

	CARLOADS
Watermelons	3284
Onions	2470
Tomatoes	2204
Potatoes	1800
Peaches	1254
Cabbage	300
Cantaloupes	163
Berries	123
Cucumbers	60
Apples	10

The sugar produced in 1910-1911, entirely from cane, was 13,200 net tons, and the total production, 1904 to 1910, was 105,600 net tons. Sugar beets are grown for stock feed, and there are parts of the Panhandle so well adapted for this crop that plans for the erection of sugar-beet factories are announced.

Mineral Resources and Products.—During the 29 years ending with 1911 the total value of the mineral products of Texas was \$205,277,614. This amount was made up of the following items:

Petroleum	\$73,901,579
Coal and lignite	38,142,958
Clay products (brick, tile, pottery)	37,142,295
Stone (granite, limestone, and sandstone)	8,990,514
Silver	6,623,341
Pig iron, partly estimated	3,000,000
Salt	3,236,248
Mineral Waters	2,548,050
Quicksilver	2,133,115
All other products	29,559,514
Total value	\$205,277,614

There is a little copper, lead, tin, gold, and sulphur produced in the State, but the values are not now of special importance. It is probable, however, that the development of the sulphur deposits near the mouth of the Brazos River will soon place Texas in the second rank as a producer of

this substance, with Louisiana first. The sulphur exists as such in beds at depths of 900 to 1100 feet, and is obtained by pumping superheated water down, dissolving the sulphur, and pumping it back into great bins, where the water evaporates and leaves the pure sulphur.

During this period of 29 years the production of petroleum was 156,359,454 barrels of 42 gallons. The production of bituminous coal was 12,980,765 tons, and of lignite 7,358,091 tons. The petroleum-producing fields are in the counties of Clay, Hardin, Harris, Jefferson, Liberty, Matagorda, Navarro, and Wichita. There are fields also in the counties of Bexar, Brown, Coleman, Jasper, McCulloch, and McMullen, but statistics of production are wanting. Most of the petroleum produced in the State has come from what is known as the Gulf Coastal Plain, a crescent-shaped area extending along the Gulf of Mexico and having a mean average elevation of about 170 feet for the first one hundred miles inland. The geological formations which have yielded the greater part of the oil are the Tertiary and Cretaceous, but the oil from Clay and Wichita counties is probably from the Carboniferous.

Texas became an important producer of petroleum in 1898, when the Corsicana field, Navarro county, yielded 546,000 barrels. The famous Spindle Top field, Jefferson county, came into production in January, 1901; Saratoga and Sour Lake, Hardin county, in 1902; Batson, Hardin county, in 1903; Markham, Matagorda county, and Henrietta (Petrolia), Clay county, in 1904; Dayton, Liberty county, and Humble, Harris county, in 1905, and Electra, Wichita county, in 1910-1911. The maximum production of petroleum was reached in 1905 with 28,136,189 barrels. The production then declined and reached its lowest point in 1910 with 8,899,266 barrels. In 1911, however, the production was somewhat larger than in 1910, but did not reach 10 million barrels.

In 1902 Texas held second place as a producer of petroleum, in 1903 third place, in 1904 and 1905 second place again, in 1906 fourth place, in 1907 and 1908 third place again, in 1909, 1910, and 1911 sixth place. For the last several years California has held first place as a producer of petroleum, with Oklahoma second.

There are in Texas eleven petroleum refineries, with two others building. The combined capacity of these refineries is more than 100,000 barrels a day. All kinds of products are made, from the lightest, such as gasoline and naphtha, to the heaviest, such as asphaltum, greases, etc. For the purpose of conveying the crude oil to the refineries there are in the State about 1500 miles of pipe lines, with additional mileage under construction.

Closely connected with the petroleum industry is that of natural gas. This is conveyed to Fort Worth, Dallas, and many other north Texas cities and towns by pipe lines from the wells in Clay County. Laredo secures natural gas from wells in Webb County, Corsicana from wells in Navarro County, while Texarkana and Marshall secure gas from the Caddo fields, Louisiana.

