A tetrasomic plant in barley

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A new trisomic type for inverted chromosome 6 (with large satellite) has been briefly reported by the writer (CIS 3: 16). This paper is a brief report of a tetrasomic type which was obtained as a sibling of above mentioned new trisomic type. During several years of experiments on trisomics in barley, tetrasomic plants have never been obtained in the more than thousands of progenies of triploids and trisomics examined. Thus the tetrasomic plant to be reported here is the first case known in barley. The tetrasomic plant showed relatively vigorous growth and had a considerable extent of pollen and seed fertility.

As clearly seen in somatic metaphase plate (Fig. 1, × 2400) the tetrasomic plant had two changed chromosome extra which are the same ones as that observed in the new

trisomic type mentioned above. At MI of meiosis the chromosome configurations of $1_{IV}+6_{II}$ (Fig. 2, × 2200), $1_{III}+7_{II}+1_{I}$, 8_{II} (Fig. 3, × 2200), and $7_{II}+2_{I}$ were observed; the first and the third configurations were most frequent showing frequencies of 56.7% and 23.3%, respectively. The shape of tetravalent chromosomes of this tetrasomic plant is different from the quadrivalents observed in autotetraploids or in some translocation heterozygotes: Almost all of the tetravalents were chains, and only occasionally were open rings observed which showed a rather oblique shape. Zig-zag-type tetravalents which were most common in autotetraploids (Tsuchiya 1953, Seiken Ziho 6: 46) and most translocation heterozygotes (Burnham 1956, Bot. Rev. 22: 419) of barley could not be observed so far in the present plant. AI, TI and later stages of meiosis proceed without peculiar abnormalities.

The relatively good viability of this tetrasomic plant may be attributed to a deletion accompanied by a pericentric inversion.