

## Correspondence.

## An Opportunity for Inventors.

To the Editor of the Scientific American:

The "new steam carriage" of French invention, described in the SCIENTIFIC AMERICAN of Jan. 9, and all similar vehicles, are of profound interest to the American people. Our towns and cities are filled with people who will not keep a horse, not because of the *first cost*, but because the horse is a heavy *continuous* expense, when idle as when in use. For a vast majority of people, this objection is fatal where a vehicle is desired mainly for pleasure purposes. No such objection applies to a steam carriage; with it the expense ceases with the journey.

The weight of this French carriage and the attention of a stoker are grave difficulties in the way of its general introduction. Let some of our clever inventors overcome these difficulties, and he will enrich himself, besides conferring a blessing on the millions. The employment of a small engine using oil for fuel might be a simple solution of the whole problem.

The wants of tens of thousands of our people would be fully met by a vehicle capable of a journey of ten or twelve miles without further additions to the initial charge of motive power. The writer has long been of the opinion that a couple of iron or steel cylinders of very moderate dimensions charged with strongly compressed air and mounted on a light vehicle would answer every purpose.

It is to be seriously hoped that the entire problem will receive from our inventors the earnest attention which it so richly merits. B.

Columbia, S. C., Jan. 18, 1886.

## Danger from Steam Pipes.

To the Editor of the Scientific American:

As there have been several articles in your valuable paper of late with regard to the danger of steam pipes in contact with wood or other inflammable substances, I thought the following might interest some of your readers.

We introduced steam heat in our house in the autumn of 1857. Several years later, the pipes in the cellar were inclosed in a box filled with sawdust, while at a distance of from fifteen to thirty feet from the furnace they were also wrapped with what appears to have been a woolen blanket cut into strips.

On taking down the boxing and sawdust, several days ago, I found the woolen wrappings charred on the inside, where they came in contact with the pipe. The sawdust had settled so as to leave the pipe bare, and above it the top of the box was considerably scorched, although the space intervening was from half an inch to an inch.

In one place, where an inch board was jammed tightly between the pipe and the floor above, it was very much charred, being converted completely into charcoal on the surface. The steam pressure is never over four or five pounds at the most, and is generally much less.

The size of the pipe is two inches in external diameter. I send you specimens of the woolen wrapping and board. WM. TATNALL, JR.

Wilmington, Del., Jan. 23, 1886.

## Mind Cure.

To the Editor of the Scientific American:

I have just read a very interesting and well-reasoned article on the "Mind Cure," in the SCIENTIFIC AMERICAN of the 16th inst. For years I have made experiments on the subject, and had, in many cases, obtained striking results where the patients were uneducated people. It appeared so difficult to account for these results that I could scarcely credit the evidence of my own senses, until a medical friend, instead of laughing at me, as I expected he would, handed me a book out of which I send some passages which may interest those of your readers who follow up the question.

It is one of the clinical lectures on the principles and practice of medicine delivered by John Hughes Bennett before the Edinburgh College of Medicine, and the official position and responsibility of the lecturer must add weight to his utterances.

He speaks of the mind cure as the influence of predominant ideas on the body, and calls it "monoidealism," and goes on to say: "In all the cases of relief, there can be little doubt that any benefit that did occur may be attributed to a strong belief, on the part of the patient, in the efficacy of the means employed. In recent times, more systematic attempts have been made in this way to relieve pain. This subject, however, is yet in its infancy, and has to be separated from the charlatanism which has hitherto been mingled with it. The labors of Dr. Eisdale among the natives of India and of Mr. Braid in Manchester exhibit a worthy commencement to the rational treatment of disorders by the means now alluded to, and there can be little doubt that, in no long time, its influence, when further studied, will be acknowledged. But how far this influence is dependent on the confidence of the patient, on

the belief of some mysterious circumstance which is presumed to produce the effect, or on some unknown law regulating function, through the mind, further observation alone can determine."

