## Correspondence.

### The Chestnut Worm.

*To the Editor of the Scientific American:*

Under the caption of "How the worm gets into the chestnut," published in the Chattanooga (Tenn.) *Evening News* of Dec. 22, by a Pittsburg physician, it is said that the eggs are deposited by an insect, etc. Having been reared among the extensive chestnut forests of the foothills of the famous Walden Ridge, have closely observed, for the past six years, the brown chestnut and its only enemy. There appears, from the middle of August to the first of September, a bug, very like the common lady bug, possibly a little longer, whose head terminates in a downward curved mosquito-like bill, with which it bores into the soft green chestnut, from the bud end, there deposits its eggs, which subsequently hatch into the well known "chestnut worm." When the chestnut matures and falls out, this same bug is to be found, and remains until killed by the frost.

To keep a chestnut in a damp place you will observe, about the middle of August, the shell will begin to show signs of decay, after which the bud end will open and the bug make his appearance, covered with bright brown specks; and, armed with his wiry bill, go in quest of a place to propagate his race.

I have searched in all the natural histories available, but cannot find any trace of such an insect described above. The blight of the chestnut is growing more each year from this cause. I would be pleased for you to give me, if possible, some insight as to the first appearance of the insect through the SCIENTIFIC AMERICAN.

ROBERT L. BOLTON.

Sale Creek, Tenn., January, 10, 1893.

Prof. L. O. Howard, of the Department of Agriculture, to whom we submitted the above, says: Mr. Bolton's observations are in the main correct. The common chestnut worm is the larva of a weevil known scientifically as *Balaninus caryatripes*. A full account of it will be found in the fifth report of the U. S. Entomological Commission, pages 350–53. He thinks Mr. Bolton is mistaken in respect to the killing of the insect by the frost. This chestnut weevil is indigenous to this country. No remedies are known.

### Safety Suggestions for Ocean Steamers.

*To the Editor of the Scientific American:*

I have read your "Safety Suggestions for Ocean Steamers" with great interest, and although not an expert, they appear to me of great importance.

I submit for your consideration the following suggestions, which you are at liberty to publish in the interest of the public or consign to your waste basket, as you may think proper.

*First.*—By providing air tight hatches and coverings, *to be used when necessary*, over engine rooms and such other openings in the deck of a ship as are usually left for ventilation, so secured as to safely withstand outward pressure equal to about two atmospheres, together with air pumps (to be worked by steam power or by hand), so placed as to be always accessible for compressing air in either of its compartments, and air locks through which men may pass when air is compressed therein. It is suggested that in case of an accident of any kind which causes one or more openings in the bottom of a ship, through which more water passes than can be pumped out, either of the several compartments, or all of them, may in a few moments be substantially converted into pneumatic caissons, and in a very short time all water therein which is above the level of the opening through which it has entered can be forced out through such opening or openings and kept out by compressed air. When this is done, the fractures in the hull of the ship would probably, in most cases, be easily accessible for repairs; and if for any reason repairs cannot be made at sea it would only be necessary to maintain the requisite air pressure in the leaky compartments, by pumping in as much air as might escape through the decks or otherwise, to secure the continued buoyancy of the ship for such length of time as might be required for it to reach its port of destination.

