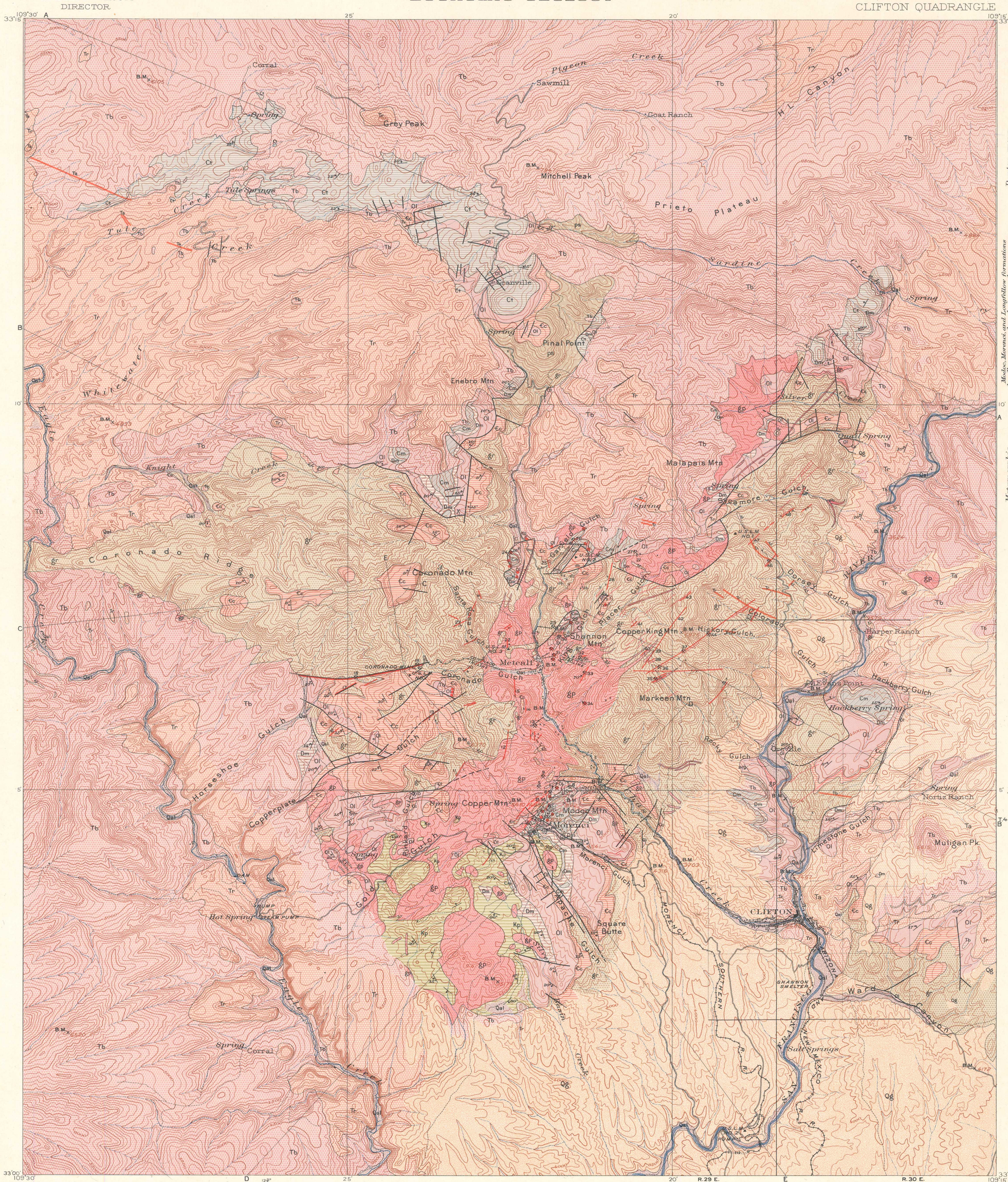
U.S. GEOLOGICAL SURVEY
CHARLES D. WALCOTT
DIRECTOR

ECONOMIC GEOLOGY

ARIZONA
(GRAHAM COUNTY)
CLIFTON QUADRANGLE



LEGEND

SEDIMENTARY ROCKS

(Areas of subaqueous deposits are shown by patterns of parallel lines; subaerial deposits by patterns of dots and circles; metamorphism is indicated by hachures combined with the line patterns.)

