

learned that the part of anvil will not and cannot be spared him, and that every blow that he gives smites also his own cheek; that the serf corrupts the master as well as the master the serf, and that in politics the guardian and the ward are rendered equally stupid."

### Correspondence.

The Editors are not responsible for the Opinions expressed by their Correspondents.

#### The Pine-Apple.

MESSRS. EDITORS:—There is, perhaps, no production of the tropics which is so generally and deservedly esteemed by the people of the North as the pine-apple; yet of none have they such vague ideas as to its manner of growth. Not unfrequently have we heard it expressed as being the fruit of a tree; associating it with the cone-bearing trees of our own country. The pine-apple plant (*Ananassa sativa*) is a native of tropical America, growing wild in the forests, but is also largely cultivated in those regions, as well as to some considerable extent in the West Indies, and on the eastern continent.

It has fifteen or more long, serrated, ridged, sharp-pointed leaves springing from the root, resembling in its general aspect the century plant, but much smaller in size. In the center of this cluster of thick, succulent leaves, springs up a short stalk bearing a spike of beautiful flowers, which in time produces a single pine-apple. On the summit of the fruit is a tuft of small leaves, capable of becoming a new plant, which, together with suckers, are the means by which it is propagated, as the cultivated plant seldom produces seeds. It flourishes best in a moist and warm climate, but is able to survive a long drought and extreme heat.

There are several varieties of the pine-apple, differing in their leaves being more or less spiny on their edges, and in the shape and color of the fruit. Great care is requisite in its cultivation, otherwise it will be coarse and fibrous, with but little sweetness. Nothing can surpass the rich and delicate flavor of a pine-apple which has been properly grown, or of the wild fruit of the forest, which we always found equal, if not superior to the cultivated ones.

A word as to the manner of preparing a pine-apple for eating may not be out of place here. Let the rough exterior first be removed to a sufficient depth, and then slice the fruit longitudinally with the core, and not across the hard center, as is generally done with us. As soon should an ear of green corn be divided in sections when the kernels must be pulled from the cob, as a pine-apple across the core, instead of nicely slicing the fruit from its adherents. The deliciousness of a pine-apple when freshly picked from the plant and prepared in the above manner cannot be surpassed.

H. M. MYERS.

#### Orbital Motion.

MESSRS. EDITORS:—I have devised a simple addition to the gyroscope, to serve as a popular proof and illustration of the demonstrable truth, that axial motion produces orbital motion. Dr. G. M. Ramsay says (Cosmos p. 78) "the Gyroscope demonstrates that axial, tangential force becomes an orbital propelling power, but it carries the gyroscope in a reverse orbital direction;" and hence he draws the conclusion, that "if the planets had an independent, direct axial force, they would move in a retrograde orbit."

I maintain that the gyroscope itself will show his conclusion incorrect. Set it to spinning with a direct motion, and observe it when the axis deviates a little from a perpendicular. The hub describes an orbit with a direct motion, the same as the wheel moves. The inclination of the axis represents the inclination of a planet's axis to the plane of its orbit; and also the nutation of the earth's axis. And even when the axis becomes horizontal, the under side of the wheel is, in fact, the outer side of the orbit, and its orbital motion is direct, the same as before.

Thus planetary, axial, and orbital motions are well represented by the gyroscope; but more truly and plainly by my addition, which any person can readily make or get made. It consists of a metallic bar (1 foot long and  $\frac{1}{16}$  inch in diameter for the small gyroscope), bent about 30° in the center, a cavity on the concave side, so as to balance on a pivot like a compass needle; a socket on one end, a weight on the other, to balance the gyroscope. Set it to spinning in this socket, and it at once produces an orbital motion around the pivot, direct or retrograde, just as you spin the gyroscope.

That this must be so appears as certain and plain as Archimedes' "Eureka." The radius vector of a planet may be regarded as a lever. The direct axial tangential force at the outer end of the planet's diameter, which coincides with the radius vector, is just equal to the tangential force at the inner end of the same, where the motion is retrograde to the orbit; but the outer tangential force having the longest leverage, the motion must be direct.

S. N. MANNING.

Kankakee, Ill.

