Correspondence.

A Remarkable Family of Snakes.

To the Editor of the Scientific American:

I have fifty-six copperhead snakes in a quart bottle, that were taken from the old snake by Mr. Douglas Bird last summer. Each of the fifty-six was inclosed in a sack by itself, and was attached to the snake bed by a string. They were alive when cut out, one hour after the dam was killed, I have also the skin of the old snake, which measured 4½ feet.

The umbilicus is still to be seen attached to several of the snakes in the bottle. They are each 9 inches in length.

Mr. Bird is a man of truth. Now, if you have a true snake story of greater magnitude, I should like to have it. S. E. HAMPTON, M.D.

Milton, Ky., Dec. 6, 1886.

Destructive Effects of Nitro-Glycerine.

To the Editor of the Scientific American:

In your issue of Dec. 11 appears an article headed "Destruction by Nitro-Glycerine Explosions," copied from the New York *Times*. It is well enough for the daily press to print such absurdities, but the SCIENTIFIC AMERICAN should not lend its columns to the propagation of anything but the truth. It is hardly necessary to specify any particular part of the above article, as the whole thing is a tissue of falsehoods. A nitro-glycerine explosion cannot cause annihilation of human bodies, horses, magazines, etc., as therein stated. It is true that a man's body is often reduced to minute atoms, but the *debris* will cover the ground for a large space all about, and it is impossible to gather it together.

I have seen a number of explosions, and in the winter as well as the summer. That the snow or ground remained pure and spotless in any case, after such an explosion, is false.

I was on the ground within ten minutes after a nitro-glycerine explosion that happened in the woods near Aiken, this county, about four years ago. A shooter was driving along the road with a sleigh load of 60 quarts of the explosive. From some means or other, the stuff went off. There was a hole about three feet deep and four feet square blown in the frozen ground. The horses were hurled forward about twenty-five feet, and their hind quarters were driven forward into their bodies. Nothing remained of the sleigh but splinters, and those were very small. A part of the tongue, with one of the whiffletress, was still connected by the harness to the horses. Of the unfortunate driver, we picked up probably thirty pounds of flesh and bone. Several trees were chopped down to secure small portions of his remains. His face was intact, but there was nothing left of his skull; but the ground for an area of several acres was covered with the blackened portions of the wreck, interspersed with darkened blood stains, that showed out clearly from the snow.

August 27, 1885, a nitro-glycerine factory was blown up, just beyond the city limits. Twenty-three hundred pounds of the explosive were destroyed. The wreck was complete. A horse was killed, and his body was blown several yards, but it was not annihilated. Several heavy iron safes were turned over, but they were not removed from human vision. Where the factory had stood was a large hole in the ground, and a space of about twenty acres covered with kindling wood. There was a score or more of the heavy iron drums in which acid is transported, scattered about. None of them was annihilated. I can cite a dozen more cases if necessary. A. L. S.

Bradford, Pa., Dec. 11, 1886.

Gas for Ocean Steamers.

To the Editor of the Scientific American:

Should the supply of natural gas prove inexhaustible, there will be no limit to its uses or applications. Its special adaptation to the iron and glass industries is a recognized fact of industrial economics, and a wider range of service is contingent only on a reasonable expectation of its continued availability.

Among the more immediately promising opportunities for the utilization of this natural product, that of its application to the propulsion of ocean steamers appears as the most prominent. The space required for the storage of coal is useless space, so far as profit is concerned; and the expenditure of power in carrying the source of power is indeed very heavy.

The Oregon required storage for 3,800 tons of coal—3,000 for actual use and 800 for contingent supply; fully, if not more than, half her actual tonnage. Whatever plan or device tends to the cheapening of steam production, without increasing risk or danger, must attract the attention of practical men with a view to its timely adoption.

One invention prepares the way for another, and the larger use of most substances and appliances means the increased production thereof at reasonable cost. The compression of gases is a recent accomplishment of science which carries with it the possibility of a constantly increasing use; and one of the most easily applied and practical uses of the process is the compression of natural gas in appropriately made cylinders, under such pressure as will insure safety and yet render the cylinders easily handled.

