

AREAL GEOLOGY

ARIZONA
RAY QUADRANGLE

EXPLANATION

SEDIMENTARY ROCKS
Areas of unconsolidated deposits are shown by patterns of parallel lines; subsurface deposits by patterns of dots and circles; metamorphism is indicated by hachures.

- IGNEOUS ROCKS (continued)**
- Andesite tuff and breccia**
(chiefly consolidated pyroclastic material with contemporaneous dikes, possibly includes some lava flows)
 - Diabase**
(typically a medium-grained, granitic, massive diabase or diorite in regular dikes with many cross-cutting connections, included especially in the Mesozoic)
 - Madera diorite**
(quartz-mica diorite, apparently grading locally into granodiorite or quartz monzonite in places; granitic in places; batholithic masses in the Final schist of the Grand Canyon)
 - Granite**
(light-colored granite, generally coarse-grained and crystalline; batholithic masses, generally exposed in the Grand Canyon)
- Known fault**
Probable fault
Concealed fault (covered by younger deposits)
- 1/45°* Dip of fault plane
1/20° Overthrust side of thrust fault
1/20° Strike and dip of stratified rocks
β Strike of vertical beds
α Horizontal beds
- × Mine**
x Prospect



- Recent**
- Alluvium**
(gravel, sand, and silt along present stream ways)
- Pleistocene**
- Gila conglomerate**
(fluviatile conglomerates, coarse in places near the mountains, grading into fine silt, probably in part lacustrine, in wide valleys; half and alluvial earth)
- UNCONFORMITY**
- Whitetail conglomerate**
(subarkose fragments chiefly of diabase and limestone, disintegrated by streams and hillside wash)
- UNCONFORMITY**
- Tornado limestone**
(light gray limestone, thick bedded in upper part, thinner bedded in lower part; basal part in upper beds)
 - Martin limestone**
(thin bedded, well-sorted to dark gray, somewhat magnesian limestone; upper part fossiliferous, upper part fossiliferous beds in lower half)
- UNCONFORMITY?**
- Troy quartzite**
(coarse bedded, white to light gray quartzite, chiefly chert, thin bedded, with some thin beds, marked with wavy marks, in upper portion)
- Mescal limestone**
(thin bedded, white to light gray limestone, with abundant fossiliferous layers of chert, includes, as supposed, an overlying flow of volcanic basalt)

Apache group (Chiricahua)

 - Dripping Spring quartzite**
(fine grained, ripple marked and thin bedded, carbonaceous, quartzite, with abundant dark red and gray)
 - Barnes conglomerate**
(coarse well rounded, quartzite pebbles in carbonaceous matrix)
 - Bonner shale**
(dark, reddish brown, shaly, with yellowish to brown shaly parting at base, includes as supposed, a basal conglomerate)

UNCONFORMITY

Metamorphic rocks

 - Final schist**
(chiefly fine grained metamorphosed fine grained schist, includes some massive and little schistose igneous material)

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

 - Dacite**
(thick extensive flow with little vent at base in northwestern part of quadrangle)
 - Rhyolite porphyry**
(rhyolite porphyry dikes east of Troy and Tornado Peaks)
 - Quartz diorite porphyry**
(dikes and small intrusive masses, particularly abundant near Troy and Tornado Peaks)
 - Granodiorite**
(intrusive mass near Troy Basin)
 - Teapot Mountain porphyry**
(dikes and small intrusive masses of quartz monzonite porphyry near Ray)
 - Granite Mountain porphyry**
(irregular intrusive masses of quartz monzonite porphyry near Ray)
 - Quartz diorite**
(dikes and comparatively small intrusive masses)

Explanation is continued on the left margin.

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T. G. Gerdine, Geographer in charge.
Topography by Pearson Chapman, C. E. Eberly,
and reduced from map of Ray and Vicinity
Control by T. M. Bannon and Thos. Winsor.
Surveyed in 1907-1908.

Scale 42,500
1 2 3 4 Miles
1 2 3 4 5 Kilometers

Contour interval 50 feet.
Datum is mean sea level.
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DIAGRAM OF QUADRANGLES
RAY AND VICINITY

Geology by F. L. Ransome and J. B. Umpleby.
Surveyed in 1910 and 1911.

APPROXIMATE MEAN ELEVATION 1922