Scientific American

NEW-YORK, DECEMBER 4, 1852.

Old and New Inventions.

We are conservatives in respect to inventions which are old and useful, and reformers in respect to those which are old and of an inferior character. Plain common sense teaches any man that it is foolishness itself to prefer an invention merely because it is new, and deride another merely because it is old. We are also advocates of all that is new and useful, but it requires experience, a great amount of knowledge, and disinterested judgment to tell what is new and useful; whether it has been employed before and superseded by something better, or had been before proposed, experimented with and failed, or has inherent defects. It frequently happens that old and exploded inventions are revived and presented to the public with the most glowing eulogies of their superiority and incomparable qualities; and it no less frequently happens that others possessing inherent defects are as prominently paraded and more vauntingly advocated. It is our duty—and we have often to perform it—to expose the worthlessness of the one class and the errors of the other. This we do without any reference to private and invidious prejudices—for we have none of them—but as public journalists speaking the truth as we believe it. We believe that much wrong is prevented from being perpetrated on the public by timely exposures of unworthy objects, many of which it has fallen to our lot to hold up, either to scorn (according to the manner in which they were heralded) or to a candid and kind criticism. Almost daily, we have either old or inferior inventions presented to us for our opinion, by honest and worthy inventors, many of whom are disappointed at discovering the age or inferiority of their plans, but generally all satisfied with our conclusions. Two years ago we were asked for our opinion about propelling a ferry boat across a river in South Carolina by the power of a huge *spring* wound up with a crank; we informed the inventor that the same device had been applied to a boat in this city in 1808, and that it had inherent defects. Nothing but a trial, however, would satisfy the inventor, and that did satisfy him to his cost, but he thanked us for our information. Three years ago a gentleman in Syracuse, N. Y., asked our opinion about a substitute for the crank which he had invented; we gave our opinion that there was no loss by the crank, and it was the most simple and best device ever invented to convert rectilinear into rotary motion.—The inventor concluded he would try his own device; the result of his experiments, however, confirmed every word we had said, and his testimony to this effect we published on page 99, Vol. 5. We could name a great many such cases, but we have not room to do so. Of the many public exposures which we have made, not *one*, we believe, has turned out different from what we predicted, although we are liable to make mistakes as well as others, for none are perfect, but we are disinterested.

In our last volume we gave our opinion respecting the worthlessness of a project which was presented to the public in this city for navigating plank and common roads with steam carriages. It would have been easy to have proven us incorrect if we were wrong, by the said company putting their plans in operation; and when we consider that this could have been done at no very great outlay, and that the company was composed of editors, lawyers, artists, &c., who make pretensions to science, and practical mechanics, it is certainly presumptive evidence that some of them have become convinced that we were right, if not, they have acted unwisely. It is now eighteen years since Robert Mills, engineer and architect in Washington, published a pamphlet recommending the adoption of steam carriages for common roads. At that time, (1834) railroads were almost unknown in our country; there was but a single short railroad then in this State, (N. Y.) Since then railroads have multiplied until they have laced our entire country with an iron network of 12,000 miles. To advocate steam carriages on common roads now, when we have railroads on which the resistance is twenty times less, betrays a great want of judgment.

With respect to new and superior modes of travelling; too much attention cannot be bestowed upon them. The steamboat and railroad are fast revolutionizing the world; but it is not to be supposed that we are yet at the end of such inventions and improvements. A means of safely, cheaply, and rapidly navigating the atmosphere may yet be invented, but no plan hitherto proposed or tried meets these positively necessary conditions; we confess, however, that we have far more confidence in balloons than steam carriages on common roads. An invention to be successful must not only be new, but useful—an improvement. Any plan or invention having these qualities, no matter by whom invented or proposed, we advocate with pleasure and hail with delight.

The Effect of Climate on Health---Consumption.

