logue of Geological Literature' and 'Personal and Scientific News.'

Three new ornithological journals have appeared this year. *American Ornithology*, edited by Mr. C. A. Reed, at Worcester, Mass.; *The Petrel*, edited by Mr. J. W. Martin, at Palestine, Ore., and *The Bittern*, edited by Mr. G. M. Hathorn, at Cedar Rapids, Ia. On the other hand *The Western Ornithologist* has suspended publication.

SOCIETIES AND ACADEMIES.

THE ACADEMY OF SCIENCE OF ST. LOUIS.

At the meeting of the Academy of Science of St. Louis, of March 4, 1901, the following subjects were presented:

The Corresponding Secretary read a communication from Dr. Amos Sawyer, entitled 'Ethnographic life lines left by a prehistoric race,' the paper being illustrated by sketches, fragmentary human remains and stones, etc., derived from a prehistoric grave examined some ten miles southwest of Hillsboro, Illinois, on the west side of Shoal Creek. In one instance it was stated that a grave consisting of six slabs of limestone contained six skeletons, their thighs flexed upon the abdomen, the legs upon the thighs, their arms placed by their sides, and their heads at either end of the enclosing box and facing east and west. From the limited capacity of the slab-enclosed graves, the writer inferred that the remains had been placed in them after skeletonization, as there was not sufficient room for the number of bodies found unless the muscles had been removed, and it was argued from this that the remains were those of prominent men in the nation.

The Corresponding Secretary read a further communication from Dr. Sawyer, referring to a piece of wood found at a depth of 400 feet below the surface in sinking a shaft for a coal mine. The specimen was said to have occurred in a ten-foot layer of loam filled with the débris of a forest, and the specimen submitted, like others, had been flattened by pressure.

In the discussion which followed the reading of these communications, Mr. Colton Russell said that west of St. Louis, in a number of so-called Indian graves which he had examined, the encasing with rough limestone slabs, mentioned by Dr. Sawyer, had been observed; and Dr. Trelease called attention to the fact that the specimen of wood exhibited, which did not seem to be petrified, belonged to post-glacial times and was perhaps comparable with certain pieces of wood, supposed to be cedar, but not yet carefully studied, which Mr. Hermann, the Sewer Commissioner of St. Louis, had found in company with bones of the early bison in the glacial detritus through which a storm sewer is being excavated at Tower Grove, St. Louis.

A paper by Dr. T. Kodis, 'On the action of the constant current upon animal tissue,' was read by title.

Professor F. E. Nipher stated that he wished to take this occasion to correct some misapprehensions concerning the development of photographic positives. He stated that the effect of development in the light was to make the normal exposure for positives shorter than when they are developed in the dark-room. When for a given illumination of the developing room the exposure has been properly made, the ordinary developer used for negatives may also be used for positives without any restrainer. The restrainer is only needed when the plate to be developed as a positive has been under-exposed, or the plate to be developed as a negative has been over-exposed. In both cases it is an approach to the zero condition which calls for the restrainer.

Professor Nipher stated that Mr. Cockayne, of the Heliotype Company, of Boston, had suggested to him the use of potassium ferro-cyanide in place of potassium bromide in developing positives, and he had found it to give great brilliancy to the pictures. A Cramer 'Crown' plate exposed in a printing-frame for a couple of minutes at a south window, just out of the direct rays of the sun, under a thin negative or positive, may be developed at the same place. A few drops of a ten-per-cent. solution of the ferro-cyanide may be added, and even as much as one part in twelve of developer has yielded excellent results. The bath has in some cases been wholly made up of the ferro-cyanide solution, the other chemicals being added in dry form. The action of the ferro-cyanide is quite different from that of

bromide in equal strength, although it may be largely a matter of degree.

The bath should not be quite so strongly alkaline as for negatives, in order to get the best results. The best results when pictures are developed in daylight are as fine as can be obtained in the dark room, in the ordinary developing of negatives. Various developers have been tried, but none of them have yielded as good results as hydrochinon.

Mr. G. Pauls laid before the Academy a branch of a small hackberry (*Celtis*) which had become completely covered with the small nodular galls frequently borne in smaller quantities by the hackberry, and called attention to the fact that in this particular case the natural enemies of the gall-forming creatures seemed to have been absent, allowing of their unusual multiplication.

One person was elected to active membership.

WILLIAM TRELEASE,
Recording Secretary.

GEOLOGICAL SOCIETY OF WASHINGTON.

