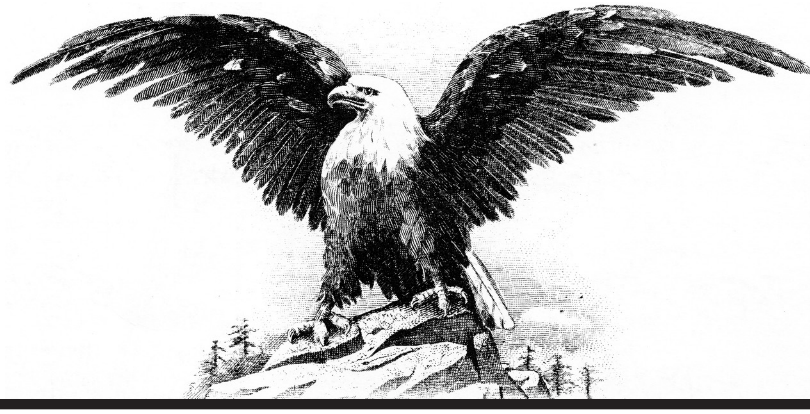
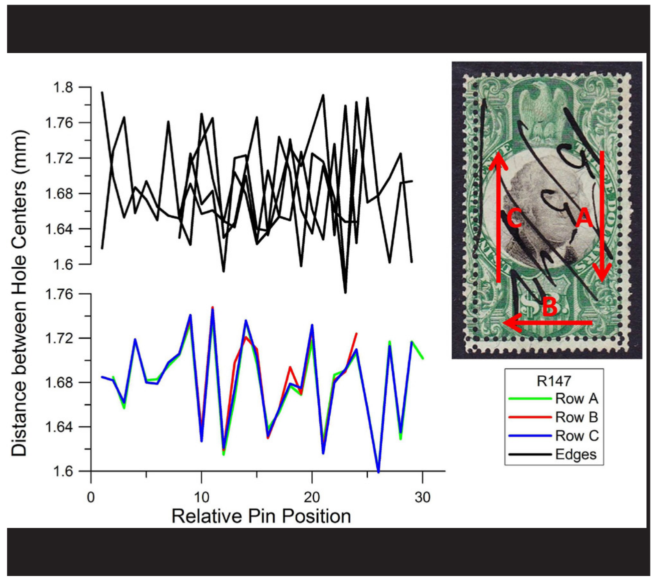


The American Revenuer

FORGERIES ISSUE!



Upper plot: perforation pattern "fingerprints" for the four edge perforation rows, which show no similarity to one another. Lower plot: "fingerprints" for the three extra lines of perforation, which are nearly identical, a very strong indication of forgery. More inside, page 2.

JOURNAL OF THE AMERICAN REVENUE ASSOCIATION

First Quarter 2014

Volume 67, Number 1
Whole Number 593

ARA Auction Joins the 21st Century

by Martin Richardson, ARA Auction Manager

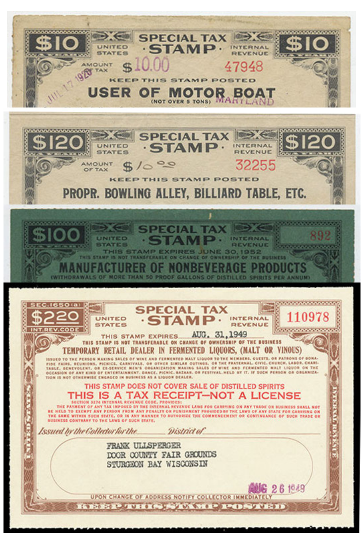
Lot 40

Auction 86 will be the first using our new online real time software, specifically designed for the needs of the ARA. I think our membership will find it easy to use and superior to that used for many of the auctions run by smaller auction houses and dealers.

Why the new software? I have been running our auctions for over 20 years. Initially they were not online and were processed using an Apple computer, later on an Epson computer utilizing a DOS operating system; this was all before Windows and MACOS. Over the years I acquired Windows-based systems and continued to use the old software based on dBase IV, run as a DOS application under Windows. This was very time-consuming; some auctions such as Sale 85 took hundreds of hours to assemble. At my request the ARA Board invested in new software to reduce the hours spent and provide much better service for the membership.

All future auctions will be online only. They will employ Active Server Page (ASP) technology. When you bid on a lot you will see immediately if it is the high bid. For example, on a the lot opening at $10, if you bid $11 in the absence of other bids, you will see that your bid has been accepted and is the high bid. Should another bidder enter $12, the opening bid will change to $12 and you will receive an email message that you are no longer the high bidder. Any lot with a reserve will show whether the reserve has been met. Bidders may also see a report at any time showing the status of their bids.

The bid page displays the lot categories. For example, if you are looking for Special Tax Stamps you click on that category and the images and descriptions will appear. Clicking on that small image will bring up a larger one. Not all lots will have images, for example large documents, books, catalogs, etc. For group lots such as Special Tax Stamps only a representative example will be illustrated.



Lots 105, 106, 107, 129

Consignor reports and invoices will be generated, and sent by email.

Only current ARA members may bid in the auctions. Our server maintains a copy of the current ARA membership data as supplied by the Secretary. When you enter the auction you will be asked for your last name and membership number (which appears on your *American Revenuer* mailing label). If you are not a member or not current, you will receive a notice and will not be able to place any bids. Membership applications and renewals are available on the website.

Lots 308, 311, 356

Once signed in you will be asked for your personal information, mailing and email addresses, etc. You must enter an email address. You will be able to change your username and password also. This information does not alter the ARA membership list or the address to which your *American Revenuer*, sales circuits, etc. are sent. If you want your auction lots and messages to go to a different address, you can change your postal or email address. Our server is secure so your information is safe. Payments for lots made online by credit cards will be secure. No payment information is kept on our server. Payments are processed by the Merchant Service Company though their secure gateway.

If you do not have a computer or access to one, can you still bid? Yes you can. The auction catalog will no longer be included with the *TAR* mailings; if you want to bid you must request a printed copy from me at the address in the *TAR* masthead. These paper copies typically have 20 pages and some color images, but not all. Your request must include a payment of $5.00 to cover my expenses plus postage. The printed catalog will include a bid form to be mailed to me. I will enter your bids into the system for you.

Sale 86 contains 863 lots, including all unsold match and medicine from Sale 85 at reduced prices, 18 lots of M&M ad cards and related material, 63 lots of US telegraph franks, 99 lots of Federal Hunting License stamps (RWs), State RWs, 67 lots of Special Tax Stamps, including Wagering, Motorboat, Coin Operated Amusement Devices, Manufacturer of Nonbeverage Products and others seldom seen. There are some great foreign lots: Canada, Mexico, Hong Kong, China, Burma and more. Literature includes Canada catalogs for tobacco stamps, as well as US name sale auctions, beer stamps and more.

Lot 740

Any questions or concerns should be directed to me at MartinR362@aol.com or at the mail address listed in *TAR*. I have also posted some of this information on the ARA website including revised instructions for submitting material for future auctions.

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Freak or Fake? A New Fingerprinting Method for Distinguishing between Original and Fraudulent Extra Perforations of 19th Century Revenue Stamps

By Robert Mustacich

Stamp experts have long suspected that extra perforations appearing on 19th century revenue stamps might be fraudulent. Dealers and collectors alike would benefit from an accurate way to assess these stamps, but thus far no definitive method has existed. Being curious about this topic, I devised a new method, using high-resolution digital scans coupled with computer-based analysis that distinguishes certain extra perforations. This precision method is able to create a unique "fingerprint" for each perforation and detect which type of perforating machine was used—either rotary or stroke—which is key in revealing forgeries. Most surprisingly, it gives strong evidence that most of the forgeries could have been done by a single perpetrator.

Conventional stamp wisdom has held that perforations crossing the interior of the stamp (for example, #18 in Figure 1) are forgeries, while those near and parallel to the edge (often called "double perforations," see #3 in Figure 1) are genuine, especially for the First Issue revenue stamps. However, I have found this rule-of-thumb to be somewhat unreliable. Can you spot which stamps in Figure 1 are "freaks," or errors in production, and which are "fakes"? According to my findings, half of the stamps in Figure 1 have extra original perforations, but you might be surprised by which ones they are. The other half contain fraudulent perforations, added to mimic errors in original production in order to raise the value of the stamp. Answers are given at the end of the article.

Figure 1. *Nine of these stamps have genuine extra perforations, and the rest are forgeries. Can you pick out the correct nine stamps? See the end of the article for the answers.*

The Smoking Gun

Detecting forgeries is closely linked to knowing how the genuine article is made. In the 19th century, original perforations were done by a rotary perforator. Presumably, the few rotary perforators in the U.S. were in the control of the government or its contractors, and consequently would not have been available to forgers. After printing, a sheet of stamps traveled between a row of wheels, each with 192 pins (Leavy, 1918), and a row of wheels with closely matching holes, creating the familiar part perforate stamps. A second pass through a perforator with the sheet turned 90 degrees completed the perforation of the sheet. Infrequently, a sheet would become crooked or be run twice, resulting in extra original perforations. The rotary perforator was a complex machine for the era, and was very difficult to fabricate. It is not surprising that a new high-resolution method reveals myriad tiny inconsistencies in the resulting perforations.

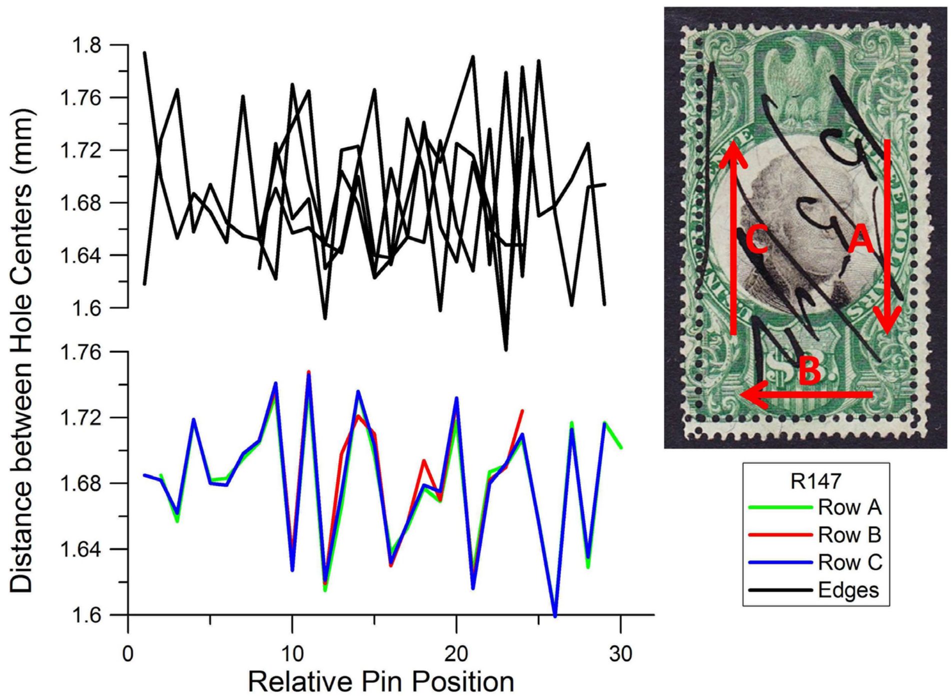


Figure 2. Comparison of perforation pattern "fingerprints" on a Scott #R147. The upper plot compares the four edge perforation rows, which show no similarity to one another. The lower plot compares the three extra lines of perforation, which are nearly identical, a very strong indication of forgery. The fingerprint directions show that the stamp was turned about its center and punched near each edge.

An alternative perforation device, presumed to have been used in forgery, is called a stroke perforator. Though scarcely documented, it is assumed to have been a small device with a single row of pins in a lever-operated punch. This device, like the rotary perforator, creates a perforation row with many microscopic inconsistencies. Detecting the use of a stroke perforator would be the smoking gun which would reveal a forgery.

The logical way to detect extra lines of perforation added by a forger would be to compare these with the original edge perforations on a given stamp. (In this article I will use the terms "original" and "added" to distinguish between genuine and fraudulent perforations.) I started by overlaying images of different perforation rows from the same stamp using software such as Adobe Photoshop. However, the more stamps I looked at, the less conclusive the analysis became. Next I tried more detailed analysis of the gauge using digital images. I did indeed find variations, not only between the edges and the extra lines, but also among the four edges of the same stamp. I quickly discovered so much variation in perforation gauge that the approach collapsed. This confirmed the observation of Brett (1990) that perforation gauge did not appear to be useful for analyzing extra perforations.

I decided that this problem called for even more powerful digital technology and analysis. Drawing on my background as a research scientist, I designed a complex method using a high-resolution digital scanner and various pieces of software which I wrote for the project. Finally, at this level, some remarkably distinctive patterns started to emerge distinguishing between rotary and stroke perforations. Using this approach, a perforation row now revealed a unique "fingerprint" comprised of such features as spacing, placement, hole size, and hole shape.

Matching Fingerprints

Under high magnification, each wheel of a rotary perforator produces a characteristic repeating "pattern" that is 192 pins—or holes—long. The pattern is nearly 13 inches in length, and each wheel has its own pattern. When I analyzed the four edges of any given stamp, each edge consistently had a different "fingerprint,"defined as the distance between hole centers as a function of pin position, as a result of all of the different wheel and pin possibilities. A rotary perforator operating with 18 wheels would have more than 3400 individual pins! In **Figure 2,** these "fingerprints" for the edges of a stamp are represented in the graph at the top left. Each black line represents the pattern of one edge of the stamp, and even the untrained eye can see that there is no duplication between them.

