

**American Genius.—Launch of the General Admiral.**

There are three desires implanted in the human breast, which, if sought to be gratified in a proper manner, will develop the intellect and wisdom of a people, and yield corresponding beneficial results, not only to those within the immediate sphere of their influence, but also, by example, to the whole world; and these are the desires of power, of esteem, and of knowledge. They are distinctly perceived in all deliberations of individuals and governments, in every purpose of resolution formed in consequence of deliberation, and in every promise or contract in which man plights his faith. They cause men in dealing with all the phenomena of nature to give the superior elevation to mental over physical labor, and a regular and orderly disposition and arrangement to the various parts within the grasp of individuals, and bring out the vitality of intellect to fit means to ends. It is gratifying to every true lover of his country to perceive daily evidences of the fact that the American mind has properly comprehended its mission in these respects, and through its power and clear sightedness, has even now, at this yet undeveloped stage not only developed our own internal resources, and poured blessings upon every household in our land, but actually brought to our shores people and governments from lands thousands of miles away, to pay homage to American genius and enterprise.

Twenty-eight years since, the first locomotive engine was imported to this country from England, and now we have thousands of these iron horses of our own construction, traversing a web of railway over 24,000 miles in extent against 8,000 miles in England, and are constantly transporting them to various quarters of the globe. In ship-building we have surpassed the world, and now we have the great northern Autocrat of all the Russias, as did his illustrious predecessor of the house of Romanoff for locomotives, coming to the shipbuilders of the Great Republic, after critically examining the works of the world, and selecting one as the architect of a mammoth vessel for his Imperial Navy. The fact is significant, and no wonder is it that thousands of our citizens paired, on the morning of the 21st ult., to the shipyard of our fellow-citizen, W. H. Webb, to witness the launching of the American-built Russian ship *General Admiral*. The *New York Herald*, in giving a notice of this memorable event, truly says that upon an occasion so full of pride and honor for America, when the eyes of thousands are resting on the finest and largest wooden vessel that ever floated on the bosom of Old Ocean, from the days when the crude ark of Noah was tossed by the tempestuous billows of an inundated world, until these progressive days of human prowess and scientific achievements—the reflective mind cannot but give a brief retrospective view of the past. If the venerable poets of ancient Greece and Rome could in their days have been permitted to see such a leviathan of the deep, the creation of man, formed from the branches of the sturdy monarchs of the forest, what "thoughts that breathe and words that burn" would they not have conveyed to their parchments for the instruction of distant posterity? If the crude crazy structures of those early times could have called forth the warm approbation in inspiring verse of a Horace, a Virgil, and a Juvenal, what would these ancient heroes of song have said, could they have seen this huge monster of the deep? The nineteenth century of the Christian era is as redolent of wonders as the spring rose is of odor. Witness the great triumphs of science that have followed one upon the other. On casting the glance of thought over the records of the past, we are struck with wonder and amazement. We see, as it were, in the hoary vista of a dim antiquity, the fragile ship of the Argonautæ accompanying Jason to Colchis, in his daring expedition in an attempt to recover the fabled "golden fleece."

But what was the little barque of Argos to the great frigate launched yesterday? In the "Metamorphoses" of Ovid this famed barque was held to be the first that ever sailed the sea; and now the indomitable scion of an ancient house, that claims a spiritual and temporal power over seventy millions of souls, in the face of the old prestige of Europe, comes to a vigorous nation of people scarcely a century old, to procure the construction of a wooden wall commensurate with its power and greatness.

The launch of this magnificent vessel was in keeping with all the admirable arrangements observed during its construction. At twenty minutes past eight o'clock the ways were cleared, and amid the shouts of the assembled thousands, the *General Admiral* slowly, steadily, and gracefully glided into the bosom of the East River. The unanimous and heartfelt enthusiasm of the masses upon every accessible seeing point in the neighborhood, and of the hundreds of persons on board, was a fitting ovation to the genius, enterprise and skill of the architect, and in fact, of all engaged in the completion of this marked evidence of American shipbuilding.

