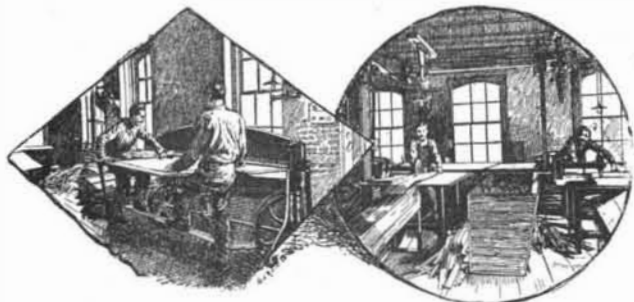


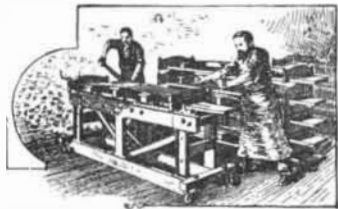
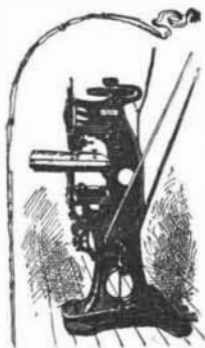
**IMPROVED LEATHER BELTING.**

For high speed machinery, especially planing machines and dynamos, the very best possible article of belting is required, which shall combine flexibility and strength. The house of Charles A. Schieren & Co., of this city, has devoted special attention to the production of this class of goods. The general routine to which the hides are subjected is as follows: Only the best selected and trimmed oak-tanned hides are used, the center portion of which is cut out and the rest discarded. After soaking, the hides are cut into strips according to their thickness and are then softened by machinery, shaved by hand, and finally scoured. This removes all dirt or remnants of flesh that may be adhering and cleanses and opens the pores of the leather, which is then partially dried and treated with oil and tallow. As the water evaporates from the skin,

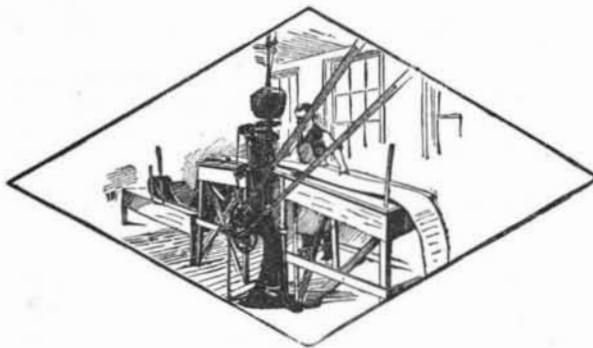
**STRAIGHTENING AND CUTTING MACHINE.**

the stuffing, as it is called, penetrates the pores and takes its place.

The material of a belt must be pre-eminently unstretchable in order to insure accurate running on the wheels. We give a small view of the machine in which belt leather is stretched. For 24 hours it is subjected to tension, after which it is polished and dried. By shears and cutting machinery it is now cut into the various widths that can be yielded by the skin under treatment. It has next to be fastened. The leather is squared at the joints and carefully feathered off to a sharp edge; the pieces are then cemented and cut into rolls about 300 feet long each. So good and

**MACHINE FOR STRETCHING BELT LEATHER.****WAX THREAD SEWING MACHINE.**

perfect is the cementing that a belt secured by no other means is often used and found thoroughly efficient, but to make it thoroughly reliable for heavy work a better fastening must be used. In the old way it was riveted with copper rivets and burrs, and much heavy belting is made up in that way by the house. But rivets are certainly clumsy, interfere with the smoothness of the belt, and impair flexibility. We

**ENDLESS WIRE SCREW MACHINE.**

therefore illustrate a machine which marks an important improvement—the use of endless copper wire screws. This machine screws the belt together by small screws, which form extremely strong attachments, that can be multiplied to any desired extent. The belt produced is perfectly smooth on both sides, is far more pliable than one made with rivets, and the layers of leather are held more firmly together. The electric belts for dynamos and motors are now all made in this way. As a special article for export, belts with joints sewed with waxed threads are manufactured also. The high speed belting is perforated in order to prevent air cushioning and to allow the belt to have a full grip upon the driving or motor pulley. This house also has extensive works in Brooklyn devoted entirely to the production of lace leather. Here the brands of Brooklyn and Gowanus raw hide lace leather are made and a special tanned lace leather. Electric engineers find the Schieren belting admirably adapted for their uses on motors and dynamos.

