

**China's
“Workers and Soldiers
Definitive Set of 1955-61”**

Scott #'s 273-281

Yang set R8

An Ongoing Investigation

The 2nd International Symposium on Analytical Methods in Philately

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Scott 273-281, Yang R8 set.

Printed by lithography.

Officials state there is only one variety (Shanghai printing, perf 12.5 of the 8 fen orange) in the set.

Officials say all printed on one paper type. Note color var of 2 fen green.



Sheet layout of 2.5 fen blue value, Scott 276

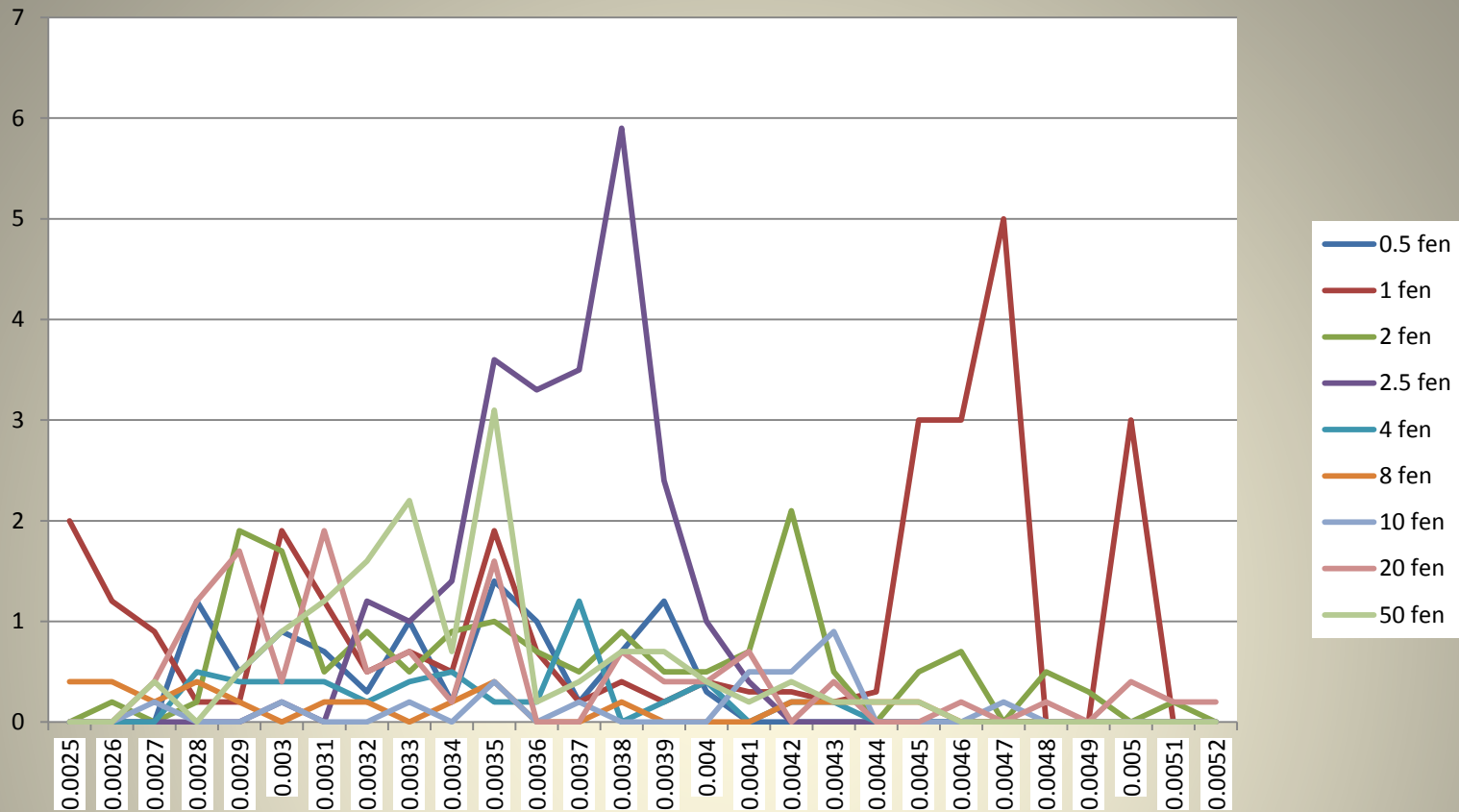
Note 23 across, 10 down format for 230 total stamps.

Sheet size 10.25" x 17.75"



Paper differences

Image of a drop of water on the back of the 10 fen value. The left copies took longer to be absorbed into the paper. The middle copies absorbed the water quickly. Photo taken 15 minutes after water added. The right copies are on a coated paper.



