

This formation does not here invade the American shore. The Potsdam sandstone has been deposited in the sinuosities of the more ancient quartz, or rests unconformably on its upturned edges. The channel of the St. Mary's has been excavated along the line of junction between the azoic and Silurian systems, thus affording a striking coincidence in the political and geological divisions the country.

AZOIC SERIES ON THE SOUTHERN SHORE.

In the region included between the two great lakes, known as the northern peninsula of Michigan, this group constitutes the fundamental rock. The materials of which it is composed appear to have been thrown down in a comminuted state, since we rarely meet with those grits or conglomerates which occur on the north shore. They constitute alternating beds of great thickness, known as gneiss, hornblende chlorite, argillaceous, silicious and talcose slates, quartz, saccharoidal, and crystalline limestones. They are highly inclined and much contorted, and nowhere exhibit the characters of a purely sedimentary rock, but the evidences of metamorphism are more striking as we approach the lines of igneous outburst. Gneiss generally flanks the granite, succeeded by dark masses of hornblende, with numerous joints, but obscure lines of bedding, which often graduates into hornblende slate or chlorite slate, as we recede from the purely igneous products.

The outlines of this class of rocks are extremely irregular, and a reference to the general map will give a clearer idea of their range and extent than a mere verbal description. The great mass, it will be seen, occupies nearly half of township 48, between ranges 30 and 36; thence, they stretch uninterruptedly south to the Brulè river; on the east they are bounded by the granite and sandstone, and on the west by the granite. From the main mass there are numerous projecting arms. One starts from township 48, ranges 25 and 26, and trending in a north-easterly direction, intersects the head of Keweenaw bay, and terminates in township 51, range 30. It flanks the Huron mountains on the north and west, and is separated from Lake Superior by a narrow and irregular belt of sandstone. The length of this arm is nearly eighty miles, with a width of eight or ten miles.

Another arm starts near Machi-gummi, or Big Lake, and runs nearly due east, intersecting the main lake between Presqu'isle and Carp river. Its length is about thirty miles, varying in width from six to fifteen miles. It is included between two granite bosses, the one on the north and the other on the south. This portion is characterized by vast deposits of specular and magnetic oxide of iron in a state of considerable purity.

Another arm about eighteen miles in length and ten in breadth extends easterly into townships 42 and 43, range 28; while another shoots off in a southerly direction, occupying the valley of the Menomonee as low down as Pike river, in township 35. Their western termination is in Wisconsin.

In this district, the area occupied by these rocks exceeds eighty townships, or more than three thousand square miles. The configuration of the slates and granites may be compared to the contours of a rugged coast. The main granite masses form numerous projecting headlands, while the subordinate patches rise up like islands. The slates sweep round the promontories and form numerous narrow and deeply-indented bays.

The topographical features of the region occupied by the slates are stri-

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