EXPLANATION

SEDIMENTARY ROCKS

Qas — Alluvium of first and second bottoms, low terrace deposits, and dune sand

Qla — Lacustrine and alluvial deposits in depressions
Beaver, Alfalfa, and Garfield Counties.

Qts — High terrace deposits, dune sand, loess, and volcanic ash
Includes some dune sand of Recent age. Includes small areas of high-level possible late Tertiary gravel in northeastern Oklahoma.

Qg — Gerty sand
Occupies former channel of Canadian River in southeastern Oklahoma.

QUATERNARY (Pleistocene and Recent; Pleistocene) — TERTIARY (Pliocene)

NORTHWESTERN OKLAHOMA

T — Dune sand, Ogallala formation, and Laverne formation
Includes some stream deposits and dune sand of Pleistocene age.

SOUTHEASTERN OKLAHOMA

Ko — Ozan and Brownstown formations
Ke — Eagle Ford shale
Kt — Tokio formation
Kwb — Woodbine formation
Kw — Washita group
Grayson shale, Main Street limestone, Pawpaw formation, Weno clay, Denton clay, Fort Worth limestone, and Duck Creek formation. Includes Kiamichi formation of Fredericksburg group.
Kf — Fredericksburg group
Goodland limestone and Walnut clay.
Kpy — Paluxy sand
Baum limestone member at base in eastern Carter County and western Johnston County.
Kdq — De Queen limestone
Khc — Holly Creek formation
(Trinity group)

Kc — Colorado group
Exposed beds equivalent to Greenhorn limestone and Graneros shale.
Kd — Dakota sandstone
Kp — Purgatoire formation
Cimarron County. Contains Kiowa shale member and Cheyenne sandstone member.
Kk — Kiowa formation
Northwestern Oklahoma. Equivalent to Kiamichi formation of southeastern Oklahoma.

Upper Cretaceous — Lower Cretaceous — Gulf — Comanche — CRETACEOUS

J̄R — Morrison formation (Jur.), Exeter sandstone (Jur.), and Dockum formation (Trias.)
Jurassic rocks are present only in Cimarron County.

TRIASSIC AND JURASSIC

WESTERN OKLAHOMA

Pec, Pdy — Quartermaster formation
Elk City member, Pec, and Doxey member, Pdy.
Pcc — Cloud Chief formation
Day Creek dolomite member at base in northwestern Oklahoma and Weatherford member at base in central western Oklahoma. In Beaver County Cloud Chief may include some areas of Whitehorse group.
Prs — Rush Springs sandstone
Pm — Marlow formation
Verden ss. mem., Pv, in southwestern Okla. and Doe Creek ss. mem., Pd, in northwestern Okla.
Pwh — Whitehorse group undifferentiated
(Whitehorse group)

SOUTHWESTERN AND CENTRAL SOUTHERN OKLAHOMA

Pdc — Dog Creek shale
Pb — Blaine gypsum
Pfd — Flowerpot shale and Duncan sandstone
Base of Duncan sandstone equals base of San Angelo sandstone of Texas.
(El Reno group)
Phy — Hennessey shale
Equals Clear Fork group of Texas.

Per — El Reno group
Chickasha formation and Duncan sandstone.
Phy — Hennessey shale

NORTHWESTERN AND CENTRAL NORTHERN OKLAHOMA

Pdc — Dog Creek shale
Pb — Blaine gypsum
Pf — Flowerpot shale
In Canadian, Blaine, and Kingfisher Counties Flowerpot shale consists of a lower shale tongue and a less extensive upper shale tongue which are separated by a northward-thinning wedge of beds equivalent in part to Chickasha formation and Duncan sandstone.
(El Reno group)
Phy, Pch — Hennessey shale
Cedar Hills sandstone member, Pch.

