

cloth; almost any color can thus be put on. A scarlet color is made by a topical application of an extract of turmeric upon a dyed cochineal red. To enable some of the coloring agents to go on evenly, milk and the white of eggs are frequently mixed with them. These applications also serve to impart a metallic luster to the surface. Prior to rolling, the dyed skins are slightly shaved on the wrong side and trimmed at the edges.

The subsequent finishing operations consist in rolling the skins on a table under a small weighted roller having a grooved face, and which is attached to a suspended arm which the operator moves back and forth until the roller has traversed the entire surface. This operation imparts a glossy cordovan surface to the leather. A second rolling, with the grooves running in an angular direction, gives the surface a diamond cordel finish—the true morocco style. Formerly these skins were all finished by hand labor. The operatives stretched them on inclined boards, and rubbed over their surface with grooved balls of ebony held in the hand. Sometimes an extra finish is still imparted in this manner to skins.

In this factory we saw the first aniline (popularly called Magenta) colors on morocco that have been applied in this country. The senior partner had been on a European tour last summer, and obtained the new color from abroad. It produces the most beautiful shades of purple, lavender and lilac upon leather. No coloring agent hitherto known can equal it.

All processes for making leather from skins is not tanning, although most persons so term them. White leather is prepared with alum, and in some instances with a paste of flour. These are tawing, not tanning processes. It requires an agent, such as hemlock, oak or sumac, containing tannic acid, brought into contact with gelatinous tissue, to constitute the tanning process.

Heavy sheepskins are frequently split by machinery, and for some purposes such leather is more suitable than any other kind. In this factory, a new machine for splitting had just arrived from England, and we were surprised to learn that, although it did not split so many skins in the same space of time as the American splitting machines, it was preferred because its work was of a superior quality. The cutting knife moves with a reciprocating sawing action, and is driven with a very high velocity.

We have in this brief description of morocco dressing mentioned three new improvements not to be found in works published on the subject, viz.: the depilatory process, the cleansing operations with dilute sulphuric acid, and the new styles of colors. Morocco leather dressing proper is principally carried on in our cities on the seaboard or in their immediate vicinity, as the goat skins are all imported from India, Africa, &c., and the sumac for tanning them from the island of Sicily—that land to which the eyes of the whole civilized world have recently been directed, on account of the wonderful exploits of Garibaldi and his heroic followers, fighting for the freedom of Italy.

**WEAR OF RAILWAY CAR WHEELS.**—An examination made last year, on the Reading Railroad, in England, showed that, of all the wheels in use on all descriptions of cars since 1852, the average wear had been that of 58,094 miles, before the wheels were renewed. The life of the wheels under the passenger cars was ascertained to be 117,706 miles, a fact which shows not only the superiority of the wheels used under passenger cars, as compared with those under freight and coal cars, but also the advantage of good springs, those under the passenger cars being much the easiest on the road. The coal trains have been run at from 8 to 15 miles an hour; the passenger trains at from 25 to 40 miles. These results, as to wear, were carefully ascertained, and are of value to other railroad companies.

**CALIFORNIA MECHANICS.**—We learn from our California cotemporaries that the Fair of the Mechanics' Institute held in San Francisco in the month of September last was an entire success. The *California Farmer* says respecting it:—"We say that the mechanics of California have reason to be proud of the exhibition they have made of their skill and progress, and every observer should also be proud that our State can show such enterprising and skillful operators."

**THOMAS T. STRODE.**—The address of Mr. Strode is Mortonville, Pa.

#### DISCOVERIES AND INVENTIONS ABROAD.

**Trussing Casks.**—In trussing casks, coopers generally make a fire of shavings inside of them, for the purpose of slightly warming the staves and thus enabling them to be driven up more easily. A patent has been taken out in England by Thomas S. Cressy, of Burton-on-Trent, for a heating furnace for casks. This furnace is secured between jointed levers and raised up in the inside of the casks, and also lowered, with the greatest facility, to supersede the trouble of making a new fire of shavings for each cask to be trussed. This improvement deserves the attention of all coopers.

**Transferring Pictures to Glass.**—A patent has been granted to Willoughby Smith, of Dalston, England, for the following process relating to transferring prints. He takes the print of any picture produced on paper and treats its surface with three coats of collodion. When this is set and hard, the paper is washed off, when the ink or color will be found firmly attached to the film of collodion. To effect this operation perfectly, the print should be first stretched on a board and receive the coats of collodion, then put into water to soften it, when it may be easily rubbed off, leaving the design firmly fixed upon a transparent coat of collodion, which is then allowed to dry and afterwards receives a thin coat of transparent varnish. Collodion may be rendered tough and transparent by adding about three per cent of castor oil and the same amount of Canadian balsam to it and boiling them together in a close vessel until they are thoroughly incorporated. The printed film of collodion is now ready for mounting upon glass. This is done by placing it between two plates, pressing them close together, and cementing their edges by pasting a strip of paper around them. By this process any printed pictures may be transferred, rendered transparent, and fitted for the slides of magic lanterns. These collodion transfer pictures may also be pasted on single strips of glass and covered on the back with transparent varnish, and in this manner ornamented windows may be easily made by almost any person.

**Hardening Spindle Caps.**—In spinning and doubling machinery, the spindle cap consists of a cylinder of cast iron, polished on the outside and placed on the spindle. Being made of cast iron the caps are easily damaged by a blow or by falling on the floor. To remedy this defect and render them more enduring, W. Smith and P. Smith, of Keighley, England, have taken out a patent for hardening them in the same manner that steel tools are treated; that is, they heat them to a red heat, then dip them in a bath of cold salt brine.

