R., 1958, Geology of the Pierre area, South Dakota: U. S. Geol. Survey Prof. Paper 307, 83 p. (a) Fig. 12, 1:110,000; (b) fig. 14, 1:850,000 (also published in Geol. Soc. America Bull. 64, pt. 1, 1953, p. 592); (c) fig. 23, 1:225,000 (report also contains Pierre, Oahe and Canning quadrangle maps).
32. Gries, J. P., 1958, The Dakota Formation in central South Dakota: S. Dak. Acad. Sci. Proc., v. 37, p. 161-168. Fig. 2, 1:500,000.
33. Pye, W. D., 1958, Northern Great Plains paleogeology and inter-stratigraphic relationships: N. Dak. Geol. Soc. 2nd Int. Williston Basin Symposium, p. 8-16. Fig. 2-13, 1:33,480,000.
34. Sandberg, C. A., and Hammond, C. R., 1958, Devonian system in Williston Basin and central Montana: Am. Assoc. Petroleum Geologists Bull., v. 42, no. 10, p. 2293-2334. Fig. 3, 1:5,500,000.

Figure 4  
MAP SHOWING PUBLISHED GEOLOGIC REPORTS ON SOUTH DAKOTA GROUND WATER

Following numbers  
cover whole State:  
7 b, c, 38



Published Geologic Reports on South Dakota Ground Water  
(also see Special Reports in the next section)

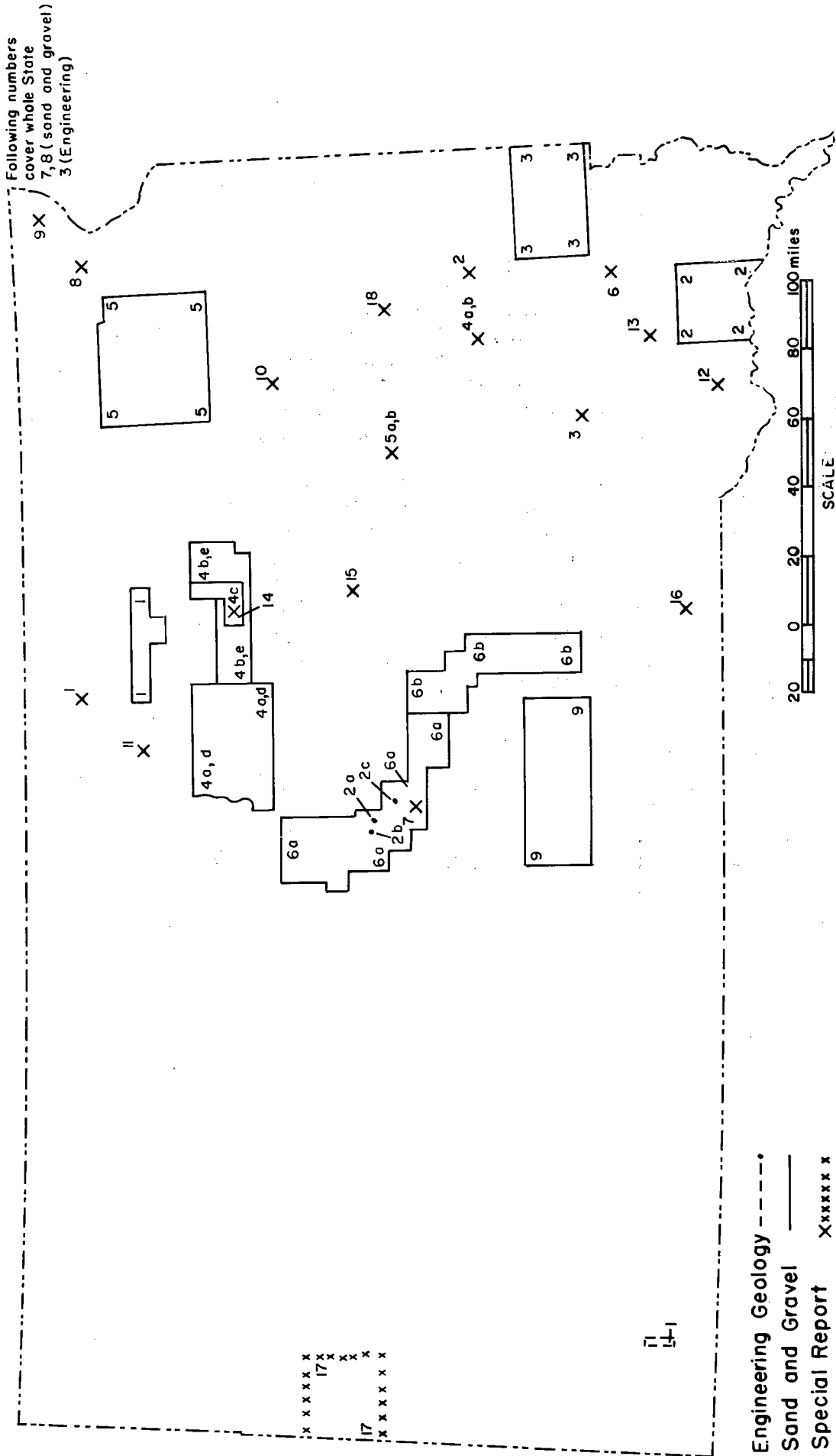
1. Todd, J. E., 1900, Geology and water resources of a portion of southeastern South Dakota: U. S. Geol. Survey Water-Supply Paper 34, 34 p. Pl. 3, 1:400,000.
2. Darton, N. H., 1901, Preliminary description of the geology and water resources of the southern half of the Black Hills and adjoining regions in South Dakota and Wyoming: U. S. Geol. Survey Ann. Rept. 21, pt. 4, p. 489-599. (a) Pl. 59, 1:250,000; (b) pl. 94, 1:450,000; (c) pl. 95, 1:450,000; (d) pl. 96, 1:250,000; (e) pl. 97, 1:250,000.
3. Todd, J. E., and Hall, C. M., 1904, Geology and water resources of part of the lower James River Valley, South Dakota: U. S. Geol. Survey Water-Supply Paper 90, 47 p. Pl. 3, 1:250,000.
4. Darton, N. H., 1905, Preliminary report on the geology and underground water resources of the central Great Plains: U. S. Geol. Survey Prof. Paper 32, 433 p. Pl. 35, 1:1,250,000.
5. Condra, G. E., 1908, Geology and water resources of a portion of the Missouri River Valley in northeastern Nebraska: U. S. Geol. Survey Water-Supply Paper 215, 59 p. Pl. 2, 1:500,000.
6. Darton, N. H., 1909a, Geology and water resources of the northern portion of the Black Hills and adjoining regions in South Dakota and Wyoming: U. S. Geol. Survey Prof. Paper 65, 105 p. Pl. 4, 1:250,000.
7. \_\_\_\_\_ 1909b, Geology and underground waters of South Dakota: U. S. Geol. Survey Water-Supply Paper 227, 156 p. (a) Fig. 6, 1:400,000; (b) pl. 1, 1:1,250,000; (c) pl. 13, 1:2,500,000.
8. \_\_\_\_\_ 1918, Artesian waters in the vicinity of the Black Hills: U. S. Geol. Survey Water-Supply Paper 428, 64 p. Pl. 1, 1:250,000.
9. Rothrock, E. P., 1933, Water supplies and geology of Lake Kampeska: S. Dak. Geol. Survey Rept. Inv. 17, 11 p. Fig. 7, 1:105,000.
10. \_\_\_\_\_ 1934, Water supplies at Fort Thompson, South Dakota: S. Dak. Geol. Survey Rept. Inv. 18, 10 p. Diagram following p. 1, 1:31,680.
11. \_\_\_\_\_ 1935, Geology and water resources of Day County, South Dakota: S. Dak. Geol. Survey Rept. Inv. 25, 42 p. Map following p. 16, 1:175,000.
12. Rothrock, E. P., and Petsch, B. C., 1935, A shallow water supply for Huron, South Dakota: S. Dak. Geol. Survey Rept. Inv. 24, 9 p. Diagram following p. 3, 1:70,000.
13. Rothrock, E. P., and Robinson, T. W., Jr., 1936, Artesian conditions in west-central South Dakota: S. Dak. Geol. Survey Rept. Inv. 26, 93 p. Map, 1:1,500,000.
14. Rothrock, E. P., 1941, Sources of water supply for the city of Miller, South Dakota: S. Dak. Geol. Survey Rept. Inv. 40, 15 p. Map, 1:75,000.

15. Rothrock, E. P., 1942, A hydrologic study of the White River Valley: S. Dak. Geol. Survey Rept. Inv. 41, 32 p. Map, 1:28,800.
16. Rothrock, E. P., and Otton, E. G., 1947, Ground water resources of the Sioux Falls area, South Dakota, Part I: S. Dak. Geol. Survey Rept. Inv. 56. Fig. 2, 1:145,000.
17. Littleton, R. T., 1949, Geology and ground-water hydrology of the Angostura irrigation project, South Dakota: U. S. Geol. Survey Circ. 54, 96 p. Pl. 2, 1:62,500.
18. Barkley, R. C., 1953, Artesian conditions in the area surrounding the Sioux Quartzite ridge: S. Dak. Geol. Survey Rept. Inv. 72, 68 p. Map (in pocket), 1:500,000.
19. Colby, B. R., Hembree, C. H., and Jochens, E. R., 1953, Chemical quality of water and sedimentation in the Moreau River drainage basin, South Dakota: U. S. Geol. Survey Circ. 270, 53 p. Fig. 6, 1:1,000,000.
20. Rosier, A. J., 1953, Ground-water resources of the Rapid Valley unit, Cheyenne Division, South Dakota: U. S. Geol. Survey Circ. 201, 32 p. Pl. 1, 1:31,680.
21. Erickson, H. D., 1954, Artesian conditions in east-central South Dakota: S. Dak. Geol. Survey Rept. Inv. 74, 116 p. Map (in pocket), 1:600,000.
22. \_\_\_\_\_ 1955, Artesian conditions in northeastern South Dakota: S. Dak. Geol. Survey Rept. Inv. 77, 39 p. Map (in pocket), 1:450,000.
23. Rothrock, E. P., 1955, Ground water reservoirs near Aberdeen, South Dakota: S. Dak. Geol. Survey Rept. Inv. 78, 47 p. Map, 1:100,000.
24. Tychsen, P. C., and Vorhis, R. C., 1955, Reconnaissance of geology and ground water in the lower Grand River Valley, South Dakota: U. S. Geol. Survey Water-Supply Paper 1298, 33 p. Pl. 1, 1:125,000.
25. Lee, K. Y., 1956, Geology and shallow water resources of the Blue Blanket Valley and Hoven outwash, Potter County, South Dakota: S. Dak. Geol. Survey Rept. Inv. 80, 57 p. Pl. 1, 1:55,000.
26. Stoley, Aaron, 1956, A glacial outwash study in South Dakota (Delmont Outwash): S. Dak. Geol. Survey Rept. Inv. 81, 44 p. Pls. 3, 4, and 5, 1:70,000.
27. Koopman, F. C., 1957, Ground water in the Crow Creek-Sand Lake area, Brown and Marshall Counties, South Dakota: U. S. Geol. Survey Water-Supply Paper 1425, 125 p. Pl. 1, 1:125,000.
28. Lee, K. Y., 1957a, Geology and shallow water resources between Hoven and Bowdle, South Dakota: S. Dak. Geol. Survey Rept. Inv. 83, 58 p. Pl. 1, 1:63,360.
29. \_\_\_\_\_ 1957b, The water supply near Selby, Walworth County, South Dakota: S. Dak. Geol. Survey, 7 p. Pls. 1 and 2, 1:25,200.
30. \_\_\_\_\_ 1957c, The water supply at Mound City, Campbell County, South Dakota: S. Dak. Geol. Survey, 15 p. Fig. 2, 1:9,000.
31. Tipton, M. J., 1957, Geology and hydrology of the Parker-Centerville outwash: S. Dak. Geol. Survey Rept. Inv. 82, 52 p. Pl. 1, 1:95,000.



