

Bluish and "Clay" Paper Specimens of the 1908-9 Regular Issue on Cover

By R. H. White

A limited number of examples of the bluish and clay printings of the double line watermark issue of 1908-9 on cover has been recorded at The Philatelic Foundation. This article reviews the time frames and issuing dates associated with these stamps. Methods for distinguishing between the two types without removing the stamps from covers, and the inherent risk of altering stamp characteristics by attempts at removal, are discussed in detail.

General Information

A search and review of Philatelic Foundation records indicate that, except for the bluish paper 1-cent and 2-cent denominations, only a very few covers purporting to having been franked with a blue or clay paper specimen have been submitted to The Philatelic Foundation for expertizing. The results of the search are presented in Table 1. This table does not list the number of covers sent to the Foundation that were franked with other than bluish or clay specimens.

Numerous examples of 1-cent and 2-cent stamps on cover have been submitted as bluish varieties and rejected. It is possible that several or more may have been clay paper types and not recognized as such. In addition, specimens of the 1908-9 issue printed on a grayish appearing paper have been found to be "on a grayish-paper." This latter variety is neither experimental nor unusual, and the fiber and chemical characteristics do not distinguish it in any way from the normal all-wood pulp paper.

Identification of the various paper types no longer poses a problem to the Foundation. Analytical equipment and techniques have been developed that reduce to absolutes the few key

aspects of each paper type. To a large measure, these methods have been reviewed in published articles (see references). That information is presented in considerable detail and might be examined as further reference. For the purposes of this report, only information relevant to examples of bluish and clay paper examples on cover are included.

Fiber and Chemical Characteristics of Bluish and "Clay" Papers

Bluish papers were manufactured from a wood pulp stock containing approximately 30-35% cotton and/or flax fiber. Plant fibers such as cotton or flax are typified by long or more twisted stands with pointed ends. References (1) and (2) clearly illustrate those physical properties. Figure (1) pictures a single 1-cent on bluish paper on postcard, PFC #225965 superimposed on x-ray data showing presence of ultramarine pigment, sodium aluminum sulfo-silicate. This mineral was added to the grayish mixed pulp stock to give the finished sheet a whiter appearance.

Subjective approaches to the identification of bluish papers involving such criteria as paper thickness, watermark clarity, backwards/upside down watermarks, etc., have no place in a valid expertization process. By their very origin, bluish papers have most of the poor qualities of chemical pulp papers modified somewhat by their cotton/flax fiber content. They can be found with thin or thick gum, distinct or obscure cameo when viewed from the back, and variations in the bluish color. The latter factor is of course a function of the amount of ultramarine bluing added to the stock, which does not vary in the 3-cent to 15-cent denominations, of which so few were printed. Lighter and darker

Table 1
Tabulation of Bluish and "Clay" Covers
Submitted to The Philatelic Foundation

Type	Denomination	Number and Date of Usage	Origin	Certificate Numbers	Remarks
bluish	1 cent	23 from 2/09	numerous, but mostly Washington, D.C.	numerous	
clay	1 cent	2 - May and July 1909	both Washington, DC	225961 225962	PF Reference
bluish	2 cent	14 - from 2/09	many Washington , DC	numerous	
clay	2 cent	1 - 4/3/09	Barre, VT	225964	
bluish	3 cent	0			
clay	3 cent	0			
bluish	4 cent	0			
clay	4 cent	0			
bluish	5 cent	1 -10/24/10	Rockford, IL	81854	
clay	5 cent	1 - cancelled stamp		215317	off cover
bluish	6 cent	1*			
clay	6 cent	0			
bluish	8 cent	0			
clay	8 cent	1 - 4/6/09	Dennysville, ME	223345	
bluish	10 cent	1 - 9/14/1?		181222	
clay	10 cent	1 - cancelled stamp			off cover
bluish	13 cent	0			
clay	13 cent	2	New York, NY Brookline, MA	223346 223347	PF Reference
bluish	15 cent	0			
clay	15 cent	1 - 1/15/11	Utica, NY	225963	

* Reported sold at auction, but not submitted to PF

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specimens from the norm can be found in the 1-cent and 2-cent stamps and in the Lincoln Memorial issue, where the printings exceeded one million each. In any event, there is no need for speculation.