**The Best Form of Motor.**

The introduction of motors for power transmission will soon be governed by their cost. The questions of reliability, safety, and convenience are all important, but dollars and cents, says *Electric Power*, are the most conspicuous consideration, and this point is by no means overlooked by the manufacturer of motors.

The evolution of a perfect machine of this character is necessarily a slow process. Its original design and construction is in the hands of the inventor and a few practical mechanics. When it is placed in actual service, the modifications begin. It is strengthened in one part and lightened in another. Its construction is gradually simplified. The arrangement of the parts is changed in order to facilitate examination and possible adjustment. Nothing but the lapse of time and the exigences of actual service will develop all the faults and suggest all the improvements which may be made. When practical perfection is eventually attained, special machinery may be devised, which will bring the cost of production down to the lowest point, greatly enlarging the sales, even if the profit on each motor is reduced. This is the natural course through which any line of manufacturing must pass in order to attain the highest degree of perfection.

So long as competition tends toward the production of a better article at less money, it is beneficial, provided it is done at a reasonable profit; when, however, an effort is made to reduce cost by introducing an insufficient quantity of material, or that of an inferior quality, the result is more likely to show loss rather than gain. The high speed at which dynamos and motors are run, and their susceptibility to damage if not properly balanced and fitted, has led up to first class workmanship. Therefore, it seems reasonable to suppose that in this particular branch of the electrical business there is little apprehension of retrogression.

**Consanguineous Marriages.**

The author of a recent work on this subject calls attention to the curious ideas which have been generally received in reference to the infecundity of and physical degradation consequent on consanguineous marriages. So far as the data given may be trusted—and it is hardly to be supposed that the author holds a brief on the opposite side—there is absolutely nothing to show that marriages between near kinsmen are lacking in fertility, or that they are peculiarly liable to give issue to deformed or diseased offspring. There is no lack of instances of enforced consanguinity, in the matter of marriage, in isolated communities, according to M. Huth, to disprove the assumption that physical degeneration is likely to result from the practice. An investigation into a number of unions between uncles and nieces, nephews and aunts, and cousins in the first and second degree, gives an average of children rather above than below the general average, though this is attributed to some extent to the comparatively early age at which such unions are generally contracted.

Breeders inform us that the results are markedly in favor of consanguineous unions between healthy well-bred animals. Unions between men or animals of widely different varieties, on the other hand, have a decidedly injurious effect on the offspring, and beyond a certain limit are almost absolutely sterile. Mulattoes and the half-breeds of India and America are striking examples of the deterioration to which such racial disparity gives rise. The great point to bear in mind is that the union of individuals with the same morbid tendencies intensifies the taint, and that, too, quite irrespective of any consanguinity. The moral, according to the author, is that the reasons which have led to the prohibition of marriages within certain degrees of relationship are social, and not physiological.—*Medical Press and Circular*.

**What will the End Be?**

J. E. Thickston, a scientist and astronomer, living at Metuchen, N. J., while alluding to the Johnstown horror, said to a *Herald* correspondent that the dreadful catastrophe was as nothing compared to what might have occurred.

"The news from Central Pennsylvania is awful," he said, "but this may be a very little thing compared with what may yet occur. Near and west of the Alleghenies a great opening within the earth's crust must be made somewhere by the escape of natural gas. Will the earth settle and fill the empty places, or will air pass in and thereby make it possible for the immense reservoirs of gas, stored away, no one knows how far, to explode and make an upheaval? Many people believe there is gas enough under Western Pennsylvania and Eastern Ohio to blow the country from Lake Erie to the Monongahela into promiscuous fragments. When oil was struck at Oil Creek in 1859, timid folks feared a collapse and a sinking of the oil field, but that danger was obviated by water running into the wells as the oil ran out. The dreaded vacuum never came, as water took the place of the removed oil. It is not so in this case. Water is not filling up the gas wells, except to a limited extent. What the outcome may be is not really a very enjoyable thing to revolve in our minds these pleasant June mornings. A submerged

