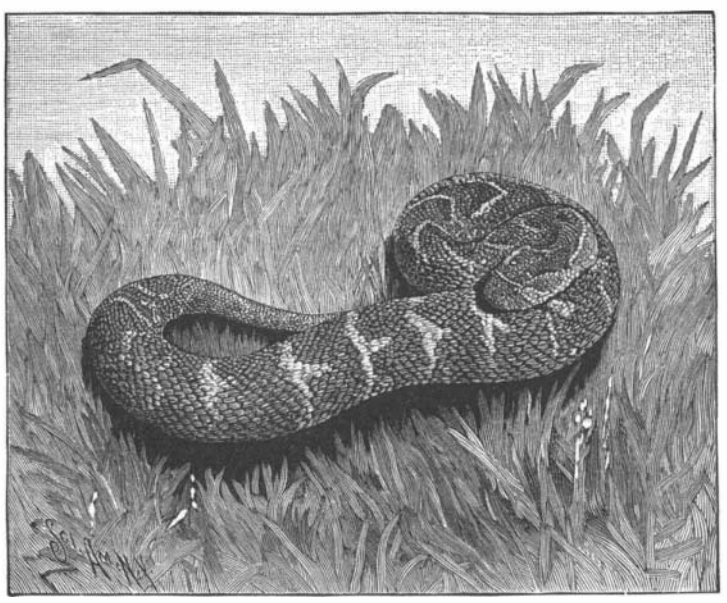
COLOR OF SNAKES AS AFFECTED BY CLIMATIC INFLUENCES.

BY G. R. O'REILLY.

The ophiologist well knows that the coloring of snakes is not a sure guide to specific difference of variety.

This is well understood, but perhaps it is not so well known that the pattern or distribution of coloring is constant in the same species. Now this is well shown in the specimens of *Bothrops atrox* and *Bothrops lanceolatus* figured in a recent issue of the SCIENTIFIC AMERICAN, and of the two specimens of *Xiphosoma hortulana*, illustrated on this page. There the *labarri* or *Bothrops atrox* from the dark woods of South America is seen to have the same pattern, but a much deeper coloring than his brother, the *Fer de lance* from the sunny canefields of Martinique and St. Lucia. The former harmonizes in shade with the black rotting leaves of the frequently inundated river bank in the dark forest, while the latter in color reminds us of the yellow and reddish soils of the often plowed canefield. Of the two specimens of *Xiphosoma hortulana* herein shown, the darker one comes from the gloomy ravines of the forest-clad mountains in the island of Grenada, while the lighter one, a purely yellow snake, is an inhabitant of the open and comparatively sunshiny mangrove swamp of Caroni, in the island of Trinidad. If any one will examine the snakes of this species, he will be astonished to see how much they vary in shade, and still will notice that the pattern in all is traced in a formation of rings along the sides more or less regular.



THE PUFF ADDER.

