DISAPPEARING DEMON.

BY W. E. ROBINSON.

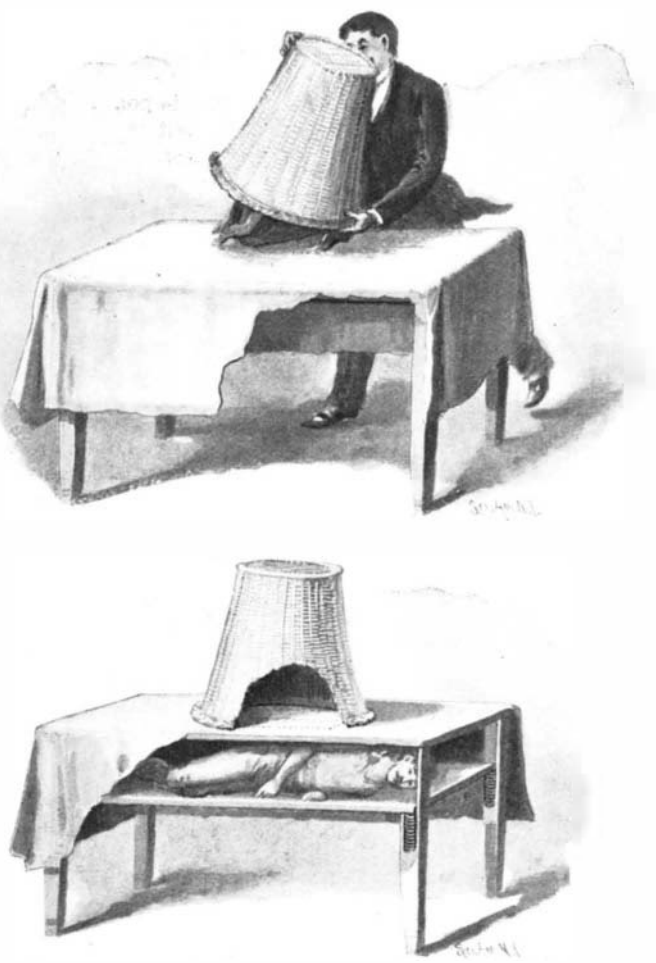
An excellent trick which never fails to please is known as the "Disappearing Demon." A couple of very clever acrobats and contortionists have been mystifying both continents with acrobatic feats and wonderful posturings, and then end their performance with a unique disappearing and appearing act. The only piece of apparatus which they have occasion to use is what appears to be an ordinary kitchen table, devoid of cloth. One of the performers suggests that they set the table for dinner. The cloth is spread over the table, coming some ten inches below the top. A dispute then arises who shall cook the dinner. Finally, one of the acrobats, who is dressed as Mephisto, jumps upon the table to get away from his companion, who follows him with a cone-shaped wicker basket, which he claps over his comrade's head and body, hiding him completely from view. In a few seconds the pursuing acrobat kicks over the cone, and the demon has disappeared. The cone is again placed upon the table, and immediately lifted, and it is found that the demon has returned. The trick can be readily understood by reference to our engravings. The table has a double top, the upper one being made fast to the legs and containing a well-concealed trap. The lower one is movable, working up and down in grooves in the table legs. It is kept in its normal position against the real top of the table by means of spiral springs in the hollow legs of the table. The cloth is slit on three sides of a square, and the other side is loosely basted, so that one pull on the thread will disjoint or free it. When the demon is covered over, he pulls out the thread in the cloth and passes through the trap in the table top, the lower part of the double top sinking down under the performer's own weight. During the time when he is lost to the view of the audience, he lies flat between the two table tops, and close to the trap. Of course, when the cover is removed, he has apparently disappeared. He makes his appearance in the reverse way.

Fish Poison.

The subject of fish poisons has for some years past attracted attention among chemists, and a useful contribution to the subject has just been completed by a corresponding member of the Pharmaceutical Society, Dr. M. Greshoff, the Director of the Chemical Laboratory at the Colonial Museum, Haarlem. It forms Part XXIX. of the Mededeelingen uit 'Slands Plantentuin, as published in Batavia. A good deal of the work was done in the celebrated Botanical Gardens at Buitenzorg, in Java, where Dr. Greshoff worked for some time. This volume is the second that has been issued, and the two form a complete résumé of all that is known on the subject, economical, botanical, and chemical. The poisonous action on fishes seems to be due chiefly to the following substances: Prussic acid, saponin, cumarin, cytisine, and andromedotoxin, although there are others, such as picrotoxin, derrid, and the acrid principles of the Euphorbiaceæ and Ranunculaceæ.

