

inches, and the third the number per pound:

3-penny,	1 inch long,	337 per pound.
4	1½	353
5	1½	332
6	2	167
7	2½	141
8	2½	101
10	2½	98
12	3	64
20	3½	34
Spikes,	4	16
"	4½	12
"	5	10
"	6	7
"	7	5

From this table an estimate of quantity and suitable sizes for any job can be easily made.

**KEEPING WATER IN ZINC RESERVOIRS.**—In view of the fact that water-reservoirs are frequently made of zinc or have zinc linings, Ziurck, a German chemist, has made some experiments upon the influence of water on this metal, and discovered that water kept in zinc vessels dissolves zinc in proportion to the time it remains in contact with the metallic surface, and to the amount of chlorides (common salt, etc.) contained in the water. He shows also that boiling not only does not precipitate the zinc from such a solution, but that it even augments the solvent power of the latter. Water containing zinc, and and boiling in a zinc vessel to precipitate it, would actually absorb more zinc, and precipitate none. This chemist found the amount of the metal in one instance, the water having been kept for a considerable time in a zinc reservoir, to be as high as 1.0104 grammes to the litre, or nearly fifteen grains to the quart. A much smaller quantity would be very injurious, if the water were used for drinking or cooking. It is therefore recommended to coat such reservoirs with good oil-paint, containing—not litharge, white-lead, or zinc-white, but iron-ochre or asphaltum.

**THE IMPORTANCE OF LEARNING A TRADE.**—Why is it that there is such a repugnance on the part of parents to putting their sons to a trade? A skilled mechanic is an independent man. Go where he will, his craft will bring him support. He need ask favors of none. He has, literally, his fortune in his own hands. Yet foolish parents, ambitious that their sons should "rise in the world," as they say, are more willing that they should study for a profession, with the chances of even moderate success heavily against them, or run the risk of spending their manhood in the ignoble task of retailing dry-goods, or of toiling laboriously at the accountant's desk, than learn a trade which would bring them manly strength, health and independence. In point of fact, the method they choose is the one least likely to achieve the advancement aimed at; for the supply of candidates for positions as "errand-boys," dry-goods clerks, and kindred occupations, is notoriously overstocked, while, on the other hand, the demand for really skilled mechanics, of every description, is as notoriously beyond the supply. The crying need of this country to-day is for skilled labor; and that father who neglects to provide his son with a useful trade, and to see that he thoroughly masters it, does him a grievous wrong, and runs the risk of helping, by so much, to increase the stock of idle and dependent, if not vicious, members of society.

It is stated in the report of the Prison Association, lately issued, that of fourteen thousand five hundred and ninety-six prisoners confined in the penitentiaries of thirty States, in 1867, seventy-seven per cent., or

over ten thousand of the number, had never learned a trade. The fact conveys a lesson of profound interest to those who have in charge the training of boys, and girls too, for the active duties of life.—*Manufacturer and Builder.*

**WHITEWASH.**—Whitewash is one of the most valuable articles in the world when properly applied. It not only prevents the decay of wood, but conduces greatly to the healthfulness of all buildings, whether of wood or stone. Out-buildings and fences, when not painted, should be supplied once or twice a year with a good coat of whitewash, which should be prepared in the following way: Take a clean, water-tight barrel, or other suitable cask, and put into it a half bushel of lime. Slack it, by pouring water over it boiling hot, and in sufficient quantity to cover it five inches deep, and stir it briskly till thoroughly slacked. When the slacking has been thoroughly effected, dissolve it in water, and add two pounds of sulphite of zinc and one of common salt; these will cause the wash to harden and prevent its cracking, which gives an unseemly appearance to the work. If desirable, a beautiful cream color may be communicated to the above wash, by adding three pounds of yellow ochre, or a good pearl or lead color by the addition of lamp, vine or ivory black. For fawn color add four pounds of umber, Turkish or American—the latter is the cheapest—one pound of Indian red, one pound of common lamp black. For common stone color, add four pounds of raw umber and two pounds of lamp black. This wash may be applied with a common whitewash brush, and will be found much superior both in appearance and durability to the common whitewash.—*Journal of Chemistry.*

**OILING AND BLACKING HARNESS.**—In the first place I subject the harness to one or two coats (as the leather may need) of lamp-black and castor oil, warmed sufficiently to make it penetrate the stock readily. Then make about two quarts of soap-suds, and with a sponge wash the harness. When dry, rub it over with a mixture of oil and tallow, equal parts, with sufficient lamp-black to give it a color, or, what is better, Prussian blue, which gives it a new and fresh look. This compound should be applied sparingly, and well rubbed in, which can be quickly done, and will leave a smooth and clean surface. By saturating the stock in the first place with oil, the soap and water are prevented from penetrating it in the process of washing. When leather is permitted to absorb water or soap, it has an ultimate tendency to harden it. When the harness is washed first (as is generally the case), the water repels the oil; consequently in the one case you have the oil inside of the stock, and in the other you have the soap and water. By oiling first it softens the dirt, so that it can be washed off in at least one-half the time required when washed before oiling, and also saves the scraping process, which defaces the grain of the leather. It will remain soft much longer from the fact of its being penetrated with oil. The whole process can be accomplished without the delay of waiting for it to dry. Consequently the harness can be oiled and cleaned in much less time, will remain softer, wear longer, and look better than when cleaned by the old method; and I consider these reasons of sufficient importance for every one having a harness to give this method a fair trial. The English patent harness blacking, which is commended for keeping leather soft and giving it a good polish, is made by