

PAPER-HANGING.

We would urge the necessity, from a sanitary point of view, of having the walls of a room thoroughly stripped of all old paper, and washed and dried before laying on new paper. Old papers, containing as they do a large amount of vegetable and animal matter in the form of size, are easily softened by the moisture, and become putrefied and mildewed, the odor from which is unpleasant and unhealthy. This, however, is an evil that can easily be averted by expending a few dollars in stripping and thoroughly cleaning the wall before each re-papering. Inquiry is often made by the careful wife as to whether paper-hangings will clean, and if so, which is the best method to adopt. Good hand-printed paper will clean, but machine-made paper, owing to the material used in sizing the colors, as already explained, will not. The following is the method that can be used:—Cut into four or six parts a moderately sized loaf of bread that is two days old—it must be neither newer nor staler. With one of these pieces, after blowing off all the dust from the paper to be cleaned with a good pair of bellows, begin at the top of the room, holding the crust in the hand and rubbing lightly downwards with the crumb, about half a yard at each stroke, till the upper part of the hanging is completely cleaned all around. Then go round again, with a light sweeping stroke downwards, always commencing each successive course a little higher than the upper stroke had extended, till the bottom is finished. This operation, if carefully performed, will frequently make very old paper look almost equal to new. Great caution must be used not by any means to rub the paper hard, or to attempt cleaning it in a lateral or horizontal way. The dirty part of the bread, too, must each time be cut away, and the pieces renewed as soon as it may become necessary.

MENDING BELTS.

It is not always economy to replace a partially worn belt by a new one. So long as there are portions of a worn belt that retain a part of their original soundness it is useful as a portion of another belt. In no case put a piece of new, unused belting into an old and partially worn one; more than 18 hundred years ago this fact was recognized and recorded, although the word "bottle" was used instead of belt. The uniform tension of a belt is impaired by uniting new and unused leather with that which has grown supple by use. No belt should have more than one butt joint. The pieces should be put together in scarf joints by means of rivets or lace leather; old belts have usually absorbed so much lubricating oil that belt cement—fish glue—will not "take." In riveting, the heads should be on the wearing or pulling side, and the burrs or washers on the other. In sewing a lap, the awl should be passed through in a slanting direction, and the stitches should present the smallest amount of surface on the pulling side. In making a butt joint, the lacing should not be crossed on the pulley side. The ends of the belt should always be cut by a try square to insure perfect straightness. In taking up belts, even narrow belts, it is much better to cut and sew the belt *in situ* than to run it off the pulleys. The proper degree of tension can always be thus secured and the belt not be kept too loose, nor shortened too much; besides, there is always an uneven strain, liable to work injury to the belt, in running it on. A good belt clamp should have a place in every shop and factory. If you cut your own lace leather, the handiest way to make laces is, after straightening one edge of the skin, to guide the knife with the thumb instead of a straight edge under which the leather will stretch and pull. By holding the thumb rigid, any width of lace may be assured and the work is very rapidly performed.

SEWER GAS AND DISEASE.

The authorities of one of the largest hospitals in London lately took measures to ventilate all the drains and sewers in connection with their institutions. Up to the time these alterations were made, pæmia and erysipelas had almost driven the medical staff to despair. When the whole of the ventilation was completed, and as soon as the pressure was removed from the traps of the closets and lavatories, no fresh cases were found to occur. For months the hospital wards were free from both erysipelas and pæmia. Suddenly, however, there was a fresh outbreak of these diseases, but it was noticed that the epidemic was confined to one of the surgical wards, built apart from the main building, on the pavilion plan, and having only one story. Close investigation proved that the ventilation pipe in this wing had been stopped up by a careless workman. When this was remedied, all traces of the epidemic disappeared.

NEW REGISTERED WARMING STOVE.

The growing popularity of heating and warming stoves for burning petroleum or other mineral oil, is shown in the alacrity with which manufacturers, in obedience to the public demand, produce new and special patterns as the winter season comes on. A perfect little stove of this kind—emphatically claimed as "The Stove of the Season"—is illustrated in the annexed engraving. It is a handsome stove, and when burning imparts considerable warmth and cheerfulness to the room, thus rendering it useful for warming bedrooms, landings, halls, &c. As will be seen, it is of octagon shape; the tank, handles, and body ring are made of best bright tin, and the body of ornamental bronzed iron, with a neat bronzed cast iron top. It is fitted with a movable 3-inch burner (manufactured under Rippling's patents, of which the Albion Lamp Company have the sole right of production) which gives great heat without smoke or smell, at a small cost for oil. There are eight ruby glass panels through which radiant heat is reflected, giving the stove a most attractive appearance. Ironmongers will find this a good item to put before their customers in cold weather, as the octagon is at once a cheap and pretty stove for domestic purposes.

IMPROVEMENTS IN BOILER MAKING.—We made reference a few weeks since to some improvements in boiler making, whereby leakage due to the unequal expansion arising from the difference of temperature between the top and bottom of a boiler might be avoided. The remedy consisted in welding the plates in complete rings, so as to avoid the necessity of rivet joints at the bottom of the boiler. This plan required the rolling, for some boilers, of much larger sheets than had hitherto been attempted. That difficulty, however, was soon overcome, when a second presented itself, in bending such large plates into the proper "set." This work, according to the Newcastle (Eng.) *Chronicle*, entailed the expenditure of a large amount of additional time and labor. At length, however, the managing engineer of the Jarrow Rolling Mills of Newcastle conceived the idea of using vertical "bending rolls," instead of the ordinary horizontal ones. The thought was promptly developed and a set of the new rolls erected at the Jarrow Works, which the *Chronicle* says are exceedingly simple in arrangement, and eminently successful in operation. By their use there is a large saving of the labor and time consumed in the ordinary course of plate bending; and what is of equally valuable importance, the required "set" of the plate is obtained to a nicety, and with perfect ease. By the introduction of these improvements, those works are now enabled to construct marine boilers of extra large size; and the experiment has been completely successful.

WHY DOES STEEL HARDEN?—Mr. James Nasmyth opens up a very interesting question in the following letter recently published in *Engineering*: "In these days of earnest scientific investigation, it is to me a matter of surprise that no special attention has been given to one of the most vitally important subjects, namely, 'the reason why' steel becomes hard on being suddenly cooled down from a red heat by plunging it into cold water. On this one simple but wonderful property of steel depends the entire range of those mechanical arts which lie at the basis of civilization, and by whose exercise we are enabled to rise above the savage condition. It occurs to me that it is from the want of due consideration of the enormously important consequences that arise from this wonderful, yet simple, property of steel, that the causes of so remarkable a change as respects hardness which results on suddenly cooling it from a red-heat condition, has prevented the subject from receiving special attempts to investigate its nature. While in these days the most powerful and active intellects are occupied in physical investigations, in searching into the nature of those actions in matters which are ever in progress around us, so far as I am aware no one has made an attempt to enter upon this vitally important subject. It is in the hope that these remarks may chance to direct the attention of some one who may have the ability and opportunity to enter upon the investigation to do so.

CRACKING IN HARDENING.—In tools composed partly of iron and partly of steel, steel laid as it is called, the tendency to crack in hardening may be avoided in a great degree by hammer-stretching, hammering the steel edge at a low temperature until it is expanded, so that when cooled in hardening it will merely contract to a state of rest with regard to the iron parts; the same effect can be produced by curving a piece, giving convexity to the steel side before hardening.