ABSTRACT. In 2003, the author obtained an 1865 cover franked with three Great Britain 1858–1879 1d plate 77 stamps (SG 43). If genuine, this is a very valuable and historically significant philatelic item. Discoveries of plate 77 stamps are always met with suspicion because they are so rare and have often been the subject of attempted fakery. This paper presents a detailed scientific study of this cover and the stamps. It begins by presenting a compilation of possible methods that might be used for faking the plate 77 stamps. It then develops an analysis plan that carefully examines each possibility. Appropriate analytical equipment is identified for each step in the process. Finally, the stamps in question are subjected to rigorous testing. The majority of the testing was performed by state-of-the-art, independent laboratories in the United Kingdom and the United States. Many different analyses were employed. These included optical and scanning electron microscopy, X-ray fluorescence spectroscopy, Raman spectroscopy, and more. The paper then presents the results of these analyses and the conclusions drawn from them. All of these data were reviewed by outside forensic experts in order to validate the scientific procedures. Two anomalies that arose during testing are discussed, and hypotheses are posed to account for them.

INTRODUCTION

An 1865 part cover (Figure 1), which was sent from Guernsey to Brussels, was written in the hand of the famed literary figure and playwright Victor Hugo, who resided at Hauteville House in Guernsey. Hugo lived on the island between 1855 and 1870. The letter, which was dated 27 November 1865, is addressed to his publishers La Croix Verboeckhoven in Brussels. This fact was confirmed by Mr. Adrien Legendre, specialist in books and manuscripts, Sotheby’s Paris, who confirmed as follows: “In my opinion, the handwriting on the envelope is Victor Hugo’s.” This cover will henceforth be referred to as the Victor Hugo cover.

The cover, sent from Guernsey to Hugo’s publishers in Brussels, was franked with three examples of the iconic Great Britain 1858–1879 1d stamp showing a plate number 77. The stamps were canceled with the Guernsey 324 duplex dated 27 November 1865. The cover also carried a “PD” mark in red and was hand stamped with the ANGLETRE/AMB. OUEST2- TPO mark and the BRUXEL arrival circular date stamp of 28 NO 65.

Because only a handful of accepted examples of this iconic stamp are known to exist, it is understandable the discovery of three used examples of this rarity on a part cover would be treated with much skepticism by the philatelic world. The purpose of this paper is to describe the analytical methods used to determine whether these stamps are genuine.
The accepted and provenanced stamps showing a plate number 77 have always been considered by the philatelic world to have been printed from plate 77. There was never a reason to question this fact, and with so few examples known there was never a need to research them.

Illustrated in Figure 2 are images of two of the accepted plate 77 stamps. These are the unused stamp BA (indicated by the letters next to the words “ONE PENNY”), now in the Tapling collection, and the used example stamp PH, the Fletcher copy, both in the philatelic collection at the British Library.

The discovery of the 1865 Victor Hugo cover franked with three examples showing a plate number 77 has shed a completely new light onto the origin of these rare and iconic stamps from Great Britain. Comparing the position of the corner letters of the three stamps and the presence of a major plate flaw confirms these three stamps originated from plate 73.

The image in Figure 3 is that of the imprimatur stamps from plate 73. The stamps in Figure 4 are from the Victor Hugo cover. The arrow indicates the distinct flaw under the letter “S” in the top right box on stamp SK. This flaw is mirrored on stamp SK (Figure 4) from the Victor Hugo cover, which shows a plate number “77,” and the corner letters are identical in their positions on both stamps.

These features undoubtedly indicate that the printers, Perkins, Bacon & Co., must have reengraved some impressions on plate 73 with the plate number “77” clearly before 27 November 1865, the date the three stamps were canceled, and in view of the great rarity of this trio must have then corrected them back very soon afterward using the plate 73 transfer roller to their original plate number 73. Plate 73 continued to print stamps until early 1868, printing a total of 529,900 sheets.
The discovery of this remarkable cover, which is franked with three stamps that undoubtedly show interesting philatelic anomalies, necessitated in-depth research into all the accepted plate 77 stamps.

For the purpose of this discussion, this paper will be divided into two sections: first, a comprehensive scientific investigation to rule out the possibility of faking or counterfeiting these three stamps and second, research into plate 77 and the accepted stamps showing a plate number 77 with discussion on why and how the reengraving was carried out and the possible reasons for producing “plate 77” stamps in this way.