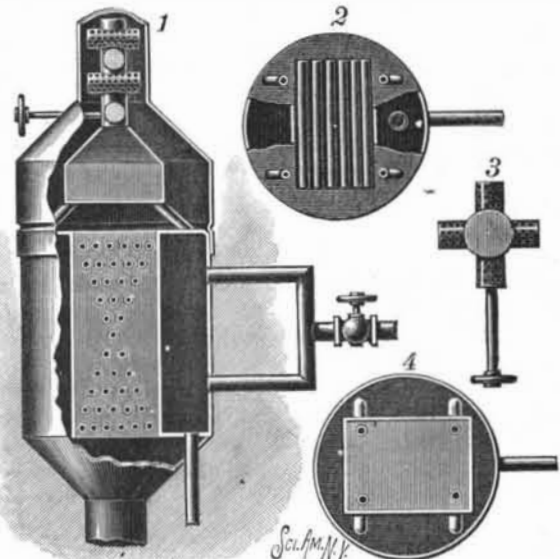
valley, lined with the bones of fifteen thousand men, women and children is a fearful thing in the history of the human race, but what of that compared with a wrecked continent? What of that compared with a world blown open or blown to fragments? I am not an alarmist or a sensational Wiggins. I do not believe that old Mother Earth is about to be shot into smithereens, but there may be danger ahead in this direction, and although we grieve over the Conemaugh catastrophe, let us be thankful that there has not been a natural gas explosion out West, and that there are not two rings instead of one set of asteroids in the material heavens."

**THE NEW RUBBER TIP PEARL MUCILAGE BOTTLE.**

In our issue of June 9, 1888, we described the new rubber tip mucilage bottle recently introduced by the Nassau Manufacturing Company, of this city. The tip is now perforated only on one side, so that no air can enter, and consequently no portion of the contents can possibly escape. This simple modification makes the Pearl Mucilage Bottle perfect. There is no evaporation, as the slit is always closed. The amount that is delivered in use is enough and not too much. No attention is required, and where real pasting in quantity is to be done, its good qualities appear best.

**AN APPARATUS FOR HEATING AND STEAMING GRAIN.**

The apparatus represented in the accompanying illustration is more especially designed for treating wheat, so as to toughen its hull and produce a better bran, an increase of middlings, clearer flour, and whiter break-flour. The invention forms the subject of a patent issued to Mr. William H. Smith, of Hickman, Tenn. Fig. 1 is a sectional side view of the apparatus, and Figs. 2 and 4 are plan views in different sections. A central drying chamber is supported within an outer steam vessel, steam being supplied to the latter from any suitable source by means of two side pipes, the steam also circulating through pipes extending transversely through the drying chamber, as shown in Figs. 1 and 2, while the water of condensation is carried off by a pipe at the bottom. From the top of the steam vessel pipes lead to an upper steam chest above the drying chamber, the upper end of the steam chest being connected with a pipe extending a short distance into the grain supply pipe, this steam pipe being closed at its upper end. In the bottom of this pipe is a valve, and in the pipe are a number of horizontally extending perforated pipes, as shown in Fig. 3, whereby steam may be furnished as desired to steam the grain entering the supply pipe, or entirely cut off therefrom when

**SMITH'S APPARATUS FOR HEATING AND STEAMING GRAIN.**

the grain is only to be dried. The arrangement of the pipes in the drying chamber permits only a slow movement of the grain to its central discharge spout at the bottom, so that the grain is thoroughly heated and dried in its downward movement.

**The New National Zoological Garden.**

During the last session of Congress the sum of \$200,000 was appropriated for the establishment of a zoological garden in Washington. The necessary site for it has now been selected. It comprises about 150 acres, lies to the northwest of the city, about two miles from the White House, along the banks of Rock Creek, and is said to be admirably situated and in every way well adapted for its purpose. It is expected that before next winter the necessary arrangements will be so far advanced that the animals now inappropriately housed in the grounds of the Smithsonian Institution can be removed to their new quarters.