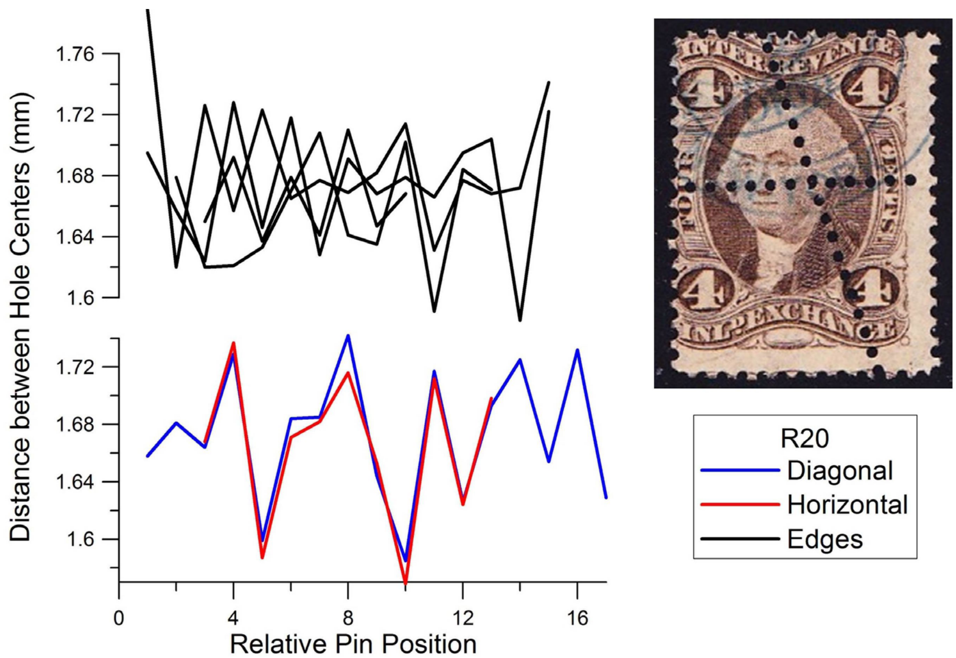


Figure 3. *Analysis of perforation patterns for Scott #R20, which contains interior crossing rows. These fraudulent rows match strongly in pattern, while the edge perforations show no correlation to one another.*

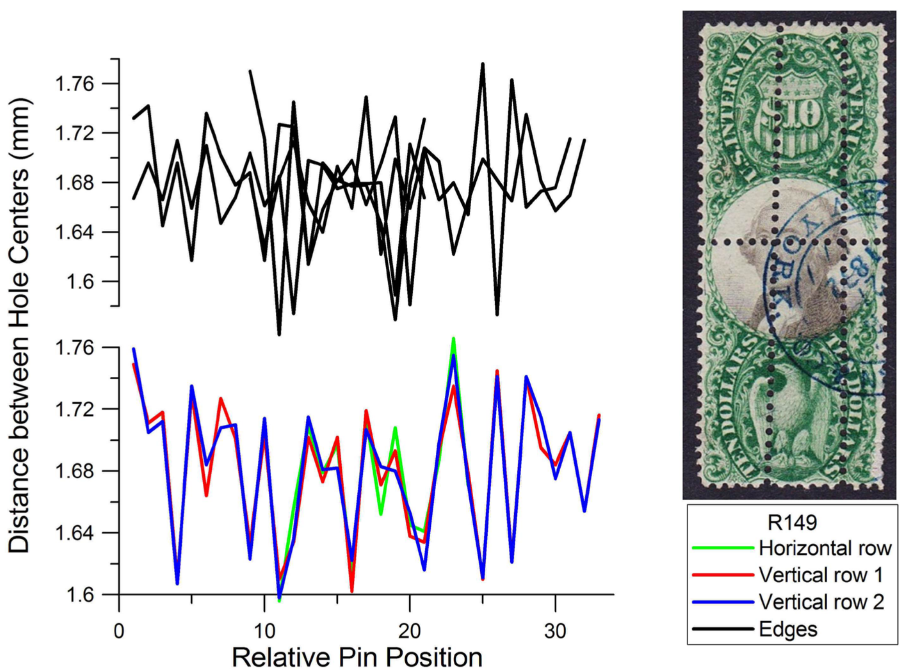


Figure 4. Analysis of Scott #R149, with fraudulent extra perforations. The two parallel vertical rows of extra perforation exhibit no shift in pattern, which would be accomplished by a movement of the stamp in a direction perpendicular to the pins in a stroke perforator.

In contrast, while examining the suspicious extra rows of perforations, I was amazed to see a very different result on a single stamp—each extra row had a nearly identical fingerprint! To make sense of this, consider how a forger would use a stroke perforator. A single stamp could be punched, carefully rotated, and then punched again; it's easy to imagine that the same section of pins would be used for both lines. The colored graph in Figure 2 is a stunning example of this technique. This graph shows a near-perfect match in the fingerprints of the three extra lines of perforation (Rows A, B, and C). This duplication even shows that the stamp was rotated in place for punching the three extra rows. Such a result is not possible with a rotary perforator.

Figure 3 shows an example of the often-observed extra perforations intersecting at odd angles. In the 4¢ Inland Exchange stamp pictured (Scott #R20), there are no matching patterns found among any of the edges. However, the patterns of the extra perforations show a close match, evidence of a stroke perforator. (Incidentally, the missing extra perforation hole at the right edge of the horizontal row is evidence that the extra perforation was added after the stamp was separated from the sheet; close examination shows that the edge of the stamp was folded rather than having the last hole punched—something that would not occur if the stamp was still part of the original sheet.)

Figure 4 shows an example typical of multiple added perforations, some parallel but separated from each other. In this example on the $10 Third Issue stamp (Scott #R149), the two vertical rows of perforations match each other without any shift in alignment. This shows that the two parallel rows were made in this case by carefully moving the stamp slightly in a direction perpendicular to the pins. The centered alignment of the horizontal row's pattern match again suggests that the stamp was approximately rotated on center for this perforation.

An example of a closely spaced pair of added perforations spanning the center of the stamp is shown in **Figure 5** for the Second Issue $1.30 stamp (Scott #R119). Note the near-perfect matching of the hole spacing sequences. Again, there is no apparent alignment shift between the two vertical rows, indicating that the stamp was carefully moved a small distance in the stroke perforator, perpendicular to the pins, to punch the next row of holes. Offset a little to one side, the stamp appears to be approximately turned about center to create the horizontal row near the top of the stamp. While the top row has the appearance of a possibly original extra perforation (often called a "double" perforation error), its pattern match to the other perforations shows it to be added.

In contrast to the examples in Figures 2–5, **Figure 6** shows a typical example of genuine extra perforations and the lack of correlation between them (Scott #R113). Just as with the edges, there is no apparent shared pattern between these extra rotary perforations.

These results agree with the earlier studies of these stamps, summarized by Brett (1990) in an article including an annotated bibliography. This survey was supplemented with new findings of these stamps on document (Mahler 1991a,b,c). Mahler (1991c) summarized a general view of these stamps in the form of three hypotheses: 1) perforations spanning the stamp interiors are almost always fraudulent; 2) original diagonal perforation errors are usually found on stamps issued or used in 1862–3; and 3) the original perforation errors reached the public due to the extraordinary pressure on the printers during early production to fill orders

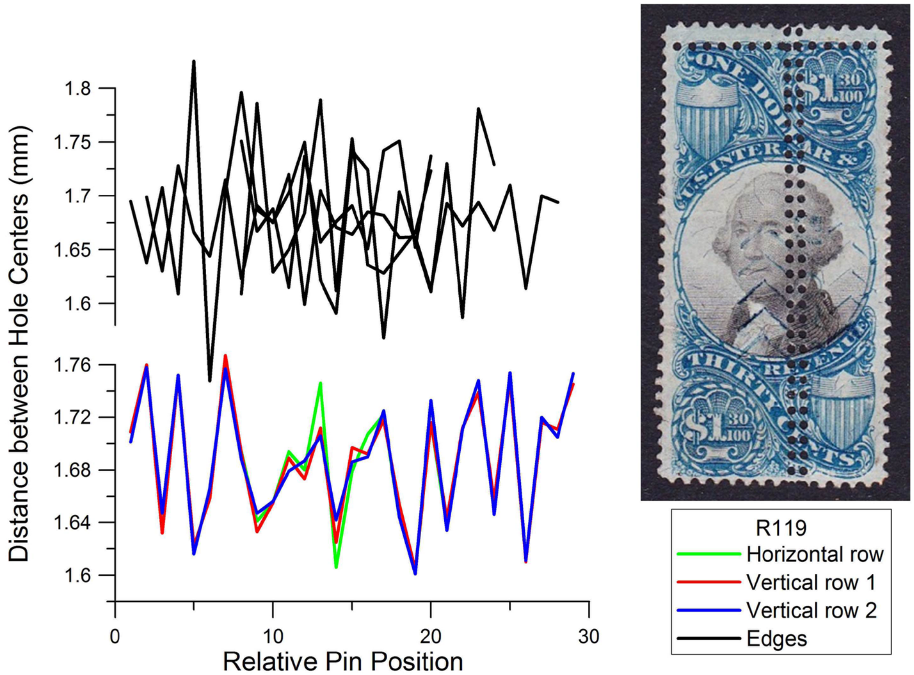


Figure 5. Analysis of Scott #R119. This stamp, like Figure 4, contains two extra vertical rows with identical patterns, clear evidence of forgery: Such a close pattern match would be impossible using a rotary perforator.

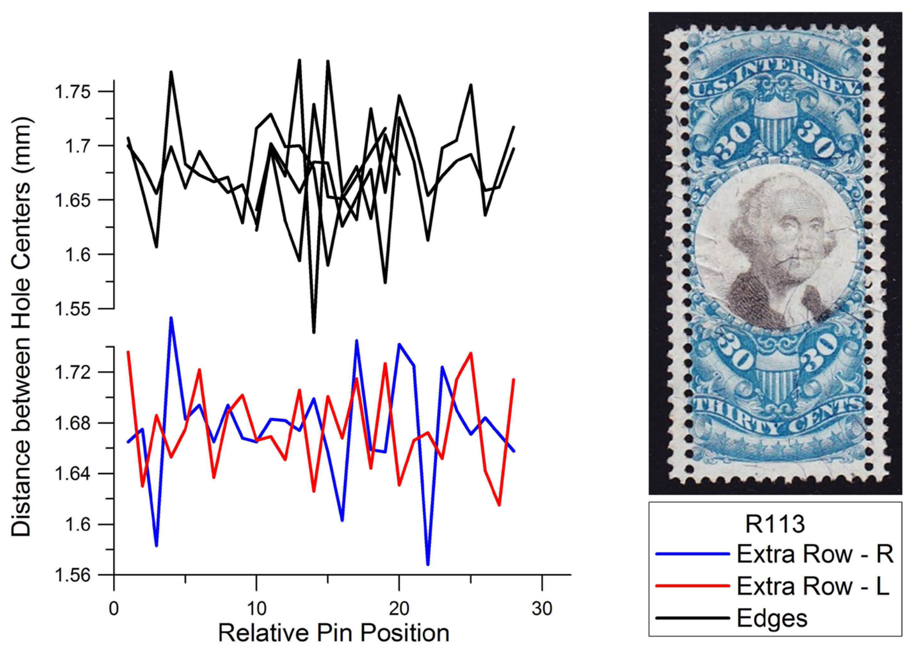


Figure 6. Analysis of Scott #R113. Unlike the previous four examples, this stamp exhibits genuine extra perforations. Like the edge perforation rows, these extra rows show no matching of the perforation fingerprints.

for these stamps. Brett considered the added perforations to be produced by a stroke perforator based on observed repetition of distinctive features in parallel rows such as missing punched holes (i.e., so-called "blind" perforations). Further considerations suggested to him that the added perforations were punched after the use of the stamps.

So if a stamp contains multiple extra rows of perforation, and these result in nearly identical "fingerprints" under my analysis, I could conclude that these were made by a forger using a stroke perforator. But what if the stamp has only one additional row of extra perforations? Are there some distinguishing characteristics of stroke perforations? Further study revealed that yes, there are detectable micro-features such as the shape of holes and their size. The latter can frequently be detected with a specialist perforation gauge; this is discussed in a later section of this article. However, an even more reliable test is to compare the fingerprint of a single row to known stroke perforations on other stamps. A match between these is certain proof of forgery. Thus for any given row of perforation, I could now determine its origin as fraudulent or authentic in nature.

Family Relations

Each stamp that I scanned and analyzed was added to a database of digital fingerprints. As this database grew larger, it provided ever-increasing opportunities for fingerprint matching. The results were overwhelming. Any row of added perforations had a pattern closely matching that of other added rows, forming a network which will be called the Added Group. It would be as if a group of people were found to be all related, anywhere from identical twins to cousins. In contrast, if an original, genuine perforation was submitted for matches, it failed to significantly match anything in the Added Group, and showed only slight similarity to other original perforations.

The close similarities within the Added Group strongly suggest that these forgeries were done on a very limited number of stroke perforators, possibly even one, which is not a new idea. Nast (1908) extensively commented more than 100 years ago on these stamps. He believed that they became numerous in the years following an effort by Edward B. Sterling, a prominent revenue dealer and specialist, to include these curiosities (catalogued at premium values) in his "great catalog of 1888," namely *Sterling's Standard Descriptive and Price Catalogue of the Revenue Stamps of the United States* (see Appendix II for a discussion of this catalog in light of this study). Brett (1990) further references that, according to the recollections of Hugh Barr, a New York philatelic auctioneer, "These fakes began to appear about 1890 and it is understood that most of them, if not all, came from one source, a stamp dealer quite active in New York, who had acquired a perforating machine, and who was already a suspect in connection with many other forms of fakery, such as the altering of stamps and the affixing of stamps to covers, quite a nefarious character." A dealer in New York was also reported to have a stock book completely filled with these curiosities while debate raged whether they were "freaks" or "fakes."

Although in general my findings support the views of Brett, I also uncovered numerous exceptions. My research shows that some perforations extending into or through the stamp interiors are original, products of rotary perforation. Similarly, there are rows which look like original perforation errors (sometimes called "double perforations") that were actually punched with a stroke perforator. Rather than calling these stamps "interior" and "double" perforations, respectively, and then having to call out many exceptions, I am instead classifying these extra rows as "original" genuine perforations produced by a rotary perforator, or "added" fake perforations produced by a stroke perforator. Since the stamp edges are original perforations, these are sometimes referred to as "edge" perforations. There are also many examples of perforation rows which do not extend fully across the stamp. I will refer to these as "partial" rows of perforations in this article.

Technology

A very brief overview of the technology I developed for this investigation is contained in the following paragraph, and the interested reader can find supporting technical details in Appendix III. Basically, a semi-automated method was developed for the detailed analysis of minute perforation features in images. Stamps were placed in a high-resolution optical flat-bed scanner and scanned at 2400 dots per inch (dpi) or higher resolution. Images of individual perforation rows were then manually processed using standard image editing software to reduce the images to edges and delete superfluous information. Custom computer software was written to determine the distances between hole centers, radii of the holes, lateral zigzag, circularity of the holes, and statistics of these features for the row. Computer programs were also written to seek pattern matches and possible networks of interrelationships between the different perforation rows. The collection of revenue stamps with extra perforations used for this study consists of about 220 stamps covering the First Three issues (with the exception only of the "Persian Rugs") and most of the early Proprietary revenues. This collection provided data for approximately 1,000 perforation rows, including the edge perforations .