The cotton fibers are easily identified, and the bluish compound is readily detected by x-ray analysis -- both non-destructive methods. So-called "clay" papers contain neither vegetable fiber nor ultramarine blue as a whitener. Refer to Figures 1 through 4, on the opposite page, for differences in chemical composition between the various papers.

Bluish Papers On Cover

None of the subjective identification guidelines that were mentioned earlier (color, gum, clarity of watermark) can be used for expertizing covers. Stamp paper color usually appears darker when viewed against the brownish wood pulp cover papers which continue to darken with time.

Further degradation of the bluish papers occurs if the stamp is moistened in an attempt to remove stamp from cover for watermark detection purposes. Ultramarine blue, a rather chemically unstable mineral, will be faded or change color to a violet or greenish blue by moisture in the presence of the acid sulfate in the envelope paper of the period.

Although only a very few examples of bluish and "clay" papers on cover are available for comparison, it is obvious that one cannot distinguish them without fiber analysis or x-ray analysis of a bit of perf tip. Foundation reference covers should be examined.

"Clay" Papers On Cover

Several of the references cited review the origin of the so-called "clay" papers and why they in fact do not vary significantly in clay composition (essentially a mixture of aluminum and silicon oxides) from normal paper. The es-

sential difference lies in the presence of a cheap filler, calcium sulfate, a grayish white chemical that always imparts a brittle characteristic to the dried paper.

"Clay" paper is degraded by moisture, a portion of the filler material separating from the pulp. While not a problem for the unused original gum specimen, cancelled stamps on cover will lose their gray, brittle characteristics if removed from covers using water or water vapor.

Conclusions

- Covers of the 1908-9 issue printed on bluish, "clay," or gray papers cannot be differentiated without x-ray spectrographic and/or electron microscopy analysis of the paper composition and fiber content.
- Bluish papers will exhibit significant concentrations of ultramarine pigment in the margins or selvage.
- Bluish papers will show presence of cotton or flax fiber in the paper matrix when a perforation "bit" or fiber is subjected to electron microscope examination.
- "Clay" papers do not contain ultramarine blue in the pulp matrix, and do not have a cotton or flax fiber content.
- "Clay" papers always exhibit a high calcium and sulfur elemental content attributable to calcium filler.
- Gray papers are the result of poorly bleached pulp. They do not contain ultramarine blue pigment in the pulp matrix, nor plant fibers, and calcium sulfate is absent.
- Gray papers are not affected by water soaking. Bluish and "clay" papers lose both blue pulp color or filler if subjected to moisture.

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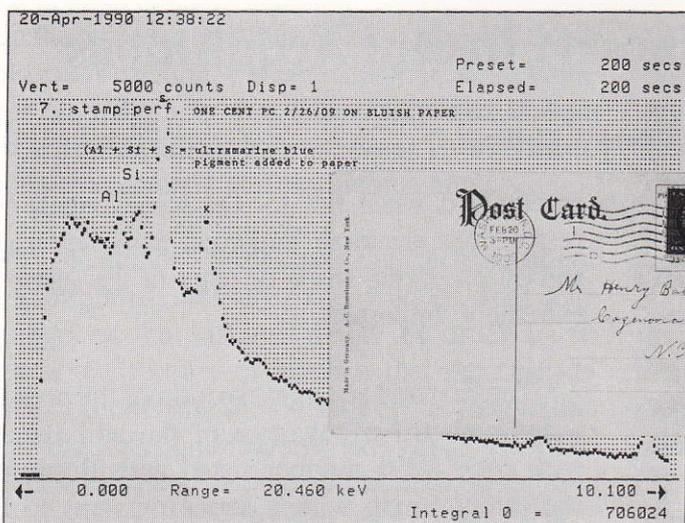


Fig. 1 illustrates peaks for aluminum (Al), sulfur (S) and silicon (Si), the elements present in ultramarine blue pigment in bluish papers.

