SUMMARY

Cytological study is made in 110 populations of 97 species of mosses (46 acrocarpous and 51 pleurocarpous taxa) collected from the Garhwal Himalaya. The chromosome numbers along with the collection data of the investigated taxa are given in Table-I.

Of the studied mosses, 17 taxa (Dicranella spiralis - n=13, Symblepharis vaginata var. microtheca - n=13, Entostodon wijkii - n=26, Brachymenium ochianum - n=12, Plagiopnium integrum - n=6, P. subintegrum - n=6, Zygodon obtusifolius - n=10+m, Meteoropsis squarrosa - n=11, Amblystegium amsale - n=10+m, Brachythecium cereum - n=12, Rhynchosium vagans - n=10, Rhynchoszielle humilis - n=12, R. scabriseta - n=12, Euthynchos muelleri - n=9, Entodon concinnus - n=11, E. laetus - n=11, Isoptrygium minutissimum - n=10+m) have received cytological attention for the first time.

Eight species [Drepanodon latifolius - n=13, Physcomitrium coarcesse - n=52, Plagiopnium japonicum - n=12, P. rhynchophorum - n=6, Philonotis angusta - n=6, P. falcata - n=12, Isoptrygium alboaege - n=10 (9+m), L. distichaceum - n=12(10+2m)] are found to exist with chromosome numbers that are at variance with the earlier reports for these species.

The lowest chromosome number among the presently investigated taxa is recorded as n=6 (14 taxa of Mniasceae and
three taxa of Bertramiaceae) and the highest as n=52
(Physcomitrium coorensis).

Intraspecific polyploidy is observed in two taxa
(Plagiocenium rhynchohorum - n=6, 12 and P. rostratum n=6, 12)
and intrageneric polyploidy is recorded in three taxa
(Physcomitrium - n=26, 52; Plagiocenium - n=6, 12 and Philonotis -
\( n=6, 12 \)).

Seven genera (Entosthodon - n=26, 28; Brachymenium -
\( n=10, 11, 12 \); Bryum - 10, 11; Knium - 6, 7; Brachythecium -
\( n=11, 12, 13 \); Rhynchoestegium - n=10, 11; Eurhynchium - n=7, 9;
Isoterygium - n=10, 11, 12) are found to exhibit intragenic
aneuploidy.

Slightly heteromorphic sex bivalent is observed in six
taxa (Oxystegus cylindricus, Apororhizis symbifolium, Brachymenium
ochianum, Bryum aepiculatum, P. atrovirens and P. pseudotriquetrum).

\( m \)-bivalent is recorded in ten taxa. Two \( m \)-bivalents,
a rare situation in mosses, are observed in Campylopus fragilis
\( (n=11+2m) \) and Isoterygium distichaceum \( (n=10+2m) \). The \( m \)-bivalent
always showed precocious disjunction at first metaphase. In
nine species (Atrichum undulatum, Discrænum undulatum,
Hymenostylium recurvirostre, Entosthodon nutans, Philonotis
falcata, Brachythecium buchananii, B. camarat, Rhynchoestegia
humillima, P. scabriata) bivalents are observed to show
stickiness and/or clumping.
Secondary associations among the bivalents, which indicate genetic homology and polyploid nature of the taxa, are observed in *Entosthodon wikii*.

Besides the largest and the smallest member of the set, bivalents are also found to disjunct precociously in ten taxa (*Pogonatum microstomum*, *Symblepharis vaginata* var. *microtheca*, *Hymenostylium recurvirostre*, *Mniium heterophyllum*, *Philonotis falcata*, *P. turneriana*, *Brachythecium buchananii*, *P. cameratum*, *P. rutabulum*, and *Rhynchoasteiella humillima*).

Laggards are observed in *Hymenostylium recurvirostre*, *Entosthodon nutans* and *Rhynchoasteiella vagans*.

The genus *Anomobryum*, which shares morphological characteristics with the subfam. Pohlicioideae and subfam. Bryoideae, is found to agree with the latter subfamily in cytological traits.

*Mniium heterophyllum* - n=7 is found to be in natural assemblage in the sect. *Stellariformia* rather than in the sect. *Polla*.

In the family Bertramiaceae, genus *Philonotis* is found to be close to the genus *Breutelia* rather than to the genus *Bertramia* in cytological traits (chromosome number n=6, similar staining reaction and morphology of bivalents).

The family Timmiaceae, morphologically close to family Bertramiaceae, is also found to be close to the latter family
in cytological characteristics \((n=8 - \text{present study; } n=8+m, 16, 16+m - \text{cf. Fritsch, 1982}).\)

In the family Hookerioideae, subfam. Distichophyllaceae exclusively with \(n=10\) or its multiple is found to be cytologically very distinctive from the other subfamilies i.e. subfam. Daltonioideae \((n=11)\) and subfam. Hookerioideae \((n=7, 10, 11, 12).\)