Correspondence.

Storage of Wind Power.

To the Editor of the Scientific American:

Upon reading your first article offered by W. O. A., on the storage of wind power, a plan occurred to me which would do away with the engine, which I suppose would be necessary if you took power from compressed air; my plan is to raise a heavy weight in a shaft, running from the ground to the roof, the size of weight to be determined by the amount of power required. I would have wind wheels attached to weight by proper gear, so that we could wind up power at the same time we were using it, and have two or three days' power in advance, which would be imparted to machinery upon the clockwork principle. The idea seemed to me very simple. F. N. DAVIS.

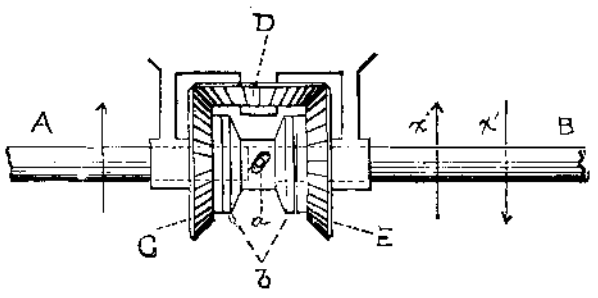
Calais, Me., July 24, 1883.

Rotary from Reciprocating.

To the Editor of the Scientific American:

While developing an invention several years ago, I had occasion to make use of a mechanism which would give me a one-way rotary movement from a reciprocating rotary motion. Not being able to find such, I devised one; and never having seen anything like it anywhere, or the same movement effected in any other way automatically, I deem it may be new, and if so, of use to some of your mechanical readers.

In the cut, B is the power shaft, and A the transmitting shaft, the separation of the two being indicated in dotted lines. Bevel gear, E, is free upon shaft, B, idle wheel, D, is loose upon its axle, and C is fast or keyed to shaft, A. The double forced grip or frictional adherence "clutch," *b*,



is free to move longitudinally upon both shafts. Projecting from shaft, B, is a pin, *a*, or may be a tongue free to slide smoothly in a slot or recess set at an angle, formed into said "clutch." Now, when B is rotated, as shown by arrow, *x*, the transmitting shaft, A, has the same movement as to direction and speed, and when B reverses, as per arrows, *x'*, the "clutch" shifts instantly to bevel wheel, E, in which case the shaft, A, is driven as before; and from the reciprocating rotary motion of B we get a one-way rotary movement of A. The promptness with which the shifting of *b* is made is dependent upon the pitch of the angular slot and the clearance of the frictional adhering surfaces. S. D. MOTT.

59 Astor House, New York.

How to Get Rid of Red Ants.

To the Editor of the Scientific American:

In the SCIENTIFIC AMERICAN of July 14, I noticed among the Notes and Queries (No. 1) the question: "What will kill, remove, or destroy the small red ants?" The reply was, greased paper. I tried greased paper for many seasons, but the ants returned again with every summer.

For four years I have used water treatment, and have not seen an ant since the first year of using water. If the ants come in at the pantry window, wet several folds of old cotton cloth, and lay it the whole length of the outside window sill, occasionally pouring water over the cloth, and this will effectually prevent the ants from entering.

Ascertain where they come in, and treat them with the wet cloths. They cannot crawl over anything wet.

Z. H. SPOONER.

Plymouth, Mass., July 25, 1883.

Prehistoric Man.

Professor Marsh contributes a paper to the *American Journal of Science* for August in regard to the reported finding of human footprints in sandstone near Carson, Nevada. He says that many different kinds of tracks were found, some of which were made by an animal allied to the elephant; some resembled those of the horse and the deer; others were apparently made by a wolf. There were also tracks made by large birds. The supposed human footprints are in six series, each with alternate right and left tracks. The stride is from two and one-half to over three feet in extent. The individual footprints are from eighteen to twenty inches in length, and about eight inches wide. The distance between the line of right hand and left hand tracks, or the straddle, is eighteen to nineteen inches. The size of these footprints, and especially the width between the right and left series, are strong evidence that they were not made by men, as has been so generally supposed. A more probable explanation is that the impressions are the tracks of a large sloth, either *Mylodon* or *Morotherium*, remains of which have been found in essentially the same horizon.

[SAN FRANCISCO CHRONICLE.]

The Coining Process at the San Francisco Mint.