THE COMPREHENSIVE SCIENTIFIC INVESTIGATIONS

What is in question is the following: have three stamps been manipulated and altered in five different locations to the extent of altering five printed figure “3”s into five faked figure “7”s; have the paper fibers in these five small areas been disturbed, moved, or altered; and has any foreign ink been used in order to carry out this faking process?

Having examined these stamps the moment they were discovered using a light microscope at ×100 magnification and a UV light, no evidence whatsoever has been found of any faking, fiber disturbance, evidence of painting, or any other attribute that would indicate that these stamps have been manipulated.

In order to obtain an endorsement from the expert philatelic bodies, the stamps were first presented to the Royal Philatelic Society London (RPSL) and then to the Philatelic Foundation of New York (PF) for an expert opinion (Figure 5).

The RPSL Expert Committee issued a certificate of opinion, number 194446 dated 13 September 2006, which stated “stamps are not from plate 77 but have been faked in each case using a stamp from plate 73.” On 3 October 2006, the RPSL reiterated its opinion by stating the plate 73 numbers had been modified into 77s through a “cut and paste” method.

The PF Expert Committee issued certificate number 457736 dated 6 November 2007, which stated “The stamps are not from plate 77, rather the second digit of each stamp has been altered to resemble a 7.” The PF expert responsible for this opinion believes this was done through “abrating to un-inked paper and painting.” The certificate is hand-stamped in red with the words “ALTERED OR COUNTERFEIT.”

These two opinions, which allege that the stamps had been faked, necessitated scientific analysis, the only route by which one can establish their validity.

It is worth mentioning that the alleged alteration would have to have been carried out five times on the five visible 7s on three stamps, on most of which the cancel falls over the second “7.” This faking would need to have been done on an area that does not exceed 2 mm in width, with the downstroke of the number 7 measuring 0.6–0.8 mm (Figures 6 and 7). This is a very small area indeed for such complicated faking work to be carried out.

In order to establish the stamps have not been tampered with, the Victor Hugo cover and the three “plate 77” stamps were subjected to a wide variety of scientific examinations by renowned organizations that used state-of-the-art scientific equipment. The services of two independent forensic scientists, Mr. Robert Radley, who specializes in the field of document tampering, and Professor Alan Jamieson, both of the Forensic Institute, were also employed.

The following possible methods of alteration were investigated:

Removing stamp design elements:
- inlaying (i.e., cut and paste),
- scraping,
- powder blasting or laser obliteration, and
- chemical erasure, partial or complete.

Adding stamp design elements:
- retouching small areas and
- retouching the whole “diamond.”

Table 1 summarizes the various possible methods by which the stamps could have been altered and the various scientific examinations that were used in order to determine their validity.

THE SCIENTIFIC METHODS USED TO ESTABLISH NONTAMPERING

Scanning Electron Microscopy Surface Analysis of the Paper Fibers

Scanning electron microscopy (SEM) is a form of microscopy that allows for the large magnification of an area, providing an almost three-dimensional image, making the analysis of
SEM uses an electron beam to trace over the surface of an object, dislodging electrons from the surface, which are in turn attracted by a secondary electron detector. This produces an image by registering different levels of brightness on a monitor.

SEM provided by Reading Scientific Services Ltd. (RSSL) was used to study the surface of the right-hand “7”s to see if there were any fiber disruption or the addition of foreign paper fibers, and as can be seen in Figure 8, the surface is completely untouched.

The two SEM images in Figure 8 are from stamp SL on the Victor Hugo cover. These clearly show the paper fibers are matted together and completely intact and undisturbed.

The SEM image in Figure 9 is the left-hand “77” on stamp SK, shown in backscattered mode. The heavy elements forming the printing ink show up brightly within the diamond. It is important to note that both “7”s show similar “dark” features. If the right-hand figure “7” originated from a cleaned or a bleached figure “3,” then the figure “7” would not have been as clear and

FIGURE 5. The PF and RPSL certificates.

FIGURE 6. Images of (top) the figure 73 from a plate 73 stamp and (bottom) the figure 77 from stamp SK on the Victor Hugo cover.
definitive as it appears as existing elements from the ink would still be present. Furthermore, there is no indication of any previous number being present.

If the figure “7” had been derived from a figure “3” as shown on the left, then the areas marked with arrows on the SEM image would appear as bright spots where the ink from the figure “3” would have been.