Data Table of paper thicknesses

Percentage of stamps of each denomination for each thickness.

Data based on 578 measurements.

Summary of Papers

1. Paper type(s) with sizing.
2. Paper type(s) with no sizing.
3. Paper type(s) with coating.
4. Paper thickness is highly variable.

Color

Color variation or lack thereof seems dependent on specific value.



Scan of those values without variations.

I have found no discernable color variations in these stamp values of the R8 set. There are paper variations however in all values but the 20 fen blue.



Scan of values with possible color variations.

When I look at a large quantity of each of these values, it appears there are possible color variations.

Scans of those with variation

Using Photoshop Essentials 13 HSB sampling of darkest individual pixel.

Left hand stamp				
1/2 fen brown value			Avg	
H	14	16	13	14.3
S	47	55	51	51.0
B	69	60	61	63.3
1 fen violet value				
H	318	312	322	317.3
S	40	44	47	43.7
B	53	51	49	51.0
2 fen green value				
H	137	140	140	139.0
S	52	52	54	52.7
B	49	49	53	50.3
8 fen orange value				
H	7.0	7.0	6.0	6.7
S	75	69	71	71.7
B	100	100	100	100.0

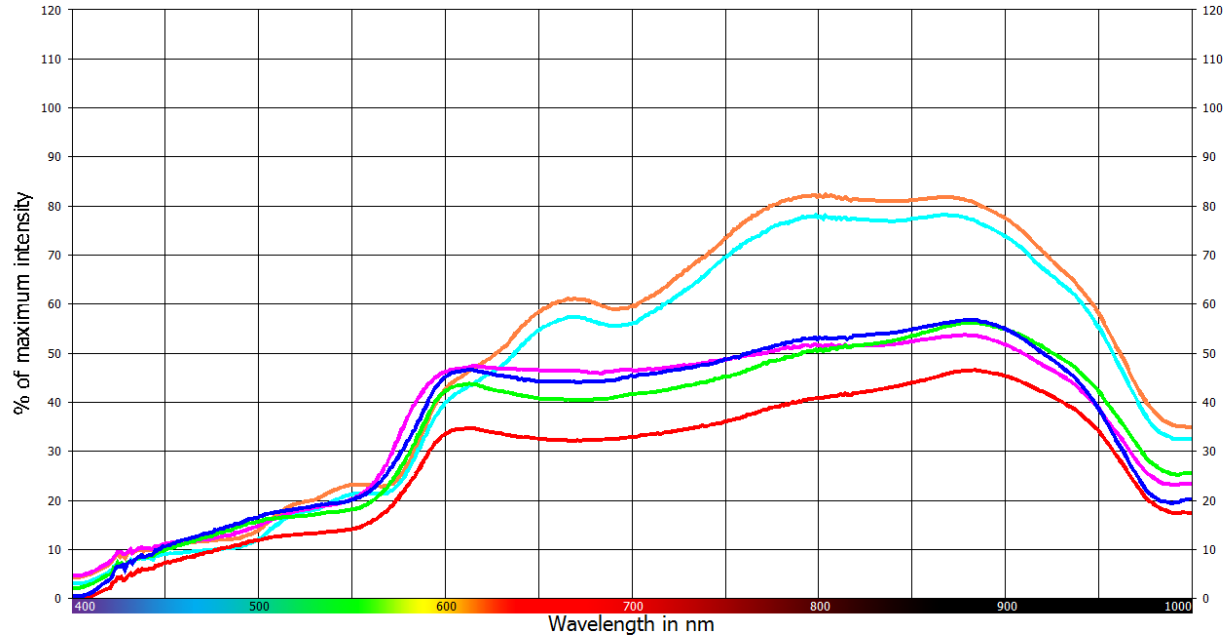
Right hand stamp					
1/2 fen brown value			Avg		% difference
H	16	17	16	16.3	14%
S	60	63	53	58.7	
B	64	65	63	64.0	
1 fen violet value					
H	330	333	330	331.0	4%
S	47	49	41	45.7	
B	61	59	62	60.7	
2 fen green value					
H	155	158	158	157.0	12.90%
S	18	20	23	20.3	
B	54	57	53	54.7	
8 fen orange value					
H	8	6	10	8.0	19.40%
S	70	73	75	72.7	
B	100	100	100	100.0	



Possible color variations in Scott 273, ½ fen brown.

Top three stamps (1-3) are one color variety, bottom three stamps (4-6) are possibly a different color variety. Note that all samples used are on opaque (with sizing) type paper.

