

this method we are enabled to place all the species in a natural order, and obtain on the one hand a transition into the zircon genus, and on the other into the clay genus.

In the metallic genera, those species which are in the metallic state are placed first, next the different oxyds and combinations. Great attention must, however, be paid to the transitions, and their arrangements.

Arrange-  
ment of  
subspecies.

9. As the subspecies are few, their arrangement is comparatively easier: we must here attend, chiefly, to the rules of transition, so that the arrangement may be natural.

Characters  
of minerals.

10. The characters which are employed in the description of minerals are, by Werner, divided into five classes, 1. External. 2. Chemical. 3. Physical. 4. Geognostic, and 5. Geographic.

1. *External Characters*—are those which are discoverable by the external senses, without inducing any considerable alteration in the aggregation of the mineral; thus colour, shape, lustre, fracture, hardness, weight, &c. are of this kind.

2. *Chemical Characters*—are those which are afforded by the complete analysis of the mineral; by trials with acids, with the blow pipe, and Wedgwood's pyrometer.

3. *Physical Characters*—are those physical properties of minerals which are discovered by trials with the magnet, or by rubbing or heating.

4. *Geognostic Characters*—The determinate occurrence of one mineral with another affords, what Werner

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