Mericinal Chimeras in the Gametophyte of *Dryopteris thelypteris* (L.) Gray.—The typical fern gametophyte is a heart-shaped monolayer of cells with an apical cell as the meristem. All cells are derived from an apical cell lineage with each consecutive apical cell dividing into a daughter apical cell and a vegetative cell with the latter proliferating into a group of cells that Douin (Rev. Gen. Bot. 38:487–508. 1924) termed a merophyte (Fig. 1); Gifford (Ann. Rev. Plant Physiol. 34:419–440. 1983) specifically notes that a merophyte is to include the original sister cell as well as all its derivatives. Later Korn (Acta Biotheoretica 41:175–189. 1993) described a merophyte as a clone. Klekowski (Evolution 38: 417–426. 1984) raised the question of whether an apical-celled organ can express a chimera by noting that a mutation in the apical cell will lead to all subsequent cells as mutant and therefore a persistent mericlinal chimera is not possible. A mericlinal chimera in angiosperms includes a region of one layer within either L1, L2 or L3 and in a fern gametophyte it would include one transient subclone of a merophyte clone. The question is then can chimeras occur in fern gametophytes? This note reports a mutant of the fern *Dryopteris thelypteris* (L.) Gray that produces not one but a number of mericlinal chlorophyll chimeras in a gametophyte, that is, it appears to be an eversporting chimera (Hejnowicz , Recent Adv. Bot. 2:146–148. 1951).

Sterilized spores were plated in agar dishes and periodically observed for morphology of subsequent gametophytes (Korn, Bot. J. Linn. Soc. 68:63–171.1974). Merophytes can be easily identified in *D. thelypteris* as a papilla forms on the most anterior, marginal cell of each merophyte (Korn, Bot. J. Linn. Soc. 68: 63–171. 1974) (Figs. 1 and 2). About 1,100 spores were seeded in each of three plates and 16 chimeric gametophytes (Fig. 3) were found for a frequency of 16/3300, or 0.0048, gametophytes with chimeras.

Where in the parental sporophyte the mutation occurred can be calculated as follows. First, the frequency of gametophytes or spores with the mutation of 0.0048 is converted to the frequency heterozygous diploid cells of the leaf, or 0.0048 becomes 0.0096, or approximately 0.01. Next, the fraction of a leaf with the patch of heterozygous cells is determined. Each sporangium has about 22.7 ± 3.3 (n = 25) spores which come from 22.7/4, or about 5.7 sporocytes, a sorus has an average of 30.6 ± 6.0 (n=25) sporangia per sorus, a secondary pinnae has an average of 12.6 ± 1.9 (n = 25) sori, a primary pinna has 45.8 ± 6.3 secondary pinnae and a leaf has 45.7 ± 9.5 (n= 5) primary pinnae for a total count of 5.7 × 30.6 × 12.6 × 45.8 × 45.7, or there are about 4,599,901 sporocytes per leaf. If 0.01 sporocytes are heterozygous then there were 4,599,901 × 0.01, or 45,999 heterozygous sporocytes per leaf. With about 45,999 heterozygous sporocytes per leaf and with 5.7 × 30.6 × 12.6, or 2,198 sporocytes per secondary pinna, there were 45,999/2,198, or 20.9 secondary pinnae with heterozygous sporocytes. With 45.8 secondary pinnae per primary...