Then Bennett goes on to say that the phenomena are wholly occasioned by predominant ideas in the individual, by suggesting thoughts to patients in various ways—definite physical impressions, etc. He says that remarkable cases have been met with, where a judicious application of this system has removed insomnia or various kinds of pain, spasms, and other evidences of excitement; where hysterical paralyses of the limbs or special organs of sense have been *relieved or cured*, and where the torpid functions of lactation, perspiration, defecation, menstruation, etc., have been rendered more active.

That is the summing up of Bennett's lecture. The mere fact that it was delivered to the students of a great medical college by one responsible for the orthodoxy of his opinions ought to secure for the question of "mind cure" a serious and earnest consideration, when, in Bennett's own words "there can be little doubt that in no long time its influence, when further studied, will be acknowledged." H. G. JOLY.

Quebec, January 19, 1886.

## A New Source of Selenium.

To the Editor of the Scientific American:

The success of Mr. Ch. E. Fritt's recent experiments with curved gold leaf and thin homogeneous plates of selenium for converting the sun's rays into electrical energy, also Crooke's experiments with the radiometer, and the many half successful and half completed experiments made by others in this direction, suggest the strongest possibilities of an unexplored field of great value, in which solar electricity is to play a prominent part. Selenium has been found to possess strange actinic properties, not yet half understood, even by the most persistent experimenter.

Owing to the scarcity and high cost of this substance, these investigations have not been pursued to the extent that is warranted by the success thus far attained.

The SCIENTIFIC AMERICAN rightly refers to flue and chamber deposits of sulphuric acid works using pyrites for acid making as a possible source of supply of this valuable substance. In this connection I am able to point out a source of supply in our own country that should be ample to furnish all that is needed for experimental purposes, if not for extended use. All pyrites contain traces of selenium, which accumulate in the flues and lead chambers of the acid works in sufficient quantity to color the deposit red. In most cases the quantity of selenium in the ore is too small to estimate. The Milan mine, of Milan, N. H., however, contains selenium in its ores in very appreciable quantities, in fact, from 0.02 to 0.25, and even in some samples 0.5 per cent is found. Sulphuric or nitric acid solutions of the ore invariably yield the peculiar rose red color of selenium, and acid chambers running on this ore accumulate large quantities of selenium oxide. Strong sulphuric acid precipitates selenium; consequently, it may be obtained from the settling tanks of the acid works in very pure condition. No arsenic is present in the ore, as is usually the case, and the selenium is free from this nuisance, although some of the rarer metals may be there.

Tests of the selenium mud and deposits are now being made, and I hope to be able soon to report fully upon their composition. Since many acid works are using this ore, it will not be long before the selenium can be obtained in quantity. In the mean time, the Atwood Lead Co., of Portland, Me., will be glad to furnish samples of the mud for experimental purposes to any one who will take the trouble to send for it.

In this same connection I may be allowed to suggest that analytical chemists, spectroscopy experts, and all those who wish to investigate and search for rare elements and possible new ones, will find these same flue and chamber deposits a subject quite worthy of their attention. F. L. BARTLETT.

Portland, Me.

## Proposed Method of Firing Dynamite Shells.

To the Editor of the Scientific American:

A few weeks ago you published an article describing the "Pneumatic Dynamite Gun," accompanied by an excellent engraving. The device appears to be a well-planned, elaborate affair, but at the same time presents some objectionable features, such as being too bulky, and the liability of the disarrangement of some of its complex machinery. Of course, it is understood that the only difficulty in this matter is to start the projectile by a gradual and increasing force, so that it will not explode in the gun by concussion. Could not this objection be overcome by an arrangement of cone-shaped powder chamber with an expansion room behind the shell charged with dynamite?

My plan is to use a slow-burning powder and to ignite the cartridge at the forward or small end by a vent, electricity, or a needle and cap. When this takes place, the first gases of explosion, which cannot be of great volume, owing to the small area of the neck of the chamber, are allowed to expand, so that the projectile

is not subjected to a violent shock in starting. As it moves away from the breech, the space behind it is more rapidly filled by the gases on account of the increasing surface of the burning powder, therefore it is constantly impelled by an additional force, until it leaves the muzzle at about the speed of an ordinary cannon ball.