Then with suitable appliances to control the flow of the compressed fuel, these cylinders could be stored in proper chambers on the vessel, and, under the charge of the engineer, this newer heat producer could show its marvelous use and power in driving the steamships across the ocean, and that, too, with a maximum of cleanliness and comfort to the passengers, besides insuring a very greatly increased profit on account of the much larger quantities of freight carried, the coal bunkers being utilized for freight space.

If the natural gas has done as much for certain branches of industry as is claimed that it has, it does not seem unreasonable to argue, by analogy at least, that there is a future for it as a compressed fuel, premising, of course, that the cost of such compression be reduced to the smallest figure by improved and cheapened and reliable processes. W. L. KELLER.

Baltimore, Md.

How to Cast a Box on a Shaft.

To the Editor of the Scientific American:

To cast a box on a shaft or mandrel, warm the shaft (and box if practicable), take a piece of ordinary writing paper and cut to the length of the box and wide enough to just reach round, oil well, and wrap around shaft, and have lap come on side where the box will come apart; then wind the paper with a piece of common wrapping twine, in the form of a cone screw, say on a box 6 inches long about ten times, and fasten the ends by tucking them under another coil.

No. 2.—Proceed to put on cap, and pour as in other methods. When the box is made and the shaft taken out, you will find a good box, and the twine has made a spiral groove in the box, running from end to end, giving the oil a chance to pass through the box. In making a loose pulley, proceed as in casting a box. Always oil the paper. A. P. HYDE.

Oxford, Chenango Co., N. Y., Dec. 14, 1886.

Two New British War Ships.

The second of the new class of belted cruisers which has been built by the Palmer Shipbuilding and Iron Co., Jarrow, for the English Government, was successfully launched on the Tyne on Nov. 25, in the presence of a large concourse of spectators. As the vessel left the ways she was christened the Undaunted by Lady George Hamilton, amid the cheers of the onlookers. The construction of the Undaunted is similar to that of the Orlando, which was launched from this yard on August 23 last. The principal characteristics of this type of vessel are a high attainment of speed with great defensive power.

The following is a general description of the vessel: Length, 300 ft.; breadth, extreme, 56 ft.; depth, moulded, 37 ft.; normal draught, 21 ft.; displacement, 5,000 tons; indicated horse power, 8,500; estimated speed, 19 knots. The armor is compound, or steel-faced, and consists of a belt 200 ft. in length extending from 1 ft. 6 in. above the water line to 4 ft. below. This belt is 10 in. in thickness, and is backed with 6 in. of teak, secured in steel plating 1 in. in thickness. On a level with the top of the belt there is a protective deck formed of 2 in. of steel plating. Beyond the belt at both ends the deck is inclined downward to an angle of 30°, and is 3 in. in thickness. All openings in this deck are fitted with either armor shutters or shell proof gratings, and those necessarily open in action are also fitted with cofferdams.

By means of the armor belt amidships and the protective deck plating fore and aft, the whole of the vessel under this deck is rendered invulnerable to shot and shell, and forms an unsinkable raft in which are placed the engines, boilers, magazines, shell rooms, and steering gear. When in action, the movements of the machinery, the steering of the ship, and the firing of the guns are under complete control from the conning tower, a massive structure at the fore end of the vessel. The lookout men in this tower are protected by 12 in. of steel-faced armor, and all the communications to engine rooms, magazines, steering wheels, etc., pass through a tube of steel 8 in. thick. The stem, which forms a ram, is exceptionally strong, and is well supported by the framework of the vessel and the protective deck. The ram, sternpost, and propeller brackets are each of cast steel, manufactured by Messrs. Spencer & Sons, of Newburn. The hull is built of Siemens-Martin steel, and is divided into over 100 watertight compartments.

Sir C. M. Palmer, M.P., said the Undaunted belonged to a class which was a new departure, to meet the requirements of the empire. She would have a speed which would exceed that of almost any privateer that might be employed against the merchant shipping of the country, although they must not rest content with a speed of 18 or 19 knots while they had merchant ships performing 20 and 21 knots.

