

Scientific Museum.

For the Scientific American.
Floating of Rafts on Rivers.

I was pleased to see a communication in your paper from an inquisitive correspondent at Silver Creek, signed "A. R.," concerning the floating of rafts. Permit me, in alluding to it, to lay down a principle, now mentioned publicly, I believe for the first time. It is the analogy of a current of water to an inclined plane. I tracing this connection I think A. R. can run his opponents aground, and account satisfactorily for all the cases he advances in demurrer to their solution. Let a raft be ever so large and lying still in dead water, a pull of 10 lbs. on a rope attached will start it; or 5 lbs., or even 1 lb., very slowly, granted, but it overcomes the friction of the water so as to move the raft. Now the fall between Olean Point and Pittsburgh is perhaps a foot and a half to the mile, or more. Consider how readily heavy cars run down a very small incline, and one sees that the log or raft would start down stream, even supposing the water standing still on that inclination. But let the raft be cut loose in the running water, and what happens? As you remarked last week, the heavier water impinging behind the raft, gradually increases its velocity until it shall have a velocity equal to the water, and they move on together—water and raft: and so they would continue to go down the incline faster and faster together, only the friction of the banks and bottom impedes the water, while the friction of the water on the raft is not so great as the earth on the water, and the raft is not hindered so much in its downward course on this inclined plane. The water thus gives to the raft its own velocity, and a man on the raft would seem to have still dead water around him. But it is on the inclined plane, nevertheless, and as it would start downward, as in my first supposition, so it will start ahead of the water around it now. Thus it out-runs the current—thus the longer, larger, more compact or smoother it is, the less the water catches it and keeps it from sliding down; as the larger the boat the less her water surface in proportion to tonnage.

This accounts for the fact long known by military men, viz., that a river may be crossed by surprise, by directing the boat with the rudder downward and a little across the stream.

My attention was called to the subject of the currents of our western rivers by a conversation with Col. Long of the U. S. Topographical Engineers some years ago, and since that I have thought much on the subject. Had we the data which A. R. has given the public, we might have shortened the discussion of a question of considerable interest at the time.

I could wish that there were more intelligent and inquisitive observers of nature like him, every where, than there are. J. C. S.

West Troy, June, 1851.

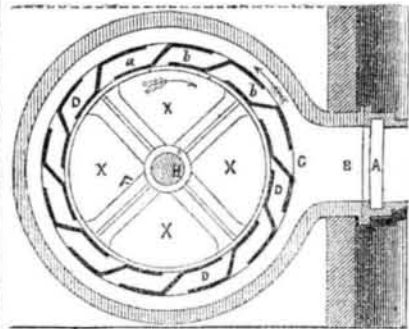
Horse Shoeing.

The shoes of the horse should be of equal thickness throughout, with a flat ground surface, as those with high heels which assinine smiths make in imitation of their own are dangerously absurd. The toe, which ought to be raised is lowered and nature's plan reversed, which elevates the point in order to avoid obstructions. The web should be wide and of the same width throughout, instead of being pinched in because the smith likes to see the shoe well set off at the heels. This is both unphilosophical and detrimental; it deceives the eye of man and injures the foot of the horse. The outer edge of the foot rests on the inner edge of the shoe, and the remaining width of the web projects beyond the hoof; so that the master who thinks his horse has a good open foot, only has to be proud of a bad open shoe, which both conceals deformities underneath, and invites with open arms a bad road to come and do its worst. The heels are made bare just where the navicular joint is most exposed; and if that be inflamed, what must the agony be when the unprotected foot treads on a sharp flint? The horse falls suddenly lame, or drops as if he had been shot—phrases in much too common use to require

explanation; and small is the pity which the suffering animal meets with from man, who, having first destroyed the use of his victim's feet, abuses him because he cannot go; and imputes "grogginess" to him as crime, as if he were in liquor like a groom, and not in agony.

The above remarks are from the pen of Mr. Miles, Veterinary Surgeon of the English Life Guards.

For the Scientific American.
Hydraulics.
(Continued from page 320.)



GWYNNE'S WATER WHEEL.—This engraving, fig. 55, is a sectional elevation of a water wheel, recently patented in England, and termed "Gwynne's Patent Double Acting Balance Pressure Wheel." A swelling name truly.

