

made twelve pianos of an average value of about \$450 each. In the construction of these instruments many of the native woods of this region, ash, laurel, and other varieties, have been used with good effect.

ORGANS.—The only organ manufactory is that of John Mayer, located on Page, near Octavia Street. The instruments made by this maker have a good reputation for power and sweetness of tone. Two workmen were employed and two large organs made during 1866.

GLASS.—The manufacture of glass during the year 1866 amounted to about \$30,000 in value, the two glass works which are located in this city being in active operation for only eight months of the time. The Pioneer Glass Works on the Pacific coast, were erected at the Potrero by the Pacific Glass Company, which was incorporated in 1862; the buildings were erected on a ten acre lot of land belonging to the company; the first glass blowing taking place on the 16th of June, 1863. The works were built with especial reference to making green and black glassware, for which the wine, liquor, soda water and other trades created a large demand. They consist of a substantial brick building, in which is located the furnace and tempering ovens, and a number of frame buildings in which materials are stored, and pot making and other preparatory work done. Between forty and fifty men and boys are employed in the works, which contain a furnace with five open pots, and when run at its full capacity, turn out about \$6,000 worth of glass per month. The great increase of the native wine trade promises to soon make a vast demand for bottles to supply, which will probably require enlarged manufacturing facilities. The works are at present run by Messrs. Saulsbury, Kirk and Mordecai, who have leased them of the company. The San Francisco Glass Works, owned by Messrs. Newman & Brannan, are located on Townsend Street, between Third and Fourth Streets. The works consist of a frame building, containing an eight-pot furnace, and are adapted to the manufacture of all variety of white, green or black glass; the pot though covered for the manufacture of white glass, yet, being by an ingenious invention, patented by Mr. Newman, suitable for making all colored glass economically. They employ forty men and boys, who turn out about \$6,000 worth of glass per month. All kinds of white glass, such as druggist ware, chemists' retorts, lamps, chimneys, tubes, etc., are made as well as carboys, demijohns, wine, soda water, and other black and green glass. The variety made at these works is almost endless; it comprising all kinds of white glass, except crystal ware, that have hitherto been imported from the Atlantic States and Europe. Their ability in this respect has proved most valuable; several instances having already occurred, whereby the domestic manufacture of large retorts, syphons, tubes, etc., the chemical works, and the United States Mint in this city, have avoided long delays and the heavy expenses and damage attending the importations of the articles from Europe. Although white glass has been made for about a year past, the domestic manufacture is fast driving importations out of the market; it being found cheaper to manufacture than import with the attendant risk of loss and breakage by sea voyage. The white sand used for the finer quality of glass made at these establishments, is found in large quantities in Monterey County; the next quality comes from Oakland, across the Bay; whilst that for the common or ordinary quality, is found in immense quantities in the hills of San Francisco. The manganese used for coloring, is obtained from Red Rock in the Bay, about ten miles from this city; it being prepared from an ore of better quality, and at a cheaper rate than it can be imported. The soda ash used is all imported, but

attempts are now being made to prepare a substitute from salt cake, the refuse of nitrate of soda from the chemical works. This process, if successful, will be more economical, and will also benefit the chemical works, whose managers have been at expense to rid themselves of a hitherto useless and cumbersome article.

IRON FOUNDRIES AND BOILER SHOPS.—The iron foundries of San Francisco are among the most important of its industries. Though of only eighteen years' growth, through the peculiar condition of circumstances of the country, they have attained a degree of excellence and magnitude of operations not to be equaled by those of any similar sized city in the Union. Commencing with the use of two blacksmiths' bellows and a common forge, in the autumn of 1849, when the first casting was made in the sands of Happy Valley, by Peter and James Donahue, the facilities for casting have increased so that at the present time any piece of machinery required for the business or commerce of the Pacific coast, can be done as well and cheaply as can be imported from any of the Eastern cities. To no one branch of mechanics can the unparalleled prosperity and enterprise of the Pacific coast be ascribed more than to the foundries and machine shops of this city. Through their aid the numerous improvements, required in mining, have been met as soon as experience has suggested the need, until, at the present time, California is confessedly in advance of the rest of the world in mining machinery required to economically save the precious metals. Without a single saw mill in the State at the commencement of gold digging, the foundries have supplied the requisite machinery for sawing lumber, not only to meet the demands of a wasteful population of over half a million, but to also minister to the demands of foreign countries, which required many millions of lumber annually. From there being not a single flouring mill in the State, in the last eighteen years the foundries have supplied machinery to meet not only the domestic demand, but also to export, during 1866, 250,000 barrels of extra choice flour to other countries. What has occurred with mining and milling machinery has also happened with other necessary trades, the joint product of which saves over \$20,000,000 from being annually imported into the State. Up to the present time the principal foundries and machine shops located in this city have turned out machinery for the propulsion of 1,000 ton vessels, stationary engines of 300 horse power, first class locomotive engines, batteries of heavy guns, the most powerful quartz crushing machinery, saw and flour mills, and for a multiplicity of business not needed to mention. With the exception of the raw materials used for castings and machinery, the foundries of the State have rendered its people independent of other countries and given profitable employment, directly and indirectly, to several thousands of persons. At the present time there are fourteen large foundries and machine shops, some of which have no superiors anywhere in excellence of work and adaptation of materials to meet the wants of the people. During the year 1866 these foundries, with some few smaller ones, employed 1018 men, using 6921 tons pig iron, 1448 tons bar and rod iron, 1027 tons sheet and boiler iron, and 110 tons rivets. Several of these establishments have extensive boiler shops connected with them, and the boiler works of Messrs. Colley & Risdon, Moynihan & Aitken, and the works more recently established by Messrs. Baurhyte & McAllee, manufacture a large amount of work annually.

THE UNION FOUNDRY.—These works, situated at the corner of First and Mission Streets, were established in 1849 by James and Peter Donahue, who, as before stated, made the first castings ever run on the Pacific coast.