B.SC III YEAR, PAPER III
(C.C.S. UNIVERSITY MEERUT)
UNIT-I
Topic – Ecological Succession

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Ecological Succession :

- Occurrence of relatively definite sequence of communities over a period of time in the same area is called ecological succession.

- Term succession for the first time used by Hult (1885).

- Odum (1971) preffered to call this orderly process as ecosystem development.

Causes of Succession:

1. Initial causes
2. Continuing causes
3. Stabilising causes

Types of Succession:

1. Primary Succession
2. Secondary Succession
3. Autogenic Succession
4. Allogenic Succession
5. Autotrophic Succession
6. Heterotrophic Succession

Important terms regarding Ecological Succession:

- **Hydrosere or Hydrarch** - Starting in regions where water is in plenty.
- **Mesarch** -Where adequate moisture conditions are present.
- **Xerosere or Xerarch** - Where moisture is present minimal amounts such as dry deserts, rocks etc.
- **Lithosere** - Initiating on rocks.
- **Psammosere** -On Sand.
- **Halosere**- In saline water or soil.

General Process of Succession:

I. Nudation

II. Invasion

III. Competition and Coaction

IV. Reaction

V. Stalilization

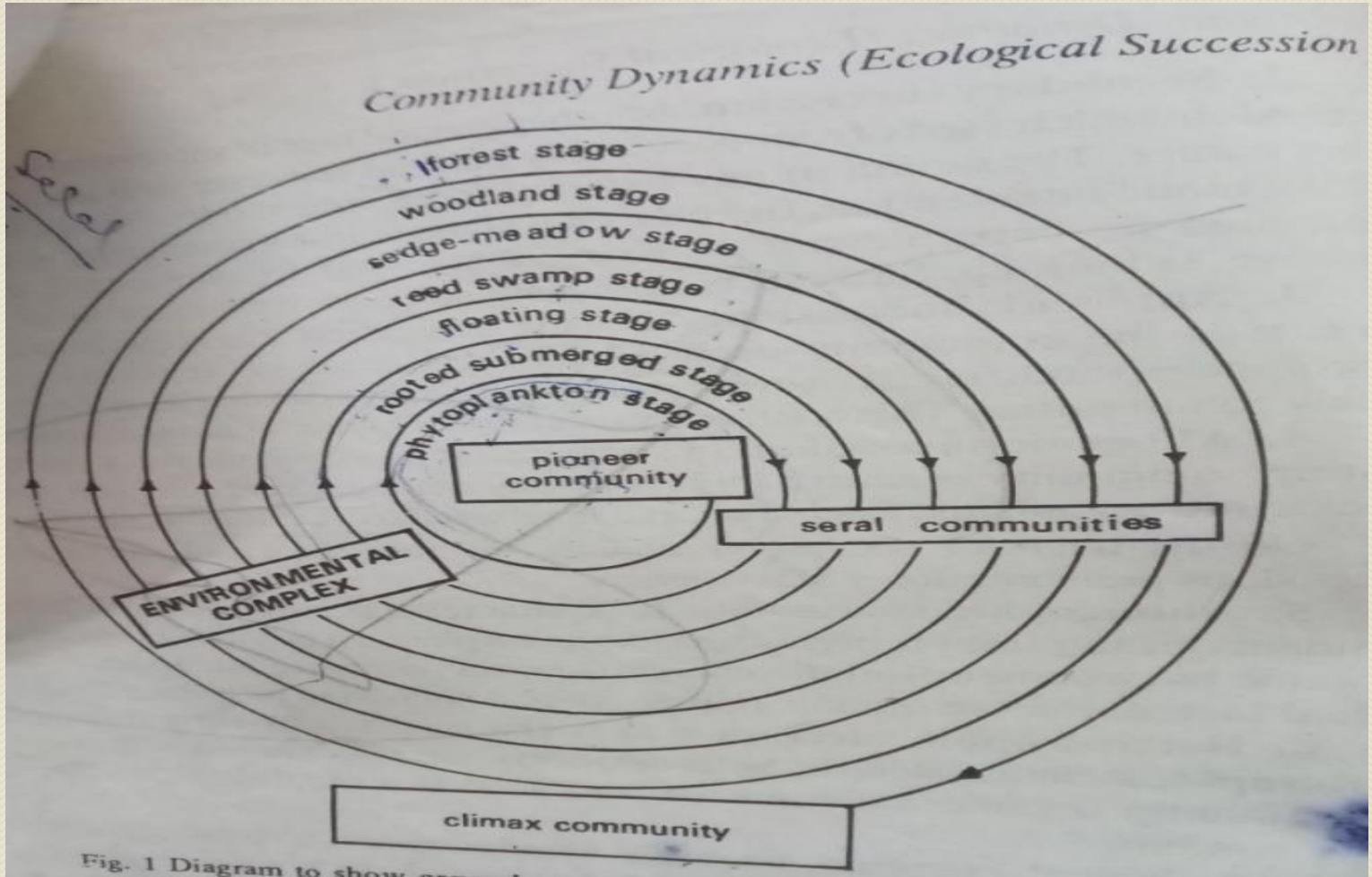


Fig. 1 Diagram to show general process of succession with different plant communities appearing thereon under the influence of developing environmental complex, taking hydrosere as an example. Ne... climax communities