"Man is born to trouble as the sparks fly upward." It is well known that peculiar diseases belong to peculiar climates. Thus, for example, consumption is the most prevalent disease in Britain, the New England States of America and nearly the whole of New York State; the young and the lovely are its victims, and it leaves its impress on some families for generations. The tender plant grows up in loveliness and beauty, but just when the bud is ready to burst forth and bloom, there comes the chilling frost of consumption, and the expanding leaves and bud begin to droop and decay. It spares no rank, yea, rather those who are blessed above others, and more exempt from common troubles on account of their wealth, are more often the victims than the children of the poor. On this account, its general prevalence, and deceptive character, it has received more attention from medical men than any other disease. Its local causes have long been understood, but the remedies suggested are exceedingly numerous. Many patients linger so long and hope so much, that quackery with its brazen front has found an ample field for pandering to the hopes and credulity of the weak. In general, respectable physicians have counselled a change of climate, and invalids from the Northern States have generally gone to the Southern States, and the West Indies; those of England went to the South of France or Italy. Lately, some English physicians have come out against a change of climate, especially a mere change from a cold to a warm region, asserting that some warm regions are more dangerous to invalids than their own cold native hills and valleys. Dr. Burnett, of Boston, has written an able article on this subject to the Boston Medical and Surgical Journal, in which he attributes the prevalence of consumption in the New England States to the intemperate changeable climate, the tendency of which is to produce disease in the pulmonary organs. The only season of the year when the climate is favorable to lung diseases is during the month of September, and the first part of Oct., when the air is warm, dry, and quiet. It has been customary for Northern invalids who went South to return when benefitted. In general, all who did so have been re-attacked, and finally carried off (sometimes very suddenly). From statistics and information which Dr. Burnett has been collecting, he has come to the conclusion that consumptive invalids, to be permanently benefitted by a change of climate must go South and make their home there. They must also go there in the early stage of the disease, for when too weak they but leave home to die. The climate of Greenville, in South Carolina, and some parts of Georgia is exceedingly favorable to those laboring under this disease; in summer the temperature rarely exceeds 90°, and is free from sudden changes. Dr. Burnett is of the opinion that the American States possess a variety of climate and advantages for this disease, far superior to those of Europe, and as the people of England—those possessed of wealth are becoming dissatisfied with Italy and Madeira, it is not improbable that with the present rapid Atlantic steam communication, our country may soon become the home of many of the noblest and most wealthy of her inhabitants. If they are wise for themselves they will make at once for a new and a better home on the western continent.

Volcanoes, their Causes---Igneous Theory.

With our ideas of volcanoes we always associate the grand and the terrible; and a volcanic eruption—a huge piece of artillery, with a mouth perhaps miles in circumference, shooting up rocks and burning lava—is truly a terrific sight. Volcanoes are exceedingly plentiful on our planet, there being no less than sixty-three principal ones; still, they are confined to certain localities, which occupy but limited portions of our globe. The question has often been asked, "what is the cause of volcanoes?" And truly, when we consider how disastrous some of these eruptions have been, no wonder the question of their cause has been forced upon the attention of almost every reflecting mind. It is one well worthy of some speculation, and requires a considerable amount of scientific knowledge to investigate, and this may be usefully employed either in pointing out errors or presenting new facts. Various opinions have been expressed respecting their origin and activity. One thing is certain, they are in no way connected with solar influence, for they exist under the tropics of South America, and are found in the frosty regions of Iceland. It was the opinion of Darwin, that the volcanic districts of the world had earthy crusts resting on lakes of igneous melted matter. Humboldt believes that the volcanic region of Quito, in South America—the whole of that vast Plateau—is a single volcanic surface, composed of a solid crust covering a lake of molten matter. Such opinions, however, have nothing to do with a general theory, of which there are two—one is astronomical, and asserts that this earth was originally a fiery molten mass, and that we live on its crust, beneath which all is molten fiery matter; the other theory is chemical, and asserts that they are caused by explosive materials deposited in huge quantities in the volcanic localities, and which, when saturated by some means with oxygen, and ignited, act exactly like any explosion of artillery. Leibnitz first suggested that this earth was originally in a fiery fluid state; Sir Wm. Herschell afterwards suggested the hypothesis of matter being originally in a nebulous state, which, by condensation, developed great heat, and our earth became a fiery ball, the surface of which we now live upon being a mere crust, the rest not being cooled yet which, when reached by water, causes an explosion like a steam boiler. This is the nebular igneous theory.

The author of "The World Without" states how easy it is to account for volcanoes by this theory, by saying—"according to the fiery nebulous theory, the earth, at a depth of sixty-five miles, is 7000 degrees temperature, and if water percolates through fissures of the earth, we have a sufficient explanation of earthquakes and volcanoes."

