

THE AMERICAN TOAD.

The common American toad of the eastern United States is scientifically named *bufo lentiginosus*, Shaw; sub-species *Americanus*, LeConte (Professor Cope, and the Smithsonian Institution).

In Pennsylvania and New Jersey, from the latter part of March to the first week in April, according to the season, the toad quits its winter quarters. A week or so later it seeks a mate, when, most commonly at twilight, the buzz-whistling cry of the male may often be heard. The female deposits her spawn in the water, and the ova are fecundated by the male while they are being laid. They soon hatch, when myriads of larvæ, or little black toad tadpoles, may be seen in clusters in the shallow water of ponds and creeks, near the banks. The hind legs of the tadpole are the first to appear; the fore legs later, the tail disappears, and in a few weeks the young toads quit the water with the form they are to retain throughout life. In September the toad creeps into the mud of ponds and ditches, or digs a hole in a loose or sandy soil, and there hibernates.

This, like other batrachians, is insectivorous, devouring almost any kind of insect with which it meets, not excepting bees and wasps, although some have supposed differently. I have in several instances induced it to seize and devour pieces of raw beef, by impaling the meat upon the point of a piece of thin wire, and passing it in a swinging manner before the toad.

The toad has often proved itself to be a good collector of entomological specimens, for many rare and interesting insects have been found by extracting the stomach and examining its contents. By this means insects, not supposed to be found in a certain locality, have, on dissection, been found within a toad taken in that same locality. The prevalent supposition that, by handling a toad, excrescences will be produced upon the hands is entirely fabulous.

I have attempted to represent a toad creeping towards a beetle. This habit of creeping slowly upon its prey instead of always springing, I have also observed in various frogs (*rana*). Insects are sometimes frightened off by a sudden spring of a frog or toad before they can be captured, hence this habit of creeping.

Fig. 1 represents the internal organs of this *bufo*. Fig. 2 is the skull, viewed from above. Fig. 3 is the larva or tadpole.

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THE VAPART DISINTEGRATOR.

We annex an illustration, from *Engineering*, of a disintegrating machine largely used in France. It consists of a cast iron case provided with two doors, which can be opened, as shown, for inspection or renewal of the various parts. Through the middle of the case runs a vertical shaft, with bearings at top and bottom, and carrying at the upper extremity a pulley by which the shaft is driven. Within the case, three disks are mounted on the shaft at equal intervals. On these disks are bolted a series of radial ribs, as shown. Around the inner side of the case, as well as on the doors, are placed strong cast iron toothed segments, and beneath each segment is placed an inclined and curved plate. The operation of the machine is as follows: The material to be disintegrated is fed in from the top and falls upon the upper disk, and the quick rotation of the latter drives the material forcibly against the corresponding toothed segments. From here it falls down the inclined plates, and is delivered on the middle portion of the second disk, where the same operation is repeated on it, as well as on the bottom disk, whence it is delivered into a hopper below. The disintegration can be carried to any desired extent

Cheap Coal and Water Supply.

Our manufacturers on the east branch of the Hoosac have been congratulating themselves on the abundant supply of water which they are now enjoying. This is like old times, when an equal and sufficient flow could be depended upon. The reason of this former affluence of water was that the native forests, as yet undestroyed, retained the water in the vast range of country over which they stretched, and rendered it gradually forth throughout the summer season. These growths of wood, when firewood was at so high a price, became, however, a rich source of income to our farm-

our factories to the former, and farmers, finding it of so little profit to hew wood on the mountain sides, have left off doing so. Consequently our young forests are springing up vigorously on every side, and the old localities are again being covered with a thick screen of verdure, which both attracts and retains moisture—hence the natural supply of water over which our manufacturers are now rejoicing.—*North Adams (Mass.) Transcript.*

Ruins of New Mexico.