The keel of the *General Admiral* was laid on the 21st of September, 1857, by the Russian Minister and a number of Russian officers, with all proper ceremonies. The model is what is called the long flat floor, full bilge, sharp end, round stern, no poop or cutwater, and short fore-castle deck. She is expected to attain a speed of fourteen knots under sail, and her draft of water will not exceed 25 feet. Her dimensions are:—Length on spar deck, 307 feet; breadth, 55 feet; length over all, about 325 feet; depth to spar deck, 34 feet. She is pierced with 44 side ports and two stern ports on the lower deck, and 30 side ports and 4 large ports forward, and 4 large ports on the spar deck. Her armament will consist of 40 shell guns of large caliber on the gun deck, and 20 long guns and 2 pivot guns of largest size on her spar deck. She is built of white oak, and will be propelled by two direct horizontal engines, now building at the Novelty Works, this city, each cylinder of which will be 84 inches in diameter, and 3 feet 9 inches stroke, with a nominal power of 2,000. The propeller is 19½ feet in diameter, and is one of Griffith's patent, and can be raised out of the water at pleasure. We gave an illustration of this propeller on page 352, Vol. XII, SCIENTIFIC AMERICAN. It is expected that she will be finished by October next, and long after the great ship shall be floating on the ice-bound waters of the northern seas will the recollection of this launch be borne in mind by all who witnessed this step in the completion of a magnificent sample of skill, alike honorable to America and those who were immediately engaged in its design and construction.

**Volcanoes and their Action.**

When we recollect that this hard, rocky crust of earth on which we live only compares with the igneous fluid mass beneath, as a sheet of writing paper on an ordinary school globe, we cannot fail to be highly interested in the occasional demonstrations of its presence, called "volcanic eruptions;" and further, when we associate these eruptions with their friends, the earthquakes, and recall the myriads of our fellow beings who have perished by their scourge, a double excitement is felt at the recollection of their horrors and the inducement to study their phenomena is considerably heightened.

From the researches of Daubeny, Gemellaro, Waltershausen, Quatrefarges, and others (some recent, others antique), we condense the following information:

There are in the world no less than 559 volcanoes, 270 of which are active, and 190 of these are found in the Pacific Ocean. The average number of eruptions every year are twenty, and all these are grouped around some great central cone such as Vesuvius, Etna, Peak of Teyde in Teneriffe, Pico of the

Azores, the volcano of the isle of Bourbon, Mount Erebus in south latitude 78°, Antartctic Ocean, and about 12,500 feet high; Mount Loa and Mount Kea, in Hawaii, both about 14,000 feet in height.

The whole of the Canary Isles rest on one volcanic hearth, over which each one of them has been raised by submarine eruptions to their present level. A great number of fiery mountains lie in a line one after another, and they are frequently grouped in double rows or chains; these have been called "chain volcanoes." Those in Iceland are arranged in this way. The Lipari Isles appear to be the loftiest crater-crests, among which Stromboli is ever active. A great number of volcanoes are upon the ridge of the Cordilleras, in South America, and twelve among them may be called chains. In Guatemala and Nicaragua burning mountains are found, and one in the latter place is only 500 feet high. In January, 1835, there was an eruption of this, the ashes of which were carried by the winds to Jamaica, and a vessel was covered with floating pumice, 800 miles at sea. The Mexican volcanoes are well known, and include Popocatepetl, from which is ever issuing fire, smoke and ashes, at a height of 17,000 feet. In Java, Sumatra, &c., are many smaller ones, although some attain the elevation of 12,000 feet.

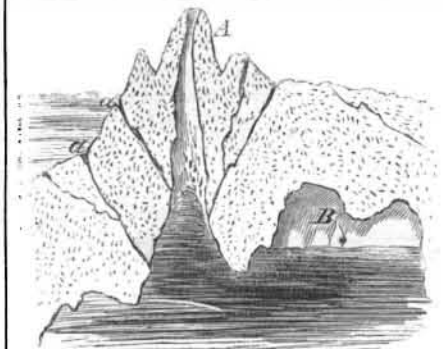
Every European traveler has explored Vesuvius; and from Murray downwards there never was a handbook of travel published without a full account of somebody's ascension and descent; but of Etna we know less, and therefore to it we shall principally direct the reader's attention. Its height is 10,830 feet, and the base is about thirty-five miles in diameter, and from the sea it has rather a picturesque appearance. As the wanderer ascends its sides, he first passes through fertile fields, where the salubrity of the climate and clearness of the atmosphere have drawn together a population of about 300,000 persons; then on through a forest where pines and firs flourish in rich luxuriance, to the "desert region," where a curious contest is often going on between the hot lava and the snow that nearly all the year comes down thus far. Many blow holes, through which issues sulphureous smoke, and small cones, occasionally ejecting small stones, dot this region, and give a fantastic wildness to the scene. Passing up still higher, the "valley of oxen" is reached. This is a vast amphitheater five miles in diameter, and surrounded on three sides by precipices 2,000 feet or more high. Water is scarce here, as every rain-drop that falls, and all the melting snow or ice, is rapidly absorbed by the porous pumice stone, or evaporated into steam by the hot lava. We have not space to enumerate the many eruptions of this mountain, the earliest on record being B. C. 480, 427 and 396, from which time to the present it has always been smoking, and many times has sent forth its devastating showers and liquid lava, overwhelming the surrounding country for many miles.

