

Correspondence.

Erosion Due to Expanding Wall of Gun.

To the Editor of the SCIENTIFIC AMERICAN:

The writer notices a new theory of gun erosion in your issue of April 13, 1907. Judging from the experience the writer had early in the history of automobiles, we are very positive that the new theory is right. The writer conceived the idea of using light drawn-steel shells for cylinders, and constructed several automobile engines on that principle. Both theoretically and mechanically they appeared all right, but we were unable to get the power from the engines that we thought they should develop. The pistons would show perfectly tight on the compression stroke, and everything would apparently be all right, but under the high pressure of the burning charge we found that the walls would expand sufficiently to allow the gas to escape, and we therefore had to abandon the light drawn-steel construction on account of its elasticity.

Pontiac, Mich., April 16, 1907.

A. R. WELCH.

The Influence of Seasons on Earthquakes.

To the Editor of the SCIENTIFIC AMERICAN:

Referring to an item in the SCIENTIFIC AMERICAN of October 6, 1906, entitled "The Alleged Influence of the Seasons Upon Earthquakes," I beg leave to supplement the explanation of Mons. de Ballore with a thought which does not seem to have occurred to him, and which, I believe, would account for a very large percentage of the "earthquakes" reported during the cold season from northern latitudes; viz., that these are not earthquakes at all, but are due to:

1. The freezing and cracking of the ground.
2. The cracking of the ice in large bodies of water.
3. The grinding of ice floes, where such are found, as here on Bering Sea.

I believe that these three causes will explain nearly all of the alleged earthquakes reported from Alaska. I know that they will explain all of those reported from Nome and the surrounding country in the last seven years.

CHARLES W. THORNTON.

Solomon, Alaska, January 3, 1907.

Coffee Filter.

To the Editor of the SCIENTIFIC AMERICAN:

In your issue of March 23 there is an illustration of a recent patent, which goes to show how history repeats itself. Fifty-eight years ago I was using in my first housekeeping, in the western part of New York State, a precisely similar coffee filter, which I saw in common use among my neighbors, from whom I copied it. A coarse muslin bag contained the ground coffee, through which the boiling water was poured, as it hung in the coffee pot. In the heavy muslin hem finishing the top of the bag, four open buttonholes were worked at the four quarters of the bag. Through these two No. 10 wire rods about five inches long—bent round to a ring at one end, for hanging up with the bag, when washed, to dry—were put crosswise and holding the bag in the coffee pot, just as the patentee's legs and rings inside do. It was very effective and simple, and we used it many years; yet it required considerable care and work. So when Marion Harland's patented coffee pot with perforated tin strainer came on the market, we used that.

While I am writing, permit me to add a most earnest protest against the article I notice in your Notes and Queries department of March 30. A correspondent N. L. in Query 10,485 most impertinently accuses you not only of error in your answer to him, and general childish ignorance, but also trying to cast ridicule on your correspondent, "as you frequently do," he writes.

I have been an almost constant reader and subscriber of the SCIENTIFIC AMERICAN for fifty-four years, and I have never seen anything but the most patient courtesy in that interesting department. I have wondered again and again at the patient outlay of time and labor over sometimes the most puerile questions propounded. Instead of "casting ridicule" on your correspondent, you have often and again taken pains to open their eyes to self-evident absurdities without expostulation for the waste of room. As one competent judge (as far as time and attention are concerned) I express my sincere regret that you should be so ungratefully treated.

R. WHITTINGHAM.

Aikin, Md.

Snowshoes for Wagons.

To the Editor of the SCIENTIFIC AMERICAN:

I am one of your readers for the last ten or twelve years, and I have read almost everything in your valuable paper ever since.

Having to travel much this winter, I could not follow the reading of your paper regularly, and to-day in reading the back number of January 19, 1907, your article on "Snowshoes for Wagons" attracted my sight, and I cannot pass over it without a few comments.

