

NOTES AND MEMORANDA.

TWELVE thousand sewing machine needles are made daily at the Domestic Needle Works, Middleboro, Mass. Fifteen thousand per month are sent to Australia.

THE American Knife Company, of Thomaston, Conn., which was burned out last spring, has completed probably the finest building of its kind in the United States. It is three stories high, including the basement grinding room, and one hundred and three feet by twenty-six.

BLACK FINISH FOR BRASS.—Make a strong solution of nitrate of silver in one dish and nitrate of copper. Mix the two together and plunge the brass into it. Now heat the brass evenly until the required degree of dead blackness is obtained. This is the method used by French instrument makers to produce the beautiful dead black color so much admired in optical instruments.—*American Manufacturer.*

THE EFFECTS OF CLIMATE.—The ease with which some ready writers can spin theories is curiously illustrated in a recent article in *Reform*, a journal published at Hamburg, in which the effect of climate on the people of the United States is discussed. The theory assumes that we are beginning in this country to resemble the North American Indians. The assumption is first made that our people are chiefly of English descent. Our skins have become dry. Our glandular system has shrunk to a minimum. Our necks are long; our heads small. Our cheek bones project. Our eye cavities are deep. Our under-jaws are full. In all these particulars we are approximating the Indian. Furthermore, the Englishman is heavily bearded, the American lightly, the Indian not at all. Our hair is straightening. Our extremities are lengthening, so that American gloves have to be made with long, slender fingers. But this is not all. The change extends to our manners and customs; for instance, the Lynch law of the border and the polygamy of Utah show the proclivity toward the ways of the aborigines. Even the negroes here, we are told, are yielding to the climate, and are bleaching gradually. What a pity it is that the Indian chiefs failed to hear of all this, when they were recently at Washington. Instead of hoping to be civilized as white men are, they have only to wait and we shall become as they.—*N. Y. Tribune.*

USES OF WATER GLASS.—The uses of silicate of soda are more and more extending, notwithstanding that the business of its manufacture is still in its infancy. The greatest demand is for soap making. It is better than the addition of resin, and its alkalinity adds to the cleansing power. It retains water, keeps the soap from shrinking, and prevents great loss of weight. It can scarcely be called an adulteration. It is used as paint, and mixes with all mineral colors; there are even now factories which make paints of mixtures of oil-paints and water-glass. It makes the paint more durable, and gives it a gloss-like varnish. It is also indispensable as a mordant for calico-print works, and at present, therefore, extensively used as such. It makes an excellent fire-proof cement for stove and iron foundries, especially in putting up iron fronts for buildings. It is the main ingredient in several methods of making artificial stone. For instance, in the Ransome process, which in England consumes thousands of tons yearly, it makes an excellent adhesive mucilage, and is used in a cheap mixture to mend china, glass and wood. Being perfectly fire-proof, it will give its quality to wood or paper when this has been soaked in it; and being when dry also water and damp-proof, it is the best coating for brick vaults, and thus very valuable for beer brewers, sugar refiners, &c. These are not all the praiseworthy qualities of this valuable material.—*Polytechnic Review.*

THE SPONGE FISHERIES.—Returns of the sponge fisheries belonging to Greece show that there are at present 150 boats engaged in this trade, 40 of which have English diving-bells. Twenty-four of these boats belong to the Island of Ægina, and the remainder to the islands of Kalymnos and Simi. Each of the boats, which are supplied with diving-bells, has a crew from 11 to 150; the others are manned by only four sailors, so that the total number of men engaged in fisheries may be put at about 1,000. They took last year more than 240 tons of sponges of different qualities, the total value being \$360,000. Sponges of the finest quality are sold upon the spot at from \$3.12 to \$3.18 a pound, and the second qualities for rather less than \$1.50. The fishermen have to pay a tax of 10 per cent. on the gross value of their takes. The cost of a diving apparatus is \$1,067, or \$24,680 for the forty now in use, and each vessel makes four voyages a year, taking about a ton of fine sponges. The divers remain under the water about six hours a day when they are fishing, and it is said that many of them die of suffocation, and that a

great many of them lose their hearing after a few years of this work. The island of Ægina, whose divers are very renowned, is building nine new boats, which will be launched very shortly, and it is stated that the annual profits of the sponge fisheries were nearly \$145,500 for that island alone.—*N. Y. Grocer.*

