they do further south. In crossing the Appalachian valley this uplift protected the basin of New River against the encroachment of the Atlantic streams, which otherwise would, doubtless, have captured its headwaters. In this region also some of the tilted portion of the older peneplain is probably preserved in an intermediate level which some observers have classed is a distinct peneplain.

It seems probable that in other regions local uplifts have occurred during the continuance of periods of extensive baseleveling, and if so similar forms have probably been produced.

W. F. MORSELL.

U. S. GEOLOGICAL SURVEY.

ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA, APRIL 21.

MR. LEWIS WOOLMAN described the imbedded trees in the cedar swamps of Cape May Co., N. J., from which cedar shingles are manufactured. The lumber men distinguish two kinds of logs: those from 'windfalls' or trees overturned with their roots and 'breakdowns' or those broken off by the wind or other agency. The wood of the former is always well preserved, while that of the 'breakdowns' is not generally in as good condition. From a sound trunk 32 feet long 4,000 cedar shingles have been cut. The tree contained upwards of 800 rings of growth, and the wood when cut emitted a distinct odor.

MR. A. E. BROWN stated that he had recently had an opportunity of examining in the British Museum a cast of the portion of a skull of *Pithecanthropus erectus* discovered by Dr. Dubois. An examination of the cast supports the opinion advanced by Cope and Allen before the Academy that the remains as described and figured by Dubois present no characters separating the species from *Homo Neanderthalensis*. The Java skull is possibly a little flatter than the Neanderthal specimen, but this is purely individual and is compensated for by a bump over the coronal suture. It is also a little more inflated postero-laterally, the supra-orbital ridges being perhaps not quite so thick, although they project as much, if not more. The Java skull is about five-sixths or seven-eighths the length of the other, the cubical capacity being somewhat less.

The phylogeny of man and the apes was considered by Messrs. Rothermell, Brown and Chapman.

Anthropological Section, April 10. Charles Morris, Recorder. Prof. Witmer made a communication on the relations of modern psychology to anthropology. Numerous examples were adduced to illustrate the connection between psychic and physical action, modern psychology beginning with a study of sensation rather than movement. The law of Fechner and Weber, that if stimuli increase in arithmetical proportion, sensation will increase in geometrical proportion, was, although repudiated by physiologists generally, held by the speaker as furnishing an index of discrimination and indicating methods by which we can distinguish and measure individual responsiveness to various stimuli. Devices for registering and measuring psychical responsiveness were described.

The subjects of psycho-neural tests, temperaments and the effects of stimuli on unconscious movement were discussed by Messrs. Kavanaugh, Mills, Allen, Witmer and Reisman.

Botanical Section, April 13. Dr. Charles Schaeffer, Recorder. Mr. Lippincott presented a specimen of *Grindelia squamosa*, a Western plant, collected at Swedesboro', N. J. He also read a paper on the propagation of orchids.

A paper on the varieties of bacteria, their cultivation and their life history was read by Dr. Rabinowitsch.

Dr. Ida Keller exhibited the effect of chlorine in changing the blue color of a *Cinneraria* to pink due to the formation of hydro-chloric acid in the petals. The experiment was made in connection with a consideration of the acid or alkaline contents of vegetable cells.

EDW. J. NOLAN,

Recording Secretary.

GEOLOGICAL CONFERENCE OF HARVARD UNIVERSITY, APRIL 7, 1896.

Ice Phenomena in Green Bay, Lake Michigan.

By E. P. CAREY.

The Great Lakes offer an interesting field for the study of ice action under the influence of the wind, especially at the head of Lake Superior in the vicinity of Duluth, and in Green

Bay, at the west of Lake Michigan, from which it is almost entirely shut off except a very narrow strait called the 'door.'

At these two localities the effects are quite different. Mr. D. J. Woolman, of Duluth, states that at the head of Lake Superior the ice, which has formed in early winter some distance out from the shore, usually soon becomes broken up by easterly or westerly winds and is subsequently piled up by the wind in a ridge several feet high along the shore. In later winter the ice freezes more deeply and so becomes frozen to the bottom for some distance out from the shore. Beyond this limit of freezing the outer ice again becomes broken up by the wind, and in a similar way another ridge of ice is formed a few rods from the shore, roughly parallel with the first ridge, and enclosing a sheet of smooth ice. In this way two or more ridges of ice are formed parallel with the shore.

In Green Bay, however, the effect is quite different. The Bay is almost entirely shut off from Lake Michigan and in winter becomes entirely frozen over, and after once freezing over the ice is rarely broken up to any extent by the wind. On the other hand, a strong wind from the west or northwest sometimes has the effect of causing the ice to move shoreward in the direction of the wind, as a solid sheet, thus piling it up along the shore to a depth of sometimes sixty feet or more. A movement of this kind generally occurs at least once during a winter, and is fully accomplished in from one to three minutes.

In this way considerable geological work is done along the shore, and it is not uncommon to see, after the ice melts in spring, a pile of shore debris piled up in places to a height of eight feet, and showing features characteristic of moraines. The amount of geological work done at different points along the shore differs and at any point seems rather to depend on the slope of the shore and conditions other than the ice movement at that point, *e. g.*, at the point where the maximum amount of ice movement occurred the minimum amount of work was done. Here the conditions were these, viz: A steep slope just at the shore line, which must have had the effect of causing the

ice to break almost as soon as it began to move. Along the shore about eight feet from the original ice front, stood a pile of slabs, piled loosely to a height of ten feet, and parallel with the shore so as to directly oppose the advance of the ice. These slabs, however, though completely buried for many feet by the ice which pushed up over and beyond them, were nevertheless scarcely disturbed. As the ice became broken at the shore line the pieces filled in between the shore and the slabs so that the ice following pushed up over the ice already deposited there, leaving the slabs practically intact.

T. A. JAGGAR, JR.,
Recording Secretary.

PROCEEDINGS OF THE TORREY BOTANICAL CLUB.

THE Club met on Tuesday evening, April 9, 1896, President Addison Brown in the chair, and 30 persons present. Two new members were elected.

Dr. Albert Schneider read a paper on 'The Uses of Lichens,' giving an instructive account of the past and present uses of these plants in medicine and the arts. Mr. P. A. Rydberg read his announced paper entitled 'Preliminary Notes on a Revision of the North American species of *Potentilla* and Related Genera.' This was accompanied by many herbarium specimens and drawings, and drew forth remarks from the President and Mrs. Britton.

The last paper was that of Mrs. E. G. Britton, on 'Notes on Mexican Mosses.' Mrs. Britton gave a short historical account of the various collections of mosses which have been made in Mexico, stating that she had recently received, for naming, the specimens gathered by Pringle, as well as those collected in 1892 by Smith and Brunner. Specimens from these two collections, as well as others from those of F. Müller, C. Mohr, Hahn, etc., were exhibited, and a comparison was made of the number of genera and species which are common to Mexico and the United States.

The President reminded the members of the first Field Day of the season, April 25th, at Prince's Bay, S. I.

W. A. BASTEDO,
Secretary pro tem.