The steepness of the principal cones of burning mountains prevents the torrents of lava and showers of ashes lodging on their sides, except in the crevices and fissures, and in consequence the mountains themselves are not much elevated, but the surrounding plains that flank an active volcano quickly rise by the accumulation of lava on their surface. This phenomena is proved by the fact that round a monument at a great elevation on Etna, and which is two thousand years old, in all that period up to 1807, only nine feet one inch of lava had accumulated, while on one occasion the fluid mass rose to a height of sixty feet above the ramparts of Catania—a town twenty-five miles off—and then toppling over, fell in a burning cascade upon the town beneath.

Passing now from the facts to the speculations they have induced among geologists, we will present those which appear most satisfactorily to account for their origin and continuance. Without alluding to the more ancient

theories of the heathen philosophers, some of whom imagined that a volcano was but the chimney of the furnace in which Vulcan and his one-eyed Cyclops forged the thunderbolts of Jupiter, we will give two theories of modern times. When we recollect the hills and dales, the high mountains, and deep oceans which cover the surface of the earth, we are naturally led to suppose that the under surface of this crust is equally rough and uneven. Sir Humphrey Davy, when he proved the existence of the metallic elements, calcium, strontium, barium, &c., suggested that in the central and fluid portion of the earth these existed in the pure metallic state, and that as the water filtered through the rocks it would be quickly decomposed by them into its elements, the hydrogen being set free, and the oxygen combining with the metals. Whether this be so or not, we are certain that from chemical action, heat, and electricity, a great quantity of gas must always be mixed up with the molten mass of elemental fusion, this, of course, being lightest, will always ascend and escape if it can, and if not able to have free egress, it will press with such force as to produce earthquakes, and, making vents, form volcanoes.

We have made an imaginary section through a volcano. A is the principal cone, surrounded by the dyke and wall, and the sea is washing its base on the one hand, while on the other extends the fertile plain and grassy slope. B is a cavity in which the gases can accumulate, and when they have sufficient force it is evident that they would eject the molten matter by their own expansive power through the crater, and so cause an eruption.



*a a* are submarine vents, and will show how eruptions may take place under the sea. It has been calculated that the number of atmospheres which the gases, vapors, &c., must be condensed to eject lava from Etna, is 882, while the force required to cause an eruption of Cotopaxi, in Quito, 18,869 feet high, would be 1,492 atmospheres, or 24,380 pounds to the square inch, and that some such condensation as this does go on is also evidenced by the presence of sulphureous or boracic blow holes on the flanks of all volcanoes.

The other theory is entirely mathematical, and may be called the dynamic. It assumes the premises that the fluid in the interior of the earth obeys the same laws as fluids on the surface, and that it will be attracted by the other masses of matter in space, which, aided by the rotary motion of the earth, produces a wave-motion in the mass, and these being granted, the conclusion is that volcanic eruptions and earthquakes are but *high fire*, not *high water*, in the fused material. Which of these is correct we cannot say. Much more research is required before we can positively affirm the cause of these phenomena; but in the meantime, theories serve a good end, by stimulating inquiry and encouraging investigation.

**How to Stop Blood.**—Take the fine dust of tea or the scrapings of the inside of tanned leather, and bind it close upon the wound, and blood will soon cease to flow. These articles are at all times accessible, and easy to be obtained. After the blood has ceased to flow, laudanum may be advantageously applied to the wound. Due regard to these instructions will save agitation of mind, and running for the surgeon, who would probably make no better prescription if present.