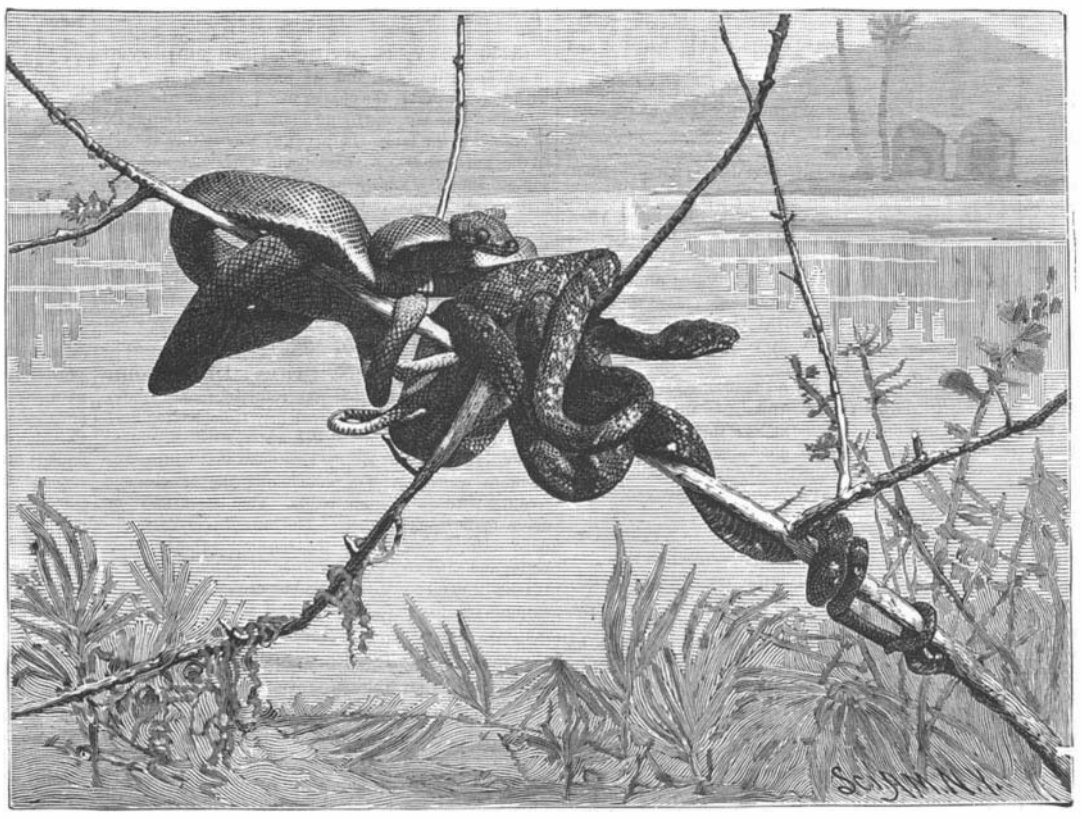
The diamond rattlesnake from the sunny plains of Guiria, in Eastern Venezuela, where the soil is of a reddish color, is reddish in his dorsal marks and much lighter than his fellow from the dark woods of swampy Demerara.

From this it would seem that the coloring is largely modified as regards shade by the nature of the light reflection in which the animal lives. In a certain sense the color of his surroundings is photographed on his skin. It is said that mountainous districts are favorable for poetic genius, and that few poets are natives of level, monotonous countries. If this is true as regards vividness in the human imagination, as certainly seems to be the case, it is none the less so with the coloring of snakes. Take the South African puff adder (*Clotho arietaus*) for instance. The puff adder, which is figured above, is a short, thick, broad-headed black and yellow deadly snake. Snakes of this species from the lower lands near the sea are dull in color. The yellow is pale and the black dirty looking, like an old dress coat coming to its last days on the back of a tramp. But the mountain puff adder is very different. He is arrayed in a gorgeous dress of golden yellow and the deepest black velvet. And it is only natural that while his home for ages has been in the land of sunny rocks and darksome shadows, he should bear photographed in his skin with nature's own photography the reflection of these objects.

The lora of Venezuela (*Ahaetulla liocerca*) shows the same difference. On the mountains he is arrayed in green of the most vivid brightness, along each side is a band of gold, and the scales of his under parts are of a mother-of-pearl white, while his brother of the plains appears dirty all over. In July, last year, the writer caught a young boa constrictor on the lowlands of Quebranta, near Guiria, in Eastern Venezuela. He was covered with markings of light gray and dark gray. In September, I got one of the same size from the hills of Arouca, in Trinidad, and he was, of course, the same in pattern, but black and white. Boa constrictors from the dark forests of the plains of Chaguanas, in the same island, are not nearly so clearly marked as those from the hills of Zoco, twenty miles to the northeast. And some time ago I had one from the hills of Brazil much more brightly marked than any I have yet seen.

There are now in my collection in the Central Park several fine specimens of *Xiphosoma hortulana*, which well illustrate this variation of shade. One is yellow, so pale that the pattern is not perceptible. A second is red, with yellowish ring-like markings. A third is a reddish brown, with the same marks. A fourth is jet black, with white rings, and a fifth has, strange to say, a white groundwork, with jet black circular spots.

This same superiority of the colors of mountain snakes may be noticed in many countries. Perhaps not of snakes alone is it true, but of other animals also, that after a long sojourn in their home they bear photographed on their skins the reflection of their surroundings.



TREE SNAKES (XIPHOSOMA HORTULANA).

Our Wood Pulp Industry.

The vastness of our wood pulp industry, which is but comparatively a few years old, is probably not realized by people not directly interested in it. At first, wood pulp was used entirely in the manufacture of newspapers, but now it is employed for manifold purposes. Its use bids fair to be large for mouldings, and it is being made into barrels, tubs, pails, washboards, water pipes, doors, caskets, carriage bodies, floor coverings and furniture, imitations of leather cloth and silk have been made from it. Successful experiments have been made wherein it has been used in the manufacture of armor plates.

