

with the cock's blood after hatching. They had been isolated from mature male turkeys throughout but, in view of the findings of Olsen and Marsden⁵, several eggs from each (altogether forty-four) were incubated before insemination began, to check the possibility of parthenogenetic development; there was no evidence of this in any of them. Each bird was inseminated five or six times at intervals of three to four days; the volume given ranged from 0.2 to 0.75 ml. but was usually 0.4, 0.5 or 0.6 ml. Of six potentially fertile eggs from the controls, three developed small blood rings. Of thirty-three from the experimental birds, two developed small blood rings, nine showed slight embryonic development (less than two days), one died at about the three-day stage and one at about fifteen days. Thus approximately 50 per cent of each group showed some evidence of cellular proliferation at least. In view of the small numbers involved, the greater development in some of the eggs of the experimental birds cannot be considered significant, especially as previous workers^{2,3} have obtained embryos of a still more advanced stage from normal parents.

These breeding tests therefore failed to indicate any positive effect of induced immunological tolerance on the chances of successful hybridization. It should be pointed out, however, that while the original treatment had suppressed the normal response to immunization, it had only delayed, not prevented, the formation of natural antibody; this may yet prove to be of some significance for the production of hybrids between species.

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Importance of Smaller Phytoplankton Elements

MARINE biologists have been slow to recognize that the smaller phytoplankton elements which will pass through the finest nets are of great importance in the productivity of the oceans. In order to get some quantitative data on this subject for eastern Australia (lat. 33–34° S.), we have recently conducted experiments in which 44 gallons of sea-water were pumped into a drum and filtered through a phytoplankton net having 170 meshes per inch. The filtrate was collected and the particulate matter was spun out of 2-litre aliquots using a continuous centrifuge running at 13,000 rev./min. and having a slightly coned cup of maximum internal diameter 4.5 cm. and height 3.8 cm.

Both the net fraction and the centrifugate were examined microscopically, using the fluorescence of

chlorophyll, to count the photosynthetic organisms, and at the same time chlorophyll determinations were made. These determinations were carried out on acetone (90 per cent) extracts of the plankton at 665 μ in a Unicam SP 500 spectrophotometer.

It has been found that the chlorophyll content of the centrifugate is 25–3,000 times as great as that of the net plankton, while the counts of organisms are 10–10² as high again.

So far, no determinations have been made during diatom blooms, and it is proposed to continue these studies over an annual plankton cycle, in an estuary, and in the open sea.

From the above figures, it can be seen that the smaller phytoplankton elements (nanoplankton) may be of far greater importance than the diatoms and dinoflagellates, a fact which has been recognized by Atkins¹, Harvey² and others, but concerning which quantitative data are scanty.

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Further Chromosome Counts in Orobanchaceae

IN addition to the chromosome counts for British parasitic plants belonging to the Orobanchaceae already published¹, three new counts have been obtained for foreign species. *Orobanche cernua* var. *desertorum* Beck (Indian material) was found to possess a diploid complement of 38, as do other members of the subgenus *Osproleon*, while *O. ramosa* L.

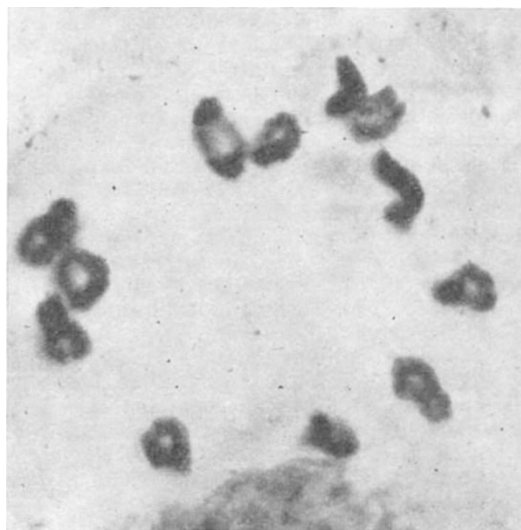


Fig. 1. *Orobanche ramosa* L. Diakinesis in pollen-mother cell. 12 bivalents (indicating $2n = 24$ chromosomes) may be counted. A single nucleolus is present. $\times 2,000$