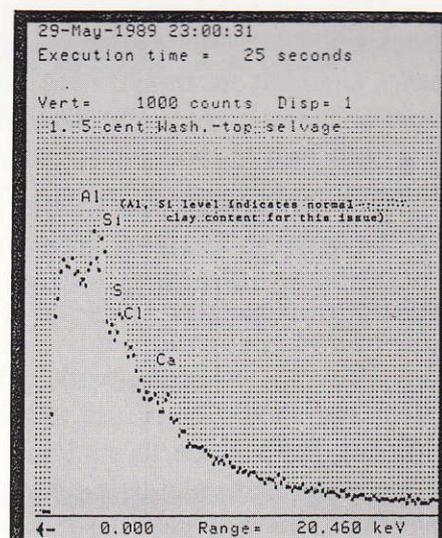


Fig. 4 illustrates the average aluminum and silicon levels for ordinary clay present in the later American Bank Note and early U.S. Bureau of Engraving and Printing issues. This stamp is a 5-cent specimen of the U.S. 1908-9 issue.

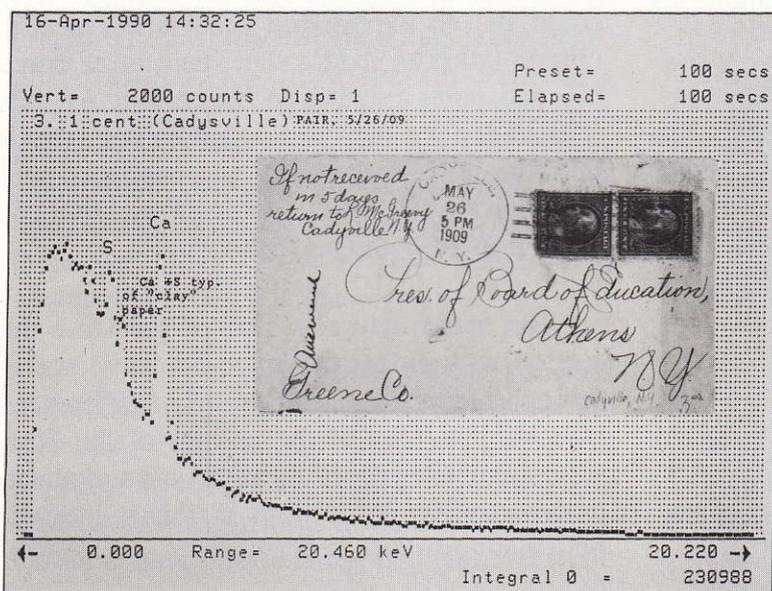
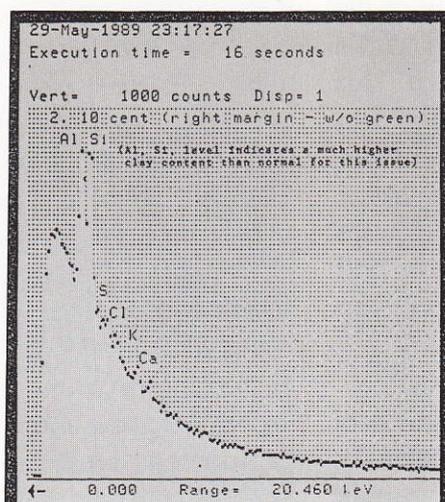


Fig. 2 shows the peaks for calcium (Ca) and sulfur (S), typical of "clay" papers.

Fig. 3 illustrates the elemental composition of the rare example of a chemical wood pulp paper containing a large amount of ordinary clay. This stamp, a 10-cent specimen of the U.S. 1895 issue, is in The Philatelic Foundation Reference Collection.



References

1. *Opinions V*, (E. C. Pope, ed.), "Forgeries of the Bluish Paper Varieties of the 1908-1909 Regular Issue," R. H. White, The Philatelic Foundation, New York, New York, 1988.
2. R. H. White, "Application of Electron Microscope and X-ray Analyses to Identification Techniques for Stamp and Proof Papers," *The United States Specialist*, Bureau Issues Association, Inc., Belleville, Illinois, Vol. 60, No. 6, Whole Number 714, August 1989.
3. R. H. White, "Experimental and Other Paper Varieties of the Double Line Watermark Issue of 1908-9," *The United States Specialist*, Vol. 59, No. 10, p. 459ff, Whole Number 708, Belleville, Illinois, October 1988.