

# Researching a Rarity: The "China Clay Papers"

By Robert Furman

## Part II

*(Ed. Note: In our previous Bulletin, Robert Furman discussed the history and background of the "China Clay Papers" as well as early research findings. We resume here with the research findings of Roy H. White and The Philatelic Foundation.)*



Figure 2

The paucity of certified examples is the principal cause of ignorance about these issues in the philatelic community. Their visual similarity to Bluish papers probably has caused some to be identified as Bluish and has thereby impeded their study. Confusion has reigned with regard to these issues, and only the recent application of scientific principles and research methods to philately has enabled us to effectively differentiate and define them.

In 1954 the Foundation certified its first specimen of China Clay Paper. Before the discovery of the blocks, the Foundation had examined many stamps purported to be China Clays and of these had given the following seven items Certificates as genuine:

<u>Scott #</u>	<u>PFC date</u>	<u>PFC #</u>	<u>Denom-ination</u>	<u>Description</u>
332	11/75	52 326	2c	VF Single
332	8/75	50 079	2c	LR Corner Margin block wide right selvage FVF centering
333	1982	105 241	3c	Block. VF centered
334	9/73	42 117	4c	Top margin block of 4, Type V imprint, right margin only, plate no. 5199, avg-f centered (Figure 3)
335	3/54	4 584	5c	XF single
335	12/63	18 152	5c	Bottom margin block of 6, plate no. 5379, Type V imprint & star, avg-f centered (Figure 2)
335	3/71	35 230	5c	Right margin strip of 3, Type V imprint & plate no. 5396, star, avg-f centered

The major find of China Clay Papers was made in 1981. The expertizing process for these stamps was extremely extensive and involved most of the major personalities and organizations in the philatelic world.

When obtained in early 1981, the study blocks were tentatively identified as China Clay Paper by the author, who proceeded to show them to other knowledgeable dealers, many of whom confirmed his opinion. With this, the Foundation was approached and accepted a 4c single, the 13c block, and the 15c block (Figure 1) for study.

Philatelic Foundation Certificate No. 98 887, dated June 26, 1981, was issued for the 15c block stating it to be "...340 var., unused, o.g., on China Clay Paper...genuine." Foundation personnel felt that rather than their undertaking examination of the entire grouping, it would be more appropriate to submit them for study to R.H. White, former Executive Director of the Foundation, who was actively researching them and seeking samples for examination with scientific equipment.



Figure 3

White had become interested in these stamps based on his professional interest in physics and chemistry as well as his work in philately. He believed that stamps could be studied scientifically and that by using sound scientific method one could determine whether overprints and cancellations are genuine via ink dating and analysis, paper composition and whether the gum is genuine by comparing the ingredients of original gum with later imitations.

White subjected the China Clay stamps to non-destructive testing through a series of x-ray examinations performed at his lab, at Rensselaer Polytechnic Institute, and at a private laboratory in California. The first step was to determine what substances were present in the paper that are not present in normal or Bluish paper. This involved the use of many different tests and a "rule out" methodology.

First, chemical China clay, or kaolin, was sought by testing for aluminum silicate, a compound present in quantity in kaolin. Neutron activation was performed. This is a test using neutrons to bombard a substance and then measure the intensity of the gamma ray emissions attributable to the aluminum compounds. It showed that normal and certified Clay Papers did not emit significantly different rays related to aluminum compounds. In fact, some normal stamps showed more aluminum content than did some known Clay Papers! We may thus conclude that Clay Papers do not contain significant kaolin (chemical China clay).

X-ray fluorescence and diffraction studies may be used to identify and quantify chemical elements present in paper. X-rays penetrating the paper react according to the elements they impact and those elements may thereby be measured as a ratio against other substances. The elements tested for and discovered in significant amounts were barium, calcium, zinc, lead and aluminum. The tests showed that regular and Bluish papers measured 5 to 8, and that suspected and certified Clay Papers ran from 12 to 20, on a relative basis. This is a very large difference and is scientifically convincing since these elements in the quantities found are known to cause major changes in appearance (darkness of paper, etc.).

A significant addition of the minerals cited above to stamp paper will cause it to become physically denser. Just as a cube of steel is denser than a cube of cotton, so a piece of stamp paper with a high mineral content will be denser than one containing only wood or plant fibers (as do normal or Bluish papers). A densitometer was used to perform density measurement of normal, suspected, and certified stamps, using beta rays transmitted at low energy. A denser material will stop more rays. Normal stamp paper was found to be 1.24 times as absorbent of the beta rays of radioactive calcium as is laboratory filter paper. Stamps certified by the Philatelic Foundation as Clay Paper stamps were found to be 1.27 to 1.31 times more absorbent, i.e. denser, than lab paper.

A report was written by White and transmitted to the author, the Foundation and Scott Publications. This report, which was the basis for the China Clay section of White's book (1), found that the one single that was tested from each block exhibited high mineral content and was gray and dense. Upon evaluating the report, the Foundation reviewed all of the stamps from the ten blocks discovered in 1981 and issued each single a certificate stating that they are 331-340 varieties on China Clay Paper.

