Asafetida in Affghanistan.

M. C. Cook communicates to the *Technologist* the following facts in relation to the collection of asafetida:—

"To what was before known with certainty of asafetida in Affghanistan may be added the following particulars, communicated principally by Dr. Bellew, who was formerly attached to the mission to Kandahar. Some portion may be a repetition of the same facts previously obtained by other travelers, and which are hereby corroborated; for other information now communicated for the first time, Dr. Bellew is mainly responsible. This brief notice can, however, only be regarded as supplementary.

"The asafetida of commerce is obtained from only one plant in Affghanistan, viz: *Narthex asafetida*. It grows wild on the hills about Herat and Furrah, and is never cultivated, though hundreds of the Kakar tribe from the Boree family, who collect the gum, remain in the deserts to tend and water the plant.

"The 'tear' sort is the gum resin that exudes, and dries drop by drop, from incisions around the top of the root; the 'lump' sort is the gum resin as it exudes from a broad surface, as when the top of the root is sliced off. The latter sort is more frequently met with than the former, but I do not know of any difference in the qualities of the two sorts. There are several other umbelliferous plants in Affghanistan which resemble the asafetida plant in external appearance, and which also, like it, when wounded, exude a milky viscid sap, but I never heard that the sap of these plants (also gum resins) was ever collected by the natives, though the plants were very abundant, especially on the western slopes and ranges of the Sufaid Koh.

"The frail vaginated stem, or the lower cluster of sheathing leaves (of the asafetida plant)—the former belonging to old plants, and the latter to young ones, —is removed at its junction with the root, round which is dug a small trench about six inches wide and as many deep. Three or four incisions are then made around the head of the root, and fresh ones are repeated at intervals of three or four days; the sap continuing to exude for a week or fortnight, according to the caliber of the root. In all cases as soon as the incisions are made, the root head is covered over with a thick bundle of dried herbs o loose stones, as a protection against the sun; where this is not done the root withers in the first day, and little or no juice exudes. The quantity of asafetida obtained from each root varies from a few ounces to a couple of pounds welght, according to the size of the roots, some being no bigger than a carrot, whilst others attain the thickness of a man's leg. The quality of the gum differs much, and it is always adulterated on the spot by the collectors before it enters the market. The extent of adulteration varies from one-fifth to one-third, wheat or barley-flour or powdered gypsum are the usual adulterants. The best sort, however, which is obtained solely from the leaf-bud in the center of the root-head of the newly sprouting plant, is never adulterated, and sells at a much higher price than the other kinds. The price of the pure drug at Kandahar varies from four to seven Indian rupees per *man-i-tabriz* (about three pounds), and of the inferior kinds from one and a half to three and a half rupees per man.' The asafetida is commonly used by the Mahometan population of India as a condiment in several of their dishes, and especially mixed with 'dal.' It is not an article of general consumption in Affghanistan, though often prescribed as a warm remedy for cold diseases by the native physicians, who also use it as a vermifuge. The leaves of the plant, which have the same peculiar odor as its secretion, when cooked, are commonly used as an article of diet by those near whose abode it grows; and the white inner part of the stem of the full-grown plant, which reaches the stature of a man, is considered a delicacy when roasted and flavored with salt and butter. The annual value of the asafetida trade with India is estimated in the Government Reports of the Northwest Provinces at about £2,200."

New Methods of coloring Woods.

Dr. Wiederhold communicates to the *Neues Gewerb fur Kurhessen* the following directions for coloring wood:—"The surface to be colored is smeared with a strong solution of permanganate of potash, which is left on a longer or shorter time, according to the shade required. In most cases five minutes suffice. Cherry and pear-tree woods are most easily attacked, but a few experiments will serve to show the most favorable circumstances. The woody fiber decomposes the permanganate, precipitating protoxide of manganese, which is fixed in the fiber by the potash simultaneously set free. When the action is ended, the wood is carefully washed, dried, and afterwards oiled and polished in the ordinary way. The effect of this treatment on many woods is said to be surprising, particularly on cherry wood, to which a very beautiful reddish tone is communicated. The color is in all cases permanent in light and air."

The Pneumatic Despatch in Liverpool.

Mr. C. A. Varley, of Liverpool, has invented an improved apparatus for the transmission of parcels on the pneumatic principle. The novelty (?) of Mr. Varley's invention consists in the use of compressed air as a motive power for the propulsion of carriages in one direction, while a vacuum is created for their transmission in the other.

