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Expert Committee Technical Report

Submission of a Potential Two Cent Large Queen on Laid Paper for Expertization
Spring 2013

A Two Cent large queen was submitted to the Expert Committee in March 2013 showing laid lines in the paper. It was not an obvious fake. Accordingly considerable analysis has been undertaken to determine if it is genuine. If so it would be the third known genuine copy. A photo of the stamp follows:

Origin and Provenance

The submitted stamp was purchased by the collector early in 2013. It came from a sales circuit book. There was no description of paper type. The cost was very modest. It was simply a Hamilton dated copy with creases and a tear. He was checking Large Queens for watermarks using back lighting. This has been confirmed by the submitter who is known to a member of our Expert Committee. The submitter believes he was not the first person to see the particular circuit book.

There seems to be nothing obviously suspicious about the origin of the stamp.

Nature of Analysis

Given the potential significance of the item we decided to do as much analysis as necessary and to be sure we could defend analytically why it was determined to be either genuine or a fake. It will not be sufficient to say it “does not feel right” if the decision is negative. We will need to determine how it was created. Equally we will ensure a positive decision can be supported scientifically and analytically. The Foster + Freeman VSC6000 is the scientific tool used to enhance our analysis.

In order to complement the examination by members of the Expert Committee, additional known experts on the Large Queen issue were brought to the Foundation with their material to examine the submitted stamp and to provide extremely useful and important knowledge. Specifically, Richard Gratton, Glenn Archer and Lawrence Pinkney were most helpful.

There were no less than twelve different aspects of the submitted stamp that were examined in relation to Two Cent Large Queen stamps and laid paper varieties in particular.

General Understanding of Large Queen Paper

Committee members Portch, Taylor and Nixon spent a day with Richard Gratton understanding paper making in the latter part of the 19th century, how pulp was applied to a wire mesh or screen, and how wires could be added to the wire mesh to create visible laid lines in the paper.

The wire mesh on the paper making machine is stretched and flows in a large loop and carries the pulp.
We understand that all paper has a mesh. The mesh visible within the paper runs in the direction that the wire mesh runs in the machine. Looking at this lengthwise down the wire screen, the mesh will appear to run away from you or run vertical as opposed to having a horizontal prominence running across in front of you.

Whether the paper as viewed on a printed stamp has a vertical versus horizontal mesh has nothing to do with production of the paper. It only indicates the direction that the paper was fed into the printing press. Pieces of paper cut from the same stock or roll can be fed into the printing press at right angles to each other. When the stamp sheet is printed and viewed one will show a vertical mesh, the other a horizontal mesh.

The prominence or visual strength of the mesh has to do with whether the steel mesh in the paper making machine had become more stretched and is related to the thickness and bulk of the pulp or the type of fibres (cotton, hardwood or softwood) which predominated in the pulp. If the fibres are highly refined the mesh will be less visible. Bothwell paper shows a strong coarse pattern which emanates from a less refined pulp and a stretched steel mesh. The vertical grain in the printed stamp is simply the result of the direction the paper was fed into the printing press.

Large Queen stamps were printed on damp paper. After printing the paper shrinks slightly across the grain of the mesh. We see stamps as either horizontally (H) meshed or vertically (V) meshed with varying degrees of strength to the mesh. For the same stamp value those copies which are (V) will measure taller and narrower than those which are (H). The difference in height, for Large Queen stamps is about .3mm between (H) and (V) meshed stamps. This is a very important feature.

Specialists such as Duckworth have classified printings of Large Queen stamps by direction of the mesh, its visibility and paper thickness. It is critical to understand these differences in paper characteristics when analyzing large queen printings. Much of this is summarized in an article by Gratton in the Canadian Philatelist July/Aug. 2012.

Measurements

We have performed measurements on a wide range of One, Two and Three Cent Large Queen stamps. We can confirm the differences in height and width for vertically meshed versus horizontally meshed copies. The easiest vertical (V) meshed stamp to use as a standard is the Bothwell/watermarked paper, since the mesh is very visible. A number of

common papers such as Duckworth papers 3 or 10 show the horizontal (H) mesh clearly and can be used as a standard. It is preferable to pick the maximum width or height just to get more distance when measuring. This will produce a difference of about .3mm in both height and width, as indicated above. When testing for vertical versus horizontal on a stamp in question one needs three stamps – a known (V), a known (H), and the stamp in question. It doesn't really matter which point on the outer frame of the stamp you pick for measurements as long as you pick precisely the same points on each stamp, obviously.

