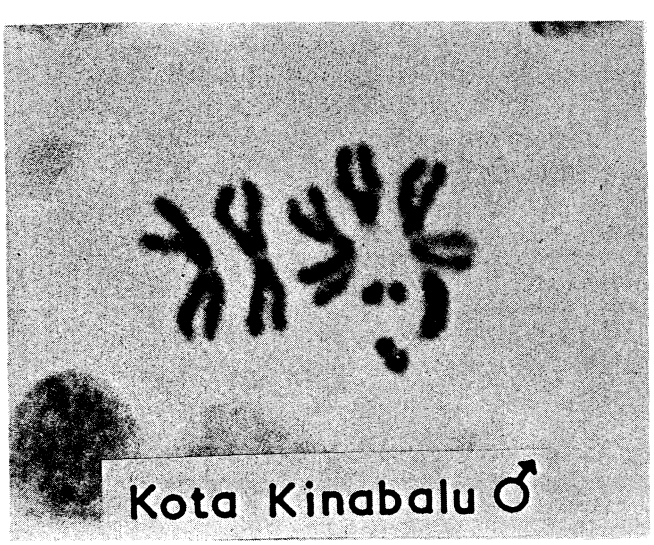
Baimai, Visut. University of Queensland, Australia. Karyotype variation in D. montium.

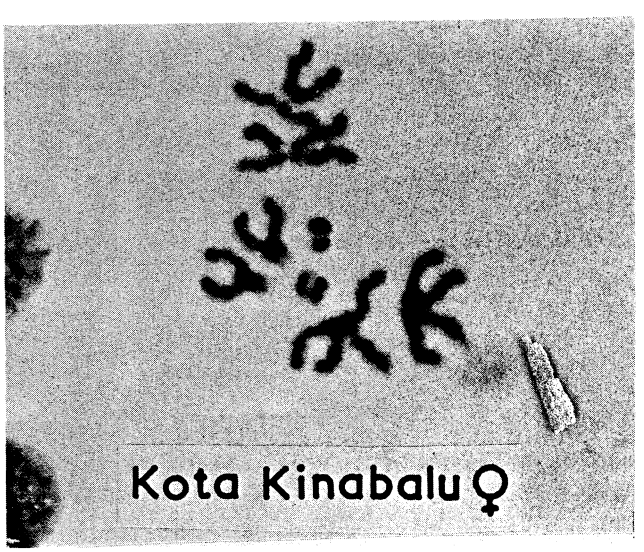
Kikkawa (1936) described two races of D. montium from localities in Japan, which differ in the morphology of one chromosome. Ward (1949) showed a third karyotype in the strain from China. Thus three categories, designated as type 1, 2, and 3, are recognized (Patterson and Stone 1952). Recently Drosophila collections from Madang, New Guinea and Sabah, Malaysia (Mather 1968) revealed an interesting karyotype variation in D. montium (designated serrata type I in Mather 1968 and unpublished Mather 1967). Type 3 has been verified in strains from Sandakan and Tawau (on the North East and South Coast of Sabah respectively). Strains from Kota Kinabalu (Jesselton) (North West Sabah) and Madang were found to differ from type I and 2 in the 4th chromosome. These two strains also have four pairs of chromosomes, but the rod-shaped 4th chromosome has been transformed into a small V-shape while the other chromosomes are similar to the corresponding ones of chromosome type I and 2. The Y chromosomes of the Madang and Kota Kinabalu strains have been identified as a rod-shaped and a V-shaped chromosome respectively. Further, comparative study of the F_1 hybrids shows that the V-shaped 4th chromosome of the Kota Kinabalu strain is considerably smaller than that of the Madang strain, which in turn is smaller than that of the Sandakan and Tawau strains.

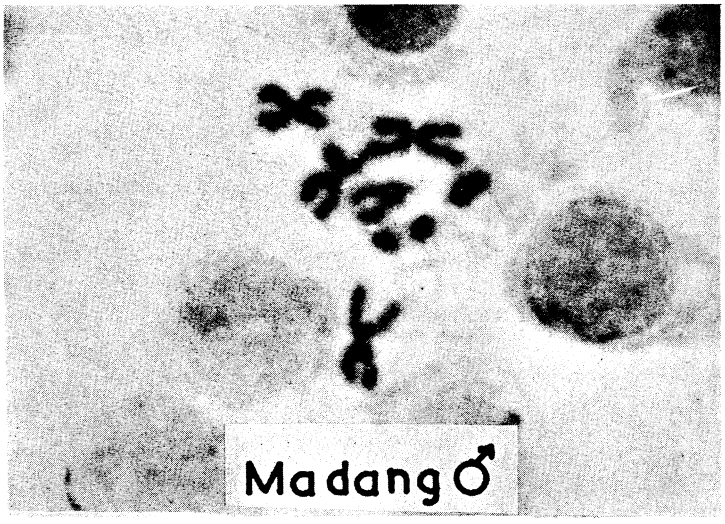
Hence, these two strains from Kota Kinabalu and Madang could indicate new karyotypes within the species D. montium. If this is the case, the total number of karyotype variations in D. montium could be increased to five types, which is the most variable karyotype known in the genus Drosophila. However, the possibility of misinterpretation of the metaphase chromosome configuration should not be ruled out. The V-shaped 4th chromosome could have been misinterpreted as rod-shaped by Ward, as it has been occasionally observed by the author even using the more advanced colchicine treatment (Lewis and Riles 1960). However, this is not certain, as there is no photographic evidence of Ward's result available for comparison. At this stage it is quite obvious that there are at least four chromosome types in D. montium.