Antiseptic Properties of Bile.

A few years ago it was supposed that the bile had a considerable antiseptic power, and that one of its functions consisted in modifying the intestinal fermentations; later on, however, bacteriological research showed that the bile had no antiseptic power, but, on the contrary, it was in most cases an excellent medium for the culture of different microbes. But although the bile is not antiseptic, it acquires, under certain conditions, antitoxic and vaccinating properties. Robert Koch found that the bile of animals who had succumbed to the bovine pest could be used for the inoculation of other animals to protect them from the disease. The recent work of F. Neufeld has established a new property of the bile, namely, a bacteriolytic power toward the pneumococcus. If 1 part of rabbit's bile is taken and mixed with 10 or 20 parts of a bouillon containing the pneumococcus, it is found, upon examining the liquid in suspended drops, that at the end of a few minutes the contours of the pneumococcus lose their sharpness, becoming less and less visible, and finally disappear completely, being dissolved in the liquid; this action requires, in ordinary cases, about three or four minutes, but sometimes lasts as long as fifteen to twenty minutes. The rapidity with which the solution takes place varies, besides, with the more or less fluid state of the bile and the quantity of culture introduced; the bile may dissolve up to 300 times its volume of culture. The action is about the same at the ordinary temperature and at 38° C.; but is slower at 1° or 2° above zero. The dissolving of the pneumococcus does not involve the destruction of the vaccinant substances contained in the body of these micro-organisms; in fact, a hypodermic injection of bile given to a rabbit, and having previously dissolved a culture of pneumococcus, gives it immunity, or at least increases considerably its resistance to this form of infection. The bile seems to act only against this particular form of micro-organism, and leaves intact the other pathogenic bacteria (typhus bacillus, streptococcus, diphtheria bacillus, etc.) This property is possessed not only by rabbit's bile, but in less degree by the human bile and that of different animals.

