

THE BABYROUSSA OF MALACCA.

This strange creature is notable for the curious manner in which the tusks are arranged, four of these weapons being seen to project above the snout. The tusks of the lower jaw project upward on each side of the upper, as is the case with the ordinary boar of Europe, but those of the upper jaw are directed in a very strange manner. Their sockets, instead of pointing downwards, are curved upwards, so that the tooth, in filling the curvatures of the socket, passes through a hole in the upper lip, and curls boldly over the face. The curve, as well as the comparative size of these weapons, is extremely variable, and is seldom precisely the same in any two individuals. The upper tusks do not seem to be employed as offensive weapons; indeed, in many instances they would be quite useless for such a purpose, as they are so strongly curved that their points nearly reach the skin of the forehead. The female is devoid of these curious appendages.

From all accounts, the babyroussa seems to be a very fierce and dangerous animal, being possessed of great strength, and able to inflict terrible wounds with the tusks of the lower jaw. A naval officer who had experienced several encounters with this creature, spoke of it with great respect, and seemed to hold its warlike abilities in some awe. The adult male babyroussa is considerably larger than the boar of England, and the officer above mentioned told me that he had seen them as large as donkeys. It is a very good swimmer, and will take to the water for its own gratification, swimming considerable distances without any apparent effort.

The skin of the babyroussa is rather smooth, being sparsely covered with short, bristly hairs. The object of the upper tusks is at present unknown, although certain old writers asserted that the animal was accustomed to suspend himself to branches by means of the appendage. The babyroussa lives in herds of considerable size, and is found inhabiting the marshy parts of its native land.

THE BARBASTELLE.

The barbastelle does not seem to be very plentiful in this country, nor in England. One of these animals, which was for some weeks in possession of Mr. Bell, was taken in Kent, says Wood's *Natural History*, at the bottom of a mine seventy feet in depth. It did not seem to be so active as some long-eared and other bats which were taken in the same locality, and preferred lying on the hearth rug to using its wings. It fed readily on meat and would drink water, but never became so tame as its companions. Its captive life lasted only a few weeks, its death being apparently hastened by the attacks of the other bats, one of which was detected in the very act of inflicting a bite on the barbastelle's neck.

The color of the barbastelle is extremely dark, so much so, indeed, that by depth of tint alone it can be distinguished from any other British bat. On the hinder quarters, a rusty brown takes the place of the brownish-black hue which characterizes the fore part of the body. Underneath the hair is nearly gray, being, however, much darker towards the neck.

The length of its head and body is just two inches, that of the ears half an inch, and the expanse of wing measures between ten and eleven inches. The ears are tolerably large, and slightly wrinkled. The tragus is sharply pointed at its tip, and widened at its base. A full view of the face shows a rather deep notch in the outer margin and near the base of the ear.

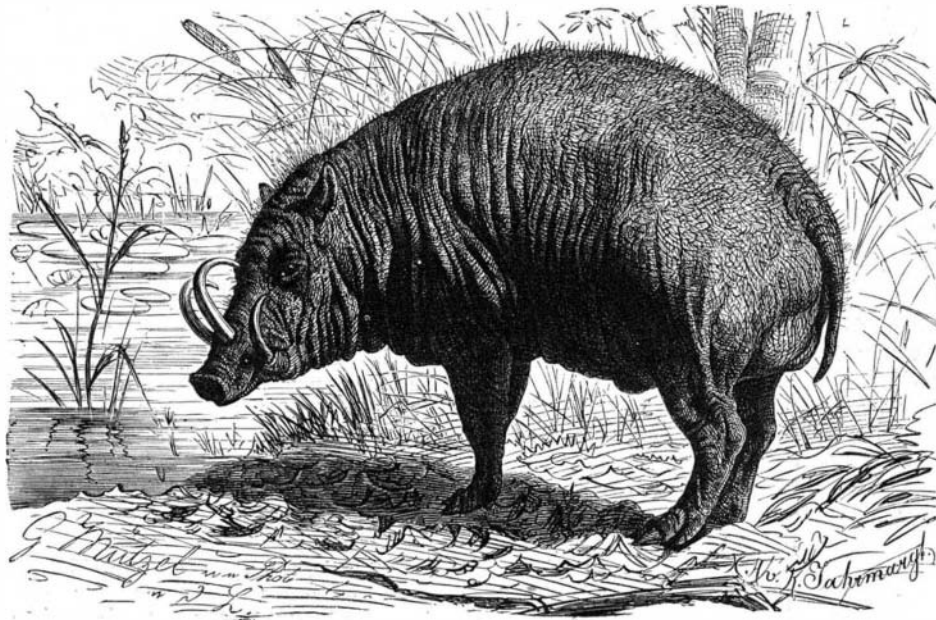
Successful Importation of Soles.