Addition of Laid Lines in Paper Production

Laid lines were added in the late 19thC. paper production process by attaching wires across the wire mesh, thus at right angles or perpendicular to the flow of the wire mesh carrying the pulp in the paper making machine. This important feature has been confirmed by Gratton, Archer and research material available on the internet. The result is that by definition large queen stamps which show horizontal laid lines will measure as vertically meshed stamps because the laid lines were applied perpendicular to the flow of the mesh in paper production.

We focused on One and Three Cent Large Queens, and made use of the article in Canadian Philatelist, July/August 2012 by Gratton on Large Queen papers. We then focused on paper 5 which is the laid paper variety. We had a number of One and Three Cent copies available to us which we considered genuine and all measured (V). It is fair to say that, in the past this was not a test performed by the Greene Foundation Expert Committee to determine genuineness of a One or Three Cent stamp submitted as laid paper.

As the result of this current analysis, it seems clear that this should be the first test in the process.
Essentially if a stamp showing horizontal laid lines measures (V), it has a chance of being genuine. This is a good but not sufficient test. If it measures (H), it is almost certainly a fake.

The submitted Two Cent stamp does measure as a vertically (V) meshed stamp.

It is our intention to research the photos of some of our issued genuine and false certificates for One and Three Cent Large Queens to enhance our findings. Our certificate photo does include a measurement guide. An initial review over the past 2 years found two false certificates for One Cent laid paper copies which had been slightly contentious. A check of the (H) and (V) measurements in the photo now confirmed each was in fact horizontally meshed which means neither could have been genuine laid paper.

Thickness of Laid Paper

The One Cent laid paper is a relatively thick soft paper, with some variation in thickness recorded. It seems to range from about .0031in to as high as .0039in, but generally in the .0035in range. The Three Cent is a thinner paper falling more tightly in the .0026 to .0029in range. The Two Cent is said to be a thicker paper similar to the One Cent.

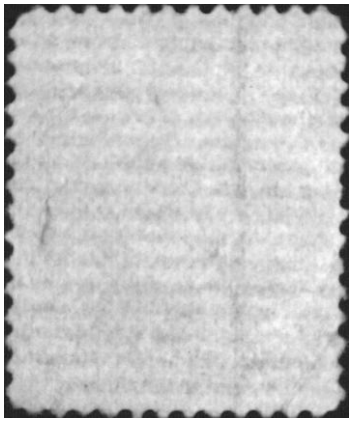
It is relevant to consider if there are any other large queen papers that have the thickness and softness of the One Cent laid paper. Paper 8 is noted as being soft, white and generally in the .0035in range, although copies seen by us are thinner. But it is horizontal meshed. It exists for the One, Two and Three Cent values, and others. It is worth investigating if this has ever been seen with a vertical mesh grain. In fact, at this point we have not seen any One or Three cent thick soft paper measuring as thick as .0035in, (H) or (V) mesh, other than the One Cent laid paper.

The submitted Two Cent is .0035in thick on a soft paper very similar to the One Cent laid paper.

Visibility of Laid Lines

It has been noted that the visibility of the laid lines can be a useful test of laid paper. On the Three Cent it is relatively easy to see the lines on the reverse since it is a thinner paper. For the One Cent usually the lines are visible on the reverse but sometimes the surface can be pressed smooth so the lines are somewhat buried within the paper visually. It is also important to see a shine of the laid lines on the front of the stamp. This can be done by holding the stamp at an angle to good light and sighting either from the side or bottom. This has been confirmed with a number of genuine items. Generally those with faked laid lines will not have the shine of visible lines on the front of the stamp.

Laid lines as seen from the front
VSC6000 photograph using 365nm transmitted ultra violet light



Laid lines as seen from the back
VSC6000 photograph using spot fluorescence

The lines are always more visible on reverse when the stamp is placed in water or watermark fluid. The traditional test has been simply to place the stamp in watermark fluid.