Figure 10 shows two photomicrographs of the right-hand figure “7” from the right panel from stamp SK. The image on the left was taken by Professor Gene Hall at Rutgers University, and that on the right was taken by the RSSL. The identical features of the left-hand “7”s can be seen between both images. It is also interesting to note that the small area of disturbed fibers in the center of the diagonal of the figure “7” clearly illustrates the fact that had the area been disturbed in order to alter the number, then such a feature would be prevalent throughout the diamond area.

**X-Ray Microfluorescence**

X-ray microfluorescence (EDXRF) is a nondestructive method for detecting and analyzing the elements in inorganic substances. The XRF spectrometer measures the individual component energies of the X-rays emitted when the sample is irradiated with an X-ray beam. A spectrum is produced that depicts those elements found in a specific area.

EDXRF was used by both Professor Gene Hall and the RSSL in order to analyze the elemental components of the ink used to print the stamps. Both the right-hand and left-hand “7”s were analyzed in order to look for similarities or differences together with a normal plate 73 stamp for comparison.

Figure 11 is a plot from an EDAX International (Mahwah, N.J.) micro EDXRF Eagle II spectrometer used by Professor Gene Hall. EDXRF revealed the diamond inked area around the second “7” in plate number “77” contained the same elements (Hg, S, Pb, Ca, K, Al, and Si) as in the diamond inked area around the first “7” with additional elements of barium (Ba) and...
chromium (Cr) in a spot location and was not homogenously distributed around this diamond inked area. The elements Ba and Cr were not found in the diamond area around the first “7” in the plate numbers “77” and “73” examined.

Both “7”s showed that identical elements were used for the printing ink. In addition, the right-hand “7” showed extra trace elements of chromium, barium, and phosphorus, which can only be regarded as plate contaminants originating from the plate-making process.

**Raman Spectroscopy**

Raman spectroscopy is another nondestructive method of analyzing the inorganic components in the printing ink. The
The difference between this and EDXRF is that Raman excites molecules rather than atoms. It works by irradiating molecules using light from a laser beam. The irradiated molecules will produce Raman scattering, which is measured and identified. Raman can determine the chemical compound that these elements belong to. This is only possible if the chemical compound is in a reasonable concentration and the compound is a high Raman scatterer.

Raman spectroscopy was used by Professor Gene Hall to analyze the molecular components of the ink used to print the stamps. Both the right-hand and left-hand “7”s were examined in order to characterize similarities and/or differences.

A Renishaw (Hoffman Estates, Ill.) system 1000 Raman microscope equipped with a Leica microscope was used to analyze the chemical composition of the pigments in the printing inks used on the stamps. Raman scattering in the stamps was produced by excitation with a 785 nm diode laser. The beam size of the laser was 2 µm, using a x50 objective lens, and the laser power at the sample surface was reduced to 15 mW to prevent any damage due to burning of the stamps. Emphasis was focused on areas around the second “7” diamond area, which showed the presence of additional elements of Ba and Cr from the EDXRF analyses.

Raman analyses revealed the red pigment in the printing ink was composed of vermilion (HgS) and red lead (Pb₂O₃). Unfortunately, the chemical compound associated with Ba that was determined by EDXRF could not be identified. Chromium, the trace element also found using EDXRF, was identified as lead chromate; this was not homogenous or part of a faking ink, according to Professor Gene Hall.

The Raman scan in Figure 12 shows the presence of lead chromate in the sample point on the second “7” from a stamp on the Victor Hugo cover. The red/orange trace shows the sample point from the stamp on the cover. The blue trace shows the Iconofile cinnabar cold and the black trace, the lead chromate (Aldrich) standard. Since the sample point has only traces of lead chromate, they show only as small, but significant, “bands” in the scan.

The band at 842 cm⁻¹ of the lead chromate, which must be very strong, is particularly weak in this case, as can be seen in the trace in Figure 12, indicating that this compound is present in minute trace quantities.

The Raman plot in Figure 13 expands the right-hand side of the sample shown in Figure 12. The red/orange trace shows the standard for vermilion (HgS), while the two blue traces show the red color in a plate 73 stamp AB reference copy (upper trace) and a plate 77 stamp on the Victor Hugo cover (lower blue trace). Vermilion was used to print both reference stamp AB and the diamond area of the second “7” from the Victor Hugo cover.

**Profilometry/Topography**

Profilometry was used to study the topography of the surface and to look at the figure “7” in three dimensions. In this way one can eliminate the possibility that faking has taken place, through paper fiber disruption and painting. Furthermore, a recessed “7,” if seen, could be produced only via impact, as with a surface relief printing process. The work was carried out at the RSSL using a Keyence VHX-600E digital microscope.