32. Lee, K. Y., 1958, Geology and shallow ground water resources of the Brookings area, Brookings County, South Dakota: S. Dak. Geol. Survey Rept. Inv. 84, 62 p. (a) Pl. 1, 1:48,000; (b) fig. 3, 1:186,000 (both cover same area).
33. Steece, F. V., 1958, Geology and shallow ground water resources of the Watertown-Estelline area, South Dakota: S. Dak. Geol. Survey Rept. Inv. 85, 36 p. (a) Pl. 1 and 2, 1:125,000; (b) fig. 4, 1:1,660,000 (both cover same area).
34. Jorgensen, D. C., 1960, Geology and shallow ground water resources of the Missouri Valley between North Sioux City and Yankton, South Dakota: S. Dak. Geol. Survey Rept. Inv. 86, 59 p. Pl. 1, 1:125,000.
35. Lee, K. Y., and Powell, J. E., 1961, Geology and ground-water resources of glacial deposits in the Flandreau area, Brookings, Moody and Lake Counties, South Dakota: S. Dak. Geol. Survey Rept. Inv. 87, 117 p. (a) Pl. 2, 1:125,000; (b) pl. 3, 1:125,000.
36. Walker, I. R., 1961a, Shallow ground water resources in the Wagner area, Charles Mix and Douglas Counties, South Dakota: S. Dak. Geol. Survey Rept. Inv. 90, 53 p. Figs. 2, 4, 6, and 7, 1:285,000.
37. \_\_\_\_\_ 1961b, Shallow outwash deposits in Huron-Wolsey area, Beadle County, South Dakota: S. Dak. Geol. Survey Rept. Inv. 91, 44 p. (a) Fig. 3, 1:200,000; (b) fig. 4, 1:250,000; (c) fig. 5, 1:200,000 (all cover same area).
38. Agnew, A. F., Tipton, M. J., and Steece, F. V., 1962, South Dakota's ground water needs and supplies: S. Dak. Geol. Survey Misc. Inv. 4, 9 p. Figs. 1-11, 1:5,250,000.
39. Hedges, L. S., 1962, Water supply for the city of Wakpala, South Dakota: S. Dak. Geol. Survey Misc. Inv. 5, 17 p. Fig. 4, 1:25,000.

**Figure 5**  
**MAP SHOWING PUBLISHED GEOLOGIC REPORTS ON SOUTH DAKOTA SPECIAL REPORTS, SAND AND GRAVEL, AND ENGINEERING GEOLOGY.**



Published Geologic Reports on South Dakota Special Reports,  
Sand and Gravel, and Engineering Geology

(South Dakota Geological Survey Special Reports)

1. Steece, F. V., 1959, Water supply for the city of Eureka: S. Dak. Geol. Survey Spec. Rept. 1, 22 p. Pl. 1, 1:100,000.
2. Tipton, M. J., 1959, Geology of the shallow water supply at Madison, South Dakota: S. Dak. Geol. Survey Spec. Rept. 2, 11 p. Pl. 1, 1:115,000.
3. Jorgensen, D. C., 1960a, Geology and ground water resources at Ethan, South Dakota: S. Dak. Geol. Survey Spec. Rept. 5, 19 p. Fig. 3, 1:63,360.
4. \_\_\_\_\_ 1960b, Geology and ground water resources at Howard, South Dakota: S. Dak. Geol. Survey Spec. Rept. 6, 21 p. (a) Fig. 4, 1:63,360; (b) fig. 6, 1:10,260.
5. Tipton, M. J., 1960a, Shallow water supply near Huron, South Dakota: S. Dak. Geol. Survey Spec. Rept. 4, 15 p. (a) Pl. 1, 1:115,000; (b) fig. 1, 1:2,500,000 (both cover same area).
6. \_\_\_\_\_ 1960b, Shallow water supply for the city of Parker: S. Dak. Geol. Survey Spec. Rept. 10, 15 p. Fig. 1, 1:63,360.
7. \_\_\_\_\_ 1960c, Shallow water supply for the city of Ft. Pierre: S. Dak. Geol. Survey Spec. Rept. 11, 13 p. Fig. 3, 1:15,600.
8. \_\_\_\_\_ 1960d, Shallow water supply for the city of Sisseton: S. Dak. Geol. Survey Spec. Rept. 12, 22 p. Fig. 3, 1:85,000.
9. Wong, H. D., 1960a, Shallow water supply for the city of Rosholt: S. Dak. Geol. Survey Spec. Rept. 7, 16 p. Fig. 1, 1:63,360.
10. \_\_\_\_\_ 1960b, Shallow water supply for the city of Clark: S. Dak. Geol. Survey Spec. Rept. 8, 13 p. Fig. 1, 1:63,360.
11. \_\_\_\_\_ 1960c, Shallow water supply for the city of Selby: S. Dak. Geol. Survey Spec. Rept. 9, 19 p. Fig. 1, 1:63,360.
12. Bruce, R. L., 1962a, Water supply for the city of Tyndall: S. Dak. Geol. Survey Spec. Rept. 13, 23 p. Fig. 3, 1:40,000.
13. \_\_\_\_\_ 1962b, Water supply for the city of Menno: S. Dak. Geol. Survey Spec. Rept. 16, 24 p. Fig. 2, 1:62,500.
14. Christensen, C. M., 1962a, Water supply for the city of Faulkton: S. Dak. Geol. Survey Spec. Rept. 14, 23 p. Fig. 3, 1:62,500.
15. \_\_\_\_\_ 1962b, Ground water supply for the city of Miller: S. Dak. Geol. Survey Spec. Rept. 17, 23 p. Fig. 3, 1:110,000.
16. \_\_\_\_\_ 1962c, Shallow water supply for the city of Burke: S. Dak. Geol. Survey Spec. Rept. 18, 13 p. Fig. 3, 1:48,000.
17. Cox, E. J., 1962, Preliminary report on the artesian water supplies from the Minnelusa and Pahasapa aquifers in the Spearfish-Belle Fourche area: S. Dak. Geol. Survey Spec. Rept. 19, 24 p. Pl. 2, 1:125,000.
18. Hedges, L. S., 1962, Water supply for the city of Lake Preston: S. Dak. Geol. Survey Spec. Rept. 15, 24 p. Fig. 2, 1:40,000.

## (Sand and Gravel)

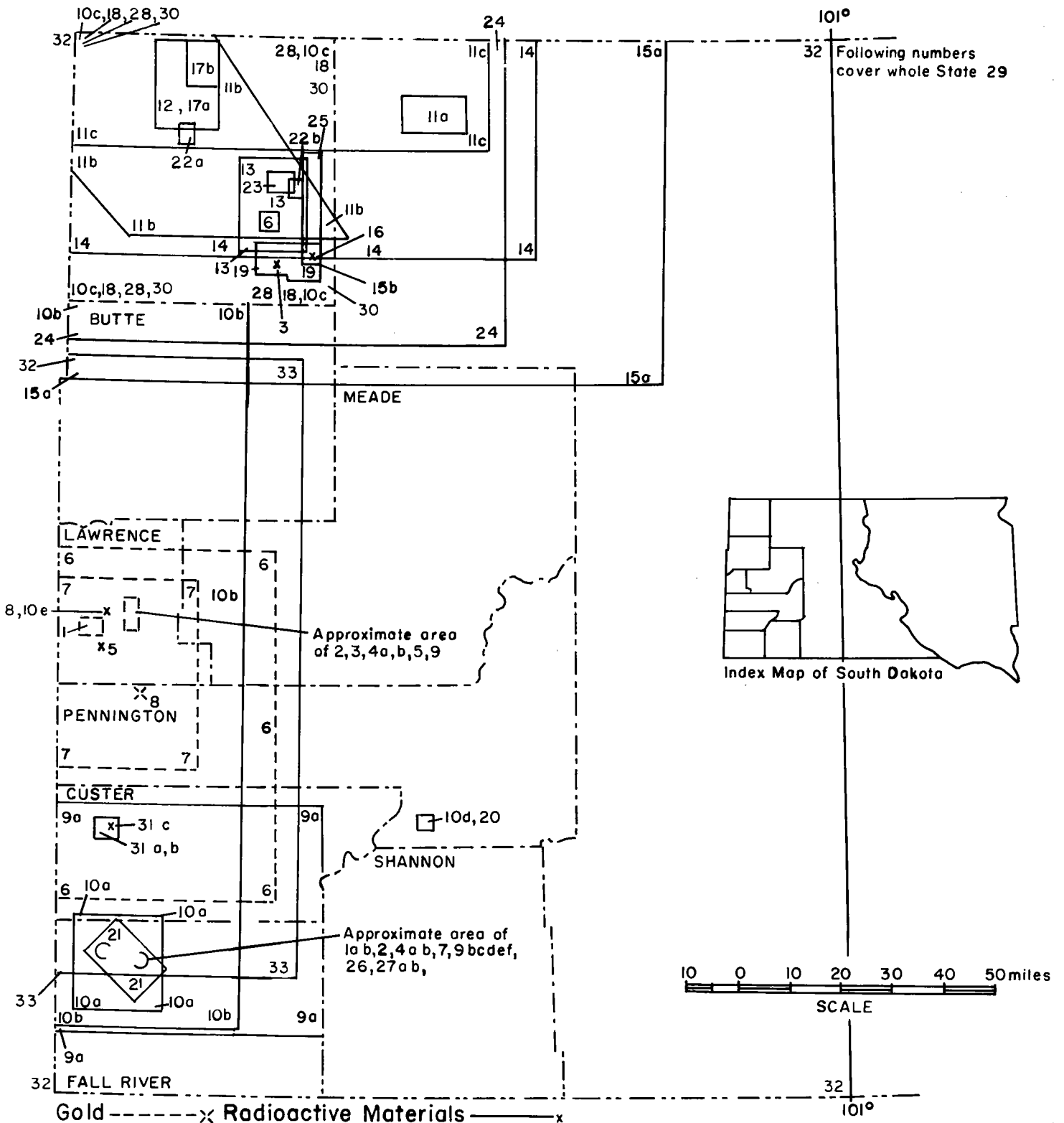
1. Rothrock, E. P., 1924, Sand and gravel deposits in eastern South Dakota, Part 2, along the Yellowstone Trail in Edmunds County: S. Dak. Geol. and Nat. Hist. Survey Circ. 15, 21 p. Fig. 5, 1:190,000.
2. \_\_\_\_\_ 1925, Sand and gravel deposits of Yankton County: S. Dak. Geol. and Nat. Hist. Survey Circ. 21, 56 p. Map, 1:140,000.
3. Rothrock, E. P., and Newcomb, R. V., 1926, Sand and gravel deposits of Minnehaha County: S. Dak. Geol. and Nat. Hist. Survey Circ. 26, 166 p. (a) Fig. 2, 1:250,000; (b) fig. 6, 1:633,600; (c) fig. 8, 1:220,000 (all cover same area).
4. \_\_\_\_\_ 1932, Sand and gravel deposits in Potter and Faulk Counties: S. Dak. Geol. Survey Rept. Inv. 11, pt. 1 and 2, 103 p. (a) Maps following p. 4; (b) map following p. 4; (c) map following p. 14; (d) map following p. 17; (e) map following p. 50, all maps 1:250,000.
5. Rothrock, E. P., 1935, Geology and water resources of Day County: S. Dak. Geol. Survey Rept. Inv. 25, 42 p. Map following p. 38, 1:15,840.
6. \_\_\_\_\_ 1944, Sand and gravel deposits in the Missouri Valley between Little Bend and White River: S. Dak. Geol. Survey Rept. Inv. 47, 118 p. (a) Map A, (includes 10 figs.), 1:200,000; (b) map B, (includes 13 figs.), 1:200,000.
7. Larrabee, D. M., 1946, Preliminary map showing sand and gravel deposits of South Dakota: U. S. Geol. Survey Missouri Basin Studies Map 4, 1:500,000.
8. Bryson, R. P., Fox, E. L., Larrabee, D. M., and others, 1947, Map showing construction materials and nonmetallic mineral resources of South Dakota: U. S. Geol. Survey Missouri Basin Studies #12. Map, 1:500,000.
9. Caddes, E. E., 1947, Gravel deposits along the White River between the South Fork of the White River and South Dakota Highway 47: S. Dak. Geol. Survey Rept. Inv. 55, 9 p. Map in back, 1:160,000.

