DESCRIPTION OF THE GOLD BELT.

GEORAPHIC RELATIONS.
The Gold Belt of California includes that portion of the Sierra Nevada lying between latitudes 38° and 40°, and east and west by the Great Basin and on the west by the gold deposits of the state, though by no means all of these may be called the "Superjacent rocks series, these may be called the "Superjacent group of rocks recognized in the Sierra Nevada. This group is generally called the "Bedrock rocks series." Along the western base of the Sierra occur beds of sandstone and clay, some of which contain coal seams. These are much younger than the mass of the beds. Favorable conditions of the older rocks. They dip gently westward beneath the later deposits which were spread in the water beds of the ancient sea, which covered southern California and which have been buried beneath recent alluvial river alluvium. Stretches over the western slope of the Sierra in the last distributed another formation of great importance—the auriferous gravels. The valley of the American river, in the course of the descent of lavas which poured out from volcanoes near the summit. Occupying the valleys, the lava buried gold-bearing gravel and forced the streams to seek new channels. These have been sunk below the levels of the old valleys, and the lava beds, with the gravels which they have, have been isolated on the summits of ridges. Thus the auriferous gravels are preserved in association with the older lavas which descend from north to south between the great valleys, and a group of rocks recognized in the Sierra Nevada. Compared with the first group, the Bedrock series, these may be called the "Superjacent series." The history of the Sierra Nevada, even so far as it is recorded in the rocks, has not yet been fully made out; but the events of certain epochs are recognized, and they can be stated in a brief summary in the order of their occurrence.

THE PALACEOIC ERA.
During the Paleozoic era, which includes the periods from the end of the Cambrian to the end of the Carboniferous, the State of Nevada was long continued, with the exception of a small area of unknown elevation. This land probably extended westward into the present State of California and included part of the area now occupied by the Sierra Nevada. Its western shore was apparently somewhat west of the general area of the land mass of the state, and the land composed of the ancient sediments, and the generally fine character of the sediment shows that the land which occupied the area of the Sierra Nevada and the northern part of the basin, the Great Basin, has not been very mountainous. As the age of the International system of rocks is more common, and the rocks of the Sierra Nevada are of the age of the International system of rocks, the term "Superjacent series" is more generally used.

Fossiliferous beds of Carboniferous age have been found in a number of places, and the presence of these beds is recognized in the Sierra Nevada. The Carboniferous beds are generally bordered each by a zone of volcanics and later lavas, which have been produced by intense metamorphism. The volcanic rocks are generally jointed with granite, and vast masses of diabase, associated with other basic igneous rocks, date from this time. There is evidence that igneous rocks were interred in varying quantities at different times, that the lavas buried gold-bearing gravels and forced the waters of a shallow bay occupying the valley of the American river. Rocks of this age are extensively developed in the southern and coastal sections of the state. They have been brought to the present surface by subsequent uplifts and prolonged erosion.

Jurassio Period.
The areas of land and sea which existed during the earlier part of this period are nearly known. Strata showing the former presence of the sea have been recognized in the southeastern portion of the range at Mineral King, where the sediments are imbedded in eroded granite, and at Saltcreek canyon, a tributary of American river. Rocks of this age occur abundant throughout the territories occupied by the Rocky mountains, but in the interior sea or archipelago, in which they were deposited, was apparently separated from the Pacific ocean by the stretching of the length of the Sierra Nevada. This land probably originated in the upheaval some time after the close of the Carboniferous, and toward the end of the Jurassio period its area became so extensive that the waters of the Pacific ocean were completely filled by the interior sea. This conclusion is based upon the fact that fossils of Jurassic age in California, so far as known, are generally restricted to western Russia than with those of eastern America of the same age.

PLEISTOCENE PERIOD.
During the Quaternary period, which is the latest of the geologic periods, the climate of the late Neocene was warm and humid, much wetter than it would have been if the highest divides of the present mountains were above the water; and erosion was correspondingly rapid. A mountain-building disturbance occurred during the Pleistocene Period. This was caused by pressure acting from the SSW toward the N-NE, with a downward inclination. One effect of this disturbance was to cause movements on a network of fissures, often of striking regularity, intersecting large portions of the range. It is not improbable that this disturbance originated at this time, but there are fissures of greater age. This disturbance also initiated an epoch of volcanic activity, marked by the formation of the fissures. They were accompanied by the eruption of lava and ash, consisting of rhyolite, andesite and basalt, which continued to the end of the Neocene. These lavas occupied small and scattered areas to the south, increasing in volume to the north until, near the 40th parallel, they covered almost the entire country. They were extruded mainly along the crest of the range, and often followed fissures belonging to the system mentioned above. The recurrent movements on the fissures were probably accompanied by an increase in the development of the fissure system. An addition to the gold deposits of the range at this period of volcanic activity. When the lavas burst out they flowed down the river channels. Sometimes they were not sufficient to flow down the river channels, and now represented by layers of "pipe clay" or similar beds in the gravels. These minor flows were chiefly rhyolite. The later andesitic and basaltic eruptions were of great volume, and for the most part completely choked the channels into which they flowed. The rivers were thus obliged to seek new channels—substantially these in which they now flow.