The first English soles ever brought alive to this country arrived by the Black Ball packet ship *Hamilton Fish*, May 21. Captain Mortimer started with twenty-five fish placed in a tank specially constructed so that the lurching of the vessel would not be felt by the fish, the sole, owing to its extreme delicacy, being killed by the least shock. During the voyage the tank was aerated every four hours, and deep sea water was given to the fish. Notwithstanding these precautions nineteen died. The rest came safe and in fine con-

dition. Two were females with spawn. They were planted on the government reservation, just inside Sandy Hook. The sole is a flat fish, of delicious flavor, peculiar to British waters. Many attempts have been made before to introduce it into American waters, but without success.

Novel Mode of Killing Gophers.

In this paper some six months ago there appeared an illustration and description of a novel mode of destroying gophers, moles, etc., by injecting poisoned fumes into their holes and runs. It seems, from the *San Francisco Chronicle*, that the apparatus has been recently tried in that city, and the writer gives the following account of it.

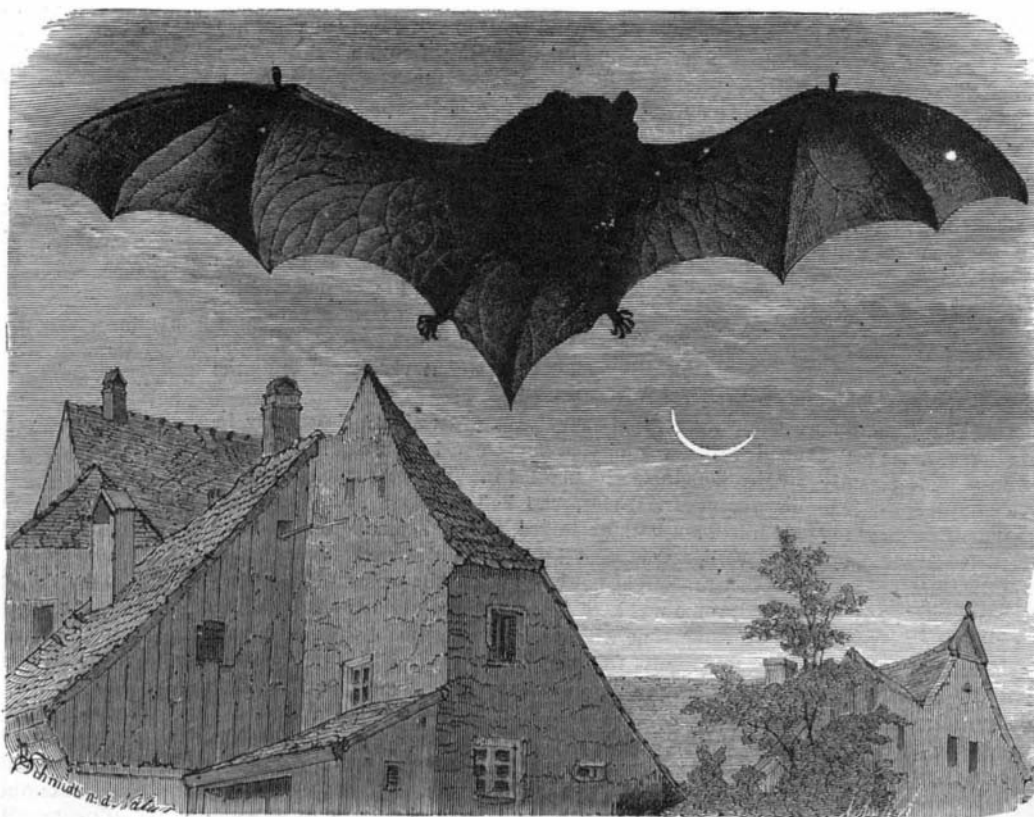
**THE BABYROUSSA.**—(*Babirusa Alfurus*.)