These shoes are not new at all in this part of the Province of Quebec. To see snowshoes being used and put under wheels is common enough, chiefly at this time of the year, when the snow comes and goes again every other day.

If I am not mistaken, these shoes were used first by the firm of C. Rouleau & Fils, coal and wood dealers, and L. P. Morin & Fils, general contractors and manufacturers, some eighteen or twenty years ago. Later on the fire department of our city used them under the wheels of one of our fire engines, and they were taken out only a few days ago on account of the roads being too bad for sleighing. I wish it was not too late, I would send you a photograph of the engine on its shoes, also one of the other shoes as used elsewhere in town.

The first originators have not applied for patents, but have let everyone make use of their process.

It may be that the snowshoes were used before in other parts of the province, but I am not aware of it.

Mr. C. Rouleau is also the first person in this city to have used under his coal carts a snow skate arranged with a hub in such a way that the wheels can be taken away from the cart and replaced by the skates in less than five minutes, and the only tool necessary for the operation is a monkey wrench. These skates are now in use everywhere in the province, chiefly in the towns.

The snowshoes shown in the January number are similar to those used in this city. J. C. ROULEAU.

St. Hyacinthe, Quebec, April 13, 1907.

The Mosquito Problem.

At the annual meeting and dinner of the American Mosquito Extermination Society, held at the Union League Club in this city on April 19, several interesting facts were given concerning the progress made within the past two or three years in the ways and methods of preventing the production of mosquitoes. The guest of the evening was Dr. L. O. Howard, chief of the Entomological Division of the Agricultural Department at Washington. He spoke of the anti-mosquito movement as one of world-wide interest and importance. In the English tropical colonies the drainage of marshes and other similar locations had been undertaken on a large scale at a comparatively reasonable cost with remarkably good results. Under government supervision the abolition of malaria and mosquitoes from Klang and Port Swettenham in Slangor, Confederate Malay States, had been effected with the small expenditure of \$1,200 for Klang and \$700 for Port Swettenham. A much smaller sum sufficed annually to maintain mosquito prevention.

The admirable work done at Ismailia under the auspices of the Suez Canal Company was alluded to. He described the great movement just inaugurated by the Lake Kopais Company and the Anti-Malaria League of Greece to eliminate the malaria so common in that country to the detriment of its economic force. He believed in the United States, mosquito-breeding districts could be easily improved; it was but a question of funds and an enlightened public spirit.

Another gentleman described the method of improving the marshes on the south side of Long Island. It has been found that the movement of the tidal waters through the creeks and small waterways and over the meadows prevents the generation of the mosquito; but if the water is caught and held stationary in any depression or pothole on the meadow, then a place is formed for their rapid production.

In this instance the plan was adopted of draining by running small ditches from these depressions to some regular creek or outlet. It was done at a very reasonable expense, and avoided the necessity of making many large ditches. There were about seventy-five miles of salt marshes along the ocean front, which if well drained would stop the annual visit of the mosquito. Some twelve or more square miles of meadow in the vicinity of Jamaica Bay and east of that place had been thus drained, and each summer a noticeable decrease in the quantity of mosquitoes was evident. His contention was that small sections of the meadows could be drained each year until large areas would ultimately become non-productive of the insects.

Prof. D. L. Van Dine, Government Entomologist of Hawaii, happening to be here, was present and referred to the work of mosquito prevention at Honolulu, the interest the authorities took in it, and the methods employed to rid the island of the pest. He stated before the work of prevention was begun, it was impossible for one to secure a good night's rest, his first night there being one of torment indescribable. Through the aid of local appropriations, the work of drainage was begun in a moderate way, and means were taken to treat with oil, pools and other places until the city was reasonably free from mosquitoes. One year the work was held up for lack of appropriations, resulting in an additional increase in the presence of the pest. The yellow fever mosquito, *Stegomyia*, was a species present in Hawaii, brought there

many years ago by a whaler. The fever, however, does not obtain a foothold because the sailing time to the islands is so great that the fever-infected persons either die or recover before the vessel arrives in port.