## (Engineering Geology)

1. Robb, G. L., 1951, Final geologic report--Angostura Dam, Cheyenne Division, Missouri River Basin project, U. S. Bureau Reclamation: Eng. Geol. Br., Geol. Rept. G-113. Fig. 6, 1:4,800.
2. Crandall, D. R., 1952, Landslides and rapid-flowage phenomena near Pierre, South Dakota: Econ. Geology, v. 47, no. 5, p. 548-568. (a) Fig. 3, 1:2,400; (b) fig. 8, 1:3,250; (c) fig. 9, 1:4,680.
3. Cox, E. J., and others, 1962, Geology of selected highway strips in South Dakota: S. Dak. Geol. Survey Rept. Inv. 93, 184 p., 53 geologic strip maps (various scales).

Figure 6

MAP SHOWING PUBLISHED GEOLOGIC REPORTS ON SOUTH DAKOTA  
GOLD AND RADIOACTIVE MATERIALS.



Published Geologic Reports on South Dakota  
Gold and Radioactive Materials

(Gold)

1. Smith, F. C., 1897, The Potsdam gold-ores of the Black Hills of South Dakota: *Am. Inst. Mining Eng.*, v. 27, p. 404-428. Map following p. 428, 1:72,000.
2. Hosted, J. O., and Wright, L. B., 1923, Geology of the Homestake orebodies and the Lead area of South Dakota I: *Eng. and Min. Jour.*, v. 115, no. 18, p. 793-799. Sketch map on p. 794, 1:62,500.
3. Paige, Sidney, 1923, The geology of Homestake mine: *Econ. Geology*, v. 18, p. 205-237. Fig. 34, 1:48,000.
4. \_\_\_\_\_ 1924, Geology of region around Lead, South Dakota and its bearing on the Homestake ore body: *U. S. Geol. Survey Bull.* 765, 58 p. (a) Pl. 1, 1:31,680; (b) pl. 8 and figs. 1-8, 1:8,000.
5. McLaughlin, D. H., 1931, The Homestake enterprise--ore genesis and structure: *Eng. and Min. Jour.*, v. 132, no. 7, p. 324-329. Figs. 2, 3, and 4, 1:12,000.
6. Connolly, J. P., 1933, Geologic history of Black Hills gold placers: *S. Dak. Geol. Survey Rept. Inv.* 16, 16 p. Fig. 4, 1:450,000.
7. Gustafson, J. K., 1933, Metamorphism and hydrothermal alteration of the Homestake gold-bearing formation: *Econ. Geology*, v. 28, p. 123-162. Fig. 2, 1:36,000.
8. Allsman, P. T., 1940, Reconnaissance of gold-mining districts in the Black Hills, South Dakota: *U. S. Bur. Mines Bull.* 427, 146 p. Fig. 29, 1:9,600.
9. Noble, J. A., and Harder, J. O., 1948, Stratigraphy and metamorphism in part of northern Black Hills and Homestake mine, Lead, South Dakota: *Geol. Soc. America Bull.*, v. 59, p. 941-976. Pl. 1, 1:38,000.

(Radioactive Materials)

1. Page, L. R., and Redden, J. A., 1952, The Carnotite prospects of the Craven Canyon area, Fall River County, South Dakota: *U. S. Geol. Survey Circ.* 175, 18 p. (a) Fig. 2, 1:15,840; (b) pl. 1, 1:960.
2. Baker, K. E., and others, 1952, Carnotite deposits near Edgemont: *U. S. Atomic Energy Commission RMO-881*, 18 p. Pl. 3, 1:20,000.
3. Gill, J. R., 1953, Uranium minerals in Cedar Canyon, Harding County, South Dakota, (in) Search for and geology of radioactive deposits--Semiannual progress report, Dec. 1, 1952, to May 31, 1953: *U. S. Geol. Survey T.E.I.-330*, p. 125-138, issued by U. S. Atomic Energy Comm. Tech. Inf. Service, Oak Ridge, Tenn. Fig. 6, 1:2,640.

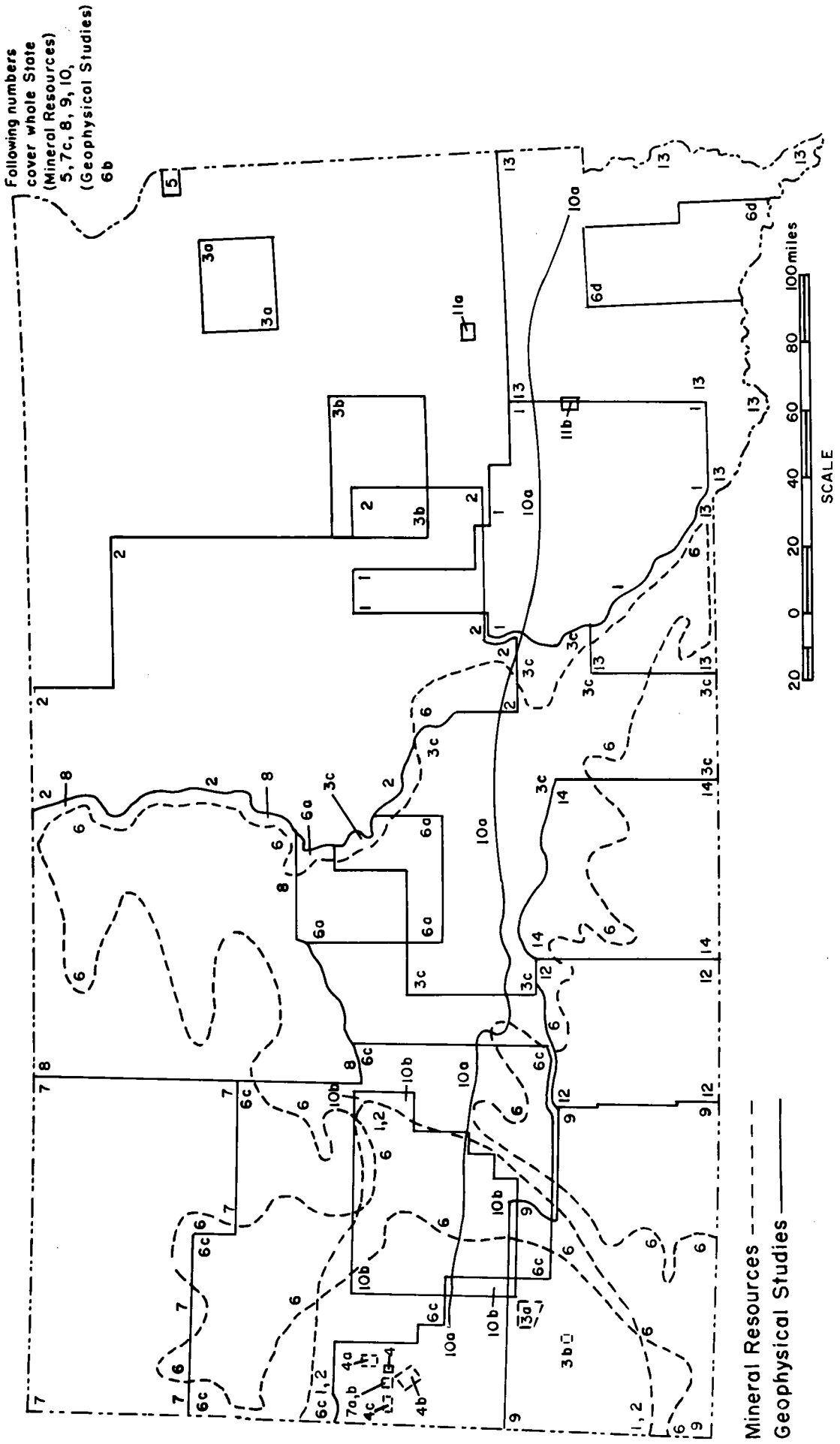
4. Gott, G. B., Page, L. R., and Jones, R. S., 1953, Black Hills, South Dakota, (in) Geologic investigations of radioactive deposits: U. S. Geol. Survey T.E.I.-390, p. 71-79, issued by U. S. Atomic Energy Comm. Tech. Inf. Service, Oak Ridge, Tenn. (a) Fig. 9, 1:1,200; (b) fig. 10, 1:7,200.
5. Vickers, R. C., 1953, An occurrence of autunite, Lawrence County, South Dakota: U. S. Geol. Survey Circ. 286, 5 p. Fig. 2, 1:480.
6. Gill, J. R., 1954, Mendenhall area, Slim Buttes, Harding County, South Dakota, (in) Geologic investigations of radioactive deposits-- Semiannual progress report, Dec. 1, 1953, to May 31, 1954: U. S. Geol. Survey T.E.I.-440, p. 113-117, issued by U. S. Atomic Energy Comm. Tech. Inf. Service, Oak Ridge, Tenn. Fig. 26, 1:22,000.
7. Gott, G. B., Jones, R. S., Post, E. V., and Braddock, W. A., 1954, Black Hills (in) Geologic investigations of radioactive deposits-- Semiannual progress report, Dec. 1, 1953, to May 31, 1954: U. S. Geol. Survey T.E.I.-440, p. 64-72, issued by U. S. Atomic Energy Comm. Tech. Inf. Service, Oak Ridge, Tenn. Fig. 10, 1:28,800.
8. Vickers, R. C., 1954, Occurrences of radioactive minerals in the Bald Mountain gold-mining area, northern Black Hills, South Dakota: U. S. Geol. Survey Circ. 351, 8 p. Fig. 2, 1:1,050.
9. Bell, Henry, and Bales, W. E., 1955, Uranium deposits in Fall River County, South Dakota: U. S. Geol. Survey Bull. 1009-G, p. 211-233. (a) Fig. 33, 1:570,000; (b) pl. 3, 1:2,400; (c) pl. 4, 1:1,800; (d) pl. 5, 1:24,000; (e) pl. 6, 1:24,000; (f) pl. 7, 1:2,400.
10. Curtiss, R. E., 1955, A preliminary report on the uranium in South Dakota: S. Dak. Geol. Survey Rept. Inv. 79, 102 p. (a) Fig. 8, 1:140,000; (b) fig. 9, 1:450,000; (c) fig. 10, 1:633,600; (d) fig. 11, 1:31,680; (e) fig. 12, 1:960.
11. Denson, N. M., and others, 1955, Uraniferous coal beds in parts of North Dakota, South Dakota and Montana: U. S. Geol. Survey Coal Inv. Map C-33. (a) Fig. 5, 1:63,360; (b) fig. 6, 1:750,000; (c) pl. 1, 1:450,000.
12. Denson, N. M., Bachman, G. O., and Zeller, H. D., 1955a, Geologic map of Cave Hills and Table Mountain area, Harding County, South Dakota: U. S. Geol. Survey Coal Inv. Map C-34, 1:63,360.
13. \_\_\_\_\_ 1955b, Geologic map of Slim Buttes area, Harding County, South Dakota: U. S. Geol. Survey Coal Inv. Map C-35, 1:63,360.
14. Gill, J. R., 1955, Lignite investigations northwestern South Dakota, southwestern North Dakota and eastern Montana, (in) Geologic investigations of radioactive deposits: U. S. Geol. Survey T.E.I.-540, p. 153-155, issued by U. S. Atomic Energy Comm. Tech. Inf. Service, Oak Ridge, Tenn. Fig. 30, 1:1,250,000.