Pg, Pwa, Pwe, Pfa, Ph, Pfr, Pc, Pn, Pr —
Garber sandstone, Pg
Wellington formation, Pwe, *(base, Pfa, of Fallis sandstone member mapped in part.)*
Chase group *(Herington limestone Ph, at top of group and Fort Riley limestone, Pfr, are only formations mapped.)*
Council Grove group *(Cottonwood limestone, Pc, Neva limestone, Pn, and Red Eagle limestone, Pr, are only formations mapped.)*
Admire group
(Permian in part undivided Pwa)

SOUTH CENTRAL OKLAHOMA

Pw, t, Pp — Wichita formation
Post Oak conglomerate member, Pp. Wichita formation equals Garber sandstone, Wellington formation, and upper part of Pontotoc group. t, base of bituminous gray sandstone which probably equals base of Garber sandstone; t is above contact. In central southern Oklahoma Hart limestone member is at base.

Pgw, Pfa — Garber sandstone, Wellington formation (base, Pfa, of Fallis sandstone member), and upper part of Pontotoc group
Hart limestone member of Stratford formation of Pontotoc group is at base in Pontotoc, Garvin, and Murray Counties.

PERMIAN

Pv — Vanoss formation
Pv — Vanoss formation
Lower part of Pontotoc group.
Pad — Ada formation
Pcr — Collings Ranch conglomerate
Pvm — Vamoosa formation
Pva — Vanoss and Ada formations
Equivalent to Wabaunsee group and upper part of Shawnee group of Kansas.
Plc — Lecompton limestone
In Shawnee group of Kansas.
Pvm, Pe — Vamoosa formation
Elgin sandstone member, Pe. Vamoosa formation equivalent to lower part of Shawnee group and to Douglas group of Kansas.
(Rocks of Virgil age)

Pht — Hilltop formation
Pta — Tallant formation
Pb — Barnsdall formation
Pw — Wann formation
Pi — Iola limestone
Pc — Chanute formation
(Ochelata group)
Phb — Hoxbar formation
Pbc — Belle City limestone
Equals Dewey formation.
Pd — Dewey formation
Pnb — Nellie Bly formation
Ph — Hogshooter limestone
Pcf — Coffeyville formation
Pcb — Checkerboard limestone
Pf — Francis formation
De Nay limestone member at base in south central Oklahoma.
Psl — Seminole formation
Psl — Seminole formation
(Skiatook group)
(Rocks of Missouri age)

PENNSYLVANIAN — CARBONIFEROUS

Fault
A few faults are dotted where concealed in some areas.
Fault around window
W inside window.
Fault outlier
O inside outlier.

CENTRAL SOUTHERN AND SOUTHWESTERN OKLAHOMA

Pde — Deese formation

SEDIMENTARY ROCKS—CONTINUED

EAST CENTRAL OKLAHOMA

Phd — Holdenville shale
Pwk — Wewoka formation
Pwt — Wetumka shale
Pcv — Calvin sandstone
(Marmaton group)
Psn — Senora formation
Pst — Stuart shale
Pt — Thurman sandstone
(Cabaniss group)
Pbg, Pbj — Boggy formation
Bluejacket sandstone member, Pbj.
Psv — Savanna formation
Pma — McAlester formation
Phs — Hartshorne sandstone
(Krebs group)
Pa — Atoka formation

Pdh — Dornick Hills formation
Ps — Springer formation
Goddard shale member at base.
Pws — Wapanucka limestone and Springer formation
Mcs — Caney shale, Sycamore limestone, and Welden limestone
MDSw — Woodford shale (Miss. and Dev.) and Hunton group (Frisco limestone, Dev., Bois d'Arc limestone, Dev., Haragan limestone, Dev., Henryhouse limestone, Sil., and Chimneyhill limestone, Sil.)
Osv — Sylvan shale, Fernvale limestone, and Viola limestone
Oss — Simpson group
Bromide, Tulip Creek, McLish, Oil Creek, and Joins formations.
Owm — Upper part of Arbuckle group
West Spring Creek, Kindblade, Cool Creek, and McKenzie Hill formations.
Cb — Lower part of Arbuckle group (Butterly dolomite, Signal Mountain limestone, Royer dolomite, and Fort Sill limestone) and Timbered Hills group (Honey Creek formation and Reagan sandstone)

