Electronic Supplementary Information

A liquid chromatography-mass spectrometry (LC-MS) analysis of mauveine and phenosafranins in black precipitate from the Bradford Colour Experience Museum.

M. John Plater and Andrea Raab

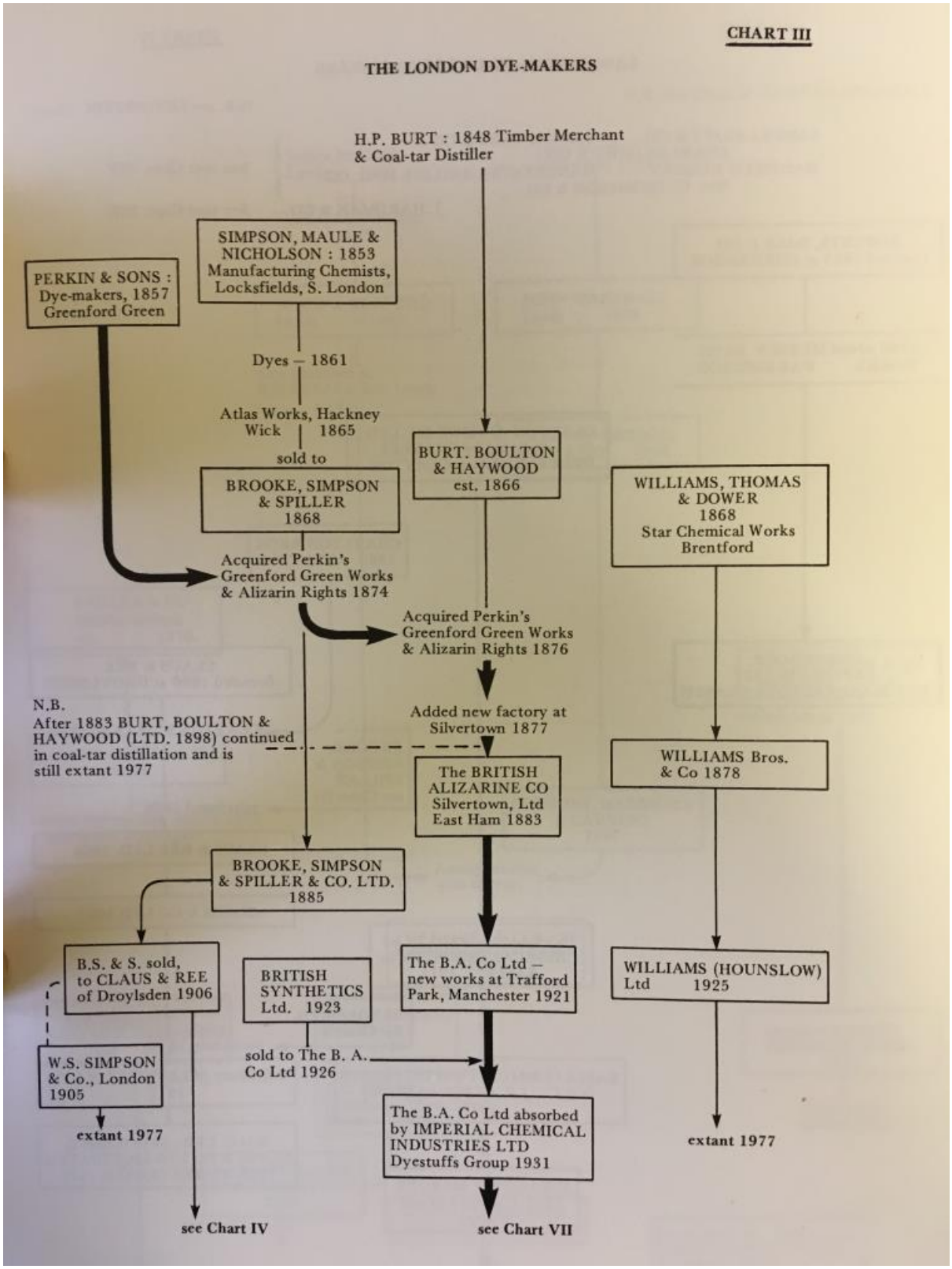


Figure S1 A chart of the London-Dye Makers.[2]

