Genus CARDIOCARPUM.

I have found at least eight species of these fruits in the Erian and Carboniferous of New Brunswick and Nova Scotia, all of which are evidently fruits of gymnospermous trees. They agree in having a dense coaly nucleus of appreciable thickness, even in the flattened specimens, and surrounded by a thin and veinless wing or margin. They have thus precisely the appearance of samaras of many existing forest-trees, some of which they also resemble in the outline of the margin, except that the wings of samaras are usually veiny. The character of the nucleus, and the occasional appearance in it of marks possibly representing cotyledons or embryos, forbids the supposition that they are spore-cases. They must have been fruits of phænogams. Whether they were winged fruits or seeds, or fruits with a pulpy envelope like those of cycads and some conifers, may be considered less certain. The not infrequent distortion of the margin is an argument in favour of the latter view, though this may also be supposed to have occurred in samaras partially decayed. On the other hand, their being always apparently flattened in one plane, and the nucleus being seldom, if ever, found denuded of its margin, are arguments in favour of their having been winged nutlets or seeds. Until recently I had regarded the latter view as more probable, and so stated the matter in the second edition of "Acadian Geology." I have, however, lately arrived at the conclusion that the *Cardiocarpa* of the type of *C. cornutum* were gymnospermous seeds, having two cotyledons embedded in an albumen and covered with a strong membranous or woody tegmen surrounded by a fleshy outer coat, and that the notch at the apex represents the foramen or micropyle of the ovule. The structure was indeed very similar to that of the seeds of *Taxus* and of *Salisburia*. With respect to some of the other species, however, especially those with very broad margins, it still appears likely that they were winged.

The *Cardiocarpa* were borne in racemes or groups, and it seems certain that some of them at least are the seeds of *Cordaites*. The association of some of them and of those of the next genus with *Sigillariæ* is so constant that I cannot doubt that some of them belong to plants of that genus, or possibly to taxine conifers. The great number of distinct species of these seeds, as compared with that of known trees which could have produced them, is very remarkable.

Genus TRIGONOCARPUM.

These are large angled nuts contained in a thick envelope, and showing internal structures resembling those of the seeds of modern