Speed of Drums.

RULE.—Multiply the diameter of the driver, by its number of revolutions, and divide the product by the diameter of the driven; the quotient will be the revolutions of the driven.

QUESTION 1.—The driver is 8 inches, making 100 revolutions per minute; the driven is 5 inches—how many revolutions will it make?

Diameter of the driver, 8 inches
Multiply by No. of revolutions 100

Div. by diameter of driven, 5)800

Answer, 160 revolutions.

The diameter, and revolutions of the driver given, to find the diameter of the driven, that shall make any given number of revolutions in the same time.

RULE —Multiply the diameter of the driver by the number of revolutions, and divide the product by the revolutions of the driven, the quotient is the diameter of the driven.

QUESTION 1.—The diameter of the driven is 12 inches, making 100 revolutions; required the diameter of driven that shall make 200 revolutions?

Diameter of the driver 12 inches
Its number of revolutions, 100

Div. by No. of rev. of driven, 200)1200

Answer, 6 in. dia.

To alter the Driver Pulley.

RULE.—Multiply the diameter of the driven, by the number of revolutions that you wish it to make, and divide the product by the revolutions of the driver, the quotient is the diameter of the driver.

QUESTION 1.—Suppose you have an 8 inch pulley, which you wish to have driven 250 revolutions per minute; what must be the diameter of the driver that makes 100 revolutions?

Diameter of the pulley, 8 inches
Mul. by No. of revolutions, 250

Div. by No. of rev. of driver, 100)2000

Answer, 20 in. dia.

Galloway's Rotary Engine.

Elijah Galloway has brought out another rotary engine in England, which on the whole has been represented to have done admirably as a blower for a furnace at Mr. Tyrell's foundry at Deptford. It is a four horse power and does not occupy more space than a small hat box. The stroke does not traverse more than nine inches of space by four inches in diameter, and the whole weight is about two and a half cwt. The Railway Chronicle says that "the interior of the box consists of five segments of circles of highly polished steel, so arranged that the pistons or acting arms (also highly polished) bear on each other so as to secure steam tight contact without packing." The steam pipe from the boiler brings the steam into the box which surrounds the machinery described and by acting upon the arms turn a crank that works the valves, and this is all the machinery necessary. It makes 400 revolutions a minute and travels through as much space each stroke as the reciprocating engine with the same expense of fuel (We doubt this. It is too good news to be true.) This engine has been in operation some time and has been severely tested, according to the Chronicle, yet it is stated that it has been supplied with steam from a ten horse power boiler at Deptford, from which we must conclude that the *economy* of fuel is *fully* as much *guess* work as if Brother Jonathan was heating the poker. The inventor, however, is we believe more intimately acquainted with the rotary engine than any other living engineer.

Ærial Locomotion.

Mr. E. Newton, of Middlesex, England, has secured a patent there for an invention of Dr. Van Hecks, of Brussels, Belgium, which is going to beat railroad and steamboat locomotion clear out of the field. The mountains will no more need to be levelled nor the rivers unsnagged. Van Hecks will lay them all upon the shelf. The Doctor states that the whole difficulty in *aerial* navigation heretofore has been the various currents in the atmosphere "presenting an insuperable difficulty to balloon navigation. The whole of *aerial* flights have depended upon gas and ballast —out with the ballast to ascend and out with gas to descend." These difficulties are all splendidly surmounted in the Doctor's own way of reasoning. He uses a frame in combination with his balloon and which has vanes or sails upon it that can be worked by wheels driven by a crank, so that whenever he gets into a cross (angry it should be) current of air, all that has to be done, is to go to work might and main and weather the storm of the atmosphere like a steamer in a squall—with this one advantage that he navigates upwards till he gets a favorable current—a fair wind—and then he douses his crank and lowers studding sails, trusting alone then to his *maintop*.

The Effect of City Atmosphere Upon Stone.

Stone buildings decay more rapidly in cities than in the open country, where dense smoke, fogs and vapors, which act injuriously on buildings do not exist. There is also another curious cause which contributes to the durability of stone buildings situated in the country In the course of time, the stone becomes covered with minute lichens, which, though in themselves decomposing agents, act with extreme slowness, and when once established over the entire surface of the stone, seem to exercise a protective influence by defending the surface from the more violent destructive agents, whereas, in populous smoky towns, these lichens are prevented from forming, and thus the stone is exposed to severer trials, than stone of the same kind situated in the country.

