THE COPPERHEAD.

BY C. FEW SEISS.

Linne, in 1758, gave the first accepted description of the copperhead. He seems to have considered it a non-venomous species, for he first named it *Coluber contortrix*, and in 1766 renamed it *Boa contortrix*, both genera including only serpents without poison fangs. It is now known to scientists as the *Ancistrodon contortrix*, which may be interpreted contorted hook tooth—a name that is neither very characteristic nor euphonious.

I have been informed by persons who "knew all about snakes," that the head of the copperhead is always as reflulgent as a newly coined cent, and by this distinguishing character alone it can always be identified. Yellowish brown, brickdust red, and cream color are the only tints observable. I never noticed the slightest resemblance to polished copper. The ground color of the entire upper portions of the copperhead, including the head, varies from light hazel brown to brick red. Lower parts of the head cream color, the line of separation between the upper brown tint being distinctly marked. Fifteen to twenty-four dark brown blotches along the body. They are narrow and contracted dorsally, but forked or widely spread out laterally; the color paler between the forks as it approaches the abdominal plates. Sometimes the dark blotches are broken on the dorsal region; sometimes one or two small spots on the light spaces between the blotches. Under parts flesh colored or yellowish, with a series of large dark spots, thirty-five to forty-five in number, on each side. Lower jaw beneath and throat unspotted. The scales of the back and abdominal plates are more or less freckled with minute dark specks. A small dark spot on each occipital plate. The head is somewhat triangular in shape, with nine plates; the neck compressed, and the snout slightly turned up. A large female in my collection measures 42 inches in length. A male specimen, from New Jersey, captured after it had swum across a small lake, measures 25½ inches.

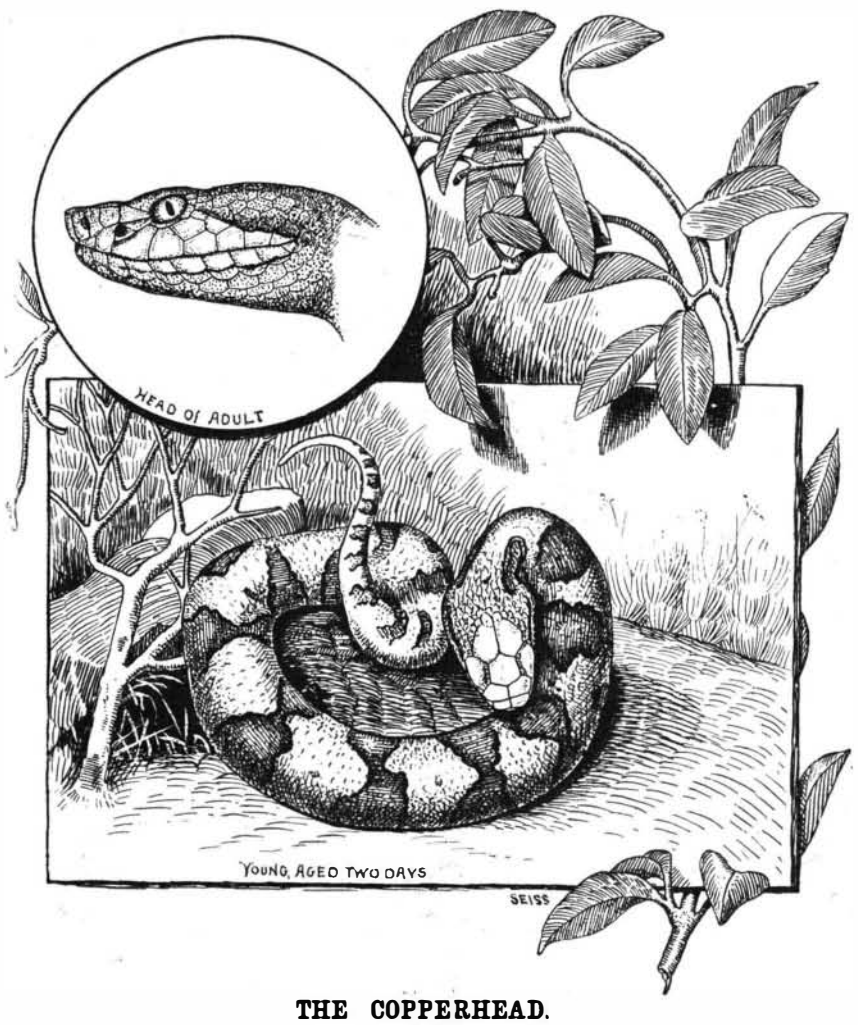
It is found in certain localities in nearly every State from Vermont south to Florida, and southwestward to Texas and Kansas and the States of the Mississippi Valley. It has not been found west of the Rocky Mountains.