At the Laurel Hill Cemetery, yesterday morning, the agent for a new squirrel, ant, and mole exterminator, gave a test of his apparatus. The machine consists of a furnace constructed of galvanized iron, lined with fire clay, about 12 x 24 inches in size. On the inside of this furnace is a discharge pipe, passing from near the top down through the bottom. To this furnace is attached an air pump by means of sectional tubes and elastic hose, which can be instantly adjusted for operation. A fire having been made in the furnace, and a poisonous compound dropped in, the top is securely closed, the chamber placed over the gopher or squirrel hole, and the air forcing machine started, when all the smoke and poisonous vapors are forced down into the hole, killing, it is claimed, everything animate with which it comes in contact. During the experiments at the cemetery yesterday sulphur was used, being dropped in the furnace in half-pound packages. When the apparatus was put in operation over one of these gopher holes, the ground for

sects. Something can also be done to prevent the flies from maturing. As the cocoon in which the larva hibernates is very frail, and as the latter does not survive the rupture of the same, it follows that many of the insects may be killed by thoroughly stirring and pulverizing the soil of rose beds. Roses that are transplanted from one locality to another should, before setting, be immersed in a tub of water and have every particle of soil washed from their roots. By observing this precaution newly made gardens may be secured for a long time against this worst enemy of the fairest flower.—*American Entomologist*.

The Grapevine Flea Beetle.

Professor Comstock, the entomologist of the United States Department of Agriculture, gives the following method of fighting an insect which has lately been a great pest in Canadian vineyards. The grapevine flea beetle (*Haltica chalybea*, Illiger) has been one of the most formidable enemies that the grape growers of this country have had to contend with. The only redeeming feature about it is that it seldom appears in the same locality in great numbers during consecutive years. These beetles leave their hibernating quarters in April, and attack and destroy the young leaf buds as soon as they appear; later they feed upon the leaves which have escaped their earlier ravages, and deposit their eggs upon them. The eggs are of an orange color, and soon hatch into small chestnut-colored larvae. These larvae also feed upon the leaves, and when they appear in great numbers sometimes strip the vines of their foliage. After a month of active life the larvae descend to the ground and bury themselves near the surface, where they make cells of the earth, and change to pupæ of a dirty yellow color. The adult beetles, issuing in the course of a few weeks, again feed upon the leaves during the autumn, doing, however, but little damage, and later seek their winter quarters beneath the bark and splinters on the vines and the stakes which support them, as well as under any rubbish that may be in the

**BARBASTELLE.**—(*Synotus Barbastelle*.)

a radius of several yards seemed animated by a series of miniature volcanoes, the sulphuric vapors belching forth from numerous undiscovered holes. About ten minutes' pumping serves to thoroughly impregnate the burrow and its connecting drifts with the poisonous fumes, and, it is presumed, to totally annihilate its inhabitants.

vineyard. This week specimens of this insect were brought me by Mr. A. R. Phillips, of this city, with the statement that his vineyard in Virginia is infested with them to a perilous extent. I at once sent Mr. L. O. Howard, my first assistant, in company with two others, to the vineyard in question, for the purpose of experimenting with remedies.

Mr. Howard's report was very gratifying. Finding it impracticable to jar them from the vines into sheets or other receptacles, and keep them there, he hit upon the plan of drenching the sheets with kerosene; this worked in a most satisfactory manner. The mode of procedure is as follows: Take two pieces of common cotton sheeting, each being two yards long and half as wide; fasten sticks across the ends of each piece to keep the cloth open, and then drench with kerosene. Give the sheets thus prepared to two persons, each having hold of the rods at opposite ends of the sheets. Then let these persons pass one sheet on either side of the vine, being careful to unite the cloth around the base of the vine; then let a third person give the stake to which the vine is attached a sharp blow with a heavy stick. Such a blow will in nearly every case jar the beetles into the sheets, where the kerosene kills them almost instantly.

