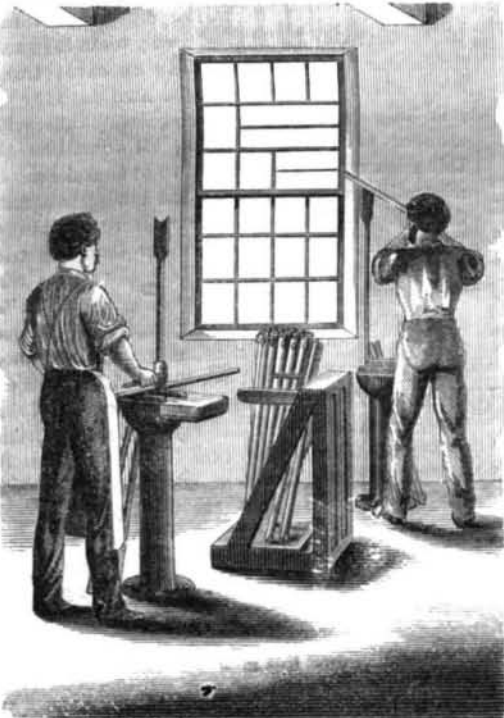


that it is unattended by noise and confusion (trip hammers make a horrible din), and results in better work in all respects. The plan is English, and was brought to this country by an individual who enjoyed a monopoly of his art for a long time, until it was at length discovered by others. Even now it takes a great while to "get the knack" of doing good work. The Providence Armory was the first to use barrel rolls in this country, outside of the Government works. When the barrels are completely finished at the rolls, they are taken to the cone-seater, who welds a rough lump of iron on one side, very much as one would stick a lump of clay the size of a hickory nut on the side of a walking stick. He then makes his mark and that of the rollers on the barrel, and it is ready for the finishing-rooms.

We have now seen the initial step toward making the musket. From this apartment we must follow our guide into another shop, where the barrels are bored out true internally; for as yet they are only rude iron tubes almost without shape or form. The barrels are laid in a lathe and "nut bored," as it is called, which consists in running a drill or cutter through from end to end. Now the barrel is very small inside—58 100ths in the bore—therefore the rod attached to the cutter would double up on the slightest pressure, and be useless if fed in the regular way. To avoid this, the cutting tool is *drown* through, and the operation proceeds with despatch. The barrels are nut bored, and are then "quick reamed;" which reaming is merely running a fluted steel bar through from end to end. This reamer runs with great rapidity and makes a squeaking noise, which suggested that a little oil or water would not be unacceptable to it. We expressed surprise that the edge was not destroyed, but were told that no difficulty was experienced on this score: this is done several times; the barrel is bored out and ready for the straightener and turner.



The barrel is straightened after nearly every operation performed upon it, and the peculiar nature of the process excites the liveliest curiosity of the uninitiated. The observer sees a number of men behaving in the most singular manner—taking up the barrels, holding them to their eyes for a minute, and then laying them over a block, they give a slight tap on one side and the thing is done. But how, asks the reader, do the men know where to strike? For further information on this point we must refer the interrogator to the workman; all that we can say is that a piece of ground glass is fixed in a frame hung across the window; on this glass there is drawn a parallel line; this line is the only guide to correctness. The operator raises the barrel and gazes through it at the lines; these are reflected on the inside of the barrel bore, and being perfectly true, any deviation in the barrel, be it ever so little, is seen and rectified by the hammer. The engraving of the two processes, rolling and straightening, were drawn on the spot.

SHAPING THE BARREL.

The rough exterior of the tube must now be removed and rendered more slightly and also lighter by going through the finishing processes. The first step is to turn it in a lathe; this is done quite rapidly, being of a regular taper from end to end. Whoever takes a modern Springfield rifle in hand will see that there is an octagon formed at the lower end near the breech. It is done in this wise—when the tool runs up near where the octagon should commence, a certain arrangement strikes against the carriage and throws an eight sided "former" against the tool; this has a yielding motion, governed by the "former," and thrusts in and out as the angles and sides push the tool in, thus a perfect octagon is made by a revolving motion. This was thought to be impossible at one time, but the Providence mechanics seem to think with Napoleon (or Joe Miller, we forget which) that nothing is impossible to him who wills. These lathes are nearly automatic, for the speed decreases as the work gets heavier, and the tool stops altogether when the task is done; so that there is no danger of spoiling the "job." One man is able to tend six of them, and when they stop the belt skipper flies back very quickly. This feature was unlooked for by us, and as we watched the operation the skipper bar came whizzing by the editorial nose and threatened to annihilate it; to the no small delight of a grimy-looking boy in attendance.

(To be concluded next week.)

One Effect of the High Price of Sugar.