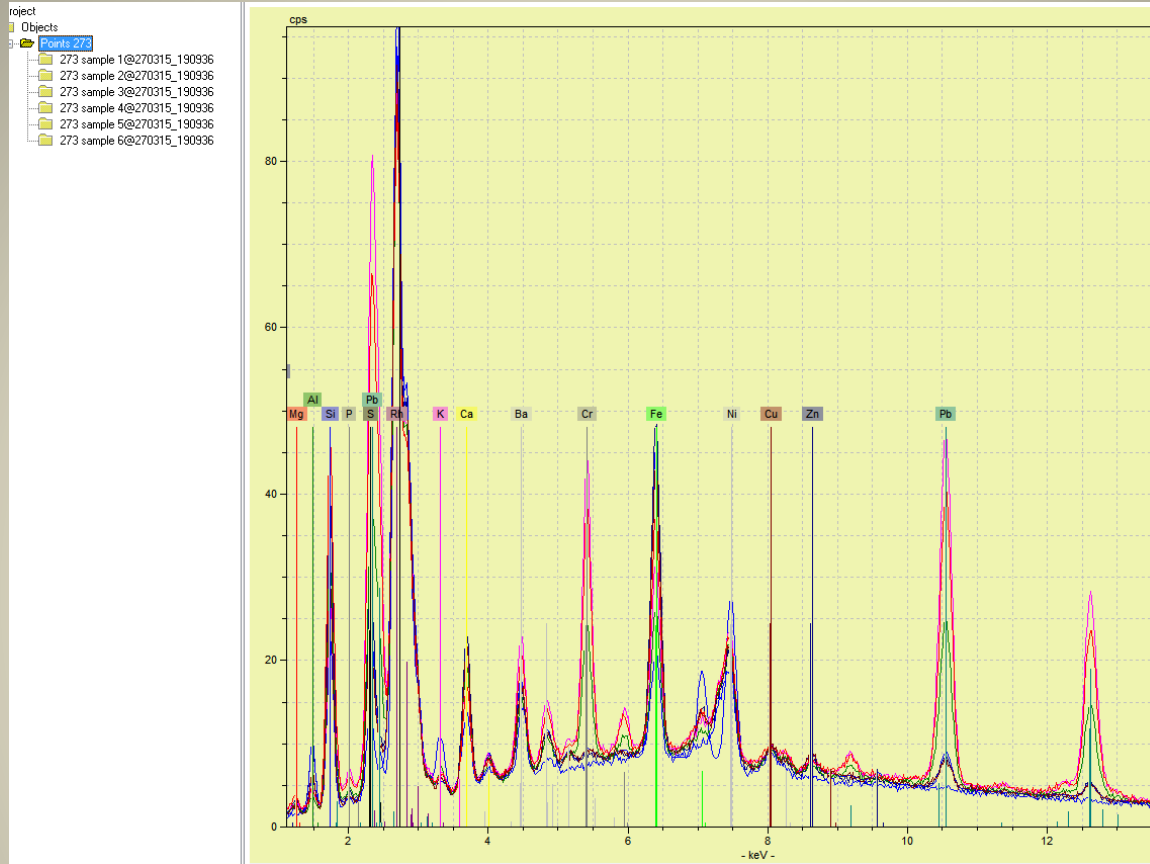
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2	Ref	273-2	12		
3	Ref	273-3	13		
4	Ref	273-4	14		
5	Ref	273-5	15		
6	Ref	372-6	16		
7			17		
8			18		
9			19		
10			20		



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VSC 6000 data for ½ fen brown

Graph of VSC 6000 data for three samples of two shades of the ½ fen brown value, Scott 273. At wavelength 650+/- the topmost three plots are samples 4-6.

