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

quake of large amounts of the quicksand underlying the clay, which, when saturated with water, flows almost as readily as water alone. Observation on the ages of trees in the cracks brought out the fact that some fissures were formed a hundred years or more before the recorded quake, while inquiry of the inhabitants shows that earthquakes are still of almost annual occurrence and are accompanied by similar but less pronounced phenomena than those accompanying the quake of 1811, indicating that the latter was simply an acute stage of a readjustment which has long been going on and is still in progress.

Some Crystalline Rocks of the San Gabriel Mountains Near Pasadena, California: Ralph Arnold, Washington, D. C., and A. M. Strong, Independence, California.

The San Gabriel Mountains, comprising an area of about twelve hundred square miles, extend for fifty miles in a west-northwesterly direction from Cajon Pass in San Bernardino County, to the Santa Clara River in Los Angeles County. Considerable divergence of opinion regarding the age of the chain has prevailed among previous writers, but it is probable that it received at least the greater part of its elevation during late Eocene or Oligocene time.

The southern range of the chain, the Sierra Madre, is composed principally of granodiorite and gneiss, with some associated quartz-monzonite and gabbro and intruded aplite, quartz-hornblende-porphyrite and diabase porphyry. The central portion of the mountains consists of somewhat coarser grained granites and granodiorites with intruded aplite, micropegmatite, etc.

The granites described are of the biotite variety and are found in the central part of the chain. The granodiorites consist of two facies, a fine-grained hornblende-bearing variety from the Sierra Madre and a somewhat coarser grained variety containing porphyritic orthoclase from the central mass. These granodiorites differ from those found in the Sierra Nevada of central California by being on the average finer grained and having less quartz, titanite and zircon. Gabbro, consisting mostly of hornblende, but also containing a little plagioclase, is found in small masses or dikes throughout the whole area. Aplite is found over the whole region in question, while micropegmatite was found only in the central portion of the chain. Quartz-hornblende-porphyrite and diabase porphyry occur in dikes in the southern range. Of the metamorphic rocks, hornblende-diorite-gneiss is by far the commonest. It and some biotite-granite-gneiss are associated with the granodiorites and quartz-monzonites of the Sierra Madre. Hornblende-schist and garnetiferous schist, found by the writers only in the southern range, complete the list of crystalline rocks described.

The Question of the Origin of the Natural Mounds of Louisiana: A. C. Veatch.

Of the many theories of origin suggested for these mounds three deserve the most careful attention: (1) the spring and gas vent theory, (2) the dune theory and (3) the ant hill theory.

In the spring and gas vent theory it is argued that the gas produced by the decay of the large amount of vegetable matter buried in the coastal plain strata has, with the artesian water associated with it, brought to the surface fine sand and built up low cones. Small cones are now forming in this manner at many points in the coastal plain, and they were pointed to as proving this hypothesis. The fatal objection to this theory is that entirely identical mounds are found in Indian Territory on flat plains underlaid by highly inclined carboniferous shales and sandstones, where the substructure clearly lacks the elements required by this hypothesis.

The dune theory is based on the resemblance of these mounds to the low dunes which collect in the semi-arid region of the west about clumps of low vegetation. The objection to this theory is the great irregularity of wind-made features and the very notable uniformity in size and exact resemblance one to another of these natural mounds of the south central United States over an area at least 300 miles wide and 500 miles long. It would seem that in so large an area a wind origin would involve a greater variation in size than has been

observed, and necessitate the presence of occasional dunes, or lines of dunes, of noteworthy size whose origin could not in any way be doubted.

In the ant hill theory two possible lines of development were suggested: (1) That the mounds are the work of the *Atta,* or leaf-cutting ants, (2) that they are the remains of hills of a mound-building variety of white ants, the termites. According to Professor W. M. Wheeler, *Atta* hills in western Texas reach a diameter of forty to fifty feet and a height of one to two feet; and Mr. E. A. Schwarz, of the National Museum, reports that the *Atta* hills in Cuba often reach a height of ten to twelve feet and a diameter several times as great. These occurrences are considered to add greatly to the possibility of an ant origin.

Regarded as the work of mound building termites, which are now restricted to the tropical regions, these mounds suggest a warmer and moister climate. Modifications such as those which permitted large elephants, camels and animals of the sloth and armadillo families to live in this region would also have permitted these now similarly restricted mound-building termites to do the same; and the causes which resulted in the extinction of the larger animals would also, though at a later date, have destroyed the mound-building termites.

Of the theories of origin yet suggested none are entirely satisfactory, and the dune and ant hill theories are the only ones well supported. If either of these hypotheses is correct the mounds are indications of important climatic changes in very recent time. It was suggested that the matter should be approached by the careful excavation of a number of these mounds at widely different points in order to fully determine the relation of the mounds to the beds which underlie them and to the soil surrounding them.

H. F. BAIN,
Secretary.

CLEMSON COLLEGE SCIENCE CLUB.

THE fiftieth regular meeting of the club was held Friday, December 16. By way of special observance of the occasion, Professor M. B. Hardin, the first president of the club, gave informally a brief account of the organization and early days of the club, and recounted some of the more interesting of the former programs.