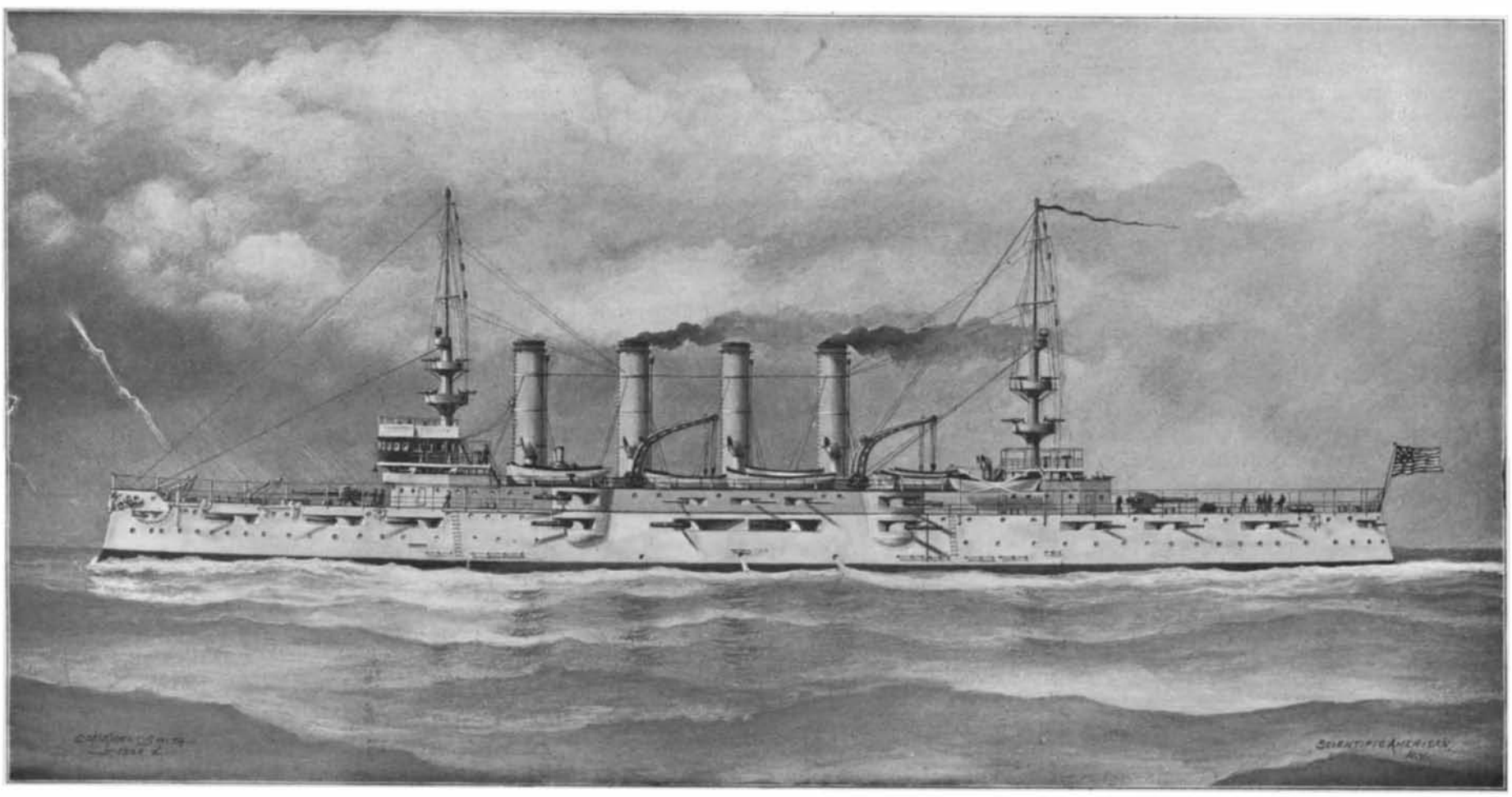


THE DISAPPEARING DEMON.

THE PROTECTED CRUISERS OF THE "ST. LOUIS" CLASS.

A point has been reached in the development of the new United States Navy in which we not only have ceased to follow the lead of other navies, but are producing original designs of ships and novel details which are being followed by foreign constructors. It is true that in size the United States Navy stands fourth among those of the world, but in design, material, equipment, and efficiency, it is the equal, if not the superior, of any other navy. This result is due largely to the ability and energy of the Bureau of Construction and Repair, which, under the Chief Constructor, Rear-Admiral Philip Hichborn, has been responsible for the design, construction, and maintenance in a state of efficiency of our new navy. The latest products of this Bureau are fourteen vessels, whose construction has recently been authorized, namely, five battleships, of about 15,000 tons displacement, six armored cruisers, of about 14,000 tons displacement, and the three protected cruisers which form the subject of the present article, of a little under 10,000 tons displacement.

The Protected Cruisers, to be named the "St. Louis," "Milwaukee," and "Charleston" (the latter to continue the name of the 3,700 ton vessel wrecked November 2, 1899, off Kamiguin Island in the Philippine group), compare favorably with their class in other navies. In fact, so closely do they approach the type of second-class armored cruisers that they might easily be



NEW UNITED STATES PROTECTED CRUISER "ST. LOUIS"—ALSO "MILWAUKEE" AND "CHARLESTON."

Displacement, 9,700 tons. **Speed,** 22 knots. **Bunker Capacity,** 1,500 tons. **Armor:** Side armor and partial belt, 4 inches; conning tower, 5 inches; gun positions, 4 inches; protective deck, 2½ inches. **Armament:** Fourteen 6-inch 50-caliber rapid-fire, eighteen 3-inch 50-caliber rapid-fire, twelve 3-poonders, twenty-four smaller guns. **Complement,** 564.

mistaken for such. In an engagement they would prove themselves a match for some of the armored cruisers of other navies. A comparison of their principal data with that of the British "Monmouth" class will demonstrate their value.