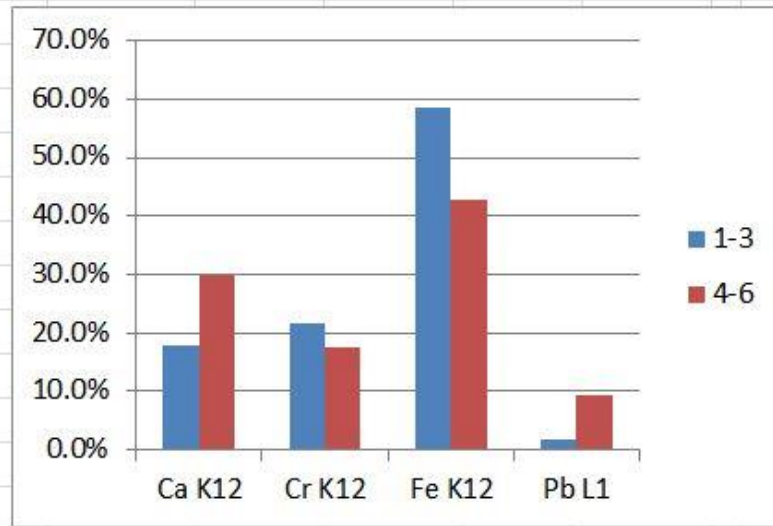
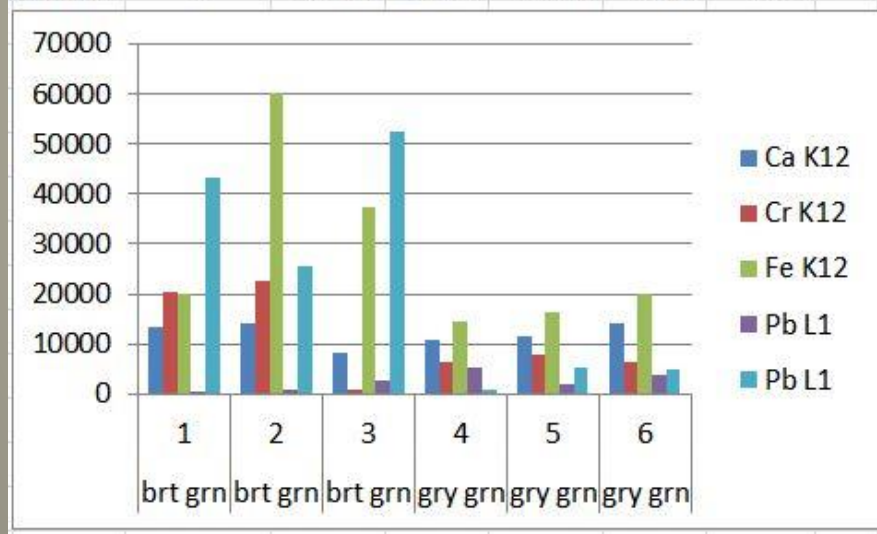


Bruker Tracer data for ½ fen brown

Graph of Bruker Tracer data for three samples of two shades of the ½ fen brown value, Scott 273.

Bruker Tracer analysis of six samples of 0.5 fen Scott 273

Color	Sample #	Ca K12	Cr K12	Fe K12	Pb L1	Pb L1	Averaged percentages						
brt grn	1	13413	20261	20178	2	43405	Averaged Percentages						
brt grn	2	14216	22795	60204	1031	25401	Color	Sample #	Ca K12	Cr K12	Fe K12	Pb L1	
brt grn	3	8090	785	37221	2670	52532	brt grn	1-3	17.8%	21.8%	58.5%	1.8%	= 99.9%
gry grn	4	10848	6428	14490	5210	794	gry grn	4-6	30.0%	17.5%	42.7%	9.4%	= 99.9%
gry grn	5	11449	7991	16291	2046	5134							
gry grn	6	13981	6486	20078	3917	4900							