SOUTHEASTERN OKLAHOMA

Pa — Atoka formation
Pjv — Johns Valley shale
Pwc — Wapanucka limestone, Chickachoc chert (equals Wapanucka), and Springer shale
Pj — Jackfork sandstone
May include narrow belts of Atoka formation where Johns Valley shale is absent.
Mc — Caney shale
PMs, tf — Stanley shale (Penn. and Miss.)
Tuffs tf, near base.
MDw — Woodford chert (Miss. and Dev.) and Pinetop chert (Dev.)
MDSa — Arkansas novaculite (Miss. and Dev.), Missouri Mountain shale (Sil.), and Blaylock sandstone (Sil.)
Op — Polk Creek shale and Bigfork chert
Ow — Womble formation, Blakely sandstone, and Mazarn shale
Ocm — Crystal Mountain sandstone
Ordovician?
Cc — Collier shale

NORTHEASTERN AND CENTRAL EASTERN OKLAHOMA

Phd — Holdenville shale
Pl — Lenapah limestone
Pn — Nowata shale
Po — Oologah limestone
In northern Rogers, Nowata, and Craig Counties consists of Altamont limestone member, Bandera shale member, and Pawnee limestone member.
Plb — Labette shale
Pfs — Fort Scott limestone
(Marmaton group)
Psn — Senora formation
(Cabaniss group)
Pbg, Pbj — Boggy formation
Bluejacket sandstone member, Pbj.
Psv — Savanna formation
Pma — McAlester formation
Phs — Hartshorne sandstone
(Krebs group)
(Rocks of Des Moines age)
Pa — Atoka formation
Pm — Morrow group
Bloyd and Hale formations.

PENNSYLVANIAN — CARBONIFEROUS

Mp — Pitkin limestone, Fayetteville shale, Batesville sandstone, Hindsville limestone, and Moorefield formation
Mb — Boone formation
In Ottawa County includes at top some beds equivalent in part at least to Moorefield formation of the several counties farther south in northeastern Oklahoma.

MISSISSIPPIAN

MDc — Chattanooga shale (Miss. and Dev.), Sallisaw formation (Dev.), and Frisco limestone (Dev.)

DEVONIAN

Ssc — St. Clair limestone

SILURIAN

Os — Sylvan shale, Fernvale limestone, Fite limestone, Tyner formation, and Burgen sandstone
Oc — Cotter dolomite

ORDOVICIAN

CAMBRIAN

IGNEOUS AND METAMORPHIC ROCKS

Tb — Basalt
Cimarron County.

TERTIARY

Pq — Quartz-orthoclase pegmatite
McCurtain County.

PENNSYLVANIAN

Od — Diorite sill
McCurtain County.

ORDOVICIAN ?

Rhyolite porphyry
Includes some rhyolite porphyry that is older than granite.
gr — Granite
d — Microdiorite dike
an — Anorthosite
gb — Gabbro
Includes olivine gabbro that is younger than anorthosite.
qt — Meers quartzite
Comanche County.