The submitted Two Cent has visible laid lines without being in any fluid. On the back the surface is reasonably smooth but the lines are quite visible. On the front the lines can be seen viewed from the side, but not as easily from top to bottom across the lines. When placed in either water or watermark fluid the laid lines are clearly visible, of course.

The submitted stamp takes longer to dry in watermark fluid than a One Cent laid paper which is somewhat puzzling given the apparent similarity in paper. However it did not exhibit qualities of a rebacked stamp which often occurs when such an item is placed in fluid. Further tests may be considered on this issue.

Soaking the Stamp in Water

It is instructive to soak a variety of Large Queen stamps in water. The sides of vertically meshed stamps will curl when the stamp is first exposed to water, - the top and bottom of a horizontally meshed stamp will curl when the stamp is first exposed to water. Each will then flatten out as the water is absorbed in the stamp. The different (H) and (V) meshed papers of Large Queens were tested and this property was confirmed.

The submitted Two Cent stamp was placed in water alongside a genuine One Cent laid paper copy. The sides of each stamp curled in the same manner and then flattened out. Essentially they reacted the same. Each was clearly a vertically meshed stamp as it must be if it is genuine laid paper.

The submitted Two Cent stamp displayed no properties of a rebacked stamp when placed in water. Obviously it did not separate from any rebacking. Further it was soaked several times. It never curled in an unusual manner. It did not reject water in any area of the stamp. It dried in the same consistent manner as the genuine One Cent laid paper copy each time it was soaked.

Width of Laid lines

The laid lines on the Three Cent are about 14 per 2cm. The lines on the One Cent are about 13 per 2 cm. The laid lines on the Two Cent submitted stamp do measure 13 per 2cm. using the VSC6000. In addition using the VSC6000 we were able to overlay the Two Cent on a One Cent laid paper copy and the lines matched perfectly with each other.

Colour of Paper

The large queen stamps come in degrees of whiteness of paper which vary by type of paper. This is recorded in Gratton's article. It has been observed that the One Cent laid paper is slightly off-white in colour. By comparison Duckworth paper 8 which is soft is a pure white colour. It is, however, horizontally meshed. In a Sisson's 1971 auction catalogue which sold one of the Two Cent laid paper copies, the paper was described as slightly yellowish.

The submitted Two Cent copy shows an off white colour similar to One Cent laid paper copies examined, but not really yellowish.

Texture of paper

The submitted Two Cent was placed beside a One Cent laid paper copy at high magnification under the VSC6000. The texture and mix of paper fibres was viewed. The two papers certainly appeared the same. There were flecks of different coloured fibres in each paper.

Both copies show some feathering of perforation tips consistent with a thicker softer paper. Of course the degree of feathering of perforation tips can certainly vary from stamp to stamp and within the same stamp will often vary on each side of the stamp.

Photos of the existing two laid paper Two Cent copies do show some slight differences in crispness of perforation holes.

Quality of Impression

It is often said that the impression of a One Cent Large Queen on laid paper should be strong but blurred because the paper is soft and reasonably absorbent. This seems to be a relative type of description. In our opinion the impression on the One Cent laid paper is quite strong, the colour is intense and actually

a much finer impression than some other printings. However it is not the very crisp, clean precise image that exists on a paper 8 copy by comparison.
The quality of the impression on the Two Cent submitted stamp is strong and intense in colour, but not as crisp as a paper 8 printing. It is what you would expect on the same paper as used for the One Cent laid paper.

Perforations

The Large Queens typically are perforated 11.9x11.9 for printings before 1872. There can be minor variations on this but not as far as to 11.75 or to 12.25. Sometimes a side will appear closer to 12 than 11.9.
The submitted Two Cent stamp measures 11.9 plus a bit on three sides while the top seems more like 12. Perhaps some further analysis is warranted on this issue but it really does not affect the paper variety. We can do additional comparisons to other One and Three Cent laid paper copies and to other large queen papers. We are not really interested in perforation changes which occurred after 1872 during the Small Queen period which also applied to Large Queens printed in that time

Hamilton Date Stamp

The submitted Two Cent stamp has a nicely centred Hamilton, March 16, 1870 date stamp. In fact the cancel is so nicely centred and perhaps used a bit late on a laid paper copy that its validity was questioned. Generally the One Cent laid paper copies are considered to be used earlier than this time. However there are precious few known dated copies of the One Cent.
Examination of Two Cent Large Queen dated copies in a specialist collection revealed a surprising number of Hamilton dated copies in the 1870-71 period- more so than for other prominent cities.

