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OUR WOOLEN MANUFACTURES.

So great has been the demand for army woolen goods, such as cloth, flannel and blankets, that all the woolen mills in our country have been stimulated to prodigious efforts in order to supply the demands made upon them. Most of the factories have been engaged on army contract work, and it is stated that all the corporations have made handsome profits. One peculiar effect of the war has been a great rise in the prices of the coarser qualities of wool, while the finer sorts have been lowered. The army regulations specify that common army cloth shall be made of a *long* coarse staple, hence the great demand for this class of wool has raised it to a very high figure. Thus the coarse Beckwell wool which used to sell at from 25 to 35 cents per pound has advanced to 38 and 45 cents. The consumption of wool for army purposes during the past six months has amounted to no less than 15,200,000 pounds. This allows for an overcoat, blanket, coat and pants, unitedly weighing sixteen pounds for 950,000 suits.

The army regulations requiring wool of *long* staple are wise, because long wool produces the best cloth for wear, but if fine wool can be obtained of sufficient length, and at a moderate price, it is unwise to restrict the regulations to long *coarse* wool, as the finer quality is warmer, more pleasant to wear and, when the thread is properly twisted, it endures longer. We ad vise those who have charge of the army clothing departments to give this subject their serious attention.

Although the army regulations specify that the cloth, blankets and flannel shall be made of long new staple wool, it has been publicly asserted that great quantities of shoddy goods have been foisted upon the United States authorities in the supplies that were furnished for the early volunteers. Shoddy consists of old woolen rags reduced by machinery to as near the condition of wool as possible, and it is employed to mix with the cloth to thicken it, as a substitute for good wool. It is used in the manufacture of cloth, upon the same principle that old paper pulp is used to mix with rag pulp. It is short in the fiber and is deficient in strength, but it is difficult to detect it in new cloth. A little wear, however, soon discloses the rotten character of the fiber, as the shoddy rubs off and comes out in fine fuzz, leaving the cloth thread bare. We understand that a superior system of inspection for army and navy cloth now prevails, and that it is scarcely possible for the government to be defrauded hereafter by contractors.

THE TURKISH BATH IN NEW YORK.

Several of our daily papers have stated that there is a project on foot in this city for establishing a Turkish bath, and that several thousand dollars have already been subscribed for the object. It is proposed to erect a building for this purpose; to send to Turkey for a sufficient number of men and women to act as attendants to superintend the various departments, and to fit up the establishment similar to the best baths in Constantinople and Smyrna.

A Turkish bath is peculiar, and entirely different from immersing the body in an elongated vessel containing water. The operation of Turkish bathing consists in, first, seasoning the body; second, manipulation of muscles; third, peeling off the scarf-skin; fourth, soaping; and then the patient is conducted to the bed of repose. These are the five acts of the operation. There are three essential apartments in the building—a great hall open to the outer air; a middle chamber, where the heat is moderate; and the inner hall, which is properly the thermæ. The first scene is acted in the middle chamber, the next three in the inner one, and the last in the outer hall.

The bather having been divested of his clothing, and having his loins girt with a linen apron, is conducted to the first chamber, to which the light is admitted through colored glass windows. The room is well ventilated, but the air within it dry, and heated to 130° Fahrenheit. The bather at first suffers slightly with hurried breathing; but as the perspiration pours from the pores of the skin, which it does most copiously, the respiration becomes normal. Having remained in this temperature for an hour the body is said to be seasoned; he next is taken to the hot-room, where the air is heated to 170°; but so great, however, is the effort of nature to accommodate herself to all circumstances, that he passes into this great heat without feeling the slightest inconvenience. Here the perspiration breaks out without bounds. And lastly, he is taken to the former room, extended upon a slab, where his body is rubbed down, during which process the loose epidermis or scarf-skin is rolled off in masses. The bather now is taken to the cool room, where his body is anointed with soap and is treated to a shower of cold water.

Baths have been employed from time immemorial in all civilized countries, and the ancient physicians, Hippocratus and Galen, recommended them as agents of health and important in the cure of certain diseases. In Egypt, and all parts of the globe where ancient civilization prevailed, vestiges of public baths have been discovered in the ruins of old cities. The Romans were great patrons of public baths. Under the Roman emperors there were 870 public baths in Rome. These edifices were models of architectural taste and ornament. The Turks obtained their knowledge of the bath from the Romans of the Greecian empire. The Turkish bath has been introduced into London lately, and it has been highly recommended by some English physicians. One veterinary surgeon in London has fitted up a Turkish bath for the treatment of diseased horses, and decided success, it is stated, has attended his effort in treating animals affected with chronic rhumatism.

COLORING STEEL BLUE—INLAYING, GILDING AND ETCHING.