The copperhead is rather sluggish in habits, and not of an aggressive disposition. Unless partially blind when about to cast off its old skin, gorged by a large meal, or come upon suddenly and surprised, it generally glides away, and secretes itself under a pile of rocks, fallen timber, or brush. When forced to act on the defensive, it does not throw itself into a coil, with the tail elevated, as is generally, though not always, the case with the rattlesnake, but throws its neck and body into contracted horizontal S-like curves, with the head slightly uplifted, and thus awaits an attack. The strike is made by instantaneously straightening the curves of the neck and fore part of the body, which, of course, propels the head forward. At the same instant the jaws are stretched widely apart, and the fangs erected by pushing forward the maxillary bones, to which the fangs are firmly fixed. This is accompanied with a downward movement of the head, for the purpose of driving the fangs deeper into the object. Then the maxillary bones are thrown outward, spreading apart the fangs, so that there is no danger of the lower jaw being injured. The poison apparatus of the copperhead scarcely differs from that of the rattlesnake. That persons have died from the bite of the copperhead is possible and probable, yet a strictly authentic case has never come under my notice.

This serpent is viviparous, or, as some prefer, ovoviviparous. The female brings forth young about the middle of September in this latitude. The number produced at a birth varies from five to nine and perhaps more. In a family of nine baby copperheads born in captivity, the average length was about 11 inches. Comparatively they were shorter and more robust in form than their mother, and the ground color of their bodies was paler and the spots seemingly more distinct than in the parent snake.

At certain seasons they are gregarious, and many are sometimes found together in a heap. According to Prof. Allen, Mr. C. W. Bennett found, near Mount Tom, in the months of July, August, and September, small groups of five to seven individuals, all of which appeared to be pregnant females. In autumn, before cold weather sets in, they seek some deep, protected fissure or hole, generally among rocks, in which to pass the winter. They may sometimes be seen sunning themselves near the entrances of their dens, on unusually warm days in early spring before the snow is all melted. They seem to resort to the same retreats for many years in succession. To the copperhead, as well as the rattlesnake, has been ascribed the power of "fascination"—a power which has been accepted and defended by many. I give here a true instance of the peculiar behavior of a bob-white or partridge when confronted by a copperhead:

"I went with several companions to a wood about two miles distant from Hagerstown, Md., for the purpose of gathering the wild haw, with which the limestone ridges in that region are frequently overgrown. The berries likewise attracted great numbers of birds, and the clefts among the rocks offered a safe retreat to reptiles. Coming to an open space in the wood, we were surprised to see a bob-white moving about in a very singular manner. We at first thought that it was performing that wonderful trick by which birds, pretending to be lame, seek to lure the intruder from their nest or young. But we were soon satisfied that this was an entirely different case. The poor bird did not pretend to be lame, but, on the contrary, was unusually active upon its legs. Its movements, however, were very peculiar. It went in a zigzag line, first to one side and then to the other, occasionally hopping forward, and always advancing. At the same time it continued to utter a chirp of great distress. We soon perceived that its eyes were steadily fixed upon a copperhead snake, three or four yards distant. The snake did not appear to be disturbed by our intrusion, nor did it seem particularly intent upon its prey, though its head was elevated from the ground about as much as in its ordinary movements. I think there was also some motion of its tail. One of our number went forward and captured the bird, which was apparently rather relieved by getting into human hands, and soon ceased to tremble, as it had evidently been doing when facing its savage enemy. The snake was soon killed, as it neither made any resistance nor attempted to escape, though it appeared sufficiently vigorous, and was about two feet long."



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A friend tells me that once when on a collecting trip, he dropped a bright tin box near a trunk of a tree, and hurried away after a butterfly he saw flying in the wood. On his return, as he approached the spot where he had dropped the box, he was surprised to see a gray squirrel, several feet away from the box, with its eyes fixed steadily upon it, moving nervously from side to side, now coming forward and again backing away a few inches, but never removing its eyes from that mysterious object—the tin box. The squirrel seemed bound to the spot, as if by an unseen cord, and only retreated when my friend approached to within a few yards of it.