15. Gill, J. R., and Denson, N. M., 1955, Lignite investigations, (in) Geologic investigations of radioactive deposits--Semiannual progress report, June 1, to Nov. 30, 1955, U. S. Geol. Survey T.E.I.-590, p. 233-240. (a) Fig. 46, 1:1,450,000; (b) fig. 47, 1:7,000.
16. Gill, J. R., and Moore, G. W., 1955, Carnotite-bearing sandstone in Cedar Canyon, Slim Buttes, Harding County, South Dakota: U. S. Geol. Survey Bull. 1009-I, pl. 10, 1:2,400; pl. 11, 1:95,000 (both cover same area).
17. Kepferle, R. C., and Chisholm, W. A., 1955, Cave Hills, Harding County, South Dakota, (in) Geologic investigations of radioactive deposits--Semiannual progress report, June 1 to Nov. 30, 1955, U. S. Geol. Survey T.E.I.-590, p. 240-247. (a) Fig. 49, 1:220,000; (b) fig. 51, 1:80,000.
18. King, J. W., 1955, Uranium in the Black Hills and northwestern South Dakota: N. Dak. Geol. Soc. Guidebook, Black Hills Field Conf. Map, p. 84, 1:525,000.
19. Moore, G. W., and Gill, J. R., 1955, Geologic map of the southern part of the Slim Buttes area, Harding County, South Dakota: U. S. Geol. Survey Coal Inv. Map C-36, 1:31,680.
20. Moore, G. W., and Levish, Murray, 1955, Uranium-bearing sandstone in the White River Badlands, Pennington County, South Dakota: U. S. Geol. Survey Circ. 359, 7 p. Pl. 1, 1:15,800.
21. Post, E. V., Schnabel, R. W., Gott, G. B., and Bell, Henry III, 1955, Southern Black Hills, South Dakota (in) Geologic investigations of radioactive deposits--Semiannual progress report, June 1 to Nov. 30, 1955, U. S. Geol. Survey T.E.I.-590, p. 151-159, issued by U. S. Atomic Energy Comm. Tech. Inf. Service, Oak Ridge, Tenn. Figs. 25, 26, 27, 1:250,000 (scaled approx.).
22. Schopf, J. M., Gray, R. J., and Felix, C. J., 1955, Coal petrology, (in) Geologic investigations of radioactive deposits--Semiannual progress report, Dec. 1, 1954, to May 31, 1955: U. S. Geol. Survey T.E.I.-540, p. 155-161, issued by U. S. Atomic Energy Comm. Tech. Inf. Service, Oak Ridge, Tenn. (a) Fig. 31, 1:62,500; (b) fig. 32, 1:51,000.
23. Zeller, H. D., 1955, Geologic map of the Bar H area, Slim Buttes, Harding County, South Dakota: U. S. Geol. Survey Coal Inv. Map C-37, 1:20,000.
24. Denson, N. M., and Gill, J. R., 1956, Uranium-bearing lignite and its relations to volcanic tuffs in eastern Montana and North and South Dakota: U. S. Geol. Survey Prof. Paper 300, p. 413-418. Fig. 140, 1:950,000.
25. Gill, J. R., and Denson, N. M., 1956, Lignite investigation (in) Geologic investigations of radioactive deposits--Semiannual progress report, Dec. 1, 1955, to May 31, 1956: U. S. Geol. Survey T.E.I.-620, p. 235-236, issued by U. S. Atomic Energy Comm. Tech. Inf. Service, Oak Ridge, Tenn. Fig. 41, 1:175,000.



26. Gott, G. B., 1956, Inferred relationship of some uranium deposits and calcium carbonate cement in southern Black Hills, South Dakota: U. S. Geol. Survey Bull. 1046-A. Fig. 4, 1:50,000.
27. Gott, G. B., Post, E. V., Brobst, D. A., and Cuppels, N. P., 1956, Black Hills uplift South Dakota-Wyoming (in) Geologic investigations of radioactive deposits--Semiannual progress report, Dec. 1, 1955, to May 31, 1956: U. S. Geol. Survey T.E.I.-620, p. 164-178, issued by U. S. Atomic Energy Comm. Tech. Inf. Service, Oak Ridge, Tenn. (a) Fig. 27, 1:24,000; (b) fig. 29, 1:1,000.
28. King, J. W., and Young, H. B., 1956, High-grade uraniumiferous lignites in Harding County, South Dakota: U. S. Geol. Survey Prof. Paper 300, p. 419-430. Fig. 143, 1:500,000.
29. Tourtelot, H. A., 1956, Radioactivity and uranium content of some Cretaceous shales, central Great Plains: Amer. Assoc. Petroleum Geologists Bull., v. 40, no. 1, p. 62-83.
30. Vine, J. D., 1956, Geology of uranium in the basins of Tertiary age in Wyoming and the northern Great Plains: U. S. Geol. Survey Prof. Paper 300, p. 337-344. Fig. 110, 1:2,400,000.
31. Braddock, W. A., 1957, Stratigraphic and structural controls of uranium deposits on Long Mountain, South Dakota: U. S. Geol. Survey Bull. 1063-A, p. 1-11. (a) Fig. 2, 1:20,400; (b) fig. 3, 1:20,400; (c) pl. 1, 1:6,000.
32. Osterwald, F. W., and Dean, B. G., 1957, Preliminary tectonic map of western South Dakota, showing the distribution of uranium deposits: U. S. Geol. Survey Mineral Inv. Field Studies Map MF-128, 1:500,000.
33. Robinson, C. S., and Gott, G. B., 1958, Uranium deposits of the Black Hills, South Dakota and Wyoming: Wyoming Geol. Assoc. Guidebook, Powder River Basin, p. 241-243. Fig. 1, 1:877,000.

**Figure 7**  
**MAP SHOWING PUBLISHED GEOLOGIC REPORTS ON SOUTH DAKOTA MINERAL RESOURCES AND**  
**GEOPHYSICAL STUDIES.**



Published Geologic Reports on South Dakota  
Mineral Resources and Geophysical Studies

(Mineral Resources Surveys)