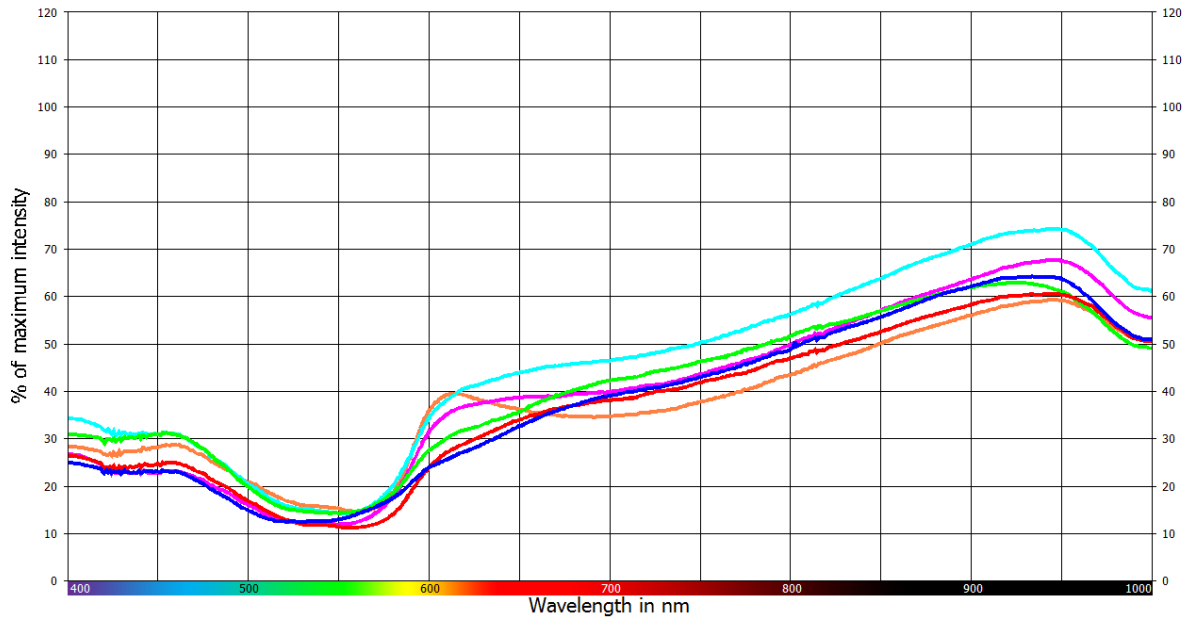




Possible color variations in Scott 274, 1 fen violet.

Top three stamps (1-3) are one color variety, bottom three stamps (4-6) are possibly a different color variety. Note that five samples are on opaque type paper. The top right stamp (3) is on translucent (no sizing) paper.

1	Ref	Scott 274-1	11		
2	Ref	274-2	12		
3	Ref	274-3	13		
4	Ref	274-4	14		
5	Ref	274-5	15		
6	Ref	274-6	16		
7			17		
8			18		
9			19		
10			20		



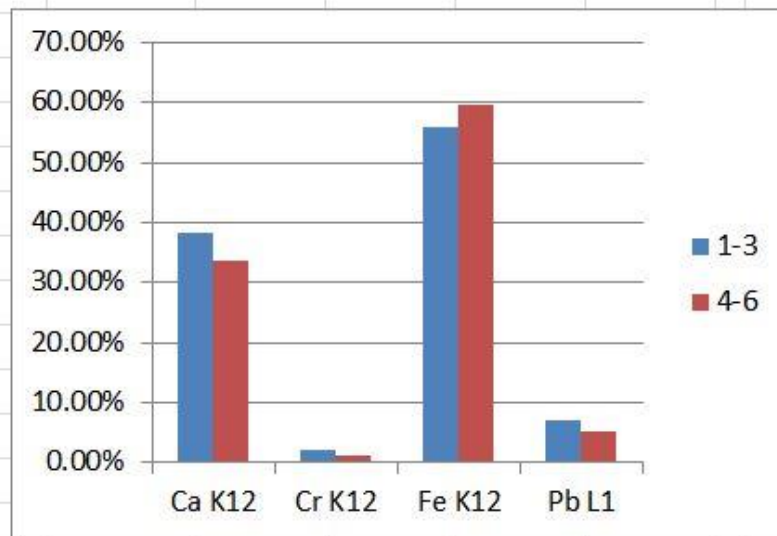
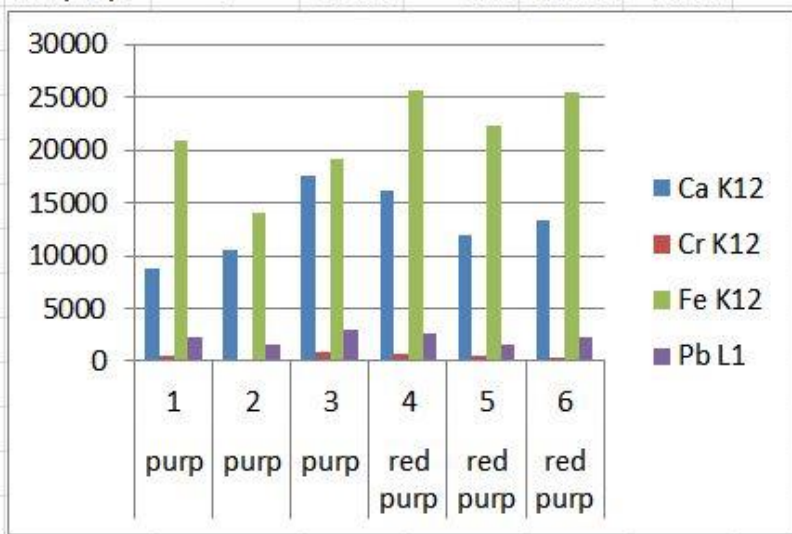
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VSC 6000 Tracer data for 1 fen violet

Graph of VSC 6000 data for three samples of two shades of the 1 fen violet value, Scott 274.