THE 112th meeting was held March 13, 1901, at the Cosmos Club. The following formal communications were presented:

'The Soil Survey of Cecil County, Maryland,' by Mr. C. W. Dorsey. This example of recent soil-mapping, by the Department of Agriculture, was illustrated by a colored map showing the areal distribution of ten classes of soil.

'Discussion of Geologic Units—Formation, Stage and Age,' by Messrs. Bailey Willis, H. S. Williams and others.

Mr. Willis, in introducing the discussion, briefly reviewed past attempts to consistently divide assemblages of stratigraphic rocks into units. He pointed out that a clear distinction exists between division on lithological grounds, and division on paleontological grounds, and that this distinction should not be lost sight of. He believed that the cartographic unit, the formation, should be defined purely on the basis of lithological character. In regard to the terms used for the units of the lithological, faunal and chronological scales in geology, it is highly important that there should be unanimity in usage. Shall we attempt to reconcile and fix the usage of such English substantives as series, formation, system, stage, period, etc., or shall we adopt entirely new terms from some foreign, preferably dead, language, and so avoid tying up well known English words to definite restricted meanings? Several terms from the Sanscrit were given in illustration of this suggestion. Professor H. S. Williams called attention to the fact that a formation, as defined on purely lithological grounds, lacks true unity. Two scales must be used to scientifically describe the formations and faunas which the geologist studies—a structure scale and a time scale. The latter must express definite time values. Such values are presented by (1) the persistence of equilibrium of a particular fauna, (2) the persistence of a particular species, (3) the persistence of a genus, etc. Major J. W. Powell gave his experiences in devising a scientific nomenclature in psychology. He at first endeavored to redefine old words. Readers forgot his definitions and unconsciously used their own in reading his work. He strongly favored the adoption of new terms devoid of all confusing connotations. Mr. Whitman Cross illustrated the difficulties arising when a formation, once defined, is found to thicken and expand into several members in another portion of the field. He was emphatically of the opinion that the evidence of fossils should be freely used in addition to lithological distinctions, whenever such a course will lead to a fuller expression of the structural and historical facts in the geology of a given region.

F. L. RANSOME,
DAVID WHITE,
Secretaries.

BIOLOGICAL SOCIETY OF WASHINGTON.

THE 337th regular meeting was held on Saturday evening, March 23d.

Sylvester D. Judd presented a paper on 'Bird Food Problems,' stating that in studying the food of birds as indicated by their stomach contents, one was confronted with the problem of identifying the articles eaten from very small particles. He showed, illustrating his remarks with lantern slides, how the presence of grasshoppers, cut worms, the larvæ of may beetles, earthworms and various plants might be recognized under the microscope from minute

but characteristic portions of these animals or, in the case of the plants, by portions of the seeds or even the form of the starch grains.

F. A. Lucas spoke of 'Some Restorations of Dinosaurs' saying that while a short time ago the Dinosaurs were very imperfectly known, now, through the exploration of our western territory and the systematic methods employed in collecting, we had a very thorough knowledge of these animals and are even able to present restorations of their external appearance. The American Museum of Natural History, of New York, he said, led in this work, and the speaker explained the methods of collecting, showing views of some of the famous quarries and of the specimens as they appeared when prepared and mounted. The matter of restoration was discussed, and the deductions made from the skeletons described and various restorations shown made by Mr. Knight under the direction of Professor Osborn. F. A. Lucas.

WASHINGTON PHILOSOPHICAL SOCIETY.

The 532d meeting was held March 16, 1901. The first paper was by Professor Updegraff, of the Naval Observatory, on the 'Errors due to Imperfections on the Pivots of a Theodolite.' After a reference to the well-known theory of elliptical pivots in a V-bearing whose sides are at right angles, the speaker considered the case of an elliptical pivot resting on two cylindrical lugs or ridges; the result of the investigations is that the center of the pivot when rotated does not change its elevation, but has a small movement in azimuth. In the long discussion that followed, Mr. E. G. Fischer, mechanician of the Coast and Geodetic Survey, pointed out that in actual practice the unequal wear of different parts of a pivot, due to unavoidable inequalities in the steel and to use of only a small arc, introduced much greater errors than any due to the original imperfections of manufacture.

Mr. Hussey then gave (by invitation) 'An Informal Account of Recent Work at the Lick Observatory,' showing superb lantern slides of stellar spectra and nebula. The interesting facts which he presented have been made accessible to the public in other ways and need not be repeated here. C. K. Wead,
Secretary.