Based on the foregoing, the Scott U.S. Specialized Catalogue for 1984 changed its note on China Clay Paper as follows:

"China Clay Paper. A small quantity of Nos. 331-340 was printed on paper containing a high mineral content (5-20%), instead of the specified 2%. The minerals, principally aluminum silicate, produced China Clay paper. It is thin, hard, and grayish, often darker than Bluish paper." (4)

It should be pointed out that the note was written when the research was incomplete and presumably will be refined in future editions as Scott determines the status of these issues. It is impossible to quantify the percentage of minerals in the paper. It has been demonstrated that the percentage of kaolin (chemical China Clay) present is minimal. One may state only that China Clay Paper contains a higher mineral content than regular or Bluish paper. Aluminum silicate (a principal component of kaolin) is not present in quantity in the paper stock; calcium, barium, aluminum, zinc and lead compounds are. The paper is of normal thickness, but is much denser (not thicker) than other Washington head papers, and is normally "hard" or brittle -- the "snap" test traditionally applied having thus been shown to be obsolete by White.

#### IV. Recognizing the China Clay Papers

##### Principal Characteristics of Regular, Bluish and China Clay Papers

<u>Characteristic</u>	<u>Regular</u>	<u>Bluish</u>	<u>China Clay</u>
Paper Color	Yellow-White	Medium Blue-Gray	Dark Green or Brown Gray
Watermark Clarity	Visible in Fluid	Visible w/o Fluid	Visible in Fluid
Clarity of Image	Clear	Somewhat Fuzzy	Prooflike

The principal characteristic of these issues is that the paper is darker than the regular items, and often darker than Bluish papers. Thus, when any philatelist spots a 331-340 with darker paper color, i.e., gray tinged with brown, green, or blue (noticeable especially from the gum

*Continued, page 11*

## "Researching a Rarity. . ." (continued from page 6)

side), it should be considered as possibly being either a China Clay or Bluish paper. If the stamp is fully gummed, the gray color will be very pronounced and will be distinguished easily from the yellowish tint of regular copies. Ungummed copies may be artificially grayed and should be skeptically examined.

If the stamp in question shows a watermark very clearly from the reverse, it is probably Bluish. If it shows a double line watermark in fluid, but not obviously upon visual inspection, it is probably China Clay. China Clays show a proof-like impression, although they are obviously stamps, and a few are known in multiples. Any such items should be submitted to the Philatelic Foundation.

The Foundation can compare any suspected China Clay with previously certified specimens and make an effective determination using the procedures indicated above.

Use of a 200-power laboratory microscope will help confirm any such finding as the density of the paper may be judged thereby. Clay Papers can be distinguished from Bluish since the latter show cotton or flax fibers (rag) and the former do not. Beyond this, any specimens may also be subjected to x-ray fluorescence and diffraction analysis and laboratory density measurement for conclusive scientific examination.

### Footnotes

(1.) *The Papers and Gums of United States Postage Stamps, 1847 - 1909*, R.H. White; Philatelic Research, Ltd., 1983.

(2.) Prior to 1924, the Bluish papers were carried in Scott as unnumbered minor varieties under each normal stamp.

(3.) No. 332 was added later.

(4.) "Thin" was changed to "thick" in the 1985 edition.

### APPENDIX A

#### Stamps Thought to Be China Clay Papers, Not Examined by The Philatelic Foundation

<u>Denom- ination</u>	<u>Description</u>	<u>China Clay per:</u>
1c - 15c	Blocks of Four	Philip Ward
1c, 5c, 6c, 13c, 15c	Singles, shown in White's Color Guide	R. White
5c	Star and Inscription Plate Block, Plate #5379 Bottom, VF	R. White
5c	Pane, Plate #5376, FVF	Phil. Jrnl. of Amer.
5c, 8c, 13c	Blocks, unused	ex. Charles Coolidge

APPENDIX B.

Philatelic Foundation Certificates for 1981 Find of China Clay Papers,  
as Assembled Into Complete Sets of Singles.

Scott #	Denomination	Certificate #'s (positions from blocks in parentheses)			
331	1c	114 433(LR)	114 449(UL)	114 448(UR)	114 434(LL)
332	2c	97 512C(LL)	97 512B(UR)	97 512D(LR)	97 512A(UL)
333	3c	114 438(LR)	114 436(LL)	114 435(UL)	114 437(UR)
334	4c	114 440(UR)	114 441(LL)	114 439(UL)	98 885(LR)
335	5c	114 443(LR)	114 451(UR)	114 450(UL)	114 442(LL)
336	6c	114 452(LL)	114 453(LR)	114 444(UL)	114 445(UR)
337	8c	114 446(LL)	114 455(UL)	114 454(UR)	114 447(LR)
338	10c	97 511B(UR)	97 511D(LR)	97 511A(UL)	97 511C(LL)
339	13c	98 886D(LR)	98 886C(LL)	98 886A(UL)	98 886B(UR)
340	15c	98 887A(UL)	98 887D(LR)	98 887C(LL)	98 887B(UR)

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