

lion. Religion, including religious communities absorbs a quarter of a million of the population. There are 139,000 doctors, etc., 111,000 teachers, 121,000 artists, and 23,000 men of letters. About 2,000,000 live on their income, and the number of pensioners is close on 300,000.

A Modern Bath-Room Interior.

The accompanying illustration, which represents a bath-room interior fitted with the latest and most approved modern conveniences and sanitary appliances, forces directly upon the mind a realization of the great progress that has been made in all that relates to household sanitation during the past ten years. The revolution that has been made within this brief period is simply astonishing. Such subjects as the piping, plumbing, bath-room, water-closet and other

ances lately brought out. In place of this, the porcelain-lined bath, an excellent and less expensive substitute, is suggested as an alternative. In addition there is furnished also a foot-bath, which will be found a very convenient accessory. The room is likewise furnished with the "Hygeia" water-closet, and with a wash-stand with oval basin. The wood-work is of mahogany, and the whole finished in a very artistic style, the entire setting combining elegance with comfort. We are indebted for this illustration to the manufacturers, the J. L. Mott Iron Works, of 88 and 90 Beekman street, New York.

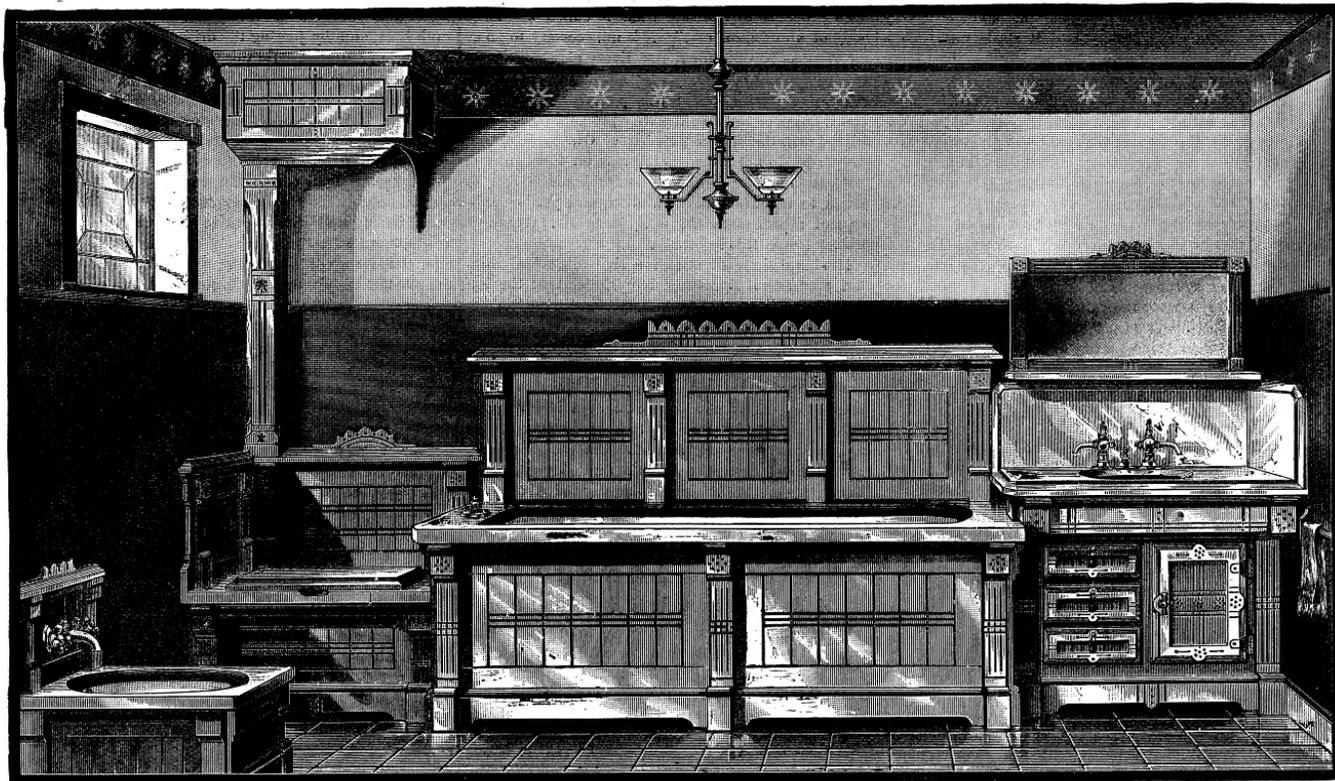
WORK ON THE CORINTH CANAL is going forward with activity. Over 1,000 laborers are employed, exclusive of officials and those engaged in the transport service. At the Corinth end a temporary harbor has been constructed, and a 312 feet long breakwater

the work a distinctive character which serves to distinguish it, and which, from an artistic point of view, is commendable.