As a remarkable illustration of the difference in the degree of durability in the same material, subjected to the effects of the air in city or country, the appearance is noticed of several frusta of columns, and other blocks of stone, that were quarried at the time of the erection of St. Paul's Cathedral, London, and which are now lying in the isle of Portland, near the quarries from whence they were obtained.—These blocks are invariably found to be covered with lichens, and, although they have been exposed to all the vicissitudes of a marine atmosphere for more than one hundred and fifty years, they still exhibit beneath the lichens their original form, even to the marks of the chisel employed upon them; whilst the stone which was taken from the same quarries, (selected no doubt with equal, if not greater care than the blocks alluded to,) and placed in the Cathedral itself, is, in those parts which are exposed to the south and south-west winds, found in some instances to be fast mouldering away.

The New Telegraphic Instrument.

The Louisville Journal says: "We had the pleasure yesterday of seeing the new telegraphic instrument, invented by Messrs. Barnes and Zook, late of the Cincinnati Telegraph Office. It seemed to us beautiful in its simplicity and in its perfect adaptness to the purpose for which it is designed. It certainly works to admiration. It dispenses altogether with the receiving magnets, an achievement which has been deemed impossible.

This instrument is now using the dots and lines, but one of the inventors pointed out to us a mode in which he says that he can readily dispense with them. We are too little acquainted with the matter to be able to judge of the feasability of his plan.

The instrument, we are confident, cannot fail to prove valuable. We take pride in it as an American invention. The country is proud of Prof. Morse, and we believe that it will be proud of Messrs. Barnes & Zook."

Caterpillars.

An English agriculturalist paper gives the following method of destroying caterpillars, which was accidentally discovered, and is practiced by a gardener near Glasgow. A piece of woolen rag had been blown by the wind into a currant bush, and when taken out was found covered with the leaf devouring insects. Taking the hint, he immediately placed pieces of woollen cloth in every bush in his garden, and found the next day that the caterpillars had universally taken to them for shelter. In this way he destroys many thousands every morning.

To Make Splendid Candles.

PARLOR CANDLES.—Melt slowly over a moderate fire in a well tinned copper kettle, seventy pounds of pure spermaceti, and to it add piecemeal, and during constant stirring, thirty pounds of best white wax. By increasing the proportion of wax to fifty pounds, the resulting compound is much more diaphanous. The candles moulded of this mixture are not of as lengthy durance as candles made from wax alone. These tapers are often tinted of various colors, rose, yellow, light blue, green, &c. For the red shade, carmine or Brazil wood, and alum are used. The yellow is made with gamboge, the blue with indigo, and the green with a mixture of yellow and blue. They are sometimes perfumed with essences, so that in being burned, they may dispense an agreeable aroma.

Experience has shown that a more transparent and elegant candle is made by adding only six and a half pounds of wax to one hundred pounds of pure dry sperm.

TRANSPARENT COMPOSITION CANDLES — To compose one hundred pounds of stock, take ninety pounds of spermaceti, five pounds of putrified mutton suet, and five ponnds wax, melt each separately over a water bath, and to the whole then mixed together, add two ounces cream of tartar, and two ounces alum in very fine powder, and whilst stirring it constantly raise the heat up to (176° F.,) then withdraw the fire and allow the mixture to rest until it has fallen to (140° F) When the impurities subside the clear liquid composition must be drawn off into clean pans. Of this cooled block, candles are made which not only look well, but burn well. The suet is in just such proportion as will be a benefit rather than an injury.

The products of these admixed ingredients is not equal in beauty to that by the preceding process, but its quality and good appearance is more than proportional to its cost, which is much less than the aforementioned composition.

To Remove Fruit Stains.

A writer in the Lehigh Register expresses himself as follows:—

"As the season for blossoms is close at hand we desire to communicate a singular fact, perhaps never publicly announced before, and which involves some questions not easily solved, and principles unexplained.

When fruit trees are in blossom: stains produced by fruit can be bleached out in a day or two, which could not have been removed by bleaching in the sun, without some chemical preparation.