The observed Hamilton dates on Two Cent copies were as follows:

August 24, 1868	December 13, 1870
September 7, 1868	March 6, 1871
March 21, 1869	April 13, 1871
May 5, 1869	April 15, 1871
March 9, 1870(blue cancel; paper 6)	April 24, 1871
August 31, 1870	December 29, 1871

Thus the Two Cent Large Queen stamps clearly were used in abundance at Hamilton up until the Small Queen value was issued in March 1872. Boggs confirmed that several hammers were used at Hamilton and different colours including blue were used. Since the Two Cent Large Queen would usually be used in combination with a One or Three Cent value it would not be unusual for the Two Cent to receive the date stamp portion of a cancel.

It should be noted that the copy with a blue March 9, 1870 date stamp is a week before the date on the submitted Two Cent stamp. One of the existing Two Cent laid paper copies has the Hamilton “5” two

ring cancel. The other laid paper copy has a blue REGISTERED hand stamp, with margins that are almost identical to those of the submitted stamp.

Thus it appears possible that the Two Cent laid paper copies came from the same sheet of stamps and they were used at Hamilton in March 1870.

Potential to Fake the Two Cent laid paper

The submitted stamp is not rebacked. It has been soaked in water several times. It has been soaked alongside a One Cent genuine laid paper copy and alongside a rebacked faked One Cent laid paper copy. The stamp has never shown any unusual signs when being soaked or when drying. It curls from the sides on drying as does the genuine One Cent laid paper copy, thus confirming it is vertically meshed.

If the laid lines had been impressed in the paper after printing, it would be necessary to find a thick soft paper Two Cent copy measuring about .0035in thick, which also is on vertically meshed paper. We do not believe such a printing of the Two Cent exists. It may be possible to find a thick soft paper Two Cent copy on horizontally meshed paper measuring .0035in, but we have not seen one of these either.

More detail on vertically meshed large queen paper types is presented next.

Vertically Meshed Papers of the Two Cent

An important aspect of the analysis is to consider how a credible fake of the Two Cent on laid paper could be made. The stamp must be on paper that measures tall like a vertically meshed stamp. Clearly if it is rebacked there are known procedures to detect this and it will not be a credible fake.

The vertically meshed papers of the Two Cent are Duckworth papers 1, 6 and 7. Paper 1 appears thin, semi-transparent, about .0030in. thick and takes a poor quality blurred impression. Paper 6, is the Bothwell watermarked paper, with a visibly strong, coarse vertical mesh, sometimes thicker than .0030in. thick, which takes a good but not crisp impression. Neither of these papers would be considered useful for producing a fake laid paper copy.

Paper 7 is not common. It is about .0030in thick, has a coarse vertical mesh so some design bleeds through to the back, and the design impression is not as sharp as the submitted stamp. Once again these characteristics are not consistent with a laid paper copy that is .0036in thick and no evidence of design bleeding through.

At this point there is not a Two Cent Large Queen paper known to us that could produce a credible fake of the laid paper copies.

Finally, we do not believe there is a One Cent Large Queen on thick soft paper, over .0033in thick, on vertically meshed paper that could be used to make a credible fake of the One Cent on laid paper.

Analysis of a Faked One Cent Laid Paper copy

We reviewed a contentious One Cent copy (VGG#5250) showing laid lines on front and back, measuring about .0030-.0032in thick, with paper that was not particularly fibrous. On close examination the height and width did not measure like a vertically meshed stamp - it was closer to a horizontally meshed copy. The stamp has a Stolow backstamp which often adds suspicion about the genuineness.

The stamp was placed in water beside a genuine One Cent laid and the submitted Two Cent copy. Both of these curled from the sides then flattened out similarly. However the One Cent#5250 first displayed a dark shadow along all four sides, then it curled top and bottom , then the sides curled up – clearly it did not behave in a normal fashion. The paper had a slight greyish tone overall in comparison to the creamy white colour of the genuine One Cent and submitted Two Cent stamps. The contentious stamp did not fall apart. Thus if it is rebacked the glue is not water soluble.