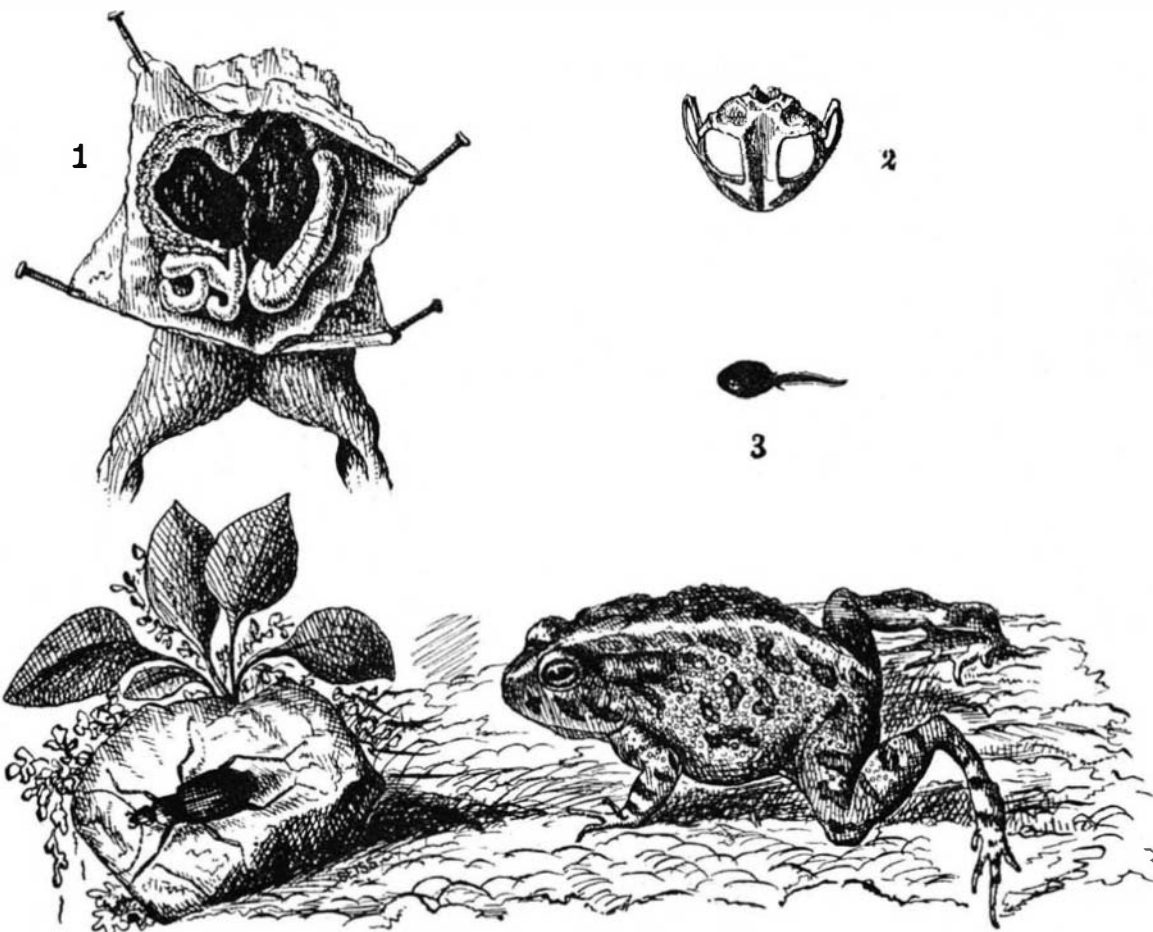
The following notes, by William H. Jackson, of Professor Hayden's survey, on the ancient ruins of New Mexico, and concerning a people about whom nothing is known, will be of interest to all readers:

Commencing with the first ruin, of the Pueblo Contado, as it is called, there are ten others along the cañon of the Chaos, two of them upon the bluff overlooking the cañon, and the others in the valley, all of similar workmanship, and manifestly the work of one people. They are remarkable in being dissimilar and immeasurably superior to any of the ruins yet discovered in America, or to any of the habitation of the present buildings. The large ruin in the Cañon-de-Chelly is of the same class, and is probably contemporaneous with them. The largest of the ten is the sixth, as we go down the cañon, called the Pueblo Bonits by Simpson, which is 540 by 310 feet in its diameter. The smallest is the ninth, and which is a regular parallelogram 78 by 62 feet. With but two exceptions all are built around three sides of a rectangle, with open court facing south and inclosed by a semicircular wall. One of the exceptions to this regular rectangular plan was the last one down the cañon, the