Thus we see the usses to which wood pulp can be put are almost unlimited. The great consumers of wood pulp at present are the paper manufacturers, who consume about ninety per cent of the total production. Most paper made to-day, from the woody newspaper up to the fine grades of writing paper, contain more or less of this ingredient. The industry naturally is enormous. At present there are fully 238 mills in the country and quite a number building. The total capacity of these mills is about four million pounds per day, at which rate they consume one million cords of wood a year.

These figures show an increase in the business of about five hundred per cent in the past eight years, and the same time in the future bids fair to see even greater strides than this. It is but four years since sulphite wood pulp has been made, yet now there are twenty-nine mills manufacturing it and twelve in course of erection.

Yet this grand and growing industry is causing considerable apprehension among those interested in our forests. They think that wood pulp is capable of being put to so many uses that the time will come when the cutting of trees for its manufacture will be of such magnitude as to deplete our forests. At the present stage of the industry this is hardly to be feared, as many mills use the large trees in their vicinity, giving the smaller ones an opportunity to grow. Even where trees are cut down indiscriminately, there is not as much harm done as in some places where the trees are cut down for lumber. Still, this indiscriminate cutting by wood pulp mills will have similar results to lumbering operations, and the two in time will, if continued, strip the country of one of its greatest resources, its immense forestry. As trees from thirty to thirty-five years old are the most suitable for wood pulp, it will take one generation, with proper culture, to grow a new supply for the industry.—*Com. Bulletin.*

Reclamation of the Sahara.

The most remarkable example of reclamation by means of artesian well water is found in the desert provinces or departments of Algeria under the French rule. The area, officially given, of French Algeria is 184,465 square miles. The outlying portion is put at 135,000 square miles. In this total of over 329,415 square miles one-half belongs to the Sahara or desert. The European population in 1887 was about 250,000; the natives and naturalized were 3,328,549, making a total of 3,578,549. Cultivation by the means of flowing well waters has been sedulously fostered by the French colonial government for both political and economic reasons. Such wells as a means of reclamation began systematically to be bored in 1857, the French engineer, M. Jus, having demonstrated in 1856 that the desert was endowed with large supplies of under-ground water. The total number of wells that have been bored since that date in the departments of Algiers, Oran and Constantine is stated at 13,135. These wells range from 75 to 400 feet in depth, and the low pressure common to the majority of them forces the water over the small bored casings to a distance of about two feet above the ground. The waters are then collected in small ditches, which convey them to the vineyards, date trees and fields of durra, millet, wheat, etc., which comprise the chief products. In all, about 12,000,000 acres have been reclaimed in this way. The government bores are at least 1-10 of the whole number. As an illustration of the reclamation brought about by this well irrigation, the following figures from a report made in 1885 will be of value, but they relate solely to the cultivation of the grape for wine-making purposes. In the province of Algeria there are 60,322 acres; in Constantine, 25,021 acres; in Oran, 26,114. Under this species of cultivation Algeria is becoming a great wine-growing country. It sent to France during eleven months of 1886, 10,513,966 gallons of wine; and of cider in the same year, 219,277,124 gallons were made. The date palm is the largest product of the desert oases proper. The total area under colonization or settled occupation in 1887 is given at 49,400,000 acres; under cultivation by irrigation in wheat, barley, oats, vines, olives, dates, tobacco, etc., at 17,041,133. The forest plantations cover 5,000,000 acres.—*R. J. Hinton.*

Heavy Woods.

There are 413 species of trees found within the limits of the United States and Territories, sixteen of which, when perfectly seasoned, will sink in water. The heaviest of these is the black ironwood (*Condalia ferrea*), found only in Southern Florida, which is more than 30 per cent heavier than water. Of the other fifteen, the best known are the lignum vitæ (*Guaiacum sanctum*) and the mangrove (*Rhizophora mangle*). Texas and New Mexico lands, full of queer, creeping, crawling, walking, and inanimate things, are the homes of a species of oak (*Quercus grisea*) which is about one and one-fourth times heavier than water, and which, when green, will sink almost as quickly as a bar of iron. It grows only in mountain regions, and has been found westward as far as the Colorado desert, where it grows at an elevation of 10,000 feet.