

Correspondence.

Coal Ashes for Peach Trees.

To the Editor of the Scientific American:

You are in error in saying that coal ashes have no value as a fertilizer. Some years since I had a peach tree about to depart this life. The leaves curled up. I placed one-half bushel of fresh coal ashes around the root; in three weeks a new set of leaves came out, and the following year I plucked over one bushel of fine peaches.

I can name you many of my friends who tried the experiment on their pear trees, and the result was a good crop the second year. The first year grew new wood and the next lots of fruit. The trees had not produced for several years before.

I will guarantee to any gardener if he will place from one to two bushels in the fall around his fruit trees, any kind, or grapevines, if he wishes, that the second year he will be well rewarded. I am always the farmer's friend. I have taken your valuable paper many years.

Philadelphia, Pa.

W. R. HOWELL.

[The ashes cannot act as a direct fertilizer, but only by lightening the soil and, possibly, by making the fertilizing elements already present more available.—ED.]

The Blue Jay as a Nut Cracker.

To the Editor of the Scientific American:

In the SCIENTIFIC AMERICAN of June 16, 1894, a correspondent describes the feat of a blue jay in killing and eating a snake. In western Oregon the blue jay varies his summer diet with hazel nuts. The only nut native to Oregon (so far as I know) is known as a hazel nut, and is a little smaller than a filbert, which it very much resembles. It ripens in July.

The bird carries the nut to a log or fence post and first strips off the outer husk. Then, getting a firm hold on it with his feet, he hammers away with his bill until he either cracks the shell or cuts a hole large enough to extract the kernel. I never discovered which. It is no mean trick in either case, as the shell is very hard and requires quite a blow to crush it. Few persons to whom I have mentioned this have ever seen it done, but it may be observed by any one who will go into the brush where blue jays and hazel nuts are plentiful when the nuts are ripening and listen for the sounds. My attention was first called to it by a small boy who avers that the bird has been heard to swear during the operation, the blue rogue having missed the nut and struck his foot. Be this as it may, I can vouch for the facts above set forth, having often been an uninvited spectator at such feasts.

Nelson, B. C., June 25, 1894.

D. G. EALON.

The Black Calla.

To the Editor of the Scientific American:

In reply to your correspondent's query in SCIENTIFIC AMERICAN of June 16, in regard to the black calla, permit me to say that there are several plants popularly known as "black callas," all of which belong to the genus *Arum*, consequently are sisters of our native Jack in the pulpit, and cousins of the true calla, which belongs to the genus *Richardia*.

From the brief description given by your correspondent, I infer that the plant in question is *Arum dracunculoides*. This species is conspicuous for its much divided foliage and exceedingly spotted stem. The bud, or properly the spathe, is light green without. As it shows not the slightest trace of color until it commences to expand, one who has never seen it before begins to grow suspicious that he has been humbugged—that it is not black at all. But when a glimpse at the interior is permitted, this skepticism is replaced by wonder and admiration. The open flower measures fully a foot in length, and the entire inner surface is like rich, reddish-black satin. The spadix, which extends to the very tip of the spathe, is even darker in shade, of a leathery texture, and hollow. The staminate flowers are clustered above the pistillate ones at its base. The single specimen that it has been my privilege to behold exhaled so obnoxious an odor on the day it opened that it became necessary to banish it from the house. When removed to the porch, it was almost immediately the center of attraction for numerous flies, which were doubtless lured by its carrion-like odor. And is it not possible that this fact shows an economic value in the single disagreeable quality of the plant? To those familiar with the various devices of the tropical orchids for enticing insects to assist in their fertilization, it is at least suggestive that in this case the process may be facilitated by the insect visitors. This theory is strengthened by the fact that after the first day the odor gradually diminishes, and in a day or so more is not perceptible in a closed room, unless one comes into close proximity to the plant; and even then it is not powerful enough to prove displeasing. If the theory that its purpose is to attract insects be true, the plant is doubtless in the best order to receive fertilization at the time of expansion; consequently only needs the perfume-bait at this time. In

pressing it for the herbarium, as it was about to fade, I observed that the remaining traces of the odor all seemed concentrated in the hollow spadix, and it is likely that the spathe was from the first odorless.