The Liverpool *Mercury* gives an account of the experiments made on Wednesday, June 22, at the offices of the Electric Telegraph Company, in Castle-street. Several messages were transmitted to and from Water street, the time occupied in the journey being a fraction over 16 seconds. The distance was stated to be about 300 yards, which gives a speed at the rate of 40 miles an hour. The power of self-action possessed by the apparatus is extraordinary; the clerk has nothing to do but ring the electric bell, put the message in the tube, and press one or other of three buttons, and the whole thing is done. It is intended, indeed, to make electricity perform the last of these operation, and then the apparatus will be as nearly automatical as it is possible for machinery to be. One great advantage claimed for the Varley system over the old plan that is, while the pressure obtained in the latter was limited to that of the atmosphere—namely, 15 pounds to the square inch—any amount of pressure can be obtained by the use of compressed air. In the present case the pressure employed is only 11 pounds, but greater pressure can be reached if necessary.

The Liverpool correspondent of the London *Engineer* says :—"One of the elctric telegraph companies has introduced the pneumatic dispatch system into Liverpool. In the cells beneath the central office of the company in Castle street is an engine usually worked at about one horse-power, though much more force can be gained if necessary. This engine works a double air-pump, which removes the air from one chamber and forces it into another. The chambers are called the 'exhaust' and the 'compressed air' chambers; and are connected by pipes and valves with the apparatus in the room on the first floor. If a message has to be sent, it is placed in a little round flannel bag made to fit loosely into the tube. A valve is then opened in connection with the compressed air chamber; the compressed air, which is kept at 11 lbs. on the square inch, rushes into the tube, and the bag is urged with immense rapidity to its destination. On its arrival there the signal is given on an electric bell, the valve stopped, and the operator is ready to receive the return message. The signal is given on the electric bell, and the valve and all outer communications at the operator's end closed. A communication is then opened with the exhaust chamber, and the air, rushing from the far end to supply the vacuum, brings the little bag along with it. On its arrival a spring is touched, the valve falls and the air rushes in. The operator is then able to open the case and take out the message. The average speed of these tubes, which are 1½ inches diameter, is about forty miles per hour, so that any number of messages may be sent or received from the exchange in 17 seconds. The arrangements have been carried out under the superintendence and direction of Mr. C. E. Varley."

THE APPROACHING FAIR OF THE MARYLAND INSTITUTE.—The seventeenth annual fair of this institute will be held in Baltimore, Md., on Monday evening Oct. 3d. These exhibitions have heretofore been highly creditable to the managers, and there is every reason to expect that the approaching one will be equal to the others. Manufacturers should avail themselves of this opportunity to introduce their goods in that part of the country. An advertisement can be found on page 63, current volume. Circulars can be had by addressing W. C. Cornthwaith, Actuary. Baltimore, Md.

Hot Springs of the Paso de Robles.

A correspondent of the San Francisco *Bulletin* gives the subjoined description of the Paso de Robles (Pass of the Oaks) Hot Springs, which are situated near the coast, in San Luis Obispo, California:—

"These springs were discovered about eighty-five years ago, and timbered up and improved by the Fathers of the Missions of San Luis Obispo, San Miguel, San Antonio, and Santa Ynez, where annually they used to congregate with their flocks for the improvement of their health, living in camps made of brush tents, and driving with them cattle and horses for food and convenience. The timbers placed in the springs by the Fathers at that time, are now as sound from decay as when first placed there, though over eighty years have elapsed since that time. Standing upon the edge of the spring is a large cotton-wood tree about 20 inches in diameter, with its roots running into and about the hot water. This tree is the product of a riding whip stuck in the soft bank thirty years ago, by an old California lady who now resides at Monterey. The dry weather has no effect upon the quantity of water, which runs a stream of about three cubic inches. The great earth quake of 1856 collapsed some subterranean passage, and since that time there has been about double the amount flowing from the spring. The temperature of the water is about 110° Fah., which would seem too hot for bathing. On the contrary, however, it is the most delightful bath I ever enjoyed.

"The climate there must be one of the most healthy of the State. The locality is a dry valley from one to three miles wide by about ten miles long, elevated about 1,000 feet above the sea. The valley is bounded on the east by the coast range, and on the west by a spur of high hills which terminate at Monterey Bay.