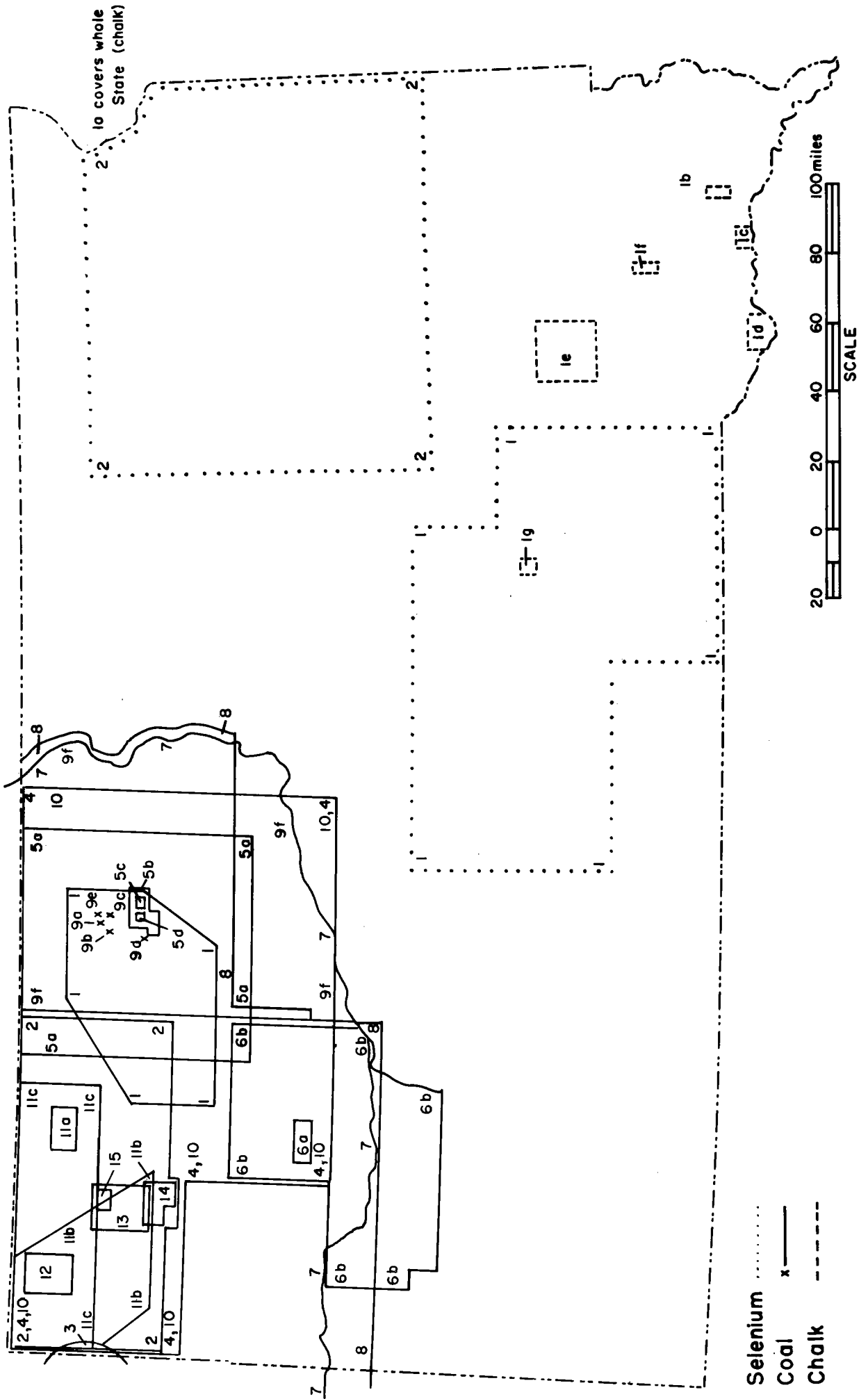
1. Newton, Henry, and Jenney, W. P., 1880, Report on the geology and resources of the Black Hills of Dakota: U. S. Geol. and Geog. Survey Rocky Mt. region (Powell), 556 p. Atlas, 1:250,000.
2. Carpenter, F. R., 1888, Preliminary report on the geology, mineral resources and mills of the Black Hills: S. Dak. School of Mines Bull. 1, 171 p. Map, 1:1,375,000.
3. O'Harra, C. C., 1899, Geology and mineral deposits of a portion of the southern Black Hills: S. Dak. School of Mines Bull. 2, 41 p. (a) Fig. 4, 1:160,000; (b) map 32, 1:7,200.
4. Irving, J. D., 1904, Economic resources of the northern Black Hills: U. S. Geol. Survey Prof. Paper 26, 222 p. (a) Pl. 5, 1:142,560; (b) pl. 9, 1:16,000; (c) pl. 17, 1:16,000.
5. Rothrock, E. P., 1939, Mineral products and Missouri River navigation in South Dakota: S. Dak. Geol. Survey Rept. Inv. 32, 10 p. Map, 1:2,800,000.
6. Gries, J. P., 1942, Economic possibilities of the Pierre Shale: S. Dak. Geol. Survey Rept. Inv. 43, 79 p. Fig. 1, 1:2,500,000.
7. Rothrock, E. P., 1944, A geology of South Dakota, Part III: Mineral resources: S. Dak. Geol. Survey Bull. 15, 255 p. (a) Fig. 3, 1:95,000; (b) fig. 5, 1:250,000; (c) map (in pocket), 1:1,250,000.
8. Dow, D. H., Larrabee, D. M., and Clabough, S. E., 1945, Mineral resources of the Missouri Valley region: U. S. Geol. Survey Missouri Basin Studies #1, 4 maps, 1:250,000.
9. Bryson, R. P., Fox, E. L., Larrabee, D. M., and others, 1947, Map showing construction materials and nonmetallic mineral resources of South Dakota: U. S. Geol. Survey Missouri Basin Studies #12. Map, 1:500,000.
10. Fischer, R. P., 1947, Map showing metallic mineral deposits of South Dakota: U. S. Geol. Survey Missouri Basin Studies #13. Map, 1:1,000,000.

(Geophysical Studies)

1. Jordan, W. H., and Rothrock, E. P., 1940a, A magnetic survey of south-central South Dakota: S. Dak. Geol. Survey Rept. Inv. 33, 19 p. Map, 1:350,000.
2. \_\_\_\_\_ 1940b, A magnetic survey of central South Dakota: S. Dak. Geol. Survey Rept. Inv. 37, 35 p. Map, 1:500,000.
3. Tullis, E. L., 1942, Magnetometer surveys during 1941: S. Dak. Geol. Survey Rept. Inv. 42, 40 p. (a) Fig. 7, 1:460,000; (b) fig. 8, 1:460,000; (c) map, 1:460,000.
4. Davis, V. C., 1948, Belle-Eldridge lead-zinc deposits, Lawrence County, South Dakota: U. S. Bur. Mines Rept. Inv. 4215, 8 p. Fig. 1, 1:2,700.

5. Petsch, B. C., 1948, A geophysical study of the Milbank granite: S. Dak. Geol. Survey Rept. Inv. 60, 20 p. Map, 1:10,200.
6. Petsch, B. C., and Carlson, L. C., 1950, Magnetic observations in South Dakota: S. Dak. Geol. Survey Rept. Inv. 66, 35 p. (a) Fig. 3, 1:500,000; (b) fig. 7 and 8, 1:2,800,000; (c) map, 1:418,000; (d) map, 1:1,250,000 (part of map showing completion of magnetometer surveys through 1946).
7. Petsch, B. C., 1958, Magnetometer survey of Harding and Perkins Counties: S. Dak. Geol. Survey Oil and Gas Inv. Map 2, 1:250,000.
8. \_\_\_\_\_ 1959, Magnetometer map of Corson, Dewey, and Ziebach Counties, South Dakota: S. Dak. Geol. Survey Oil and Gas Inv. Map 4, 1:250,000.
9. \_\_\_\_\_ 1960, Magnetometer map of Custer, Fall River, and Shannon Counties: S. Dak. Geol. Survey Oil and Gas Inv. Map 9, 1:250,000.
10. Lum, Daniel, 1961a, Gravity measurements east of the Black Hills and along a line from Rapid City to Sioux Falls, South Dakota: S. Dak. Geol. Survey Rept. Inv. 88, 26 p. (a) Fig. 1, 1:2,500,000; (b) pl. 1, 1:250,000.
11. \_\_\_\_\_ 1961b, The resistivity method applied to ground water studies of glacial outwash deposits in eastern South Dakota: S. Dak. Geol. Survey Rept. Inv. 89, 24 p. (a) Fig. 10, 1:63,360; (b) fig. 11, 1:63,360.
12. Petsch, B. C., 1961, Magnetometer map of Bennett and Washabaugh Counties: S. Dak. Geol. Survey Oil and Gas Inv. Map 7, 1:250,000.
13. \_\_\_\_\_ 1962a, Magnetometer survey of southeastern South Dakota: S. Dak. Geol. Survey Min. Resources Inv. Map 3, 1:380,000.
14. \_\_\_\_\_ 1962b, Magnetometer map of Todd and Mellette Counties: S. Dak. Geol. Survey Oil and Gas Inv. Map 8, 1:250,000.

**Figure 8**  
**MAP SHOWING PUBLISHED GEOLOGIC REPORTS ON SOUTH DAKOTA ECONOMIC GEOLOGY**  
 (Non-metallic - selenium, coal and chalk)



Published Geologic Reports on South Dakota  
Economic Geology (Nonmetallic)

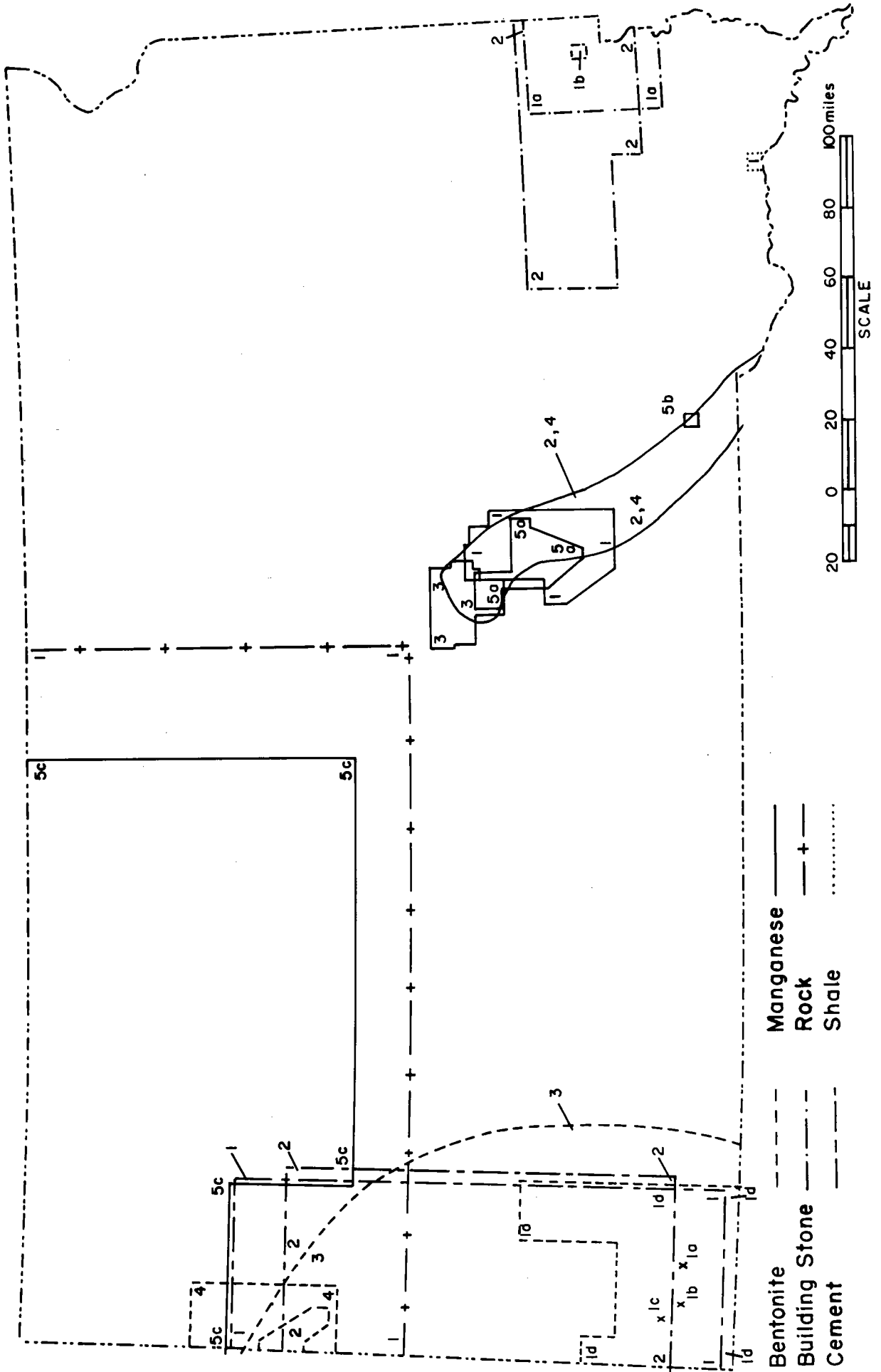
(Selenium, see fig. 8)

1. Moxon, A. L., Olson, O. E., and Searight, W. V., 1939, Selenium in rocks, soils, and plants: S. Dak. State Agr. Exp. Sta. Tech. Bull. 2, 93 p. Fig. 16, 1:1,650,000.
2. Searight, W. V., and Moxon, A. L., 1945, Selenium in glacial and associated deposits: S. Dak. State Agr. Exp. Sta. Tech. Bull. 5, 33 p. Pl. 1, 1:950,000.