A wide range of scan resolutions was tested to determine the optimal resolution of 2400 dpi for analysis of the hole features listed above. Scanning the stamps at greater resolutions was not found to provide any benefit, and increased both the file sizes and computation times considerably. The spatial resolution of the hole centers and radii is actually much greater than the linear scanning resolution (1/2400 inch, or 0.00042 inch) because of the two-dimensional aspect of the mathematical fitting of circles to the images. For typical perforation hole sizes of approximately 1 mm, the effective resolution of the hole center position and radius is estimated to be less than 1 micron, or one thousandth of a mm (0.00004 inch). In a test with a row of perforations, the same row was scanned 10 times while altering the position of the stamp in the scanner between each scan. The average error for each hole radius was merely 0.9 microns, and the average error for each of the center-to-center hole spacings in the row of perforations was only 1.1 microns. This provided ample precision for measuring any of the features for perforation fingerprinting.

It is reasonable to conclude that minute inconsistencies in hole spacing are the most easily measured characteristics since uniform spacing of pins and holes is the most difficult machining challenge in fabricating a perforator, so this feature was used as the basis for my analysis. The other characteristics of hole size and shape show more consistency, probably because the pins would likely be cut from a sufficient length of the same wire stock. Drill sizes are also relatively consistent, so the size of holes in the machine should also be fairly uniform, even if several drill bits are used in order to avoid drill breakage. Surprisingly, the resulting perforation hole size is usually nearly the same size as the pins rather than the size of the machine holes (U.S. Bureau of Engraving and Printing, 2013).

Other sequences of features, such as hole size and measures of circularity, can also be used to create row fingerprints capable of revealing pattern matches, but with diminished accuracy in comparison to using hole spacing. The alignment of the hole size sequence is shown in the lower graph in **Figure 7** for the Scott #R147 example discussed in Figure 2. When the sizes are plotted using the same sequence alignments used in Figure 2, matching is still observed, but with less precision than when using hole spacing. Similarly, as shown in the upper graph of Figure 7, the sequences of hole fit errors (a measure of the deviation from a circle, described and illustrated in Appendix III) only roughly match.

Clean Cut

Further analysis revealed that the stroke perforator has a smaller average pin radius and also cuts a sharper and more circular hole than the rotary perforator. Each hole was analyzed by comparison with a perfect circle superimposed on it. This comparison yielded a measurement of the hole radius, and of the "hole fit error," or amount of deviation from the perfect circle. An interesting qualitative relationship exists between the hole fit error and the hole radius that is peculiar to the added perforations, (plotted in **Figure 8**). The added perforations (red) have average hole fit errors and radius values that lie in an area of the graph that is largely different from the bulk of the data for original extra perforations (green). The separation is quite remarkable considering the significant

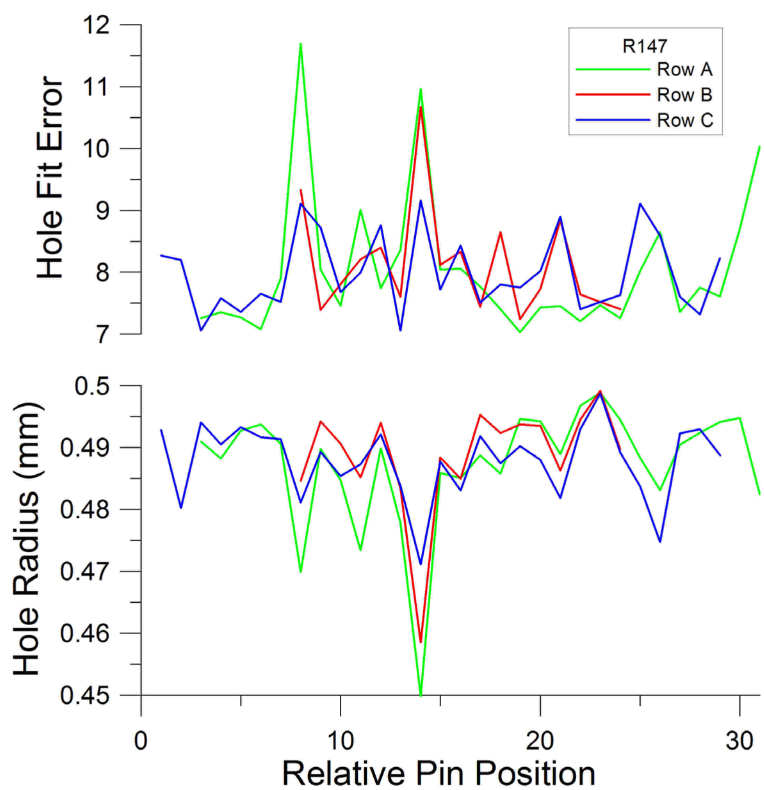


Figure 7. Two more profiles of Scott #R147, as in Figure 2. The upper graph uses hole fit error as the basis for analysis, rather than the spacing between hole centers. The lower one uses hole size. These methods are less precise, although the close similarity of added rows is still apparent.

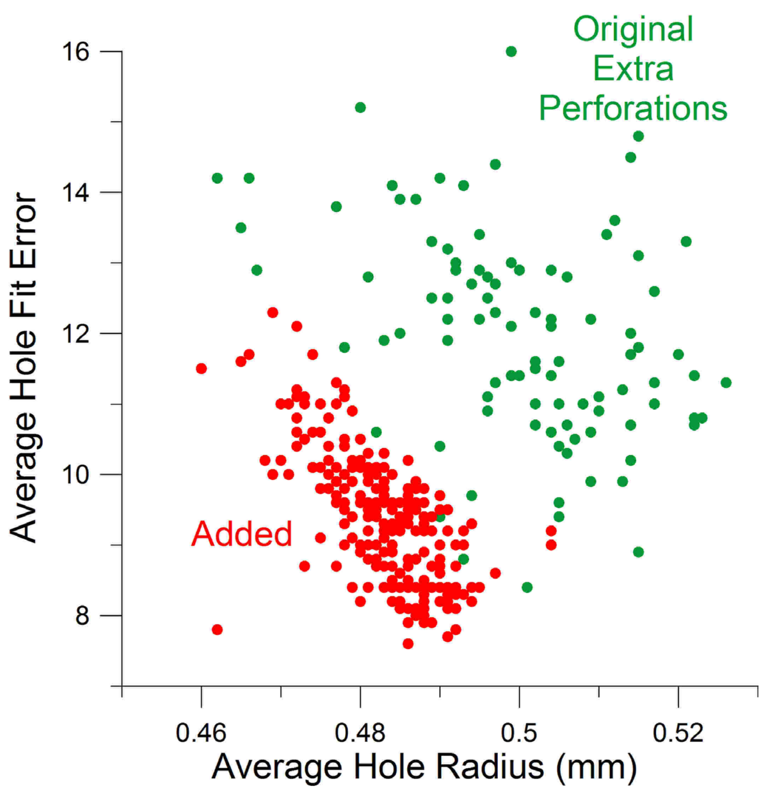


Figure 8. Plot of hole fit error vs. radius, showing a significant difference between the fraudulent added perforations (red) and the original extra perforation errors (green). The "fake" holes are smaller and more sharply cut than the genuine extras, due to the equipment used to make them. This finding is the basis for a simple test using a specialist perforation gauge.

range of normal variations usually present in these parameters. While the hole fit error reflects a combination of both circularity and smooth edges, these results show that the added perforations typically have a smaller hole radius and hole fit error than the original extra perforations produced by rotary perforators. This is consistent with Brett's observation that the suspect perforations were generally cleaner cut (Brett, 1990). A simple test can be done with a perforation gauge. Whereas the hole radius of rotary perforation holes is typically larger, the hole radius of the added perforations is approximately equal to or less than the size of the holes illustrated on some U.S. specialist perforation gauges. More specifically, the U.S. specialist gauge pertaining to 19th century revenue stamps is Kiusalas 12-66. The Precision U.S. Specialty Multi-Gauge (Sonic Imagery Labs, 2013) has Kiusalas 12-66 hole sizes which measure approximately 0.488 mm radius (uncorrected for laminate thickness when scanned). As a quick test of authenticity, most original perforations show annular gaps between their larger perforation holes and the black hole image on the transparent gauge when held up to the light, aligned, and closely inspected with a magnifying glass. However, while this test may work for a majority of these stamps, Figure 8 clearly shows that there will be some original extra perforations with radii too close to or less than 0.488 mm, for which this simple test would be misleading.

The Bird's Nest

Comparing the perforation fingerprints from each image looking for the "family relationships" is a good task for a computer—the 1,000 images of perforations rows resulted in 2,000 patterns to consider, because a perforator could conceivably be used in either direction. Also, the scanning of the stamps can be performed in either of two directions by rotating the stamps 180 degrees. For these two reasons, hole spacing sequences in both the forward and backward directions were included in the analysis. To evaluate all possible row pairings for potential fingerprint matches in the collection required an astounding 2,000,000 different comparison studies, each seeking the optimum alignment between a pair of patterns. Each comparison study involves sliding one row past another, one hole at a time. For each possible alignment a correlation score is calculated, and the highest score from all of the alignments is considered the best possible pattern match (the highest correlation). High correlation scores, if found, can then define a network of related patterns, essentially a network of matching or overlapping "fingerprints."

As shown in **Figure 9,** a network emerged from my computer analysis which showed that virtually every added row of perforation was very similar to many others. When the First Issue images (representing more than half the collection) are correlated to find pattern matches, a large and complex network of very strong correlations emerges from the more than 1,000,000 computerized optimizations carried out by the software**.** There are hundreds of strong pattern matches that each would be the equivalent of the charts shown in Figure 2-5! These "family relationships" create an intertwined network resembling a bird's nest. Each row of perforations is represented by a dot.[1] If that row has a strong pattern match to any other perforation row, the dots are connected by a line. For example, dots representing

1. The dots and connecting lines were created by NodeXL software (Social Media Research Foundation, 2013). The dots (perforation rows) were grouped by Scott number to the periphery of a ring for better clarity of the network and of fingerprint matches between multiple extra rows on the same stamps.

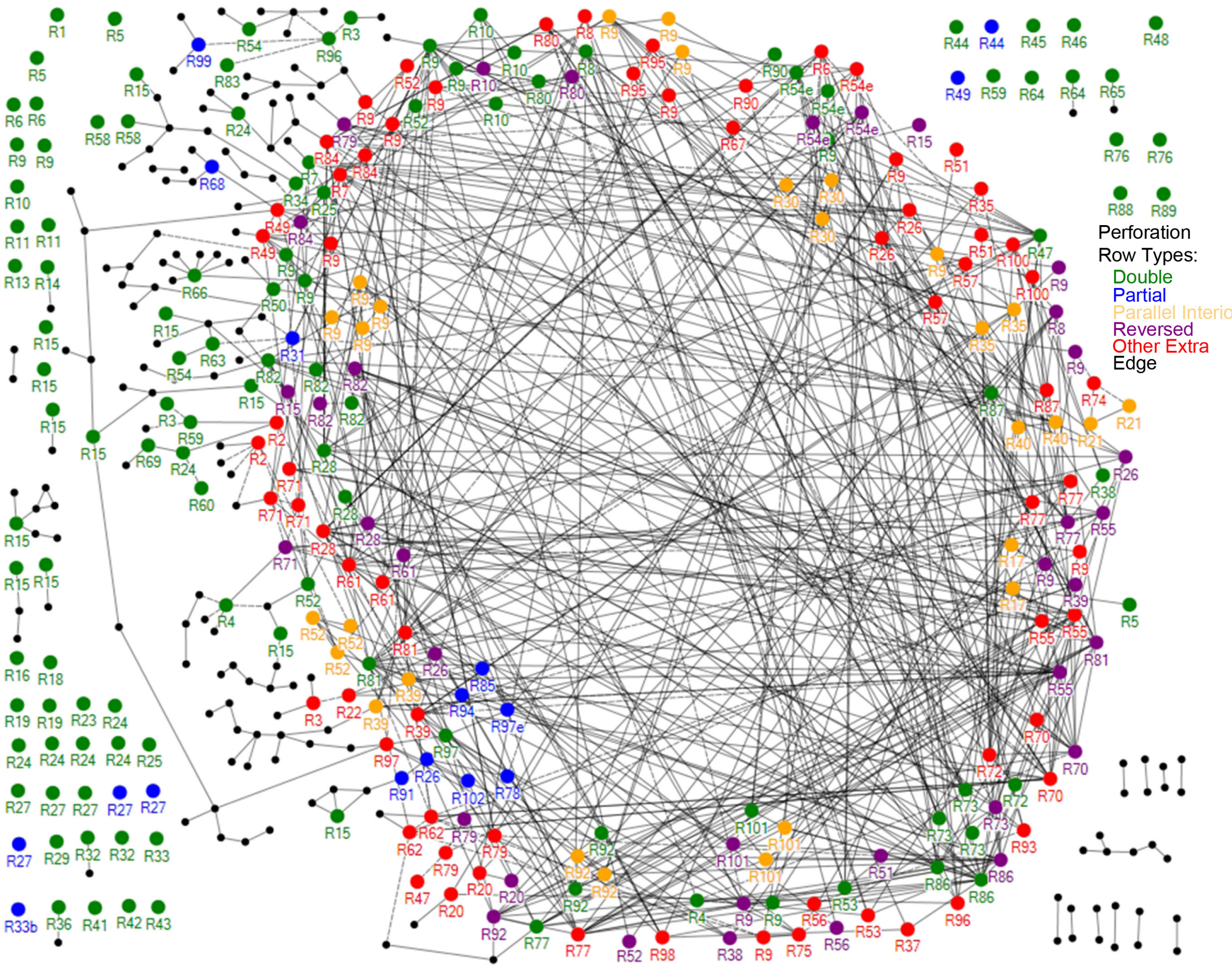


Figure 9. *The "Bird's Nest." Each dot represents a perforation row, and a line connecting any two shows that their "fingerprints" are very similar. The computer software placed every single "fake" row studied in the first issue revenues in this network, giving strong evidence that they were all done by the same perforator.*

the extra rows in Figure 3 would be linked by lines to one another as well as to numerous other rows with related fingerprints. A close view of these links for Scott #R20 is shown in **Figure 10.** Since in some cases I have rotated the stamps for scanning in the opposite direction from that chosen by the forger in creating the perforations, the correlation of one row might be with the reverse of my scan of the other row. In this specific case, the horizontal row (the red R20 dot in the center) matches the mirror image of the diagonal row (the purple R20 dot on the right).