	United States. "St. Louis," "Milwaukee," "Charleston."	Great Britain. "Monmouth," "Essex," "Kent," "Bedford."
Length on load waterline	424 feet.	440 feet.
Breadth, extreme	66 feet.	66 feet.
Trial displacement	9,700 tons.	9,800 tons.
Mean draught at normal displacement	23 feet 6 inches.	24 feet 6 inches.
Engines, twin-screw, I. H. P.	21,000	22,000
Speed	22 knots.	23 knots.
Normal coal supply	650 tons.	800 tons.
Coal bunker capacity	1,500 tons.	1,600 tons.
Armament.		
	Fourteen 6-inch R. F. guns.	Four 6-inch R. F. guns, in turrets.
	Eighteen 14-pdr. R. F. guns.	Ten 6-inch R. F. guns in casemates.
	Twelve 3-pdr. R. F. guns.	Ten 12-pdr. R. F. guns.
	Four 1-pdr. automatic.	Three 3-pdr. R. F. guns.
	Eight 1-pdr. R. F. guns.	Eight machine guns.
	Two 3-inch R. F. field guns.	
	Two machine guns, 0·30 caliber.	
	Eight automatic guns, 0.30 caliber.	
Protection.		
Main side armor	4 inches.	4 inches, tapering to 2 inches at bow.
Lower casemate armor	4 "	
Upper " "	4 "	
6-inch gun protection	4 "	4 inches.
Conning tower and shield	5 "	
Signal tower	4 "	
Splinter bulkheads	2 "	
Protective deck	2½ "	Two decks, 1¼ inches and ¾ inch.

The act authorizing the "St. Louis" class states that these vessels shall carry "the most powerful ordnance for vessels of their class, and have the highest speed compatible with good cruising qualities and great radius of action;" all these qualifications have been embodied in the design for these vessels. The general appearance of these cruisers suggests that trite quotation: "A thing of beauty is a joy forever." "Beauty" and "joy" applied to these vessels mean easy lines, graceful exterior, speed and the ability to sustain that prestige upon the sea which has been maintained by the navy of the Republic since its origin.

The main deck of these cruisers is supplemented amidships with a covered superstructure, within which are located four 6-inch rapid-fire guns and six 14-pounder rapid-fire guns; outside the superstructure are two more 6-inch rapid-fire guns, located on the center line, one forward and the other aft. Located on the gun deck is the greater portion of the battery, consisting of eight 6-inch rapid-fire guns, twelve 14-pounder rapid-fire guns, and four 1-pounder rapid-fire guns. Sixteen rapid-fire guns are stationed on the superstructure deck and bridges, and the remainder of the battery is located in the fighting tops of the two military masts. Additional platforms are built upon the masts to accommodate the two search-lights. Electric ammunition hoists are designed to supply the guns with the greatest rapidity, making it possible to hurl against an enemy a broadside of about twelve tons of metal per minute.

The four lofty smokestacks, extending to a height of 76 feet 6 inches above the normal load waterline, provide draught for sixteen straight water-tubular boilers located in four watertight compartments, which, together with the engines, are protected by the side armor, sloping deck armor, and a twelve-foot coal bunker.

The inner bottom of these vessels extends to the under side of the protective deck; above the protective deck a cellulose cofferdam, 30 inches wide and 41 inches above the normal load waterline, extends throughout the length of the vessel.

In the construction and equipment of the "St. Louis" class, as small a quantity as possible of wood is to be used, and wherever it is used it will be electric fire-proofed. Each vessel of this class is fitted to accommodate a flag officer and staff in conjunction with the regular complement. In commission the number of officers will be 39 and the crew will number 525 men, for which are provided 16 boats, ranging from a 36-foot steam cutter to a 16-foot dinghy, and in addition to these two 12 foot punts and two life-rafts will be carried. These boats are stowed in chocks on the superstructure deck and swung out by four cranes.

All the latest and best improvements in construction and equipment are to be provided for the accommodation and comfort of the officers and crew.

The waterline belt, 4 inches in thickness, extends in the wake of the engines and boilers and magazines for over one-third of the vessel's length, and reaches from several feet below to about 3 feet above the normal waterline. Side armor of the same thickness is carried up amidships to the main deck, and extends between and includes the forward and after 6-inch guns on the gun-deck. The 6-inch guns at the four corners of the superstructure are also protected by 4-inch armor.