This process, after a little experience, can be performed almost as rapidly as the persons employed can walk from one vine to another. The expense necessary is very trifling, and boys can do the work quite as well as men. Warm bright afternoons are the proper times for this work to be done, and it should be performed faithfully every sunny day until the vines are out of danger. This mode of combating the beetle promises to be much more effectual than any other which has been hitherto suggested; for it can be used early in the season before the vines are seriously injured and before the insects have begun to multiply. In connection with the above, the remedies which have been recommended often should, if necessary, be used. These are as follows: First, all rubbish should be removed from the vineyard, and the stakes and trellises which support the vines be well cleaned of bark and splinters, so as to afford the beetles little chance for hibernating in the vineyard. Second, if the larvæ appear in great numbers, lime should be sifted over the vines.

Protection Against Mosquitoes and Flies.

Quassia water is, according to a correspondent of *Nature*, a protection to peach trees against insect blight. The first year the trees bore well and the new wood was elbow length or more. I next tried quassia in the vinery. Instead of lime-washing the walls to get rid of the green fly, one watering with quassia dismissed them in a day. My head gardener, who had previously much experience in nursery grounds, wondered that he had never heard of it before. He now uses it in all cases as a protection from flies and blight. The dilution goes a long way: one pound of chips of quassia wood boiled and reboiled in other water until he has eight gallons of the extract for his garden engine. He finds it inadvisable to use it stronger for some plants. This boiling makes the quassia adhesive, and being principally applied to the underleaf, because most blight settles there, it is not readily washed off by rain. Quassia is used in medicine as a powerful tonic, and the chips are sold by chemists at from sixpence to a shilling a pound. The tree is indigenous to the West Indies and to South America.

And now as to gnats and mosquitoes. A young friend of mine, severely bitten by mosquitoes and unwilling to be seen so disfigured, sent for quassia chips and had boiling water poured upon them. At night, after washing, she dipped her hands into the quassia water and left it to dry on her face. This was a perfect protection, and continued to be so whenever applied.

At the approach of winter, when flies and gnats get into houses and sometimes bite venomously, a grandchild of mine, eighteen months old, was thus attacked. I gave the nurse some of my weak solution of quassia to be left to dry on his face, and he was not bitten again. It is innocuous to children, and it may be a protection also against bed insects, which I have not had the opportunity of trying. When the solution of quassia is strong it is well known to be an active fly poison, and is mixed with sugar to attract flies, but this is not strong enough to kill at once.

ENGINEERING INVENTIONS.

Mr. Richard B. Ireland, of Trenton, N. J., has recently patented an improved railway signal, in which the sliding night signals carry corresponding day signal arms or banners of different configurations and color, the danger slide being elevated by raising either of the other slides (caution or safety), their normal condition being, of course, danger.

Mr. John R. Jones, of Clarksville, Iowa, has recently patented an ingenious and effective device for operating car brakes. It may be operated either by hand or by means of a friction wheel fitted on the locomotive. It gives a simultaneous movement to all of the brakes on the train.

Mr. Eugene H. Angamar, of New Orleans, La., has invented a boiler adapted for application to horse cars now in use, so as to utilize such horse cars without material changes. The invention consists in a boiler made in two portions, separated by a mediate chamber, the water and steam spaces of the parts being connected by pipes.

An improved slate dressing machine, patented by Mr. Francis Shenton, of Slatington, Pa., consists of angularly set vertically moving knives for beveling and trimming the end edges of the slates, and, in connection therewith, grooves and ways and other devices for holding the slate in its proper position for the action of the knives, and an arrangement for holding the knives in position to act upon the edges at the proper moment.

THE ARMY WORM ON LONG ISLAND.—The army worm has appeared in great numbers at Islip, Long Island, and is naturally creating much alarm among the farmers.

ROOFED COUNTRY ROADS.

To a large extent in the South and Southwest the highways are of two distinct sorts—in local parlance, *turnpikes* and *mud roads*.

The former title covers the main State roads, often constructed with great care and cost, and usually macadamized. The latter includes the great majority of country roads; and for nine months or more every year the name is exactly descriptive of their character. They are emphatically mud roads, and the mud is deep and tenacious.

Plank roads are sometimes tried where lumber is cheap; but they rest under the disadvantage of being expensive, and they are neither durable nor easily kept in repair. Accordingly mud roads predominate, and the communities possessing them are little given to social or commercial intercourse with their neighbors save during the brief periods when the mud is dry and the wheeling passably good.