It is obvious from the dense network in Figure 9 that each of the stroke perforations has strong similarities with many others. Amazingly, only a single common network of pattern matches emerges from all of the data. In the figure, the color of each dot indicates the type of perforation it represents (such as interior or partial). It is easy to see that some of the double (green) and partial (blue) rows are part of the Added Group done by the stroke perforator. Figure 9 also includes some genuine extra perforations. We would expect these not to show any pattern matches with other rows. Sure enough, they appear as isolated dots.

Edge perforations (black) and many of the "double perforations" (green) have no pattern matches, or only random infrequent ones, and therefore are not part of this network. (Hundreds of such additional edge perforation patterns were omitted from the chart because they have no pattern matches at all.)

The network of pattern matches between fingerprints

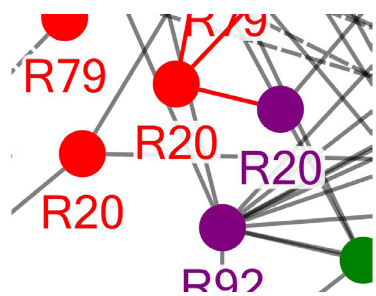


Figure 10. *Detail of the "Bird's Nest." Each dot is labeled with the Scott number of the stamp on which the row occurs. Strong similarities exist between extra rows on a single stamp, and also between rows on various stamps.*

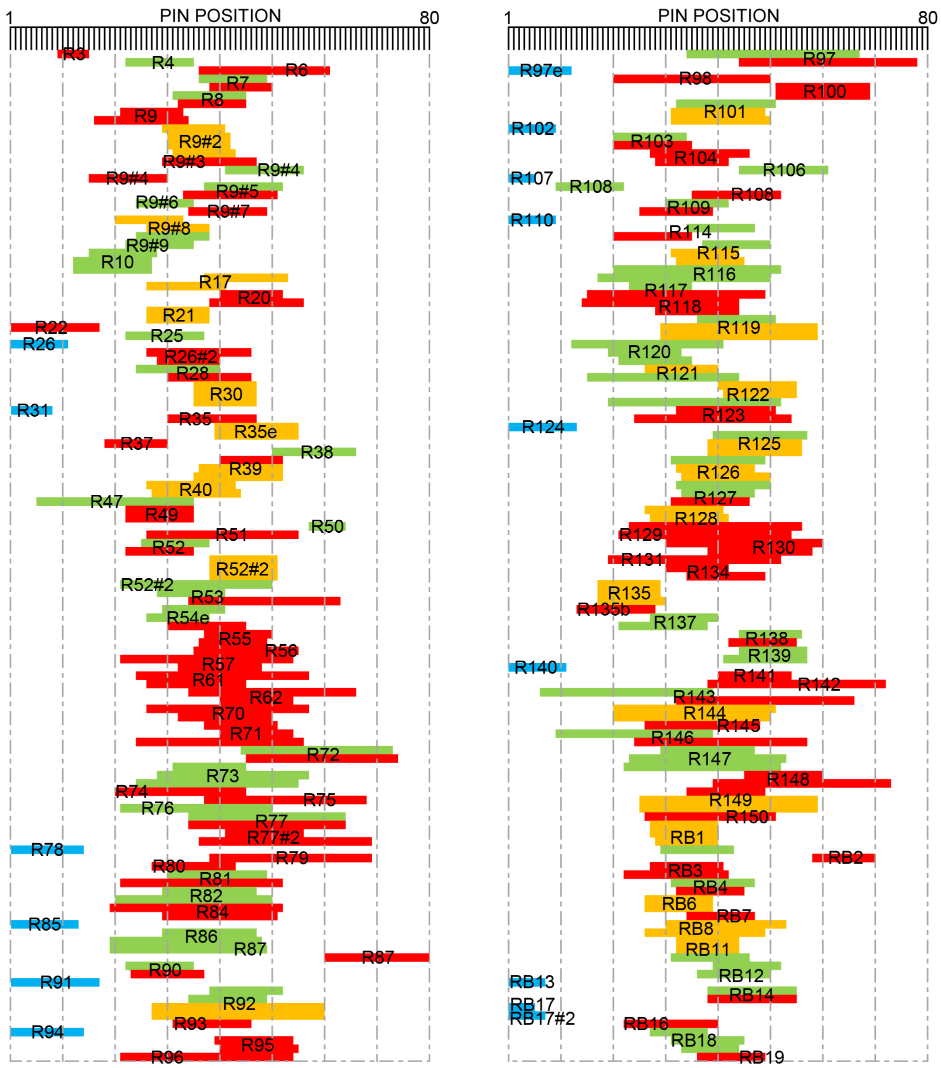


Figure 11. The Hypothetical Stroke Perforator. The computer was able to construct a row of 80 pins, about 5 inches long, which would be able to make every fingerprint pattern in the collection.

from the Second Issue revenue stamps in the collection provides a similar result to the analysis of the First Issue stamps. One notable difference is the much smaller number of genuine double perforations. This is in agreement with the hypothesis put forward by Mahler (1991b) that double perforations are primarily found in the First Issue revenues (of 22 examples he cited on document, 14 were on First Issues, one on a Second Issue, and seven on Third Issues). The 1888 catalogue of Sterling also describes perforation errors consistent with original perforations that continue in diminished numbers in the later revenue issues (see Appendix II). The pattern networks for perforation fingerprints of the Third Issues and the Proprietary revenues of 1871–1881 are very similar to the results with the Second Issues and support identical conclusions. For comparison, the graphical network for the Second Issues is included in Appendix I.

Mirror Images

Interestingly, the pattern matches for the 19th-century revenue stamps form a single dense network regardless of date. This can be observed in two different ways. First, when all of the pattern matches from the entire collection are plotted together, the density of the relationships is independent of whether the different revenue issues are grouped together or not. Second, an analysis can be applied to this data which separates the network into regions of most and least interconnectivity. Strongly interconnected subgroups of fingerprints that are less connected to the other fingerprints will be separated out in this process. I used the Harel-Koren Fast Multiscale procedure (Harel and Koren, 2002) for this analysis. Using this approach, the added perforations sort themselves into two groups. However, one of the two large groups is simply a mirror image of the other, resulting from all of the reversed fingerprints included in the data set. In essence, there is a single group and no significant subgroups. The dense plot resulting from the Harel-Koren analysis is included in Appendix I.

The Single Perforator Theory

Could a single stroke perforator possibly have produced all of the added perforation patterns? To test this possibility, pattern matches were used to construct a hypothetical row of pins. A computer program started with the closest row matches and worked downward through the network. This process resulted in a pin sequence for a stroke perforator that could produce all of the added perforation patterns. This simulation resulted in a sequence of only 80 pins to punch all of the added perforations in the analyzed collection. Eighty ~~80~~ pins would constitute a row merely 5 inches long, so this could indeed have been a small, portable device.

The results of this effort are shown in **Figure 11**, and are presented in order of Scott numbers for simpler reference to the collection. Different copies of the same Scott numbered stamp are indicated by numbers following a "#" sign. The placements of the colored bars show the selection of the pin sequence needed for creating the specific perforation row in the collection. The colors in this chart follow the same color coding used in Figure 9.

Pin #	Center-to-center Distance (mm)									
1-10		1.715	1.679	1.743	1.698	1.678	1.697	1.650	1.702	1.713
11-20	1.670	1.649	1.726	1.628	1.687	1.656	1.755	1.559	1.717	1.677
21-30	1.731	1.631	1.633	1.690	1.675	1.662	1.715	1.669	1.692	1.695
31-40	1.700	1.745	1.626	1.746	1.622	1.674	1.739	1.696	1.629	1.653
41-50	1.685	1.678	1.714	1.620	1.690	1.686	1.706	1.649	1.600	1.715
51-60	1.629	1.706	1.710	1.671	1.728	1.606	1.713	1.700	1.747	1.640
61-70	1.712	1.702	1.689	1.686	1.671	1.591	1.709	1.606	1.730	1.661
71-80	1.696	1.689	1.664	1.679	1.682	1.690	1.661	1.701	1.710	1.701

Table 1. *Center-to-center pin spacings for a hypothetical 80-pin stroke perforator created by computer analysis of the alignments in the fingerprint matches of added perforations.*

It is interesting in Figure 11 that nearly all of the parallel interior perforations that are closely spaced (shown in orange) closely align with each other. This is consistent with these perforation rows being produced by small movements in the stroke perforator. Also note that there are several triple row examples in the graph (R9#2, R30, R52, R135, and RB1) that are similar to the example featured by Brett (1990) having blind perforations in three parallel rows.

The calculated values of the distances between pins are listed in **Table 1.** As far as accuracy, the average standard deviation of the spacing for all of the aligned sequence data is only 0.016 mm. For reference, this value is less than the 0.02 mm minor unit on the vertical scales of Figures 2–5. The perforation gauge averaging over the nearest nine holes ranges from approximately 11.8 to 12.0 over the length of the 80 pin sequence. This is a small range of variation and a very good match to the Kiusalas 12-66 gauge of these revenue stamps (about 11.9). While some of the longest added perforations in the collection can span around 40 holes, this hypothetical 80-pin pattern is only twice that length, and the results in Figure 11 show an extensive use of or preference for the middle of the pin sequence, at least as created by this computer analysis. While it may be possible to further compact the pin sequence, more data and research would be required to accomplish this. This exercise demonstrates that a relatively short sequence of pins can account for all of the added perforations in the collection.

It would have been more likely that the forger acquired an existing perforator than had one fabricated, because of the difficulty in making even a simple stroke perforator. Possibly the device was acquired from a defunct operation that produced local post, telegraph, forgeries, other stamps, or documents. Some of these businesses closed in the 1880s, and are known to have interacted with stamp dealers in New York and elsewhere who were interested in purchasing their stamp remainders. The transfer of an obsolete perforator seems a strong possibility, and would fit the account of perforation forgeries surfacing in the marketplace around 1890. Preliminary efforts to examine local post and other privately produced stamps have found some issues having hole sizes and gauges that match the Added Group, but no fingerprint matches have been found so far. One interesting near match has been found in stroke perforated bond coupons in hand-written bonds thought to be produced in New York in the late 19th century. Equipment for such stroke-perforated documents that were produced singly or in small numbers is an intriguing possibility. Using the new analysis methods, it should be possible to establish links between the single suspected perforation device used to fraudulently create perforations with any previous or subsequent uses of the same device.

Please note that this analysis cannot distinguish between the result shown in Table 1 and its mirror image, which would be this sequence in reverse. In comparing stamps with this sequence, it is necessary to use reversed sequences of hole spacings (right-to- left) as well as left-to-right sequences to allow for arbitrary choices made in image scanning, the unknown stamp orientations in the perforation device, the possible use of the perforator from either side, and even the possibility of flipping over the stamps before perforating. This is illustrated in Figure 10, where the direction of rotation I chose in scanning the two rows in Figure 3 happened to be the opposite of the direction of rotation used to punch the added perforations. This results in a pattern match to the mirror image of one of the scans.

Partial Rows

For the theory of a single stroke perforator to hold, the group of partial rows (blue in Figure 11) should be associated with an end of the row of pins. The computational re-creation of a hypothetical stroke perforator does indeed align and place them

Figure 12. Partial row perforations in the collection made by stroke perforation.

at one end of the 80-pin sequence. The grouping of these at one end suggests that only one end of the row of pins was used; perhaps the other end was not accessible for this purpose. The stamps having partial rows represented in Figure 11 are shown in **Figure 12.** This is an interesting set of partial rows, a type of added perforation that is less commonly observed. The holes generally have a sharply cut appearance, and the 3¢ Proprietary especially shows the contrast of these with the rougher edge perforations. There is a large range of placements of the partial rows, in contrast to most partial rows of original perforations, which are discussed next.

Figure 13 shows examples of revenue stamps with partial rows that are original perforation errors. Partial row perforations have largely been regarded with suspicion according to Brett (1990), but Mahler (1991b) produced examples on document which lent credibility to the idea that partial rows can be extra original perforations. Such rows should be produced by halting a rotary perforator upon noticing an operating error such as sheet misalignment or the realization that the sheet had already been perforated, as was suggested by Mahler. Additionally, they could conceivably result from a folded sheet of stamps. Worth noting is that most of these partial rows are nearly parallel to the edge perforations. The blocks #3 and #4 shown in Figure 13 are consistent with an aborted perforating operation; the partial rows are slightly angled, the hole-to-hole spacings of adjacent rows do not correlate with each other or with the fraudulent added perforations, and the partial rows are parallel to each other with a separation consistent with rotary perforation. The upper two partial rows in block #3 are one hole shorter due to an incomplete hole cut that was not punched out. The partial rows in the two blocks are nearly the same length and it appears that the two blocks mate to form a 5x2 block.

The perforation hole sizes in Figure 13 mostly pass the simple test with a gauge. When put to the simple test using the Kiusalas 12-66 holes on the U.S. Specialty Multi-Gauge, most of the holes exhibit visually larger holes than the 0.488 mm hole radius on the gauge. This suggests they are original perforations. The measured average radii of the partial rows in mm are: 0.498 (#1); 0.485 (#2); 0.497-0.504 (#3 and #4); 0.533 (#5); 0.505 (#6); 0.487 (#7); 0.490 (#8); and 0.536 (#9). The hole fit errors for the three which do not pass the radius size test alone are: 10.3 (#7); 12.0 (#2); and 8.9 (#8).

Figure 13. Partial row perforations that are original perforation errors.

Visual examination of Figure 13 shows that the partial rows in stamps #7 and #8 look smooth and round, while stamp #2 shows obvious irregularity of hole shape. Stamps #7 and #8 are simply too close to the cluster of the added perforations shown in Figure 8 to be discerned using this simple visual test with a gauge.