This theory is unsound, and will not stand the test of scrutiny. The arguments adduced to prove that the interior of the earth is a fiery molten mass, is, the increase of temperature found to exist as we descend in some mines, which is about 1 degree for every 45 feet. According to this rate, at 25 miles depth, the melting point of iron would be obtained; but we have no facts to prove that the heat of the earth increases regularly to the centre; after a certain depth, it is perhaps uniform. What signify the experiments made in a few mines not over 2,000 feet, deep. From observations made by Kotzebue, Beechy, and Sir James Ross, the fact seems to be established that the waters of the ocean (it is also matter) are uniform in heat, at the depth of 7,200 feet. At the depth of 100 fathoms, as stated in Maury's Wind and Current Charts, the temperature of the water in "the cruise of the Taney," was 64°, while at 50 fathoms, one half, it was 70°. In the soundings by the sloop-of-war Albany, at 680 fathams, the temperature was 81°, while that of the air was 83°, and at 995 (5970 feet) fathoms it was only 80°, while the temperature of the air was 79°. Now if it were true that the heat increased downwards, at the rate of one degree for every 45 feet, as asserted by some, then with a temperature of air at 79°, the water of the sea at 5985 feet of depth, should be at the boiling point—212°. Instead of this it was only 80° at 5970 feet, only 15 feet less. How does this accord with a uniform increase of heat as one descends into the matter composing the earth?

Dr. Daubeny, and Sir Charles Lyell are advocates of the chemical theory, and the latter is a decided opponent of the central theory of heat. It is well known that when potassium is dropped upon water, it causes an explosion; if, in certain places of the earth, there were large deposits of this metal, and water percolate to or come in contact with it, a terrific explosion would ensue. It appears to us that volcanoes are local, and generally preceded by earthquakes. If the centre of the earth were fluid, according to the well-known laws of fluids those earthquakes, caused by volcanoes would affect equally every part of the earth's surface, a thing which we know they do not.

Our attention was directed to this subject by reading some accounts of the recent eruption of Mount Etna. There is no positive certainty respecting the real cause of volcanoes; but the general, yea, almost universal opinion expressed by writers on the subject, is that water in some way is an active agent in all eruptions. Water, however, in all likelihood, exerts no agency whatever; and a strong argument in proof of this, is, that in the moon there is neither atmosphere nor water, and yet the volcanoes of the earth are mere dwarfs compared with those on our satellite. Our views, then, are distinctly opposed to the prevailing igneous theory, and we choose, rather, to plead ignorance of the causes of volcanoes than adopt any theory which cannot stand the test of scientific analysis.

Dinner to Inventors in England.

On the 3rd of last month, (Nov.) one hundred and fifty gentlemen interested in patents sat down to a sumptuous dinner in Birmingham, to celebrate the British Patent Law Amendment Act. Muntz, the inventor of the metal which bears his name was there, so was Prosser, another eminent inventor, and Hindmarch and Webster, the two able counsellors and authors of works on patents were among the number. Some fine speeches were made, and inventors were congratulated on the boon they had obtained. Mr. Prosser said he was not yet satisfied, he looked forward to the time when patents would be obtained for half a crown, and specifications for one penny, (he forgot that the copyist needs pay as well as the inventor). Mr. Hindmarch spoke sensibly; he advocated the enrollment of the complete specification on receiving the patent. Mr. Webster contended that a mere outline description of an invention was enough when the patent was granted, always allowing six months for enrollment. He considered that with a few modifications the patent law was a good one, and he hoped, for the sake of inventors, that it would be long before Mr. Prosser's hopes were realized. He considered that low fees would make patents less valuable in England; this statement was allowed to be true, and met with a general response. He made a fierce onslaught on the opposition which was manifested against the bill by some members in the House of Commons, and completely demolished the trashy arguments (like those advanced in the New York Daily Times,) against patents. "The foolish idea," he said, "had got into the head of some men that *patents were bad things*; this was an idea which should be got rid of by every man who entertained it."

A Large and Small Wheel.

MESSRS. EDITORS.—In No. 10, Scientific American, you expect some of your friends in Muncy to prove how much the small wheel slides that is secured on the axle with two wheels of double diameter, (6 feet,) I will answer; it will slide exactly the whole of its circumference, and roll the whole of its circumference, which is $3{\cdot}14159 \times 3 = 9{\cdot}42477 \times 2 = 18{\cdot}84954$. We measure the distance which the large wheels travel by the point of tread upon the rail, which is a perpendicular line drawn through the axis, consequently the axis is drawn through a space of 18·84954 feet in one revolution of the large wheels, therefore, as the small wheel makes only one revolution, and its axis passes through an amount of space double its circumference, it follows, that it must slide 9·42477 feet.

The error which you also wish pointed out is the use of the word will *not* slide; it was superfluous. Am I right? R. M. B.

Muncy, Pa., Nov. 24th, 1852.

[R. M. B. is right; the communications received on this subject have been "*legion*."]