Lithosere - A Xerosere on Rock:

Various stages and their components are as follows:

1. Cutose Lichens Stage - e.g. *Rhizocarpon, Rinodina, and Laconora.*

2. Foliose Lichens Stage - e.g. *Parmelia, Dermatocarpon* etc.

3. Moss Stage - e.g. *Polytricum, Tortula and Grimmia.*

4. Herbs Stage - e.g. *Aristida, Festuca, Poa, Solidage* etc.

5. Shrub Stage - e.g. *Rhus, Phytocarpus* etc.

6. Forest Stage - Finally forest community.

Fig. Communities of a Lithosere appearing on Rock.

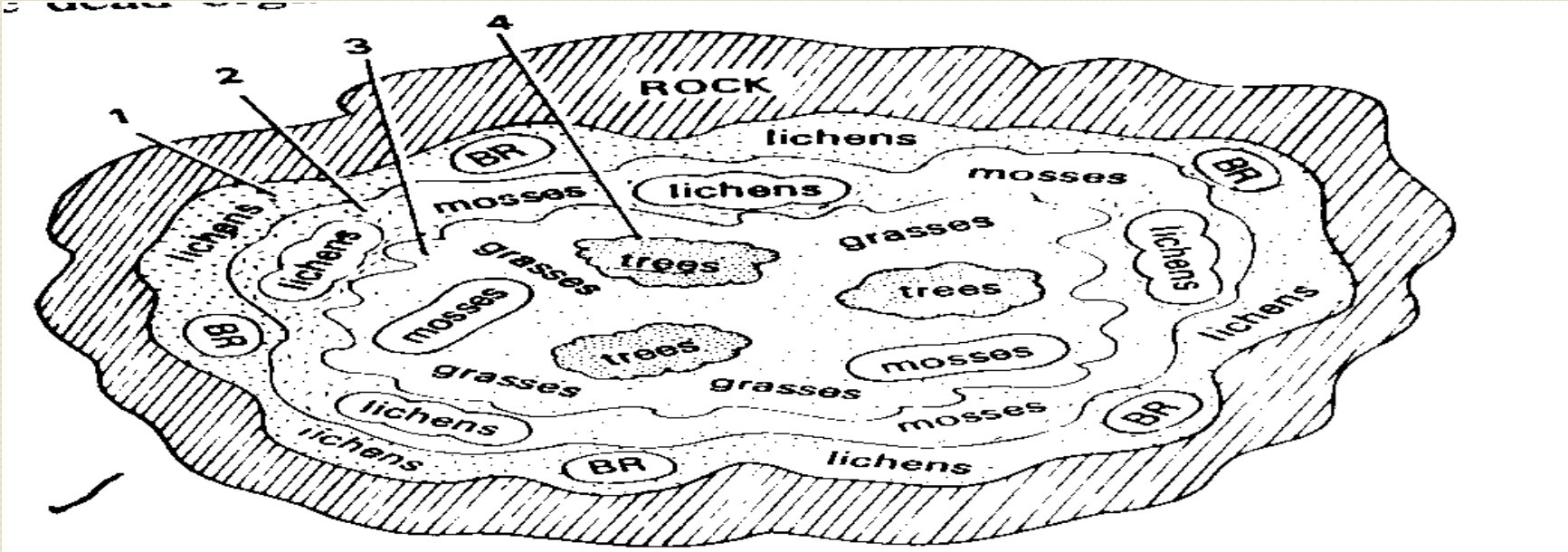
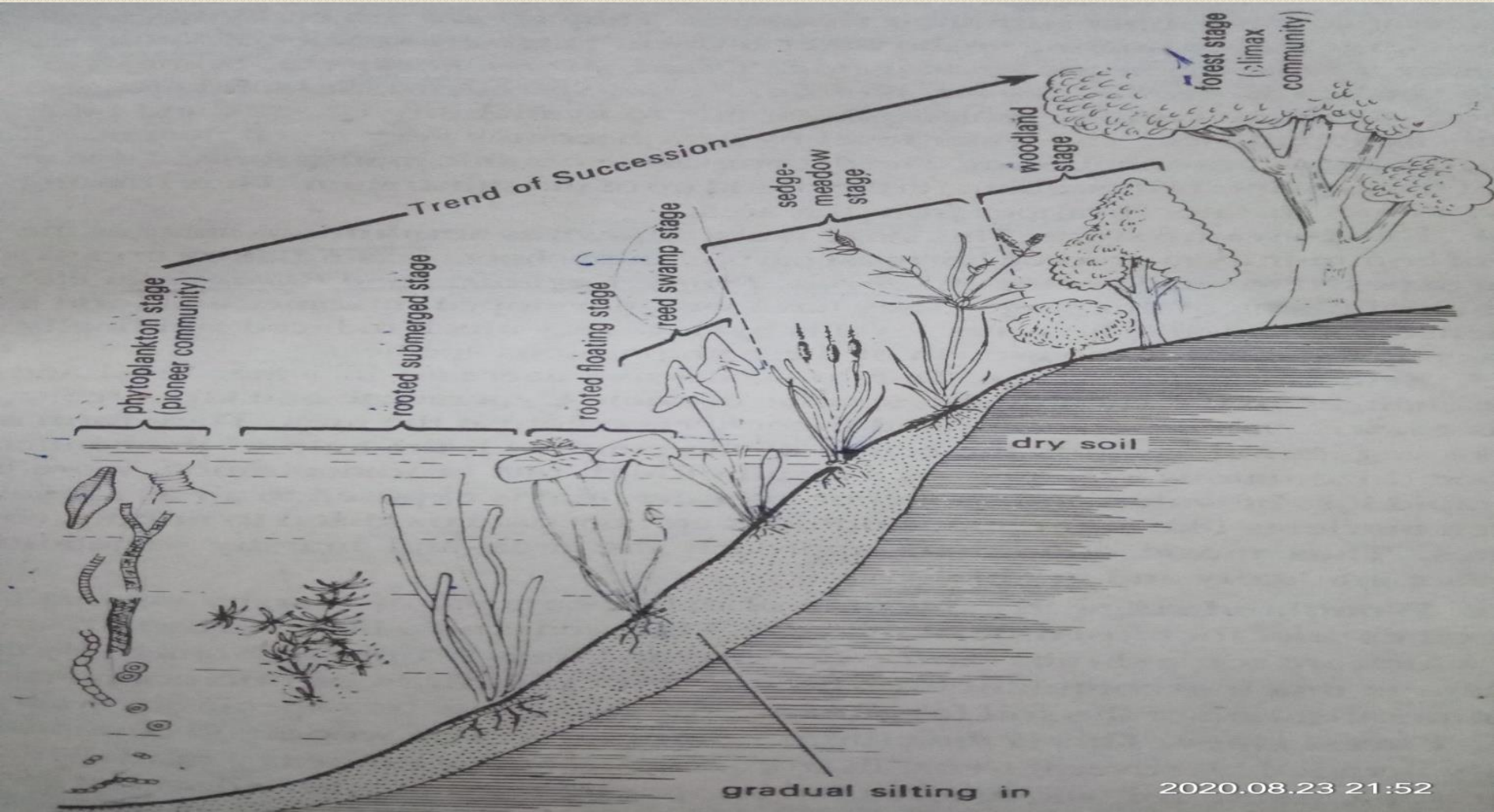


