

outwardly to some other animal, or the water, and then back to another *Anhinga*, is wholly unknown."

SCIENTIFIC OPINION.*—A weekly journal showing the progress of science in all its departments, is a most welcome publication. It is edited with great ability, and its editorial reviews deserve especial notice for their plain speaking and candor. No other journal known to us reports so promptly and fully the Proceedings of Scientific Societies, especially the German and French. Both this and the Paris *Cosmos*, a favorite exchange with us, will doubtless have a wide circulation in America, as science is attaining such proportions that we on this side of the water must receive weekly scientific intelligence from Europe.

FAUNA OF THE GULF-STREAM AT GREAT DEPTHS.†—This is the continuation of a similar paper by the same author previously reviewed. The utmost depth reached with the dredge was 517 fathoms, or 3102 feet, or over 1000 feet beyond the late researches near Spitzbergen. The bottom has been divided into three regions, extending in zones around the Florida reefs:—1st, From the reef outwards four or five miles to the depth of 90 fathoms; 2d, From 90 to 250 or 350 fathoms; 3d, The bottom of the channel which does not much exceed 500 fathoms. The first region is barren, and covered only by dead and broken shells, showing that the fauna of the reef itself does not extend seaward. The second is "rich in animal forms," and is particularly interesting to the geologist. It is a limestone, gradually increasing by the accumulation of the calcareous remains of Corals, Echinoderms and Mollusks. "These debris are consolidated by the tubes of *Serpulæ*, the interstices filled up by *Foraminiferæ*, and smoothed over by the *Nullipores*. It is supposed by the author that this will eventually thicken until the water is shallow enough for the *Astreans* and *Madrepores* to begin their work of founding a new barrier similar to the existing reefs. This limestone is filled with recent fossils, furnished in great part by the animals now living on the bottom, but "a few contribute by sinking after death from the higher regions of the superincumbent water (teeth of fishes and shells of *Pteropods*), and others are brought by currents from littoral regions (bones of the *Manatee*, and fragments of littoral plants). All the branches of the animal kingdom, so far as their marine carnivorous orders are concerned, are abundantly represented in this region, but it is destitute of plants.

The third region is sparsely inhabited by a few *Mollusks*, *Radiates*, and *Crustaceans*, but the peculiar animal is the microscopical *Globigerinæ* whose siliceous shells have covered the bottom of the channel with a thick deposit. The deep sea animals of the second and third regions are of smaller size than allied forms of the littoral zone. "The only exception is an *Echinus*, which is nearly of the average size, and an *Actinia*.

* *Scientific Opinion*. A Weekly Record of Scientific Progress at Home and Abroad. Part I. December; II, January, 1869. 4to. Monthly Parts, 1s. 6d. London, 1869. 4to, 3 columns.

† *Bulletin of the Museum of Comparative Zoology*, No. 7. Contributions to the Fauna of the Gulf-stream at great depths. (Second series.) By L. F. Pourtales, Ass't U. S. Coast Survey.

The prevailing colors are white, pink, — sometimes playing into orange, — and a pale green. Blue was only seen in a small incrusting sponge. What proportion of light reaches a certain depth we shall try to determine during our next explorations. It is certain, however, that the deep sea animals have generally well-developed eyes, larger if anything than those of their congeners of shallow water."

THE GEOLOGICAL SURVEY OF ILLINOIS.* — Prof. Worthen announces that the Carboniferous system attains a maximum of 2500 feet in this State, and contains ten seams of coal, six of them in the lower, three hundred feet of the true coal measures being of workable thickness. The whole series is exposed in the banks of the Illinois, which cuts diagonally across these beds for more than a hundred miles from north-east to south-west.

Prof. Worthen points out from theoretical data what may possibly prove to be a very serious mistake in Prof. Owen's estimate of the thickness of the coal measures in Kentucky. If it prove a true criticism, Kentucky is not so rich by one half in workable coal seams as she has been represented. Prof. Worthen thinks that Prof. Owen mistook two outcroppings of the same sandstone for two different layers, and that these two, which are distinguished as the "Anvil-rock Sandstones," and the "Mahoning Sandstone," in the Kentucky section, are identical. If this be so, the series of coal seams between the latter and the former, do not overlie the Mahoning Sandstone, but are merely similar or duplicate beds, occurring in the same geological horizon. "The product of our coal mines for the past year (1867) according to the most reliable statistics, is fully 1500000 tons." "There is, perhaps, no other area of equal extent in the United States where coal is so easily obtained with a moderate expenditure of capital as in the Illinois Coal-field." The strata are undisturbed; their inclination from the western border to Springfield is not over seven feet to the mile, and the principal seams are accessible in the central parts of the State, at from two hundred to four hundred feet. Our space only permits us to name the counties, the geology of which is fully described. They are Alexander, Union, Jackson, Perry, Jersey, Greene, Scott, Washington, Clinton, Marion, Jefferson, Cook, and La Salle Counties.

The second part, by Messrs. Meek and Worthen, is devoted to Palæontology, and contains among much interesting matter, full descriptions and figures of the remarkable Carboniferous crustaceans from Mazon Creek, which were first made known by this survey. Mr. Scudder describes the fossil insects, and gives many interesting details. From these it appears that we have from the Grundy County Carboniferous rocks, besides those described in Vol. I, one species of Eurypterus and two Crustaceans allied to the common *Limulus*; two Isopods, and two Macrurous Decapods. Among insects there are two Myriapods, one of enormous size, two species of Neuroptera belonging to two genera, and two species

* Geological Survey of Illinois. A. H. Worthen, Director. Vol. III, Geology and Palæontology. 4to, pp. 574. With twenty plates and numerous illustrations.