of the whole formation as Hardyston (Potsdam) quartzite. Such a
designation is distinctly inaccurate since we have learned that true
quartzite constitutes only a minor part of the formation. Instead, it
contains conglomerates, sandstones, quartzites, jasper, chert, shales
and locally a micaceous material that has been called pinite.

**Conglomerates.**—At or near the base of the Hardyston formation
there is generally a coarse conglomerate. It is composed of well-
rounded quartz pebbles, often lightly stained to a wine-red color.
These pebbles are cemented in a dark quartzose matrix. This matrix
contains some epidote, chlorite and detrital heavy minerals. The size
of the quartz pebbles ranges from one-quarter inch to four inches in
diameter, even the largest being well rounded. The color of the matrix
varies somewhat, but usually it is dark. At no exposure in Lehigh
County does the thickness of this member exceed eight to ten feet.

**Quartzite and sandstone.**—The sandstones and quartzites are not
discussed separately as they grade into each other so thoroughly that
no sharp distinction can be made. There are two common varieties,—
the arkosic and the non-arkosic.

The non-arkosie quartzitic variety is less abundant. In a hand speci-
men it is commonly bluish gray, gray or white whereas the arkosic
varieties are generally buff or salmon-colored. Most of the occurrences
show a fine-grained, fairly homogeneous rock that breaks readily under
the blow of the hammer, almost like glass, and produces conchoidal
fractures. Pebbles or sand grains are not readily observable by the
naked eye.

Under the microscope in thin section the rock is seen to be composed
of a mosaic of interlocking quartz grains which reveal secondary en-
largenent of rounded quartz particles. Impurities, such as iron oxide,
are confined chiefly to the present grain boundaries although in some
cases they surround the original sand grains.

The most typical phase of the Hardyston formation is an arkosic
sandstone. This rock is buff, salmon-colored, or white, depending
upon the amount and condition of the feldspar, or arkose. Blue and
gray rounded quartz grains make up most of the rock. In the typical
building stone variety of arkosic sandstone the quartz grains are be-
tween one and three millimeters in diameter, but a pleasing irregu-
larity is caused by scattered larger grains, seldom larger than one
centimeter. The feldspar often is quite fresh, but more generally is
altered to kaolin or sericite. The fracture of the rock is rough, giving
it a massive appearance which further adds to its attractiveness as
a building stone.

The arkosic sandstone beds of the Hardyston, where exposed,
usually run from the basal phase to the erosion surface. This fact is
easily accounted for when one considers that nearly all the exposures
are in quarries, and that these openings would naturally start where
good building stone cropped out, and extend as deep as there was
workable stone, which would usually end at the top of the basal phase.
At no place have the authors seen an upper contact of the arkosic
sandstone. It may grade into the limestones, but the upper contact
apparently is covered with talus and soil, so that the sequence is un-