PRE-CAMBRIAN

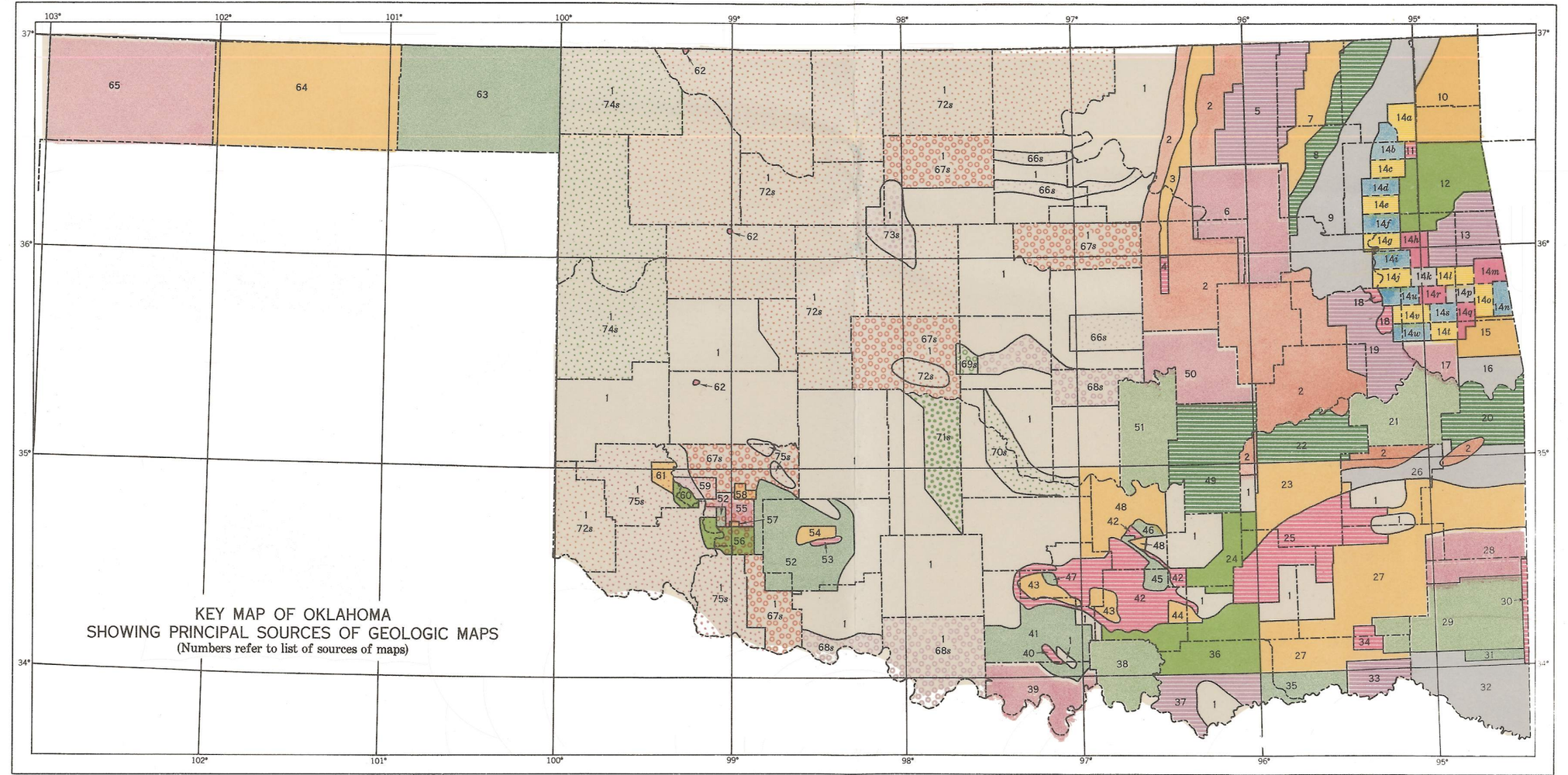
PRINCIPAL SOURCES OF GEOLOGIC MAPS USED IN PREPARATION OF GEOLOGIC MAP OF OKLAHOMA

(Numbers correspond to those given on key map. (*) indicates unpublished maps).