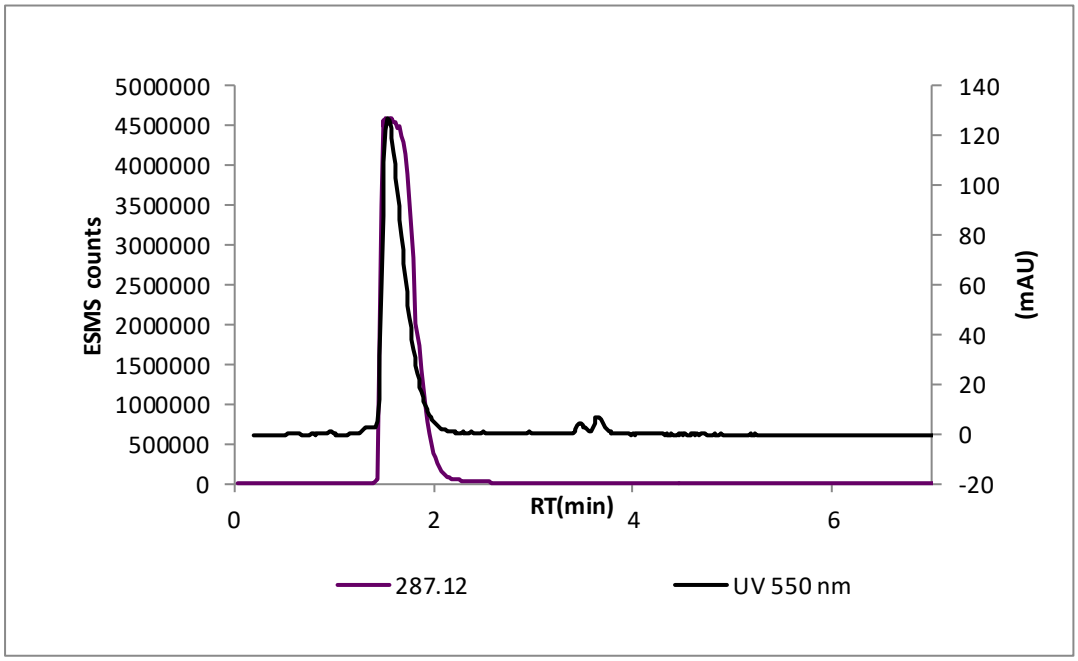
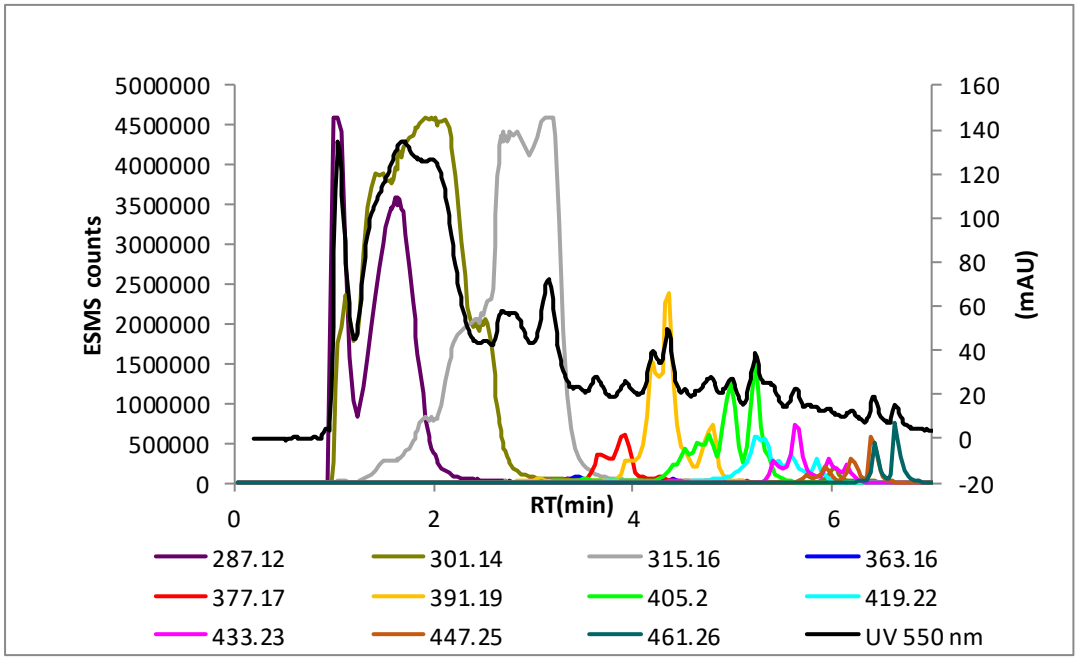


Figure S2 LC-MS analysis of phenosafranin. UV at 550 nm and extracted ion chromatograms.