The resulting images (Figures 14 and 15) are astounding. Not only can one see the right-hand figure “7” as recessed, but enlargements show that the paper fibers are totally untampered and, as can be seen from the images, run in and out of the figure “7,” changing in color as they do. Furthermore, even bigger enlargements show the white fibers of the “7” totally devoid of any ink particles, colored or “bleached.”
FIGURE 12. Raman spectra comparison diamond area around second “7” in plate “77.”

FIGURE 13. Raman spectra comparison of red ink on the diamond area around the second “7” and “3” in plate numbers “77” and “73.”
Infrared Light

Infrared luminescence and reflectance can be used to show the effect of any chemical treatment. Infrared light from an IR source and from a comparator was used to observe any differences between the two “7”s. An ACO Electronics QDX-630BE-2 Questioned Document Examination System was used for these observations.

The infrared image (Figure 16) of stamps SK and SL is seen at 695 nm. The right-hand “7” in each label shows up darker than the right-hand “7.” This anomaly was observed by myself, Professor Allan Jamison of the Forensic Institute, and Mr. Robert Radley of the Forensic Document Laboratory. While it certainly did not mean faking, this anomaly did require addressing and an explanation. For this observation to be deemed as faking, several other factors must also be observed in order to confirm that the stamps were faked, factors such as fiber disruption, faking inks, abrading, painting, chemical manipulation, or the insetting of paper. Clearly, even from the most basic of observations it was confirmed this did not happen.

FIGURE 14. Depth composition analysis of the top of the right-hand “7” from stamp SL from the Victor Hugo cover. Such a recess of a colorless area can be produced only through impact between the plate and the paper at the time of printing and cannot be produced through faking.

FIGURE 15. Micrograph showing top section of magnified “7” on RHS of stamp SL from the Victor Hugo cover.
The scientific evidence has confirmed that there was a total lack of any tampering with the paper fibers or the application of any faking ink. This must mean that the trace elements of barium and chromium must have been introduced during the reengraving process that was carried out on the plate in the right-hand diamond area on which the number was altered from a figure “3” into a figure “7.” The already existing left-hand figure “7,” which was not altered, does not show the presence of these trace elements.

**Ultraviolet Light**

High- and low-intensity ultraviolet light was also used to examine the stamps. Such a process may show if the areas under question have been chemically treated or have been retouched.

There were no differences seen between the two “7”s under UV light (Figure 17). This image was viewed at a wavelength of 365 nm using an ACO Electronics QDX-630BE-2 Questioned Document Examination System.

**Microscopy**

Optical microscopy is another useful way of examining these stamps, bearing in mind the far more elaborate methods that were used. Using light microscopy at magnifications of up to x140, no fiber disturbance was noticed. As we can see from Figure 18, which was obtained from a printed area of stamp SK at a magnification of x100, the paper fibers are matted and very much interwoven, and any tampering, abrasion, scraping, or removal of these fibers would undoubtedly be clearly seen under this magnification.

**CONCLUSION**

**Conclusions of the Experts**

The following conclusions, summarized in Table 2, have been extracted from the five reports obtained from the five scientific experts and expert groups who have examined the stamps first hand. It is clear they are unanimous in their conclusions.

1. Professor Gene Hall, Rutgers University
   “I found no evidence to support the hypothesis that paper fibers were removed or added to the second ‘7 diamond region’ on all three stamps. In addition, the chemistry of the inks surrounding all ‘7s’ are identical except for differences in concentration.”

2. Mr. Robert Radley, the Forensic Document Laboratory
   “I find no evidence of substance to significantly support the proposition that the stamps in question have been modified by an obliteration of a numeral ‘3’ from a ‘plate 73’ stamp and subsequent alteration of the ‘3’ to a numeral ‘7’. The technical difficulties in modifying a ‘plate 73’ stamp to a ‘plate 77’ stamp are immense and from a detailed examination of the cover in question, I find the combined evidence is inconsistent with such a procedure having been adopted.”

3. Professor Allan Jamieson, the Forensic Institute
   “Therefore, in the absence of evidence to the contrary, the scientifically logical conclusion is that the stamps have not been ‘faked.’”

