Material and methods

offers a challenging problem as changes in chromosome numbers, their possible transmission to next cell generations as well as bearing upon the population structure and the whole differentiation pattern call for a special attention.

The present paper deals with 30 taxa out of the 35 that form the duckweed family, all the four genera viz. *Spirodela* Schleiden, *Lemna* L., *Wolffiella* Hegelm. and *Wolffia* Horkel being represented. On the whole, material from 1500 localities was studied; this number is obviously not related to the actually examinated units and/or fronds. The study was carried out during fifteen years (1966-1980).

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2. Material and methods

The material from the present study was taken for the most part from sterile clonal cultures kept at the Geobotanical Institute, Swiss Federal Institute of Technology (SFIT), in Zürich. Some of those clones were repeatedly examined at a certain time interval; in addition, cultures independently obtained from various laboratories in the world but representing various parts of the same original clone, were sometimes studied. Only about 20% of the material comprised population samples from Europe, North America and New Zealand; 10-15 units were then taken at random in various parts of a given population.

The material was fixed in acetic alcohol (1:3) with a small addition of ferric acetate and stored at about -20°C. As the staining solution, lacto-propionic orcein diluted 1:1 with distilled water from the original stock prepared according to DYER (1963) was used. Whenever possible, young parts of the fronds were separated from old tissues for the squashes. Only mitotic chromosomes were studied. Drawings were made with a Leitz camera lucida using a supplementary magnifying tubus. The magnification of the drawings is about 4000X. The material proved unsuitable for microphotography, too many chromosomes staying out of the focus at a given time.

3. Results

The presentation of the results follows the sequence of taxa corresponding to the structure of the family of *Lemnaceae*, the current nomenclature proposals of LANDOLT (1980, 1980a, see the preceeding papers in this volume) being applied.

Prior to describing our results in detail, we should like to precise the meaning of the terms used in the present paper when cytological variation is being commented upon.

a) the term "intra-individual variation" refers obviously to variation observed within a single frond or clone. It should be noted that cultures issued from the same original clone and kept in various laboratories were sometimes independently obtained from several sources or studied repeatedly at some time interval; be as it may, the term is applied to cases when the genetic value of the material as an individual was definite.

b) the term "intra-populational variation" was used in cases when numerous units sampled in the wild within a given population represented differences as to their respective chromosome numbers, but most frequently were cytologically uniform. The term is arbitrarily chosen and may not correspond to actual differences between individuals in the genetic sense, distinction between genets and ramets being practically impossible in the duckweeds.

c) the term "cytological differentiation" or "racial variation" used as well in the author's previous paper on the *Lemna* L. (URBANSKA-WORYTKIEWICZ 1975)