#### How to Make a Perfect Boiler.

MESSRS. EDITORS:—To make a perfect boiler the following rules should be observed: First, the iron in each cylinder should be of uniform thickness and of good quality, and a templet made corresponding with the thickness of iron and size of boiler. Each plate should be marked off with a marking punch from this templet. (I do not approve of using a pencil or white lead for marking). There should be a center on the press punch to enter the mark indicated by the marking punch. This will make every hole in the boiler so perfect that a reamer will not be required. Secondly, the rings should be so laid out that by driving a pin in each of

the lap holes both rings will be closely hugged together. To make good holes the punches should be largest at the end, and tapering back, with the face a little concave, so that the edges touch the plate first. When the punch becomes dull throw it in the scrap heap; it will not pay to repair or reharden it. Thirdly, all flat surfaces of boilers should be braced to sustain a pressure equal to the bursting pressure of the cylinder; the braces being in all cases straight, so as to take a direct and positive strain, fitted of the exact bevells of the plates and riveted when possible, never using pins, as they are liable to work loose; for in my opinion, this evil has caused the destruction of many boilers. Use the best American iron; thanks to protection, we can now produce an article equal to the best in the world. The edges of plates should be planed, not chipped, and the riveting and caulking done by experienced workmen. For working pressure Haswell's rule should be the guide, as it is more accurate than any I have ever seen. The boiler should be in charge of a sober, intelligent, industrious man; then there will be no fear of explosion.

As bituminous coal is now much used; would it not be economy, to say nothing of the abatement of a great nuisance, to consume the smoke? I think also that if the water was sufficiently heated to disengage impurities, and injected into a receiver, beneath the fire box, it would be attended with benefit; there would be little or no commotion, and the water would then flow into the proper channel, and leave impurities where a blow pipe would carry them off. I think both these results can be effected; let me have your opinion upon the subject.

PATRICK QUINN.

South Newmarket, N. H.

#### Mental Science.

MESSRS. EDITORS:—There are periods of crime, as illustrated by the homicidal epidemic prevailing throughout the country. There are also tendencies to mental and moral insanity in various degrees, from ungovernable temper to mania, and the question arises, "Should these particular tendencies absolve from responsibility either at the bar of conscience, or in the verdict of the jury?"

If such tendency be the result of indulged selfishness or intemperance of any kind, the acquittal places a premium on criminality, and the next step may be as in the East, to consider the insane not only deserving of sympathy, but under the special protection of the Almighty.

While we predict the eclipse and the revolutions of Saturn, we unfortunately know little of the wondrous system within us, and our educators would vindicate their noble profession by teaching the pupil the science of self-knowledge, to ascertain the recurring laws of emotion, controllable to a certain point, and regular (to the thoughtful) as the cycle of the seasons. Said a recent victim, "My paroxysm is coming; be careful at such an hour." Would it be impracticable to extend this idea to self-application; to watch the recurrence of internal tendencies carefully as external occasions; to realize that injury to ourselves or others from uncontrollable passion (alias insanity) comes in most cases from long continued criminal negligence, and cannot, therefore, escape the penalties of responsibility?

G. A. LEAKIN.

Baltimore, Md.

#### A Question for Watchmakers.

MESSRS. EDITORS:—I would be very glad to see through your excellent journal what argument pocket chronometer makers use when it is stated to them that the balance in the chronometer escapement has an unlimited motion, and in the pocket, winding, or careless handling, a valuable hair-spring may be subject to more tension than it ought to have.

I never could account for this oversight, and always wondered how it is looked at from a watchmaker's standpoint, who not unfrequently has much trouble before he can get the spring to work to his notion; and, there are springs in use in high priced pocket chronometers that could not be bought at half the price a whole movement costs, while a mere accident may destroy them.

In this matter the lever principle has the advantage over the chronometer escapement, as every one can see. Now, I do not want to find fault with the chronometer, I only want to point out the cause of hair-spring breaking, and a necessity for its prevention in expensive watches.

J. MUMA.

Hanover, Pa.

#### Information Wanted About Brick Making.

MESSRS. EDITORS:—I desire to learn all the improvements in brick manufacture. I manufacture bricks in this city. I use the Vervalen & Wiley machines. The main difficulty is that in this part of the South we have so much rain, during the summer months, that it prevents the bricks from drying. I understand there exists some artificial invention to dry them as it would to dry vegetables and fruits. I have an idea that it is similar to a bakers' oven. I would like to know at once, without experimenting, as I have no time to lose; and also to learn how to make the concave bricks for roofs, and fire-bricks. I wish to obtain the pamphlets of all brick manufacturers that exist at the present day. I will pay for the pamphlets, and also for the tunnel or anything else that can answer for that purpose.

JOSEPH BORRO.

Savannah, Ga.

DR. STÖLZEL gives what he considers an excellent, cheap, and durable substitute for the copper cylinder in Daniell's battery. A piece of well-polished sheet tin is immersed in a very dilute solution of a copper salt and put in connection with a weak galvanic current. After the lapse of from fifteen to eighteen hours a layer of firmly-adhering copper is deposited upon the plate, which may now be bent into the required form.

