Symmetrical and Asymmetrical Post-reduction in Ascomycetes

THE analysis of asci has shown that a pair of allelomorphic genes may segregate at the first meiotic division (pre-reduction) or at the second (post-reduction). Post-reduction may be symmetrical, with two like genes adjacent in the middle of the ascus, or asymmetrical. The analysis of 77 asci of *Neurospora sitophila* by Whitehouse[1], and 31 by Wilcox[2], Dodge[3] and Lindegren[4] has given the six possible patterns of the sex genes in the following numbers:

Pre-reduction	+ + — —	26
	— — + +	24
Symmetrical post-reduction	+ — — +	10
	— + + —	11
Asymmetrical ,, ,,	+ — + —	18
	— + — +	19

The distal end of the ascus is represented to the left. There were thus 37 asymmetrical and 21 symmetrical post-reductions. The probability of so great a divergence from equality by chance is 0·049. If we add to these the figures obtained by Whitehouse for the segregation of 'weak', which is at least 41 units from 'sex' in the same chromosome, and of 'orange', which is in a different chromosome, based on 31 asci, and Dodge's data for albinism, which is also in a different chromosome based on 7 asci, we find 49 asymmetrical and 27 symmetrical reductions. The probability of obtaining such unequal numbers by chance is 0·016. On the other hand, Lindegren's data on 273 asci of *Neurospora crassa* show 14 asymmetrical and 25 symmetrical post-reductions. The difference is not significant; but it is unlikely that a larger count would show a majority of asymmetrical post-reductions. So asymmetrical post-reduction seems to be more frequent, at least for some genes, in *N. sitophila*, but not in *N. crassa*. Zickler's[5] results on *Bombardia lunata* show a slight but significant excess of asymmetrical post-reductions for the characters *lactea* and *rubiginosa*.

The greater frequency of asymmetrical post-reduction can be explained if the relative position of the chromatids generally remains unaltered during interphase.

Full details will be published elsewhere.

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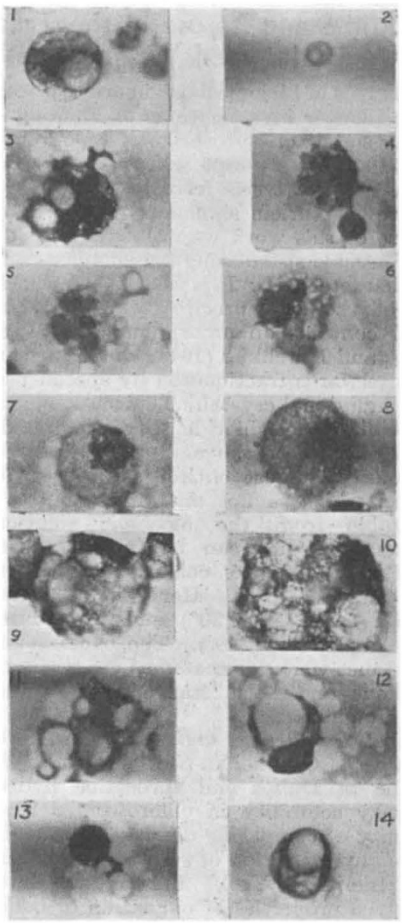
[1] Whitehouse, *New Phytol.*, **41**, 23 (1942).
[2] Wilcox, *Mycologia*, **20**, 3 (1928).
[3] Dodge, *Mycologia*, **22**, 9 (1930).
[4] Lindegren, *Bull. Torrey Bot. Club*, **59**, 119 (1932).
[5] Zickler, *Planta*, **22**, 573 (1934).

Cell Contents of Milk

BEING interested in the study of the cell contents of milk, I have investigated the colostrum bodies present in fresh human and cow's milk. I devised two methods of studying the milk cells: in wet films, staining the nuclei with methylene blue; and by dry films, staining with May Grunwald Giemsa. The smears were made from fresh milk, at the commencement of lactation, and some smears were made from the cells deposited after centrifuging.

In the wet films, I found different groups of cells. (1) The first group were cells with polymorph nuclei, which appeared to be just a little larger than the normal polymorph, and their cytoplasm seemed to be formed by small fat droplets. (2) The second group were mononuclears containing a similar number of fat droplets to the previous group of cells, the droplets varying in size from those contained in the polymorphs to drops of more or less the size of red blood corpuscles. A few of the mononuclears in this group were two or three times the diameter of a polymorph. Their appearance was similar to the cells observed in the fluid obtained from some hæmorrhagic cysts in thyroid glands (described elsewhere). (3) The third group was composed of mononuclears containing a smaller number of fat droplets. Some of the smaller cells contained only one drop of fat and a small quantity of cytoplasm, giving the cell the aspect of a lymphocyte attached to a fat droplet.



Wet Films. Nos. 1 and 2. A mononuclear full of fat droplets; and a lymphocyte containing one drop of fat.
Dry Films (stained with May Grunwald Giemsa). Nos. 3, 4, 5, 6. Different polymorphs with different sizes of fat droplets.
Nos. 7, 8, 9, 10. Mononuclears in full process of secretion of fat droplets.
Nos. 11, 12, 13. Cellular remnants of fat secretion. In Nos. 12 and 13 the remnants appear as lymphocytes.
No. 14. Protoplasmatic remnants framing some fat droplets.

In the dry films, the cells could also be divided into groups and confirmed what we had previously seen in the wet films. By careful observation, however, it could be seen that the cells were not in three distinctly different groups, but were linked together by intermediate cells. The groups observed in the dry films were as follow: (1) The first group was formed by polymorphs which appeared to be of the neutrophil variety, part of their cytoplasm consisting