While we greatly admire these vessels, we must express a regret that the waterline armor was not carried up to the bow, even if some compromise had been necessary in the matter of coal or armament. This is an age of armored cruisers (i. e., ships with a complete waterline belt), and it is regrettable that these vessels should fall short of the requirements for want of the 120 feet of 2 to 3-inch armor necessary to complete the belt to the stem.

The corn-pith cellulose cofferdam at the waterline, with its water-excluding properties, will safeguard the trim and stability of the "St. Louis" against all but the smaller 6 and 14-pounder shells about as effectively as if the 2-inch belt were extended to the stem; but it will be just these very small-caliber guns that will be used to search out and cut to pieces the unprotected ends of an enemy's waterline.

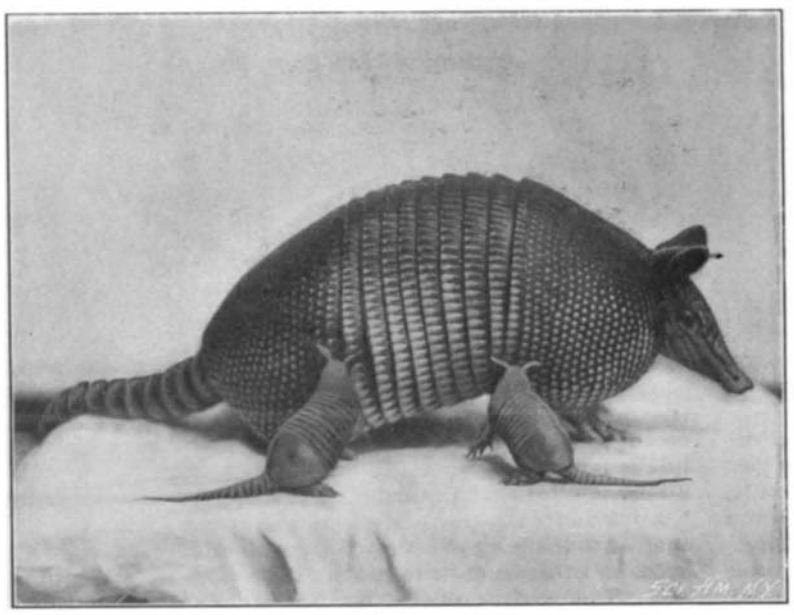
It must be admitted that the new ships, although they are not quite in the class of the armored cruisers, are nevertheless more than a match for any protected cruiser afloat.

ARMORED BURROWERS.

BY CHARLES F. HOLDER.

In the early days some of the most interesting animals were burrowers, as the glyptodon and toxodon; huge mailed creatures estimated to have been as large as a rhinoceros. South America was the home of these forms, and when the remains of a toxodon were discovered, they created no little excitement in the world of science. A rancher found the skeleton, which had rolled out of a bank. The strange head was seized upon by his boys, who, after pounding out the teeth, set up the then priceless skull as a mark, and what was left, and a few teeth, constitute the most interesting specimen in England to-day.

The glyptodon had a length of five feet and resembled an enormous turtle. The tail was long, giving the animal, with its head, a length of nine feet. All these mailed animals appear to have been enormous. Thus the genus Chlamydotherium equaled the largest living rhinoceros in size, while Pachytherium was as large as an ox. They were slow-moving creatures with little intelligence, needing the heavy armor to protect them from the attacks of the savage animals of the time.



ARMORED BURROWERS.

These giants seemed to have anticipated the curious armadillos of to-day, which are found in South America and the southwestern borders of the United States. It is difficult to imagine more interesting creatures than these armored burrowers, provided with a coat of mail jointed and so arranged that some can coil themselves up into a perfectly protected ball impervious to the attacks of almost any foe.