An exception to this rule appears in Bosier Parish, Louisiana, where an attempt has been made to keep an important earth road dry and usable by the novel device of roofing it, so as to keep off the rain. The first stretch of covered road on this plan runs from Red Chute Bridge, Louisiana, four miles across Red River bottom, near Shreveport. The idea originated with Judge J. D. Watkins, of Shreveport, and, as is the usual fate of new ideas, it aroused no little popular ridicule. Judge Watkins was not a man to be laughed down. Obtaining a State charter for his enterprise he began to build the road. His opponents complained that he was obstructing the parish road, and attempted to stop the work; but ample and lawful room having been given for the parish road their opposition came to nothing. It is now four years since the work was begun, and Mr. John S. Williams, of Shreveport, who has been connected with the enterprise from the beginning, informs us that the road is a complete success. At the time of his writing, in March, while the uncovered roads were axle deep in many places with stiff mud, the shed road was firm and dry.

In building the road, the bed, 18 feet wide, was thrown up just enough to keep out the surface water; and over it was put a roof of plank five-eighths inch thick, the planks being 12 inches wide and 20 feet long. Cypress from the neighboring swamp is used for posts, and roughly sawed timber for frame work. By means of an ingenious platform mounted on a common two-horse wagon and supporting a light framework, four men easily put up 20 sections, of 20 feet each, a day. The cost of the road was about \$3,500 a mile, with lumber at \$1 a hundred feet, labor \$1 a day, posts 12½ cents each, earthwork 20 cents a cubic yard, and nails 5 cents a pound. The advantages of the road arise from its cheapness, as compared with any other style of road possible there, its durability, and its unvarying serviceableness. The native clay soil, when kept dry, makes a better roadbed than either wood or stone, and the road is easily kept in repair. The wagons do not touch the woodwork, and the roof will last five times as long as planks laid upon the damp earth. Though the sides are not enclosed the rain does not drive in enough to make the roadbed muddy, much less wash it. In short the practical test of the road, on the score of cheapness and efficiency, has been so satisfactory that the ridicule and opposition it first awakened have been overcome, and other roads on the same plan are about to be constructed.

Germination of Cotton and other Seeds.

In the opinion of General Le Duc a discovery of value has been made in relation to the planting of cotton. A question having arisen as to the situation of the oil cells in Indian corn, the matter was referred to the microscopist, Prof. Thomas Taylor. He found a series of oil cells near the outer surface, and another row immediately surrounding the chit or germinating point, evidencing the complete protection which the latter received. This fact led Prof. Taylor to experiment, with a view to ascertaining the amount of resistance offered to the attacks of agents generally supposed to be of a destructive nature to all organic life, cotton seed being used in the experiments. For the purpose of removing the cotton from the seed he used concentrated sulphuric acid, which completely removes it without visibly affecting the outer brown shell of the seed.

To test the actual effect on the germinating property he handed some cotton seed thus treated and afterward washed, to Mr. Saunders, who planted it. To the surprise of every one except Mr. Taylor, who had foreseen this result if the germ had not been destroyed, the seed came up at least five days earlier than that in its natural state. To ascertain whether this might not be owing to the soaking the seed received, some was kept for several months and then planted at the same time with seed of the same crop unprepared. The same results followed.

The advantage to planters in having five or six days start can scarcely be overestimated, whether availed of in avoiding early frosts or raising early cotton, for which premiums are offered by several cotton boards in the South. But this is not said to be the principal benefit conferred by the discovery. Hitherto cotton planting has had to be done by hand, and the seed sown broadcast, owing to the adherent cotton preventing the seed being used in the planters used for corn and other clean seed. After preparation the seed can be used in any planter, and, by the regularity of growth resulting, the subsequent cultivation greatly facilitated. The mode of preparing the seed is as follows: The seed is placed in an earthen or glass vessel and ordinary sulphuric acid poured over so as to completely cover it. It is then stirred until the brown shell is left free from cotton. The acid is

poured off to be used again, and the seed washed till all acidity disappears from the water, and dried. A large quantity is to be thus prepared and distributed among cotton planters for next season. The acid, after it has become saturated or exhausted, is to be experimented with to ascertain whether the glucose cannot be recovered. Experiments are also to be instituted with a view to ascertain the practicability of the process as applied to seeds slow of germination, such as that of the palm, which takes three years to sprout.