Professor T. G. Poats discussed 'Recent Advances in Astrophysics,' dwelling particularly upon those made possible by the use and improvement of the spectro-heliograph.

Professor Harmon Benton, under the head of 'Economic Possibilities of the May-pop,' gave an account of his preliminary experiments in improving the wild may-pop (*Passiflora incarnata* L.) by increased fertility of soil, selection and crossing upon the edible species of *Passiflora.* Results to date indicated that the plant responded readily to improvement, and its development into an economic fruit can be predicted with no little certainty. These experiments will later be published as a bulletin of the South Carolina Experiment Station.

Dr. P. H. Mell gave an account of the Des Moines meeting of the Association of American Agricultural Colleges and Experiment Stations and Professor C. E. Chambliss reported on the boll-weevil convention at Shreveport.

The fifty-first regular meeting on Friday, January 20, was given up to reports from those who attended the Philadelphia meeting of the American Association: Dr. P. H. Mell, Professor P. T. Brodie, Professor C. E. Chambliss and Dr. Haven Metcalf, reporting on the work of the sections and affiliated societies in geology, engineering, entomology and botany, respectively.

HAVEN METCALF,
Secretary.

THE NEW YORK ACADEMY OF SCIENCES. SECTION OF BIOLOGY.

AT the January meeting Dr. W. M. Wheeler assumed the chairmanship for the year 1905. Papers were presented by Dr. Esther F. Byrnes and Dr. Wheeler.

Dr. Byrnes described 'Transitional Stages and Variations in some Species of *Cyclops.*' The species *C. signatus* occurs sexually mature in morphologically incomplete stages. It

is then characterized by eleven antennal segments instead of the adult number, seventeen; and is comparatively small in size and pale in color. Large numbers of adults of the type *C. viridis* show striking variations in the armature of the swimming feet. Similar antennæ and fifth feet are correlated in one type of individual with the swimming feet of *C. parcus;* in another form with *C. viridis* (var. *Americanus*) and in another with *C. brevispinosus.* Occasionally serial and lateral variations combine the swimming feet of *C. parcus* and *C. brevispinosus* in the same individual. These facts, together with the frequent replacement of setæ by spines, the constant association of the forms and their occasional sequence in small aquaria, indicate a very close relationship among the species observed and suggest that they are transitional forms in the development of a single species.

Dr. Wheeler described the structure and ecology of many 'ants that raise mushrooms,' giving special attention to the species of Texas and Mexico, where his own studies of these ants were made. Numerous lantern slides illustrated this lecture; and at its close many slides from photographs of ants kept in captivity by Miss Adele M. Fielde were exhibited.

M. A. Bigelow,
Secretary.

THE ELISHA MITCHELL SCIENTIFIC SOCIETY.

The 158th meeting of the Elisha Mitchell Scientific Society of the University of North Carolina was held in the chemical lecture room, Tuesday evening, February 14, at 7:30 o'clock. The program was as follows:

Dr. R. H. Whitehead: 'Mode of Infection of the Hookworm Disease.'

Professor Archibald Henderson: 'The Mystic Hexagram.'

Professor C. L. Raper: 'Statistics of Cotton Manufacturing in the South.'

Alvin S. Wheeler,
Recording Secretary.

DISCUSSION AND CORRESPONDENCE.

MONT PELÉE SIVE MONT PELÉ.

It is a curious coincidence that geologists who affect the title of 'Mont Pelé' in preference to the formal appellation of Pelée, should have associated, so far as identity of names is concerned, the tutelary divinity of volcanoes amongst ancient Hawaiians with the island of Martinique. We are assured, however, that the innovation has not been made with the idea of reverencing the goddess, but out of regard for rules of gender, Pelée being considered an adjective adopted from the Spanish, as one contributor to Science has it, or from Carib speech, according to another. Admitting either of these explanations, it is easy to see that Spaniards or Caribs must also have had a hand in christening an island by the same name off the coast of France.

In reality, Pelée has continued to be a word of good and regular standing in the French language since the time of the Norman Conquest, the expression of 'une verge pelée' occurring in the 'Chanson de Roland,' supposed to be of the early eleventh century. Strictly speaking, the word is a past participle of *peler,* which, with the co-derivatives of *pelare* in Italian, *pelar* in Spanish, and *peel* in English, comes from the Latin *pilare.* Now it happens that large numbers of past participles have become preserved in modern French as substantives, some masculine, but the majority feminine—as for instance, *allée, mêlée, gelée, fumée,* etc. And we have the authority of La Fontaine, in his 'Fables,' to say nothing of colloquial usage both in French and German, for considering the word meaning bald as a noun.

Applying this principle to place names, Pelée may be regarded as having acquired the force of a substantive, like our own 'Rockies.' It is true that Rocky and Bald may connote the character of mountains, but the adjective force of these words becomes lost when they stand for geographical appellations. Indeed, names like Big Sandy, Vera Cruz, Jungfrau, Sacré-Cœur, and so on, are nouns pure and simple. By treating Pelée as a noun, we shall have the advantage of an invariable termination, thus doing away with a dual orthography, or the possibility of a triple, in case we were writing in German.

As regards the question of gender it may be remarked that in the case of geographical