The deepest boring for oil or any other purpose is that of a well near Henrietta, Clay County, — 3985 feet.

Texas has a great variety of clays which are manufactured into common and fancy brick, fire brick, paving brick, sewer pipe, drain tiles, etc., as also into ordinary pottery. During the last 29 years the total value of the products made from clay exceeds \$37,000,000. Of special interest in this connection is the deposit of high grade kaolin in the southeast part of Edwards county. Material from this locality has been made up into many attractive forms of fine china, porcelain, etc. Its quality is not surpassed by any kaolin produced in the United States. Extensive deposits of fuller's earth, largely used in refining mineral, vegetable, and animal oils, occur in several counties, Burleson, Cherokee, Fayette,

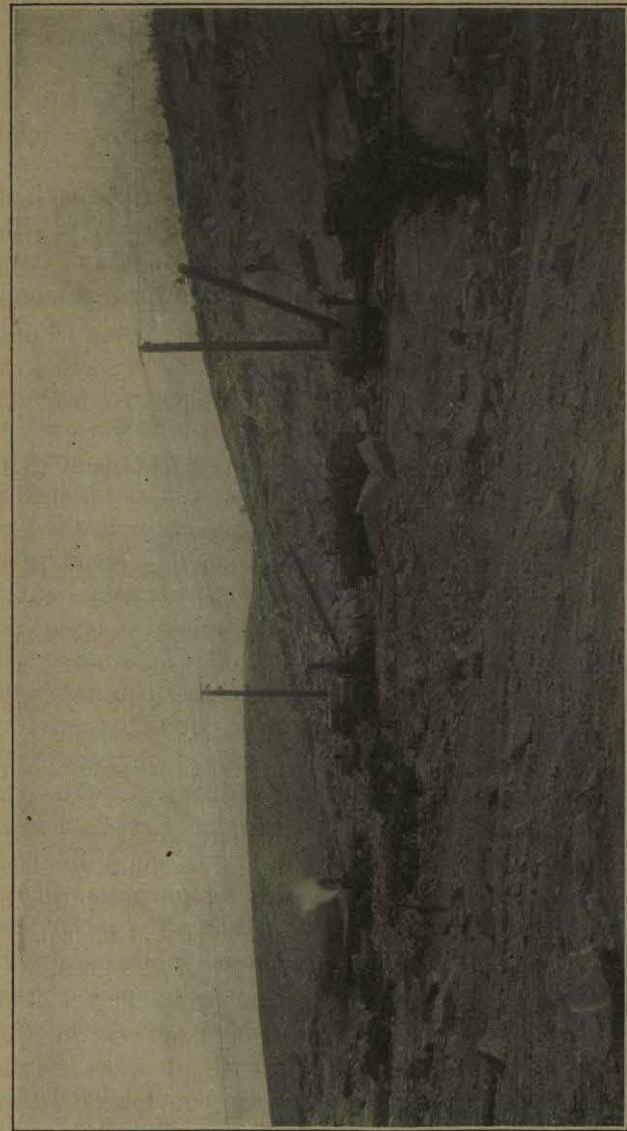


PLATE III. — View of the red granite quarry at Granite Mountain, Burnet County.

Shelby, Smith, Walker, Washington, etc. Excellent paving brick are made at Thurber, Erath county, and fire brick are made near Elgin, Bastrop county; Athens and Malakoff, Henderson county; Ginger, Rains county; Saspamco and Elmendorf, Wilson county, etc.

Building stones of great variety and beauty occur in many parts of the State, and the granites of Burnet, Gillespie, Llano, and Mason counties are among the best in the country. Plate III gives a view of the quarry at Granite Mountain, Burnet county, from which the red granite used in the construction of the State Capitol and of the Galveston Sea Wall was obtained.