Nothing is more characteristic of our people than fertility of resource, and the readiness they display in adapting themselves to circumstances, favorable or adverse, is remarkable. This trait has recently been brought to our notice with great force, by reason of the immense numbers of *bee hives* inventors have forwarded to us, with the commendable design of stimulating, through better habitations and economical arrangements generally, the art of bee culture. In this, the shrewd observer will see a loophole of escape from the high prices for all sorts of "sweetening" which now prevail, and which are not so much due to the taxes imposed by Government as to the combination of unscrupulous speculators. Sorghum mills were at one time all the rage and also other apparatus for defecating, and granulating the sap of all sugar-bearing plants and trees; but we think nothing is more noteworthy in connection with this subject than the efforts of our inventors to provide comfortable and profitable bee houses, whereby the crop of honey—a delicious substitute for molasses—will be largely increased during the coming year. If it tends to lower the price of the article, now far beyond its intrinsic value, the exertions of the inventors will not have been put forth in vain.

Practice with Lyman's "Accelerator."

Some time ago Mr. A. S. Lyman, of this city, constructed a gun at the Novelty Works on a peculiar principle: one previously embodied, however, in a small arm, from which he had fired a half-inch pointed steel bolt, eight inches long, through a block of iron six inches thick. The block was on exhibition at this office for some time. The gun alluded to was fired at Washington a short time ago, with the following result. The target was a 5 inch iron plate backed with 18 inches of live oak; at 204 yards, the longest range that could be obtained, the projectile passed completely through all obstructions, including a mass of rubbish behind the target, and struck the water 100 yards in the rear. This is "good shooting." On the occasion referred to practice had been had with an English Blakeley gun, the projectiles from which stuck in but did not penetrate the iron. Admiral Milne, Lord Lyons, Secretary Seward, and others were present, unknown to the inventor. This notice is also contraband, so far as Mr. Lyman is concerned, he having a reluctance to publish facts at present.

A LONDON professor lectured recently on adulterations of food. He handed round coffee, which was pronounced excellent, then told the audience that they had been regaled with a mixture of bullock's blood, chicory, sheep's liver, dried and old coffee grouts. He gave them capital porter too, made of spirits of wine, gum arabic and burnt sugar.



Abuse of Exhilarating Gas in Surgery.

Messrs. Editors:—During the past year public attention has been frequently called to the properties of the protoxide of nitrogen or "laughing gas," and many persons have been subjected to its influence, without being aware of its dangerous properties. Scientific men have been silent all this time, as its uses were chiefly confined to persons for public amusement. But it is time to interfere, when it is recommended for and used in surgical operations. The properties of this gas have been known since 1776, and those who now proclaim it to be a new anesthetic agent, capable of taking the place of ether, impose upon the public, as a work was written upon this very subject in 1847. It is known that atmospheric air supports animal life from the oxygen contained in it, and the essential functions of respiration can be carried on in an atmosphere of protoxide of nitrogen, but a prolonged use of this gas will give rise to disturbances of the system sufficient to produce death. Plants introduced into vessels filled with this gas faded in about three days, and they soon afterwards died. Its effects upon insects, annelides, mollusca, amphibiads, birds and mammals, were examined by Sir Humphrey Davy, and on all of these it acts as a positive poison. It produces peculiar changes in their blood and organs, terminating in death; and when forced into the veins of animals it disorganizes the nervous system, according to Nysten. Dr. Paveira says respecting it—"I have administered this gas to more than one hundred persons, and have observed that after the respiration of it for a few seconds, it causes frequent and deep respirations, the color of the lips and whole face become blue, temporary delirium is produced and an indisposition to part with the inhaling tube. The sensations are pleasing; the delirium manifests itself differently in different persons: I have known it to produce stupor, singing in the ears, giddiness, tingling sensations in the hands and feet, &c." Professor Silliman mentions a case in which the effects of this gas produced a complete perversion of the sense of taste for eight weeks; and A. S. Taylor states that some serious after effects upon the brain have been produced by its inhalation. I could cite the opinions and experience of many other authorities upon this subject, all coming to the same conclusion, that the effects of this gas are dangerous. It was known in 1847 that it produced insensibility to pain when used as an anesthetic agent. It appears unsafe to employ it in surgery even for such small operations on teeth. It cannot, therefore, be recommended as a substitute for ether or an anesthetic agent, although a new agent, as harmless and as effective as ether, without possessing its strong odor, is very desirable.

PROF. H. DUSSAUCE.

New Lebanon, N. Y. Oct. 23, 1863.

The Parrott Gun.

Messrs. Editors:—In the SCIENTIFIC AMERICAN, of Oct. 24th, a correspondent points out what he considers the defects in the manufacture of the Parrott gun; he suggests that the muzzle and chase should be made according to Dahlgren's pattern, and but a thin skin of iron turned off, in order to preserve the strong external surface of the casting. Your correspondent does not seem to be aware that there is greater difference between the rough and finished Dahlgren gun than in any other, owing to the great thickness of metal cut away from the muzzle. The Rodman core could not be introduced with advantage, save in a gun of the present Columbiad model.

FRUP.

Pittsburgh, Pa., Oct. 19, 1863.

SPECIE IN THE UNITED STATES TREASURY.—Gold is accumulating fast in the Treasury, and will be kept there until specie payments are resumed, except at the recurring periods of the payment of interest on the public debts.

Those who would like early salad next spring would do well to plant a bed of lettuce this fall.