Table S1. Transcription of the W&N 19th c. weld lake pigment recipes.

Production name	Unique recipe code	Transcription of the recipe
Yellow from Weld	4PP148AL01 (copy in P4P088L01) WL1	*Yellow from Weld. (resembled New Yellow)" Oct. 10th 1836* 2890. Take about 8 gallon of water in a copper capable of containing 12 gallons, let it boil, add to it 3 lbs whiting broken small, add by degrees & in small pieces little at a time 12 lbs Alum. Keep the liquor boiling, stir frequently, when the alum is all neutralized, & the liquor does not taste of it, put out the fire, & leave it to cool. When cold draw off the supernat liquor, & preserve the sediments for the body of the lake (this body was unequal, improved by altering the process, see further on) 2891. In a 30 gallon copper put about 24 galls water, make it boil, when it boils, add about 5 or 6 gallons cold water and put in a bundle of weld, adding to the water 3 oz Sub. Carb. Pot to assist the extraction of the colouring matter, let it boil gently about 20 min, put out the fire and run the liquor through a sieve, & a filter underneath it to separate all the bits of weld. 2892. Clean vat the copper, return the filtered liquor into it, re-light the fire, when the liquor boils, add the body stirring well as the body is mixed with the liquor, let them boil for about an hour, stirring frequently, bale it out into a tub, leave it to stand a day, decant the supernatant liquor & throw the precipitate on a filter. This produced about 7 lbs Lake, rather pale because the body was not thoroughly homogeneous. The 2nd batch much improved by putting the alum 1st into the copper, letting it dissolve, and then adding the quantity of whiting in powder, a little at a time. _ the body was much smoother & better.
	4PP148AL14 (copy in P4P089L14) WL2	2893. *2nd Bundle - Dated Oct 15th 1836* The Body made as above mentioned by adding the whiting to the alum liq - much more even in texture, but the quantity of yellow was less which I cannot account for. it was only 5 lbs or very little more, the colour was deeper & looked brighter & Deeper when dry.
Yellow Lake. Cool tint.	P1P348AL01 (copy in X6P228L01) WL3	*"Yellow Lake. cool tint."* 927. 1 Bundle Welds weighing 28 lbs (Bot of Kilbecks Oct 5/54, cost s6/- bundle) mem. this is considered a very high price). 928. Middle Copper full of water, when boiling, the copper should contain about 25 galls, add 6 lbs Pearlash when dissolved, take the bundle of welds (whole) put it as it is into the boiling liquor with the flowers downward having the roots upwards & out of the water, boil in this manner about 20 min, draw fire, take the weld out & leave to drain a cross a ladder placed over the copper – ½ hour. Strain through very fine sieve & afterwards run through a filter cloth placed over a 250 gall Butt (empty) precipitate with 3 x 4 = 12 lbs powder alum (ammonia sort) sprinkled in, a powdered state state over the surface while another person stirs rapidly, this quantity of alum was found to precipitate the colour entirely, leaving only a very faint tinge of yellow in the supernatant, when the precipitate is perfect fill the butt up with cold aq. Filter, preps & dry off _ If dropped would produce a lively kind of yellow lake for sale &c. Greenish in hue, bright in the drop & full coloured, entirely free from buffiness must be got out of hand quickly or it will turn greenish in places & look unsightly. Produce 3 ½ lbs Note: When this lake is tried in oil it produces a very beautiful yellow lake _ very cool _ bright & strong _ but was not so transparent in deep tint as might be desired _ perhaps if made for oil it would bear being made a little weaker by using more pearlash & alum, & then it might prove more transparent.
Weld Yellow	P4P100L10 WL4 WL5	*Weld. Yellow* 3 galls water; 2 lbs Flowers of Weld (the ends); 2 oz Pearlash. The P Ash first put to the boiling water and then the weld. Boil 10 min (not longer) filter the liquid add 12 ounces alum when dissolved add 8 oz powdered Borax or instead of the Alum & Borax Hydrated Alumina may be added. no washing required."

Table S2. Peak area and percentage calculated for the compounds of the MeOH:H_2O extract and for all the W&N recipes. Peaks corresponding to the luteolin 3′,7-di-*O*-glucoside (3) and luteolin 7-*O*-glucoside (4) are highlighted in grey. The accurate mass for the deprotonated molecule of each yellow chromophore obtained by UHPLC- HRMS/MS is also represented.