Fig. 4. Diagrammatic representation of different plant communities of a lithosere appearing on a rock. Note the vegetational zonation showing the poineer community of lichens around the outer edge and more advanced stages of trees located in the centre. The various zones from outside towards the centre of rock are (1) lichens (pioneers), (2) ring of mosses, (3) grasses (broad zone), and (4) trees (seedlings) scattered. BR- bare rock.

Fig. Showing different plant communities appearing at different stages of a hydrosere originating in a pond.



Monoclimax Theory:

According to the monoclimax theory within a given region all land surfaces eventually tend to be occupied by a single kind of community which is climax.

Polyclimax theory:

Tansley (1935) beleived that climax is controlled by many factors. According Tansley's popularly known as Poly climax theory.

Biome:

- A biome is an area of the planet that can be classified according to the plants and animals that live in it.
- A biome is a specific geographic area notable for the species living there.
- A biome can be made up of many ecosystems. For example, an aquatic biome can contain ecosystems such as coral reefs and kelp forests.

References:

- Ecology and Environment .P.D.Sharma. Rastogi publications.
- w.w.w nationalgeographic.org-Biome/National Geographic Society.

Suggested Book:

- Environmental Studies. Smriti Srivastava. S.K. Kataria and Sons Publishers of Engineering and Computer Books.