"The ranch, including the spring, has lately been purchased by Dr. T. D. Johnson, of San Jose, for $20,000, which seems an enormous price to pay for a league of barren land; but the spring appears to be all that he prized, and taking all the disadvantages that must always attend a trip to them into consideration, he may succeed in making this the watering-place of the State. He now has a new hotel in progress, and a fine bath-house, which will be finished in a few days. He intends to fit up the present house, or hotel as they call it, as a hospital for those who come for health only. He devotes his entire time in healing the sick free of charge. There are now about ninety patients here. Many of them for want of room are living in tents and brush houses. San Francisco is well represented by rheumatism and gout. The entire expense of stopping here, providing you are fortunate enough to get a good room, including board and baths, is only $9 per week, and those who are able can indulge in the luxury of the finest hunting in the world. Within three miles of the house there may be found game, from ground squirrel all the way up to deer, grizzly bear, and 'California lion.'"

PATENT OFFICE REPORTS FOR 1863.

The last session of Congress authorized the printing of 40,000 copies of the Report of the Commissioner of Patents for 1863, of which number 30,000 copies are for the use of the Representatives, and 10,000 for the use of the Senators. The Report will contain 3,566 illustrations, with the claims of all the patents granted during that year. Congress has adopted as a standard for future reports that for 1861, and a contract has been concluded with Messrs. E. R. Jewett & Co., of Buffalo, N. Y., to prepare the illustrations. We have frequently alluded to the illustrated work done on these reports by the above firm, and cannot forbear to express our great satisfaction at the action of Congress which continues the contract in their hands. The work done by Messrs. Jewett & Co., is highly creditable to their skill—they have a just regard for their reputation—and Congress shows a just appreciation of the valuable labors of our inventors by embodying their inventions into handsomly illustrated volumes, worthy to be preserved in private and public libraries.

Well-boring and Tools.

Mr. G. R. Burnell, F.G.S., recently read a paper at the Institution of Civil Engineers, London, England, "On the Machinery employed in sinking Artesian Wells on the Continent," in which it was stated that the extraordinary depth of some borings lately made for the purpose of obtaining an Artesian supply of water had led to great changes in the well-borers' art, and to the introduction of various mechanical processes, and of modifications of machinery, into the merits of which it was desirable to inquire.

The first well of this kind was that at the abattoir of Grenelle. This was sunk, after eight years' incessant labor, a total depth of 1797½ ft. (English), and gave rise to many inventions for the purpose of facilitating the progress of the works, for removing the broken tools, for the introduction of the pipes, and for carrying on observations at various depths from the surface. Subsequently, many similar wells were sunk on the continent, particularly in the Rhine provinces, but they were all of smaller diameter. The German engineers introduced important modifications in the tools. M. Ænyenhausen made a striking part, used for comminuting the rock to slide, so as to fall always through a certain distance, and thus avoid a jar. M. Kind had already applied his system to large excavations for winning coal mines, when he was entrusted by the Municipal Council of Paris with the execution of the well at Passy. This was to have a diameter of 1 metre (3 ft. 3 6-17th inches), that of Grenelle being only 20 centimetres (about 8 inches). The difficulties encountered in carrying the excavation through the clays of the upper series were so serious that six years and nine months were occupied in reaching the water-bearing stratum, which was ultimately attained at a depth of 1913 feet 10 inches from the surface, when the yield was 3,349,200 gallons per day of 24 hours, subsequently increased to 5,582,000 gallons, and then continued at 3,795,000 gallons per day. The total cost of the well was £40,000. It was lined with solid masonry for a depth of 150 feet, then wood and iron tubing was introduced to 1804 feet from the surface, and below that there was a length of copper pipe pierced with holes.

The results of this well had been so satisfactory, as regarded the quantity of water, that the authorities had decided to execute at once two additional Artesian wells, and there were rumours that two others were contemplated.