Arum crinitum also has divided leaves. Its flower is about a foot in length, broader than the above mentioned, and with a shorter spadix. Its color is a deep black, and it makes an attractive pot plant, as it is almost sure to bloom in mid-winter.

According to florists, it is to *Arum sanctum* that the name "black calla" rightfully belongs. It is a native of the Holy Land, and is known as Solomon's lily. The leaf somewhat resembles that of the common calla. The flowers often measure more than a foot in length and from five to eight inches in width. Like those of *A. dracunculoides*, the outside is green, the interior of the richest velvety purplish-black. The central spadix rises to a height of from 10 to 12 inches, and is of the deepest black. It is really the handsomest of the trio, and possesses not a slight additional recommendation in its favor by its fine fruity fragrance. It, too, is strictly a winter bloomer. After blooming, the foliage will die down and the bulb should be kept dry until re-planted in autumn. It is rapidly growing in favor, and is destined soon to become one of our most popular plants for winter blooming.

BESSIE L. PUTNAM.

The U. S. Coast Defenses.

At the recent convention of the American Society of Civil Engineers, Niagara Falls, the president, Colonel Wm. P. Craighill, U. S. A., delivered an interesting address on "Our National Defenses." He said:

When the civil war came on, our sea coast defenses were admitted to be as good as any in the world. In one great particular they were better than those of any other people—that was the Totten embrasure. In a casemated battery built for the defense of a great European port just before the introduction of the Totten embrasure here, the opening in the wall of the embrasure was 54 square feet, and the horizontal traverse of the gun was only 40 degrees. The Totten embrasure gave an opening of only 9 square feet, and gave a horizontal traverse of 60 degrees. The wall around the throat of this embrasure was strengthened by wrought iron a foot thick, inserted in the masonry, and lead concrete was also used as a most excellent material for resisting the impact of shot. Wrought iron shutters were added, which closed automatically, were thick enough to exclude grape shot, and kept out the smoke of the discharge. This invention of General Totten, who was then Chief of Engineers of the Army, is of historic interest as the first instance of the use of iron plating on land batteries. Some of these old forts are still of value, but not to be entirely depended upon for the defense of our harbors.

A very important part of our present system of defense consists of torpedoes, but these must be under the fire of guns on land, in order that the enemy cannot remove or disable them. The light craft which would be used by a fleet for this purpose would be vulnerable to the fire of such guns as will still be accommodated in the Totten embrasure. Great ironclads must be met by the heaviest guns and mortars, mounted behind impenetrable, covered masses, and made as safe as possible by all the modern improvements, but it would be a waste of energy and money to fight the smaller craft with these largest guns.

Some historical incidents were introduced to show the value of small guns, to be used at comparatively short range, and to show the defensive power of forts of even moderate strength. The attack of the British on Baltimore in 1812, and the experiences of Fort Sumter during our war, were introduced for this purpose. Invulnerability is not to be aimed at in constructing land defenses, but relative vulnerability and endurance, and here the advantage will always be on the side of the defense; and guns of a given power can be mounted cheaper on land than on water, and will have the advantage in stability and accuracy of fire.

No armor has yet been produced that can properly be called invulnerable, and it is safe to say that none such ever will be produced; and, unless the decks of ships are as heavily plated as their sides, they will be penetrable by shells from rifled mortars, the accuracy of which has recently been greatly improved.