1. Oil companies and independent geologists (*).
2. Malcolm C. Oakes, O. G. S. (*).
3. K. C. Heald and R. H. Wood, U. S. G. S., not published except for inclusion in 1926 edition of Okla. geologic map.
4. A. E. Fath, U. S. G. S. Bull. 759.
5. Malcolm C. Oakes, O. G. S. Bull. 62.
6. Malcolm C. Oakes, O. G. S. Bull. 69.
7. D. W. Ohern and C. D. Smith, U. S. G. S. and O. G. S., not published except for inclusion in 1926 edition of Okla. geologic map.
8. John H. Warren, O. G. S. (*).
9. Carl C. Branson, Univ. of Okla. faculty and O. G. S. His compiled manuscript map based in part on mapping by him and in part on following M. S. theses, Univ. of Okla., directed by him: Mark H. Hobbs, Jack L. Tillman, Clarence Lohman, Jr., Louie P. Chrisman, and Charles D. Claxton.
10. C. E. Siebenthal and R. D. Mesler, U. S. G. S. open-file map.
11. Malcolm C. Oakes and Hugh D. Miser, O. G. S. and U. S. G. S. (*).
12. Clayton E. Gore, Jr., M. S. thesis, Univ. of Tulsa, Tulsa Geol. Soc. Digest, v. 20.
13. James H. Montgomery, M. S. thesis, Univ. of Tulsa, Tulsa Geol. Soc. Digest, v. 19.
14. Following M. S. theses, Univ. of Okla., directed by George G. Huffman, Univ. of Okla. faculty and O. G. S.: 14a, Robert B. Branson (*); 14b, L. E. Thomas (*); 14c, I. D. Simpson, Jr., Tulsa Geol. Soc. Digest, v. 20; 14d, Thomas Wayne Hurt (*); 14e, Thomas J. McBryde (*); 14f, James F. Bollman (*); 14g, H. Marvin Douglass, Tulsa Geol. Soc. Digest, v. 20; 14h, Edward T. Smith, Jr. (*); 14i, George Doberich (*); 14j, Philip Prescott Chandler (*); 14k, Earl Lee Mills (*); 14l, Norman Bruce DeGraffenreid (*); 14m, Elvis D. Snodgrass (*); 14o, Lester E. Stafford (*); 14p, Ralph Lewis Lauderback (*); 14q, Clarence C. Powell (*); 14r, Frank Daniel Kozak (*); 14s, Clemens P. Brauer (*); 14t, Harry E. Christian (*); 14u, Clyde G. Beckwith, Jr. (*); 14v, Holland Hugh Mondy (*); 14w, Allen G. Siemens (*).
15. Carl C. Branson, O. G. S. (*).
16. Bobby Kelly Crumpley, M. S. thesis, Univ. of Okla. (*).
17. Lyle W. Stewart, M. S. thesis, Univ. of Okla. (*).
18. J. A. Taff, U. S. G. S. folio 132.
19. Charles W. Wilson, Jr., and Norman D. Newell, O. G. S. Bull. 57.
20. M. M. Knechtel, O. G. S. Bull. 68.
21. Malcolm C. Oakes and M. M. Knechtel, O. G. S. Bull. 67.
22. C. H. Dane, H. E. Rothrock, and James Steele Williams, U. S. G. S. Bull. 874, pt. 3.
23. Thomas A. Hendricks, U. S. G. S. Bull. 874, pt. 1.
24. M. M. Knechtel, U. S. G. S. Bull. 874, pt. 2.
25. T. A. Hendricks, L. S. Gardner, M. M. Knechtel, and Paul Averitt, U. S. G. S. Oil and Gas Inv. Prelim. Map 66.
26. Thomas A. Hendricks, U. S. G. S. Bull. 874, pt. 4.
27. J. A. Taff, U. S. G. S., not published except for inclusion in 1926 edition of Okla. geologic map.
28. C. W. Honess, Bur. Geology, Norman, Okla., Circ. 3.
29. C. W. Honess, O. G. S. Bull. 32.
30. Hugh D. Miser and A. H. Purdue, U. S. G. S. Bull. 808.
31. Milton E. May, M. S. thesis, Univ. of Okla. (*).
32. George Heilborn and Herbert Skolnick, M. S. theses, Univ. of Okla. (*) and Charles Fair, U. S. G. S. and O. G. S. (*).
33. Harry Daniel Gibbs, M. S. thesis, Univ. of Okla. (*).
34. J. O. Beach, O. G. S. (*).
35. Hugh D. Miser, U. S. G. S. Reconnaissance mapping for 1926 edition of Okla. geologic map.
36. J. A. Taff, U. S. G. S. folios 79 and 98.
37. Lloyd William Stephenson, U. S. G. S. Prof. Paper 120.
38. Fred M. Bullard, O. G. S. Bull. 39.
39. Fred M. Bullard, O. G. S. Bull. 33.
40. Kaspar Arbenz, Univ. of Okla. (*).
41. C. W. Tomlinson, O. G. S. Bull. 40-Z and Ardmore Geol. Soc. field guidebook, 1948, pl. 7.
42. William E. Ham and Myron E. McKinley, O. G. S. (*).
43. William E. Ham, Ph. D. thesis, Yale Univ. (*).
44. Myron E. McKinley, M. S. thesis, Univ. of Okla. (*).
45. Martin Peter Gillert, M. S. thesis, Univ. of Okla. (*).
46. James Charles Barker, M. S. thesis, Univ. of Okla., Tulsa Geol. Soc. Digest, v. 19.
47. Robert Jacob Dunham, M. S. thesis, Univ. of Okla. (*).
48. George D. Morgan, Bur. Geology, Norman, Okla., Bull. 2.
49. O. D. Weaver, Jr., Ph. D. thesis, Univ. of Okla. (*).
50. Edward Richard Ries, Ph. D. thesis, Univ. of Okla. (*).
51. William F. Tanner, Ph. D. thesis, Univ. of Okla. (*).
52. Gerald W. Chase, O. G. S. (*).
53. Charles E. Decker, O. G. S. Circ. 22.
54. Floyd Elden Schoonover, M. S. thesis, Univ. of Okla. (*).
55. Gerald W. Chase, O. G. S. Prelim. map.
56. C. H. Taylor, O. G. S. Bull. 20.
57. Riley Smith, M. S. thesis, Univ. of Tulsa (*).
58. Paul W. Hull, M. S. thesis, Univ. of Okla. (*).
59. Glenn E. McKinley, M. S. thesis, Univ. of Okla. (*).
60. Thomas Robb Polk, M. S. thesis, Univ. of Okla. (*).
61. Berton James Scull, M. S. thesis, Univ. of Okla. (*).
62. Fred M. Bullard, O. G. S. Bull. 47.
63. Stuart L. Schoff, U. S. G. S. and O. G. S. (mapping partly completed) and manuscript map of oil company.
64. Stuart L. Schoff, O. G. S. Bull. 59.
65. Stuart L. Schoff and J. Willis Stovall, O. G. S. Bull. 64.