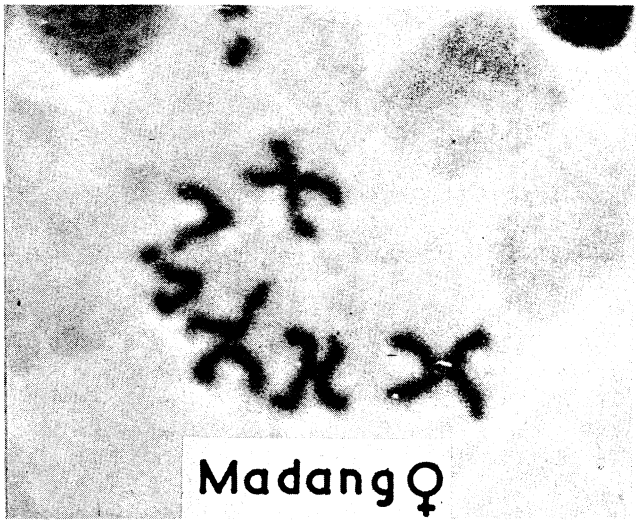
Furthermore, crosses between Madang and Kota Kinabalu, Madang and Sandakan, Madang and Tawau, and Sandakan and Tawau strains have yielded fertile hybrids. Interestingly enough, crosses between Kota Kinabalu and Sandakan and Kota Kinabalu and Tawau strains are cross-sterile. Thus the Kota Kinabalu strain is completely reproductively isolated from Sandakan and Tawau strains.

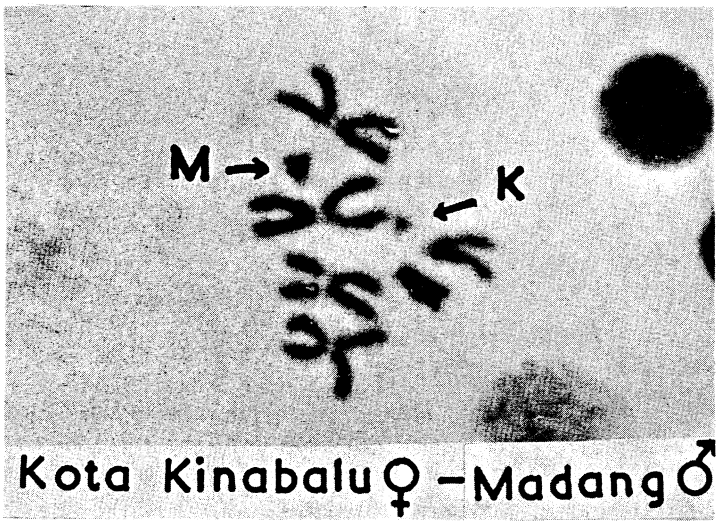
References; Kikkawa, H. 1936, Two races of Drosophila montium (a preliminary note) Jap. Jour. Genet., 12:137-142; Lewis, E. B. and L. S. Riles, 1960, A new method of preparing larval ganglion chromosomes, D.I.S. 34:118-119; Mather, W. B. 1968, The genus Drosophila in New Guinea and Sabah. Pap. Dept. Zool. Univ. Q'ld. 3(4):47-50; Patterson, J. T. and W. S. Stone, 1952, Evolution in the Genus Drosophila. New York: The MacMillan Co. Ltd.; Ward, C. L., 1949, Karyotype variation in Drosophila. Univ. Tex. Publ., 4920:70-79.