There were three different systems of well-boring, mostly dependent on the nature of the tools:—the Chinese, or Fauvelle's; the French, or rather the usual well-borers' plan; and M. Kind's. In the first, the motion given to the tool in rotation was simply derived from the resistance that a rope would exercise to an effort of torsion, and, therefore, the limits of application of the system were only such as would allow the tool to be safely acted upon. Besides, a considerable quantity of water was required to clear out the boring, so that this plan had been almost universally abandoned. In the ordinary system of well-boring, the weight of the tools and of the solid iron rods became so great, when the excavation was deep, that there was considerable difficulty in transmitting the blow of the tool, in consequence of the vibration produced in the long rod, or in consequence of the torsion. Hollow rods filled with cork, and M. Ænyenhausen's joint, which permitted the tool to fall freely, and through the same height every time it was released, were now employed. M. Kind adopted both these modifications, and in the well of Passy he substituted oak rods for iron ones, as being lighter, and more easily counterbalanced in water. The products of the excavation were still most frequently removed by augers and chisels, and all the processes hitherto practiced were considered to be more or less defective, as in every case the comminuting tool had to be withdrawn. In the well at Passy, M. Kind employed a trepan to comminute the rock; it weighed 1 tun 16 cwts., and fell through 2 feet. This tool was composed of two principal pieces—the frame and the arms—both of wrought-iron, but the teeth of the cutting part were of cast-steel. The frame had at the bottom a series of holes slightly conical, into which the teeth were inserted, and were tightly wedged up. These teeth were placed with their cutting edge on the longitudinal axis of the frame that received them, and at the extremity of the latter there were formed two heads, forged out of the same piece with the body of the tool, which also carried two teeth, placed in the same direction as the others, but which were made of double the width of the latter in order to render this part of the tool more powerful. It was by increasing the dimensions of these end teeth that the diameter of the boring could be augmented, so as to compensate for the diminution of the clear space by the tubing that it might be necessary to introduce in traversing strata disposed to fall in, or to allow the waters from below to escape at an intermediate level. Above the lower part of the frame of the trepan was a second piece, composed of two parts bolted together, and made to support the lower portion of the frame. This part of the machinery also carried two teeth at its extremities, which served to guide the tool in its descent, and to work off the asperities that might be left by the lower portion of the trepan. Above this, again, were the guides of the machinery, properly speaking, consisting of two pieces of wrought-iron arranged in the form of a cross, with the ends turned up, so as to preserve the machinery perfectly vertical in its movements by pressing against the sides of the boring already executed. These pieces were independent of the blades of the trepan, and might be moved closer to it, or further away from it, as might be desired. The stem and the arms were, lastly, terminated by a single piece of wrought-iron, which was joined to the frame by a kind of saddle-joint, and was kept in its place by means of keys and wedges. The whole of the trepan was finally jointed to the great rods that communicated the motion from the surface by means of a screwed coupling, formed below the part of the tool that bore the joint, which permitted the free falling of the cutting part, and united the top of the arms and frame and the rod.

Action of Butter on Copper.

The following communication to *L'Union Pharmaceutique*, Paris, by E. Lancelot, we find in the Philadelphia *Journal of Pharmacy*, for which publication it was translated:—

"I take the opportunity of the Scientific Commission now meeting at the Vienne (France), to communicate to my fellow-pharmaceutists a fact which, I believe, is new to the science of chemistry, and may ultimately prove highly interesting as a question of hygiene and toxicology.

"Some time ago, an inhabitant of our city had a copper hydrant put up in his yard. The inner part of the copper pipe had not been tinned, that precaution being commonly deemed superfluous.

"The water supplied by this hydrant for the usual wants of the household, had never been suspected of containing noxious matter; but, one day, the lady of the house told her husband that, having left a slice of butter for several days in water drawn from the new hydrant—the water having been renewed five or six times—she found that the immersed surface of the butter had turned quite green.

"Anxious to ascertain the cause of this singular alteration, the proprietor divided a pound of butter into three equal parts, and placed them separately in three different vessels. He then filled one of these with water taken from a wooden hydrant placed in his yard at some distance from that of copper; the second vessel was filled with water from the very well that supplied the copper pipe, but, from the outside of that pipe; and the third vessel contained water that had passed through the copper pipe itself.

"The butter deposited in the water of the third vessel was the only one which, after two days immersion, became covered with a bluish green color, exhibiting the aspect of an hydrate of deutoxide of copper.

"The piece of colored butter was handed to me by the owner, with a request to experiment chemically upon it, so as to ascertain the true nature of this coloration.

"A solution of hydro sulphuric acid applied to the butter, produced at once a blackish dirty spot; and the ferro-hydrocyanate of potassa gave a crimson spot; the latter grew darker by degrees. These characteristic aspects left no doubt of the presence of copper.

"Desirous of experimenting upon the very water that had imparted such a color to the butter, and also of determining what proportion of copper it might contain, I requested the owner to send me a certain quantity of that water, especially that which would be the first drawn in the morning. He sent me about three gallons of it, one quart of which was tried by means of the above-mentioned reactives, and some well-known others, but without any result.

