To Prevent Oscillation in Locomotives.

MESSRS. EDITORS—I perceive in the SCIENTIFIC AMERICAN for January 10th, 1857, an article in relation to the oscillation cillation of locomotives. Deeming the subject as one deserving the serious attention of our locomotive builders and others interested in the performance of the steam engine, I beg to submit the following experience, gained from experiments made in order to discover the cause, effect, and means for counteracting this existing evil. The result conclusively determines two forms of oscillation, fore and aft, and lurching. The first is due to the inertia of the reciprocating masses of the pistons, piston rods, and cross-heads, having to be encountered and annihilated at every return of the stroke, the absolute counteraction of which should be a proportional weight moving in adverse directions to the motion of the engines may be made in the form of a block, working in slides, and driven by the return crank, producing a correcting antagonistic force, completely neutralizing in its effect. The second form of oscillation is produced by the eccentric swinging of the cranks, and merely require to be balanced by equivalent weights in the driving-wheels.

An engine correctly balanced in the aforesaid manner will be found to run with astonishing ease and steadiness of motion, require at least 25 per cent. less fuel, and keep in running order an infinitely longer time.

WM. M. HENDERSON.

Union Works, Baltimore, Jan., 1857.

The Up-and-Down Saw Yet.

MESSRS. EDITORS—The circular saw has made so much noise within the past year or two, in the lumbering world, that an inexperienced person might be led to conclude that it is the only saw worth having for manufacturing lumber economically and successfully. The old "up-and-down saw" does not envy the "circular," yet it does not wish to be left in the shade, as though it were destitute of merit, and it will not stop to inquire into the claims of the "circular" at this time, but would simply state that it has cut 2,000,000 feet of pine lumber in one year, and that it can do it again. And further, that its lumber will bring from 10 to 20 per cent. more in market than the same amount of circular lumber will; and that if all the bad stuff made by each, during that time, were shown at the same time, the "circular" would be very apt to be left in the shade. It cuts speedily, but it will not endure. A single vertical saw has cut 1000 feet of pine in an hour. The circular saw may do more than that, but it will not be as smooth. The difficulty of finding good circular sawyers makes its superiority doubtful. A vertical saw has cut 10,000 feet in 24 hours, week in and week out, which can be easily verified. The whole subject of saw mills is not yet so fully and generally understood as it should be. S. E. P.

Pa.

Death of Dr. Ure.

This distinguished and venerable man of science died on the 2nd inst., in London, at the age of eighty-nine years. He is well known by his writings in the United States, especially by his Dictionary of Arts Science, and Mining, which has no equal in any language.

His first work was a Dictionary of Chemistry, published in Glasgow, Scotland, when he was Professor of Chemistry in the Ander onian Institute, where he delivered his chem ical lectures to the working men of Glasgow. The last thirty years of his life have been spent in London. He was a popular lecturer and writer.

On the Peshakame river, in the Lake Superior region, there is a ridge of specular oxyd of iron—nearly pure—113 feet high, 100 feet wide, and extending miles in length

Tin ores are becoming scarcer, and the price of this metal has been rising steadily during the past year.

Inventors have been very active in England during 1856; 3,000 patents having been issued to them.

Treating Metallic Ores.

