land mass, to which the name "Appalachia" has been applied, from 100 to 300 miles or even more in width, that paralleled the present Atlantic shore line. At times the northwest margin of this land perhaps lay only a short distance to the southeast of what now constitutes Lehigh County. At other times, the shore may have been several scores of miles away.

The inland sea covered all of the present Appalachian province. It varied from time to time in size and shape owing to movements or warpings of the earth's crust. In this sea, which appears to have always been comparatively shallow, practically all the materials now constituting the sedimentary rocks of Lehigh County were accumulated on a gradually sinking bottom.

When the depression of the area occurred, there was probably a fairly deep cover of soil and rotten rock over the land. The waves of the advancing Cambrian sea seem to have removed most of this surficial cover inasmuch as the Hardyston in most places rests on fresh unchanged gneisses. Locally, however, a thin band of a peculiar rock is found at the contact, which is believed to be an old soil. It has now been altered to a dense, fine-grained, light green rock that has been called pinite. It is never more than a few feet thick and can seldom be recognized over any extensive area. It is developed in several localities in Lehigh County. It is questionable as to whether this material should be included in the Byram or in the Hardyston. Inclusions of angular vein quartz fragments link it with the former, and occasional rounded pebbles suggest the latter reference.

The lowest strata of the Hardyston are conglomeratic in several places but not everywhere; occasional pebbles are more than an inch in diameter. These coarser sediments constitute a basal conglomerate that was formed either near the mouths of streams or where shore currents were reasonably strong. They probably formed near the shore as the advancing sea transgressed. They also indicate that the land mass from whence the pebbles were derived was fairly high and thus furnished stream gradients sufficiently steep to transport the pebbles.

Probably owing to the southeasterly retreat of the shore line by the sinking of Appalachia, coarse pebbles were carried into this region for only a short time. Most of the deposits of Hardyston time were sands, generally fairly fine. Crystalline rocks from Appalachia were breaking up without the complete decomposition of the feldspars, and numerous grains of fresh orthoclase were deposited with the quartz grains and kaolin. The arkosic character is a prominent feature of the Hardyston sandstones.

A progressive change in the sediments from sands to shales and calcareous oozes took place and we pass from the Hardyston to the Tomstown sediments. The Tomstown and also the overlying Allen-town formations contain occasional fine sandstone lenses, indicating that unusual conditions, probably freshests or floods, once in a great while brought some sands into the region. Generally, however, only the finest land-derived material came in. This indicates the lowering of Appalachia to the extent that the streams entering the sea carried only the finest material in suspension and these only at certain times. They brought calcareous matter in solution and this was precipitated on the ocean bottom either by purely chemical processes or by the