"The remaining eleven quarts were reduced by evaporation to a tumbler full. Having filtered that remnant, I tried the limpid liquor: no result. I next poured on the filter—now coated with a calcareous deposit—a few drops of a reagent: again without result. Finally, I dissolved this deposit in nitric acid, and then neutralized the solution; but that was as unsuccessful as the other trials.

"Now, what conclusions can be drawn from the above? Simply this: That butter may fix and reveal molecules of copper, so very minute, that they will evade the most sensitive reagents known. Another remark is, that none of the persons who had used the water of this hydrant had ever experienced the slightest accident. Nevertheless, my experiments lead me to the following conclusion: That under certain circumstances—as, for instance, the washing of butter—water from copper hydrants may become deleterious, unless the pipes be tinned inside.

"It has long been known that the acids contained in greasy substances will act promptly on copper; but the above experiment has demonstrated to me, that butter is perhaps the most sensitive reagent to detect the presence of that metal, or of its salts, in a liquid; and that, if iron has the property of reducing the salts of copper contained in a very diluted solution, butter itself possesses the property of forming a copper salt—perhaps a butyrate—which reveals the presence of that metal, even when the active reagents most in use have failed to give traces of its existence.

"I leave to the masters of the science the care of completing these experiments, which are certainly not devoid of interest in a toxicological point of view."

Conversion of Salt Meat into Fresh---A Further Application of Dialysis.

Mr. A. A. Whitelaw has addressed the following note to the *Chemical News*, London:—

"As an appendix to the notice of my process for the utilization of brine (see page 309, Vol. X., Scientific American), I now beg to direct attention to a modification of that process, applicable to ships at sea, by which the quality of the meat supplied to the men may be much improved, and their food varied.

"The salt meat is placed in a dialytic bag made of untanned skin, or other suitable material, and the bag filled nearly, but not quite, full of brine from the beef barrel. The dialyzer is then placed in sea water, and the process allowed to go on for several days, till the meat and brine are sufficiently fresh for use, or till the brine in the dialytic bag is within 1° or 2° of Twaddel's hydrometer of the same strength of sea water. In this way, as the brine becomes free from salt, the beef, which, by the action of salt, has been contracted, gives its salt to the brine in the bag, and so the process goes on, the beef expanding like a sponge, and gradually taking up a great part of the natural juice that it had previously lost in the salting process. In this way no loss of juice is sustained by steeping, and the brine left in the bags, after a nightly dialysis in fresh water, can be used for soup.

"Thoroughly salted beef, without bone, takes up nearly one-third its weight of juice, and this absorption takes place gradually as the strength of the brine in the dialyzer becomes reduced. Meat thus treated—being, in fact, fresh meat—may be cooked in a variety of ways that are obviously not available for salt meat; and so the food of sailors, and, consequently their health, may be improved."

A Pamphlet published in London, containing a narrative of the cruise of the *Alabama*, "by one of her crew," gives a list of men on board the *Alabama*, their citizenship and other particulars. It specifies forty-nine Englishmen, and eight Scotch and Irish, or a total of 57 British subjects of whom two drew English pensions and eighteen belonged to the Royal Naval Reserve.

