chief reliance in determining the slope of the upraised land surface over New York, New England and eastern Canada.

Probably the chief reason why the New England men have underestimated the marine submergence (or the subsequent uplift) is because they have relied on the highest evidence of standing-water work in a limited area. And such features may be far inferior to the glacial sealevel. Absence of phenomena in a single district, or even over considerable territorry, is never conclusive. Only by examination of great areas and the correlation of summit phenomena is the true summit level determined.

The present elevation over ocean of the glacial-time sealevel features in the ice-covered territory is the net result of plus and minus movements of both sea and land since the Quebec glacier melted. The ocean surface was considerably lower when the great volume of water had been withdrawn for storage in the Pleistocene ice caps. Hence the present height of the upraised marine features in the coastal region quite certainly does not indicate the total rise. And it appears probable that recent growth of polar and mountain ice fields has again somewhat reduced the ocean level. This matter is also discussed, with up-to-date data, by Professor Daly in his article noted above.

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LIGHT LOCALIZATION IN CTENOPHORES

ONLY living ctenophores or parts of them are photogenic. Peters (1905) states that "phosphorescence appears along the rows of paddle plates and no phosphorescence was obtained from jelly free from paddle plates." Although the luminescence of ctenophores seems to relate closely to the paddle plates, a question is still open as to whether or not any necessary connection exists between the paddle plates and the light production. Peters has already mentioned that the movement of the paddle plates is generally not accompanied by luminescence. It was shown in *Mnemiopsis leidyi,* a ctenophore found at Woods Hole, that *the smallest piece from which light was obtained must contain four consecutive paddle plates,* and that a piece with a lesser number of them could not produce light. Peters' experiments show evidently that the light production by ctenophores depends upon the minimal number of the paddle plates.

Ocyropsis fusca is a very active ctenophore found at Misaki, Japan, in the spring. This species is strongly compressed in the direction of the tentacular axis and possesses well-developed lappets, larger than one and a half times the height of the body. The meridional canals in the lappets are not accompanied with paddle plates. The meridional canals are provided with lateral branches carrying the gonads. The lateral branches of the subpharyngeal canals in the parts not covered by the paddle plates are much better developed than those situated aborally in the body proper and covered by the paddle plates. The former branches are very conspicuous on account of their milky white color. The luminescence of *Ocyropsis* is especially bright in the sub-pharyngeal meridional canals located in the lappets. The canals in the lappets, as just described, are not covered by the paddle plates. Several pieces of varying sizes were excised from the lappets and observed in a dark room. Luminescence came from all pieces containing any small amount of the lateral branches of the meridional canals, but not from those pieces of jelly which were so excised as to be entirely without branches. Such pieces of jelly were, however, alive, for when they were touched with a needle-end they showed muscular contraction.

From the foregoing description the light localization of ctenophores may be summarized as follows: *the luminescence is localized in the eight meridional canals and is strictly limited to the region where the sexual cells are found,* but the phenomenon has little relation to the paddle plates. The photogenic substance appears to be of fine granules which can be set free from the cells by crushing.

Not only the adult but also the embryo and even the egg of ctenophores produce light. The light emission of ctenophore eggs has been known as far back as 1862 (Allman), and the phenomenon has been described by several authors such as Agassiz, A. (1874), Chun (1880), Peters (1905) and Yatsu (1912). According to Peters "no phosphorescence can be obtained from the eggs of *Mnemiopsis* before segmentation," but Yatsu observed at Naples that the egg of *Beroë,* when stimulated with a weak electric current, emits "a beautifully greenish light." The luminescence is said to be produced by the ectoplasm alone and with the development of the egg this property is strictly confined to this layer.

A ctenophore egg consists of three layers, an extremely thin homogenous envelope, ectoplasm and endoplasm. The ectoplasm, in which the luminescence takes place, contains no visible morphological signs of light production. In this case no granules, which are characteristic of the photogenic cells, were found. Nevertheless light is emitted by the ctenophore egg. The formation of the photogenic material seems to be possible only in darkness, and upon a very slight stimulation the formed substance is broken down very quickly, the katabolic phase being accompanied by luminescence.

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