Peak	$[M-H]^-$ *m/z*	Extract MeOH:H_2O		Yellow from Weld				Yellow Lake. Cool tint.		Weld yellow			
				4PP148AL01		4PP148AL14		P1P348AL01		P4P100L10 I		P4P100L10 II	
		Area	%	Area	%	Area	%	Area	%	Area	%	Area	%
1	593.1495	0,00323	1,06	0,00171	0,49	0,00385	1,11	0,00193	0,23	0,00372	0,71	0,00185	0,77
2	609.1443	0,00762	2,51	0,0136	3,88	0,01009	2,91	0,03981	4,78	0,01299	2,47	0,01096	4,58
3	609.1442	0,01495	4,92	0,05388	15,35	0,05975	17,25	0,17433	20,91	0,06928	13,17	0,0551	23,05
4	447.0927	0,16827	55,31	0,14263	40,65	0,14608	42,16	0,25227	30,26	0,27654	52,55	0,04451	18,62
5	431.0979	0,00896	2,94	0,02068	5,89	0,01899	5,48	0,06946	8,33	0,02552	4,85	0,02681	11,22
6	461.1082	0,01602	5,27	0,02114	6,03	0,01822	5,26	0,06193	7,43	0,03209	6,10	0,02338	9,78
7	447.0925	0,01729	5,68	0,02198	6,26	0,02001	5,77	0,06372	7,64	0,02654	5,04	0,02699	11,29
8	285.0406	0,01686	5,54	0,01395	3,98	0,02245	6,48	0,06604	7,92	0,02831	5,38	0,00923	3,86
9	269.0457	4,99E-04	0,16	0,000564	0,16	0,00148	0,43	0,00549	0,66	0,00107	0,20	0,00337	1,41

Peak area calculation was done by defining the time intervals for each peak, measured at λ=350nm. The area below the peak was integrated within this interval is measured and the percentage of each area is calculated dividing by the sum of all the peak areas. Peak identification: 1) apigenin-6,8-di-C-glucoside, 2) luteolin di-O-glucoside; 3) luteolin 3′,7-O-glucoside; 4) luteolin 7-O-glucoside, 5) api-genin 7-O¬-glucoside, 6) chrysoeriol glycoside, 7) luteolin 4′-O-glucoside, 8) luteolin, 9) apigenin.

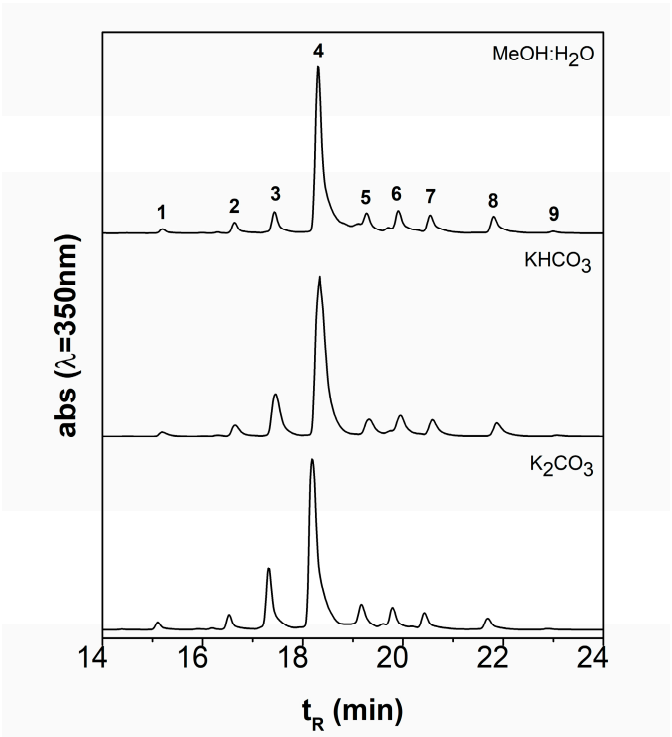

Figure S1. Chromatogram of different extraction of *Reseda luteola*, λ=350nm: MeOH:H_2O (70:30, *v:v*), $KHCO_3$ (as detailed in recipe *Yellow from Weld*.) and K_2CO_3 (as detailed in recipe *weld yellow*). Peak attribution: 1) apigenin-6,8-di-*C*-glucoside, 2) luteolin di-*O*-glucoside; 3) luteolin 3′,7-*O*-glucoside; 4) luteolin 7-*O*-glucoside, 5) apigenin 7-*O*-glucoside, 6) chrysoeriol glycoside, 7) luteolin 4′-*O*-glucoside, 8) luteolin, 9) apigenin.