Excellent serpentine is found in Gillespie and Llano counties, and also good soapstone and graphite. Silver-black and golden onyx are found near San Saba, San Saba county, and beds of marble in Brewster, Culberson, El Paso, Llano, San Saba, and Travis counties. The black and white marble from near Paisano Pass, Brewster county, closely resembles the famous Kilkenny marble, from Ireland. Limestones suitable for all purposes to which this stone is applied occur in so many counties that it is impracticable, in the limits of this chapter, to enumerate them. The principal counties where limestone is quarried are Bell, Bexar, Comal, Coryell, El Paso, Grayson, Guadalupe, Jack, Jones, Lampasas, Nolan, Palo Pinto, Stephens, Travis, and Williamson. The chief lime-producing counties are Bexar, Comal, Coryell, El Paso, Kendall, Nolan, San Saba, Tarrant, Travis, and Williamson.

Fine sandstones, suitable for building purposes, occur in many counties, and the principal producers are in Burleson, Fayette, Lavaca, Polk, and Tyler. The red sandstone quarries near Barstow, Ward county, from which much excellent stone has been obtained, are not now in operation, nor are those at Fairland, Burnet county.

The increasing demand for better roads and for material used in bitulithic paving in the cities and towns has resulted

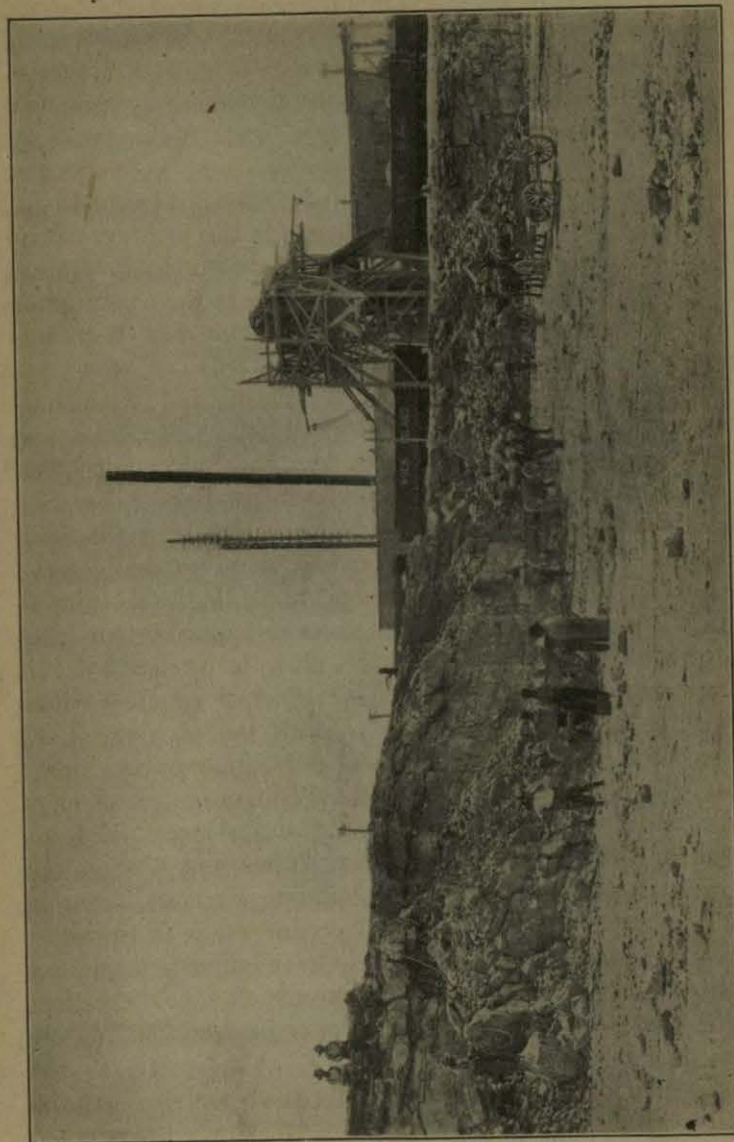


PLATE IV. — View of limestone-crushing plant at Jacksboro, Jack County.

in the building of several plants for preparing crushed stone. The most important of these are at Granite Mountain, Burnet county; near New Braunfels, Comal county; Jacksboro, Jack county; Mineral Wells, Palo Pinto county, and Stryker, Polk county. Plate IV gives a view of the limestone-crushing plant at Jacksboro.