RT(min)	*m/z* 287
1.6	99.1

Figure T1 Retention time and molecular mass for Figure S2



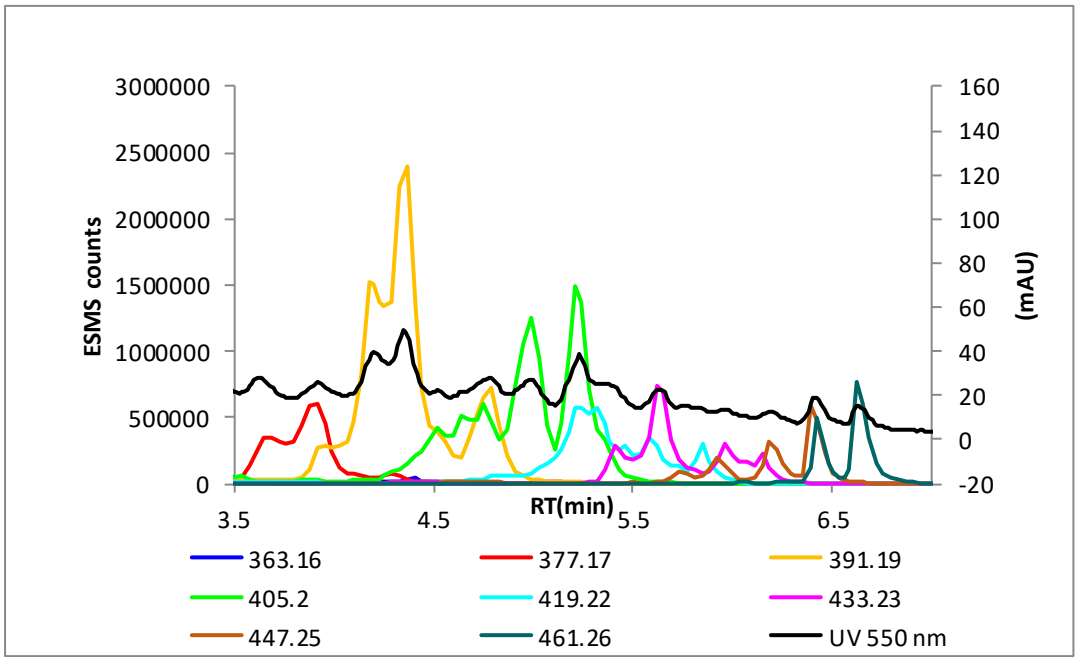


Figure S3 Top: LC-MS analysis of phenosafranins, residual mauveine, *N-tert*-butylmauveine A and *N-tert*-butylmauveine B in the red fraction separated from mauveine (extracted from a second batch of Colour Experience Museum black precipitate), by chromatography eluting with aqNH_3/EtOH (20:80); Bottom: An expansion of the top chart. UV at 550 nm and extracted ion chromatograms.

RT(min)	*m/z* 287	*m/z* 301	*m/z* 315	*m/z* 363	*m/z* 377	*m/z* 391	*m/z* 405	*m/z* 419	*m/z* 433	*m/z* 447	*m/z* 461
1.5	18.9										
1.7		4.1									
2.0		32.4									
2.2			2.5								
2.5		4.9	4.1								
2.8			4.0								
3.2			18.1								
4.4						2.0					

Figure T2 Retention time and molecular mass for Figure S3 Top. The peaks after 4.4 min are absent because they are below 1 % so the total is below 100%.

RT(min)	*m/z* 363	*m/z* 377	*m/z* 391	*m/z* 405	*m/z* 419	*m/z* 433	*m/z* 447	*m/z* 461
3.5	1.2							
3.9		6.9						
4.2			5.0					

4.4			18.1					
4.5				1.3				
4.6			2.4	2.1				
4.7				2.2				
4.8			5.1	4.7				
5.1					1.0			
5.3					2.7			
5.4					2.7	1.9		
5.5					1.5			
5.7						4.4		
5.6					2.4			
5.9					1.3		1.0	
6.0						1.0		
6.2							1.8	
6.4							2.6	2.6
6.6								3.4

Figure T3 Retention time and molecular mass for Figure S3 Bottom. Some peaks are below 1 % so the total is below 100%.

Figure S4 A photograph of a silica gel column used to purify mauveine chromophores for which the reaction precipitate has been subjected to an initial purification procedure by repeated extractions with boiling toluene, then extracted with EtOH. In the synthesis *N*-*tert*-butyl-*p*-toluidine hydrochloride was used in place of *p*-toluidine. The purple band of deprotected mauveine chromophores has already been eluted using the eluent of aqNH_3/EtOH (20:80). The red band shown is the *N*-*tert*-butylated mauveine chromophores. Note the striking white colour of the silica which can be reused for this column.