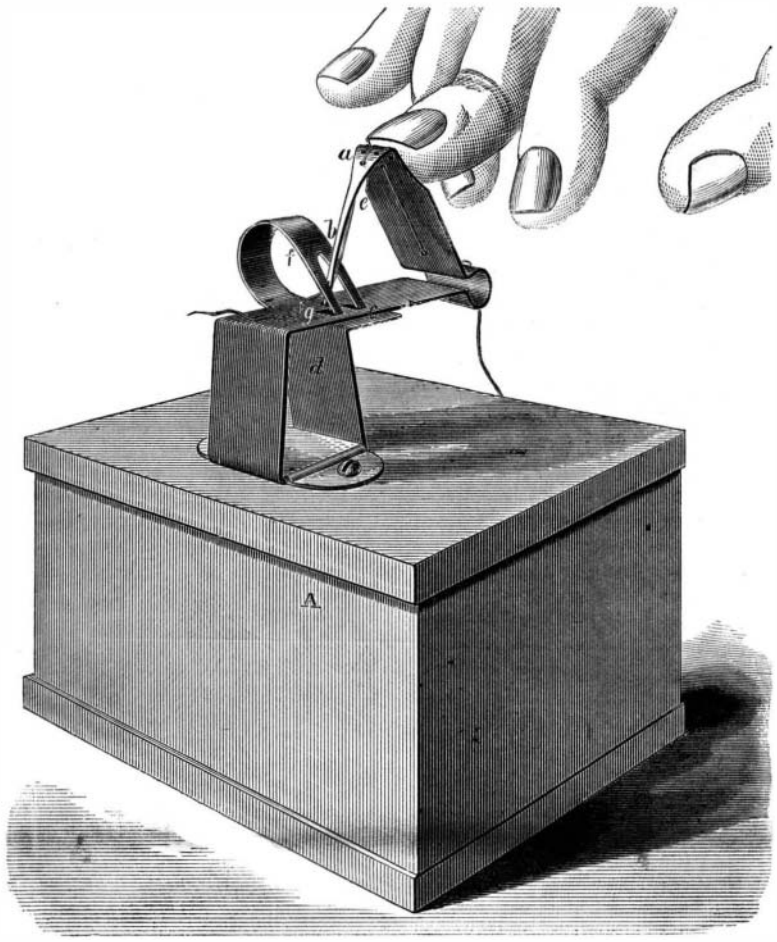
A Locomotive has lately been patented in England which is designed to condense its steam when passing through tunnels. For this purpose it has a surface condenser over the cylinders, extending the whole length of the engine.

Improved Pocket Sewing Machine.

Many objections have been made to ordinary sewing machines on account of their expense and complexity. We fancy that the most unmechanical person could not find fault with the machine illustrated herewith in either of these respects, for there is not one of the mechanical powers involved in its construction. It is simply a steel spring ingeniously bent and arranged, and it is said to sew small articles very well. The spring is all in one piece and is held to the box, A, by a clamp. The whole affair can easily be carried in the coat pocket, and on this account will recommend itself to travelers, tourists, etc. The inventor thus describes the operations of his machine :—

"The thread being taken from a conveniently-placed spool (which may be laid in the box, A, if desired), is rove through a greater or less number of the tension holes, *a*, according to the tension required, and then passed through the eye of the needle, *b*. The cloth is inserted at *c*, the surplus, if any, lying over in the part, *d*. The machine is worked by being vibrated with the finger, in the same manner that a piano key is vibrated, and it may be done as rapidly; or, if desired, the machine may be taken in the hand and worked in the same manner as a pair of spring pincers. The needle-bar being depressed, the needle passes through the cloth, and when the inclined edge, *e*, comes in contact with the feed-spring, *f*, it forces said spring back from the slots, *g*, and when the needle rises clear of the cloth, the feed-spring moves forward by its elasticity and forces the cloth forward the distance of one stitch by its points acting through the slots. When the needle rises it leaves a loop protruding beneath the lower plate, and by the forward motion of the cloth this loop is flattened and prepared for the next descent of the needle, which passes through it, thus forming a chain stitch. The needle or feed-spring may be made separately if desired and attached to the other part in any suitable manner. This machine is adapted to sewing small articles, hemming handkerchiefs, etc., with patterns in the chain-stitch. It is not liable to derangement when well made."

This invention was patented, by W. D. Heyer, through the Scientific American Patent Agency on the 17th of November, 1863. State and county rights for sale. Address W. D. Heyer, Box 762, New Orleans, La.

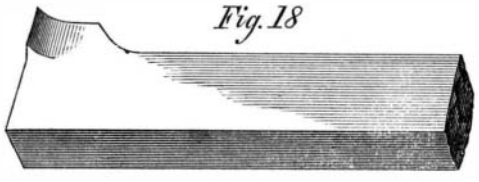


HEYER'S POCKET SEWING MACHINE.

BORING TOOLS.

NUMBER 4.

In the drills, and all other tools used by mechanics, there are innumerable cases where tools are made for special purposes, and it is principally for this reason



that the subject is inexhaustible. An elaborate treatise on tools would present little that is really new; and to the practical reader there is no benefit in discussing those which have been used for years unless some errors in their construction can be pointed out and removed, as in the case of the boring tool we illustrated in the first of these articles. For boring cylinders and hollow work in general, where a bar and boring head is used, a cutter like the one shown in Fig. 18 is very serviceable, but the kind of work varies so much that one tool cannot be used continually, and the good sense and ingenuity of the workman must be the judge of what is required. Much also depends upon the feed and speed of the cutter, or the work, and unless these are well regulated either the job is much longer in the lathe than it should be, or else it is not properly done. These details cannot be put down positively, for it very often happens that the intelligent workman does not know himself at what speed he will run until the the job is under way.