There are many excellent mineral springs and wells in the state, supplying both hot and cold waters. The principal establishments are at Marlin, Falls county; San Antonio, Bexar county; and Mineral Wells, Palo Pinto county.

Texas has considerable resources for the manufacture of iron and steel. Excellent iron ores are found in Llano county, central Texas, and in many of the northeastern and eastern counties, such as Anderson, Cass, Cherokee, Gregg, Henderson, Marion, Morris, Nacogdoches, Panola, Rusk, Shelby, Smith, Upshur, and Wood. The iron ore in this part of the State has been used for many years in the manufacture of pig iron, iron pipe, etc. There are iron furnaces at Rusk and New Birmingham, Cherokee county, and at Jefferson, Marion county, but they have not been in operation for several years. Plate V gives a view of the State Iron Furnace, at Rusk. This plant has been idle since the spring of 1909, but steps have recently been taken to lease it for active business again. In order to facilitate the use of Texas iron ores in other parts of the country and, possibly, abroad, an iron ore dock has been built at Port Bolivar, Galveston Bay, the only one of the kind on the Atlantic seaboard south of Sparrow's Point, near Baltimore.

There are in the State, also, large deposits of gypsum, used in making plaster of Paris, rock plaster, etc., and beds of fine alabaster. Materials for making Portland cement abound in many parts of the State, and there are now four large establishments engaged in this business, two in Dallas county, one in Bexar, and one in El Paso.