TORREY BOTANICAL CLUB.

The meeting of January 30, 1901, was held at the Botanical Academy, Bronx Park, New York City.

A paper was presented by E. S. Burgess on the history of *Aster Claytoni*, soon to appear in print. A series of specimens was exhibited showing type and variations, and a range from the Hudson River to Virginia. The first specimen known was collected in the mountains of Virginia by John Clayton, apparently in or before 1754, during his botanical expedition along the James or that to the sources of the Rappahannock. It is No. 767 of the Gronovian herbarium preserved by the British Museum. Comparisons, kindly made by Mr. Edmund G. Baker, of the British Museum, show its identity with plants observed first on Manhattan Island at Inwood by E. S. Burgess in 1896, and kept under observation since for study of development. The description of No. 767, written by Clayton and Gronovius, and published in the 'Flora Virginica,' Part III, in 1762, without a specific name, long remained without reference to any of our known native species, Forster's reference in 1771 to *Aster macrophyllus* proving untenable. In reestablishing the species in the 'Illustrated Flora,' in 1898, under the name *Aster Claytoni*, it was intended to pay this tardy tribute to the memory of its discoverer, John Clayton, rightly styled by Collinson as at that period, 1764, 'the greatest botanist of America.' The species seems particularly frequent in the lower Hudson region, where it had, however, been hitherto confused with its smoother and more forking ally, *Aster divaricatus*.

At the meeting of February 13, 1901, at the College of Pharmacy, in New York City, Dr. J. K. Small presented a paper entitled, 'Notes on Some Species of *Rudbeckia*,' exhibiting a series of specimens of *Rudbeckia*, illustrating groups typified by *R. hirta*, *R. triloba*, *R. laciniata*, etc. Numerous critical characters depending on style-tips, form, serration or lobation of leaves, etc., were discussed. About 25 species occur east of the Rockies, 3 native to our own vicinity. All evidence shows *Rudbeckia hirta* to be an introduced plant in the northeastern states, perhaps from Maryland northward. Dr. Underwood remarked that *R. hirta* seemed to be first

introduced into Central New York about 1864. Dr. Rusby referred to its rarity within his memory in the vicinity of New York City, and to the recently discovered medical value of the related genus *Echinacea*. Dr. Britton called attention to the supposed variants of *R. hirta* with parti-colored rays, as suggested by plants from near Philadelphia and from Staten Island.

Dr. Britton presented the subject of the relationship of our woodland species of *Circæa*, *C. Lutetiana* being the representative near New York City, and extending widely around the world. The characteristic bristles of the fruit fail to appear in a remarkable specimen from Ohio which was exhibited. *C. intermedia* of Central Europe was also discussed in its relations to the foregoing.

The third paper, also by Dr. Britton, was upon *Antennaria*. Dr. Britton exhibited a series of specimens of *Antennaria neodioica* Greene, a species which seems to be easily distinguished from the others of eastern North America by its spatulate basal leaves, distinctly mucronate, tapering rather abruptly from well above the middle into a long narrow base, which, however, can scarcely be called a petiole. He showed specimens of the plant collected in company with Professor Greene at Bushkill, Penn., on the Club's Field Meeting, May 30, 1897, at which time Professor Greene first insisted on its specific difference from *A. plantaginifolia* with which it grew. The series included authentic specimens of *Antennaria rupicola* Fernald, which differs only from the typical specimens in the yellowish involucre, and slightly less abruptly tapering leaves, collected by Mr. Fernald at Island Falls, Aroostook Co., Maine, a character which can hardly be maintained for specific distinctness; also specimens of *A. neodioica attenuata* Fernald, which differs from the type in its slightly more acuminate inner involucral bracts and relatively broader leaves, and is identical with *A. alsinoides* Greene, original specimens of which were also included in the exhibit; also of *A. neodioica grandis* Fernald, which differs from the latter only in size. He concluded that the series represented only one species, *A. neodioica*.

Dr. Rusby referred to the similar variability of Andean species of *Gnaphalium* as seen by himself and other botanists in Bolivia.

Dr. Howe discussed the relationship of *Riccia Beyrichiana*, the hepatic which he had considered to be probably identical with one discovered by Mr. R. Harper near Athens, Georgia, last summer. The loan of the type-specimen from Vienna now shows that the two are wholly distinct, Mr. Harper's plant representing a new species, soon to be described in the *Bulletin*. *Ricca Beyrichiana* seems, therefore, to be still known only from the original collection of 1833.

