concerned plants are compared in Table 1. It is apparent that a very high univalent frequency is related to total failure in kernel set but that the contrary is not always true. In one family in particular (68-818) and its F_2 derivatives (69-674 & 676) this asynaptic characteristic acquired both a stronger or complete effect on the majority of individuals. Some degree of independence from the presence of the tripsacum chromosome in the genomes of these substitution stocks was also evident in some of the individuals which were completely fertile, while 25% of their segregants showing the recessive phenotypes for all tested loci became asynaptic and therefore sterile. There are three possible explanations for this variation: (i) some form of mutagenic effect of tripsacum introgression; (ii) spontaneous deletion of a segment with As on chromosome I of corn (As As being regulatory in function, As as also would induce asynapsis and univalency--Baker & Morgan, Genetics, 61, 1969) and (iii) the As in chromosome I being substituted by as of tripsacum subsequent to an interchange involving this locus. The unexpected occurrence of higher associations (quadrivalents or trivalents + univalents) in some of the related stocks, suggestive of additional homeologies to chromosomes other than chromosome IX, as previously reported (MNL, 1969), would seem to favor an interchange between this tripsacum chromosome and corn chromosome I, while at the same time maintaining its greater homeologies to chromosome IX. Absence of a direct correlation between univalent frequency and the degree of fertility observed could be due to the inherent variability in the expression of as as or ds ds recognized for maize and other genera (Riley & Law, Adv. Genet., 13, 1965).

B. G. S. Rao
P. Chandravadana
W. C. Galinat

16. Progress on the cytogenetic comparison of maize and Tripsacum chromosomes.

The morphological features at pachytene of the tripsacum chromosomes homeologous to the different corn chromosomes ascertained from both the genomes of maize and Tripsacum dactyloides are compared on p. 127. The rela-

Chromosome No. in maize genome	Identified loci common to maize and Tripsacum	Length and arm ratio of the Tripsacum homeolog observed in the genome of				
		Maize		T. dactyloides		
		Total length (microns)	Arm ratio	Total length (microns)	Arm ratio	Assigned no.
IIS	Ws Lg_1 Gl_2 b Sk Fl_1	22.3(TKL)	1.7	25.9(TKL)	1.7	9
IVS	Su_1 (but not La)	29.3	2.8	27.0	3.2	7
IVL	Gl_3 (but not Bm_3 Ra_3 J_2)	22.4(TKL)	3.5	21.6(TKL)	3.5	13
VII	V_5: Ra_1 Gl_1 Ij	*				
IX	Yg_2 C Sh_1 Bz_1 Wx: Gl_{15} Bk_2 Bm_4	34.0(TKL)	4.0	32.4(TKL)	4.6	5

TKL: Terminal knob present in long arm.

*The Tripsacum homeolog described previously (MNL 1969) has since been found to be an altered form.

tive positions each of these extracted chromosomes occupy in the normal complement of T. dactyloides are also included to facilitate their identification.

W. C. Galinat
B. G. S. Rao
P. Chandravadana

17. Internuclear variability in the form and pairing behaviour of the homeolog for corn chromosome II derived from T. floridanum.

Analysis of 35 pachytene nuclei from microsporocytes of six 20+2 Lg Gl plants, in which the added chromosome pair is derived from T. floridanum, revealed the presence of two distinct chromosome types of tripsacum in different sister nuclei. Their morphological features and that of chromosome 9 of T. dactyloides, all of which are homeologous to corn II, are compared in Table 1.

Table 1

Source of extraction	Length in microns			Arm ratio
	short arm	long arm	Total	
T. dactyloides:	7.7	13.2 (TK)	22.3	1.7
T. floridanum:				
*Type 1	6.6	11.4 (TK)	19.2	1.7
*Type 2	5.7	15.4 (TK)	22.3	2.7

*Represent averages of 21 and 14 observations, respectively, for types 1 and 2; TK - terminal knob present.

In addition to the types 1 and 2, the following variations with respect to the extra chromosome pair were also observed in some of the pachytene nuclei:

(a) partial or total asynapsis of the long arms with one of them loosely paired with a corn bivalent;

(b) heteromorphy for only the terminal knob accompanied by asynapsis in that region;