#### WHAT INVENTORS SAY.

We are in daily receipt of strong testimonial letters from patentees who have employed this office to secure their letters patent. We present some examples received within a few days:

MESSRS. MUNN & Co.:—It is with the greatest pleasure I inform you, that through your Agency, I this day received my letters patent all right and in good condition; and in expressing thanks to you would say, that next to having a good patentable article on which to obtain a patent, is the importance of employing those whose experience and discernment—as solicitors—enable them to "sift the wheat from the chaff," and while tenacious in giving their clients the full benefit of what rightly belongs to them, are conscientious as to the rights of others—always painstaking and reliable. Such, gentlemen, have I, on more than one occasion, found your firm to be, and for which please accept this acknowledgment.

Meantime, I remain, yours truly,

WM. A. COBB.

Orange, Mass., June 23, 1870.

MESSRS. MUNN & Co.:—It affords me much pleasure to acknowledge the receipt of the patent papers for my Lock Nut, also the duplicate specifications of the same. The success of this, your fourth effort, in securing patents for me, is an additional assurance to me that the increase of business, does not lessen your interest in the applications of those who intrust their business to your hands. If success is possible, I am satisfied that your firm is the most reliable medium to secure it. It may be of some satisfaction to you to know how my method of tying a nut stands practically. I can say that it has stood the test of nearly six months on the Reading road, and is being tested on two other roads leading from this city.

Yours respectfully,

U. B. VIDAL.

Philadelphia, Pa., June 20, 1870.

MESSRS. MUNN & Co.:—Allow me to express to you my thanks for the very prompt and efficient manner in which you have successfully prosecuted my application for a patent on my Vapor Burner, which was allowed May 26th. I have already realized from it the amount of \$3,000, and consider myself not only truly fortunate in that, but that in selecting you to prosecute my claims, I found those who did it so promptly and ably.

Accept my best thanks, therefore, and allow me to say that the fees I paid you were not only the best investment I ever made, but that I can earnestly recommend all the inventors of America to intrust their cases to you if they desire a certainty in having them faithfully and ably attended to.

Yours truly,

THOS. MOORE.

Bloomington, Ill., June 20, 1870.

MESSRS. MUNN & Co.:—The letters patent for my Rotary Pump came duly to hand. I am highly pleased with the prompt and efficient manner in which you have conducted my business at the Patent Office, and shall take pleasure in recommending your Agency. Respectfully yours,

W. B. ALLYN.

Boston, Mass., June 27, 1870.

MESSRS. MUNN & Co.:—We are perfectly satisfied with our patent, and we must say that it is impossible to secure an invention better than you do. You have found in our invention applications we never dreamed of. You may depend upon us to praise and recommend your office.

Respectfully yours,

E. LOISEAU & C. REQUIN.

Nashville, Tenn., June 25, 1870.

MESSRS. MUNN & Co.:—Letters patent for my Projectile have just been received. I desire to thank you for the perfect and satisfactory manner in which you have prosecuted my claim to a successful issue.

Respectfully, your obedient servant,

JOHN G. BUTLER.

Philadelphia, Pa., June 22, 1870.

#### The White Man's Feet.

Edward E. Cheever, in the May number of *The Naturalist*, gives a most interesting paper on the "Indians of California," in which we find the following passage: "In tracking white men, they (the Indians) cannot make mistakes. The white man's foot is deformed, made so by the shape of his boots and shoes, and even when barefooted, his toes are turned inward. The Indian's foot, never having been compressed, has the toes naturally formed and straight as our fingers are, and he can even use them to hold arrows when he is making them. When he walks, therefore, each toe leaves its imprint in the dust or sand, the imprint of the little toe being as straight, perfect, and distinct as the largest."

This paragraph might be made the text for an article, and perhaps Mr. Brigham will make it one before he concludes his present series of valuable papers. We wish we knew of some plausible reason, why Indians deserve better formed feet than white people, but we do not. No doubt it is a matter of accident, rather than of choice, but so it is. And surely, the white race, with all their glorious achievements in the sciences and the arts, might easily construct boots and shoes on such models as would allow nature full play; and we believe they would if they had a proper understanding of the subject, and a higher ideal of what a glorious state physical perfection is, and the degradation of deformity. The foot is not so degraded a member of the body that we should neglect it, and it cannot grow into perfect form if pinched and cramped by bad shoes, and the sooner people know it the better. It is no excuse that it is kept so much out of sight,