

Archimedes.

Having given, in our last, a brief sketch of the life of Archimedes, we now proceed to mention some of those achievements in art and science, which have caused his name to survive the wreck of 2000 years, and which will prevent it from sinking into oblivion, so long as philosophy has any charms for the human mind and the affairs of life require to be transacted by the accuracy of measurement and calculation.

When we contemplate the state of the arts and sciences, at the time that Archimedes appeared in the world; and when we consider the number and variety of his inventions and discoveries, we must be struck, alike with astonishment and admiration, at his genius.—The greatness and splendour of the performances of Archimedes, have procured him the appellation of the Newton of antiquity, as a similar comparison of the genius of the latter philosopher with that of the former, procured Newton the title of the Archimedes of modern times. The names of both, mark most important eras in the history of science, with this difference, that the one is incorporated with its infancy, the other with its maturity. Invention has always been considered as a greater characteristic of genius than improvement, and independent of all comparison if we estimate the intellectual powers of Archimedes by this criterion, we must assign him a place in the very highest rank of philosophers.

As a mechanic, the fame of Archimedes is indeed unrivalled. There, probably, never was a time nor a place in which mankind were totally devoid of all knowledge of mechanics as an art; but history carries us back to a period, when, as a science, they were entirely unknown. Prior to the time of Archimedes, the notions that excited respecting the laws of mechanical bodies, did not deserve the name of science. The opinion of Aristotle on this subject, though entitled to consideration, sunk before the splendid genius of the Syracusan philosopher; and though the former had made some slight advance in this branch of knowledge, it has always been regarded so small that the latter has ever been considered as the founder of the science. The inclined plane, the pulley, and the screw have generally been considered as the trophies of his genius, though no philosophical account of their principles was given to the world, till about five hundred years after he flourished. He was the first that investigated the powers and properties of the level, by making geometry subservient to the illustration of this branch of mechanics. During his inquiries on this subject, he discovered that there is, in every body, or in every system of bodies, a particular point, in which all the force or pressure is concentrated, and that if this be duly supported, the whole mass will be held in equilibrium. This he distinguished by the name which it still bears, "the centre of gravity." This gave birth to his Treatise concerning equiponderants, a work which is still extant. He is not less famed for his practical, than for his scientific skill in mechanics. The ancients ascribe to him the honor of about forty different mechanical inventions: and the well-attested fact, that he suspended the fall of his native city, for three years, against the attacks of a powerful Roman army, under the command of such a general as Marcellus, speaks wonders in praise of his genius.

Hydrostatics is another branch of natural philosophy, for whose origin the world is indebted to Archimedes. He pointed out the difference between fluids and solids, and what it was that constituted the equilibrium of the former. His investigations on this subject gave rise to his Treatise on floating bodies, and are allowed to have laid the foundation of naval architecture. It is probable that his attention was first directed to this subject by a problem which was submitted to him by his royal kinsman. Hiero had given a workman a certain quantity of pure gold to make a crown. The crown being finished and brought to the king, though not deficient in weight, was suspected by him to be adulterated with some baser metal. To discover this adulteration was a difficulty, for the solution of which the powers of science, at that time,

were wholly inadequate; but it proved a fit opportunity for the display of the genius of Archimedes, and the transmission of its benefits to posterity. Having considered this question for some time, without arriving at a solution, the philosopher happened to go into the bath one day, probably with his mind full of the subject; and observing that, as he sunk into the water, a quantity of the fluid was displaced, exactly proportioned to the bulk of his body: the thought immediately flashed upon his mind, that any body of equal bulk, whatever might be its weight, would produce the same effect. Here, then, was a criterion for trying the purity of Hiero's crown. Gold being the heaviest of all metals then known, he inferred, that in proportion to its weight, it must, when immersed in water, displace a less quantity of the fluid than any other metal. Elated with this discovery, to an uncommon degree of extacy, according to report, he sprung from the bath, and ran home, through the city, like one frantic, exclaiming, "I have found it, I have found it." After a series of experiments, he not only ascertained that the king had been defrauded, but to what amount.

