

Unit-10 : Phytogeography

1) What is phytogeography?

Ans. Phytogeography is a branch of biogeography which deals with the study of origin, environmental relationships and distribution of Plants in time and space

2) Name the father of Phytogeography.

Ans. Alexander von Humboldt.

3) Briefly describe the continental drift hypothesis.

Ans. German Meteorologist Alfred Wegener (1915) proposed the idea of 'Continental drift' in his book "On the origin of continents and oceans." He suggested that a 'supercontinent' called 'Pangaea' (means all the lands) once existed in the past. 'Panthalassa' (means all the seas) was the name given to the resulting world ocean. He developed his idea based on 4 different types of evidences →

i) Fit of the continents

ii) Fossil evidences

- iii) Rock types and structural similarities
- iv) Palaeoclimatic evidences.

Eduard Suess first realised that there had once been a land bridge connecting South America, Africa, India, Australia and Antarctica. He named this large land mass 'Gondwanaland' based on the first plant Glossopteris found throughout those continents. He proposed that this Gondwanaland formed after Pangaea and broke up during the Jurassic period.

Evidences in support of Gondwanaland →

- i) Fit of the continent → It was recognised that the fit of the continents could be improved by fitting the continents at the edge of the continental slopes.
- ii) Fossil evidences → The identical fossils were located directly opposite on widely separated continents. For example - Glossopteris are found in all the southern continents.
- iii) Rock types and structural similarities → Similar age structure and rock types are found in the North American

Appalachian mountains and Caledonian mountains in Scotland and Scandinavia.

iv) Palaeoclimatic evidence → Glacial ice of the same age is found in Southern Africa, South America, India, Antarctica and Australia.

4) Explain the Theory of tolerance →

Ans. This theory was proposed by Good in 1931 which explains that "a species is able to occupy only those parts of the world where the external conditions are within its range of tolerance".

Most plants do not show adequate adaptation in a newly changing environment. For example - if a long day plant is dispersed in a region of short day photoperiod, it will not reproduce sexually, thus its distribution will be restricted.

Each tolerance has a genetic basis. The range of tolerance to a particular environment is directly proportionate to its genetic diversity.

It has been shown that different ontogenetic phases have different

tolerances. For example - seeds and mature plants are more tolerant to temperature and moisture than their seedlings.