Pleistocene Period.
During the Quaternary period the Colorado River and the Great Basin were extensively developed, and the western portion of the range was深化改革 of the fissure system. The western portion of the range was submerged under a great mountain range, the disturbance above referred to, and minor dislocations probably occurred at intervals, but at the close of the Neocene there occurred a greater uplift which was accompanied by the formation of normal faults widely distributed through the range, and also by erosion of the eastern escarpment, where they form a well-marked scarp to the west of Mono Lake and Owens Lake. As a consequence of this
TOPOGRAPHY.

The Placerville sheet comprises a part of the middle slope of the Sierra Nevada in Placer, El Dorado, and Amador counties. The elevations above sea-level range from 800 feet in the southwest corner to 5,400 feet in the northeast. The prevalent character of the topography between the rivers is that of irregular and undulating plateau, not so rugged as the eastern United States, but with a number of parallel ranges and a few old canyons, the most prominent of which is the Yuba river. The general level of the sheet is broken by large areas of flat or gently sloping topography.

DESCRIPTION OF THE PLACERVILLE SHEET.

Geology.

The Placerville sheet consists of the sedimentary rocks which were driven into a nearly vertical position at or before the post-Mariposa upheaval, together with the associated igneous masses.

Aridious Slaters.

Calaveras formation.—This group, which includes the oldest strata in the region, consists of two belts of rocks, one lying to the east and one to the west of the main belt of Mariposa slates. The eastern belt consists of highly compressed black slates and black sandstones, and fine-grained alluvial slates (phyllites), the latter at least in part of Mesozoic age. These slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.

Comstock-Carson area.—In the Comstock-Carson area, the slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.

Comstock-Carson area.—In the Comstock-Carson area, the slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.

Comstock-Carson area.—In the Comstock-Carson area, the slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.

Comstock-Carson area.—In the Comstock-Carson area, the slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.

Comstock-Carson area.—In the Comstock-Carson area, the slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.

Comstock-Carson area.—In the Comstock-Carson area, the slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.

Comstock-Carson area.—In the Comstock-Carson area, the slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.

Comstock-Carson area.—In the Comstock-Carson area, the slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.

Comstock-Carson area.—In the Comstock-Carson area, the slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.

Comstock-Carson area.—In the Comstock-Carson area, the slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.

Comstock-Carson area.—In the Comstock-Carson area, the slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.

Comstock-Carson area.—In the Comstock-Carson area, the slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.

Comstock-Carson area.—In the Comstock-Carson area, the slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.

Comstock-Carson area.—In the Comstock-Carson area, the slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.

Comstock-Carson area.—In the Comstock-Carson area, the slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.

Comstock-Carson area.—In the Comstock-Carson area, the slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.

Comstock-Carson area.—In the Comstock-Carson area, the slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.

Comstock-Carson area.—In the Comstock-Carson area, the slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.

Comstock-Carson area.—In the Comstock-Carson area, the slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.

Comstock-Carson area.—In the Comstock-Carson area, the slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.

Comstock-Carson area.—In the Comstock-Carson area, the slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.

Comstock-Carson area.—In the Comstock-Carson area, the slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.

Comstock-Carson area.—In the Comstock-Carson area, the slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.

Comstock-Carson area.—In the Comstock-Carson area, the slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.

Comstock-Carson area.—In the Comstock-Carson area, the slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.

Comstock-Carson area.—In the Comstock-Carson area, the slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.

Comstock-Carson area.—In the Comstock-Carson area, the slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.

Comstock-Carson area.—In the Comstock-Carson area, the slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.

Comstock-Carson area.—In the Comstock-Carson area, the slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.

Comstock-Carson area.—In the Comstock-Carson area, the slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.

Comstock-Carson area.—In the Comstock-Carson area, the slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.

Comstock-Carson area.—In the Comstock-Carson area, the slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.

Comstock-Carson area.—In the Comstock-Carson area, the slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.

Comstock-Carson area.—In the Comstock-Carson area, the slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.

Comstock-Carson area.—In the Comstock-Carson area, the slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.

Comstock-Carson area.—In the Comstock-Carson area, the slates are not very thickly bedded, but rather are interbedded with volcanic fragments. The Desolation-Carson area contains a large area of these slates, and is one of the principal sources of iron ore in the state.
rocks, as shown in the long projecting offshoots or somewhat variable texture, though it is usually fine grained. The quartz-porphyritic, as well as the granite- diorite, here contains much more sodic than potassic.

Closely connected with the granite diorite is the hornblende-porphyrite; it is a medium grained rock with porphyritic feldspars and hornblende in a groundwork of greenish or greenish-brown color and of somewhat variable texture, though it is usually fine grained. The quartz-porphyritic, as well as the granite diorite, here contains much more sodic than potassic.