Chevalier G. Hahner, of Leghorn, in Tuscany, has invented a new process for treating metallic ores, which embrace chemical principles deserving the consideration of all mineralogists. The object of this invention is to decompose certain metallic oxyds, and especially the oxyd of copper, at a high temperature, in the presence of vapors of water and of silica, by means of alkaline chlorides, or other chlorides forming oxychlorides, or chlorides soluble in water—avoiding the loss of metal from the formation of free soda, or soda combined with silica, by the addition of an acid; and in separating the metals and other substances contained in the solutions. To form the oxyds, the ore is submitted to roasting, either in the open air or in kilns or furnaces, for the purpose of expelling sulphur, arsenic, and other volatile substances, and rendering the ore more friable. If the metallic rock contains calcareous substances, it must be burnt in a similar manner to lime, and dissolved in water; the oxyds of the ore will deposit at the bottom of the vessel in which the lime has been dissolved and driven off. Oxydized and other ores which do not contain sulphur or other mineralizing substances, only require to be brought to a red heat. The ores, treated as described, are then reduced to powder by the ordinary means, and again roasted in a reverberatory furnace—a small quantity of coke, charcoal, coal dust, or other combustible being added to facilitate the operation. To decompose metallic oxyds obtained as described, and also other oxyds, the red hot ore remaining in the furnace, after being completely roasted, is mixed with an alkaline chloride (chloride of sodium being preferred on account of its low price), in the proportion of about two parts, by weight (more or less according to the nature of the ore), of chloride for each part, by weight, of metal to be extracted from the ore. To obtain a more perfect mixture, an equal weight of ore already roasted is intimately mixed with the chloride, previous to its introduction into the furnace, and then moistened if dry. The moistened chloride, or mixture of chloride and roasted ore, ought then to be incorporated as intimately as possible with the red hot ore in the furnace, and kept in a continual movement and at a red heat, until the smell of muriatic acid becomes less perceptible, and the ore commences to adhere to the workmen's tools; the ore is then withdrawn from the furnace, and a fresh charge added. It is advantageous to leave the red hot ore thus withdrawn for some time, in heaps, which renders the process still more perfect. If the ore contains no silica, it is requisite to add about ten per cent. of this substance. The ores, treated as described, are then submitted in a hot state, if possible, to lixiviation. The inventor adds to the water employed for the lixiviation of the roasted ore, about five parts, by weight (more or less, according to the nature of the ore), of sulphuric, muriatic, or other acid, to one thousand parts, by weight, of ore, to render more soluble the oxychlorides or chlorides, and to decompose the free soda, silicates of soda, &c., which may have been formed during the roasting, and which would cause a great loss of metal. The vessels in which the lixiviation is performed may be of wood, and of any form and dimensions, according to circumstances; they should be furnished with an ordinary filter, to allow the water to run off freely. The precipitation and purification of the metals contained in the solution can be affected by the usual process. The copper may be precipitated by common ashes, lime water, and caustic water; and the products obtained may be used in the manufacture of different colors, salts, or reduced to the metallic state in ordinary furnaces. The copper may also be precipitated in the state of arsenite or arseniate of copper for the formation of green French paint by means of a solution of ar- s enite or arseniate of potash.

The machine shop at Hornellsville, N. Y., belonging to the New York and Erie Railroad, was burned down on the 20th inst. One locomotive was burned, and all the machin ery. In all likelihood, this conflagration was caused by carelessness.

The Tower of Babel.

The *Boston Traveler* contains a letter from Beyrout, giving an account of an expedition under M. Place, the French Consul at Mosul, to the plains of Arabella, and his discovery of the veritable "Tower of Babel," which the Bible tells us was built not long after the Deluge, and was intended by the Babylonians to be elevated so high, that if a second flood came they would be safe above its waters.

The account given of the tower discovered by M. Place is, that only two stories of it are all that remain, but these are so high as to be seen for sixty miles around. The material of its construction is brick, of a delicate yellow color. Many of the bricks are marked with inscriptions neatly executed. M. Place, it is stated, also discovered inscriptions on fillets of gold, silver, and copper, and a metal now unknown to moderns, resembling ivory in appearance,

Petrus Valensis, an Italian traveler, visited the ruins of Babylon in 1616, and describes a tower such as that said now to be re-discovered, but he believed it to be a tower built by one of the late Princes of Babylon, and not the famous old Tower of Babel, the building of which is recorded to have been the occasion of the confusion of tongues, and the source of the various languages of men.

Babylon was one of the wonders of the East. Its walls were 87 feet thick and 350 feet high, and were 60 miles in extent. The Tower or Temple of Belus stood in the middle of it, in which was a golden image of Baal, forty feet high. It was famous for the cultivation of the science of astronomy at an early date; the astronomers made their observations from the top of the high tower, in a very clear atmosphere. Alexander the Great took it; and Calisthenes, the philosopher, who accompanied him, states that astronomical records had been made in Babylon from 115 years after the Deluge.

The grandeur of the palaces and buildings, and the known wealth of old Babel, rendered it for a long period the center of Asiatic civilization and power. But its walls have crumbled, and for centuries the very Arab of the desert has shunned its ruins, because of the wild beasts that haunt there, and the numerous venomous serpents that make their abode in palaces, which were once the abode of kings.

Elastic Gums.

These gums are among the most important and generally useful, and although at present confined to two varieties, there is no reason why additions should not be made to the list, and investigation promoted to elicit the comparative value of others. The rapid progress of the submarine telegraph, setting aside other important commercial uses of gutta percha, loudly calls for fresh supplies. If no other purpose had been subserved by this Indian gum than that of encasing the telegraph wires, mankind would have reason to be eminently grateful to the discoverers.