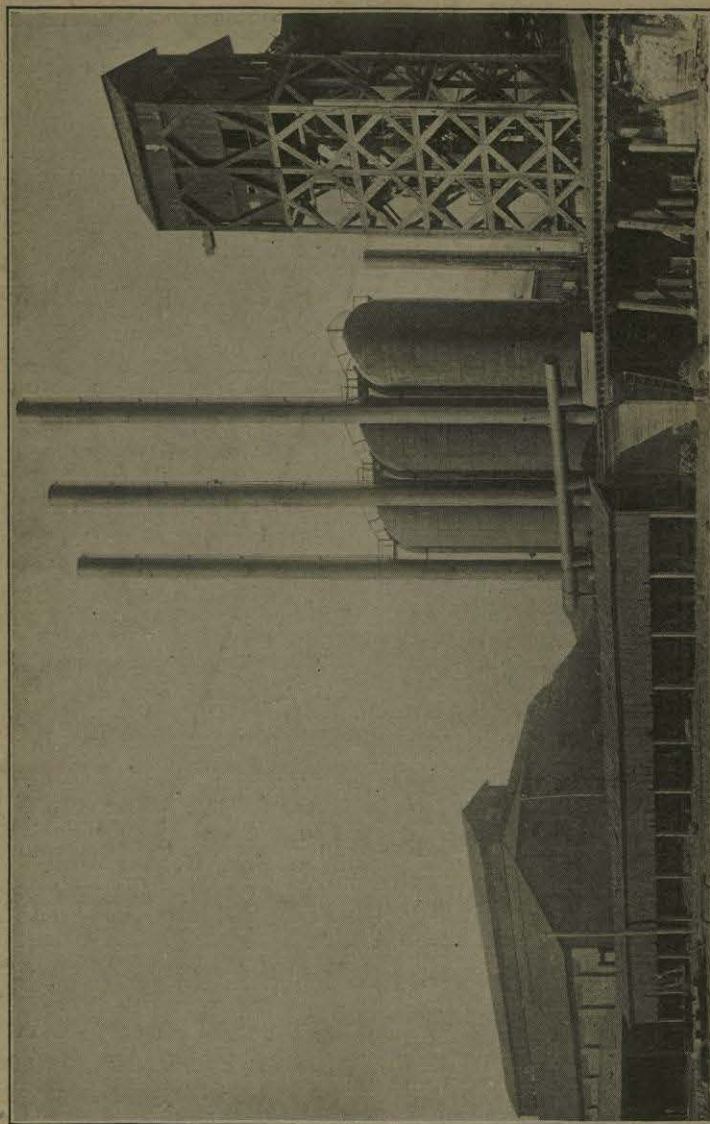


PLATE V. — View of state iron furnace, Rusk, Cherokee County.

There are extensive deposits of asphalt rock suitable for paving purposes, but not now utilized.

Beds of rock salt occur in the counties of Anderson, Mitchell, Van Zandt, and Smith, and they are used for the manufacture of salt in the three first-named counties. In several of the western counties there are deposits of salt, carbonate of soda, and sulphate of soda occupying old lake beds. Plate VI gives a view of the interior of a salt works at Grand Saline, Van Zandt county.

Deposits of lithographic stone are found in the counties of Bexar, Burnet, Gillespie, and San Saba, but, like the marble, they have not been developed. Rare and valuable compounds of uranium, yttrium, thorium, etc., are found at Barringer Hill, Llano county, and from this same locality there was obtained one of the largest quartz crystals in the world, weighing more than 700 pounds. It is in the collection at the University.

Texas is not rich in gems or precious stones, although some handsome pearls have been obtained from the Colorado and Llano rivers, from Caddo Lake, Marion county, etc.; beautiful amethysts from Llano county; fine topaz from Mason county; excellent turquoise from El Paso county, and agates, jasper, and chalcedony from Brewster and Presidio. Moss agates have been reported from San Patricio county, while the clear and flawless quartz crystals, from Fayette county, have been cut and used in jewelry. One of the most attractive stones is the exquisitely tinted rose quartz from Llano county. River shells have been gathered and used in the manufacture of pearl buttons.

Several meteorites have been found in the state and the largest of them, weighing about 300 pounds, is at the University, together with fragments of the others.

There is one silver mine in Texas, at Shafter, Presidio county, which has been in successful operation for more than 25 years, and has produced more than \$6,000,000 in



PLATE VI. — View of the interior of a salt works, Grand Saline, Van Zandt County.

silver, with a little gold and some lead. The deposits of quicksilver ores in the southern part of Brewster county have been worked since 1899, and have produced more than \$2,000,000 worth of quicksilver. The ores there are, on the average, three times richer than the California ores. For the last fourteen years Texas has ranked second in the production of quicksilver, with California first. Plate VII gives a view of a quicksilver furnace in Brewster county. One of the largest silver-lead-copper plants in the United States is at El Paso, but it derives its ores almost entirely from other States and from Mexico. Plate VIII gives a view of this plant. It is capable of handling more than 2000 tons of ore a day.

Public Lands. — When Texas was annexed to the United States in 1845, it reserved its public domain. The Land Office of the Republic of Texas was opened for business on the 4th of January, 1838, but it was not until 1849 that any reliable estimate of the extent of its possessions was made. At that time the total area was placed at 379,054 square miles, the extreme northern point reaching almost to Cheyenne, Wyoming. In 1850 Texas ceded to the United States 110,937 square miles, receiving therefor about ten million dollars. This region extended through New Mexico and Colorado. Texas has had its own land office for 75 years. According to the report of the Commissioner of the General Land Office for the two years ending August 31, 1912, there remained 1,636,176 acres of unsold public lands. Of this acreage 1,548,583 acres, or more than 94 per cent, were in the counties west of the Pecos River, and 1,098,834 acres, or more than 67 per cent, were in the counties of Brewster and Presidio alone.

There were 377,018 acres under lease, of which 280,705 acres were leased at an annual rental of from 3 to 3½ cents an acre. A very small proportion of the land under lease brought as much as 6 cents an acre a year.

