Cytological analysis of a random sample of fifty diakinetic nuclei in the PMC's of the above referred plant revealed the presence of 2–4 extra fragments in all of them, the number varying in the different pollen mother cells examined and there were no pollen mother cells found without these fragments or even with one fragment only. They were about half the size of the seventh chromosome (smallest chromosome) of the complement.

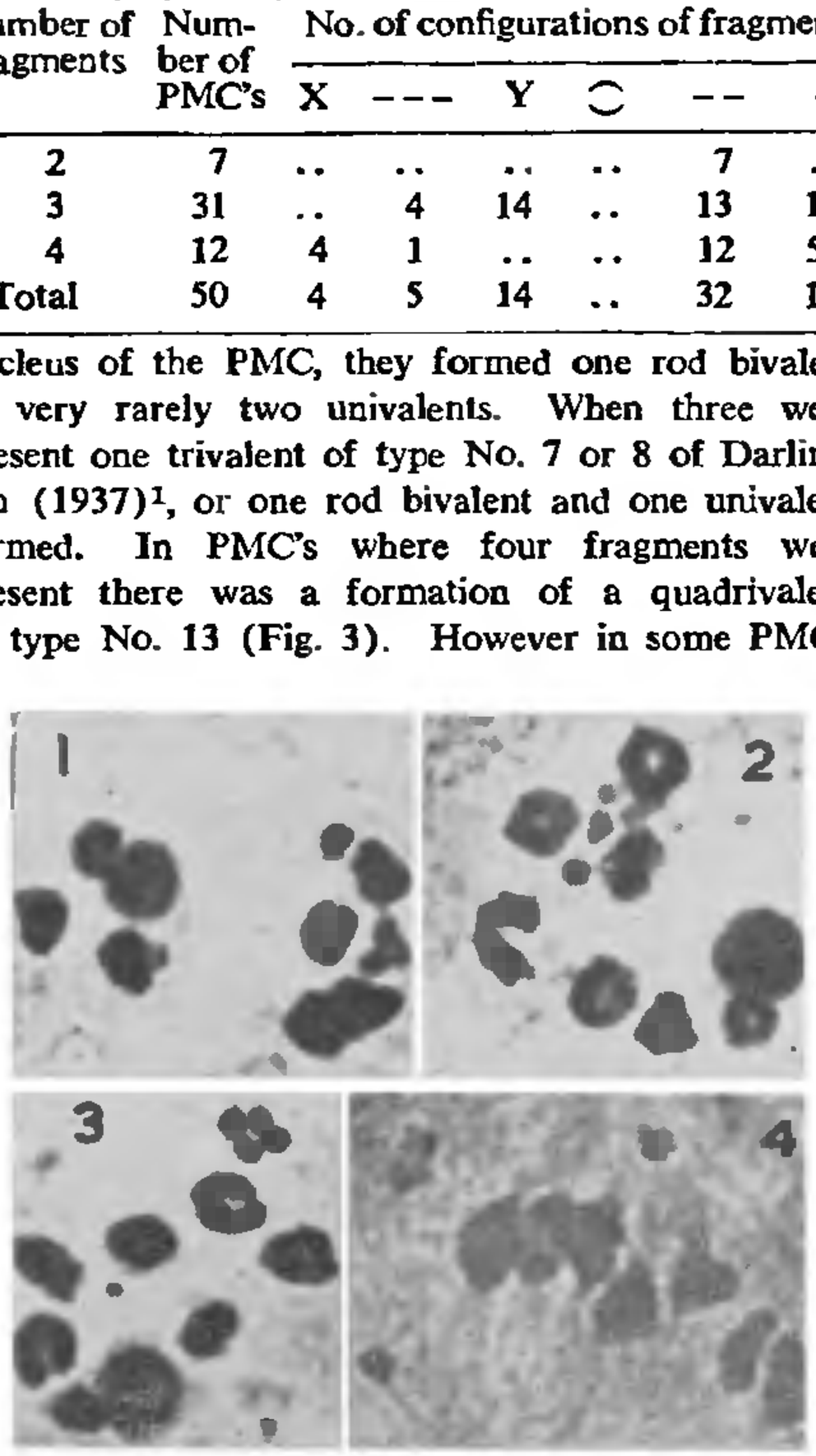
The meiotic behaviour of these fragments was studied at diakinesis and post-diakinesis stages. When two or more than two fragments were present in a PMC, they paired among themselves, two by two at a time along their length and gave rise to different types of configurations as shown in Table I. If two fragments were present in a

TABLE I

Different types of configurations of fragments and their frequency

Number of fragments	Number of PMC's	No. of configurations of fragments					
		X	---	Y	○	--	-
2	7	..	..	..	..	7	..
3	31	..	4	14	..	13	13
4	12	4	1	..	..	12	5
Total	50	4	5	14	..	32	18

nucleus of the PMC, they formed one rod bivalent or very rarely two univalents. When three were present one trivalent of type No. 7 or 8 of Darlington (1937)[1], or one rod bivalent and one univalent formed. In PMC's where four fragments were present there was a formation of a quadrivalent of type No. 13 (Fig. 3). However in some PMC's one trivalent of type No. 7 or 8 and a univalent (Fig. 1) or two rod bivalents (Fig. 2) were formed. Table I contains the data showing the different types of configurations.