Sugar by Diastase.

It is a curious fact that as diastase, or whatever other substance may be the transforming agent in malt, acts upon starch and converts it into maltose and dextrose, so these products in their turn exert a retarding influence upon further change. The presence of a large proportion of dextrose or maltose undoubtedly stops the transformation of starch, and this fact has been recorded by Schutzenberger and others who have studied the question. It is easy to understand, therefore, that in a very thick mash there may be an incomplete conversion; but if a portion of the dextrose or maltose be removed, and a little fresh diastase added, the action will be continued. This is, to some extent, practically done in the sparging operation in the brewery, but in consequence of the high temperatures usually employed most of the diastase is destroyed. It would appear, therefore, that beneficial results would be obtained by reserving a little of the grist for the purpose of sprinkling it over the malt just prior to sparging; this fresh malt would yield the necessary diastase or converting agent required to transform any unconverted starch or dextrine into sugar. It may be argued that there will be loss, in consequence of the last addition of malt not being completely extracted, but this might be obviated by making a small separate mash of it at a comparatively low temperature.—*Brewers' Guardian*.

Land Birds at Sea.

During a recent passage of the White Star steamer *Germanic* from Liverpool to New York, and when about one thousand miles from Queenstown, a strange bird was discovered in the rigging. The sailors and passengers endeavored to catch it, but without success, until Dr. C. W. Goff, of this city, one of the passengers, came on deck, when the bird at once flew into his hands. The doctor cared for it, and upon the arrival of the steamer presented the bird to the collection at the Central Park. The bird is known as the whimbrel—a peculiar land bird resembling the curlew in habits and about the size of a prairie hen, black and gray plumage, wings like a bat, with a long whalebone-like bill in shape similar to that of a woodcock. Great interest was attached to the bird by the officers of the ship from the fact of its being a land bird found so far at sea, with wings but poorly calculated to sustain it for any length of time.

The owl "Kate Field," captured under similar circumstances in mid-ocean last autumn by one of the crew of the White Star steamer *Celtic*, is still at the Central Park, thriving, contented, and doing honor by the wisdom of her countenance to the name she bears.

Coin in the Sub-Treasury.

The law requiring the coinage of \$2,000,000 a month in silver dollars, in connection with the public aversion to handling large sums in silver when bills can be obtained, has resulted in making a serious plethora of coin in all our government depositories. Those at San Francisco, Cincinnati, and Chicago were all filled early in March, and those at Washington, Boston, Philadelphia, and St. Louis reached the limits of their capacity soon after. As a consequence nearly all the newly-coined silver is being piled up in the Sub-Treasury in this city. This inconvenient treasure, weighing over 612 tons, is stored in a huge vault, 47 feet long, 27 feet wide, and 12 feet high. In the same vault are stored 130½ tons of gold, worth over \$65,000,000.

Burnt Alum.

Ordinary alum is a double sulphate of potash and alumina, containing, when crystallized, twenty-four molecules of water. When heated, it melts in its water of crystallization, and on continued heating this is expelled, leaving a dry powder, known in pharmacy as *Alumen usta*, or burnt alum. That sold at the drug stores is often imperfectly dried, and should be placed for an hour or more in a hot bake oven before use. According to C. Bernbeck the best test for a good article is, that it is nearly tasteless when put on the tongue, and takes twelve to twenty-four hours to dissolve in water. Much of the alum now in commerce contains no potash, the alkali being ammonia. Of course ammonia alum cannot be converted into burnt alum, as the ammonia is expelled at the same time, leaving only sulphate of alumina behind.

Memphis Reclaimed.

It is reported that Memphis is at last clean, and so far worthy of exemption from further epidemics of yellow fever. Twenty miles of sewer pipes have been laid already, and over 700 men are now at work for the district government. Thirty miles of sewers will be finished by June 1. This will nearly complete the sewer system. In addition, an equal number of miles of drain tile have been laid. Aside from sewerage and drainage, mention must be made of the cleaning and filling of vaults, the demolition of hundreds of old buildings, the tearing up of the Nicolson pavement, the cleaning up of cellars, and the general renovation of stores and dwellings.