Her Majesty's belted cruiser Australia, built by Messrs. Robert Napier & Sons, Govan, for the British Government, was launched on Nov. 25. The Australia is one of five belted cruisers ordered in April, 1885. The building of two, the Australia and the Galatea, was intrusted to Messrs. Napier & Sons; two, the Orlando and the Undaunted, were ordered from Palmer's Shipbuilding and Iron Company (Limited), Jarrow-on Tyne; and the fifth was ordered from Earl's Shipbuilding Company, Hull. The Australia, like her sister ships, is 300 ft. long between perpendiculars and 56 ft. in extreme breadth. The draught of water under ordinary circumstances will be 19 ft., and at this draught the displacement will be 5,000 tons. This may at times be increased to 6,000 tons when a full supply of coal is shipped.

It is expected that the vessel will have a speed of 18 knots per hour. The engines which are to be fitted on board, and have been designed by Messrs. Napier, are of the triple expansion type, working twin screws, and will indicate 8,500 horse power, the working pressure being 130 lb. It may be interesting to mention that when tenders were asked for vessels of this class, compound engines of 7,500 horse power were specified; but Messrs. Napier proposed as an alternative scheme to fit triple expansion engines on board, and undertook to develop 8,500 horse power, and that without taking up any more room in the ship or increasing the collective weight of the machinery and coal.

The Admiralty accepted this proposal, and carried it out in the other ships of the class. The result will be to increase the speed by about a knot per hour, while less coal will be consumed. The boilers are of the double ended multitubular type, and have corrugated flues. The armament will consist of two very long range 9¼ in. Armstrong guns, ten 6 in. guns of the same class, all mounted on central pivot Vavassenr mountings, eight 6 pounder and eight 3 pounder quick firing guns, also six torpedo impulse tubes. The two striking characteristics of the ship are her high rate of speed and length of gun, or range of fire. These qualities would generally enable her to overtake an enemy or to avoid one altogether if too heavy metal for her, or using her great speed she might keep the enemy within range of her big guns while she herself was beyond the enemy's fire. Every safeguard has been adopted to shield her from the enemy's fire and to prevent her from sinking. She is divided into about 130 compartments or cells. The engines and steering gear are all under the water line, and are protected from *debris* and from dropping fire by a 2 in. thick steel deck extending the whole length of the ship. The water line of the ship is protected by an armor belt 10 in. thick, steel-faced, strongly supported by teak and steel backing, and capable of resisting a shot or shell from 10 in. guns.

At a luncheon which followed, Mr. A. C. Kirk, the head of the firm of Messrs. R. Napier & Sons, said the ship that had just been launched was a formidable addition to the British Navy. It was a matter of congratulation, he thought, to the country that a private firm should be able, without any effort, to advance such a vessel to its present stage of completion, including the testing of 132 watertight compartments and the testing of 500 tons of armor plate, within a period of about 20 months. Had it been necessary, it could have been done in even less time. The Admiralty, in preparing this design, had succeeded in combining the conflicting qualities of a war ship in a rare degree—namely, offensive and defensive power, a large range of action, with a high rate of speed. The Australia was the fifty-first war ship which had been built by the firm.

A Note on Watering Potted Plants.

In the operation of watering potted plants, persons not practically familiar with plant culture are apt to make serious mistakes. Cultivators find by experience that an excess of water at the roots is very injurious to almost all plants, and hence it is usual to direct that great caution be used in the application of water, especially in winter. The result is that frequently the opposite extreme is fallen into, to the great injury of the plants. From the moment that the soil becomes so far dried that the fibers of the roots cannot absorb moisture from it, the supply of the plant's food is cut off, and it begins to suffer. Some plants can bear this loss of water with more impunity than others; some again, and the heath family among the rest, are in this way soon destroyed. The object in watering should be to prevent this stage of dryness being reached, at least during the time a plant is growing, and at all times in the case of those of very rigid structure; at the same time, that excess which would sodden the soil and gorge the plants is also avoided. Within these limits the most inexperienced persons may follow sound directions for the application of water with safety. But whenever water is given to pot plants, enough should be employed to wet the soil thoroughly, and the difference between plants that require less or more water should be made by watering more or less frequently, and not by giving greater or less quantities at one time.—*Farmer's (Irish) Gazette.*