It is presumable, from the notice of several ancient writers, that Archimedes was well acquainted with the science of astronomy.—Indeed to this study he is said to have been particularly addicted; and fame gives him the credit of having constructed a glass globe, in which were represented the circles of the sphere, and the motions of the planets. To this machine there are several allusions in the poets of antiquity; but none gives so circumstantial a description of it as Claudian.—The following is a translation of his epigram upon this singular piece of mechanism:—
When, in a glass's narrow sphere confined,
Jove saw the fabric of the Almighty mind,
He smiled, and said, "Can mortals' art alone
Our heavenly labors mimic with their own?
The Syracusan's brittle work contains
The eternal law that through all nature reigns.
Framed by his art, see stars unnumbered burn,
And, in their courses, rolling orbs return:
His sun through various signs, describes the year,
And, every month, his mimic moons appear,
Our rival's laws his little planets bind,
And rule their motions by a human mind.
Salmonus could our thunder imitate,
But Archimedes can a world create."
(To be continued.)

The Snow Flea.

In the National Intelligencer we find a communication from Mr. Josiah F. Polk giving a description of what he calls the Snow Flea, seen by him in the Winter of 1826, in the neighborhood of Grand River, in the State of Michigan. He says: "I have found them to be exceedingly minute, apparently destitute of members, but in constant elastic motion. They would spring up to the height of 18 inches or more. When I first observed them (the latter part of November) they did not exceed in size the point of the smaller needle. I watched them through the coldest Winter I ever witnessed, and carefully observed their progress to maturity till the month of May, when that which in December was a shapeless and scarcely visible creature became a perfectly organized being, with legs, wings and antennæ. The body was slender, and more than a quarter of an inch long. The wings were longer. Perhaps the whole length was two to three-fourths of an inch.—When I first saw them the snow was but a few inches deep; and, although it increased to three feet or more in depth, those little creatures, by their perpetual motion, were always on the surface; but how they contrived to maintain their locality amid the furious winds, is to me a mystery. Afterward on Rock River, in Wisconsin, in time of Summer I saw myriads of the flies. Various insects have been known to exist in snow. One kind somewhat resembling a spider, is not uncommon as far north as Sweden and Norway."

A French officer, quarrelling with a Swiss, reproached him with his country's vice for fighting on each side for money, "while we Frenchmen," said he "fight for honor."

"Yes sir," replied the Swiss, every one fights for that he most wants.

Transatlantic Astronomy.

The following from the pen of Professor Nichol, in a Scotch newspaper, is worthy of attention, as it exhibits the generosity of men of science in frankly rendering honor to whom honor is due.

"We have just received and read with much interest two important documents sent from Boston, U. S. One is the first volume of the proceedings of the American Academy, containing several abstracts of memoirs on the obscurer points of the history of the Planet Neptune; and the other, three valuable papers emanating from the Observatory at Harvard. These last are accompanied by superb engravings of the Nebulæ in Andromeda and Orion, as seen in the great Refractor—an instrument equalling Struve's at Poulkova, and therefore the largest yet made. The Nebula of Orion, drawn from long continued micrometrical survey by Mr. Bond, director of the Observatory, exhibits several points not previously noticed, and, on the whole, is probably more complete than the elaborate picture presented by Sir John Herschell, as one result of his important labors at the Cape. In fact, the two may well lie side by side,—each manifesting certain features with a distinctness not found in the other. Mr. Bond seems to have made considerable advance regarding the small stars projected over this nebula—several of the smaller having been found by his exquisite glass to be double stars. He would confer a great favor by constructing a map of that region, considered solely as *stellar*, and on large dimensions. The nebula of Andromeda has been studied and figured by the director's promising son, Mr. George P. Bond; and here the ground was untrodden.—The picture brings out accordingly much that is entirely new.

Two features of the nebula proper were noticed by Mr. Bond, although since their discovery we have seen them with a much smaller telescope; they are two trenches—or narrow but deep valleys, straight as an arrow, and with sides quite parallel, lying along the length of the luminous mass—the first one being about half-way between the central light and the edge—as we formerly called it. In the field of view they appear blackish streaks, and are evidently spaces devoid of stars,—openings, like clefts in the bright mass. What shape these extraordinary features betoken, or what Agencies have produced them, are questions lying far beyond reach of the powers of humanity; nor can we hope that they will appear otherwise, even in any more advanced condition of our Race. Mr. Bond conjectures the length of one of these clefts, to be twenty times greater than our distance from Sirius!

Labor and Thought.