I would make my gun only slightly longer and much lighter than ordinary cannon. The shell should be long, with its greatest weight in the front end, so as to require little or no grooving of the bore. As there would be no sudden rebound, a light carriage could be used. S. E. WORRELL.

Hannibal, Mo., Dec. 30, 1885.

## The Birds and Gold of California.

To the Editor of the Scientific American:

In the SCIENTIFIC AMERICAN of Dec. 12, C. F. Holder contributes an article under the head of "Candelabra Cactus and California Woodpecker," in which he relates the observations of himself and others on the peculiar instincts of the California woodpecker in regard to storing his future supply of food where it will be safe against the destructive effects of the elements and the depredations of other animals. I do not think the woodpecker is singular in his industry and ingenuity in providing for his future wants. The greater number of animals exhibit a like power of reasoning and judgment in their efforts to provide for themselves and their young. In fact, they display qualities in this respect that might be imitated with great advantage by a large class of the human race. The goodness and wisdom of the Creator are seen in the fitness of things throughout creation, the nice adaptation of those qualities in every created thing suited to its enjoyment, perpetuation, and preservation.

I had a favorable opportunity to observe the peculiar habits of the California woodpecker while mining in the Sierra range of California. An incident will fully illustrate what I wish to say. Early in the fall of '50 I noticed a red-headed woodpecker, such as we have in the Middle States, busy from daylight to dark digging holes in the bark of a pine tree near our cabins. At my first leisure I visited the tree, expecting to find the bark infested with worms, but to my surprise I found it studded with acorns, but not protruding from the holes. The holes ran in regular lines around the tree, beginning about four feet above the roots and extending to the height of fifteen feet. The holes were dug with mathematical precision. The acorns were driven in *large end foremost* (the contrary end put forward by Mr. Holder's bird), and the fit was so exact that no agency could remove them without cutting away the bark. No miser worked more incessantly or hoarded with greater care. When the rain confined us to the cabins, he continued at his work, laying up his treasures with persistent industry. As soon as he had pecked out a hole, he flew to an oak and selected an acorn, sometimes from the ground, at others from the tree, to fill the place; and so perfect was his organ of size that I never saw him get one too large to go in, or so small that he did not have to hammer it to its place. The incident would be incomplete without giving the sad part of it. The persistence of his character would otherwise never have been known. Wishing to reload my rifle, preparatory to a deer hunt, I stepped out of the cabin to discharge it. The bird, as he labored on the side of his tree, made a tempting mark, but too distant, I thought, to be in danger; but it proved otherwise. I walked sadly down to the tree and picked up his remains, and to my surprise I found that he had worn down his upper bill to the raw flesh.

Frequently afterward I noticed magazines of acorns stored in the pine bark and some in the oak. They were put in to stay, and when the woodpecker wanted his dinner, he took it on the *whole shell*.

In the same number of your paper, Mr. C. H. Chase, of Bridgewater, N. S., makes the statement that the "first gold found in California, by James Marshall, was in the limits of the present city of Marysville, on Feather River, and not on the Sacramento." The history of Marshall's discovery of gold in California is, as well established and the location as well defined as the old "Plaza" in the city of San Francisco, and is not located at "Marysville on Feather River," nor on the "Sacramento River," but at Coloma, on the south fork of the American River, where Marshall was erecting a saw mill for Mr. Sutter. The mill was being built on a bar in the river, and when the water washed over the smooth, hard rock in the bottom of the tail race, carrying off the gravel and sand, the gold lay exposed to view in the little fissures of the rock.

The mill was never completed, but was in a good state of preservation when the writer saw it, two years after its erection. PAUL OLIVER.

Perryville, Ashland Co., Ohio.

## British Bayonets.

The *London Times* says that on a recent test of several thousand bayonet now in use in the British army, being a fair representation of the quality of all, thirty-three per cent were found to be useless, for lack of stiffness and temper.