There have been but few registered visitors at the mint since that time, but a reporter, unobserved, passed in among the number and commenced his annual investigations. A number of bars of bullion were the interesting objects first pointed out by the conductor to his visitor. After that introduction of the subject of money making he continued his interesting narrative, detailing every process in the coining of a dollar, from its receipt as metal of an uncertain value to its issuance for circulation. Bullion is received in the form of bricks of all sizes and very peculiar shape when it comes from Spanish American countries. The regular shaped bricks often weigh as heavy as 150 pounds.

The Mexicans melt their silver and run it into the most crude shaped moulds in the world, i quantities so large and heavy that a burro could not carry one casting. It seems strange at first to think of these indolent people performing a very troublesome and laborious operation only to find themselves confronted with more labor. There is good reason, however, for the large castings. If the valuable metal were carried in quantities convenient for handling, raiders for miles around would be after it and demand the whole or a large portion of the silver as salvage for protection against other raiders. The Mexican silver received at the mint is taken to the machine shop and cut up before it is in shape to be put into any of the largest crucibles. The regular shaped bricks are taken first to the assay office, where the diagonally opposite corners of opposite surfaces are clipped and the brick bored into both ways. An assay is then made of the clippings and borings. The result of an assay is made known to the person making the deposit in about twelve hours. He gets his money and the government gets his bullion.

After the assay the bullion passes to the refinery if it should require the operations there performed. It is melted in the refinery and poured out on water. There is a great sputtering for a few moments, and then a result called "the granulations" is perceptible. The solid molten mass has become scattered in particles of many sizes and indescribable shapes. The general appearance is that of the fallen leaves of forest trees which have become crisped up by the frost. The granulations are then weighed and put into large caldrons of ironstone china about the size of a barrel. The caldrons are valued at $100 each, and the men working about them are very careful in their movements lest they should damage or destroy one. The caldrons are set in rows on a false floor, under which pass steam pipes. Water flows around them to the height of about a foot. A quantity of muriatic acid is then placed in the caldrons proportionate to the amount of granulations. They are then closed in or surrounded by a tight box or house. Steam is admitted to pipes beneath the false floor, and the steam heats the caldrons and their contents. The red fumes at the chimney tops are generated in this process. This heating reduces the granulations to a fluid state if they are silver, but gold remains solid in granulations if part gold and part silver. The fluid is drawn off by a siphon and deposited in tanks about twelve feet in diameter which contain a stirring apparatus driven by steam power.

Common salt is then placed in the solution to precipitate the silver. It is deposited as chloride of silver, and the liquid is drawn off through filters and allowed to flow away. The chloride of silver precipitate is about the consistency of a mason's putty coat, and resembles it very closely in other respects. The acids are then cleansed out by washings in what is well known as the sweetening process. When the silver has been obtained in a state as near as possible to absolute purity it is taken to the press room, and by hydraulic pressure compressed into solid circular masses of from twelve to fifteen inches in diameter and five inches thick, resembling very much the shape of a cheese. The silver is then placed in an oven in iron pans. A fire is raised and the iron and oven are brought to a cherry red color for the purpose only of driving off moisture in the chloride of silver. The least portion of moisture in the crucibles would break them, and the silver would be lost in the ashes. The cakes next go to the melter and are run into bricks. If it goes on the market as bullion, its weight in ounces and its value is stamped upon each brick. If it is to be turned into coin, it is again melted and an alloy of one-tenth copper is put in both for silver and gold, and the whole is then run into ingots.

These are heated and rolled to the proper thickness and width, and the strips are then annealed and whitened. The blanks are next punched and cleansed of the grease from the rollers, and are then sent to the adjusters. Each piece is weighed and if found too heavy a little is filed off the edge; if under weight, it is remelted. From the adjusters the blanks pass to the stamping room. The milling, as it is generally termed, is then put on, but not at all according to the popular idea. If the blacksmith's homely but expressive word of "upsetting" were used instead of milling, there would be but little doubt as to the process.