**Deep Sea Telegraphs.**—In a communication to the *London Mechanics' Magazine*, Thomas Allan, Esq., a distinguished electrician, states that of 12,000 miles of submarine cable which have been laid in various parts of the world, only 1,200 miles are in working order, at present. He asserts that the success of any ocean telegraph depends entirely on the nature and construction of the cable, and that those companies (such as the Atlantic, of famous memory) which have failed have themselves to blame, because they persisted in dogged adherence to the use of cables which were snited only for shallow waters. An ocean cable, he says, should have great internal strength and low specific gravity—lightness—and it should be made of such materials as will permit it to be thoroughly tested before it is laid down. There were upwards of 1,500 joinings in the Atlantic cable, and it never was tested under water until the cable reached the bottom of the sea.

**Cast Iron Enamelled Water Pipes.**—The pipes which are employed to convey water in cities are made of cast iron and are very liable to rapid corrosion, when placed in the vicinity of leaky gas pipes. To obviate this evil, cast iron pipes for conveying water are now being made with imperishable surfaces, by Messrs. Salt, of Birmingham. Cast iron pipes thus treated will be more expensive at first, but cheap in the end, as they will last for a hundred years, whereas, in many situations, common cast iron water pipes have to be renewed every seven years.

**The Sun: Is it a Sphere of Fire?**—M. Leverrier, of Paris, believes that the spots seen on the sun's disk are clouds in its atmosphere. His opinion is that the sun is not a luminous body on account of its high temperature, but that it is a huge solid or liquid body surrounded by an atmosphere. A common opinion respecting the

constitution of the sun is that it has a luminous atmosphere but an opaque body, and that the spots seen on the sun are open spaces formed by unknown causes in the luminous atmosphere. This subject is still shrouded in mystery, and on this very account it excites more general interest.

**Earthquakes.**—Within the memory of man, earthquakes have been principally confined to a few localities, such as Aleppo, in Turkey, Portugal and Calabria, in Europe, and Chili, in South America. Most of the people in Europe and we, dwellers in North America, have congratulated ourselves that there was no danger to us of such trepidations of the earth producing like sensations in our sensitive hearts. According to Dr. Ansted, of London, however, we are admonished not to be quite so secure in our reflections of immunity from earthquakes, and the quake which vibrated through New England and Canada, last week, affords him argument for his opinions. He tells the people of London, in the *Chemical News*, that "earthquakes have frightened our forefathers, and may overwhelm us. The fatal explosion may happen this or next year; it may not happen in this century. It may originate beneath our very feet, or at the bottom of the ocean near our shores, or it may take place so far away that we hear only the faint distant echoes of the convulsive throes, but we are not the less certainly living over a mine ready to be sprung, and no one can tell when or where the fatal match will be applied."

**WOODEN SCHOOL SLATES.**—Since the manufacture of wooden nutmegs, in the State of Connecticut, has ceased, the people have turned their attention to the manufacture of all sorts of Yankee notions, from patent sewing birds, in the manufacture of which a fortune has been made, and wooden clocks, in which fortunes have been made and lost, down to campaign medals, of which one manufacturer turns out ten thousand per diem. About the last invention contrived by one of these ingenious people is the manufacture of school slates out of wood. Not long ago, Messrs. Dean and Munger, of New Haven, Conn., took out a patent, through this office, for the manufacture of this article, and from their manifest superiority over the old stone slate, they are going into almost universal use. They are made of three thicknesses of veneering glued together and covered on both sides with a black coating of just the proper degree of roughness to receive the impression from the pencil, and are then framed in the usual manner. Their most striking peculiarities are their extreme lightness and durability; they may be thrown down and even stamped upon without being broken. The manner of polishing these slates is illustrated on another page. The same firm also make blackboards with the same covering.

**THE OIL REGION OF PENNSYLVANIA.**—A correspondent of the *Boston Post*, writing from among the oil works of Pennsylvania, says:—

"The hotels are crowded, people often sleeping three in a bed, and one hears nothing talked of but 'petroleum,' 'surface indications,' 'boring,' 'territory,' 'pumping,' &c., landlords, doctors, lawyers, ministers, blacksmiths, and almost everybody has an interest in a well bored, or being bored. As to the election, it is entirely forgotten in the eagerness of securing a fortune. A politician drove up to old Father Raymond's Rural House, in Franklin (the old man has two wells pumping fifty barrels daily) and after getting his dinner, commenced pumping the old gentleman by asking, 'How is politics?' 'Don't know any such well around here,' replied Father Raymond. 'But,' says the stranger, 'what is the prospect for Douglas or Breckenridge?' 'Oh,' says Boniface, 'I don't know, it all depends on whether there are any surface indications.' 'But,' continues his guest, 'will fusion go down among you old diggers?' 'Fusion,' exclaims the landlord, 'well, I don't know, some of these chaps called geologists say that there must be fusion below, but my opinion is that the devil has something to do with it down there before we get it.' 'But,' says the politician, 'are you not in favor of squatter sovereignty in the Territories?' 'No; I will shoot anybody who dares to equate on any of my territory, and I own four miles on Sandy Creek!' 'Give me my horse,' says the stranger—and vanooosed.

Several mines are now being worked with success in the White Mountains, N. H. About four tons of charcoal iron are turned out daily at the Franconia iron mine. The ore is magnetic oxyd of a very superior quality.