FIGS. 1–4. Figs. 1–3. Diakinesis showing four fragment chromosomes. Fig. 1, One trivalent and one univalent; Fig. 2, Two rod bivalents; Fig. 3, One quadrivalent. Fig. 4. Metaphase-I showing one bivalent and two univalents.

If the terminal association of the fragments at diakinesis and metaphase-I were considered to be the result of chiasma formation, it would be expected to enhance the chiasma per nucleus. In this case the mean chiasma frequency of fragments per PMC at diakenesis was 1·84, and the total mean chiasma frequency per PMC was 14·64 while that in the diploid with no fragments was only 12·46. Therefore it may be considered that the ends were associated by formation of chiasma in the terminal region of the fragments.

These fragments, oriented at metaphase-I along with the normal chromosomes, move regularly to either of the poles and become included in the telophase nuclei. There was very high pollen and seed fertility and nearly 100% seed setting.

Previously the occurrence of fragments was reported in this crop plant by Powell and Burton (1966)[3] and Pantulu (1967)[2] in mutagen treated populations. Fragments, observed by these authors, were very small in size in comparison with those reported here and also they did not record any observations on pairing behaviour of the fragments. The fragments reported here are centric as shown by their orientation at metaphase-I and regular movement to the poles. In their study on the meiotic behaviour of the fragments in pearl millet, Powell and Burton (1966)[2] also considered them to be centric because of their behaviour during metaphase-I and anaphase-I.

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Department of Botany, MISS J. N. R. MANI.
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LEAF SCALD OF RICE (*RHYNCHOSPORIUM ORYZAE* HASHIOKA AND YOKOGI)

LEAF scald of rice hitherto found only in Japan, Costa-Rica, Guatemala and Thailand has now been recorded in India from the Central Rice Research Station, Pattambi, Kerala.

The disease usually starts from the tip of the leaf as dark reddish brown discoloration and develops downwards rapidly through the whole breadth of the leaf blade. The tissues of the diseased portion collapse soon and the leaf dries up to become brown or straw colour, the reddish brown colour being still visible at the developing region. The large lesions show characteristic zonations delimited with wavy lines blackish in colour (Fig. 1). When the disease is severe, almost