After it is upset, to raise the ring on the surface, the blank passes under the die. The impression is made on both sides from one blow. The milling is in reality by pressure—squeezing the silver out into the little grooves of the mould. A rule of the coiner's department does not allow an employe to leave it during the day until after the accounts are adjusted. From the coiner the money passes to the counter, who with the aid of a counting board, which holds an exact number of pieces, is able to count thousands where a person ordinarily would count only units. The counting board carries just 1,000 silver dollars. One of the most interesting objects to be seen in the mint is a large balance scale, so nicely adjusted that one may take a hair from the head, split it and place it on one of the scale pans, and the beam will be noticeably deflected. Only dollars and "twenties" are now being coined, but there is money enough on hand in the mint to make half the town rich. There is more money than can be handled. The reporter noticed the heavy doors for a new vault which is to be constructed as a strong place for the excess of coinage. There is $15,000,000 in one vault, $8,000,000 in another, and $6,000,000 in another, besides bullion which will turned into money as soon as the new vault is completed.

Eruption of a Volcano in Lake Nicaragua.

During the past three or four months the extinct volcano of Ometepe—an island in Lake Nicaragua, twenty miles long—has given signs that it was about to burst into activity. Smoke, flames, ashes, pumice stone, small lava flows, and all the accessories which mark a complete volcanic outlet have been seen. The inhabitants of the island have been frightened, and for leagues around on the mainland the people have been in a constant state of excitement, as is proved by the following interesting relation given in the *Panama Star and Herald*. On June 19, for the first time, the lava streamed from the new crater and ran in the direction of Las Pilas, but until the 22d it had not reached the main road at Sinacapa. On the night of the 20th the sides of the mountain were alive with fire as the lava poured down, sweeping with it trees, rocks, and earth, while the continued bellowings of the volcano struck terror into the hearts of all who heard them. On the 23d, the whole island was continually quaking, many of the inhabitants fled, and the authorities commenced preparations for the removal of every one from the island. On the 24th the lava bed had covered up the road, and two young men who had gone with others to watch the flow had been buried under it. The lava continued to pour out in an almost uninterrupted stream, but up to the 25th of June it had not reached the shore.

On the 26th a panic set in among the populace caused by the prolonged and incessant rumblings, the torrents of lava, and the clouds of ashes and dirt which continually issued from the mountain. In consequence schooners and boats were sent to the island to transport the people to Granada, Rivas, and other cities. The lava flow on Tuesday, the 26th, took a new direction, and pouring down within a mile of the town cut off communication with the farms and pastures upon which the islanders depend for their living. On the 27th and 28th the eruptions were horrible in their intensity, and led to the few remaining people fleeing to the mainland. Boiling lava and mud and ashes and rocks now cover the sides of the mountain and the pleasant slopes which have been cultivated for centuries by the peculiar and ancient race which inhabited the island. The view of the volcano when in eruption is said to be one of surpassing grandeur. Clouds of smoke sweep upward, through them flash glittering masses of burning, half molten rocks, which shatter into a thousand fragments on coming into contact with the cold air, while underneath there swells, bubbles, and throbs the ever-surging mass of red hot lava destined to carry ruin to the villagers who have hitherto lived on the flanks of the volcano. Although the ground is in a continual tremor no earthquakes have been experienced, and the clouds of ashes which constantly rise do not trouble visitors to the island. The strong winds sweep them over to Rivas, where land owners are becoming alarmed at the prospect of their crops being damaged.

Experiments with Peas.

Experiments have been made this season, at the New York Agricultural Experiment Station, at Geneva, N. Y., on the period of growth of peas and the relative value of seed matured from the earliest and the later pods. It appears from experiments with sixty-eight so called varieties the earliest edible pods were obtained in fifty-five days from planting, and of fifteen others the latest required fifty nine and a half days. Of seed peas gathered from the first pods and from the latest pods, the average difference in the vegetation of the seeds was fourteen and one-half per cent in favor of those earliest matured, and in favor of earliest production of edible peas a difference of five days in favor of the earliest matured seeds. In productiveness, also, the difference in favor of those from the earliest matured seed is considerable, from an equal number of plants the earliest seed vines producing in the same time thirty-eight well filled pods to only thirteen well filled pods from the later matured seed.

Postal Notes.

It is only a month before the public will have the new postal notes, the limit of their preparation being September 3. They will prove to be a great convenience, as the sender can transmit any sum from one cent to five dollars. The New York *Tribune* illustrates the convenience of the new arrangement by stating that "a lady living out of town who wants to send $3.79 to a drygoods store in New York will hand that sum, and 3 cents fee, to the postmaster. He will give her an order with the figure three punched in the dollar column, the figure seven in the column of dimes, and the figure nine in the column of cents. This is simple and easy, and offers no chance for fraud."