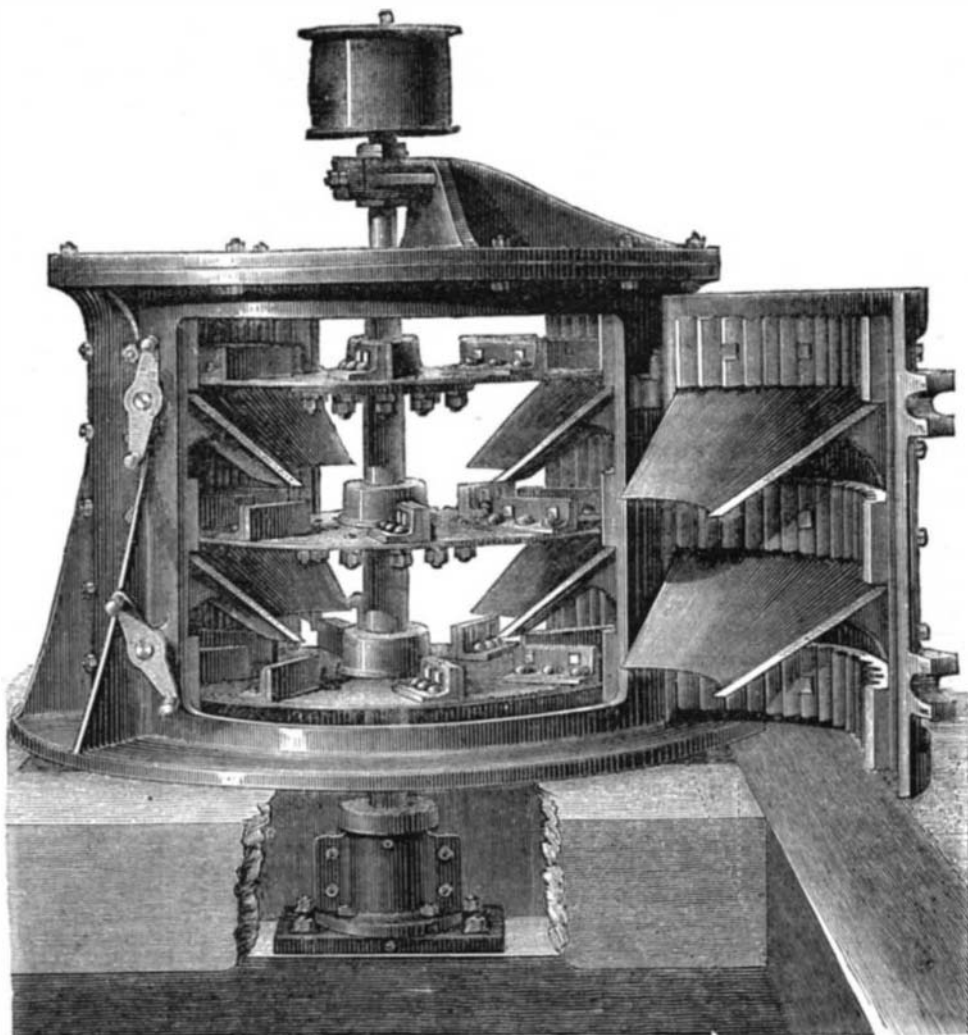
Pueblo Penasco Blanca, of perfect elliptical shape, 496 by 363 feet in its diameter, and the other, Pueblo Bonits, was a perfect half oval or of an egg-shape divided along its greatest diameter. In all, the ground plan of each could be made out with perfect instructions, and in nearly all an elevation through three or four of their stories.

A marked feature was the large size of the rooms. On the second flooring, in the Pueblo Pintado, the rooms averaged 12 by 20 feet, some being as large as 14 by 25 feet square and 12 feet in height. In the Pueblo Penasco Blanca the average length of the rooms on the second floor was 20 feet, some being as large as 18 feet. In the other Pueblos the average height between floors was 10 feet. This does not apply to the first or ground floor, which had a similar height and was divided into much smaller apartments. These were evidently for storage purposes, as is the practice with the Pueblos at the present time.

In five of the ruins we found entire and perfect rooms, preserved from the destruction by the strength of the regas or rafters supporting the floor above them. These we examined with much care and interest, and regretted that we had not the means of digging into others, which are intact beneath the debris of fallen walls. In all the rooms there was a notable neatness of finish, particularly of the ceiling, which, in the case of Penasco Blanca, were covered with thin boards of pine somewhat larger, but of the thickness of an ordinary shingle. All the larger beams, ten to fourteen inches through, were cut off square and smooth. Some of the rooms were plastered perfectly white, probably with the same *yeso* the Pueblos and Mexicans now use. On the walls of one of the small rooms of the Pueblo Bonits were scratched the names of Lieutenant Simpson and R. H. Kern, dated August 1849, and looking as fresh as if but a day old. There were at least two doors or windows in every apartment, of an average size of 26



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