Part-Perfs and Dubious Doubles

No part perforate revenues have been found so far with extra perforations that correlate with the fraudulent added perforations. Especially interesting is the angled, partial row in the scarce strip of five R33b (Figure 13, #9) that appears to be original perforation. While a lack of correlation to the added perforations does not conclusively prove that a row of perforations is original, no other meaningful groups of fingerprints have been found in this comprehensive study and the average hole radius (0.536 mm) is much greater than the largest hole radius of the added perforations that have been observed. In the absence of any indications to the contrary, it appears that the perforations are original. Indeed, expert opinion on the certification for this item termed the extra perforations a "freak partial row." This is acceptable since "freak" is synonymous with original perforation.

A number of original-appearing extra perforations were produced by stroke perforation. These were likely intended to mimic "double perforation" errors which were common in the First Issues. Some examples of these are shown

Figure 14. *Original-appearing extra perforations that were produced by a stroke perforator.*

in **Figure 14.** All of these examples have extra perforations which appear approximately parallel to and near an edge of the stamp. There are a number of stamps such as the example in Figure 2 which have perforations on opposite sides of the stamp with a spacing between the rows that is smaller than the rotary perforator's wheel separation. An original perforation error with the rotary perforator should result in a new set of rows all displaced to the left or right of the original rows (as in the blocks shown in Figure 13) rather than opposite directions on the same stamp (as shown in Figure 2). Applying the simple test with the transparent specialist gauge, all of the extra perforations in Figure 14 appear to be the same size or smaller than the 12-66 gauge and have holes with round appearance and smooth edges. This is in agreement with the actual measurements of the radii. This research supports the idea that multiple extra perforations on the same stamp are usually added perforations.

There is only a single example in the collection with a pair of original extra perforations at adjacent sides (on stamp #2 in Figure 1). It seems that accidental rotary re-perforation in both directions was an infrequent occurrence.

Added and Extra Perforations on a Single Stamp

There are two examples of stamps in the collection having multiple extra perforations in which one row is original and the other is added. Stamps #1 and #7 in Figure 1 both have an original perforation on the left and an added vertical perforation through the interior. When put to the simple test using the transparent 12-66 specialty gauge, the two rows on stamp #1 visually differentiate easily in that the double row has much larger holes. The average actual hole radii for the two rows are 0.505 mm and 0.480 mm for the double and interior rows, respectively. The same visual test put to stamp #7 fails even though the average hole radius in the original row is a considerable 0.015 mm greater. In this case the measured average hole radii are 0.493 mm and 0.478 mm for the double and interior rows, respectively. Unfortunately, the 0.493 mm value is just too close to the 0.488 mm radius of the gauge dots on the transparent gauge for this simple test to work in this case.

Conclusion

Interestingly, no stamps matching the added perforations have been found that are later than the 1880s issues included in this study. While stamps of later issues do occasionally turn up with extra perforations, none have so far exhibited fingerprints characteristic of the added perforations on these revenue stamps. This is consistent with the possibility that the production of the added perforations was confined to a single episode carried out by a single individual in the late 1880s with a focus on revenue stamps.

The new analysis methods developed in this research should have additional valuable applications to subjects such as: re-perforation of stamps, including the Washington-Franklins; fingerprint characterizations of other equipment such as different types of comb perforators and harrow perforators; and distinguishing the perforated stamps produced by different companies, whether private or under contract to the government. Preliminary testing also shows that it is possible to fingerprint the perforations of stamps on document using these methods. Viewing the history of fakery as an "arms race" of forgers against authenticators, this research illuminates new paths of quantitative philately that can make fraudulent efforts an ever more difficult undertaking.

Quiz Answers for Figure 1

The following stamps have extra perforations that are original: 2, 3, 9, 11, 13, 16, and 19. The following have fraudulent extra perforations: 4, 5, 6, 8, 10, 12, 14, 15, 17, and 18. Two of the stamps each have one extra original perforation and one extra fraudulent perforation: 1 and 7.

Appendix I. Graphical Networks of Original and Added Perforations

The graphical network of perforation patterns in the Second Issue revenues is shown in **Figure A-1.** The dots representing perforation rows follow

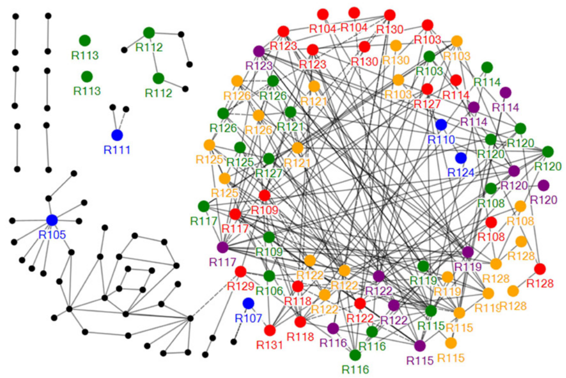


Figure A-1. Graphical network of matching perforation patterns for the Second Issue revenues. The findings are very similar to the network shown in Figure 9 for the First Issues, but with few original double perforation errors.

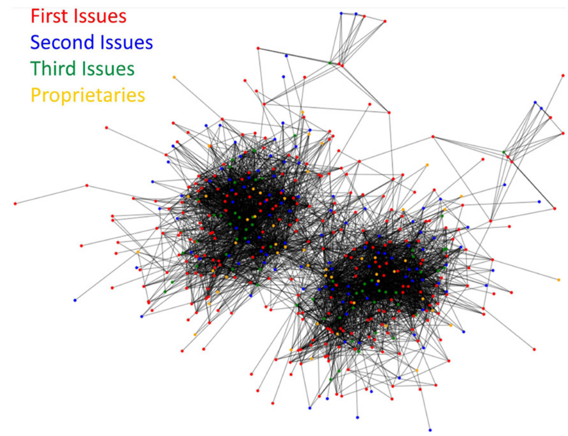


Figure A-2. Analysis showing that all correlated perforation patterns (including all sequences both forwards and backwards) from the first three issues and the Proprietaries separate into a single group (forwards) and its mirror image (backwards). There are no other groups of significant size.

the same color coding as used in Figure 9 for the First Issues network. The dots are labeled by Scott number, except for edges which are unlabeled to reduce clutter in the graph. The lines represent high cross-correlation scores of 50 or greater. Using a correlation score of at least 50 simplified this graph by showing a smaller number of only very strong correlations; including strong scores of 30 or more causes the graph's center to become overly dense. In a few cases where a fingerprint for an interior row had scores less than 50, then correlation scores of at least 30 were included and are indicated by dashed lines. The lines only serve to show strong pattern matches, and their length has no significance. Dots without connecting lines represent perforation rows for which strong correlations were not found. In Figure A-1, more than 60 edge perforation rows (black dots) lacked strong correlations and were not included in the graph to reduce clutter. The few correlations that occur with edges appear to be random and mostly with other edges. Compared to the network of patterns for the First Issue revenues, there are few original double or partial perforations.

The Harel-Koren analysis (Harel and Koren, 2002) separates graphical networks into regions of greater and lesser interconnectivity. Highly linked subgroups that are weakly linked to the rest of the perforation fingerprints can be separated and identified in this process. The Harel-Koren analysis applied to all of the added perforation fingerprints (forwards and backwards) in the collection results in a clear separation into two groups as shown in **Figure A-2.** The forward fingerprints mostly separate from the backward fingerprints resulting in two groups that are mirror images of each other. Thus, the added perforations consist only of a single interconnected group.

There is a small degree of interconnectivity between the two groups which corresponds to the pattern matches with reversed sequences; this is the result of scanning decisions that I made in creating the study database—there are instances where I scanned opposite sides of a stamp in the same direction, when instead the stamps were rotated to bring each edge to the stroke perforator, or I rotated a stamp in the opposite direction for scanning than it was rotated for punching the added perforations. An example of this was discussed and presented in Figure 8.

Appendix II. Edward B. Sterling's Enumeration of Rarities and Their Valuations in His Revenue Catalogue of 1888

Edward B. Sterling assembled a very comprehensive collection of revenue stamps before publishing his series of *Sterling's Standard Descriptive and Price Catalogue of the Revenue Stamps of the United States.* The fifth edition of 1888 became a standard reference work for U.S. revenues. In that same year he sold his pioneering collection to Hiram Deats for $7,000, an enormous price for revenue stamps in that time. He later acquired the records and archives of Butler and Carpenter, a producer of both private and government revenue stamps for the U.S. Treasury Department. This material he also sold to Deats.

Sterling's 1888 revenue catalogue describes more than 4,000 varieties of revenue stamps including perforation varieties, pre-print paper folds, paper varieties, imprints, and imperforate multiples. His catalogue includes 330 descriptions

Figure A-3. *Pioneer revenue collector, Edward B. Sterling, pictured in his 1888 catalog.*

of specific revenues having extra perforations, and his descriptions nearly all conform to the extra perforations found to be original in this study. More than 90% of his descriptions are for double perforations, with the remainder being mostly partial row perforations along an edge of the stamp. His catalogue includes only one first issue revenue with double perforations on two adjacent sides (a different stamp from Figure 1, #2). There are only three interior perforation rows described in his catalogue for the First Issue stamps. Two of these consist of a vertical row through the centers of the stamps, while the other has a diagonal row near the top. There are six partial rows in the First Issues that are described as going toward the center of the stamp. There is only a single description of a stamp with crossing interior perforations in his catalogue. This was observed on a multiple of a private die match stamp.

Regarding the later revenue issues, the catalogue reports only 37, 15, and 2 stamps with extra perforations for the Second, Third, and Fourth Issues, respectively. This agrees with the steep decrease of original extra perforations in later issues observed in this study.

Considering the extent of Sterling's collection, the rare observance of interior perforation rows crossing the stamps, and the extensive consistency of his descriptions with original perforation errors, it appears that Sterling's collection may have been one of the best surveys of revenue stamps before stamps with fraudulent extra perforations were introduced to the market. Given the extent of his collecting, he was in a good position to attach valuations to perforation errors before the authenticity of these stamps came into doubt. While his prices of 25¢ to 50¢ for many of these perforation errors may seem like high multiples, this is similar to current valuation practices for rare varieties, especially for stamps otherwise having "penny" valuations.

Appendix III. Technical Description of the Analysis Methods

High resolution images were obtained with a Canon 9000F flatbed scanner used in positive monochrome film mode. The method of scanning creates a dark image of the stamp with white holes. This mode uses an insert which limits images to a width of about 57 mm. Images were investigated using resolutions from 600 dpi to 9600 dpi to determine the appropriate resolution for this research. A resolution of 2400 dpi was found to provide sufficiently high resolution without burdening the analysis with overly large file sizes and excessive computation times. All scans were done with the stamps placed directly on the platen, and small weights away from the features of interest were placed on the stamps if there was any observed curvature or lift of the stamps above the platen. All scanning of perforation rows was done by orienting the rows horizontally in the scanner. The scanned image of a 40 mm transparent ruler on a Stanley Gibbons Instanta gauge measured 39.994 mm in pixels for an estimated error of only 0.01%. Similar tests with 1 mm sized objects gave close agreement between micrometer measurements to the nearest 0.0001 inch and the image width in pixels. Vertical orientation in the scanner gave a much larger error. Images were manually processed using Adobe Photoshop software and then analyzed using computer programs written in Free Pascal (Free Pascal team, 2013). The Photoshop manipulations were as follows: images were converted to gray scale; the "Trace Contour" feature was used to determine a 1 pixel-wide contour of the holes in the image; the image was cropped down to just the row of holes of interest; and the "Brush" tool was used to eliminate any remaining parts of the image other than the hole contours. From the "Levels" tool, the midpoint between the highest black peak and the white peak (typically about 155) is used for the Trace Contours level with the low bias setting. The measured radius of a hole feature can be corrected by a factor of r/(r-0.5), where the value of the radius, r, is in pixels, to compensate for the use of a 1 pixel-wide contour. The Trace Contours feature provided superior results to the more standard "Find Edges" feature (2 pixel-wide contour) because of the better defined, more constrained hole edge. The Trace Contours method with the applied correction was compared with the Find Edges method in processing a perfect circle of 1 mm diameter created in software at different resolutions. Both methods were found to converge to the exact radius with increasing resolution of the image, and at 2400 dpi the Trace Contours method was within 0.3 microns of the correct result for the radius. The Brush tool was used to erase the bridges between the holes at the edges of the stamps so that the only remaining parts of the image were the data arcs of the holes to be fitted with circles.

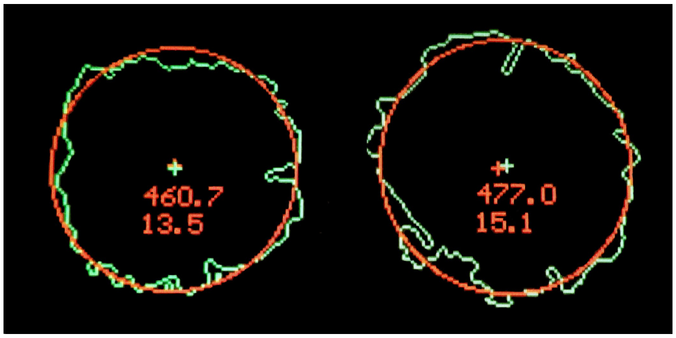
The measurement of circular arcs in digital images is a widely encountered application in physics (Chernov, 2010). Partial arcs of data are particularly prone to varying degrees of error depending upon the method. Several methods were evaluated for this application, with special focus on their ability to correctly fit the partial arcs from edge images of stamps. Methods tested included Nelder-Mead "simplex" iteration (Nelder, 1965), Levenberg-Marquardt iteration (Levenberg, 1944), and the linear least squares approach adapted to circular data by Coope (1993). Test images were created with scans of real perforations and a two-step process was used to apply these methods. First, a low resolution search with a circular mask of 0.49 mm radius was performed by scanning the perforation row image. When circular arc data was found that overlapped the mask, this location was then used to launch one of the circle fitting methods for the second step of the process.

A large number of studies at different resolutions compared these methods using real image data having a range of arc lengths. The Nelder-Mead method was unreliably sensitive to the initial estimates used to launch the method, while the matrix algebra methods of Levenberg-Marquardt and Coope were both very fast and in near agreement. The Coope method performed slightly better in the testing with partial arcs of data encountered with edge images, and was adopted for the second stage, high resolution analysis.

