Thus he finds it convenient to separate probably related groups such as the Pinnipedia and the Carnivora, *Polyodon* and the sturgeons, but, on the other hand, he thinks the orders Anseres, Steganopodes, Tubinares, Longirostres, Pygopodes, Impennes 'might well stand as a subclass—the web-footed swimmers.' Whatever mnemonic value there may be in his classification of the fishes (which is based chiefly upon visible external characters), it must be admitted that the scheme is arbitrary, not expressive of kinships and far from representing the present state of ichthyology. The physostomous and physoclistous orders are scattered about indiscriminately the electric eel (*Symbranchus,* which is almost certainly an eel-like offshoot of the characines) is cited as a typical example of the order Apodes; the Pediculates are widely separated from the spiny-finned group and placed next to the 'foot of the subclass of bony fishes,' which place of slight esteem is assigned to the eels and *to the sea-horse group!*

W. K. Gregory.

SCIENTIFIC JOURNALS AND ARTICLES.

The February number of the *Botanical Gazette* contains 'The theory of respiration,' by C. R. Barnes, being an address as retiring president of the Botanical Society of America, and published also in Science of February 17. —H. N. Whitford has begun a discussion of the forests of Flathead Valley, Montana, being the results of his work as a collaborator in the U. S. Bureau of Forestry. The paper discusses the conditions that determine the appearance and nature of the forests of that region, and inferentially the nature of the conditions of forest development in other regions.—Theo. Holm publishes a study of *Munroa squarrosa,* both from the standpoint of its general characters and its anatomy.—C. J. Chamberlain presents the view of a botanist as to alternation of generations in animals, his theory being that the egg with the three polar bodies constitutes a generation comparable with the female gametophyte in plants; that the primary spermatocyte with the four spermatozoa constitute a generation comparable with the male gametophyte in plants; and that all other cells in the animal constitute a generation comparable with the sporophyte in plants. His lines of evidence are the gradual reduction of the gametophyte in plants, with the constantly diminishing interval between the reduction of chromosomes and the process of fertilization; and the phenomena of chromatin reduction in both animals and plants.—W. F. Ganong, in continuing his descriptions of new precision-appliances for use in plant physiology, describes an autographic transpirometer, an adjustable leaf clasp, and a leaf-area cutter.

The February number of the *Journal of Nervous and Mental Disease* opens with an article by Dr. Morton Prince, of Boston, on the course of the sensory fibers in the spinal cord as evidenced by a case of section of the cord. Dr. Prince discusses the function of the posterior columns with a leaning toward the view that they are largely for the conduction of muscular rather than tactile sense, and that at least one of the paths of conduction of tactile sense is in the lateral part of the cord. He goes over the reports of various experiments on animals, and then presents very carefully the case in point, resulting from a brawl between a couple of Italians and amounting practically to a vivisection experiment on a human being. Lack of space prevents giving his conclusions in full, but among them might be noted: It is proved that tactile sensations are conducted by other paths than the posterior columns, and this is probably although not positively true of pain as well. A path for sensibility must cross the cord. In the second article Dr. Frank R. Fry, of St. Louis, reports two cases of syphilitic disease of the cervical spine, belonging to a type characterized by a stiff neck with one or more points of tenderness on deep pressure, severe neuralgic pains, often not sharply localizable, no objective sensory changes, and no paralysis. Dr. F. X. Dercum, of Philadelphia, reports a case of trauma of the foot of the second frontal convolution, followed by ataxia, nystagmus and epilepsy, which improved after surgical interference. The October meeting of the Philadelphia Neurological Society and the November meeting of the New York Neuro-

logical Society are reported. The 'Periscope' includes abstracts of the following periodicals: *Neurologisches Centralblatt, Journal de Neurologie, Allgemeine Zeitschrift für Psychiatrie, Journal of Mental Science, Archives de Neurologie,* and selected articles from miscellaneous journals. T. S. Clouston's 'Clinical Lectures on Mental Diseases' and 'Traité de Medicine,' Vol. IX., Diseases of the Nervous System, are reviewed.

SOCIETIES AND ACADEMIES.

THE GEOLOGICAL SOCIETY OF WASHINGTON.

The Red Beds of Southwestern Colorado: WHITMAN CROSS and ERNEST HOWE.

During the areal mapping of the Ouray quadrangle, on the north side of the San Juan Mountains last season, a notable angular unconformity was observed immediately below a peculiar limestone conglomerate which has long been known to carry fragmentary remains of dinosaurs and crocodiles, with occasional plant and invertebrate forms, all of Triassic types (see Telluride and La Plata folios). Within a distance of two or three miles this Triassic conglomerate is seen to transgress the edges of 1,200 feet or more of unfossiliferous conglomerates, sandstones and shales, of typical Red Bed character, and several hundred feet of the Hermosa formation—Pennsylvanian Carboniferous. The Triassic beds are here but 50 to 200 feet thick, the La Plata Jurassic sandstone resting unconformably upon them.

This unconformity below the Trias shows that the major portion of the Red Beds section of the San Juan country is Paleozoic and the authors provisionally refer that portion to the Permian, and propose the name Cutler Formation for it, the Triassic Red Beds retaining the name Dolores, in accordance with the original definition of that formation.

The significance of this unconformity in interpreting the Red Beds sections of other parts of Colorado and the western plateau country was briefly discussed. This paper was read by title at the winter meeting of the Geological Society of America and will be offered for publication in full in the *Bulletin.*

Cause and Periods of Earthquakes in the New Madrid Area, Missouri and Arkansas: MYRON L. FULLER.

The term New Madrid earthquake is applied to a series of shocks beginning late in 1811 and continuing to the early part of 1813, constituting one of the most remarkable examples of incessant quaking in a region far from any volcano for a period of many months. The shocks, though felt throughout nearly the whole of the country then settled, were most severe in southeastern Missouri, northeastern Arkansas and western Tennessee. Along the Mississippi there is said to have been a broad dome-like uplift of some twenty feet, while both to the east and west the land was depressed, forming the broad 'sunk land' districts. The uplift resulted in the drainage of many lakes and bayous, while the depression gave rise to basins into which waters flowed, killing the existing timber. Among other characteristic features of the earthquake was the opening of immense cracks, often several feet across and many feet in depth, and the formation of craterlets, through both of which large amounts of lignite-bearing sands were ejected, probably giving rise to the broad areas known as sand-slews where the surface, even to-day, is in places a barren, sandy, timberless waste, upon which only weeds will grow. The submerged stumps, slews, craterlets and cracks were still visible in 1904 when a trip was made to the region by Professor E. M. Shepard, C. B. Bailey and the speaker. Professor Shepard, who gave much attention to the cause of the earthquake, believes that the conditions are such as would result from the undermining action of ground waters under artesian pressure and which are thought to have escaped in the past, as possibly at present, along some of the streams by springs bringing up sand and lignite. The equilibrium being destroyed by a readjustment of some Ozark or other fault, cracks were formed and sand and water ejected in large amounts, permitting the settling described. The speaker, however, believes that there was no preliminary undermining, but that the sinking was brought about because of the extrusion at the time of the