Bruker Tracer analysis of six samples of 1 fen Scott 274

Color	Sample #	Ca K12	Cr K12	Fe K12	Pb L1	Averaged percentages							
purp	1	8883	478	20883	2347								
purp	2	10587	261	14083	1619	Color	Sample #	Ca K12	Cr K12	Fe K12	Pb L1		
purp	3	17518	904	19155	3008	purple	1-3	38.20%	2.00%	56.00%	7.00%	=	103.20%
red purp	4	16181	751	25662	2688	reddish	4-6	33.70%	1.30%	59.70%	5.30%	=	100.00%
red purp	5	11920	472	22316	1618								
red purp	6	13426	388	25526	2265								

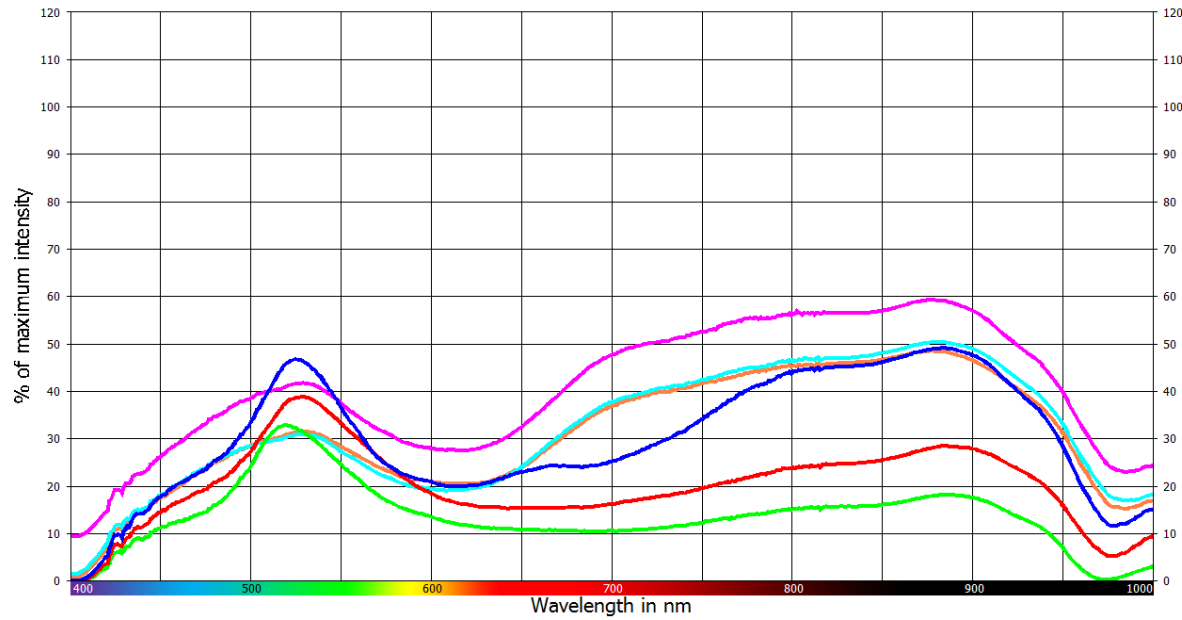




Possible color variations in Scott 275, 2 fen green.

Top three stamps (1-3) are a bright green, the bottom three (4-6) stamps are a grey green. This color difference was documented in *The China Clipper* in 2014, but based on only one sample of each.

1	Ref	275-1	11			
2	Ref	275-2	12			
3	Ref	275-3	13			
4	Ref	275-4	14			
5	Ref	275-5	15			
6	Ref	275-6	16			
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8			18			
9			19			
10			20			



