ART. IV.—*Preliminary notice of a small collection of Fossils found by Dr. Hays, on the west shore of Kennedy Channel, at the highest northern localities ever explored;* by F. B. MEEK.

SOME time after Dr. Hays' return from his Arctic expedition, he sent on to the Smithsonian Institution several boxes of mineral and rock specimens collected by him while in the north, to be examined by Prof. Thomas Egleston. On opening these, Prof. Egleston noticed, amongst other specimens, a mass of gray limestone containing a few fossils, to which he called the attention of the writer. Finding these to be of much interest, considering the distant northern locality from which they were obtained, the other specimens were then carefully examined, and fragments of a few other fossils found amongst them. When Dr. Hays subsequently visited Washington, he stated that the best specimens of fossils collected by him were then in the possession of a friend at Philadelphia, and that those we had seen were merely fragments that had been packed up with the rock specimens. At the request of Dr. Hays, the writer agreed to examine and report upon these fossils, so soon as the other specimens could be sent on from Philadelphia. After the lapse of five or six months, however, without their arrival, inquiries were

[17] Fire extends sometimes its ravages beyond the natural limits of the prairies and destroys the forests of the borders, where the trees are not only scattered but of feeble growth. It is only on this intermediate ground that the contest of progression and receding of the forest is in constant activity.

made in regard to them, when it was ascertained from Dr. Hays that his friend, with whom he had left the specimens, had sent them on some time previous. Unfortunately, however, up to this time they have not been received, and, as it is quite probable they may never be recovered, it has been thought desirable in the interests of science, as well as in justice to the intrepid Arctic explorer, Dr. Hays, that such conclusions as can be deduced from the meager collection of imperfect fossils found amongst the rock specimens collected by him, should be placed on record.

Before expressing an opinion, however, in regard to the age of the rock from which these specimens were obtained, the following list of them, with brief descriptions of some of those believed to be new to science, are given:[1]

1. ZAPHRENTIS HAYSII, Meek.

Corallum obconical, distinctly curved, rapidly expanding from a pointed base; length, about two inches; breadth, near the summit, 1·40 inches; sometimes showing, on the convex side, two broad, distant, shallow, longitudinal furrows, extending the whole length, so as to give that side a trilobate appearance. Epitheca, thick, and, where not worn, concealing the septa within; surface showing small wrinkles of growth, which are most distinct near the summit. Calice, apparently rather deep, (filled with stony matter in all the specimens examined); principal radial septa about sixty, rather stout and rigid, as seen around the margins of the calice, where about ten of them may be counted in a space of half an inch; alternating with these there is a shorter and weaker secondary series.

The trilobate appearance of the outer or convex side in the type of this species, together with its small wrinkles of growth, give it much the aspect of some of the merely arched species of *Platyceras*, for which it might be mistaken, when the calice is filled with stony matter. As some of the other specimens, however, apparently not differing in other respects, do not present this trilobate appearance, it may not be constant.

The specific name of this coral is given in honor of Dr. Hays, its discoverer.

Locality, Cape Frazier. Between lat. 80° and 81° N., long. 70° W.

2. SYRINGOPORA, (*sp. undt.*)

A mere fragment. The tubes are crowded so as to be nearly always less than their own breadth apart, and sometimes nearly in contact. They are uniformly 0·10 inch in diameter, and apparently nearly straight and parallel, while the connecting tubes are small.

Locality, Leidy. Between lat. 80° and 81°, long. 70° W.

3. FAVOSITES, (*sp. undt.*)

A small flat fragment showing regular hexagonal calices 0·10 inch in diameter. Tabulæ apparently thin and closely arranged; mural pores consisting (as seen on one wall only) of four or five alternating series.

Locality, same as last.

[1] It is the intention of the writer, when more at leisure, to prepare drawings and fuller descriptions of these fossils, as well as of the others now lost, should they be recovered, for publication in a work Dr. Hays has in progress on the results of his expedition.

4. STROPHOMENA RHOMBOIDALIS, Wahlb. (=*Leptaena depressa* of authors). Presenting its usual characters.

5. STROPHODONTA HEADLEYANA, Hall?

The specimen of this shell consists of about the half of a ventral valve, embedded in the matrix so as to show the inner side with its coarse irregular striate, subcordate visceral cavity, and granulose surface. So far as can be determined from this, it agrees well with the New York species.

Locality, same as last.

7. STROPHODONTA BECKII, Hall?

The specimen referred with doubt to the above species, is imperfect, but presents the same general outline, and flatness, as well as the characteristic small curving concentric wrinkles, fine striæ, and even traces of the flabelliform visceral scar, of the New York shell.

Locality, same as last.

8. RHYNCHONELLA, (*sp. undet.*)

A single specimen of a ventral valve partly embedded in the matrix. Breadth, 0·42 inch; length, 0·36 inch. Mesial sinus broad and shallow; surface with only twenty small radiating costæ, five of which occupy the mesial sinus.

Locality, same as last.

9. CŒLOSPIRA CONCAVA, Hall.

Several specimens, showing both sides, agree well with the New York species.

Locality, same as foregoing.

10. SPIRIFER, (*sp. undet.*)

Specimens, partly embedded, closely resemble *S. perlamellosus*, Hall, of New York Catskill Shaly limestone.

Locality, same as last.

11. LOXONEMA? KANEI, Meek.

An internal cast, from which it is not possible to determine, beyond doubt, whether it is a *Loxonema*, or a *Murchisonia*. Length, about 2·07 inches; breadth, 0·75; apical angle, 20°. Form conoid-subfusiform; consisting of about six convex whorls, separated by a distinct suture. Aperture subovate; last turn comparatively rather large; surface unknown.

Named in honor of Dr. Kane, the Arctic explorer.

Locality, Cape Frazier; between lat. 80° and 81°, long. 70° W.

12. ORTHOCERAS (*undetermined*).

The specimen is too imperfect for identification with any known species, or be characterized as new. It is incomplete at both extremities, and partly embedded in a mass of limestone. Entire length of the fragment, 2 inches; section circular, at the larger end, 0·43 inch in diameter; at smaller end, 0·15 inch. Septate throughout; septa numbering five in the space of 0·27 inch at larger end. Siphon and surface unknown.

Locality, same as last.

13. ILLÆNUS, (*sp. undet.*)

Fragments of the glabella, and a movable cheek, apparently of a species of this genus.

From the foregoing list, it is believed that geologists will agree, that the rocks at this highest northern locality at which fossils have ever been collected, belong to the Upper Silurian era. The most remarkable fact, however, is, that they are nearly all very closely allied to, and some of them apparently in all respects undistinguishable from, species found in the Catskill Shaly limestone of the New York Lower Helderberg Group. Indeed, these shells resemble so closely Shaly limestone forms, that we could scarcely dismiss the impression that the mass of limestone in which they are imbedded might be a New York specimen that had in some way been accidentally mixed with those from the north after Dr. Hays's return, until assured by him that he distinctly remembered collecting it at the Arctic locality.

We are aware that great caution is necessary in pronouncing upon the identity of fossils found at localities separated by forty degrees of latitude, without a good series of specimens for comparison; but, whether or not the absolute specific identity of any of these Arctic shells with New York species be admitted, in their unquestionably close affinities to the New York forms alluded to, they certainly present another striking evidence of the apparent wonderful uniformity of climatic and other physical conditions during these early periods of our earth's history, over the whole globe.