infection. Infective P is potentially dangerous as it leads to ventricular necrosis followed by cardiac standstill.

Thus mass mortality due to tail rot should be due to heart necrosis and not merely due to tissue decay associated with microbial infection.

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TRANSLOCATION HETEROZYGOSITY IN *PORTULACA* LINN

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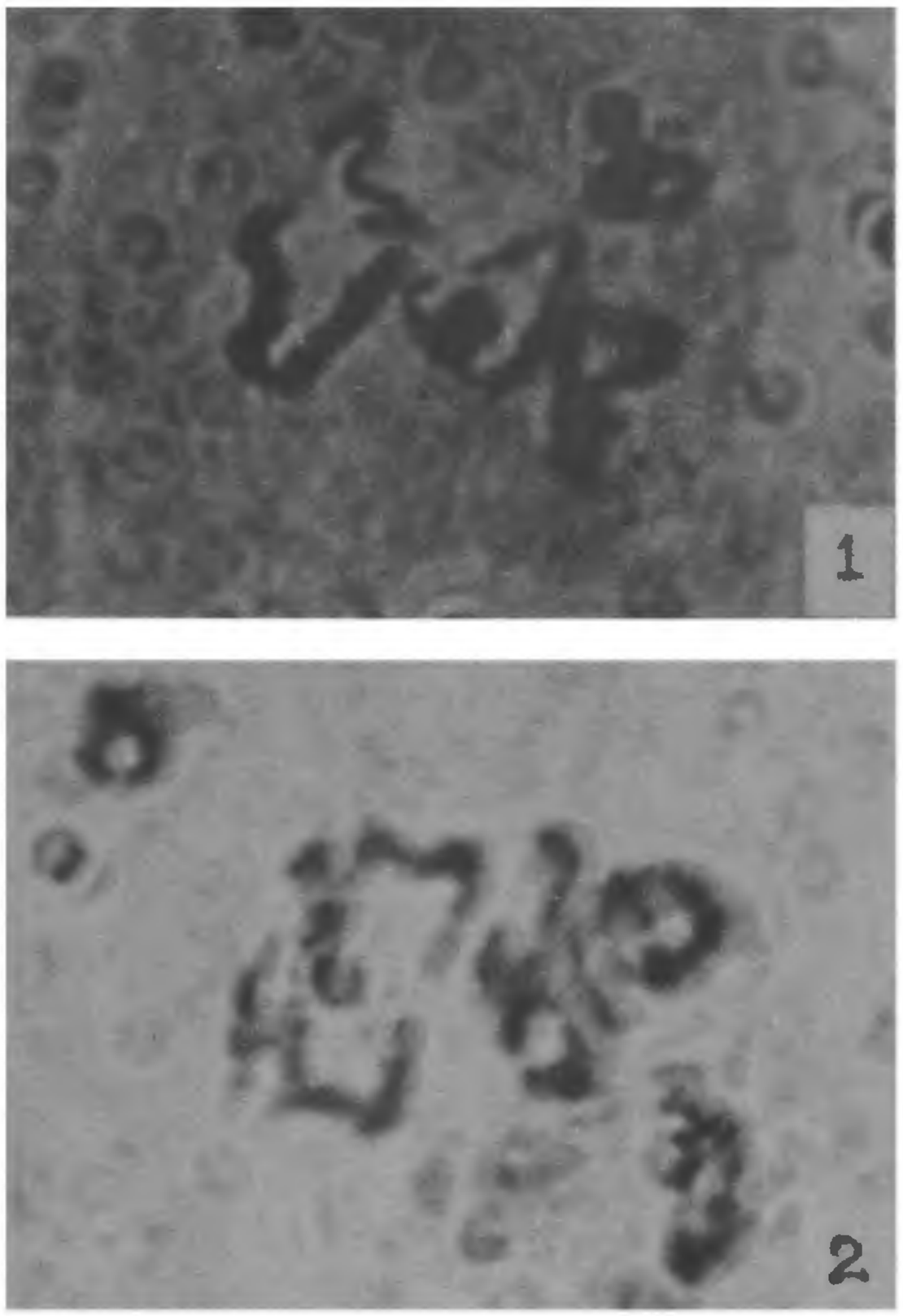
PORTULACA Linn (Portulacaceae) is widespread in tropical and sub-tropical regions and has nearly 200 species[1]. The genus constitutes succulent annuals and perennials, most of which are weeds and a few are valid as vegetables. One species, *P. grandiflora* Hook is widely cultivated for its single and double brilliantly coloured flowers. While screening a number of garden varieties, one pink-flowered single variety was found to be a translocation heterozygote, the meiotic behaviour of which is described.