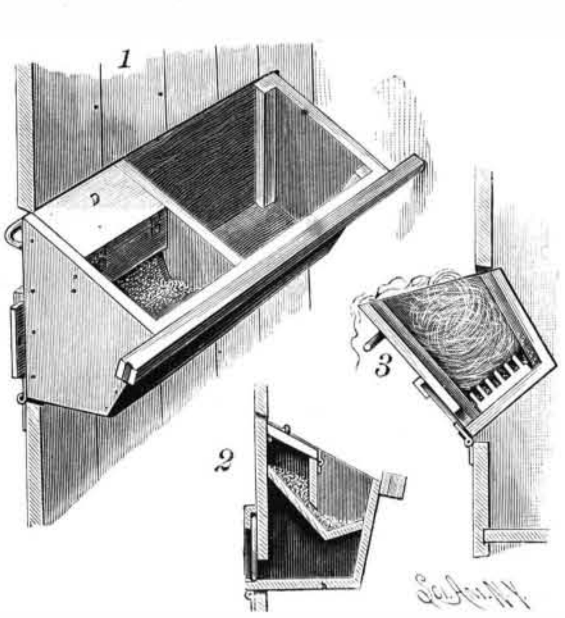
*Second.*—To provide an automatic device for giving instant notice to the officers of a ship when it enters waters of a temperature so low as to indicate the proximity of an iceberg, it is suggested that the poles of a galvanic battery be connected by wires forming two circuits, one much longer than the other. That a properly constructed thermometer be so placed as to be substantially submerged by the water which (when the engines of the ship are in motion) is continually passing from the sea into the ship for the purpose of condensing steam. That the wire forming the shorter electric circuit above referred to shall be cut and the ends thereof introduced into the tube of the thermometer, so that when the temperature of the sea water passing in contact with it is at or above such as may be assumed as the "danger line," the mercury therein will be in contact with the ends of the wire and complete the circuit. When the temperature of the sea water causes the mercury in the tube to fall below the assumed "danger line," or, in other words, so low as not to be in contact with the ends of the wire, the shorter electric circuit will be thereby broken, and, in accordance with a well known law, the electric current will then, and not until then, pass over the longer circuits, and in so doing may be made to ring an alarm bell on the bridge, or any other part of the ship, as may be desired, and unless the current is "switched off" by the officer of the ship, the bell will continue to ring until the ship passes into water of a temperature high enough to cause the mercury in the thermometer to rise and restore the continuity of the shorter circuit, when the bell will cease to ring.

T. B. BLACKSTONE.

Chicago, January 12, 1893.

### AN IMPROVED MANGER.

The illustration represents a manger by the use of which the hay may be readily fed separately from the oats, and the compartments of which may be conveniently filled without stepping into or entering the stall. The improvement has been patented by Mr. Wm. Vender, of Kinde, Mich. It is hinged at its front lower edge to the front of the stall, through an opening in which it may be swung outward for filling, as shown in Fig. 3, while in its innermost position it is supported by a cross bar attached to the sides of the stall, as shown in Figs. 1 and 2, and to this crossbar the animal may be tethered. A partition divides it into two compartments, one for hay or cut feed and the other for oats or other grain. In the bottom of the hay compartment, Fig. 3, is a grate, through which seed or other particles may fall to the bottom, to be thence removed through a slot in the front, the impurities falling out through the slot when the manger is swung into an outermost position. While feeding cut feed the grate is removed and the opening is closed by a slide. The




VENDER'S MANGER.

grain compartment, Fig. 2, has an interior bottom, portions of which are differently inclined, and a transverse partition with a hinged lid forms a rear storage receptacle, through an opening at the bottom of which the grain is fed forward to the feeding compartment. With this construction the animal receives only a small quantity of grain at a time, additional amounts being fed from the storage compartment as the supply is consumed. A suitable handle at the front facilitates swinging the manger outwardly for placing the food in the different compartments.

### An Ice Crusher and War Steamer.

There has just been launched from the yards of the Craig Ship Building Company, of Toledo, Ohio, a vessel which in two hours' time can be converted in all respects into a harbor defense ram, and with a rapid-fire battery well protected by steel shields can justly be expected to silence any craft the British are able to send through the Welland or St. Lawrence River canals. The new vessel is the Ann Arbor, built for the Toledo, Ann Arbor, and North Michigan Railroad, and designed expressly for immediate conversion into a war ship on the breaking out of hostilities.

The new vessel has been duly inspected by a representative of the Navy Department, and those in naval circles in a position to know declare that, had the new vessel been intended exclusively for war purposes, she could not have been better designed. The Ann Arbor will soon be followed by a second vessel, a duplicate throughout, and later by four more vessels of still greater efficiency.

The new vessel measures 267 feet in length and has a beam of 52 feet. Her draught is 12 feet and displacement 2,550 tons. This displacement is slightly in excess of that accorded to the new Ammen harbor defense ram now building for the United States. The Ann Arbor is provided with three screws, placed one on each quarter, well forward of the stern, and the third in the bow. The bow screw sets well aft of the stem, and occupies a position clear of the keel. The lower edge of the propeller blades are flush with the keel, making it impossible for the blades to touch bottom before the keel. The three screws are operated by three distinct sets of engines.