Gilbert Burns, a brother of the poet, distinguished as a man of sound sense and extensive information, in a letter to Dr. Currie, respecting the propriety of educating the middling and lower classes, combats with great force the idea that the exercise of the mind is inconsistent with the employment of the hands. He observes: "I can say from my own experience that there is no sort of farm labor inconsistent with the most refined and pleasurable state of the mind, that I am acquainted with, thrashing alone excepted." The primitive mode of performing that kind of work, he regarded as "insupportable drudgery," and he suggested that the man who invented the thrashing machine deserved a "statue among the benefactors of his country, to be placed in the niche next to the person who introduced the culture of potatoes."

Gilbert Burns never gathered stones on the Maple Flats or he would have set down the flailing as nothing.

In agricultural life, however, great happiness may be derived from a contemplation of the beauty and harmony of nature, as evinced in the laws which govern the mineral, vegetable and animal kingdoms, constituting one of the strongest incentives to investigation and the pursuit of knowledge; and, in this respect, none have greater opportunities than the farmer.

A valuable vein of lead has been discovered near the James River Canal, Va. It lies four feet below the surface and yields 80 per cent of pure lead and 2 of pure silver.

Limits of the Human Mind.

Newton was one day asked, why he stepped forward when he was so inclined; and from what cause his arm and his hand obeyed his will? He honestly replied, that he knew nothing about the matter. But at least, said they to him, you who are so well acquainted with the gravitation of planets, will tell us why they turn one way sooner than another? Newton still avowed his ignorance.

Those who teach, that the ocean was salted for fear it should corrupt, and that the tides were created to conduct our ships into port, were a little ashamed when told that the Mediterranean has ports and no tides.—Muchemdrock himself has fallen into this error.

Who has ever been able to determine precisely how a billet of wood is changed into red hot charcoal, and by what mechanism lime is heated by cold water?

The first motion of the heart in animals—is that accounted for? Has it been exactly discovered how the business of generation is arranged? Has any one divined the cause of sensation, ideas, and memory? We know no more of the essence of matter than the children who touch its superficies.

Who will instruct us in the mechanism by which the grain of corn, which we cast into the earth, disposes itself to produce a stalk surmounted with an ear; or why the sun produces an apple on one tree and a chesnut on the next to it? Many doctors have said, what know I not? Montaigne, said, what know I?

Recipe for a Gent.

Don't have your hair cut or disturbed by comb or brush: let it hang in matted locks over the collar of your coat. If you have a beard, let it grow whenever it will. Don't wash your face if you can help it; and never use soap. Don't wear a shirt, or, if you have a taste for such an obsolete custom, don't show any part of it. Smoke incessantly, without regard to the feelings of any one. By strictly attending to the above rules, you will soon attain your object, and look like a foreigner whose residence in his own country has been dispensed with, and might well be spared in this.

Youthful Bravery.

Two boys of Rahway, New-Jersey named Joseph and Theodore Folsom, the one aged 16, the other considerable younger, on Wednesday last week saved the life of a daughter 12 years old, of Mr. Post, late publisher of the Jersey City Advertiser, who had fallen through the ice into the river. The elder brother seized her after she had sunk twice, and sustained her by treading water, she having grasped him so that he could not swim, while the younger, by direction of his brother procured a rail and extended it over the solid ice so that it served as a means of escape. The heroism displayed by these boys is worthy of the highest praise and we like to publish these things because we are positive that the recited generous actions of the young, tends to elevate their minds.

Minute Animals.

In Lapland, we are told that in certain places there exists a stratum of earth called bergmehl, full of fossil animalcules. It contains four per cent of animal matter, for the sake of which the wretched inhabitants, when hard pressed for food, collect this earth, and mixing it up with a portion of the bark of trees ground to powder, use it as food. The town of Richmond, in Virginia, is entirely built on a bed of siliceous marl composed of these creatures, and on the average about twenty feet in thickness.

A Hiding Place from the Storm.

It was a beautiful turn that was given by a great lady, on being asked where her husband was when he lay concealed for having been deeply concerned in a conspiracy, resolutely answered that she had hid him. The confession drew her before the King, (Charles II.) who told her that nothing but her discovering where her lord was could save her from the torture. "And will that do!" said the lady.—"Yes," replied the king, "I give you my word for it." "Then," said she, "I have hid him in my heart; there, and there alone, you'll find him!"