4. Mr. Tom Ray, Microscopy Laboratory Manager, Reading Scientific Services Ltd.
   “I can confirm that by using a range of microscopy techniques (i.e. stereo light microscopy and scanning electron microscopy using secondary and back-scattered imaging modes), we found no evidence in terms of fiber disruption (such as deliberate tamper by scraping, cutting or adding fibers) during topographical examination of the second ‘7 diamond’ regions on all three stamps. In conclusion,
FIGURE 18. The image on the right is a ×100 enlargement of a small area (left, black arrow) from the top of the right-hand “7” of the SK stamp from the Victor Hugo cover. The general matted appearance of the paper fibers at this magnification is clearly visible, and any fiber disturbance would also be visible under this magnification.

<table>
<thead>
<tr>
<th>Modification type</th>
<th>Analytical method</th>
<th>Microscopy</th>
<th>Near-visible light</th>
<th>Spectroscopy</th>
<th>Profilometry</th>
</tr>
</thead>
<tbody>
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<td></td>
<td></td>
<td>Optical</td>
<td>Scanning electron</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inlaying</td>
<td>No fiber disruption</td>
<td>No fiber disruption</td>
<td>n/a</td>
<td>n/a</td>
<td>No chemical difference</td>
</tr>
<tr>
<td>Scraping</td>
<td>No fiber disruption</td>
<td>No fiber disruption</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Powder blasting or</td>
<td>No fiber disruption</td>
<td>No fiber disruption</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>laser obliteration</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemical erasure</td>
<td>n/a</td>
<td>n/a</td>
<td>No visible</td>
<td>No visible</td>
<td>No fiber disruption</td>
</tr>
<tr>
<td>Retouching small areas</td>
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<td>No visible</td>
<td>difference, no</td>
<td>Note 1</td>
<td>No fiber difference, no</td>
</tr>
<tr>
<td></td>
<td>difference, no feathering</td>
<td>feathering</td>
<td>difference</td>
<td>Note 1</td>
<td>feathering</td>
</tr>
<tr>
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<td>No visible</td>
<td>difference</td>
<td>No chemical</td>
<td>No visible difference</td>
</tr>
<tr>
<td>diamond</td>
<td>difference</td>
<td>difference</td>
<td></td>
<td>difference</td>
<td></td>
</tr>
</tbody>
</table>

*The fluorescence noted under infrared light was confirmed by EDXRF and Raman spectroscopy to be from chromium found near the second 7s of all three Hugo cover stamps. As discussed in the text, this is believed to have been a contaminant introduced in the printing process.*
no evidence was found of the addition or bleaching away of additional layers of pigment in order to change a ‘3’ into a ‘7’, or any fiber disruption (e.g. through deliberate tamper by scraping, cutting or the addition of fibers) during depth composition examination of the second ‘7 diamond’ regions on any of the stamps examined. Again, there is no evidence that extra layers of pigment have been added in order to convert a ‘3’ to a ‘7’. Individual fibers from the paper can be traced, again showing no evidence of tamper."

5. Dr. Hans Hagemann, University of Geneva

"Further inspection of the paper fibers do not suggest any mechanical action (scraping) on the stamps, in agreement with the observations in the ‘Hall’ report."

**PLATE 77 RESEARCH**

There is no doubt the three stamps on the Victor Hugo cover show a plate number 77 that originated from plate 73. The corner letters match, and the flaw in the “S” box of stamp SK is common on both the stamp and the imprimatur proof.

The fact that there is no evidence of tampering can only mean that Perkins, Bacon & Co., the printers of this issue, altered the plate numbers on some impressions from plate 73 to a number 77.

This procedure was certainly irregular, so why do it? Perhaps it was one of the following reasons:

- a failed experiment at a temporary repair or marker number,
- a misunderstanding between the printers and plate makers,
- an unauthorized act at Perkins, Bacon & Co.,
- an effort to make a collectable stamp, or
- a mixture of these.

In fact, 66 impressions on plate 73 are documented in both the Perkins, Bacon & Co. printing records and the Inland Revenue records as having been reentered.

As far as the origin of stamps showing a plate number 77, my research has revealed that there are only two possibilities for how these stamps came into existence (Najjar, 2008a, 2008b, 2009a, 2009b, 2009c).

According to the Inland Revenue document IR79/79, pages 41 and 42, held at the National Archives, plate 77 was not registered or put to press, and no sheets were printed from it when the issue went to press in March 1864. The plate was rejected in a letter from Ormond Hill, secretary at the Board of the Inland Revenue, to the printers Perkins, Bacon & Co. dated 7 February 1863 and was defaced in February of that year.