We shall take the earliest opportunity of laying a full description of this machine before our readers.

Water and Steam Power.

The second volume of the census on manufactures is a mine of valuable information. Like other mines, however, it requires some digging to extract its most precious stores. Among the researches which have brought forth new and useful information, one of the most interesting shows the quantity of power employed in manufactures. The elaborate tables in the census report give both water and steam power separately for each State and Territory, and the number of horse-power employed in each branch of man-



A MODERN BATH-ROOM INTERIOR.

household conveniences but a few years ago were not esteemed worthy the attention of the architect or house owner, and were relegated to the tender mercies of the plumber. To-day they are held to be of as much importance as the solidity of the foundations and other essential parts of the structure. The intelligent interest shown very generally in such things is one of the best evidences we have of the diffusion of sound, wholesome ideas respecting the important connection existing between them and the health of the inmates of the house.

With the very great and general improvement in the efficiency of the safeguards against the evils of imperfect drainage which this wholesome public interest has called forth, has come hand in hand a similar improvement in artistic surroundings, and the view given herewith of a bath-room interior, from the design of the well-known J. L. Mott Iron Works, will not fail to gratify the taste of the most fastidious.

The bath proper is the admirable Mott Imperial porcelain bath, which we had occasion some time ago to characterize as one of the best sanitary appli-

erected at Isthmia Kalamaki. Powerful excavators are soon to be set at work on the undertaking.

A New System of Forming Sheet Metal.

Without anticipating the inventor's intentions respecting publicity of details, we may in a general way announce the fact that there is now in course of passing through the Patent Office a very ingenious and effective machine for bending and shaping sheet metal by power, which promises to work a pronounced revolution in the production of cornices, moldings, and other decorative forms, architectural and otherwise, for which sheet metal is adapted. Until we are at liberty to publish an illustrated description of the details of this ingenious labor-saving machine, it must suffice to say that in the bending and shaping of the sheet metal it is drawn or clamped over adjustable supports, which may be placed wherever they are needed to make a form or bend. The machine, in addition to permitting the production of decorative forms of sheet metal much cheaper than by the methods and machinery now in use, give to

ufacture. From these tables, it appears that in all 3,410,837 horse-power is employed in manufactures, 1,225,379 being water-power and 2,185,458 steam-power.

The tables, however, include as manufactures certain important industries not commonly regarded as embraced by that term. The grinding of wheat, corn and other grain into flour and meal, though an industry of vast importance, yielding an annual product in value greater than any other single branch of manufactures, is not commonly included in the mind when manufactures are mentioned. The sawing of logs into lumber, also, is of great importance, and swells the aggregate value of manufactured products, and yet it adds comparatively little to the value of the lumber treated. These two industries employ 1,593,129 horse-power—namely, 748,673 water power and 844,456 steam power, and thus nearly double the power reported as employed in manufactures, without anything like a proportionate capital, number of hands, or addition to the value of materials used. It will be highly instructive, therefore, to deduct the power used in these two branches from the

aggregate reported as used in manufactures in each State and Territory. In the following tables these items are thus separated, though it must be understood that the separation is not absolutely accurate, because the census makes small allowances for duplications in different States, but does not show in what branches of industry these duplications occur. For all practical purposes, however, the figures given will be found correct; they show first, the power used in grist and saw mills in each State and Territory; and second, the power used in all other branches of manufactures:

| States and Territories. | Grist and Saw Mills. | Manufactures. |
|--------------------------------|----------------------|---------------|
| Pennsylvania | 158,957 | 354,774 |
| New York | 176,271 | 280,099 |
| Massachusetts | 31,979 | 279,114 |
| Ohio | 119,573 | 142,853 |
| Connecticut | 13,680 | 104,552 |
| New Jersey | 20,403 | 79,717 |
| Illinois | 66,671 | 79,046 |
| Rhode Island | 3,116 | 60,509 |
| New Hampshire | 32,822 | 55,285 |
| Maine | 52,070 | 48,937 |
| Michigan | 123,477 | 42,332 |
| Indiana | 93,124 | 41,012 |
| Maryland | 20,254 | 31,885 |
| Missouri | 55,176 | 28,157 |
| Vermont | 35,620 | 28,150 |
| Wisconsin | 78,807 | 27,604 |
| Kentucky | 37,598 | 19,509 |
| Georgia | 36,655 | 15,395 |
| West Virginia | 23,119 | 15,204 |
| California | 19,443 | 14,478 |
| Tennessee | 39,337 | 14,379 |
| Virginia | 45,191 | 13,725 |
| Delaware | 4,714 | 10,714 |
| Iowa | 44,291 | 10,698 |
| North Carolina | 39,252 | 7,962 |
| Minnesota | 46,764 | 7,629 |
| South Carolina | 20,294 | 6,900 |
| Louisiana | 6,513 | 5,397 |
| Alabama | 22,896 | 4,680 |
| Kansas | 17,519 | 4,065 |
| Texas | 28,824 | 3,028 |
| Mississippi | 16,676 | 2,613 |
| Oregon | 11,321 | 2,516 |
| District of Columbia | 958 | 2,185 |
| Arkansas | 16,237 | 1,571 |
| Colorado | 4,408 | 1,394 |
| Nebraska | 7,409 | 1,105 |
| Utah | 3,770 | 939 |
| Washington | 3,926 | 494 |
| Wyoming | 270 | 485 |
| Florida | 7,169 | 301 |
| Dakota | 2,115 | 169 |
| Montana | 1,352 | 146 |
| Nevada | 578 | 138 |
| Idaho | 1,676 | 36 |
| New Mexico | 1,329 | 30 |
| Arizona | 530 | .. |
| Total | 1,593,129 | 1,817,708 |

The States in which the great manufactures flourish appear near the head of the list, though scattered points of vigorous development are found in others.

Iron and Steel.

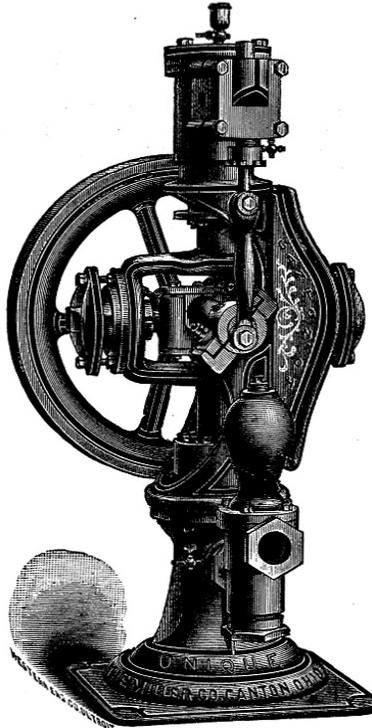
The Secretary of the Iron and Steel Association estimates that the production of pig iron in 1883 "was equal to that of 1882, but did not exceed it." The data published, however, lead to an impression that there may appear some increase when the full accounts are made up. For the production of the first half of 1883 was 40,357 tons more than for the first half of 1882, and the number of furnaces in blast November 1st was only three less than July 1st. Considering that several of small capacity had stopped, while nearly as many of larger capacity had started, it would seem not improbable that the production of the last half year may be found larger than the estimate. The consumption is computed at

4,948,323 tons in 1883, including about 325,000 tons imported. Of steel rails it is supposed that 1,200,000 gross tons were made, against 1,304,392 tons in 1882. If the production of iron rails also declined to 100,000 tons, as is supposed, the total consumption during the year was about 1,400,000 tons, against 1,708,000 tons in 1882.

The "Unique" Steam Pump.

The manufacturers present the pump shown in the accompanying illustration as specially designed to meet satisfactorily the requirements of a boiler-feed pump.