(Coal, see fig. 8 and 13)

1. Willis, Bailey, 1885, The lignites of the Great Sioux Reservation, a report on the region between the Grand and Moreau Rivers Dakota: U. S. Geol. Survey Bull. 21, 16 p. Pl. 5, 1:250,000.
2. Winchester, D. E., and others, 1916, The lignite field of northwestern South Dakota: U. S. Geol. Survey Bull. 627, 169 p. Pls. 1 and 2, 1:125,000.
3. Bauer, C. M., 1925, Ekalaka lignite field, southeastern Montana: U. S. Geol. Survey Bull. 751-F, p. 231-237. Pl. 33, 1:125,000.
4. Searight, W. V., 1930, A preliminary report on the coal resources of South Dakota: S. Dak. Geol. Survey Rept. Inv. 3, 46 p. Map (frontispiece), 1:750,000.
5. \_\_\_\_\_ 1931, The Isabel-Firesteel coal area: S. Dak. Geol. Survey Rept. Inv. 10, 35 p. (a) Fig. 1, 1:760,000; (b) pl. 2, 1:63,360; (c) fig. 7, 1:31,680 (coal boundary); (d) fig. 8, 1:31,680 (coal boundary).
6. \_\_\_\_\_ 1934, The Stoneville coal area: S. Dak. Geol. Survey Rept. Inv. 22, 20 p. (a) Pl. 1, 1:63,360; (b) fig. 1, 1:900,000.
7. Sandals, K. M., 1936, South Dakota coal: S. Dak. State Planning Board, 45 p. Pl. 5, 1:1,500,000.
8. Rothrock, E. P., 1947, Coal fields of northwestern South Dakota: S. Dak. Geol. Survey Map, 1:375,000.
9. Denson, N. M., 1950, The lignite deposits of the Cheyenne River and Standing Rock Indian Reservations, Corson, Dewey and Ziebach Counties, South Dakota, and Sioux County, North Dakota: U. S. Geol. Survey Circ. 78, 22 p. Map, 1:500,000. (a) Fig. 7, 1:24,000; (b) fig. 8, 1:24,000; (c) fig. 11, 1:24,000; (d) fig. 14, 1:24,000; (e) fig. 18, 1:24,000; (f) pl. 1, 1:500,000.
10. Brown, D. M., 1952, Lignite resources of South Dakota: U. S. Geol. Survey Circ. 159, 18 p. Pl. 1, 1:825,000.
11. Denson, N. M., and others, 1955, Uraniferous coal beds in parts of North Dakota, South Dakota and Montana: U. S. Geol. Survey Coal Inv. Map C-33. (a) Fig. 5, 1:63,360; (b) fig. 6, 1:750,000; (c) pl. 1, 1:450,000.

**Figure 9**  
**MAP SHOWING PUBLISHED GEOLOGIC REPORTS ON SOUTH DAKOTA ECONOMIC GEOLOGY**  
 (Non-metallic - manganese, rock, bentonite, cement, building stone, and shale.)



12. Denson, N. M., Bachman, G. O., and Zeller, H. D., 1955a, Geologic map of Cave Hills and Table Mountain area, Harding County, South Dakota: U. S. Geol. Survey Coal Inv. Map C-34, 1:63,360.
13. \_\_\_\_\_ 1955b, Geologic map of Slim Buttes area, Harding County, South Dakota: U. S. Geol. Survey Coal Inv. Map C-35, 1:63,360.
14. Moore, G. W., and Gill, J. R., 1955, Geologic map of the southern part of the Slim Buttes area, Harding County, South Dakota: U. S. Geol. Survey Coal Inv. Map C-36, 1:31,680.
15. Zeller, H. D., 1955, Geologic map of the Bar H area, Slim Buttes, Harding County, South Dakota: U. S. Geol. Survey Coal Inv. Map C-37, 1:20,000.

(Chalk, see fig. 8)

1. Rothrock, E. P., 1931, Preliminary report on the chalk of eastern South Dakota: S. Dak. Geol. Survey Rept. Inv. 2, 51 p. (a) Map following p. 1, 1:2,500,000; (b) map following p. 10, 1:63,360; (c) map following p. 16, 1:63,360; (d) map following p. 21, 1:95,000; (e) map following p. 26, 1:174,240; (f) map following p. 38, 1:63,360; (g) map following p. 40, 1:63,360.

(Manganese, see fig. 9)

1. Gries, J. P., and Rothrock, E. P., 1941, Manganese deposits of the lower Missouri Valley in South Dakota: S. Dak. Geol. Survey Rept. Inv. 38, 96 p. Map, 1:125,000.
2. Gries, J. P., 1942, Economic possibilities of the Pierre Shale: S. Dak. Geol. Survey Rept. Inv. 43, 79 p. Fig. 11, 1:4,000,000.
3. Rothrock, E. P., 1943, Missouri Valley manganese deposits between Lower Brule and DeGrey: S. Dak. Geol. Survey Rept. Inv. 46, 66 p. Map, 1:112,000.
4. \_\_\_\_\_ 1944, A geology of South Dakota, Part III: Mineral resources: S. Dak. Geol. Survey Bull. 15, 255 p. Fig. 9, 1:1,400,000.
5. Pesonen, P. E., Tullis, E. L., and Zinner, Paul, 1949, Missouri Valley manganese deposits: U. S. Bur. Mines Rept. Inv. 4375, pt. 1, 90 p. (a) Figs. 7-11, 12 (area J), and (b) fig. 12 (area K), 1:24,000; (c) fig. 3, 1:375,000.

(Bentonite, see fig. 9)

1. Spivey, R. C., 1940, Bentonite in southwestern South Dakota: S. Dak. Geol. Survey Rept. Inv. 36, 56 p. (a) Pl. 5, 1:3,000; (b) pl. 6, 1:3,000; (c) pl. 7, 1:3,000; (d) map, 1:250,000.
2. Wing, M. E., 1940, Bentonites of the Belle Fourche district: S. Dak. Geol. Survey Rept. Inv. 35, 29 p. Map, 1:42,240.
3. Gries, J. P., 1942, Economic possibilities of the Pierre Shale: S. Dak. Geol. Survey Rept. Inv. 43, 79 p. Fig. 10, 1:4,000,000.



4. Knechtel, M. M., and Patterson, S. H., 1956, Bentonite deposits of the northern Black Hills district, Montana, Wyoming, and South Dakota: U. S. Geol. Survey Mineral Inv. Field Studies MF-36 (two sheets), 1:48,000.

(Cement materials, including lime and gypsum, see fig. 9)

1. O'Harra, C. C., and others, 1908, The cement resources of the Black Hills, Part I: The geology of the Black Hills cement materials: S. Dak. School of Mines Bull. 8, p. 9-27. Four maps, 1:1,500,000.
2. Anonymous, 1936, Portland cement, gypsum, and lime industries in South Dakota: S. Dak. State Planning Board, 70 p. Fig. 2, 1:750,000.

(Building Stone, see fig. 9)

1. Beyer, S. W., 1897, Sioux quartzite and associated rocks: Iowa Geol. Survey, v. 6, p. 69-112. (a) Map following p. 70, 1:570,000; (b) map following p. 80, 1:21,680.
2. Baldwin, Brewster, 1949, A preliminary report on the Sioux Quartzite: S. Dak. Geol. Survey Rept. Inv. 63, 34 p. Fig. 1, 1:250,000.