The minimum arc lengths for typical edge perforation images were about 145 degrees of arc, and the methods work well down to about 120 degrees. Below this arc length the methods deviated towards larger values of the radius. In edges with badly worn or rounded-off bridges between perforations, the short arcs thus tend toward overly large fitted circle sizes. The data in Figure 8 shows a large assortment of double perforation errors (green) that are measured over 360 degrees of arc length. The radius of the original perforations is generally less than 0.525 mm. For this reason, if the Coope analysis returned a radius in excess of 0.535 mm, a cross correlation of the image at high resolution using a 0.535mm radius mask was instead used for the second step of the circle-fitting process. The 0.535 mm radius gives a sensible maximum radius value for 12-66 perforation of these stamps, and avoids introducing a grossly offset hole center from an erroneous fit to a short or rounded-off data arc in an edge row.

The fitting of a circle to the image determines the radius of the circle and the coordinates of circle location in the image. Using an estimate for the perforation gauge, the computer program searched for the next arc of data in the row of perforations. This process is simply repeated until the right edge of the image is reached.

After a circle is fit to an arc of data, a calculation can be made for the error of the fit. This was defined as the average intensity-weighted root mean square error in the radius calculated for all of the image in the neighborhood of circle. This "hole fit error" was scaled to the number of data points so that the result is independent of the length of the data arc. Better fits of circles to the hole outlines result in lower error values. Increased hole fit error can come from at least two sources: non-circular shape and roughness of the edge contour in the image. Rough, torn, or fibrous edges on perforations will result in irregular edge contours and increase the hole fit error. Partially punched perforations also will result in increased error, and if grossly misshapen will introduce error to the circle fit as well. For this reason, portions of data arcs that are not representative of the perforation row due to defects such as tears, unremoved paper in partial punches, etc. are deleted from the image to prevent skewing of the average results. Two examples of hole fit error are shown in **Figure A-4** and **Figure A-5**. Figure A-4 shows an example of a pair of adjacent holes in a rough appearing double perforation error of a Scott #R27 having high values of the hole fit error. The 1 pixel-wide contour from the actual image is shown in green. The initial estimate of the hole center is shown by a red cross mark and the center of the fitted circle is shown by a green cross mark. The numbers below the center marks are the fitted radius in microns and the hole fit error. Figure A-5 shows the much smaller error with the rounder, more regular holes obtained from an image of the added perforations on a Scott #R135. The video graphics images in the two figures



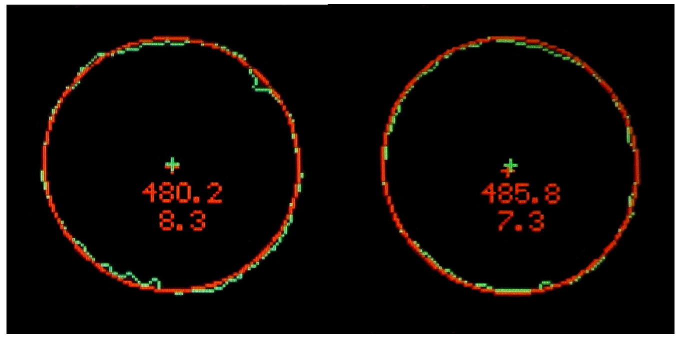


Figure A-4. *Left, two adjacent holes from an original perforation error of Scott #R27 from an image displaying rough hole contours. The 1-pixel wide contour line showing the hole edge from the processed image is shown in green. The best circle fit is shown in red and the radius (in thousandths of a mm, or microns) is the top number. The lower number is the hole fit error.*

Figure A-5. *Right, two adjacent holes from added fraudulent perforations of Scott #R135 showing much smoother, more circular holes and much smaller values for the hole fit error.*

are generated using rounded-off, integer values for radius and screen position, but the actual numerical results are far more accurate.

After the hole locations in the row are determined, the average perforation gauge and the pattern of hole spacings were calculated. A matrix algebra method determined the gauge by a linear least squares solution of two variables: the horizontal coordinate of the first circle of the gauge, and the average spacing in the gauge to best fit the sequence of perforations. While the scans are done near horizontal in the scanner, any slope in the data is removed by first doing a linear least squares analysis of the hole center positions. Given the micron level accuracy of the circle fitting methods, the gauge measurements vary less than 0.01 of a gauge unit upon repositioning the stamp in the scanner and rescanning. This is a resolution that is more than 20 times smaller than the normal variation in gauge encountered with these stamps.

A file was created for each perforation row that included the sequence of hole coordinates, hole radii, hole fit errors, and the distances between consecutive centers. The cross correlation of a pair of perforation rows was done by deter-mining the alignment that best matched the patterns. All possible alignments were evaluated by translating one sequence over the full length of the other, and the differences between the sequences were squared and summed giving a measure of the variance. In seeking the overlap with the least variance, it is important to not allow trivial situations involving coincidental overlapping of one or two values at the ends of the two sequences. Therefore, a "score" was developed to scale the correlation result by the length of the actual overlap. The correlation score was expressed as 10^{-3}n/variance, where n is the length of the overlapping region of the sequences and the variance is the sum of the squares of the errors using hole spacings in mm. Further, overlaps of less than eight values or less than the shortest row length were not allowed. The median value of computed scores in the approximately two million correlation studies resulting from 2,000 different hole sequences was approximately 0.3. The graphical networks in Figures 9 and A-1 utilized results having minimum scores of 50, very large correlation scores that are visually evident in the close pattern matches shown in Figures 2-5.

NodeXL (The Social Media Research Foundation 2013), a template for Microsoft Excel, was used for creating the graphical networks shown in Figures 9 and A-1. The circular graphical layout option of NodeXL was manually edited to group perforation rows from the same stamp in the network graph. Redundant reverse correlations were manually deleted from the graphs. The Harel-Koren Fast Multiscale analysis (Harel and Koren 2002) for sorting nodes according to the degree of interconnectivity is a feature in the NodeXL template.

The reconstruction of a hypothetical stroke perforator's pin sequence was accomplished using a program that worked through a listing of all of the correlation scores starting with the highest values. The matches would determine a common sequence for the pin spacings. After the first pairing based on the highest correlation score, a third pattern sequence was overlaid with the pin pattern based on the highest correlation to either of the first two sequences, and so forth. In the course of this process, the ends of new pin sequences would sometimes extend beyond the existing selections and further increase the number of pins in the hypothetical perforator.

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Finds in the Marketplace: Another Hart L. Pierce 1¢ Proprietary Counterfeit?

[from Dan Harding] On the left, a normal 1¢ Proprietary (Scott R3c). At center, a Hart L. Pierce counterfeit (all Hart pieces I've ever examined or seen in auction catalogs have this color and appearance).

At right, an R3b (or more likely a trimmed R3c) recently acquired because it looked "off" to me with respect to the facial features. Now that I have it in hand, I'm not sure what it is. Looking at the eyes, nose, and lips, as well as the upturned hair curl at left, it looks to have more in common with the Hart L. Pierce work than the genuine stamp shown here. Note also the similarity in perforation style between the Hart L. Pierce and the new acquisition.

However, it appears to have a completely different color and impression. Looking at R3c's and R3b's I have, there is some variance throughout, but that nose and lip combination is fairly distinctive. Just an oddity or something more?

[Readers: opinions? Email the editor, or Dan directly at dan@revenue-collector.com. In any case, visit his website (http://www.revenue-collector.com), a veritable cornucopia of visual and informational treats!]

Forged Control Handstamps on California Bill of Lading and Insurance Stamps

by Michael Mahler

Colors of genuine stamps

According to Kenyon (1920), on classic California red stamps, whether Bill of Lading, Exchange or large Insurance, the "GWW" Controller's hanstamp is found *only* on stamps in the distinct shade he called orange-vermilion. To this I would add the "GWW" Passenger stamps. **Figure 1** shows examples.

Figure 1. *Bill of Lading, Exchange, large Insurance, and Passenger stamps with "GWW" controls, all in orange-vermilion.*

Kenyon further stated that the "ARM" plain control also comes *only* on orange-vermilion; the "ARM" fancy comes *only* on brick red; and the "SHB" comes on brick red and carmine-lake (on bluish papers), and vermilion on white paper.

Figure 2 illustrates these four colors.

Figure 2. *From left, stamps in orange-vermilion, brick red, carmine-lake (all on bluish papers), and vermilion on white paper.*

For the Bill of Lading and large Insurance stamps, Kenyon's conclusions are confirmed by my own exhaustive analysis of their deliveries and daily sales, and the on-document evidence [*California Bill of Lading and Large Insurance Revenue Stamps of 1858–1861. I. Identifying and Dating the Four Printings. II. Pricing the Four Printings.* (http://www.revenuer.org/articles.html)].

Suspicious "GWW" on carmine-lake

Imagine then my surprise and shock at encountering in a dealer's stock the "GWW" stamps shown in **Figure 3,** in carmine-lake or something like it, but certainly not orange-vermilion. By my reckoning, no stamps in this shade had ever been delivered to Controller G. W. Whitman; he left office October 6, 1858, and the first delivery of carmine-lake stamps did not occur until March 16, 1860, to Controller Samuel H. Brooks. Yet the stamps themselves appeared genuine, and the control handstamps closely matched the illustrations in the Cabot and Hubbard catalogs.

Figure 3. *Insurance and Bill of Lading stamps in carmine-lake with "GWW" controls. No stamps in this shade were ever delivered to G. W. Whitman!*

On that basis veteran state revenue collectors were skeptical, to say the least, of my claim that the stamps must be bogus.

My suspicions were heightened by a second line of reasoning. The Insurance 3 Mo./$1.25

with “GWW” control, if genuine, would be a very rare stamp; it is listed but unpriced in all catalogs. The 3 Mo./$12.50 raised an even more conspicuous red flag. According to my analysis, no “GWW” 3 Mo./$12.50 were ever sold! Twenty-five were issued to the San Francisco County Treasurer but returned to the Controller, and then to the Stamp Commissioners.[1] It is possible, but extremely unlikely, that any of these reached philatelic hands. And in any case, as part of the very first deliveries of the large Insurance stamps, by all other indications they should all have been in orange-vermilion.

Figure 4. *Bill of Lading and Insurance stamps in orange-vermilion with “GWW” controls matching those shown in Figure 3.*

Figure 5. *Attorney, Exchange and Insurance stamps on document, plus off-document Passenger stamp, all with “GWW” control handstamp.*

My previous analysis forced the conclusion that if these stamps themselves were genuine—and they certainly appeared to be—their control handstamps must be forged. This hypothesis became more tenuous in light of the stamps shown in **Figure 4,** with very similar handstamps, but now in the expected orange-vermilion shade. Moreover these denominations, if genuine, while certainly scarce,[2] would not be great rarities in the class of the “GWW” 3 Mo./$1.25 and 3 Mo./$12.50. Must these two then be forgeries too?

To provide context I examined about 35 “GWW” stamps on hand on document (and one off, the blue Passenger!), on attorney, bill of lading, exchange, insurance and passenger documents. Four were already shown in Figure 1, and **Figure 5** shows a representative group of five more. To my eye none of their controls have the “fat” look of the five shown in Figures 3 and 4.

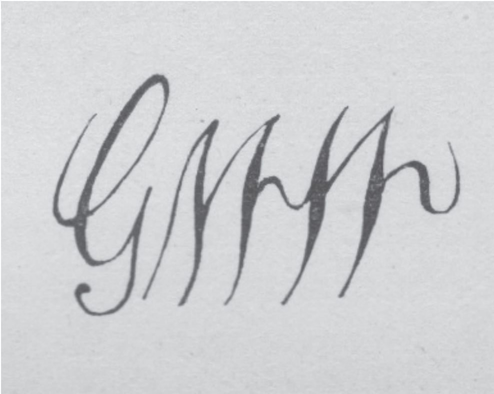
My working hypothesis was that this control handstamp is a skillfully made forgery. Of course I am not an impartial observer; if these five stamps and controls are genuine, all my analysis (and Kenyon’s observations) are wrong! But I didn’t think I was wrong.

The “Aha!” moment was the realization that the illustrations of the “GWW” Type II handstamp in Kenyon (1920) and Cabot (1940) are markedly different, and that Cabot’s bears an uncanny resemblance to the suspect handstamps, whereas Kenyon’s illustration, if not perfectly accurate, does have the sharper “spidery” look of the examples on document **(Figure 6)**.

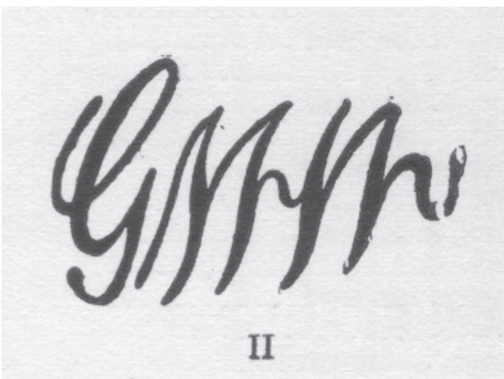
My tentative conclusion is that Cabot had a metal printing block (commonly referred to as a “cut”) made of the handstamp to illustrate his book, and that the suspect items are genuine stamps, from the find of unstamped remainders that surfaced in the 1930s, with forged controls made with Cabot’s device, then cut to shape to resemble used stamps.

1. The initial deliveries of stamps to G. W. Whitman, nominally dated June 1, 1858, in the records but evidently occurring some days earlier, included 100 of the 3 Mo./$12.50. Twenty-five were issued to the San Francisco County Treasurer on October 6, 1858, and the remaining 75 returned to the Commissioners on June 30, 1859. The final reckoning of large Insurance stamps on July 31, 1861, shows all 25 of the 3 Mo./$12.50 issued to San Francisco as returned to the Commissioners.

2. The 12 Mo./$2 and the Bill of Lading 30¢ First catalog $150 and $65 respectively in the new SRS catalog.



GWW Kenyon



GWW Cabot

Figure 6. *Top, illustration of "GWW" Type II control in Kenyon (1920), with representative on-document examples demonstrating its accuracy. Bottom, illustration of the same control in Cabot (1940), which strongly resembles the suspect examples shown in Figures 3 and 4.*

The suspect"GWW" is noticeably thicker than known genuine controls, and its "W"s slope upward at a markedly steeper angle. Its colors can also be expected to be slightly different from originals.

A Second Forged Handstamp

It gets worse. Consider now the star-cut Insurance stamps shown in **Figure 7.** They look perfect. The stamps are undoubtedly genuine, the controls, now not "GWW" but "SHB," look good, matching those illustrated in Cabot. Too perfect for my liking, though: too fresh, too pristine; a used stamp, especially star cut, on this fragile paper, would likely have acquired a few small faults. I was again suspicious.

