

was ignorant at the time of its being a new species, and in consequence communicated it to Professor Balfour under the name of *Conferva Brownii*.

Dr. Harvey's slight doubt as to the British form of *Cladophora repens* being the same species with that described by J. Agardh is entirely dispelled by these specimens from Ireland, in which the articulations, although variable, are in general shorter than in the Jersey specimens gathered by Miss Turner, and intermediate in size between Agardh's plant and that described by Harvey.

3. "On the British species of *Arctium*," by Charles C. Babington, M.A., F.R.S. &c. (See p. 369.)

4. "Register of the Flowering of certain Plants in the Royal Botanic Garden, from 14th Feb. till 13th March 1856, as compared with the five previous years," by Mr. M'Nab.

## MISCELLANEOUS.

*On the Influence of the Soil on the Distribution of Plants.* By  
M. STUR. Communicated by Count MARSCHALL.

IN a Memoir presented to the Imperial Academy of Sciences of Vienna, March 6, 1856, M. Stur, treating of the influence of the soil on the distribution of plants, gave the results of the observations made by himself in the Alpine region of Austria.

The soil on which plants live is either rocky or disintegrated. The "rocky" or solid soil is either of calcareous or of argillaceous and siliceous nature. The "disintegrated" or detrital soil is composed of fragments from the "rocky," agglutinated by mineral substances of tertiary origin; it contains therefore lime, silica, and alumina, in more or less equal portions.

The rocky soil prevails in the higher elevations of the Alpine region; the detrital soil fills up the bottoms of the valleys and depressions. The first corresponds to the continents surrounding the tertiary sea, or to the islands emerging from it; the second indicates the extension of this sea itself, as formed by drift deposited on its bottom.

The nature of the roots is an essential condition for the thriving of any plant on either of these soils. Species with annual fleshy, or with compound fasciculated, roots, or with underground stems, can only live on detrital soil; those with woody roots, with numerous ramifications, are best fitted for the rocky soil.

A comparison of the flora of the higher calcareous region with the mica-schist flora proves the plants of either of them, although equal in size, to differ so materially from each other in shape, that it must be admitted that the geological constitution of the soil has an influence on the vegetation covering its surface.

Alpine plants carried down by the streams into the plain increase in size and grow more luxuriantly in their new station. Forest-trees



shrink more and more in size and shape as they reach greater elevations. Both these facts bear witness to the influence of climatal conditions on the development of vegetable life.

Cereals occur exclusively on the detrital soils of the lower region. They follow the Alpine tertiary gravel in its variations of altitude; but are only able to produce a rich harvest where they grow on a detrital soil composed of lime, alumina, and silica mixed in nearly equal proportions. This same soil is likewise the most congenial to the non-cultivated plants of the lower region. If this soil be mixed with heterogeneous substances (as salts, on the sea-shore, on the banks of saline lakes, on plains with saline efflorescence, or above saliferous rocks), new genera and species, not occurring under ordinary circumstances, make their appearance.

The pine (*Pinus abies*, L.) accommodates itself to every soil, and therefore ranges from the lower to the upper region, marking the limits between, and participating in both. Its vertical oscillations correspond to those of the cereals, and to the distribution of detrital soil accessible to atmospheric heat.

New vegetable forms, together with new rocks, make their appearance in the higher rocky regions. Such are certain species peculiar to the calcareous mica-schist, as *Artemisia nana*, Sand., *Lomatogonium carinthiacum*, Rehb., *Gentiana prostrata*, Haenke, *Herniaria alpina*, L., *Braya alpina*, Hoppe, &c.

Wherever a great variety of rocks near to, or interstratified with, each other appear within a comparatively narrow space, the plants pass from one of these soils to another, undergoing at the same time frequent alterations of form; species nearly allied to each other are peculiar to such spots, producing hybrid and intermediate forms.

The distribution of genera and species in the upper region answers exactly to the geological constitution of the soil. Calcareous and mica-schistose Alps have every one their peculiar flora. Near Windisch-Matzey and Heiligenblut the mica-schist and the calcareous mica-schist floras appear side by side. At the "Tauern" of Radstadt, where nearly all Alpine rocks are heaped together, the floras of the calciferous rocks, of the mica-schist and of the calcareous mica-schist appear simultaneously.

M. Stur appended to his memoir a catalogue of about 1000 species of plants collected by him within the Alpine region, and arranged according to their localities and to the geological constitution of their native soil.

#### *Note on the Freshwater Dolphins of South America.*

By M. PAUL GERVAIS.

It has long been known that a peculiar species of Dolphin is an inhabitant even of the upper parts and branches of the great river Amazon, to the Indians living on the borders of which it is a creature of no small importance. It was described by M. d'Orbigny as the type of a new genus under the name of *Inia boliviensis*, by which it has since been generally known; but it appears to have been





Stur, M. 1856. "On the influence of the soil on the distribution of plants. Communicated by Count Marschall." *The Annals and magazine of natural history; zoology, botany, and geology* 17, 520–521.

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