THE ABUSE OF SAWS.—Makers are annoyed by having saws returned to them for repair in such a condition that it is impossible they should go through the wood, from the miserable way in which they have been filed and set—some jammed all to pieces, some not half filed, some not filed true on the face or back, while others are all shapes but the right one in the throat, leaving no chamber room for dust and chips. Some saws have a bad pitch, some no pitch at all; some out of round; some with irregular or long and short teeth, one up and one down. In many cases they are returned broken. Why? Each tooth of a 24-inch circular saw goes through the wood 2,000 times per minute, 120,000 per hour, 1,200,000 times per day, and if not sharp, the saw is strained at the root of the tooth. This frequently not only closes the set, but must eventually break the saw, for although steel is strong, continual straining will make it tender, and it must break. The tooth becomes dull on the side or under the point in proportion to the amount of feed; thus, if the tooth takes one-eighth of an inch hold at each revolution, it will become dull for one-eighth inch below the point, or more if feed be greater. A diamond will not cut if dull; why should a saw? A few minutes' filing two or three times a day will save tenfold the amount of time and labor expended in running an imperfect, dull saw, also making a saving in the amount of power consumed, and a heavy percentage in the amount and quality of lumber cut. It is a mistaken idea that there is a saving by not taking time to sharpen a saw.—*N. W. Lumberman.*

THE MANUFACTURE OF MOSAICS.—The modern process of making mosaics now commonly followed at Rome is this: A plate, generally of metal, of the required size is first surrounded by a margin rising about three-quarters of an inch from the surface. A mastic cement, composed of powdered stone, lime and linseed oil, is then spread over as a coating, perhaps a quarter of an inch in thickness. When set, this is again covered with plaster of Paris rising to a level with the margin, upon which is traced a very careful outline of the picture to be copied, and just so much as will admit of the insertion of the small pieces of smalto or glass is removed from time to time with a fine chisel. The workman then selects from the trays, in which are kept thousands of varieties of color, a piece of the tint which he wants, and carefully brings it to the necessary shape. The piece is then moistened with a little cement and bedded in its proper situation, the process being repeated until the picture is finished, when the whole, being ground down to an even face and polished becomes an imperishable work of art. The process is the same for making the small mosaics so much employed at the present day for boxes, covers or articles of jewelry, and this work is sometimes upon almost a microscopic scale.

The Florentine mosaic, which is chiefly used for the decorations or altars and tombs, or for cabinets, tops of tables, coffers and the like, is composed of precious materials in small slices or veneers, and by taking advantage of the natural tints and shades which characterize the marble, the agate or the jasper, very admirable effects may be produced in imitation of fruit, flowers or ornaments. The use of this kind of mosaic is extremely restricted, on account of the great value and expense not only of the materials, but of the labor which is spent upon them. None but the hardest stones are used; every separate piece must be backed by thicker slices of slate or marble to obtain additional strength, and every minute portion must be ground until it exactly corresponds with the pattern previously cut.—*Jeweler.*

THE BORAX DEPOSITS OF THE UNITED STATES.—The principal borax deposits in the United States form a kind of band in the ancient volcanic soil which surrounds the Sierra Nevada mountains, and some slight reference to these deposits may not improperly be made since borax is a valuable element in glass-making and the ceramic arts, from the fact that it possesses the property, at a high temperature, of dissolving the metallic oxides and forming transparent glass, the color of which depends upon the metal used. It is also largely employed in the manufacture of enamels, glazings for earthenware and strass. In the large glass and porcelain factories of Europe its utilization has only been limited by the high cost of the product, chiefly obtained in Italy; but the discovery of the immense borax deposits in this country has materially removed this restriction, so that at the present time its employment is rapidly extending, and the export of the salts bids fair to become a very important branch of our commerce.