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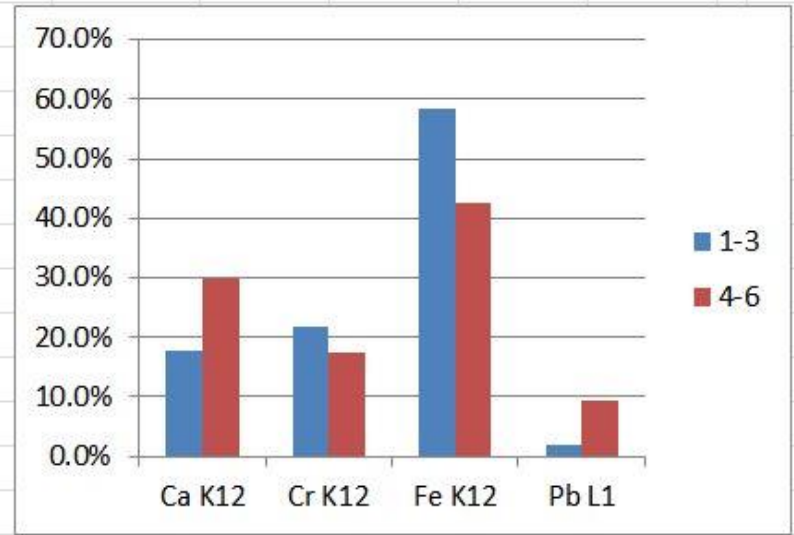
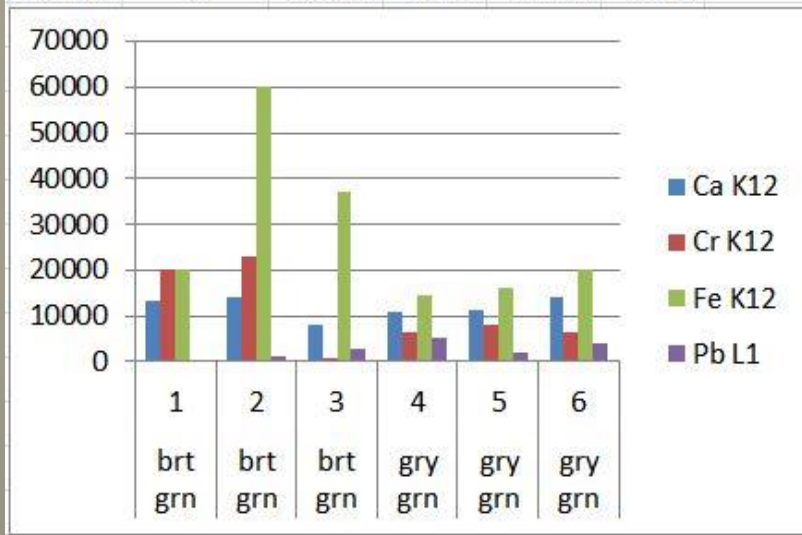
VSC 6000 data for 2 fen green

Graph of VSC 6000 data for three samples of two shades of the 2 fen green value, Scott 275.

Bruker Tracer analysis of six samples of 2 fen Scott 275

Color	Sample #	Ca K12	Cr K12	Fe K12	Pb L1	Averaged percentages								
brt grn	1	13413	20261	20178	2									
brt grn	2	14216	22795	60204	1031									
brt grn	3	8090	785	37221	2670									
gry grn	4	10848	6428	14490	5210									
gry grn	5	11449	7991	16291	2046									
gry grn	6	13981	6486	20078	3917									

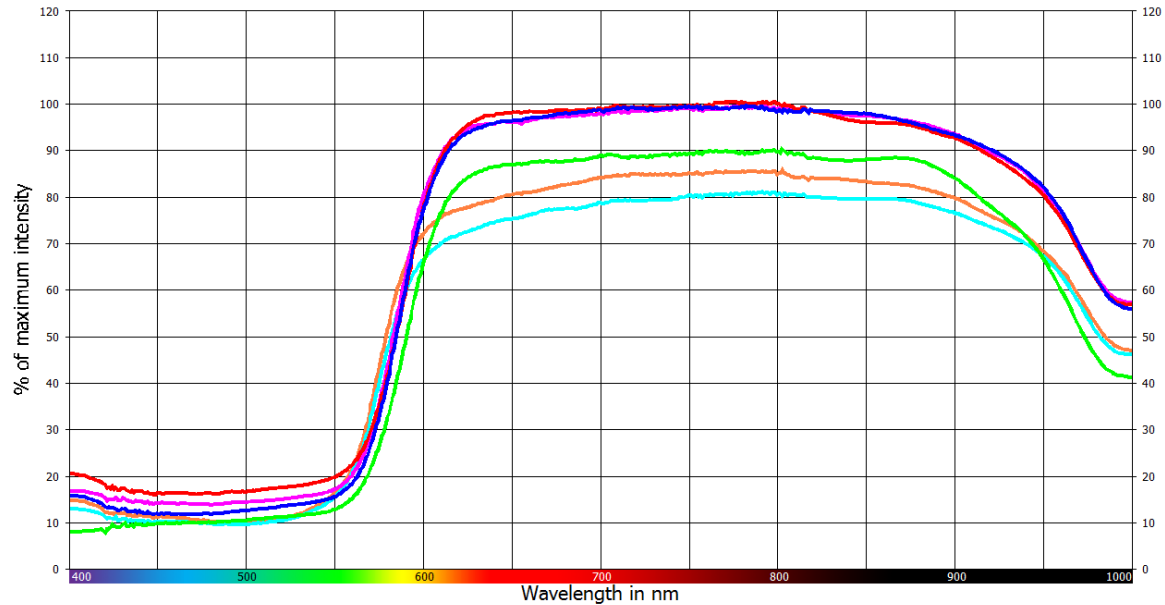
Color	Sample #	Ca K12	Cr K12	Fe K12	Pb L1		
brt grn	1-3	17.8%	21.8%	58.5%	1.8%	=	99.9%
gry grn	4-6	30.0%	17.5%	42.7%	9.4%	=	99.9%





Possible color variations in Scott 278, 8 fen orange.

