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Those diabases lying to the west of the Watchung Mountains, and therefore higher up in the series forming the so-calling "Watchung traps" are as Prof. Davis has shown effusive masses, but the "Palisade traps," lying further east and lower down in the Newark strata and which form the celebrated Palisades on the Hudson River, are true intrusive sheets. Where the diabase constituting these Palisade traps comes in contact with the Newark shales along its lower face, these latter are much altered, but the alteration is not the ordinary alteration into Spilosite, Desmosite or Adinole, nor does the diabase itself assume the usual variolitic structure, but the contact products resemble much more closely those ordinarily found in connection with Plutonic rocks, and may be classed as follows :—

1. Normal Hornstones, which cannot be distinguished from those found in connection with Plutonic rocks.

2. Horustone containing a large amount of Tourmaline. This mineral is transparent and of a grey and brown colour and usually has a well marked zonal structure.

3. Contact rocks derived from the alteration of arkoses and which are characterized by the development in them of a fibrous green hornblende.

4. Lime-silicate Hornstones ("Kalksilicathornfelse").

A fact of especial interest, on account of its bearing on the subject of regional metamorphism, ¹ is that the lines of separation beween the different hornstones which represents rocks of very different chemical composition, are even when examined under the microscope, perfectly sharp and well defined.

The principal results of the investigation may be summed up as follows:---

1. The diabase of Jersey City belongs to the group of the quartz bearing hypersthene diabases and forms, according to American geologists, an intrusive sheet. The hanging wall has been for the most part removed by erosion, while the lower contact is characterized by what is for diabase a series of very peculiar contact products.

2. The diabase at its lower contact not only becomes finer in grain, but shows an alteration in both structure and chemic...lcomposition. The ophitic structure of the normal diabase passes over into a typical porphyritic structure, while the hypersthene disappears and its place is taken by olivine. Biotite also which. occurs but very, sparingly in the normal diabase, becomes more abundant. *