The only important mining district in the eastern part of the sheet is that of Grizzly Flat. A long stretch of the contact of slate and granite diorite, from the middle fork of the Comstock to the "Buttes," is mineralized and occupied by a great many auriferous quartz veins, the most prominent of which is that of the Mount Pleasant mine.

The soils formed by secular disintegration of the underlying rock, are deep only on some slopes and lava plateaus. Many of the soils have but a thin coating of soil. The soils formed by secular disintegration may be classed under three general heads, as red, granitic and slate soils.

Red soil.—In part derived from diabase, gabbro- diorite and amphibolite, and in part from the underlying lavas. The two kinds differ somewhat, but both are rich in plant food and admirably adapted to horticulture.

Granitic soil.—Derived from granite diorite. This soil is somewhat poorer than the red soil, but being usually deeper, warmer and easier to work, it is preferred.

Slate soil.—Derived from the sedimentary slates. It is usually shallow and the poorest of the three.

J. W. Marshall's discovery of gold in 1848 was made at Coloma, on this sheet. The alluvial accumulations of gold-bearing gravels in the present rivers and creeks were the first deposits worked. They were soon exhausted and the attention of the miners was turned to the gold in older deposits. A few bars along the American and Cosumnes rivers are still worked.

The Placerville gravel benches along the present rivers have been and are now in part worked for hydraulic mining. The hydraulic process is applied to the Tertiary auriferous gravels near Todd valley, on the divide north of Long Valley, and near Placerville, and also near Indian diggings.

The most important mines on the Placerville sheet are located along the so-called Mother lode in the area of the Mariposa slates, traversing the sheet from north to south. The Mother lode, which must not be considered as a continuous vein, but rather as a belt of parallel though sometimes interrupted quartz-filled fissures, can be traced continuously as far north as the St. Lawrence mines on the Georgetown divide, and there are found many celebrated mines, such as the Church Union, the Pacific and the Gopher-Boulevard. The veins run parallel to the strike of the slates or cut them at a very acute angle. The dip is nearly always to the east and at a usually at a somewhat less steep angle than that of the surrounding slates. Along the veins of the Mother lode frequently run narrow streaks of amphibolite-schist and serpentine. The eastward extension of the slate is evidence of the existence of the St. Lawrence mines, of the Church Union, and of the Pacific and the Gopher-Boulevard.

The soils formed by secular disintegration may be classed under three general heads, as red, granitic and slate soils.

Red soil.—In part derived from diabase, gabbro- diorite and amphibolite, and in part from the underlying lavas. The two kinds differ somewhat, but both are rich in plant food and admirably adapted to horticulture.

Granitic soil.—Derived from granite diorite. This soil is somewhat poorer than the red soil, but being usually deeper, warmer and easier to work, it is preferred.

Slate soil.—Derived from the sedimentary slates. It is usually shallow and the poorest of the three.

Soil of the hills and ridges formed by secular disintegration of the underlying rock, is deep only on some slopes and lava plateaus. Many of the soils have but a thin coating of soil. The soils formed by secular disintegration may be classed under three general heads, as red, granitic and slate soils.

Copper deposits.—Copper ores are found in very few places on the Placerville sheet, and nowhere in any considerable quantity. They occur as vein deposits along the granite diorite in the zone of contact metamorphoses, and one prospect lies south of Deer creek in the amphibolite-ashit. Small masses of copper pyrites occur in serpentinite and amphibolite about two miles west of Greenwood.

Quicksilver deposits.—Quicksilver was formerly mined near Fanny creek, south of Big Sugar Loaf.

Traces of Cinnabar are said to occur near the mouth of Hastings creek and in Clark's creek running the economic geology two deposits are noted. On the area described above the "serpentines" belt many small pockets have been found.

GOLD-BEARING GRAVELS.—J. W. Marshall's discovery of gold in 1848 was made at Coloma, on this sheet. The alluvial accumulations of gold-bearing gravels in the present rivers and creeks were the first deposits worked. They were soon exhausted and the attention of the miners was turned to the gold in older deposits. A few bars along the American and Cosumnes rivers are still worked.

The Placerville gravel benches along the present rivers have been and are now in part worked for hydraulic mining. The hydraulic process is applied to the Tertiary auriferous gravels near Todd valley, on the divide north of Long Valley, and near Placerville, and also near Indian diggings.

The most important mines on the Placerville sheet are located along the so-called Mother lode in the area of the Mariposa slates, traversing the sheet from north to south. The Mother lode, which must not be considered as a continuous vein, but rather as a belt of parallel though sometimes interrupted quartz-filled fissures, can be traced continuously as far north as the St. Lawrence mines on the Georgetown divide, and there are found many celebrated mines, such as the Church Union, the Pacific and the Gopher-Boulevard. The veins run parallel to the strike of the slates or cut them at a very acute angle. The dip is nearly always to the east and at a usually at a somewhat less steep angle than that of the surrounding slates. Along the veins of the Mother lode frequently run narrow streaks of amphibolite-schist and serpentine. The eastward extension of the slate is evidence of the existence of the St. Lawrence mines, of the Church Union, and of the Pacific and the Gopher-Boulevard.