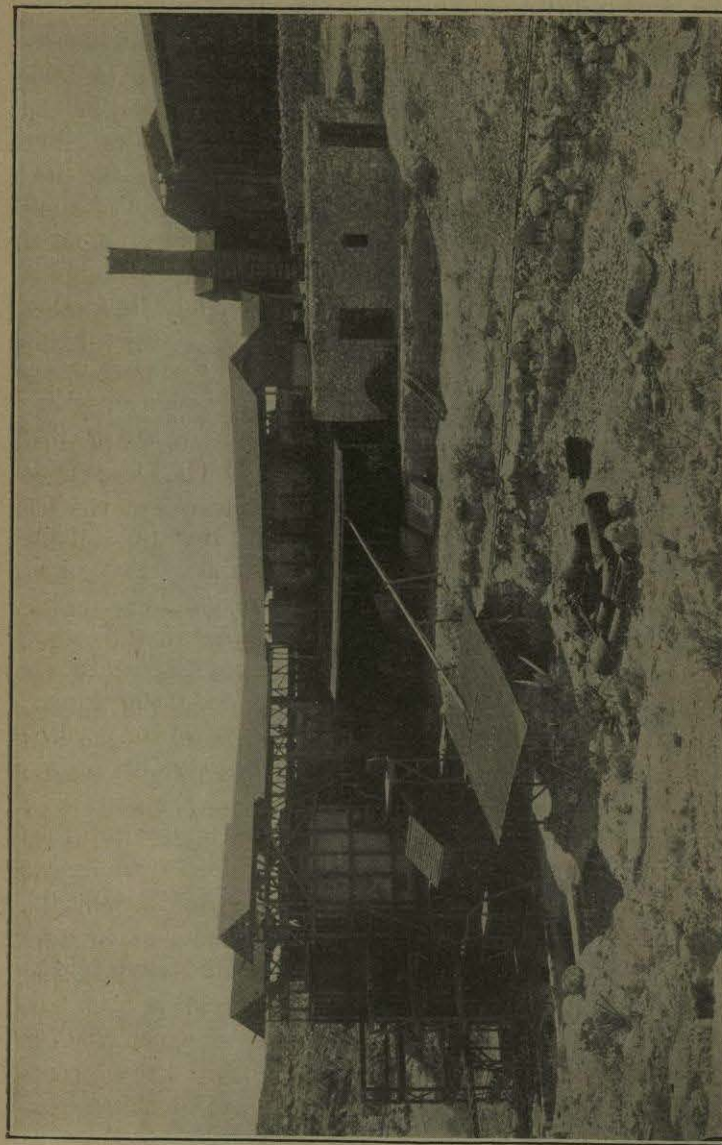


PLATE VII. — View of a quicksilver furnace, Brewster County.

The State reserves all minerals in the public lands, but the surface is sold from \$2 to \$2.50 an acre, according to location, etc., and a three years' residence is required in order to secure title, the payments being extended over forty years, with interest at 4 per cent. The administration of the public lands, whether agricultural, grazing, or mineral, is in the hands of the Commissioner of the General Land Office, Austin.

Fuel Resources. — In Texas there are about 70,000 square miles of land underlaid by deposits of coal and lignite, an area larger than the State of Missouri. The original supply of these fuels was about 40 billion tons, and what has been mined and used comprises an insignificant fraction of what remains. If the present production of coal and lignite should be increased ten times, the present known supply would last 800 years.

The coal-producing counties are Erath, Maverick, Palo Pinto, Webb, Wise, and Young. The counties that produce lignite are: Bastrop, Hopkins, Houston, Lee, Leon, Medina, Milam, Robertson, Titus, Van Zandt, and Wood. Much firewood is used in Texas, the latest statistics (1908) showing an annual consumption of over 4,000,000 cords, valued at more than \$12,000,000. Crude petroleum is also used as fuel under stationary boilers and in locomotives, for burning lime, brick, etc.