The first possible origin is from the rejected imperforate and ungummed trial sheet(s) printed over a year before this issue was put to press. The sheet(s) that should have been destroyed would have had to be stored, then perforated, gummed, and released amongst the ~13.2 billion stamps printed but not before someone knowing their importance removed the four known unused examples from the top of the sheet. This gives us odds of finding a used example, say, stamp PH from the one trial sheet released to the public, as high as 1 in 13.2 billion.

If these stamps did originate from the trial sheet(s), then one would expect the impression to be pristine and the plate numbers on all stamps to look identical in shape and position. They would also exactly match the roller impression from which they originated. However, close examination of all the accepted stamps showing a plate number “77” reveals that they do not (Figures 19 and 20).

**FIGURE 19.** Great Britain 1858–1879 1d red plate 77, an uninked impression taken from the transfer roller, the Board of Inland Revenue Stamping Department Archive, list 4, volume 12; plate 77, BA, unused, the Tapling Collection, Great Britain section, page 2 and plate 77, PH, used, the Fletcher Collection, volume 81, page 2. The black arrows indicate the two dashes next to each figure “7” on the roller impression. These are a fundamental feature of the master die yet are absent on both stamps BA and PH. Courtesy of the British Library Philatelic Collections.
In fact, I have examined thousands of these stamps from every known plate, and the shape and position of the plate number do not vary in any way apart from the expected inking vagaries on some. This, however, is not the case with the accepted plate 77 stamps.

The right-hand column of Figure 20 shows the two dashes against each number “7” present on the roller impression, which are absent on both stamps BA and PH (black arrows), and the short and misshapen figure “7”s (yellow arrows). The left-hand column shows the dissimilar figure “7”s and, most important, the position on the intersection on which they fall (yellow arrows). These could not have originated from a trial sheet produced from this roller impression.

The second possible origin is through reengraving some existing plates with the number “77.” Although this was quite an incredible procedure adopted by Perkins, Bacon & Co., this is a valid possibility because the existing plate 77 stamps show anomalies that cannot be explained by the trial sheet theory but can be explained only by reengraving.

The anomalies in the figure “77” on all the accepted plate 77 stamps cover are as follows:

- None of the figure “77”s match each other in shape and position as they should if they had originated from one roller impression.
- They lack a fundamental feature that appears on the master die.
- They show signs of wear that cannot be so had they originated from pristine trial sheets.

There are 13.2 billion stamps matching their plate numbers in shape and position, yet the few accepted stamps originating from the alleged proof sheet are all different. Why?

The alteration of the plate number to a number “77” could have been done by hand engraving directly on the plate, which would have been carried out either by the movement of the metal within the diamond area in order to produce the figure “7” or by the insertion of a plug on which the new number was engraved. Both methods have been replicated in the laboratory, proving that such an action could have easily been done by the master engravers of that time.

My research into the 1858–1879 issue and the origin of plate 77 stamps, the imprimiturs and the roller impressions, plate 73 and both the documented and undocumented plate repairs, the scientific evidence, and other matters relating to the Victor Hugo cover are fully published on my Web site.1

There is no doubt that the discovery of the Victor Hugo cover has caused a major controversy amongst philatelists and philatelic experts, a few of whom opted for the faking option in view of the incredible rarity of this major philatelic item and the way that these “plate 77” stamps were produced.

However, had it not been for my unwavering belief that the stamps and cover were completely genuine, the extensive use of state-of-the-art forensic science and scientific equipment and the involvement of internationally recognized forensic scientists, all of whom and without exception have found the stamps to be completely untampered with, then an extraordinary world-class philatelic gem of the greatest importance and the unique and most revealing research that it has generated would have been sadly buried for all time.

NOTES

1. Adrien Legedre, email message to author, 21 May 2012.
8. Gene S. Hall, Ph.D., Professor of Analytical Chemistry, Rutgers–State University of New Jersey, Department of Chemistry and Chemical Biology, Wright-Rieman Laboratories, letter dated 1 April 2010.


11. Mr. Tom Ray, Technical Specialist, Microscopy Laboratory manager, RSSL, letter dated 30 March 2010 and Examination and Analysis of Three Penny Reds—Penny Red 77, report dated 29 February 2012.

12. Dr. Hans Hagemann, Department of Physical Chemistry, University of Geneva, 30 Quai Ernest Ansermet, CH-1211 Geneva 4, Switzerland, letter dated 5 October 2010.


REFERENCES


SUGGESTED READINGS