These engines are of the horizontal compound type, and are placed entirely below the water line. Each engine is distinct and separate from the others. The cylinders of each engine measure 20 inches and 40 inches respectively for the high and low pressure cylinders. The stroke is 36 inches. Steam is furnished by three connected steel Scotch boilers, 10 feet long by 14 feet in diameter. The boilers are intended for an ordinary working pressure of 125 pounds to the square inch. It is calculated that the new vessel will develop a speed of 14 knots per hour when tried. It is now recognized that had the triple expansion engines been used instead of compound engines, their speed might have been made to approach close to 16 knots per hour.

The adaptability of the new vessel for ramming purposes will be best understood when it is known that the hull construction is of oak up to two feet above the water line. At the water line there has been provided a belt of iron, extending all around the vessel and having a uniform width of six feet throughout.

In the bow and extending aft for a distance of 15 feet is a solid and massive backing of oak. Extra oak backing has been placed under all the beams along the water line, and there is a further longitudinal strengthening furnished by means of a steel cord running the entire round of the vessel and nipping together the oak backing. At a distance of every four feet this steel cord is connected with steel ties running to the keel. The keelson is strengthened with a steel plate two feet wide and three-fourths of an inch thick.

Ordinarily the Ann Arbor will be used to carry cars across Lake Michigan from Frankfort to Kewaunee, and this she will do throughout the entire winter months. Her hull has been so shaped that it will rise above and crush down the ice.

Alongside her longitudinal backing is an open and spacious run fore and aft, affording sufficient berthing room for 500 hammocks. The coal bunkers are placed on a longitudinal line amidship. The open fore and aft space along the sides has its decks some four feet above the water line, and gun ports marked off can be cut through if desired in a day's time for the mounting of broadside rifles. It is hardly deemed likely among those well posted that there will ever be any necessity for opening ports from the main deck space, as there can be placed on the upper deck a battery too powerful to be opposed by any vessel the British are now able to crowd through to the lakes. The battery of the Ann Arbor can be made up of as heavy ordnance rifles as the Navy Department may desire.—*N. Y. Times.*

### The Advance in Armed Cruisers.

As Captain Noble remarked at the luncheon which followed the launch of the Yoshino, the powerful protected cruiser, 360 feet in length, built by Messrs. Armstrong, Mitchell & Co., at Elswick, for the Japanese government, and described in a recent issue, marks progress in the construction of ships of the class, the wonderful development being due, he said, in a considerable degree, to Lord Armstrong. First there was the Esmeralda, designed by Mr. George Rendell, a vessel 270 feet long, with a displacement of 2,950 tons, its speed being 18·3 knots, and its armament very powerful in those days. Then there were the Niniwa and the Takachiho Kan, designed for the Japanese government by Mr. White, the present chief constructor to the British Navy. They were a great improvement on the Esmeralda, being 300 feet long, and their displacement 3,700 tons; while their speed was 18·8 or nearly 19 knots. And now there is the Yoshino, whose displacement is 4,150 tons, whose indicated horse power is 15,000, whose speed is expected to be not less than 22½ if not 23 knots, and whose armament will comprise every refinement that modern artillery science can produce. These four vessels show an important advance in the building of armed cruisers; but the resources of the Elswick firm are not exhausted, for Captain Noble declared that if the Japanese government intrust them with another order, they hope to surpass even what they have done in the case of the Yoshino, which, it is thought, will prove the fastest cruiser afloat.

### Economy of Tramp Steamers.

An illustration of the remarkable efficiency of some of the steam tramp vessels is seen in the Tekoa. This ship, belonging to the New Zealand Shipping Co., is built of steel, 4,050 tons gross measurement, with a dead weight capacity of 6,250 tons. She was built in 1890, to carry cargo between England and Australasia, and, in her speed trial, showed 11½ knots. Recently she ran from Teneriffe to Auckland, 12,059 nautical miles, without a stop and without slacking speed at an average rate of 10 knots, with a daily coal consumption of 21¼ tons for all purposes. Thus she transported a ton a mile by burning one-half an ounce of coal."