The beautiful blue color on portions of sword blades and other steel instruments is not a colored enamel put upon the metal, but a thin skin of the metal itself. It is produced by subjecting the polished blade to a certain degree of heat, and exposing it freely to the atmosphere. Thus, if we take the blade of a knife and polish it highly, then place it upon a plate of iron forming the covering of a furnace it assumes various shade of coloring, according as it becomes heated. At 430° Fah. temperatnre it will become a pale yellow color; at 490° a dark straw color; at 550° a dark purple; at 570° a dark blue; at 600° a pale blue. By removing the blade from the heated plate, when it has attained to any of these shades of color, and cooling it by a few passes through a cold atmosphere, or dipped into water, the color will remain permanent. When examined, the surface of the blade will appear as if coated with a thin skin of blue bronze. It is supposed that this blue film on the steel is formed by a combination of the oxygen of the atmosphere with carbon in the steel. Heat is not the cause of the color, although it is necessary to its production. Sir Humphrey Davy heated a piece of polished steel in a glass vessel filled with nitrogen, in which case no colored film was obtained.

The blue film on steel tends to preserve it from rust. Two plates, the one colored, the other of the same steel polished, were exposed together for a month in the open air during a very rainy season, when it was found that the colored plate was free from rust, while the polished one was entirely covered with it.

Articles of steel are ornamented with gold and silver in different ways. One is to cut burr lines of the figures in the steel when it is soft, then beat in [inlay] gold or silver wire into these lines. Another method consists in putting on the gold or silver by fire gilding. By dipping a piece of polished steel into an ether solution of gold, a very thin coat of the precious metal will be deposited. Articles of steel can also be gilded by the electrotyping process, but the inlaying system is the best, because it is the most durable.

Various devices are put upon steel instruments by means of etching. Every part of the article—sword or knife—to be etched is covered with a varnish (made with resin dissolved in turpentine) excepting those portions which form the design—these are left exposed. The blade is now dipped in dilute nitric acid for a few seconds, then taken out, washed in warm soft water, and then immersed in turpentine, to remove the varnish, and leave all the surface bright excepting those portions which have been exposed to the acid. These are corroded—eaten down below the surface—and form the etched "dead white" design. Various kinds of varnishes may be used for protecting the surface of the steel from the action of the acid. Soap has been used for this purpose when the etching was required to be shallow.

THE COMPOSITION OF STEEL—FRENCH CHEMISTS.

It was formerly supposed that steel was a combination of iron and carbon, in the proportion of about 1½ lbs. of carbon to 100 lbs. of iron. But the fact that certain substances containing nitrogen facilitated the conversion of iron into steel led to the suspicion that nitrogen was also an essential ingredient of steel; and some ten years ago an English chemist, Mr. C. Binks, made a series of experiments to determine this point. He enclosed iron in porcelain tubes so that it could not receive nitrogen from the air, and kept it red hot in contact with carbon alone a sufficient length of time to convert it into steel; but it remained soft iron. He then introduced various other substances into the tube with the iron, and found that when the carbon and nitrogen were both present steel was produced, and not otherwise.

A full account of Mr. Binks's experiments was published, and was received by chemists everywhere as a demonstration that steel is a combination of iron, carbon and nitrogen. This fact is now published in books on chemistry and is a portion of recorded chemical science. On another page will be found a statement of Binks's experiments as given by Muspratt in his great work on chemistry.

After all this publicity, a French chemist, M. Frèmy, has recently been reading papers before societies, and otherwise proclaiming that he has made the important discovery that nitrogen is an essential element in the constitution of steel. The French scientific journals generally publish accounts of M. Frèmy's discovery, and we have not noticed in one of them a single allusion to Mr. Binks.

SAN FRANCISCO STEAM RAIL CARS.

Combined locomotive passenger cars have been put upon the Market-street railway, in San Francisco. The people seem well pleased with the steam horse for animals. The first charter of this railway specified that the cars should be drawn with horses, but the Legislature has amended it, allowing the use of steam in the streets. On the 4th of July, 1861, this company started with one 13-horse power steam-passenger car, and it was then thought that it would do all the work required, but they now run four steam cars, and can scarcely provide for the wants of the traveling citizens. San Francisco has set the example of using steam permanently on the city railways.

THE government of France has granted subsidies to new steamship lines amounting to about $5,000,000 per year. There is one line in operation between France and Brazil, a line is to be started from Suez to China, and another from France to the West Indies and New York. It is stated that none of the ocean steamship lines in the world would pay were it not for government subsidies.

RANKIN'S ARMY TENT.—We gave the address of the inventor of this tent as William Rankin, No. 6 Astor House. It should be No. 6 Astor Place, New York.