The electrophoretic studies have revealed a major difference in the distribution of the 103,000 dalton band, generally acknowledged to be the ATPase[4]. In skeletal muscle microsomes this band represents the major protein constituent, whilst in cardiac vesicles the major components occur at 50,000 and 48,000 daltons; the 103,000 dalton band being considerably reduced.

There are two possibilities which could explain this apparent difference in protein distribution. Either the proportion of ATPase to other protein constituents in cardiac SR is much lower than in skeletal SR, or there is a compositional difference in the cardiac vesicular ATPase resulting in an altered electrophoretic profile. It is interesting to note that STEWART and MCLENNAN[10] have recently reported that brief tryptic digestion of skeletal muscle SR leads to dissociation of the ATPase molecule into 2 peptide fractions of molecular weights 45,000 and 55,000, without loss of ATPase activity.

Investigations are now proceeding to determine the ATPase activity of the individual isolated proteins from cardiac muscle SR with a view to establishing their functions.

Zusammenfassung. Die Protein-Zusammensetzung des sarcoplasmatischen Reticulums vom Herzmuskel wurde mittels Polyacrylamid-Gel-Elektrophorese untersucht und ihr Unterschied in der hauptsächlichen Proteinkomponente zum Skelettmuskel SR gefunden.

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'Cytosome', an Addition to the Cytoplasmic Organelles of *Taphrina maculans* Butler

Taphrina maculans Butler, an incitant of leaf spot of turmeric (*Curcuma longa* L.) in India, was first isolated in artificial culture by PAVGI and UPADHYAYA[1], who obtained 2 types of colonies, namely, 'salmon red' and 'creamy white', from a single infection spot. Both the colonies composed of unicellular blastospores, multiply by budding. Creamy white strain is long lived while salmon red dies gradually. The senescent colony becomes white.

Inspite of the fact that some of the earlier light microscopic findings have recently been corroborated by electron microscopic studies, much of the ultrastructural details in microorganisms are awaiting further investigation with the gradual improvement of the fixation techniques. Spores of *T. maculans*, after being exposed under the electron microscope, exhibited a novel type of organelle only in salmon red strain, whose morphology, chemical nature and a comparative account with regard to the previously described cellular components are described here.

Materials and methods. Both the strains were fixed for 2 h in a mixture of 3.5% glutaraldehyde and 2% paraformaldehyde prepared in phosphate buffer (pH 7.4) and post-fixed with 1% aqueous osmium tetraoxide at pH 7.3. Materials were dehydrated by passing through an ascending series of ethanol and embedded in epoxy resin. Ultra-thin sections were cut with Porter-Blum microtome I and stained with lead acetate for examination in an electron microscope JEM 7.

PICKETT-HEAPS's method[2] was used to determine the chemical nature of the new organelle. The material was treated with 1% aqueous periodic acid for 45 min at room temperature, preceded by 2% sodium bisulphite for 1.5 h at 60 °C. The material was transferred to 1% borate buffered hexamine (pH 9.2) containing 0.1% silver nitrate for 45 min at 50 °C. The sections were carefully watched during the later stages of incubation to prevent over-staining. Further treatment with 2% sodium thiosulphate for 15 min was followed by mounting the sections on copper grids for observation.

Results and discussion. Several round to spherical electron dense particulate bodies, named here as 'cytosomes' (cytoplasmic bodies), appeared extra-nuclear in the cytoplasm. They varied from few to about 35 in number in each section, possibly representing the approximate number in a cell and measured 250 × 200 nm in dimension. The wall was smooth, occasionally irregular and 7–10 nm thick. Small round to irregular electron dense material surrounded by white area was visible inside the cytosome (Figure 1). Such bodies were discer-

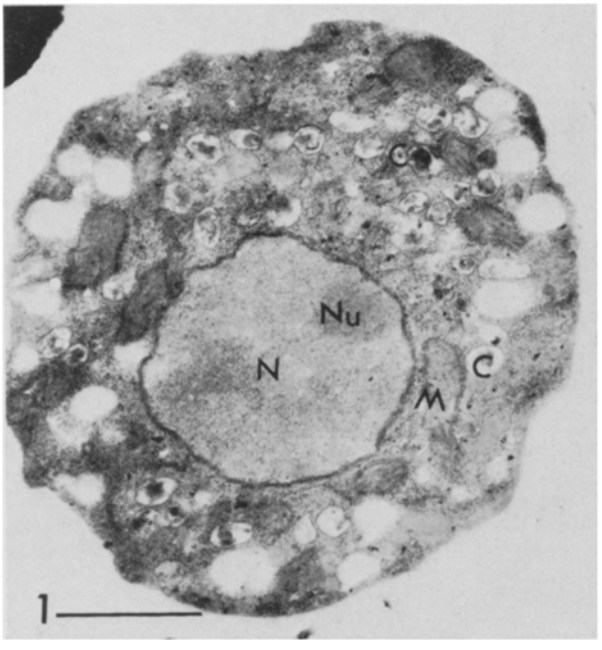

Fig. 1. Salmon red cell of *Taphrina maculans* Butler showing: C, cytosomes; M, mitochondrion; N, nucleus; Nu, nucleolus. Scale 1 μm.