As will be observed by an inspection of the engraving, the Unique pump is of the crank and fly-wheel pattern. It has a positive valve movement, single



The "Unique" Boiler-Feed Pump.

acting, and an ordinary plunger with no rings in the water cylinder to be cut by gritty water. The pump has a fixed stroke, and is fitted with a common three-port, flat slide valve, actuated by a wrist-pin in place of an eccentric. The main boxes are babbitted; the wrist-pin has a box drawn down by a cap and screw, and the bearings at the outer end of the yoke are tapered sleeves, forced in by bolts as wearing takes place. The check valves ordinarily used in feed pumps are replaced in this pump by a specially devised water valve, which is claimed to be much more efficient. These valves are positive in action, and will not allow the least quantity of water to be forced back into the suction after being drawn into the valve, either under a heavy lift and pressure, or both combined; and their lifting and forcing capacity is claimed to be unusually good. They will handle hot water as readily as cold. Both the suction and discharge valve can be got at for examination almost instantly by simply removing the air chamber.

The workmanship and material of this pump are of the best; every bolt used in its construction is milled from a solid bar of hexagon iron of double extra quality. No bright finishing whatever is done on the pumps, the makers affirming that long experience has taught them that it is work thrown away, and that the same amount of labor placed upon the

working parts gives the best satisfaction in the end. All the parts are made on the interchangeable system, each being numbered, by which duplicates may be had to replace any of them in case they should be required.

The makers build eight sizes of this pump, suitable for boilers of from 8 to 135 horse-power, and feeding from 60 to 800 gallons per hour.

The design of the Unique is one which combines strength with elegant appearance and durability in service. It is fitted with a base to bolt to the floor of the engine or boiler room.

The makers are the Miller Company, of Canton, O.

What Paint Best Protects Iron?

Among all things that require the most protective paint for iron, are carriages, farm wagons, plows, and agricultural implements, from which fact it seems feasible that manufacturers of the like ought to be able to give the best information required. Any mineral paint would answer the purpose much better, and we maintain that the paint that most effectually protects iron is red lead. Not in color is it as well suited; but that is only a secondary consideration, and easily overcome by painting it over with any color desired. It contains the following advantages for the preservation of the iron, which is the main object to be gained:

1. Dries easily with raw linseed oil, without an oil-destroying drier.
2. After drying, it remains elastic, giving way both to expansion and contraction of the iron, without causing the paint to crack.
3. It imparts no oxygen to iron, even when constantly exposed to damp—a fact to which all farm wagon makers can testify.
4. It hardens, where it has been spread thickly, without shriveling, forming the toughest and most perfect, insoluble combination of all paints. As proof of this assertion, it is used by calico-printers for red-figured prints, holding out against soap and water; by gas-pipe fitters, as the best paint to resist ammonia and tar; by the English iron-ship builders, for painting the hulls of iron ships—namely, two coats of red lead and two of zinc white; by wagon and plow makers, for painting wagon gears and plows; by knowing carpenters, for painting wood that comes in contact with damp brick in walls, as it preserves wood from rot, insects, etc.

For those among us who are uninstructed how to mix pure red lead for paint, it should be made known that pure red lead powder, after being slightly pressed down with the finger, shows no lead crystals. When they are visible, it is merely partly converted, and not first quality. It should be ground in pure, old linseed oil, and if possible used up the same day, to prevent it combining with the oil before it is applied, thus losing in quality. No drier is necessary, as in the course of a few days the oil forms a perfect, hard combination with the lead. American linseed oil is as good as any imported, where the manufacturer has given it age, and not subjected it to heat, as is the custom, by steaming it in a cistern to qualify it quickly for the market. It deteriorates in quality when heated above 160° Fah. This red lead paint spreads very easily over a surface, and the best of finish can be made with it, even by a novice in painting.

SILK CULTURE IN CALIFORNIA is assuming great importance. It is said by those who have tried it that some parts of that State are peculiarly well adapted for this industry. At a recent meeting of the State Board of Silk Culture steps were taken to import the best varieties of mulberry trees from Italy for grafting, and it was stated that a large box of silkworm eggs was about to arrive from Japan. It was decided to continue the school of instruction for silk culture, if sufficient money for the purpose is forthcoming.