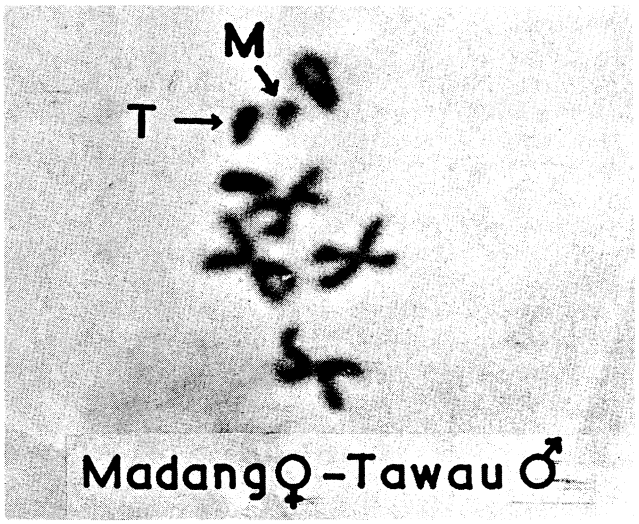





Madang ♂


Madang ♀


M
K
Kota Kinabalu ♀ - Madang ♂


M
T
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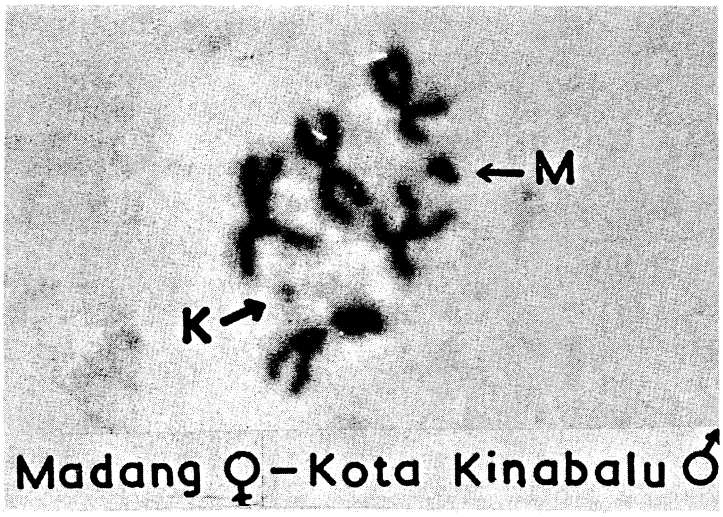
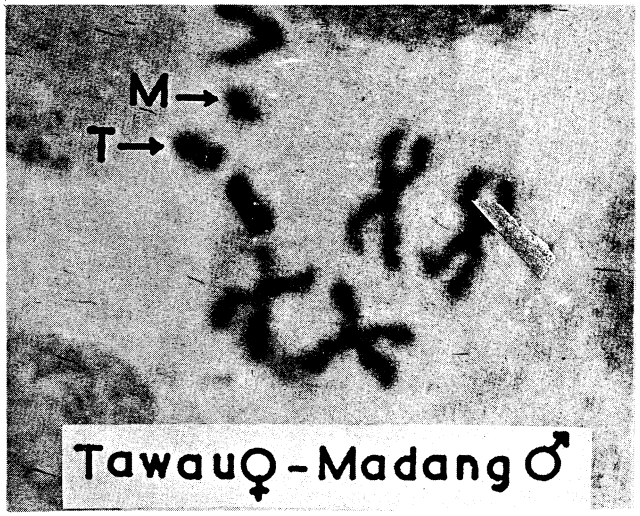
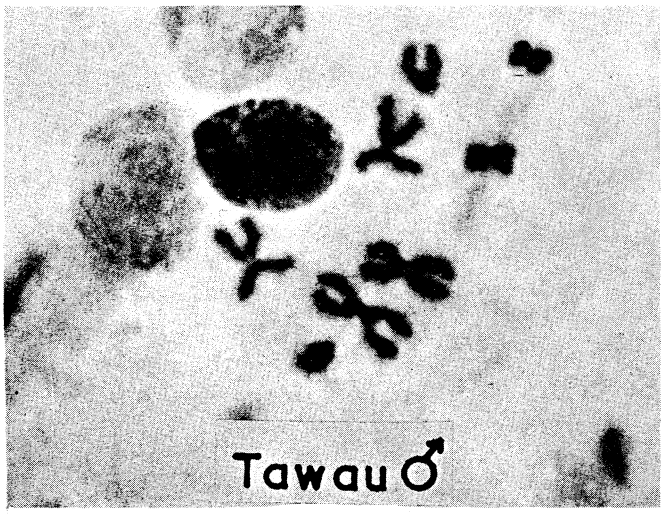
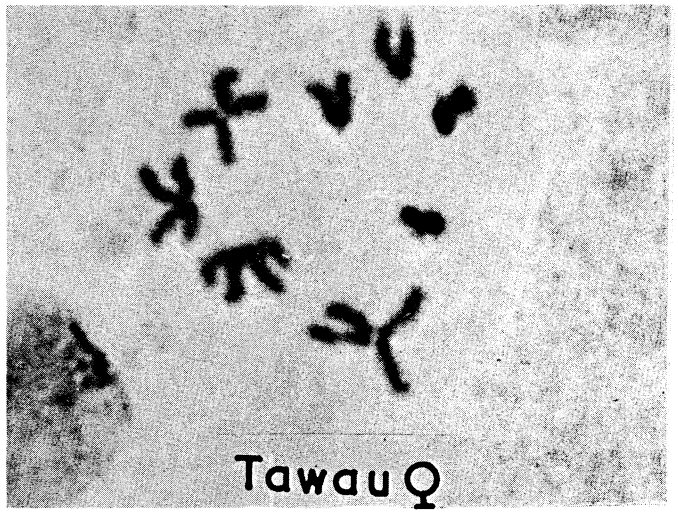

M
K
Madang ♀ - Kota Kinabalu ♂


M
T
Tawau ♀ - Madang ♂


Tawau ♂


Tawau ♀