It is often said, and especially by people in the interior, who themselves are not directly subject to attack, that no enemy would undertake to land an army on our shores, as our militia would rise and drive the invaders into the ocean. It is true that our people are brave, and, under discipline and with experience, make as good soldiers as any in the world; but in attempting to prevent a descent upon the coast they could make no prolonged resistance to the big guns of an invading fleet. The more the men who lined the shores, even with the best rifles and field artillery, the greater would be the slaughter. Some fixed defenses must be provided for our great cities and harbors. Reliance upon torpedoes alone is mistaken, for torpedoes may be taken up as easily as they can be put down, unless they are placed under fire from the shore—that is, they are only an adjunct to defense. Neither

is it the best economy to mount our guns for harbor defense solely upon ships. This would require at every point to be defended a fleet as strong as the enemy could be expected to bring against it, and the first cost of mounting guns ashore is far less than putting them on ships, and the life of shore fortifications is longer than the life of ships. It would take a navy greater than that of all the other nations of the world combined to defend the immense coast line of the United States.

In 1816 the Board of Engineers laid down the following principles for the defense of our coast:

1. They must close all important harbors against an enemy, and secure them to our military and commercial marine.
2. They must deprive an enemy of all strong positions, where, protected by naval superiority, he might fix permanent quarters in our territory, maintain himself during the war, and keep the whole frontier in perpetual alarm.
3. They must cover the great cities from attack.
4. They must prevent, as far as practicable, the great avenues of interior navigation from being blockaded at their entrance into the ocean.
5. They must cover the coastwise and interior navigation, by closing the harbors and the several inlets from the sea which intersect the lines of communication, and thereby further aid the navy in protecting the navigation of the country.
6. They must protect the great naval establishments.

These principles are fundamental, and have stood the test of argument and experience, but the means of carrying the principles out have changed, and now it is necessary to concentrate at the points to be defended armaments equal in weight and metal to those of any possible attacking fleet, supplemented by torpedo defense.

Another important element in our defensive system is the ship canal, and an interior line of waterway, parallel to the Atlantic and Gulf coasts, is of great importance. It would be useful in peace, and in time of war its advantage to our naval and merchant marine would be incalculable. For instance, a ship canal connecting the great bays of the Chesapeake and the Delaware would enable a single fleet to be prepared to promptly meet an enemy threatening either of these waters. A great canal should connect the lakes with the Mississippi, and the Erie Canal should be made wider and deeper; but most important of all is a canal across the Isthmus, between the Atlantic and Pacific coasts. The immense commercial and military advantages to be gained from the building of such a canal should be controlled by the United States, and it is certain that the Nicaragua Canal will be opened before many years have passed, if not by the United States, by England or by Germany.

The Plague in China.

A correspondent of the London *Times* writes: "When the last mail left China a fearful epidemic was raging in Canton, and it appears to have been of a somewhat mysterious character. It is said to have been first observed in that city in the last week of March, and by the end of April had spread everywhere. It was marked by a sudden attack of fever, the temperature rising to 105°, or even higher, with headache, thirst and stupor. In from 12 to 24 hours after the first attack, a glandular swelling, hard and tender to the touch, appeared in the neck, armpit, or groin. Coma supervened, and death occurred in 48 hours. Sometimes blood vomiting took place, or spots appeared on the body, but there was no general characteristic eruption. At first the epidemic was limited to one or two quarters of the city, but it was very fatal, and it is said by the native doctors that two out of every three attacked died. It did not appear to be contagious, and it is said to be the 'bubonic plague,' described by travelers in western China. As a rule, the lower animals were also affected, thousands of rats especially being found dead at the commencement of the epidemic."

The special correspondent of the *British Medical Journal* telegraphs from Hong-Kong: "While regretting to have to confirm the announcement of an epidemic outbreak of the Oriental plague in this settlement, I am glad to be able to give the latest information, which is of a somewhat reassuring character. The plague commenced here on May 5; it presents all the symptoms of the true bubonic pest which ravaged Europe in the middle ages, and produced the terrible ravages described by Defoe during the great plague in London. This bubonic pest, although extinct in Europe, has never ceased to ravage China from time to time, and has also spread from there to Persia and Asiatic Russia. The symptoms here are of the classic type, characterized by the intense symptoms corresponding to those of typhus, and by the bubonic boils characteristic of the disease. I am glad to say that the Europeans here are unaffected, except in the case of ten of the military employed by the authorities in carrying out disinfecting work in the native quarter where the plague is located; one of them is unhappily dead."