

ing its recent formation, bears a resemblance to Jura limestone, has been recognized as a product of the sea and of tempests.\*

Composite rocks are definite associations of certain oryctognostic, simple minerals, as feldspar, mica, solid silex, augite, and nepheline. Rocks very similar to these, consisting of the same elements, but grouped differently, are still formed by volcanic processes, as in the earlier periods of the world. The character of rocks, as we have already remarked, is so independent of geographical relations of space,† that the geologist recognizes with surprise, alike to the north or the south of the equator, in the remotest and most dissimilar zones, the familiar aspect, and the repetition of even the most minute characteristics in the periodic stratification of the silurian strata, and in the effects of contact with augitic masses of eruption.

We will now enter more fully into the consideration of the four modes in which rocks are formed—the four phases of their formative processes manifested in the stratified and unstratified portions of the earth's surface; thus, in the *endogenous* or *erupted rocks*, designated by modern geognosists as compact and abnormal rocks, we may enumerate the following principal groups as immediate products of terrestrial activity:

1. *Granite and syenite* of very different respective ages; the granite is frequently the more recent,‡ traversing the syenite in veins, and being, in that case, the active upheaving agent. “Where the granite occurs in large, insulated masses of a faintly-arched, ellipsoidal form, it is covered by a crust or shell cleft into blocks, instances of which are met with alike in the Hartz district, in Mysore, and in Lower Peru. This sea of rocks probably owes its origin to a contraction of the surface of the granite, owing to the great expansion that accompanied its first upheaval.”§

Both in Northern Asia,|| on the charming and romantic shores of the Lake of Kolivan, on the northwest declivity of

\* Near Teguiza. Leop. von Buch, *Canarische Inseln*, s. 301.

† Leop. von Buch, op. cit., p. 9.

‡ Bernhard Cotta, *Geognosie*, 1839, s. 273.

§ Leop. von Buch, *Ueber Granit und Gneiss*, in the *Abhandl. der Berl. Akad.* for the year 1842, s. 60.

|| In the projecting mural masses of granite of Lake Kolivan, divided into narrow parallel beds, there are numerous crystals of feldspar and albite, and a few of titanium (Humboldt, *Asie Centrale*, t. i., p. 295, Gustav Rose, *Reise nach dem Ural*, bd. i., s. 524).