As it dried it did not easily go back to a flat stamp – it remained very slightly curled from the sides. Under the VSC 6000 we could see a faintly orange irregular area in the middle of the stamp on the backside. We believe this stamp is rebacked using a very thin horizontally meshed copy on front and a very thin laid paper with horizontal lines attached to the back. Our understanding is that the laid paper piece would be vertically meshed. In fact, if you breathe on the front of the stamp it curls from top and bottom – when you breathe on the back it curls from the sides.

Next under strong magnification and infra red lighting under the VSC6000 we see specks of white paper suggesting there are two papers in the picture. Under strong light with normal magnification we could see minute evidence of two papers near perforation tips.

After drying and pressing the VGG#5250 the laid lines are quite visible in the laid paper – no fluid is required. Generally for the One Cent the paper is thick, soft and fibrous such that the laid lines do not show as obviously on the backside.
There were a number of lessons learned from analysis of this very clever fake.

Analysis of a Faked Three Cent Laid Paper copy

The Foundation reference copy of an unused faked Three Cent laid paper copy measures as a horizontally meshed copy with gum added. It was put in water and the gum quickly disappeared. There was no dark shadow around the four sides when submersed. It curled quickly top and bottom, thus indicating it was horizontally meshed. It did not curl from the sides. It did not come apart in the water. It flattened out nicely upon drying and remained flat.

By contrast to the One Cent rebacked fake we believe this Three Cent is not rebacked. But with horizontal laid lines it should have curled from the sides like a vertically meshed stamp– it did not. Rather, since it curled from top and bottom we conclude the laid lines have been faked by impressing or carving them in the paper after printing.

The lesson learned is to distinguish whether the fake involves rebacking or impressing lines in a stamp. It is interesting that in each fake the creator did not think to use a vertically meshed stamp.

The Two Existing Laid Paper Copies

Photos of the two known existing laid paper copies are available. Each was certified as genuine by the Royal Philatelic Society London in 1935.

The first is certificate # 18655 and has the Hamilton "5" two ring cancel. It is centred strongly to the lower right. The second is certificate #18955 and has the blue "REGISTERED" cancel. It is centred to the top, and just slightly to the right side. Each is said to be on thicker soft paper.

The submitted Two Cent stamp with the Hamilton date stamp has the same centring and margins as the second existing copy. An enlarged colour photo of the second copy was compared to the submitted copy. Each image appears to have the same intensity and clarity of impression. The perforations on the 2 ring "5" first copy appear ragged. The perforations on the second copy and the submitted Two Cent are better cut but still reasonably fibrous.

Most important, the submitted Two Cent appears to be the link between the first two copies as noted above.

Comparison with the Two Existing Copies

From the outset of our analysis it was considered helpful if we could get to see one or both of the existing copies. It was recognized that this would never be an easy task to accomplish without conditions being attached to such a review.

However, as our analysis of the submitted Two Cent stamp progressed through a thorough analysis of all large queen papers, printing characteristics, features of laid paper and a forensic type of analysis which sought to eliminate what the submitted copy could otherwise have been, it was apparent that an examination of one or both of the existing Two Cent laid paper copies was not critical.

Comparison to the known existing copies undoubtedly carries the potential for an examination that seeks to denigrate the submitted copy in order to protect the first two. The comparison could focus on the minutiae such as number of fibres in the perforation holes or the intensity of the impression being slightly different. Since the first two were certified 75 years ago the inclination is to say they are the standard in all respects and a third copy is inferior to the extent its minute characteristics are not identical to the first two. Finally using the comparison as required criteria for issuing a certificate on the submitted Two Cent copy essentially would hold the submitter and the Greene Foundation hostage.

The purpose of the expertization of the submitted copy was to determine if it was genuinely printed on laid paper. This has been successfully accomplished in our opinion.

Opinion of the Expert Committee

The submitted Two Cent large queen stamp with the Hamilton, March 16, 1870 date stamp is genuinely printed on horizontal laid paper which is about .0036 in thick. It has two diagonal creases and has an internal tear on the right side.

This report is being released with the permission of the submitter of the stamp.

J. Edward Nixon, chair of Expert Committee
Vincent Graves Greene Philatelic Research Foundation
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