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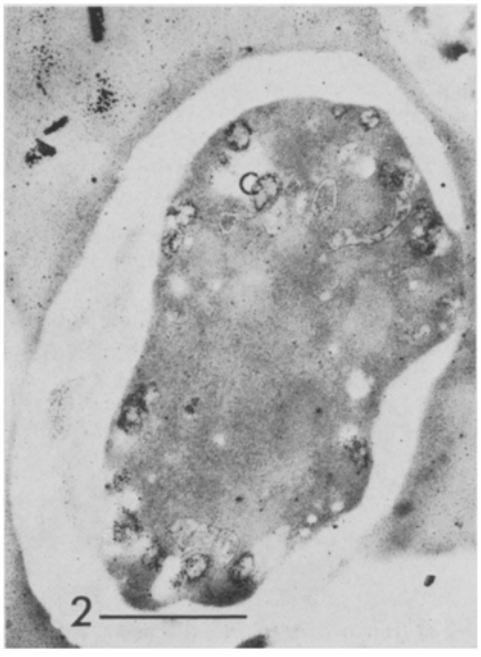

Fig. 2. Salmon red cell stained with periodic acid, buffered hexamine and silver nitrate showing: C, silver grains deposited on cytosome. Scale 1 μm.

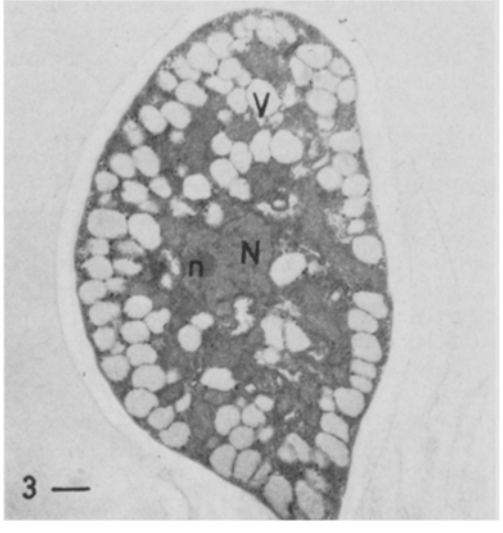

Fig. 3. Highly vacuolated creamy white cell showing constricted nucleus (N), nucleolus (n) and vacuoles (V) without cytosome. Scale 1 μm.

nible only in the red strain but not in the white one (Figure 3). The deposition of the silver grains on them (cytosomes) suggested their chemical nature as polysaccharide (Figure 2).

Evidence of cytosomes in *T. maculans* distinguishes it from the yeasts in its phylogenetic relationship, although species of the genus *Taphrina* were once considered very close to yeasts owing to the morphological conformity of the cultures[3,4]. The present organelle differs from the lysosomes in chemical nature and morphology. It also differs considerably from the peroxisomes reported earlier to occur in animal, plant and yeast cells, which possess high amounts of several enzymes and different morphology[5]. Gamma-particles in the zoospores of *Blastocladiella* appear to have a different function and morphology from the present cytosome[6]. Also vesicles of the hyphae reported by GROVE et al.[7] in *Pythium ultimum* can be differentiated on the basis of the fact that spores of *T. maculans* possess distinct vacuoles besides cytosomes. Hence, the present report presents preliminary evidence for the occurrence of a new organelle in the fungal cell[8,5]. The possible function and mode of cytosome formation can to some extent be speculated on the basis of our later work where massive intracellular synthesis of the cell wall during senescence might be triggered by the cytosomes[9].

Zusammenfassung. Elektronenoptische Beschreibung von «Cytosomen» in den Zellen vom Typus rot im Pilz *Taphrina maculans* Butler.

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Effect of Citrus Brown Mite, *Eutetranychus orientalis* (Acarina: Tetranychidae), Infestation on the N, P, K and Pigments of Sour Orange Leaves

Studies on the relationship between phytophagous mites and their host plants have been confined to the effect of nutrient elements on the development of mites[1-3]. It was concluded that mite populations were influenced by plant nutrition. However, few observations were reported on the effect of mite infestation on the chemical constituents of the host plant. For instance, it was reported[4] that the N, P and K of apple foliage were reduced as a result of high infestation by European red mite, *Panonychus ulmi* (Koch). *Tetranychus urticae* (Koch) infestation decreased assimilation and changed

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