Q. Point out the important features of Andreales. Mention the affinities of the group.

INTRODUCTION → Popularly known as "Granite mosses" Andreales are intermediate between the Sphagnales and Bryales. They have got about 109 species distributed only in the Alpine and sub-alpine regions. They have a dark brown or reddish brittle gameto-phore without the central conduction strands but with a columella in their capsule. The wall of the capsule is without spongy photosynthetic tissues. Pseudopodium is formed and the proto-nema is usually thallose. The above listed characters differentiate Andreales from other members of Bryophyta.

CLASSIFICATION → The order contains a single family.

Family - Andreaceae.

Genera - (A) Andrea
(B) Neuroloma
(C) Acrochisma.

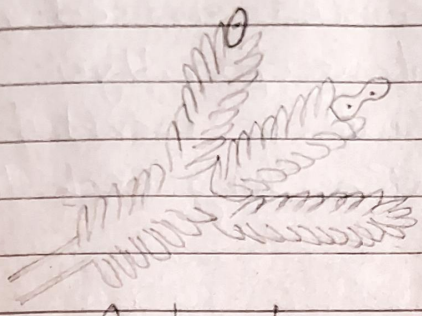
STRUCTURE OF GAMETOPHYTE →

1. Plants are xerophytic growing in extre-me xeric habitat specially on non-calcarous granite rocks.
2. The gametophyte measures about 2-4 cm

in length.
3. It has a leafy structure at maturity with a sympodial, creeping stem, leaves and rhizoids.
4. Rhizoids are peculiar in structure and are either cylindrical masses of cells or flattened plate like out growth meant for deep penetration and absorptive works.
5. Stems are slow slender creeping and sympodially branched.
6. Leaves are small, papillose, smooth and brittle.
7. Leaves are spirally arranged on the stem with a divergent of 3/8.
8. The shape of leaf varies from ovate to subulate.
9. Leaves lacks midrib.
10. Leaves contain chlorophyll but prominent of this pigment is recorded more in young leaves.

ANATOMY OF STEM →

1. There is total absence of internal differentiation of stem.
2. Outermost epidermis is well marked. It consists of thicker wall and dark coloured cells.
3. Inner cells are not differentiated into cortex and central conducting strand.
4. The cells contain large oil globules.



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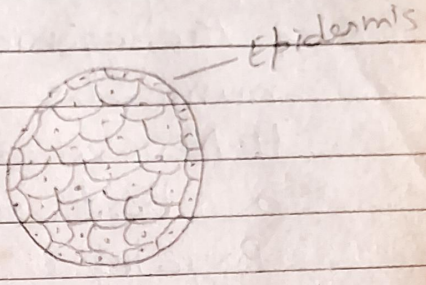


T.S of Andreala ste

REPRODUCTION → Generally the gametophyte are monoecious ~~ext~~ except certain species of Andreacea. Such as A. nivalis, A. flyttii etc are dioecious. The male and female sex organs share features common to sphagnales and Bryales.

ANTHERIDIUM →

1. Antheridium develops directly from the apical cell of the shoot.
2. Antheridia are present in groups.
3. They are surrounded by a number of perigonial bracts.
4. Each antheridium has a long stalk and an ellipsoidal body.
5. Sperms resemble the ~~typ~~ typical members of the Bryophyta.

ARCHEGONIUM →

1. The first archegonium is derived directly from the apical cells of the female branch.
2. They occur in branches and surroun

ded by perichaetial bracts.
3. Archegonia are inter spersed with the numerous filamentous paraphysis.
4. Mature archegonium is provided with a short stalk but a long neck like the Bryales.

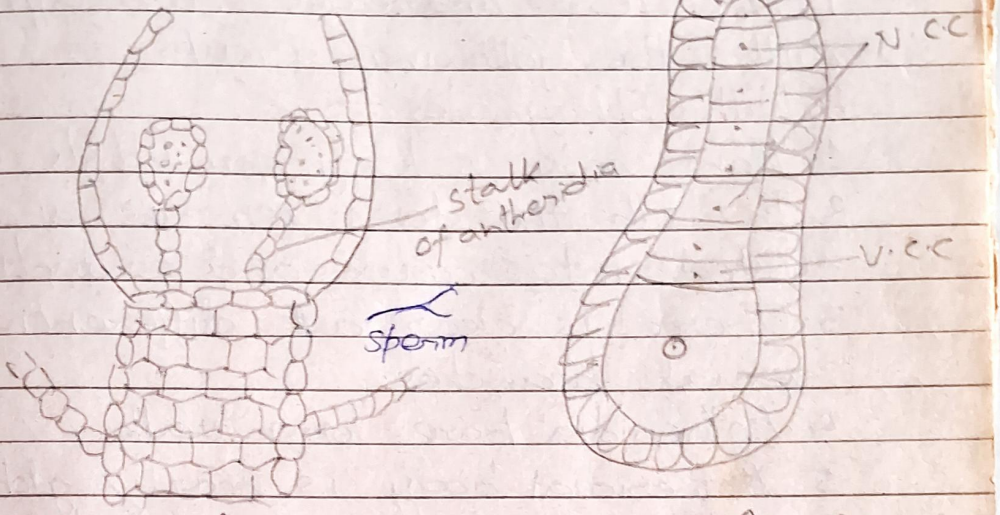
SPOROPHYTE →

1. Waldner (1887) has traced out the deve-lopmental history of sporophyte.
2. The first division of zygote is transverse
3. Hypobasal cells gives rise to irregular foot which is haustorial in nature.
4. Epibasal cell divides to form the capsule of the sporophyte.
5. Amphithecium is responsible for giving rise the wall of the capsule.
6. Archesporium originates from the outer layer of the endothecium whereas its inner wall forms the columella.

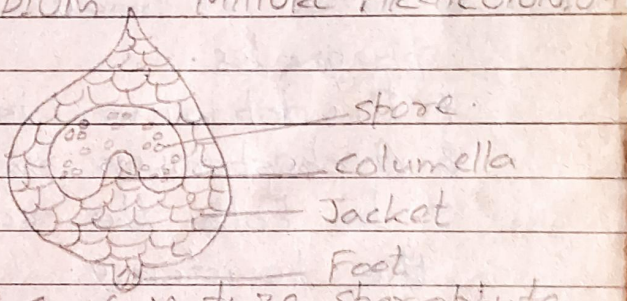
MATURE SPOROPHYTE →

1. Mature sporogonium has a swollen foot or haustorium and a small capsule.
2. Seta is very small.
3. Capsule is ovoid. It tapers both towards the base and apex.
4. Capsule wall at maturity is multilayer thick.
5. Centre of the capsule is occupied by a club shaped columella extending

nearly the top of the cavity.
6 spore sac is dome shaped. It contains haploid spores.



MATURE ANTHERIDIUM MATURE ARCHEGONIUM



L.S of Mature Sporophyte

DEHISCENCE → 1. It occurs usually along the four longitudinal line of dehiscence. In the process, the capsule opens by 4-8 longi-tudinal slits that extends neither to apex nor to the base of the capsule.
2. Peristomes are absent.

GERMINATION OF SPORES → The spores germinates to forms a thallose protonema which shows a great variety in form. It may be lobed, highly branched.