It seems hardly necessary to exclaim here against the habit of idling over work that some individuals practice. "Slow speed and fine feed"—say thesegentry—make the job last longer; they are correct undoubtedly, but they should also remember that the trick also makes their wages shorter. Men are paid for the work they do, and he that accomplishes the most and the best, will assuredly stand highest in the estimation of his employers. Let us all—as practical men—aim to drive the machines faster; have the cutters sharper, the feed as heavy as the job will bear. Let us make American engines and American machine work our pride and boast, and create a market for it all over the globe, and as a preliminary step to renown, criticize closely everything that promises to improve the character of the tools we work with.

Purifying Sorghum Sugar.

The following information just received from Mr. Riley Root, of Galesburg, Ill., patentee of a new process for clarifying Chinese and other cane-juices, may be of much benefit to those engaged in rising sorghum:— "I would add, in relation to sugar-making, that after the sirup has granulated the remaining (ungranplatable) portion of the sirup is drawn off. But with our cane at the North the mucilage is so adhesive and stiff that assistance by means of a press has been found beneficial. After the first pressing is performed the follower can be removed, and a little clear cold water may be stirred into the sugar, and press again. This process can be performed several times, and at each successive time the sugar becomes whiter, with some slight diminution of its amount; but each successive draining becomes a more perfect article of golden sirup, so that what is lost in one is gained in the other."

VERMONT is entirely independent of the foreign market in regard to sugar and molasses; not an ounce of imported sugar will be seen in many sections this year.

Caribe.

Don Ramon Paez, in his recent work, "Life in the Llanos, Venezuela, S. A.,' states that some of the Venezuelian rivers are infested with a peculiarly ferocious and blood-thirsty fish known as the caribe, which, though not larger than a perch, is one of the most formidable creatures that man or beast can have the misfortune to encounter. Their sharp, triangular teeth, arranged in the same manner as those of the shark, are so strong, that neither copper, steel, nor twine can withstand them, and hence the angler stands no chance of sport where the caribe is found. "The sight of any red substance, blood especially, seems to rouse their sanguinary appetite; and as they usually go in swarms, it is extremely dangerous for man or beast to enter the water with even a scratch upon their bodies. Horses wounded with the spur are particularly exposed to their attacks, and so rapid is the work of destruction, that unless immediate assistance is rendered, the fish soon penetrate the abdomen of the animal, and speedily reduce it to a skeleton." This cannibal fish is as beautiful in aspect as it is fierce in nature. Large spots of a brilliant orange hue cover a great portion of its body, especially the belly, fins, and tail. Toward the back, it is of a bluish-ash color, with a slight tint of olive-green, the intermediate spaces being of a pearly white, while the gill-covers are tinged with red. This fish, however, suffers from a special and constantly recurring visitation; being subject to a yearly mortality during the heat of summer when the water is deprived of a portion of the air it holds in solution. "Their carcasses," says Don Ramon, "may then be seen floating on the water by thousands, while the beach is strewn with their bones, especially their bristling jaws, which render walking barefoot on the borders of lagoons extremely dangerous."

A HANDY TOOL.

Holes in castings which are cored out very often require to be made true and smooth so that bolts will fit in them. Some machinists waste a great deal of time in plugging the holes up with wood and then drilling them out afterward; still others spoil rimmers and files in rimming or filing the sand out; it is needless to tell the intelligent workman that all these methods are costly and tedious. A better way to accomplish the object is to make a tool like the one shown in the accompanying engraving. It can be made in twenty minutes, and is a simple but indispensable tool. It is merely a steel pin ground square on the face and turned true in the lathe. It may be parallel for a short distance (so that it will go straight) and taper above so that it will clear; the length is made to suit the work to be done. This pin is to be driven right through the casting, half from one side and half from the other, or else the face of the casting will be injured. With such a tool as this ten times more work can be done than with a drill or any other method, while the quality of it is excellent. It is called a drift pin and may be made of any size.

THE latest novelty in London and Paris is the Photograph Letter Signature. Note and letter sheets are now gotten up with miniature oval photographs of the persons using them affixed to the right hand lower corner of the last page, after the words "Very truly yours," which are printed in the usual place. They are getting to be quite as fashionable as the *cartes de visite*.