

Pacific coast is estimated by competent judges at from \$230,000 to \$250,000, of which our local foundries supply over two-fifths. There are four principal foundries in the city. Garratt's Brass Foundry employed, during 1866, 31 workmen; Kingwell, Weed & White, 10 workmen; M. Dobrzensky, 18 workmen; and Greenberg & Moore, three workmen; making in the aggregate over \$100,000 worth of brass work.

IRON DOORS, SHUTTERS, AND SAFES.—The manufacture of iron doors and shutters, to make fire-proof buildings, was early engaged in in this city. The terrible conflagrations of 1850 and 1851 devastating large portions of the business section of the city, necessarily demanded protection, which could only be had through the use of stone and brick buildings, with iron doors and shutters. The mountain towns were also subject to large fires, and the only means of safety for property was the use of fire-proof buildings. The demand from these sources stimulated the manufacture of iron doors and shutters, for which what would now seem fabulous prices were paid. The isolation of California from the manufactories of the East also called for the manufacture of fire and thief-proof safes for the use of banking houses. At the present time there are seven establishments for making iron doors and shutters, and one bank-safe manufactory. These, during 1866, employed 44 workmen, and consumed 151 tons sheet iron, and 262 tons bar and rod iron. The largest business is done by Kittredge & Leavitt, who employ 18 men, who manufactured 60 tons of sheet and 90 tons bar iron during the last year. John R. Sims, Jonathan Kittredge, and J. J. Gallagher each have extensive establishments for the manufacture of iron doors and shutters, vaults, etc., and employ in the aggregate about 20 men. Iron railings and fences are also made by one firm, William McKibbin, who has used largely both of cast and wrought iron during the year.

LEAD.—The only manufactory of lead on the Pacific coast, are the San Francisco and Pacific Lead and Shot Works in this city. These are carried on by Thomas H. Selby & Co., one of our oldest and most enterprising business firms. The works are situated on the southeast corner of Howard and First Streets, and consist of a three-story brick building, with a frame shot tower 80 by 70 feet at the base and 200 feet in height. All kinds of lead work required for the consumption of the Pacific coast, are made of a quality equal to the best imported, while shot of all sizes, including Minnie balls, is manufactured to the extent of 200 bags daily. At present the lead used is mostly imported from Spain, the total consumption of all kinds, in 1866, being 1,200 tons. The manufactures of these works have been very much liked by consumers, and at present they supply full one-half the demand for the whole coast. The domestic article is steadily curtailing importations of shot, and will ultimately exclude all other makers from this market. Although the crude lead is at present imported, it is believed that in a few years at farthest that supplies will be obtained from the numerous mines of galena that are known to exist in the State. The most accessible mines at present are to be found on the island of Santa Barbara some 300 miles south of this city. The ore of these mines is found in quite large masses, and is very pure with exception of being very rich in gold and silver, which alone would pay all expenses of mining, transportation and refining. During 1866 these works employed 17 men, and manufactured 1000 tons lead goods, and 200 tons shot. The total annual consumption of lead manufactures, including shot, is about 2,500 tons, while the works have a manufacturing capacity of 4,000 tons per annum.

WIRE AND WIRE ROPE.—The manufacture of wire rope was commenced in San Francisco in the

year 1857 by A. S. Hallidie & Co. From making small rope the manufacture has increased so that at present all kinds of wire rope, cordage and wire are made by this firm. Quite a number of large suspension bridges have been erected by Messrs. Hallidie & Co., in California, Idaho, Oregon and British Columbia. The largest bridge is located on Frazer River in British Columbia, while the next largest is at Folsom in this State. The lengths of span of these bridges are 400 and 330 feet. The works have manufactured wire cables $7\frac{1}{2}$ inches in circumference in single lengths 3,500 feet long, and flat ropes for hoisting works 4 inches wide by 5-8 inch thick and 1,500 feet in length. All the wire used is redrawn before being manufactured into ropes. The firm have, however, machinery for making wire direct from "blooms," but in the absence of sufficient demand and difficulty of importing the iron, have not yet engaged in wire manufacture.

Mr. A. S. Hallidie, one of the proprietors, has lately invented a new style of bridge, which, from its peculiar structure, bracing and fastening, is asserted to be as free from wave motions as most wooden bridges known. The improvement consists in using two cables on the sides, each going from the top of a tower on one side to the foot of the opposite tower, where it is securely fastened. Where the cables intersect in the center they are securely fastened so as to admit of no vibration, while the intervening sections from center to sides are diagonally braced on a new plan, and by the arrangement of planking on girders, any motion which may take place is spread over twice the usual surface. By this plan of fastening the cables, it is impossible to sway or overturn the bridge by high winds, as was the case with the Wheeling bridge on the Ohio River last year. It is claimed by the inventor that most, if not all, of the objectionable motion of ordinary suspension bridges is done away with, and that railroad trains can run with safety at a moderately high rate of speed over bridges built on the new plan. The invention has been patented in the United States, Great Britain, France, Italy and Austria, and negotiations are now pending for the same purpose in Russia. The works in 1866 employed three men, and turned out manufactures valued at \$23,000.

WIRE WORK.—The only manufactory of wire-work goods in the State is that of H. T. Graves, 412 Clay Street. All kinds of wire cloth and wire-work are made, the larger portion of the demand of the entire coast for these goods being supplied from these works, which employ 10 men steadily.

CUTLERY.—There are four entirely establishments in this city, only two of which, Will & Finck, and M. Price, however, manufacturing cutlery for sale. These also manufacture to order, and do repairing like the others. The quality of the goods made is very superior, and would do credit to any city of the Union. During 1866 the two establishments named employed six men in new work, of which they manufactured \$4,800 worth.

BELLOWS.—There are two bellows manufactories in San Francisco, employing five men, which manufactured 650 bellows during 1866. Of these the large majority were for blacksmiths' use. The principal manufactory is that of C. W. Thomas, 22 California Street, which made 500 bellows during the last year. The domestic manufacture is fast taking the place of the imported article, the former being furnished of equal quality and at lower prices.

SALT MILLS.—There are five salt mills in this city, viz: John Barton, S. H. Tyler & Co., A. B. Winegar, Oakley & Jackson, and B. F. Barton; the most of which are located on Commercial, Sacramento and Front Streets. These mills, during 1866, employed engines of 70-horse power, 30 men, and ground 2,400 tons of domestic, and 1,800 tons foreign salt, with six run of stone. The domestic salt was