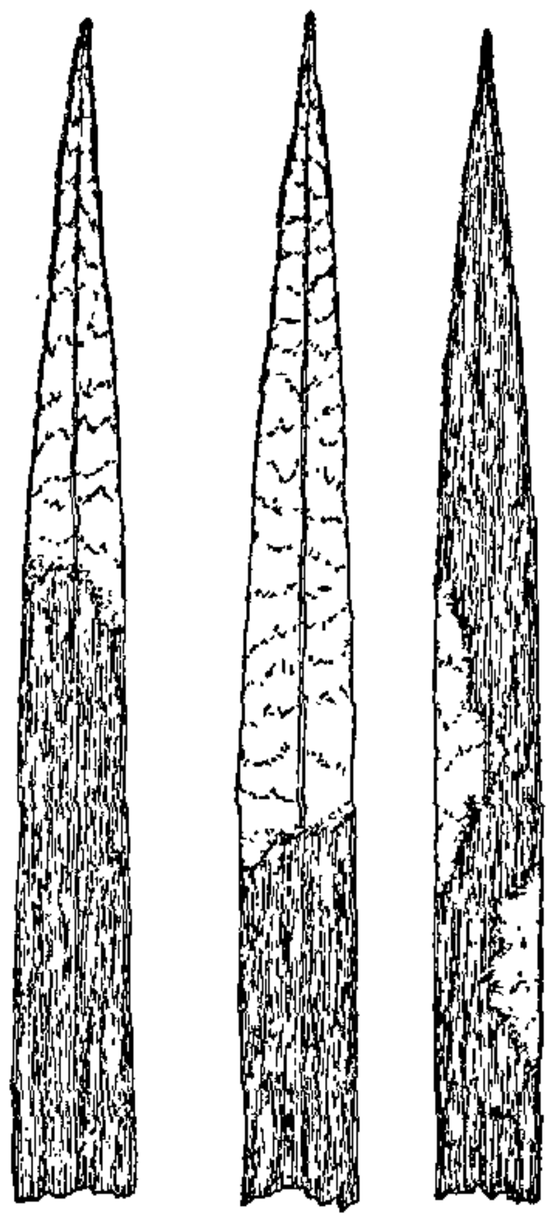

FIG. 1

all the old leaves show the scald to an extent of one-third to one-half of each leaf lamina, and in very severe cases the whole leaf may get blighted. Though the scald usually starts from the tip of the leaf, in some cases the symptom may also start from other parts of the leaf as ellipsoid or oblong reddish brown water-soaked lesions which develop on all sides. In such cases the leaf may soon break at this point and droop down and dry up.

It is reported from Japan by Hashioka Ikegami (1955) that the disease might also occur in seedlings. In Costa-Rica De-Gutierrez (1960) found the fungus causing decay of the coleoptile and also root rot. But such instances of the disease have not so far been observed in Kerala. The disease has been found to be severe during rainy season, in fields receiving excessive dose of nitrogen.

The fungus causing this disease is identified as *Rhynchosporium oryzae* Hashioka and Yokogi. Mycelium of the fungus is sparse in the mesophyll of the host, hyaline septate, 2–3 μ broad. Mycelium is sub-cuticular at first. later developing into a superficial fertile stroma more or less covering the developing region of the lesion or the entire spot. Conidiophores absent or reduced to cells of stroma. Conidia one septate, hyaline sessile, falcate but only slightly curved. Conidia are frequently unequal, 9·7 to 16·3 μ (mean 15·4 μ) in length and 3·1 to 5·3 μ (mean 3·8 μ) in breadth (Fig. 2). This species can be distinguished from

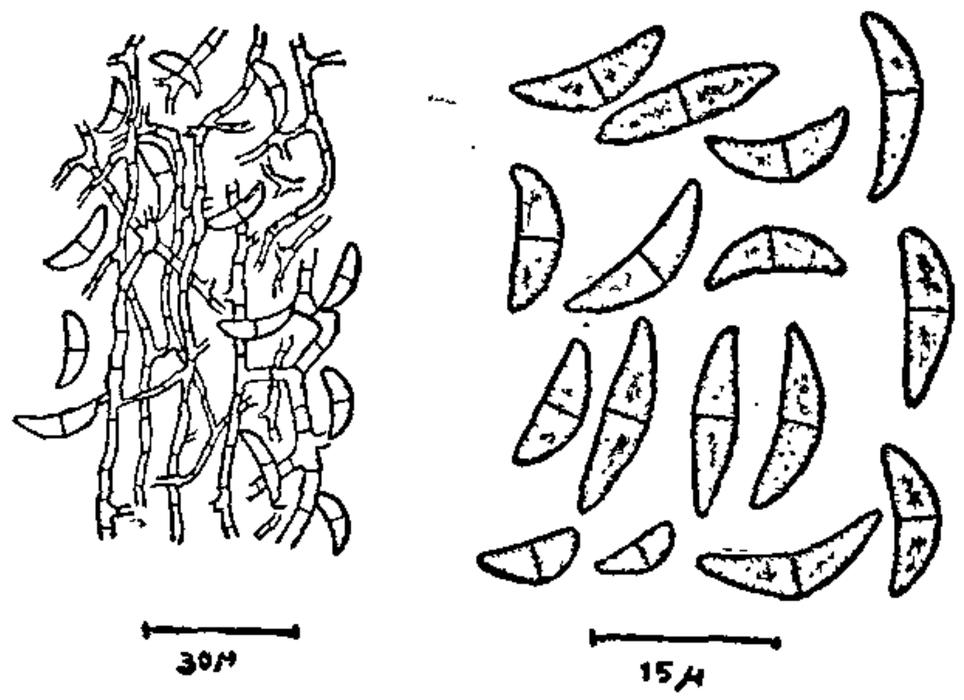

FIG. 2

other species of the genus *Rhynchosporium*, viz., *R. secalis* (= *R. graminicolum*) and *R. orthosporum* by the shape of conidia. The conidia of the latter two species are obliquely beaked and often irregular; the conidia of *R. oryzae* are not obliquely beaked and are more or less regular in shape.

The fungus is placed under Deuteromycotina, Hyphomycetes.

Division of Plant Pathology,
Central Rice Research Station,
Pattambi, Kerala, *April* 10. 1973.

S. N. SHANMUGHOM.
N. GOPALAN.
K. M. GEORGE.
R. GOPALAKRISHNAN.

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