1	Ref	278-1	11		
2	Ref	278-2	12		
3	Ref	278-3	13		
4	Ref	278-4	14		
5	Ref	278-5	15		
6	Ref	278-6	16		
7			17		
8			18		
9			19		
10			20		



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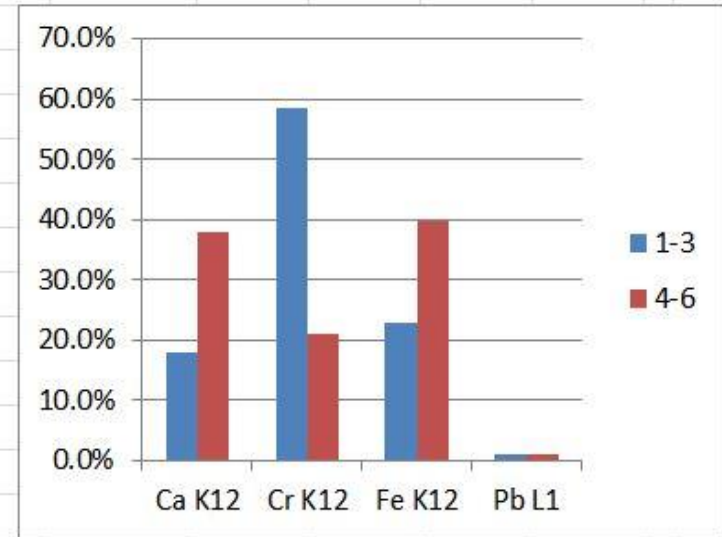
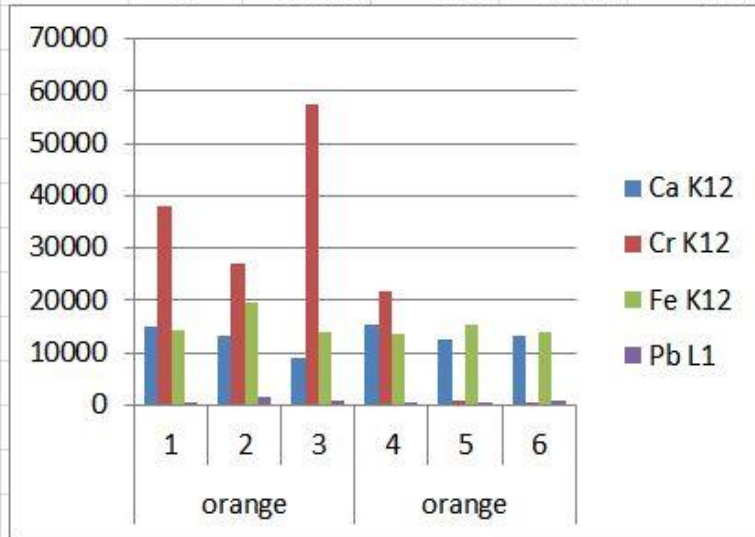
VSC 6000 data for 8 fen orange

Graph of VSC 6000 data for three samples of two shades of the 8 fen orange value, Scott 278. Note that sample 4 fits with 1 and 2 almost perfectly. Sample 3 fits more with 5 and 6.

Bruker Tracer analysis of six samples of 8 fen Scott 278

Color	Sample	Ca K12	Cr K12	Fe K12	Pb L1
orange	1	15045	38127	14192	1
	2	13318	27061	19586	1550
	3	8899	57346	14085	671
orange	4	15378	21701	13600	1
	5	12370	685	15473	436
	6	13231	380	13832	754

Averaged percentages					
Color	Sample #	Ca K12	Cr K12	Fe K12	Pb L1
orange	1-3	17.8%	58.4%	22.8%	1.1% = 100.10%
orange	4-6	38.0%	21.1%	39.8%	1.1% = 100.00%



Conclusions to Date:

- Different papers were used. Some of these differences can be identified.
- Different inks were used.
- More needs to be done to better understand the often confusing chemistry findings of H.Y. Cheng's PIXE study and this paper.
- Possible that this issue was printed over time as need for more stamps arose.

Thank You

A sincere “thank you” to the Institute for Analytical Philately and The National Postal Museum for supporting this research.

Special thanks to James Allen of the IAP and Tom Lera of the NPM.

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