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# Forgotten histories & possible futures: learning from 20th century fibres and films made from regenerated protein sources

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This paper explores the forgotten history of fibres and films made from regenerated protein sources such as milk, soyabeans, maize, peanuts, egg-white, feathers and slaughter-house products from historical, technological and ecological perspectives. It argues that learning from these experimental 20th century fibres can provide new approaches for creating sustainable fibres for the 21st century.

As war loomed, politicians and planners became anxious about the availability of wool for military requirements. Transforming surplus or waste proteins into fibres and films was actively encouraged. Major companies registered patents using regenerated proteins. Du Pont argued such 'new and valuable composition of matter comprising intimate mixtures of proteins and synthetic linear polyamides' resulted in strong, flexible films. Analysing the rhetoric of national duty and ideology associated with these materials illuminates their trajectory from futuristic and utopian to association with deprivation and substitution. Thomson's rubbish theory is used to analyse their disappearance from cultural memory. Evidence from these failed and forgotten fibre is reframed as the basis for new experimentation into sustainable fibres.

Material studies of these regenerated proteins draws on textual and visual archival sources, including patents, fibre samples, and rare surviving textiles and dress from international museum collections.

Contemporaneous technical literature describing historical methods of industrial production and use gains particular importance, bringing insight into chemical and physical expectations of the fibres with which to develop appropriate scientific methods for identification, and to investigate their material significance and preservation.

Issues of sustainability in relation to materials used for manufacturing textiles and the impact of such textiles during use (e.g. generation of microfibres) and at the end of their life will be discussed. These present opportunities for using waste materials for a sustainable fibre. Textile fibres produced from food waste that do not require any extra land use, whose microfibres have minimal impact in the environment, and that are fit for purpose could truly provide a next generation of material.

Deeper understanding of previous experimental work in the use of surplus/waste proteins to produce fibres and films, and cultural reactions to these materials, is valuable in developing innovative fibres to meet current ecological concerns.

**Keywords:** regenerated proteins fibres; films; sustainable fibres; cultural memory