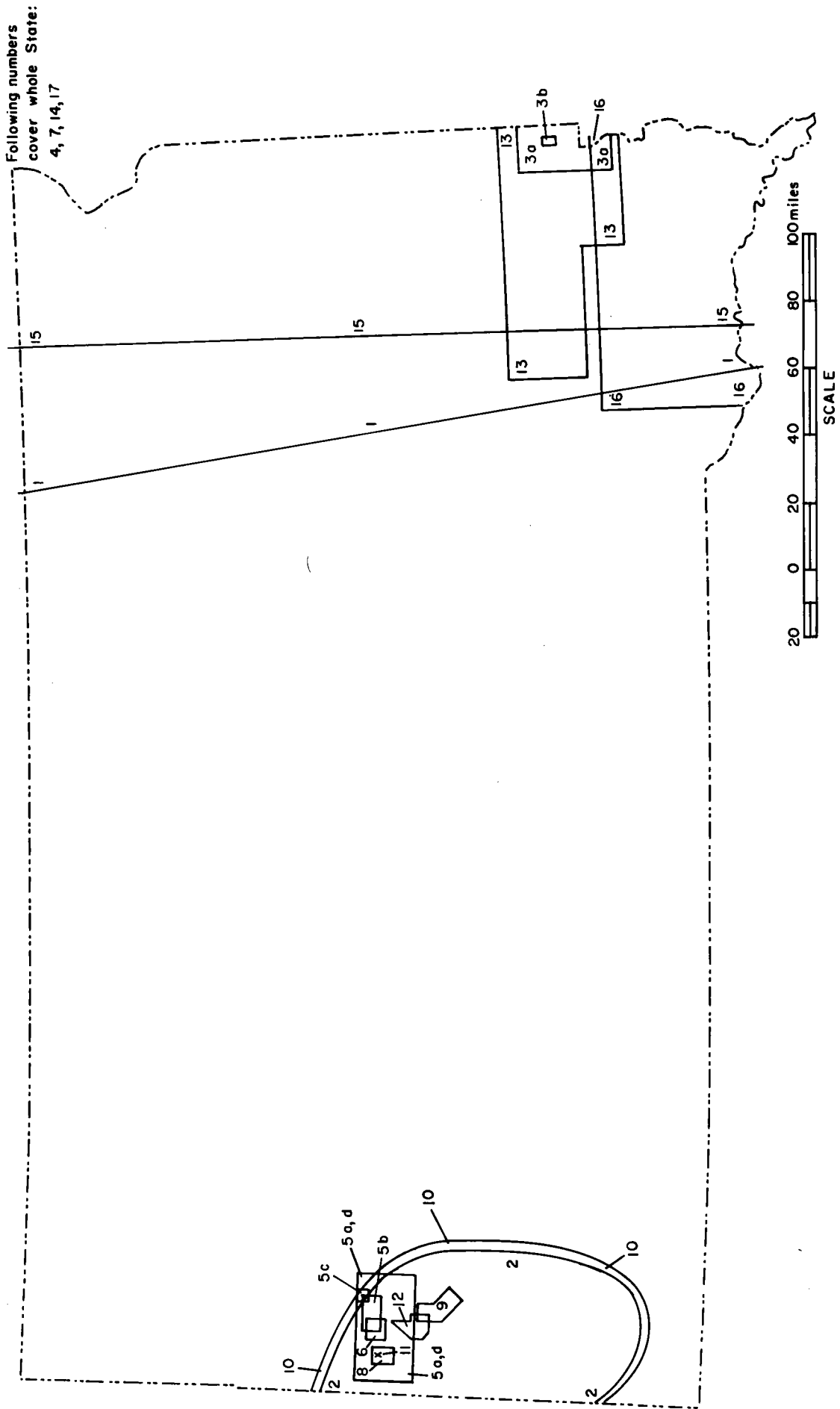
(Shale, see fig. 9)

1. Lee, K. Y., Petsch, B. C., Rothrock, E. P., and Agnew, A. F., 1961, Yankton Shale: S. Dak. Geol. Survey Min. Resources Inv. Map 1, 1:8,400.

(Rock, see fig. 9)

1. Truesdell, P. E., and Hilton, G. S., 1947, Reconnaissance map showing locations of possible sources of riprap in western North Dakota and in northwestern South Dakota: 1:500,000.

**Figure 10**  
**MAP SHOWING PUBLISHED GEOLOGIC REPORTS ON SOUTH DAKOTA IGNEOUS GEOLOGY**  
 (also see section on Pegmatites and associated minerals)

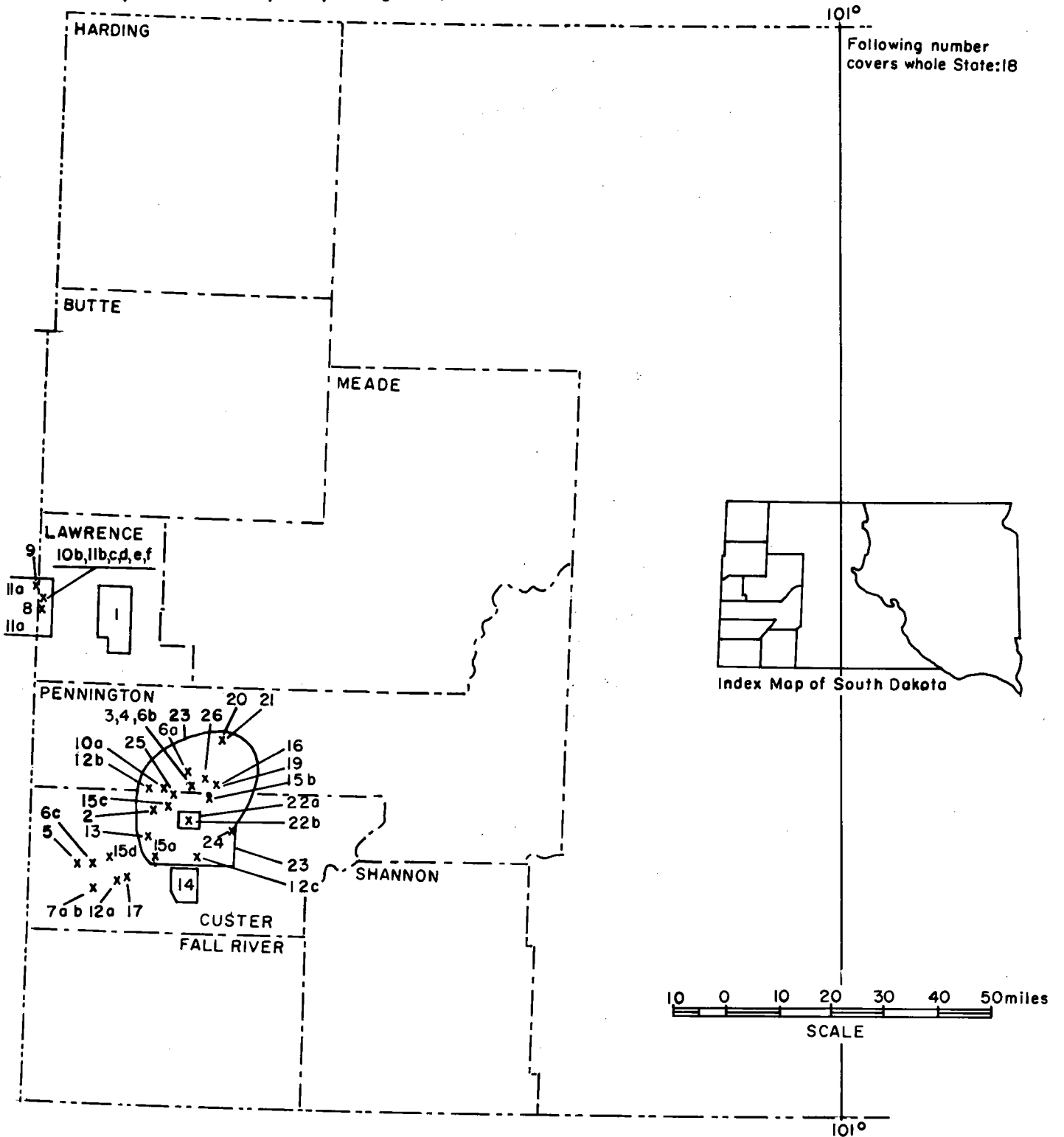


Published Geologic Reports on South Dakota  
Igneous Geology

1. Irving, R. D., 1885, Preliminary paper on an investigation of the Archean formation of the northwestern states: U. S. Geol. Survey Ann. Rept. 5, p. 175-242. Pl. 22, 1:4,000,000.
2. Van Hise, C. R., 1890, The pre-Cambrian rocks of the Black Hills: Geol. Soc. America Bull., v. 1, p. 203-244. Fig. 1, 1:825,000.
3. Beyer, S. W., 1896, The Sioux Quartzite and certain associated rocks: Iowa Geol. Survey Ann. Rept. VI, p. 67-112. (a) Map following p. 70, 1:570,000; (b) map following p. 80, 1:21,680.
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Figure II

MAP SHOWING PUBLISHED GEOLOGIC REPORTS ON SOUTH DAKOTA PEGMATITE AND ASSOCIATED MINERALS AND METALLIC ORES (beryl, mica, spodumene, tin, tungsten).

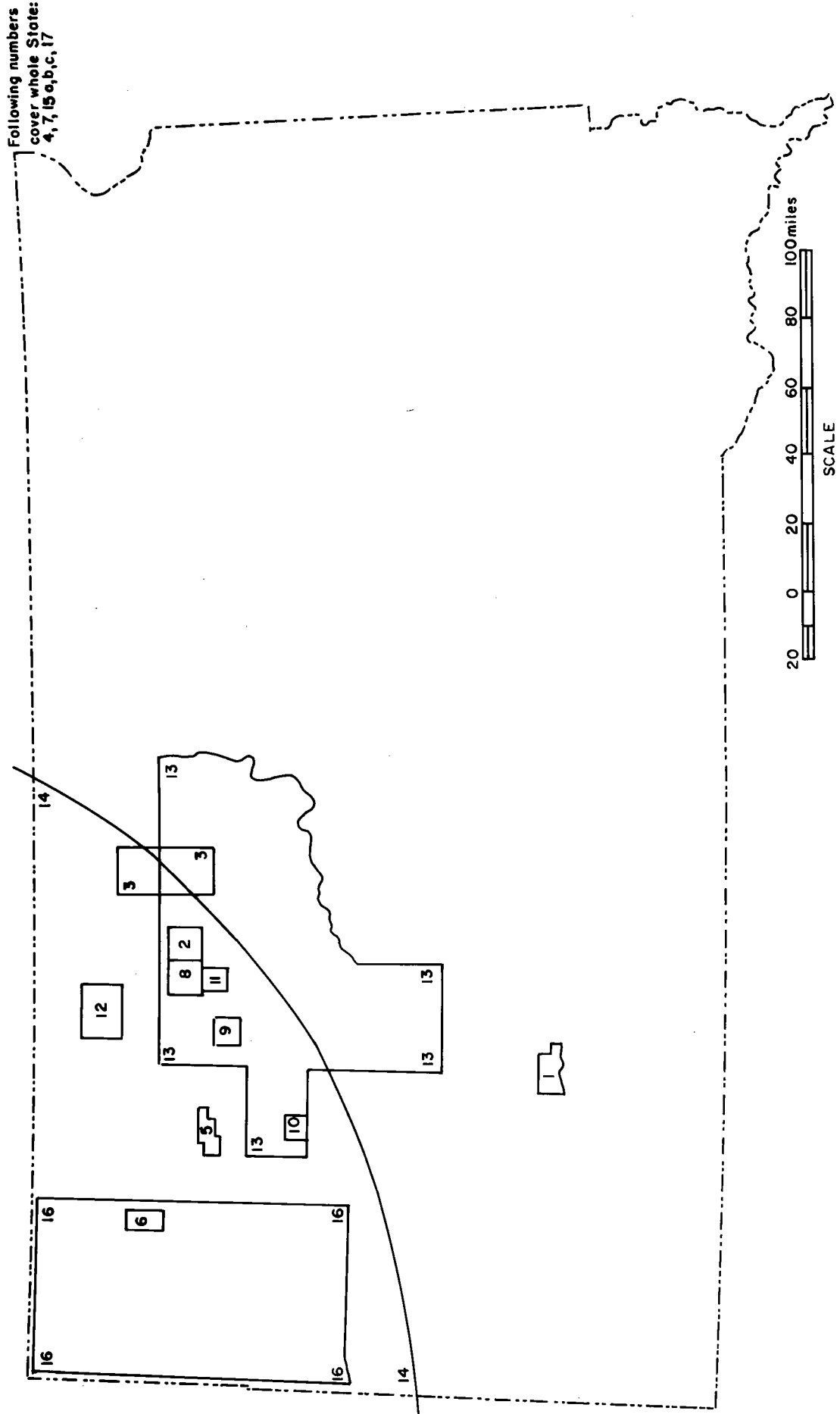


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Pegmatite and Associated Minerals and Metallic Ores  
(Beryl, Mica, Spodumene, Tin, Tungsten)