Inclusive of the coal and natural gas brought into the State, for Texas does not produce enough for its own needs, it is likely that the total annual fuel bill exceeds \$25,000,000.

Coal is brought in from New Mexico, Colorado, Oklahoma, Arkansas, Alabama, Kentucky, Pennsylvania, and West Virginia.

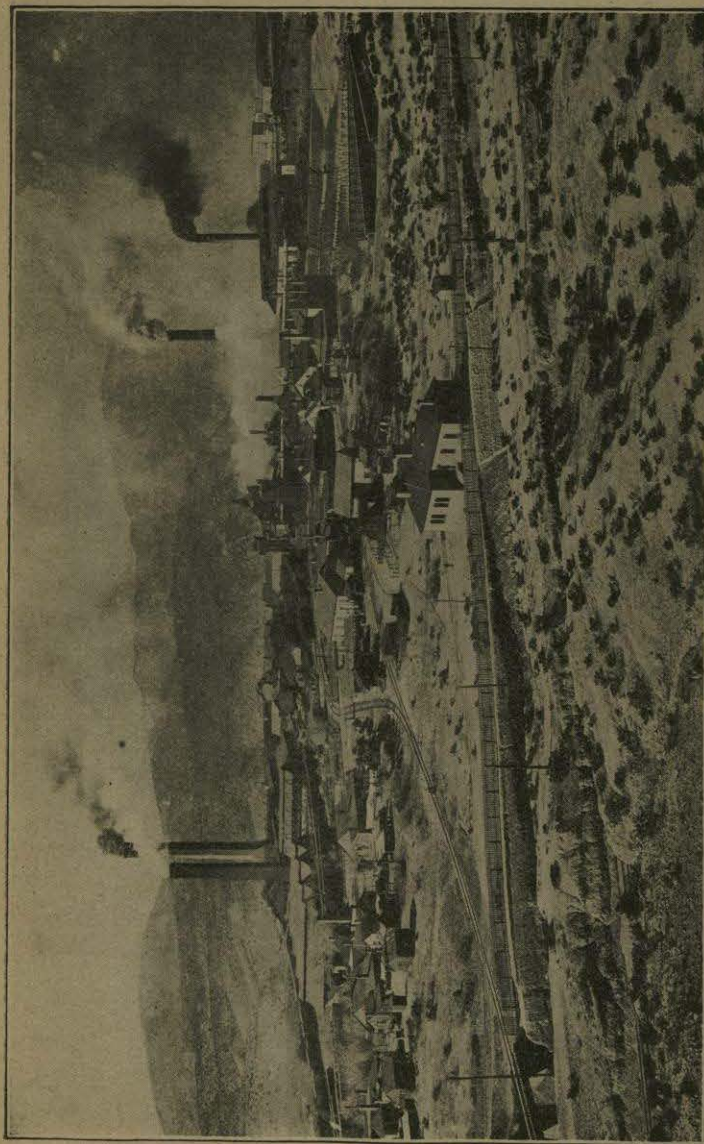


PLATE VIII. — View of a silver-lead-copper smelting plant at El Paso, El Paso County.

Classification of Rocks as to formation

- I. Sedimentary - Formed by water
- II. Igneous - Formed by Volcanic action
- III. Metamorphic - from others by pressure means changed.

Examples of I Sandstone, Limestone, Shale
 " " II Pumice, scoria, obsidian, Volcanic ash, Granite
 " " III - Marble from limestone, slate from shale, quartzite from quartz, Schist, Gneiss.

3 of Ulsuvalb (check cross section)
 1 of any volcano.
 Mt Mazama
 Blue Mt.

Hot cold mineral springs
 Geysir
 Glacier Lacna Martiney Co
 Hanging valley
 Ice Sheet + Iceberg
 Salt Lake region
 red sand
 water falls - from hard to soft shale
 " " " escarpment
 Intermittent Spring
 Fault Spring
 meandering river
 Terraced valley
 Alluvial fan
 Limestone canyon
 Sella
 Lake Titicaca
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