Moreover, the denominations, 6 Mo./$5 and 6 Mo./$10, raise red flags. On Insurance stamps, star cuts were listed by Adenaw et al. (1921) and Cabot only on four stamps: 3 Mo./$1.25, 3 Mo./$2.50 and 6 Mo./25¢ on thin bluish, and 6 Mo./$2.50 on white paper, all "SHB" control. So the "SHB" controls on these two are consistent with past observations, but the chance that two new genuine denominations would crop up only now seems small.

Even more suspicious, the 6Mo./$10 is exceedingly rare, listed but unpriced in Cabot; my extensive research on the 1858–61 issues shows that only 44 were ever sold, and of the "SHB" in brick red, as here, only 20 were sold (http://www.revenuer.org/research/mahler/CA1858-61IIPricing.pdf).

Figure 7. *Insurance star-cut 6 Mo./$5 and 6 Mo./$10 in brick red with "SHB" controls closely matching that illustrated by Cabot.*

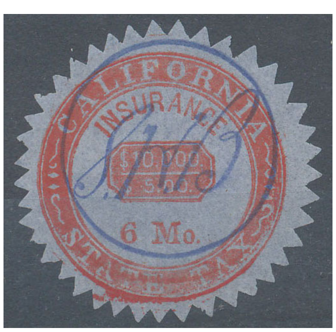


Figure 8. *Insurance stamps on document, all with "SHB" control handstamp. Each initial is followed by a period.*

Given what we have just seen regarding the suspect "GWW" controls presumably struck with Cabot's "cut," the close matching of these "SHB" controls with his illustration is not necessarily a recommendation. On a hunch, I checked my on-document "SHB" stamps; **Figure 8** shows a large representative sample.

The salient point is that all have a period after the "B" of the handstamp; readers can no doubt verify on their own examples.

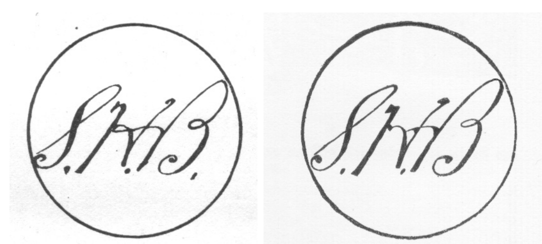
Yet on the two star-cut stamps shown in Figure 7, and in the illustration in Cabot, there is no period after the "B"!

Again the conclusion is inescapable that the "cut" used to make the illustration in Cabot (1940) has been struck on unstamped remainders.

Parenthetically, both Kenyon (1920) and Adenaw et al. (1921ca) got the illustration right (or at least more right!), see **Figure 9.** On closer inspection, Cabot got another easily detected detail wrong: the small loop in the horizontal cross-section of the "H" is present in the genuine handstamp and in Kenyon's reproduction, but missing in Cabot's, and thus in the forgeries.

An unfortunate but not surprising corollary is that the star cuts shown in Figure 7 are also bogus!

The forger was a busy boy. **Figure 10** shows four more "SHB" forgeries, three culled from the internet. Even absent the dispositive evidence of the forged handstamp, the task of identifying these as forgeries is made easier by the forger's choice of denominations. No 3 Mo./$12.50 or 9 Mo./37½¢ were ever sold! (See p. 9 on http://www.revenuer.



Kenyon Cabot

Figure 9. *Illustrations of "SHB" control handstamp in Kenyon (1920) and Cabot (1940); the latter omits the period after "B".*

org/research/mahler/CA1858-61IIPricing.pdf). Unstamped remainders in brick red, the color of these forgeries, were in fact found, even examples with genuine "SHB" control. The best one could have hoped for is that these were remainders with genuine controls. Note though, that unlike the unsullied remainders, which are either in strips or singles with huge margins, these were trimmed by the forger to mimic used stamps!

3 Mo./$12.50 9 Mo./37½¢ 9 Mo./37½¢ 9 Mo./75¢

Figure 10. *Four more Insurance stamps with forged "SHB" control.*

Figure 11 shows still more "SHB" forgeries, this time on intact remainder strips of four. The 3 Mo./25¢ denomination is again suspicious in its own right: of the "SHB" in brick red only 12 were ever sold.

Let's reprise. The forger, perhaps aware that his creations will be perceived "only" as rare handstamped remainders, cuts them to shape to mimic stamps actually issued/used. Not content

3 Mo./25¢

6 Mo./10¢

Figure 11. Insurance 3 Mo./25¢ and 6 Mo./10¢ remainder strips of four in brick red with forged "SHB" controls, lacking the period after "B".

with this second level of deception, he creates a punch to mimic the rare star cuts! Close examination will probably reveal differences between genuine and forged star punches.

Here is a critical sidebar. As shown in **Figure 12,** The handstamped remainders in the "Grinnell find" described by Vanderhoof (1941) were genuine. I have seen scans of nearly all of these (albeit not the

3 Mo./5¢ 3 Mo./50¢

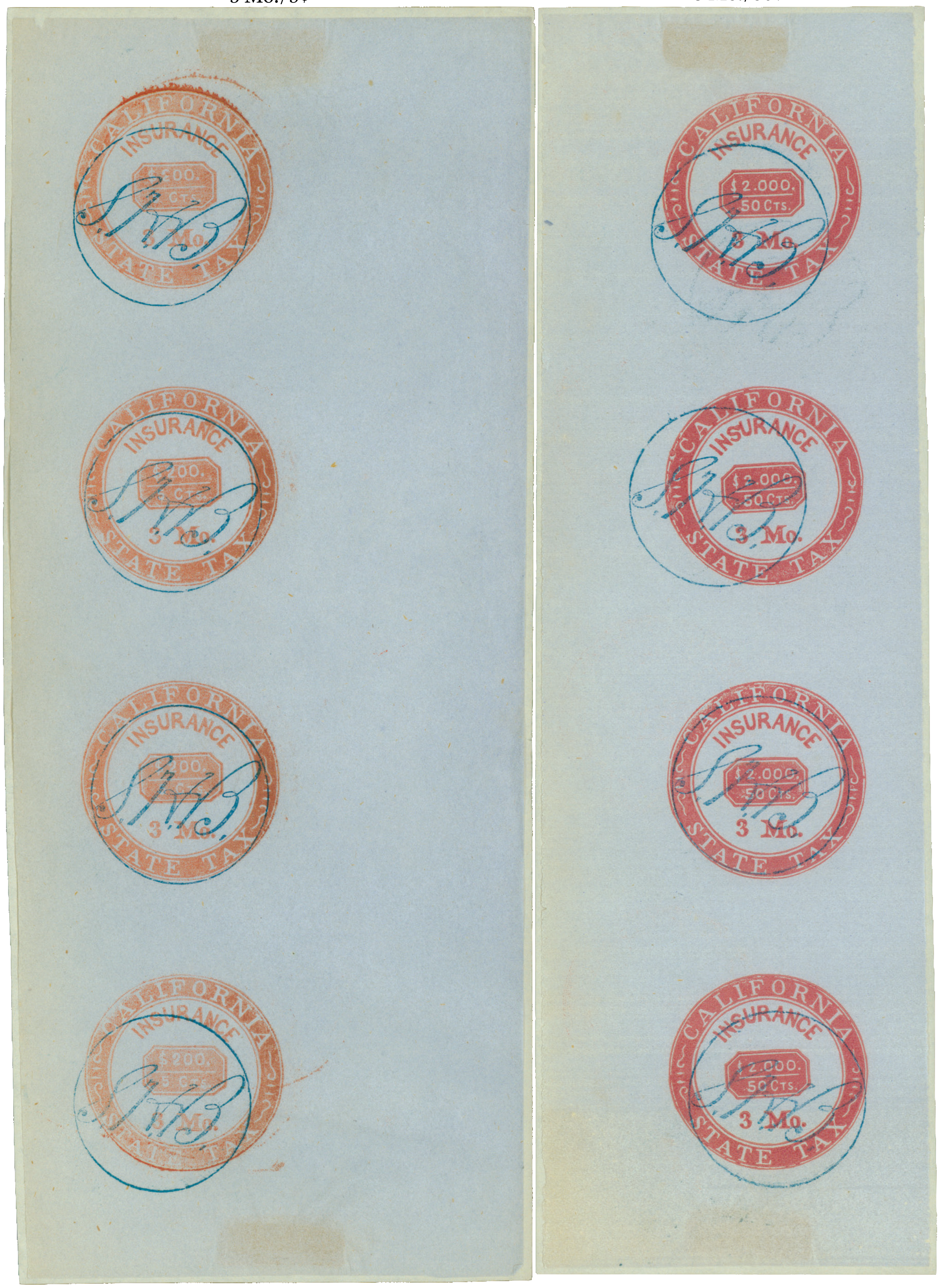


Figure 12. *Insurance 3 Mo./5¢ and 3 Mo./50¢ remainder strips of four in brick red from the "Grinnell find" with genuine "SHB" controls; note the period after "B".*

3 Mo./$12.50 or 9 Mo./37½¢). The forgeries were concocted from the unstamped remainders.

Forged "ARM" Fancy!

Now that the forger's method has been discovered, detecting more examples becomes easier. The key is to look for differences between genuine control handstamps and those illustrated in Cabot. On examination, another obvious potential forgery emerges, shown in **Figure 13:** on the "ARM" fancy control, the genuine has a period after "R", which is missing in Cabot! An on-document example and a remainder from the Grinnell find both clearly show this period.

the process of publishing his 1960 state revenue catalog, Hubbard had acquired the rights to Cabot's 1940 work, and also the devices used to create the illustrations therein. Given Bert's well established reputation for shady dealings, he is certainly a "person of interest" in the search for the identity of the forger.

The catalog did not disappoint. Despite the small size and low resolution of the illustrations, I see no fewer than ten clear examples of forged "ARM" fancy controls, usually replete with high-flying

Cabot

Kenyon

3 Mo./25¢

6 Mo./10¢

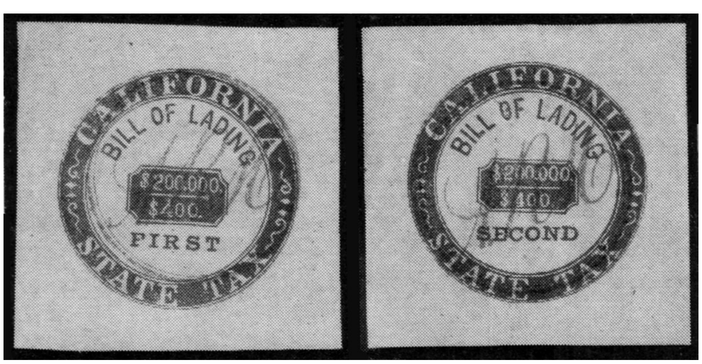
Figure 13. *From left, "ARM" fancy control as illustrated by Cabot and Kenyon, the former lacking period after "R"; and actual examples on document and on Grinnell remainder.*

Again, Kenyon and Adenaw et al. got the illustration more correct, at least in showing the period. When well struck, the actual period is long and thin, resembling a comma.

Did the creator of the devices used for the Cabot catalog include "secret marks," such as missing periods, to enable detection of skullduggery?

Let us now go searching for forgeries of the "ARM" fancy control. Where, dear reader, would you start? Call me cynical, but I headed straight for the catalog of the 1991 Superior Stamp & Coin auction of Bert Hubbard's California holdings.[3] In descriptions and estimates, as well as several more possibles. Numerous examples are shown on the following pages.

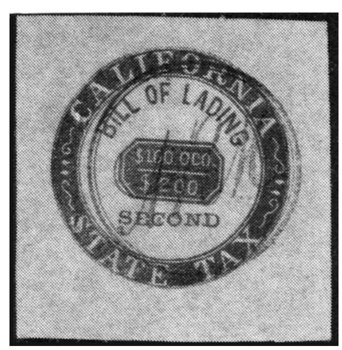
3. Veterans will remember that the fast-talking Bert convinced the staff at Superior, who knew very little about state revenues, to let him provide all the descriptions and estimates; those estimates were roughly five to ten times what the market might bear, in an area in which there was little interest to begin with, as Bert had amassed nearly everything available; virtually no bids came in; Superior realized they had been bamboozled, and aborted the auction.



1233

Lot 1233 [Bill of Lading] "30¢ thru $400 red, complete set ... with type IV blue surcharge ...the three high values [$400] ... listed but unpriced and of superb quality. ECV $11,500"

Only ten sets (of First, Second, Third, Fourth) $400 "ARM" fancy were ever sold! *These clearly lack the period after "R"; forgeries!*



1244

1244 [Bill of Lading] "$200 on $100,000, ... Type IV 'BLACK SURCHARGE' ... scarce elusive issue, superb. ECV $1000"

Only 31 "ARM" fancy sets were ever sold. *No period, forgery!*

1245

1249

1250

1245 [Bill of Lading] "$400 on $200,000, ... Type IV 'BLACK SURCHARGE' ... *unlisted and extremely rare,* superb. ECV $1750"

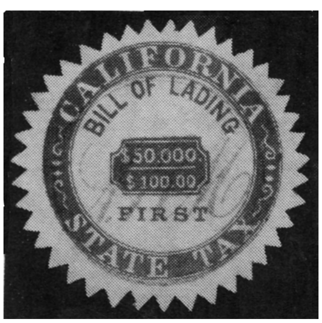
Again, only ten sets of $400 "ARM" fancy were ever sold! (Hmm, Adenaw et al. did list it with both blue and black controls, amazing; this was long before the discovery of the remainders.) I see no period here, but one may be present; examination of the actual stamp would settle the issue instantly. The large margins and pristine condition are charcteristic of remainders. Call it a *probable forgery.*

1249 [Bill of Lading] "$200 on $100,000, ... Type IV 'Black Surcharge' ... extremely rare and unpriced in catalog, superb. ECV $1200"

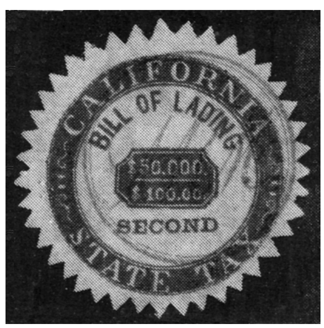
Again, only 31 "ARM" fancy sets were ever sold. *No period, forgery!*

1250 [Bill of Lading] "$400 on $200,000, ... Type IV 'Black Surcharge' ... exceedingly scarce and unpriced in catalog, superb. ECV $2200"

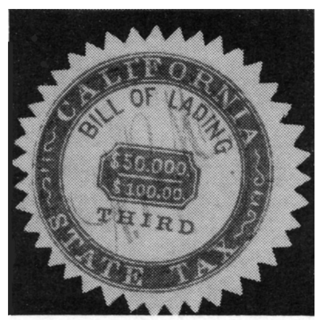
Once again, only ten "ARM" fancy sets were sold. Wow, in lot 1233 he has it in blue, in 1245 in black, now another in black! *No period, forgery!*



1237



1243



1248

1251

1237 [Bill of Lading] "$100 on $50,000, 40 point star cut with Type IV blue surcharge ... extremely fine to superb. ECV $600"

1243 [Bill of Lading] "$100 on $50,000, 40 point star cut with Type IV blue surcharge ... extremely fine. ECV $700"

1248 [Bill of Lading] "$100 on $50,000, 40 point star cut with Type IV blue surcharge ... very fine. ECV $600"

1251 [Bill of Lading] "$100 on $50,000, 40 point star cut with Type IV blue surcharge ... very fine. ECV $700"

The First (1237) clearly has *no period, forgery!* On 1243 (Second), 1248 (Third) and 1251 (Fourth) I see no period, but cannot say with certainty one is not present; again, examination of the actual stamps would quickly settle the issue. I conservatively class these as *probable forgeries,* probably all made from the same strip. Only 66 "ARM" fancy sets were ever sold, and the probability that genuine First, Second, Third and Fourth "perfect" star cuts exist is a priori infinitesimal.