NOTE: Mapping of surficial deposits only (Pliocene, Pleistocene, and Recent) in parts of central and western Oklahoma is taken from sources listed below. Mapping of such deposits in other parts of State is taken mainly from sources listed above. The letter s after the numbers below indicates "surficial."

66s. U. S. Bureau of Reclamation, Oklahoma City, Okla. Maps showing inventory of lands of Arkansas River Basin, Okla. (*).
67s. Soil Surveys of U. S. Dept. of Agriculture and Okla. Agricultural Experiment Sta.
68s. U. S. Soil Conservation Service, Operations Laboratory, Stillwater, Okla. Maps of Soil Conservation districts showing major soil areas (*).
69s. C. L. Jacobsen, U. S. G. S. (*).
70s. Robert H. Dott, O. G. S. (*).
71s. Leon V. Davis, O. G. S. and U. S. G. S. (*).
72s. Hugh D. Miser, U. S. G. S. Reconnaissance mapping (*) aided by maps of Soil Surveys and U. S. Soil Conservation Service.
73s. Joseph E. Barclay, U. S. G. S. and Okla. Planning and Resources Board (*).
74s. Arthur J. Myers, Ph. D. thesis, Univ. of Mich. (*).
75s. Clyde G. Beckwith, Jr., O. G. S. (*).



KEY MAP OF OKLAHOMA
SHOWING PRINCIPAL SOURCES OF GEOLOGIC MAPS
(Numbers refer to list of sources of maps)

GEOLOGIC MAP OF OKLAHOMA

BY
HUGH D. MISER
OF THE UNITED STATES GEOLOGICAL SURVEY
Assisted by
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PREPARED COOPERATIVELY BY THE UNITED STATES GEOLOGICAL SURVEY AND THE OKLAHOMA GEOLOGICAL SURVEY
WITH THE COLLABORATION OF
THE OIL COMPANIES AND INDEPENDENT GEOLOGISTS OF OKLAHOMA, THE SCHOOL OF GEOLOGY OF THE UNIVERSITY OF OKLAHOMA, THE DEPARTMENT OF GEOLOGY AND GEOGRAPHY OF THE UNIVERSITY OF TULSA, THE DEPARTMENT OF AGRONOMY OF THE OKLAHOMA A. AND M. COLLEGE, THE U. S. SOIL CONSERVATION SERVICE, AND THE U. S. BUREAU OF RECLAMATION

Scale 1:500 000
10 0 10 20 30 40 Miles

1954

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