We know that a cat in the bushes will sometimes draw small birds near enough to be caught. That it is not any bewitching power exercised by the living animal that produces the attractions is proved by the fact that the stuffed skin of a cat or other bird-catching animal has produced the same "fascinating" or drawing power.

THE name of Wm. Lockerby, inventor of self-adjusting life boat, was erroneously printed Lockerly in the issue of February 4.

Artificial Crystal Pictures.

I send, upon glass plates, specimens of crystals that can be examined at leisure, as they do not, like the water crystals, disappear when the air is above the freezing temperature.

The process of making them is very simple, and may give to your younger readers a taste for chemical studies and for further knowledge of the wonders of crystallization.

The glass plate upon which the crystals are to be formed should be cleaned with a little soda or other alkali. When dry place the plate on a table and have in readiness several thin wedges, with which to make it perfectly level. To one tablespoonful of water add one teaspoonful of chloride of sodium (common salt), making a saturated solution; pour this upon the plate and make it level by inserting the wedges at the sides that are the lowest.

It is best to do this in the evening, and leave the plate at rest during the night, as crystals assume the most perfect forms when free from disturbing causes.

Of the various salts I have used, this most closely resembles the water crystals made by the frost upon windows. The crystals of the common salt are deliquescent and not very permanent. If it is desirable to keep them for study, and measurement of the angles, or for projection on the screen, a coat of very thin shellac varnish should be flowed over the surface. Good results are obtained by the use in the manner here described of sulphate of copper (blue vitriol), protosulphate of iron (copperas), chloride of ammonium (sal ammoniac), sulphate of magnesium (Epsom salts), nitrate of potassa (saltpeter), and bichromate of potassa.

To enhance the beauty of these plates the solutions of those salts that are of light colors may be tinted with a few drops of a solution of aniline. If they are to be copied by the camera, for use in printing, the solution should be tinted with black or orange shades.—*J. M. B., the Swiss Cross.*

Gigantic Forging Press.

Mr. F. A. Krupp, the head of the great Prussian arsenal at Essen, lately visited the Atlas Steel and Iron Works, Sheffield, to witness the action of the gigantic hydraulic forging press lately added to the plant of the Atlas works. This press, which is believed to be the most powerful and efficient tool at present in existence, nominally exerts a total force of 4,000 tons, but its actual full power is considerably greater. Three large furnaces, each capable of heating an ingot of 100 tons, prepare the work for the massive machine, and two traveling cranes, each capable of lifting 150 tons with ease, convey the forgings from the furnace to the press and manipulate them as required. One man, who stands at the floor level in a cage suspended from the crane and traveling with it, has under his hand four valves, by which he lifts, lowers, advances, retires, moves sideways, or revolves the forging on its own axis. A second man works the lever which governs the strokes of the press, and by observing an index in front of him regulates with the utmost nicety the distance from the anvil at which the top tool is to cease its advance. A forge master and several furnace men are also required to superintend and to feed the apparatus; but its working is entirely under the control of the two men referred to. Mr. Krupp ordered one for his own works.

Foreign Adoption of American Passenger Elevators.

The "American Elevator Co.," of London, England, has recently contracted to put up the passenger elevators to be required in the 1,000 feet high Eiffel tower, now in course of construction at Paris for the great French exhibition of 1889. The same company is also under contract to construct eighteen elevators for the Whitehall Court, Thames Embankment, London, in addition to having received orders for six elevators for the Savoy Mansions, Thames Embankment. Elevators by the same company are now running at the Hotel Victoria, Charing Cross, and there are three at work at the National Liberal Club, London, while one has recently been ordered for Municipal Buildings, Glasgow. Of these elevators, the *Iron and Steel Trades Journal* remarks: "The one at the Liberal Club is a fine specimen, and shows the degree of perfection to which lifts have attained in America. Our engineers have again been caught napping. The great hesitation shown by our engineers to go in for new departures is too palpable to be gainsaid." The company thus representing in Europe the practical superiority of American inventors and mechanics in a most important specialty of modern building is a branch of the house of Otis Brothers & Co., of New York.