A is the sluice, B the water way communicating with the annular space, C, around the wheel; D D are the buckets; F represents the arms, and H the shaft. The London Mechanics' Magazine, speaking of its merits, says: "The peculiar features of this wheel, and the principal improvements from any other of its class, consists in the shape of the partitions between each water way, presenting a direct surface to be acted upon by the water in its passage through the wheel, whether the water passes into the dam through the wheel or the dam to the river. The annular space, *a a*, which contains the partitions or buckets, *b b*, is cased at the top and bottom, as represented, both surfaces of which are turned perfectly true in the lathe; these surfaces work upon the lower, under, and upper surface of the annular casing at *d d*, but not in such contact as to cause much friction, thereby directing the water through the water-ways between each partition. The advantage of this form of bucket partition is, that it presents a more direct and greater area of surface to the action of the water in its passage through the wheel, whether the water be going into or out of the dam. The direction in which the wheel moves is shown by the arrows in the plan."

It will be observed by the arrows, the motion of this wheel is contrary to that of the water, it therefore must be less effective than our re-action wheels, the great improvement in them being the motion of the water coinciding with that of the wheel, yet while the overshot water wheels set down at 70 per cent. power, Mr. Gwynne modestly claims 85 per cent. for this one. The zig zag buckets are not new in principle by any means, but they are not adopted in this country because of defects in the principles of the water action. The angular direction of the water is much better carried out in the S bucket wheel of Whitelaw & Stirratt, and the curved bucket of all the American wheels—turbine-shape is more scientifically adapted for water wheels, than Gwynne's sharp angled double acting pressure wheel.

A New Remedy for the Scurvy.

The surgeon general of the army publishes the substance of an official report by Assistant Surgeon Glover Perin, United States Army, stating that the Maguey or *Agave Americana* is a very efficacious remedy in scurvy. Mr. Perin has used it in Texas, and in every case with marked improvement over those cases in which lime-juice and other anti-scorbutics were used.

"The juice of the Maguey contains a large amount of vegetable and saccharine matter, and of itself is sufficiently nutritious to sustain a patient for days.

This aculent plant grows indigenous in most parts of Texas, and, if I am correctly informed, in New Mexico and California. In

Mexico it is well known as the plant from which they manufacture the "Pulque," and grows in great abundance. As it delights in a dry sandy soil, it can be cultivated where nothing but cacti will grow; for this reason it will be found invaluable to the army at many of the western posts where vegetables cannot be procured.

The manner in which it is used as follows:—The leaves are cut off close to the root; they are placed in hot ashes until thoroughly cooked, when they are removed and the juice expressed from them. The expressed juice is then strained, and may be used thus, or may be sweetened. The dose is from two to eight ounces, three times daily. It is not disagreeable to take, and in every instance it has proved to agree well with the stomach and bowels. After the leaves have been cooked, the cortical portion near the root may be removed, and the white internal portion eaten. It appears to be a wholesome and nutritious food, and I have been informed upon good authority that several tribes of Indians in New Mexico make use of it in the same manner. The use of the leaf in this way, I believe, will ward off most effectually incipient scurvy."

Receipts For Cholera.

The worst cases of cholera morbus, dysentery, and flux, that ever I saw I have repeatedly cured in a few minutes, by a strong tea made of the bark of the Sweet Gum, taken green from the tree is best—steep a handful to a pint of water until the liquor is like good coffee. Drink it clear, or sweeten it with loaf sugar, or add a wine glass of good brandy if the shock is severe. If not infallible, it is remarkable in its effects, and well worth being known and tried in every family.

SOLIN ROBINSON.

We can add our own testimony to the value of the Sweet Gum tea, having experienced amazing and speedy relief from its use in a violent case of dysentery, which refused to yield to the usual remedies; we have also seen in the last five years, its wonderful benefit in many other cases; we have used decoction made from the bark both green and dried, and have discovered no material difference in the effect, both being efficacious.—[Franklin Farmer.

I met with the foregoing valuable receipt several years since, and I have only to add, what has already been said by the "Franklin Farmer"—that I have witnessed speedy relief in violent cases of dysentery which refused to yield to the usual remedies, by the use of the Sweet Gum; having it at command, I have used the fresh or green bark, and I can with much confidence recommend its use from my own experience. A GEORGIA PLANTER.