For meiotic studies, young floral buds were fixed in Carnoy's fluid (6:3:1). Following conventional techniques, anthers were stained and squashed in 1% iron-acetocarmine. A minimum of 50 pollen mother cells (PMCS) were analyzed. At diakinesis and prometaphase, besides bivalents, one to three (89.7%) or one to four (2%) interchange complexes of four chromosomes were observed. (figures 1 & 2). The interchange multiples appeared as ring of four chromosomes with adjacent (68.2%) or alternate (31.8%) orientations. Of the alternate orientations, only 1.1% complexes formed chain configurations. The interchange multiples generally showed terminal chiasmata. In one cell, interstitial chiasma was found inside the translocation ring (figure 1). The bivalents were either ring or rod type with mostly terminal chiasmata. The chiasma



Figures 1, 2. Prometaphase. **1.** 20IV + 2CIV + 1II. **2.** 20IV + 5II one ring disjoining × 9000.

frequency per cell ranged from 14 to 20 with a mean of 15.06. Metaphase I, in general, was not clear due to the characteristic stickiness of the chromosomes. During anaphase, interchange multiples disjuncted normally, along with the bivalents. Occasionally, precocious separation of the multiples and bivalents was noted at MI. However, pollen stainability was only 33.4% and the pollen grains exhibited great size difference. The taxon did not produce any seeds.

Two cytotypes with $n = 9$ and 5 have been reported for *P. grandiflora* Hook[2] which is explained as intra-specific aneuploidy[3]. The most common basic number in the species is $x = 9$ which is diploid with a regular formation of 9 bivalents[4]. The present report is the first record of interchange heterozygosity in the diploid form. Rizvi *et al*[3] reported a case of interchange hybridity in a Japanese variety 'Jewel' ($n = 5$), where one to two multiples of four chromosomes with disjunctional orientation were observed. Due to direc-

ted segregation, this variety exhibited high fertility. In the present interchange heterozygote, 68.2% interchange multiples had non-disjunctional orientation. At anaphase I the interchange complexes disjuncted normally due to the presence of mostly terminal chiasmata. However, pollen stainability remained very low and there was no seed formation. This may be due to the deficiency-duplication arising from non-disjunctional orientation of the interchanged chromosomes. However, sterility is not a handicap in the present case, as the taxon is usually propagated through cuttings. Their attractive flowers have perhaps been responsible for selection and perpetuation in the gardens. Similar cases of adaptive advantages of interchange heterozygosity have been reported in a number of perennial ornamentals like *Amaryllis*[5], *Bougainvillea*[6], *Canna*[7], *Crinum*[8], *Gloriosa*[9], *Hemerocallis*[10], *Zephyranthes*[11].

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NEWS

SUPER NEUTRON MACHINE WILL SPEED MATERIALS RESEARCH

The world's most powerful machine for probing the structure of matter has started to produce new information about the composition of basic materials such as crystals, metals and glasses.

The £100 million facility, officially known as a Spallation Neutron Source, or SNS, has been built at the UK Science and Engineering Research Council's Rutherford Appleton Laboratory near Oxford and is destined to become the most important international equipment of its kind over the next year or so as it works up to full power.

The giant machine, which took seven years to build, was designed to produce short but very intense bursts of neutrons. These are one of the elementary building blocks of matter and are considered a unique tool for wideranging studies of the properties of materials at atomic and molecular levels.

Neutrons are normally obtained for such scientific research from nuclear reactors, but the SNS produces them by a different method that involves a series of accelerators in the release of neutrons. Once freed, they escape along tubes where instruments measure the intensity of neutrons scattered from the material under investigation. It is hoped to expand the facility in the future to accommodate up to 25 experiments at a time.

The SNS, which was formally inaugurated by the Prime Minister, Mrs Margaret Thatcher, has been named Isis, after a river that runs through Oxford. Mrs. Thatcher said some areas of industry were showing interest in using the new facility, which is already the subject of working scientific agreements with France, Federal Germany, Italy, Sweden and other European Community countries. Discussions on using the SNS were also at an advanced stage with other countries.

The new facility also opens up the possibility of giving engineers a new insight into the working of jet engines by producing three-dimensional maps of turbine blade temperatures.

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