India rubber is now applied to so many purposes that their mere enumeration would be tedious, and new applications of it are continually being made.

Boundless forests of the Serang tree are found upon the banks of the Amazon, and the exportation of this elastic gum from the mouth of the river is daily becoming a business of more and more value, extent, and importance.

Of substances which may be used as substitutes to some extent for india rubber and gutta percha, Professor Simonds mentions the inspissated juices of the wild and cultivated bread fruit trees, and the lola tree.

Various species of Indian fig trees, as *Ficus Radula, elliptica*, &c., also furnish portions of the elastic gum of commerce. *Vahea gummifera* likewise supplies india rubber. The *Urceola elastica*—which produces the Gintawan of the Malays—abounds on the islands of the Indian Archipelago. In Java it is called "bendud."

The concrete milky juice of the *Cryptostigeia grandiflora*—a handsome climber, common in the Madras Peninsula—has long been known to contain india rubber, but it has not yet been collected for the purposes of commerce, and it is doubtful if a sufficient quantity could be obtained to render it an article of trade.

The milk from the cow tree appears also to contain india rubber. On the river Demarara the Indians climb the rubber tree, tap the trunk, and as the gum exudes, rub it on their bodies till it assumes a sufficient consistency to be formed into balls.

Recent inquiry has shown that india rubber is furnished of good quality, by a large number of milky-juiced plants belonging to different families—*Sapotaceæ, Apocynaceæ*, and *Euphorbiaceæ*. In the East, Assam now furnishes large quantities of india rubber from *Ficus elastica*. Complaints are, however, made of the want of care in the preparation of it by the natives.

If the previous purifying of the gum be properly attended to—and in this process the whole art of manufacturing the perfectly elastic gum of commerce seems to exist—the gum should not, by any exposure to the atmosphere, be subject to the least degree of clamminess or viscidity; for if this important point be not fully attained, the article is of no use in the manufacture of those fine elastic threads which constitute its chief value.

Some large forest trees, belonging to the Sapotaceœ family, which abound at the foot of the Ghauts in India, furnish a valuable elastic gum, called by the Malays "pauchouthee," which bears a strong resemblance to gutta percha, both in external appearance and mechanical properties.

Gutta percha has been discovered in the British province of Mergui, and though not precisely identical with the gutta percha of commerce, it possesses all the valuable properties of that substance, including plasticity in hot water, and the power of insulating electric currents.

The tree from which the true gutta taban is produced (erroneously misnamed gutta percha, a gum yielded by a different tree), is one of the most common in the jungles of Johore and the Malay Peninsula. It is not found in the alluvial districts, but in undulating or hilly ground. There is a great uniformity in the size of the full grown tabans, which rise with perfectly straight trunks from sixty to eighty feet in height, and from two to three feet in diameter, the branches being few and small. The natives, after felling the tree, make an incision round it, from which the milk flows. This is repeated at distances of six to eighteen inches along the whole trunk. It appears that the taban, or milky juice, will not flow freely like india rubber, but rapidly concretes. Its appearance in this state, before being boiled, is very different from that of the article as imported and shipped. It has a dry, ragged look, resembling shreds of bark, and instead of being dense and tough, is light, and possesses so little cohesion that it is easily torn to pieces.

Various statements are made as to the produce of each tree, which is somewhat surprising, considering the uniform size of the trees. It takes twenty trees to produce one picul of 133 lbs., and as the exports of gutta percha, from the commencement of the trade up to the close of 1853, amounted to 3,107 tons, it follows that upwards of one million trees must have been destroyed to obtain that quantity in nine years. The natives, however, do not appear to be under any apprehension that the trees will be extirpated, and smile at the probability when suggested; for it is only trees arrived at their full growth, or at least at a very considerable age, that repay the labor of felling them and extracting the gutta; and those of all inferior ages which are therefore left untouched, will, it is supposed, keep up the race.

The collection of the gutta has widely extended, embracing now the Johore Archipelago, Sumatra, Borneo and Java. Unfortunately, the quality has deteriorated by the admixture of other inferior gums, the products of different trees, which are often used to adulterate the taban.

Steam Fire Engines.

In Cincinnati they have eight steam fire engines in service, and no other kind. They have already saved millions of property, and delivered the inhabitants from serious appre hensions of a wide-spread fire.