EDWARD S. BURGESS,
Secretary.

SCIENCE CLUB OF NORTHWESTERN UNIVERSITY.

THE last meeting of the Science Club of Northwestern University was held on March 1st. Professor A. R. Cook addressed the Club on 'Minerals of the Chicago Area.' The region, though containing no stores of precious metals, or gems, and though not mentioned in lists of mineral localities, has minerals enough; first, to represent five out of the eight classes into which the mineral kingdom may be divided; second, to illustrate the chemical, crystallographic, optical and other physical properties of minerals, and third, to show the chief methods of investigation.

Thus far forty-eight minerals have been found and studied. One fourth of them occur in the underlying Niagara limestone. They are of such character as the geological history of the region would lead us to expect.

Those occurring in the Niagara are most important since they most properly represent this region. They are sulfur, galena, sphalerite, pyrite, marcasite, quartz, limonite, calcite, dolomite, siderite, melanterite, petroleum, gas, asphalt.

The sulfur occurs in crumbling rounded masses in the center of the decomposing marcasite. Galena and sphalerite are in crystalline masses with occasional crystal planes developed, showing characteristic cleavage, and contained both in limestome and in quartz.

Pyrite is most common when the containing limestone most nearly approaches the purity of calcite. The surprising condition is the great abundance of the orthorhombic form of the iron sulfid. Pyrite is rare but marcasite occurs in

extensive beds where it has been sorted out by hydraulic action as in the Des Plaines valley or on the lake shore. A bed several feet wide extended along the water's edge for two hundred feet where the lake was encroaching upon the shore. The marcasite soon disappears upon exposure; it is of such occurrence in the region as to contribute to our knowledge of the species.

Quartz occurs in abundance in both phanerocrystalline and cryptocrystalline varieties. Good scalenohedrons of calcite are found at Stony Island imbedded in asphalt.

The asphalt and maltha which are usually disseminated through the Niagara limestone of the region occur quite pure in cavities formed by the dissolution of fossil cœlenterates, echinoderms and mollusks in the strata at Stony Island.

The average of four analyses showed 15% mineral matter, 82% organic matter soluble in CS_2, and 2% of organic non-bituminous matter.

The asphalt contains 25% petrolene and 75% asphaltine.

Horace M. Snyder,
Secretary.

DISCUSSION AND CORRESPONDENCE.

THE APPLICATION OF PRECEDENCE OF PLACE IN NOMENCLATURE.

It has occasionally happened in descriptive botany and zoology that two or more different names have been published by an author for the same species in the same work, even on the same printed page; in most such cases this has occurred by reason of the author regarding differing forms of the same organism as specifically different, which by subsequent observation has proved to be erroneous. The principle of now using the first in position of these two or more names as the true one, has obtained wide recognition, and is a simple and convenient method to reach this result.

There are also a few cases where the same thing has occurred with generic names, that is to say, by different generic names being published in the same work for groups of species which subsequent study has indicated to be more satisfactorily regarded as within the natural limitations of a single genus, and here precedence of place has also been invoked to determine which appellation the combined genera should bear. Here, as in the case of species, it is only a question of determining which of one or more names for the same things is the one to be employed.

The principle has been referred to as 'priority of place,' and perhaps not improperly, but it is quite a different matter from priority in time of publication, though in its application operating in the same manner to determine which of two or more rival names is to be used. It finds its most explicit presentation in the rules for nomenclature adopted by the botanists of the American Association for the Advancement of Science, at the Madison meeting in 1893, where it is thus stated:

In determining the name of a genus or species to which two or more names have been given by an author in the same volume or on the same page of a volume, precedence shall decide.

More recently it has been proposed by some botanists, as had previously been done by some zoologists, to fix the type species of every genus originally published with more than one species, by selecting for this the species which stands first on the page at the place of publication, and it has been contended that this is a logical outcome of the principle, thus giving it a widely different application from that contemplated in the rule cited above, by making it apply not to the determination of equivalent names for the same thing but to non-equivalent names for different things, a wholly different proposition. Inasmuch as a great many genera have at their first publication been made to include more than one species, and in a large number of instances some of these, often the first in position, have been used by subsequent authors as the types of additional genera, this latter-day proposition affects an enormously greater number of cases than those which fall properly under the operation of the rule.

It is, therefore, clear that there is nothing logical in the proposed extension of the principle. This would, of course, operate as an artificial short-cut in determining generic types, except in the cases where the first species named is not definitely understood, but in many instances it would lose the historic type