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Figure 12  
 MAP SHOWING PUBLISHED GEOLOGIC REPORTS ON SOUTH DAKOTA OIL AND GAS

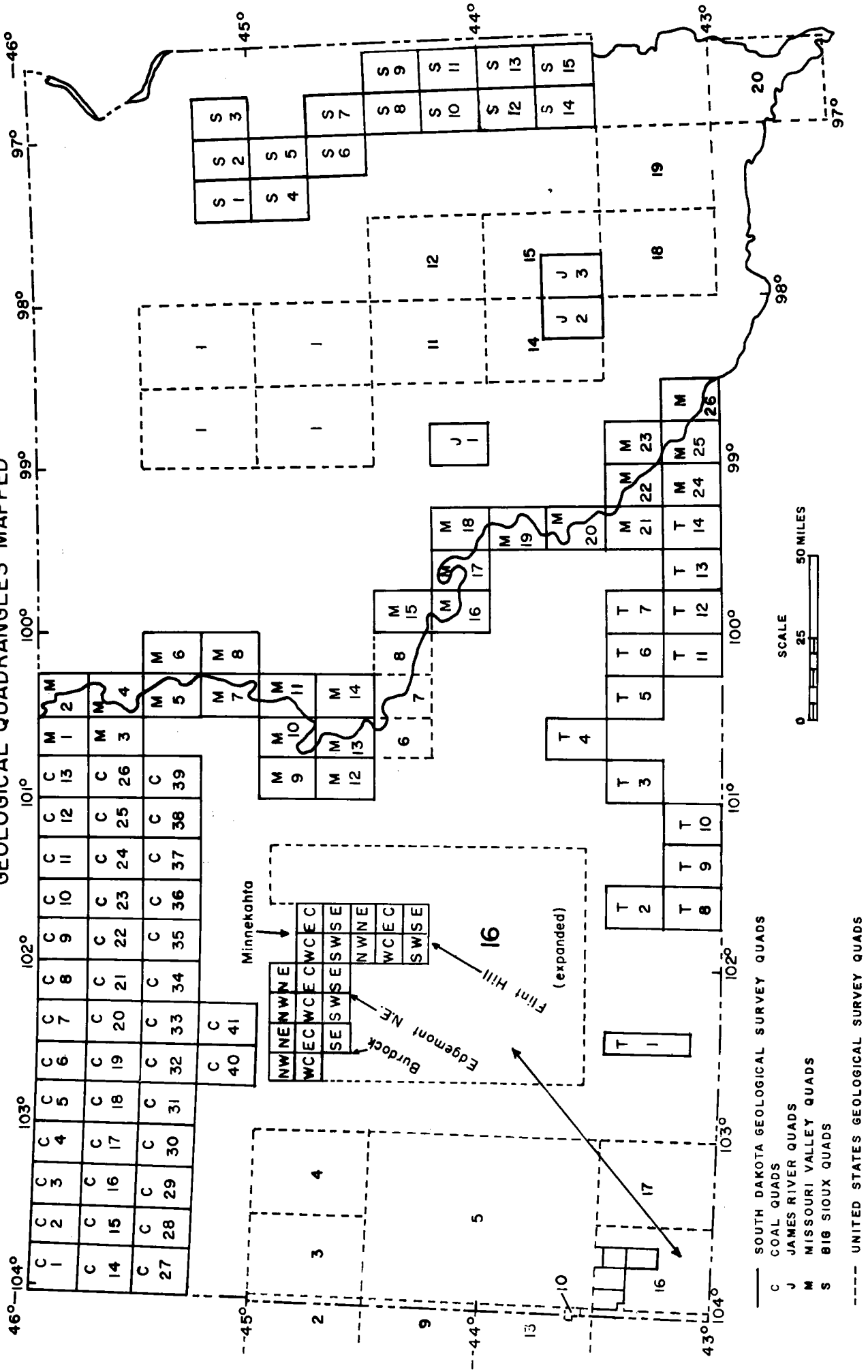


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**Figure 13**  
**SOUTH DAKOTA GEOLOGICAL SURVEY AND UNITED STATES GEOLOGICAL SURVEY**  
**GEOLOGICAL QUADRANGLES MAPPED**



— SOUTH DAKOTA GEOLOGICAL SURVEY QUADS  
 C COAL QUADS  
 J JAMES RIVER QUADS  
 M MISSOURI VALLEY QUADS  
 S BIG SIOUX QUADS  
 --- UNITED STATES GEOLOGICAL SURVEY QUADS

South Dakota Geological Survey Geological Quadrangles

(Missouri River Valley Area)

No. on Index

M- 6	Akaska, 1952
M-11	Artichoke Butte, 1952
M-25	Bonesteel, 1950
M-19	Chamberlain, 1952
M- 7	Cheyenne Agency, 1952
M-15	DeGrey, 1951
M-21	Dixon, 1951
M-13	Ft. Bennett, 1950
M-16	Ft. George Butte, 1950
M-24	Herrick, 1952
M-20	Iona, 1952
M-26	Lake Andes, 1951
M- 8	Little Cheyenne, 1952
M-17	Lower Brule, 1950
M-22	Lucas, 1951
M- 1	Mahto, 1951
M- 4	Mobridge, 1952
M- 5	Mouth of Moreau, 1950
M-10	No Heart, 1952
M-14	Okobojo, 1951
M-23	Platte, 1950
M- 2	Pollock, 1951
M- 9	Rousseau Creek, 1952
M-12	Standing Butte, 1952
M-18	Stephan, 1951
M- 3	Wakpala, 1950

(Lignite Coal Area, Northwestern South Dakota)

C-20	Bison, 1955
C-22	Black Horse Butte, 1954
C-15	Buffalo, 1956
C-12	Bullhead, 1956
C-14	Camp Crook and Midland #4, 1956
C-19	Cash, 1956
C-40	Cedar Canyon, 1962
C-33	Chance, 1955
C-34	Coal Spring, 1955
C-32	Date, 1956
C- 5	Ellingson, 1956
C-24	Firesteel Creek, 1954
C-35	Glad Valley, 1954
C-39	Glencross, 1961
C-23	Gopher, 1954

## (Lignite Coal Area, Northwestern South Dakota)

No. on Index

C-30	Govert, 1956
C-27	Harding, and Erickson #1, 1956
C- 7	Haynes, 1954
C-37	Isabel, 1952
C- 2	Ladner, 1956
C- 8	Lemmon, 1954
C-26	Little Eagle, 1960
C- 6	Lodgepole, 1956
C- 3	Ludlow, 1956
C-11	McIntosh, 1956
C-13	McLaughlin, 1956
C-21	Meadow, 1955
C-25	Miscol, 1960
C-10	Morristown, 1954
C-16	Mouth of Bull Creek, 1956
C-29	Murchison, 1956
C- 4	Ralph, 1956
C-28	Redig, 1956
C-17	Reva, 1956
C-41	Signal Butte, 1962
C-31	Sorum, 1956
C-18	Strool, 1956
C- 9	Thunder Hawk, 1954
C-38	Timber Hawk, 1954
C- 1	Willett and Midland #1, 1956
C-36	Worthless Creek, 1954

## (Tertiary Area)

T-13	Dallas, 1959
T-14	Gregory, 1958
T-11	Keyapaha, 1958
T- 8	Martin, 1959
T- 5	Okreek, 1959
T- 2	Patricia, 1960
T- 3	Ring Thunder, 1960
T- 1	Sharps Corner, 1960
T-10	Spring Creek, 1960
T- 9	Vetal, 1961
T- 4	White River, 1956
T- 7	Winner, 1960
T- 6	Witten, 1958
T-12	Wewela, 1958

## (Big Sioux River Valley Area)

No. on Index

S- 8	Brookings, 1958
S-12	Chester, 1959
S-13	Dell Rapids, 1959
S- 7	Estelline, 1958
S-11	Flandreau, 1960
S- 1	Florence, 1958
S-14	Hartford, 1959
S- 6	Hayti, 1958
S- 4	Henry, 1958
S-10	Rutland, 1960
S-15	Sioux Falls, 1959
S- 3	South Shore, 1958
S- 2	Still Lake, 1958
S- 5	Watertown, 1958
S- 9	White, 1958

## (James River Valley Area)

J-3	Alexandria, 1960
J-1	Gann Valley, 1960
J-2	Mitchell, 1961

United States Geological Survey Geological Quadrangles (GQ),  
Folios (F), and Minerals Investigations Field Studies Maps (M)

1. Aberdeen-Redfield, 1909 (F)
2. Aladdin, 1905 (F)
3. Belle Fourche, 1909 (F)
4. Newell, 1919 (F)
5. Central Black Hills, 1925 (F)
6. Oahe, 1955 (GQ)
7. Pierre, 1954 (GQ)
8. Canning, 1954 (GQ)
9. Sundance, 1905 (F)
10. Dewey, (northeast and east-central) 1958 (M)
11. Huron, 1904 (F)
12. DeSmet, 1904 (F)
13. Newcastle, 1904 (F)
14. Mitchell, 1903 (F)
15. Alexandria, 1903 (F)
16. Edgemont, 1904 (F)
  - Edgemont NE (northeast part), 1956 (M)
  - Edgemont NE (northwest part), 1956 (M)
  - Edgemont NE (west-central part), 1956 (M)
  - Edgemont NE (east-central part), 1956 (M)
  - Edgemont NE (southwest part), 1956 (M)
  - Edgemont NE (southeast part), 1956 (M)
  - Flint Hill (northwest part), 1957 (M)
  - Flint Hill (northeast part), 1957 (M)
  - Flint Hill (east-central part), 1957 (M)
  - Flint Hill (west-central part), 1957 (M)
  - Flint Hill (southwest part), 1957 (M)
  - Flint Hill (southeast part), 1957 (M)
  - Minnekahta (west-central part), 1957 (M)
  - Minnekahta (east-central part), 1957 (M)
  - Minnekahta (southeast part), 1957 (M)
  - Minnekahta (southwest part), 1957 (M)
  - Burdock (west-central), 1958 (M)
  - Burdock (northeast), 1958 (M)
  - Burdock (northwest), 1958 (M)
  - Burdock (east-central), 1958 (M)
  - Burdock (southeast), 1958 (M)
17. Oelrichs, 1902 (F)
18. Olivet, 1903 (F)
19. Parker, 1903 (F)
20. Elk Point, 1908 (F)

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