There is some fear that when the Panama Canal route is opened, the sailing time will be so greatly shortened as to make the danger of introduction of the fever into Hawaii greater; hence there is great urgency of again ridding the islands of all the pests. The Health Department had five hundred mosquito-larva-eating minnow fishes transported from the United States to Hawaii, and four hundred lived. These have been of great value in checking mosquito production, multiplying into the millions.

The work accomplished in draining the meadows and marshes on the southern end of Staten Island, N. Y., under direction of Dr. Doty, Health Officer of the Port, was described by Mr. Walter C. Kerr. It was found there was very much less annoyance from the mosquito in the summer of 1906 than in previous years.

Mr. Spencer Miller, of Orange, N. J., spoke of the great drainage work that had been completed on the Newark Meadows under the New Jersey mosquito prevention State aid law. The expense averages only about two dollars an acre. The freedom from mosquitoes in Newark and the Oranges was very noticeable in the summer of 1906. The State Legislature appropriated \$350,000 toward meadow drainage on the installment plan. If a town situated in the mosquito district or zone appropriated a certain sum, the State advanced to the town an equal amount. In this way the cost of drainage to each adjacent town or city was much reduced.

Dr. E. Porter Felt, the New York State Entomologist, spoke of the necessity of the careful study of the fifty species or more of mosquitoes that abound in the State, to determine the best method of controlling the production of those which convey infection of fever and other diseases to the human body. Biological investigations had disclosed the fact that intestinal troubles were produced from a mosquito bite. But little investigation had been undertaken in the Adirondack section of the State, where mosquitoes are found in vast quantities. A comprehensive study of all the mosquitoes in the State should be made, since the findings would have a most important effect in stimulating local interest and activity, and particularly in assisting real estate values.

A Dangerous Flywheel Explosion.

At midnight on the night of March 24, 1907, there occurred a disastrous flywheel explosion at the power house of the Philadelphia Electric Company, at 213 Susquehanna Avenue, Philadelphia, Pa. It was occasioned by the breaking of a 40-inch belt while the engine was pulling a heavy load.

The sudden releasing of the load caused the engine, which was a 900-horse-power twin Corliss, to jump suddenly beyond the control of the governors. Before it was possible to close the throttle the great 10-ton flywheel had speeded up to the bursting point.

The wheel was 20 feet in diameter with a 4-foot face and built in eight sections. The steam pipe was severed by a piece of the flying rim, thus releasing the steam from about thirty boilers, with about 170 pounds pressure on them, and completely fogging the engine room with hot vapor. About this time the lights all went out, leaving the place in total darkness. Very fortunately no lives were lost, though there were several very narrow escapes. One large fragment of the wheel was thrown vertically through the ceiling and roof, making a hole about twenty feet in diameter and coming down through the roof of the boiler room. Another piece took a pilgrimage across the street through the front of a house and clear out the back. It required five men to carry it back. Still another, on its return from the upper air, entered the roof of a three-story house and, narrowly missing the sleeping occupants, came to rest on the second floor.

It is to be hoped that the day of glued belts, involving danger to life and property, is hastening toward a close. The direct-connected reciprocating engine, or, better yet, the steam turbine, for the generation of electricity on a large scale will obviate the danger of flywheel explosions from breaking belts.

The Current Supplement.

The English correspondent of the SCIENTIFIC AMERICAN opens the current SUPPLEMENT, No. 1635, with an article on the tin-mining industry of Cornwall. Excellent illustrations accompany his article. Prof. C. E. Lucke and S. M. Woodward's paper on the use of alcohol and gasoline in farm engines is concluded. An article on petroleum and its refinement gives much helpful information on a great industry. Dr. Wendell Reber discusses illumination as affecting the eye. "Photographing Lightning with a Moving Camera" is the title of a study of lightning flashes which is illustrated by actual photographs.