land where there were no competitors, while the Haitian and Cuban forms from which they sprang have been kept true to type by the competition of the rest of the fauna by which they are surrounded. If there were any way of determining approximately the time which has elapsed since the elevation of the Bahamas above the sea in the Pleistocene epoch, we should have a means of determining the rate at which evolution and specific differentiation may proceed in such an assemblage of pulmonate mollusks placed in a suitable environment and not subjected to serious competition.

Pre-Cambrian Rocks of the Franklin Furnace Quadrangle: Mr. A. C. SPENCER.

The view held by Rodgers, Cooke and Britton that the gneisses of the New Jersey Highlands are mainly metamorphosed sediments, has not been seriously challenged up to the present time, though two of the more recent investigators of the field (Nason in 1890 and Wolff in 1896) have left the way open for accepting an igneous origin for these banded feldspathic rocks. Field work in the vicinity of Franklin Furnace carried on during the summer of 1904 warrants the conclusion that, so far as this particular field is concerned, the only sediments are the white limestone and a few patches of quartzite, the several types of gneiss being undoubtedly igneous and in large part demonstrably intrusive. For the purpose of the geologic map five divisions of the pre-Cambrian rocks will be recognized: (1) the Franklin white limestone; (2) a complex of diorites and granites showing more or less gneissic structure; (3) black hornblende or pyroxene gneiss; (4) white granite gneiss, and (5) coarse granite or pegmatite.

Age relations have been established as follows: The pegmatites cut all the other rocks; the white gneiss cuts (2) and (3); the black gneiss cuts (1) and both phases of (2); and finally the granite phase of (2) cuts the limestone (1). The relation of the diorite phase of (2) to the limestone has not been observed.

Consanguinity in the Eruptive Rocks of Cripple Creek: Mr. L. C. GRATON.

Mr. Graton showed that three magmatic groups may be distinguished, of which the most important is the series of rocks from the Cripple Creek volcano. All the rocks of this group possess certain characteristics in common and are of particular interest in having a constant ratio of silica to alumina—a proof of their derivation from a single magma. By making certain assumptions based on the field observations, the relative volumes of these rocks were computed, and by that means an analysis was obtained which was considered to approximate the composition of the total product from the magma reservoir, *i. e.*, the average rock of the Cripple Creek volcano.

The Big Sink on the Lucin Route across Great Salt Lake: Mr. J. M. BOUTWELL.

Mr. Boutwell described the construction of the long trestle extending across Great Salt Lake, and presented observations which have an important bearing on the question of the character and depth of the intermontane rock basins beneath the Pleistocene sediments. The author will later communicate a more complete statement to SCIENCE.

GEO. OTIS SMITH,
Secretary.

THE SCIENCE CLUB OF NORTHWESTERN UNIVERSITY.

THE Science Club of Northwestern University held its regular monthly meeting in the physical lecture room of Science Hall, on Friday evening, February 3, 1905, at 7:30 P.M. Papers were presented by J. W. Goldwait on 'Post-glacial Land Movements in New England,' and by Professor U. S. Grant on 'Recent Contributions to Metamorphism.'

FLOYD FIELD,
Secretary.

DISCUSSION AND CORRESPONDENCE.

A NEMATODE DISEASE OF GRASSES.

IN Europe there have been known for many years certain diseases of grasses, including wheat, caused by nematodes, which penetrate, in the larval state, the ovaries of the flowers and there reach maturity and lay their eggs. The resulting larvæ reach a certain degree of development and then, with the drying up of

the host plant, coil up and dry out themselves. In this dried-out condition they may remain motionless but alive for years. On falling to the ground the affected seeds absorb moisture and the worms uncoil, bore their way out to freedom and, finding new grass plants, enter them and ascend to the flower, thus completing the circle of development.

The affected seeds are usually shorter, sometimes, however, much longer than the normal seeds and are incapable of germination. The glumes are much enlarged and the spikelets stand out at a different angle from, and are often more crowded on the axis. In fact, the affected plants may appear to be specifically distinct, and one case is known in America where a diseased plant was actually described as a new species, the presence of the nematodes having escaped the notice of the investigator.

Although known in Europe for a long time, practically no attention has been paid to this type of nematode disease in America. On behalf of the Bureau of Plant Industry of the U. S. Department of Agriculture, the writer has resumed his work, interrupted four years ago, on the nematode diseases of plants. He has found the disease in question in grasses from Texas, Oregon and Alaska, in the genera *Chætochloa, Agropyron, Elymus, Calamagrostis* and *Trisetum*. Two, possibly three, species of nematodes were found, all belonging to the genus *Tylenchus*. Cultural experiments are now under way to determine, if possible, whether any of them are identical with *T. tritici* of wheat in Europe. In the meantime, the writer would be very glad to receive all specimens of grasses and other plants suspected of harboring nematodes in their parts above ground as he wishes to determine what plants are affected and which species of nematodes cause the diseases.

Ernst A. Bessey.
U. S. Department of Agriculture.

SPECIAL ARTICLES.

THE OLYMPIC PENINSULA OF WASHINGTON.

A visit of five weeks in western Washington in 1902 gave opportunity for the following notes on a region as yet almost unexplored. The Olympic Peninsula forms the extreme northwest corner of the United States, and, as may be seen from any map, is almost cut off by water on every side. The climate is mild, temperatures ranging at sea level from 22° F. in winter to 86° F. in summer. The annual precipitation amounts to 120 inches at Neah Bay. Rain falls gently, and is to be expected for ten months of the year. In July and August there is usually no rain at all, so that the forest litter becomes very dry, and serious fires sometimes occur. Snow is only occasional at sea level, but at high elevations all of the precipitation is in the form of snow.

The peninsula is mostly occupied by the Olympic Mountains, an irregular group, radiating out from Mt. Olympus, 8,150 feet. Many other peaks rise from 7,000 to 8,000 feet, and large areas lie above 6,000 feet. As the whole tract is only sixty miles wide from east to west, and one hundred miles long, the hills and valleys are extremely rugged and precipitous. "Glaciers and snow-fields are numerous in the central parts of the mountains" (Dodwell and Rixon). Persons sometimes speak of the Olympics as volcanic, but we saw no sign of volcanism either in the rocks or in the pebbles of the Quiniault or Queets rivers. Along the coast a soft, green, marly, Cretaceous sandstone lies in gentle folds, each crest jutting out to sea as a steep headland 150 to 500 feet high. Rivers occupy the synclines. In the sandstone many fossils are found. Especially noticeable were stumps, logs and fragments of wood at different levels and in various stages of transition to lignite. Capping this stratum is a layer of recent yellow gravel, varying from ten to forty feet in thickness, and also enclosing logs and stumps. Below Point Granville the beach is low and sandy, but north of this steep cliffs rise directly from high water line. At various points (Copalis, Klaylock Creek) government inspectors have found indications of petroleum, but no other valuable minerals are known.

The vegetation of the Olympic Peninsula is truly remarkable. Below 5,000 feet is the great northwestern forest, which must be seen to be appreciated. Douglas fir, tideland spruce and 'red cedar' (*Thuja plicata*) reach