Qal — Alluvium
(sand and gravel along present valleys and local talus accumulations)

Qg — Gila conglomerate
(thick fluviatile deposits of irregularly bedded conglomerate and sand, locally consolidated.)

QUATERNARY

Kp — Pinkard formation
(alternating brown sandstone and black shale; hardened and metamorphosed near porphyry contacts)

Beaton group

CRETACEOUS

Ct — Tule Spring limestone
(heavy-bedded bluish-gray limestone in northern part of quadrangle; contains Mississippian and Pennsylvanian fossils)

Cm — Modoc limestone
(heavy-bedded gray limestone, sometimes magnesian in lower part; contains Mississippian fossils)

CARBONIFEROUS

Dm — Morenci formation
(black clay shale with argillaceous limestone locally in lower part.)

DEVONIAN ?

Modoc, Morenci, and Longfellow formations locally metamorphosed near porphyry contacts

Ol — Longfellow formation
(heavy-bedded brown limestone, shaly and siliceous in lower part; usually cherty and sometimes magnesian.)

ORDOVICIAN

Cc — Coronado quartzite
(brown and red quartzitic sandstone, usually with basal conglomerate)

CAMBRIAN ?

Metamorphic

ps — Pinal schist
(sericite-quartz-schist containing small masses of amphibolite.)

PRE-CAMBRIAN

IGNEOUS ROCKS

(Areas of igneous rocks are shown by patterns of triangles and rhombs)

Ta — Andesite
(surface flows and dikes, representing two epochs of eruption.)

Tb — Basalt
(thick, dark-colored surface flows, rarely tuffaceous; represents two epochs of eruption.)

Tr — Rhyolite
(thick, light-colored surface flows with much tuff and breccia; represents three epochs of eruption.)

Tr Tb Ta — Dikes of rhyolite, basalt, and andesite

TERTIARY

gp **db** — Granite-porphyry, quartz-monzonite-porphyry, and diorite-porphyry
(with transition phases, occur in dikes, stocks, and laccoliths; also dikes of diabase, db)

LATE CRETACEOUS OR EARLY TERTIARY

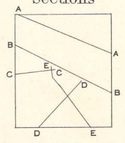
gr — Granite
(intrusive masses in Pinal schist)

PRE-CAMBRIAN

Known faults

Concealed faults
(covered by younger deposits)

Sections



20° Strike and dip of stratified rocks
80° Strike and dip of schistose cleavage
Mineral veins, chiefly copper, showing strike and dip
Mineral deposits, other than veins
Mines, chiefly copper
Prospect pits
Tunnels

MINING PROPERTIES.

Location indicated on the map by numbers.

1. Arizona Central.
2. Copper Mountain.
3. Humboldt.
4. Hormeyer.
5. Liverpool.
6. Yavapai.
7. West Yankie.
8. Longfellow
9 Clay.
10. Caynga.
11. Producer.
12. Fairbanks.
13. Copper Queen.
14. Mexican.
15. Las Terasses.
16. Copper Plate.
17. Keating.
18. Coronado (2 shafts).
19. Las Trajas.
20. Emerald.
21. Pyramid.
22. Ida.
23. Miza.
24. Stevens Group
25. Brunswick.
26. Mammoth.
27. Iolanthe.
28. Antietam.
29. Shannon (2 shafts)
30. Shirley.
31. Metcalf Mines.
32. Jameson.
33. King.
34. Standard.
35. Markeen.
36. Olivette.
37. Copper King.
38. Virginia.
39. Delaware.
40. Raton.
41. Veiled Prophet.
42. Trilby.
43. Mansfield.
44. Clifton Consol.
45. Colorado.
46. Golden Eagle.
47. Black Prince.
48. Poland.
49. Fischer.

E. M. Douglas, Geographer in charge.
Triangulation and topography by Jeremiah Ahern.
Surveyed in 1900-1901.

Geology by W. Lindgren and J. M. Boutwell.
Surveyed in 1902.

Scale 1/62500
1 0 1 2 3 4 Miles
1 0 1 2 3 4 5 Kilometers

Contour interval 100 feet.
Datum is mean sea level.

Edition of Oct. 1905.

Boutwell
Lindgren

DIAGRAM OF TOWNSHIP.

6	5	4	3	2	1	
7	8	9	10	11	12	
18	17	16	15	14	13	
19	20	21	22	23	24	
30	29	28	27	26	25	
31	32	33	34	35	36	