Armadillos are not rare in museums, but to see one alive with its young is not an every-day experience; and when I was informed that a female, owned by Edwards Brothers, of Tacoma, Washington, had given birth to three young in Pasadena, I induced the owner to allow me to photograph the family group. The young were interesting little creatures about six inches in length, and despite the fact that they were but a day old were very active; and doubtless the patient photographer, Mr. Jarvis, of Pasadena, never had such remarkable and obstreperous subjects, as it took four men over an hour to secure the accompanying picture. The mother was very docile, and displayed no affection for her young. When placed on a table on a white cloth, to throw her outlines into relief, she seemed like a stuffed specimen as far as any interest in her surroundings went; the only motion being a trembling, as though she were cold. But the two young were continually moving, attempting to reach the mother and nurse—a privilege which she had evidently denied them from the first; and the owner was trying to raise them by the bottle, to which they seemed favorably inclined. Their movements were very erratic and rapid, and when touched they at first seemed to recognize a stranger, and gave sudden leaps; but they soon became reconciled to the warmth of my hand, and would lie perfectly quiet. They were pink in color and almost perfect facsimiles of their parent; their eyes open, and the armor as hard as the inside of a man's hand and by no means as soft as one might expect. The head was very large in proportion to the body, the reverse holding in the adult.

There was something about both parent and young suggestive of swine; the peculiar snout as cold as ice, the piglike ears, and a very comical piglike trot completed the resemblance. The mother was perfectly tame, and sat in the keeper's arms in almost any position without objecting, but a strong, peculiar musky odor was particularly offensive, and would prevent the armadillo from being a popular pet. When placed upon the floor, the animal would trot around at a rapid gait, apparently not using her small eyes, but touching the snout to the floor at every step, as though to direct her course. The two adults ate three pounds of roast beef per day, and were given nothing else.

The observer in watching the animal could not divest himself of the idea that it was an automaton and wound up, so clumsy were the movements. Sometimes she stopped as though to listen, cocking her long ears upward and holding her head slightly on one side, at which time she might be standing on the tips of her toes in a most constrained and unnatural position; in a word, when the animal stopped, she did so in whatever position she happened to be in, whether flat-footed or on tip-toe. The keeper said that the animal displayed no intelligence, and paid no attention to her young. I repeatedly held the young to her nose as she trotted across the floor, but she did not appear to notice them. When placed in a box, she made convulsive leaps, falling with a crash.

To see the armadillo at its best, it should be in its home, where its burrowing powers are extraordinary. It is said that it is almost impossible to dig one out, the animal having the faculty of burrowing faster than two or three men can dig. Darwin, in referring to a South American form, states that when one was seen running along on the pampas, it was necessary literally to tumble from the horse to save it, as it would immediately begin to disappear, and before it could be grasped would often be nearly out of sight, its tail alone remaining above ground.

The hairy armadillo, according to Azara, would scent a dead horse a long way, and run directly toward it as would a hound. Instead of attacking it above ground, the armadillo would begin a burrow some distance off and come up beneath it, burrowing into it and remaining in the body until it had devoured all but the hide and bones. This species is said not to build burrows to live in, preferring the surface of the ground. When the singular Botocudos were first visited by white men, they were found to be provided with extraordinary speaking trumpets, hard as rocks and made up of facets. These were the tail armor of the largest of all the armadillos, which attains a length of two to five feet and has twelve or more movable bands. Its claws are enormous, constituting the most powerful digging armament known among animals; and in the regions where it is found, bodies when buried have to be weighted with rocks to prevent their depredations.

Nearly all the armadillos are valued as food, the flesh being described as good even from the American standpoint. The shells are used for a variety of purposes, and I have seen a very fair guitar made from one, the strings being stretched across the opening, a neck of wood having been inserted. To a certain extent the animals are scavengers. Several have been kept on one of our men-of-war to kill insect and animal pests, devouring rats, mice, and cockroaches with avidity. They are not confined to animal diet in their natural state, eating succulent roots, seeds, and plants of various kinds.

Potash Soap to Prevent Dimming of Eye-Glasses.

Constant wearers of eye-glasses, spectacles, etc., are much annoyed by the dimming of the glasses upon entering a warm room from a cooler place. It will greatly interest them to know that this evil can be obviated by rubbing the glasses with soft soap. All that is necessary is to rub every morning or before going out a little so-called green soap (washing soap, potash soap) over the whole surface of the glass, polishing it until it is bright again. The preparations, "Glasolin" and "Oculustro," offered for the same purpose at high prices, are nothing else than pure potash soap.—Die Werkstatt.

THE Prussian army is going to try barracks made of asbestos. Field Marshal Count von Waldersee has a portable asbestos house among his luggage.