[It would appear that the cholera still lingers on the banks of our western waters, and in the level districts of the Southern States. In all likelihood it will never leave the South; it will visit many places periodically, as in the East Indies. In that case, it is best to be prepared to meet it at any moment, and the above receipts from the Charleston (S. C.) Mercury are the results of practical experience, and are worthy of confidence.

St. Domingo Antiquities.

Sir Robert Schomburg, British Consul at St. Domingo, has discovered some very interesting remains of the aborigines who formerly inhabited that island, among which there is a granite ring, 2,270 feet in circumference and 21 feet in breadth. In the middle of this circle lies an idol, nearly 6 feet in length, formed likewise out of granite. During all his travels in Guiana Sir Robert never met with such a monument, which bespeaks a much greater advancement than the races possess who at present inhabit that vast territory, or who inhabited the island of St. Domingo when Columbus landed there. Sir Robert made this discovery during one of the journeys which he has already undertaken, in order to make himself acquainted with the capabilities and population of the Dominican Republic. He is now preparing for a journey to the most interesting district of the Republic—the province of Cibao—comprising also the classical ground where Columbus landed.

A horse-shoe fish, well known on the seashore, has been found in Oswego harbor. No such fish was ever seen there before. It is supposed to be a native of salt-water, and to have found its way up the St. Lawrence from the ocean.

LITERARY NOTICES.

VESTIGES OF CIVILIZATION.—This is a new book, published by H. Balfiore, Broadway, N. Y.; its title indicates the intentions which the author, and we can perceive in his book. Who the author is we do not know, but he seems to be well pleased with his work. We have read some books, from the perusal of which we have arisen much wiser, but of this we can say "much duller." This may appear strange, as the author claims for this work a simplicity, clearness, and scientific arrangement surpassing all others. It is a busy and obscure production; the style is not good. The author lays down a theory that the human mind is progressive, moving forward in cycles under the influence of his and "Nature and Humanity." This is a miserable production in comparison with Douglas's work on the "Advancement of Civilization." To go through its pages is something like swallowing stones, a custom practised by the New Zealand mothers with their children, to give them hard and strong hearts.

MUSIC METHOD FOR THE PIANOFORTE.—A new work on pianoforte music, and instructions for the instrument, by Carl Czerny, has just been issued by the publisher, Oliver Ditson, Washington St., Boston. It is well known that Czerny's great work on the pianoforte is by far the best in the world; this work, published by Mr. Ditson, contains nearly all of the original work, faithfully preserving every feature. The fame of the author is world-wide, and this book, as an instructor, should be put into the hands of children as soon as they commence learning. It often happens, indeed it is a common opinion, that any cheap book is good enough to commence learning with: this is a great mistake, for errors acquired at the threshold of the art are more difficult to eradicate than to learn. We cannot too strongly recommend this excellent and standard work.

SHAKESPEARE'S POETICAL WORKS.—Published by Phillips, Sampson & Co.; Dewitt & Davenport, New York, agents. The publishers deem it advisable to issue the Poems in three large parts. The present number forms the first of this series. The next number will contain a magnificent vignette title page, now engraving from an original design by Billings. The third and concluding part will contain a splendid engraving of Mrs. Siddons as the Tragic Muse, from the celebrated painting by Sir Joshua Reynolds.

PETERSON'S LADIES' NATIONAL MAGAZINE, for July, is issued and for sale by Dewitt & Davenport, Tribune Buildings. It is a good number and has some illustrations.

WELL'S HARTFORD DIRECTORY.—We are indebted to J. Gaylord Wells, of Hartford, Conn., for a copy of their City Directory.

GRAHAM'S AMERICAN MAGAZINE, for July, is a beautiful number, containing 12 embellishments and a brilliant variety of reading matter. The engravings are finely done. This number commences Vol. 39. Terms \$3.

SARTAIN'S UNION MAGAZINE, for July, continues the "Scenes in the Life of Christ," presenting seven illustrations finely done on wood. Mr. Sartain gives a fine mezzotint of "Alone at the Rendezvous." The number throughout is good. \$3 per annum.

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