When peach trees are in blossom, peach stains can be removed—when plumb trees are in blossom, plumb stains, and so on with any other fruit trees. If during the fruit season of 1847, any persons stained their clothing, and endeavored to remove the stains by bleaching, they found it a fruitless effort—if however, when the fruit is in blossom this spring, they will bleach for a day or two, the stains will be entirely removed. This seems so improbably, that it can scarcely be credited; to convince, it must be tried—if found to be true, we hope some of the chemical philosophers of our country will be enabled to give us the why and wherefore."

The why and wherefore is, that there is no why and wherefore about it.

Plums.

The *Curculio*.—In a recent letter of Mr. Longworth, to one of the daily papers in Cincinnati, he says that he has had but two crops of plums in thirty years, where his "trees were not set in a brick pavement, and that where this protection against the curculio has been adopted, he has not lost a crop from the ravages of this insect for eighteen years past. His plum trees are planted close to the house, where persons are constantly passing at the very time these insects are most destructive, and the brick pavements around the trees extend beyound the branches. Salt has had a fair trial in that vicinity, and has failed entirely."

Candid.

At a recent examination of Law Students at Rochester, the judge intimated that a majority of them were numbskulls, but to spare their feelings, he would admit them all to the bar.

Sewing Machine.

The Boston Cabinet gives an account of a sewing machine seen in New Hampshire, by Mr. Thomas Hunt, which appears to be a wonder indeed. It is represented to sew a foot in length of broadcloth in two minutes, putting in three times the number of stiches usually made in the same length. No lady on earth, nor man either, can do it with the same regularity. The finest cambric stitching appears coarse and unfinished when compared with the work of this machine. It matters not what is the form of the seam, straight, angular, or circular, it goes regularly along with its steady yet rapid pace, without being hindered by any change in the line of motion. The work is stronger and not as apt to rip as that performed by hand. It does all the work about a coat, pantaloons, vest, shirt, cloak, ladies' dresses. &c., except making the button holes, and sewing on the buttons. Two men and four girls will do more work with this machine, than thirty persons can without it A quarter horse power will drive more than fifty of them with ease. It is capable of making boots and shoes; also harnesses for horses, &c. It can be applied for the making of sails for ships. Indeed wherever a needle can work, it can work. It does its work so rapidly, regularly, and strongly, that it must come into extensive use. A machine for family use will not cost fifty dollars. Any girl of ten years of age can work it in the same way; and any person who can thread a needle, and turn a screw, may learn in ten minutes how to use it, and with it do more work in a day, than ten men can perform.

[Can this be the machine of E. Howe, of Cambridge, Mass., patented in 1846. We received a number of communications about Mr. Howe, from people who had wrote to Cambridge, and failed to get an answer.

Curious Apple.

An apple has been produced near Ticonderoga, having neither core nor seeds, by the following method. The experiment is worth repeating, as it may lead to important results:—"The top of a young tree was bent over and covered with earth, which took root The tree was then cut asunder, which stopped all connexion with the natural root of the tree, and, by sprouts which sprung from the top portion of the body, a regular top was formed, which produces this fine fruit—a beautiful red, good size, very pleasant table apple in the fall."

Not to be Beat.

A public dinner in Edinburgh had dwindled down to two guests, an Englishman and a Highland gentleman, who were each trying to prove the superiority of their native countries. Of course, as an argument of this kind, a Scotchman possesses, from constant practice, overwhelming advantages. The Highlander's logic was so good, that he beat his opponent on every point; at last the Englishman put a poser.

"You will," he said, "at least admit that England is larger in extent than Scotland?"

"Certainly not," was the confident reply. —"You see, sir, ours is a mountainous, yours is a flat country. Now, if all our hills were rolled out flat, we should beat you by hundreds of square miles"

Washington's Servant.

Altamont, the servant of Washington died at Washington, on the 22nd. of last month. He was a colored man and lived to the age of 94. He was proverbial for stern integrity and fidelity. When the revolution broke out Altamont was given to Col. George Washington, by his nephew, and was with his young master in all the leading battles in the south, ending with the siege of Yorktown.

Don't be in a Hurry to get Rich.

Gradual gains are the only natural gains; and they who are in haste to get rich, break through sound rules, fall into temptations, and distress of every sort, and generally fail of their object. There is no use in getting rich suddenly. The man who keeps his business under his control, and saves something every year is always rich. At any rate he possesses the highest enjoyment which riches are able to afford.