1451

1452

1474

1526

1451 [Insurance] "[3 Mo.]/$5 orange red ... outstading fresh copy, unpriced, superb ECV $850-1000"

Only 57 of the 3 Mo./$5 were sold. *No period, forgery!*

1452 [Insurance] "[3 Mo.]/"$12.50 tax on $50,000, ... unlisted value, beautiful fresh copy, possibly unique, superb. ECV $1000-1250"

Unlisted because no 3 Mo./$12.50 were ever sold! *No period, forgery!*

1474 [Insurance] "[6 Mo.]/"50¢ dull orange 40 point star cut with *unlisted Type IV surcharge* ... exceedingly rare and possibly the only existing copy, extremely fine. ECV $350-500"

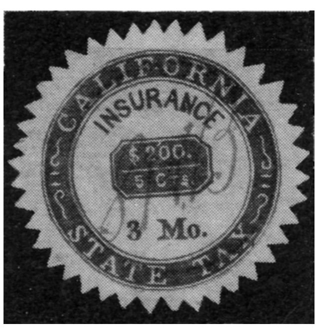
Let's hope it's the only one! Unlisted for a reason. *No period, forgery (and another forged star punch)!*

1480 [Insurance] "[12 Mo.]/"$10 orange ... unpriced in catalog, rare high value, extremely fine to superb [No illustration]. ECV $750-1000"

Not unpriced but unlisted, not surprising as only ten 6 Mo./$10 were sold. Yet here is one of those ten! Bit hard to make out, but *no period, forgery!*

1526 [Insurance] "[12 Mo.]/"$20 dark orange ... outstanding copy, unpriced in catalog, superb. ECV $600-800"

Again, not "unpriced" but unrecorded, not surprising as only 20 of the 12 Mo./$20 "ARM" fancy were sold. No problem, here's one! *No period, forgery!*

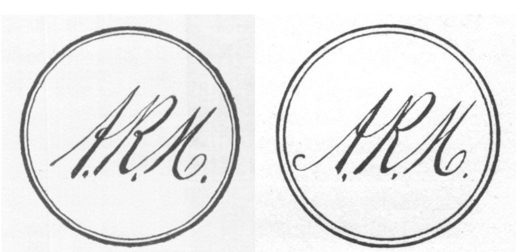


1453

Some of the now-familiar "SHB" forgeries with no period after "B" were also present.

1453 [Insurance] "[3 Mo.]/"5¢ deep rose 40 point star cut with Type V surcharge ... an outstanding rarity, only a few known, superb. ECV $900"

The 3 Mo./5¢ is actually known in some numbers (240 "SHB" were sold in brick red, and 320 in carmine-lake, this "deep rose" is probably the latter), but no star cuts were known to Adenaw et al. or Cabot. Want one? No problem, here's one. Oops, *no period, forgery (and another forged star punch)!*



Cabot Kenyon

Figure 14. *"ARM" plain control as illustrated by Cabot and Kenyon, the former lacking curlicue at start of "A"*

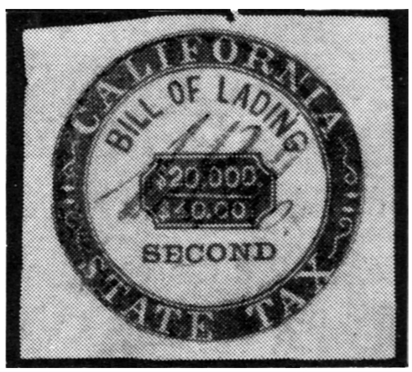
More to Come?

Since the forger used the devices created to illustrate in Cabot the "GWW" Type II, "ARM" fancy, and "SHB" controls, it is possible that he also availed himself of those for the other two controls found on Bill of Lading and large Insurance stamps, namely the "GWW" Type I and "ARM" plain. For these, forgeries will be harder to detect, as Cabot's illustrations do not have immediately obvious "red flag" errors as in the other three.

The "ARM" plain, however, does show small differences which we can hopefully exploit. In genuine controls (and the illustration in Kenyon), the upstroke on the "A" has a small curlicue at the start; in Cabot the upstroke is shorter and the curlicue is missing **(Figure 14;** in other small details Cabot's illustration is actually more accurate). The curlicue is present in on-document examples, but can be hard to see clearly even at high magnification **(Figure 15).**

Figure 15. *Genuine "ARM" plain controls on document; the curlicue of the "A" is present, but can be difficult to discern.*

1223



1225

1230

1223 [Bill of Lading] "$40 on $20,000 ... 40 point star cut with Type III black surcharge, tiny tear not affecting this exceedingly rare stamp, *possibly the only known existing copy,* [little heavy on the adjectives!] superb. ECV $750"

No $40 "ARM" plain star cuts were listed by Adenaw et al. or Cabot, let alone with the scarcer black surcharge. At first glance there is a short upstroke, but the tip of a curlicue may be present at edge of the outer band. *Probable forgery;* too close to call?

1225. [Bill of Lading] "$40 on $20,000 ... 40 point square cut with Type III black surcharge ... very desirable rarity, extremely fine. ECV $400"

Again at first glance there is a short upstroke, but even on the genuine strikes the line is very thin here. Hard to make a decision. Not a likely candidate for a forgery; the $40 is not a rare stamp, even with black surcharge; also it has a fault at top. Probably good?

1230. [Bill of Lading] "$40 on $20,000 ... 40 point square cut with Type III black surcharge ... exceptional quality, superb. ECV $350"

Same comments as above; *probable forgery.*

For all of these it would help greatly to see the actual stamps, not only to better discern the controls, but to see the stamp colors. The genuine "ARM" plain was issued or sold only in orange-vermilion (on bluish paper)! Among the many remaindered strips lacking controls, I am aware of none in that color. Probably any forgeries would give themselves away by the stamp color as well as the bogus control. For the present, though, the existence of "ARM" plain forgeries remains an open question.

All illustrated "GWW" controls in the auction, both Types I and II, appear to be genuine.

Apart from the forgeries, there is a troubling aspect to many of the descriptions furnished here by Hubbard. There are numerous pristine, large-margined remainders with genuine handstamps offered, probably cut from strips of four, but never identified as such! Hubbard must have—or certainly should have—known what these were. Innocent mistake or willful deception?

As to the forgeries, Hubbard is known to have possessed the Cabot cuts and many remaindered strips of the Bill of Lading and Insurance stamps lacking controls. Whether anyone else had access to the cuts is unknown, so we can never be certain if someone else had the opportunity to create these forgeries. But if Hubbard did not create them, how did he come into possession of so many? The presence of so many forgeries in his collection makes him the prime suspect as the forger.

Hopefully this presentation will not be the last word on this sensational topic. A well publicized reference collection, real or virtual, of these dangerous and troubling forgeries would be desirable. As a beginning, several dealers have donated examples culled from their stocks to a small collection, for which I am acting as caretaker; I will happily accept additions, either the actual items or 600dpi scans, to be displayed online in due course.

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Forged Texas Cigarette Stamp

by Kent Gray

(Waiting for text)

The American Revenue Association

President's Letter

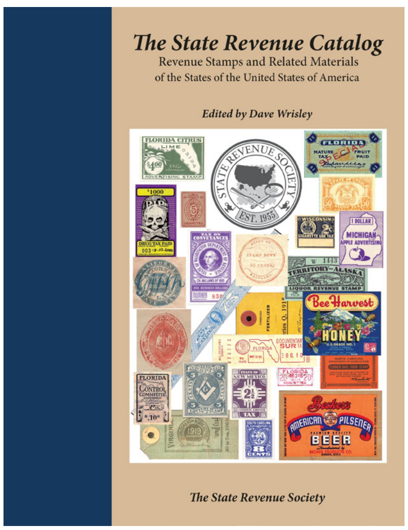
I had hoped by now that we would have everything in place for the internet-only members, but you who have opted for that type of membership are still receiving a printed copy, and the mechanics are not in place for you to sign in and read the journal online and/or download it. It *will* happen, and sooner rather than later, I promise! Details of setting up an internet account will be on the ARA website as soon as the secure site is ready.

Having gotten the bad news out of the way, the much better news is that we are taking our first steps toward getting a large portion of back issues into the data base. Chris Steenerson has stepped forward to lead the project of digitizing our past issues. I have seen some of his work with the American Topical Association, of which he is also a member, and the digitizations look great.

Our Board has agreed that we will follow the Classics Society's model and keep a rolling five years' copies in the members-only file. Earlier issues will be in an open file, available to anyone who wants to read them. As Eric Jackson points out, this will attract more traffic to our website, which cannot hurt us and may actually attract new members.

On a totally different matter, it isn't too early to begin thinking about escaping the worst of the summer heat and planning to attend the ARA annual meeting at the Minnesota Stamp Expo, July 18–20. I'll provide more details, including location and cost of the ARA dinner in the next issue.

State Revenue Catalog



The second edition of *The State Revenue Catalog* has been published by the State Revenue Society. The first edition, edited by Scott Troutman and published in 2007, was the first comprehensive catalog of the revenue stamps of all states in 50 years. This second edition, edited by Dave Wrisley, is the first catalog of revenues of all states with color illustrations throughout. Completely revised, the catalog is hardbound with 751 pages containing approximately 28,000 listings, 10,000 color illustrations, and updated catalog values.

The catalog reflects a massive six year long revision of the first edition. For the first time a thorough, organized effort was made to solicit all collectors to report information and scans of unlisted stamps for inclusion. Nearly 70 collectors made significant contributions of scans of listed and previously unlisted stamps and other important details. This is the most complete state revenue catalog of the 50 states plus the District of Columbia ever published. Fish and game stamps are well covered in other catalogs and not included.

The retail price of the catalog is $97.00 and is available from a number of dealers. SRS and ARA members may purchase it for $77.00, which includes shipping within the United States. Checks payable to the State Revenue Society should be sent to Harold Effner, 27 Pine Street, Lincroft, NJ 07738-1827. Payment by PayPal is available on the SRS website, staterevenue.org.

Also available on the website are SRS membership applications. Membership is only $17.50 per year, for which members receive four quarterly issues of *State Revenue News,* can participate in member-only auctions, and much more. Applications can also be obtained from SRS Secretary Kent Gray, P.O. Box 67842, Albuquerque, NM 87193, email staterevs@comcast.net. Join and simultaneously purchase the catalog at the member price for a lower net cost!

"the catalog is better than I'd expected, and I expected an excellent publication. Hooray!" Paul Nelson

"It is breathtakingly good, and such an advance over what we had. Hopefully the entire field of state revenue collecting will now begin a huge leap forward!" Michael Mahler

Secretary's Report

Previous Total	642
New Members	0
Reinstatements	2
Unable To Forward	0
Deceased	2
Resigned	4
Dropped Non Payments	0
Current Total	638

Reinstated

7142 Harold Effner
5310 Matthew Liebson

Resigned

5406 Maynard Bateman
5567 Albert Aldham
5414 James Holton
2082 Dr. Edward Miles

Deceased

5287 Daniel Curtis
2290 Sam Beck

Members' Ads

ARA members: send your request for free ad to mikemahler1@verizon.net, or to Editor, The American Revenuer, 2721 2nd St. #211, Santa Monica, CA 90405, limit 50 words plus address, must be about revenues or cinderellas. First come, first served, space available.

Wanted: Hong Kong Airport Passenger Service or Departure Tax slips. Send scans or descriptions with asking price or my offer to gpagota@aol.com. GT Olson, 6650 Lake Run Drive, Flowery Branch, GA 30542. *2035*

Wanted: Playing Card stamps! I will buy or trade other revenue material for your duplicate RF material. All RF or RU material is wanted. Richard Lesnewski, 1703 W. Sunridge Drive, Tucson AZ 85704. *2036*

Seeking Trading Partners for **US Reds and Greens, North Carolina RMs**, also **US Possession and Territorial Revenues.** Timothy McRee, Box 388, Claremont, NC 28610 *2041**

Worldwide Revenues liquidation by country or colony. Duplication (not massive) but lots of goodies and you will like the price(s). Also documents, cinderellas, perfins on revenues, etc., etc. everything from A–Z, almost no US, though. Wanted: Canadian cinderellas and labels. Gordon Brooks, PO Box 100, Station N.D.G., Montreal, Quebec, Canada H4A 3P4, phone 514-722-3077, or email bizzia@sympatico.ca. *2043*

Beer stamp album. 125 pages, unpunched, bright white 65 lb card stock with image of first stamp in most series. Modeled after Priester. $107.00 plus $4.00 postage and insurance, to: David Sohn, 1607 Boathouse Circle, Sarasota, FL 34231. 941-966-6505, or 847-564-0692, or email davidsohn32@comcast.net *2037*

1890s Revenue Stamp book: *Stamp Hunting* by Lewis Robie, salesman for J. Elwood Lee (RS290–294), relates tales of looking for revenue stamps in drugstores. All new, illustrated; commentary by Richard Riley; trade paperback binding, 104 pages—$12.50. From Eric Jackson, Richard Friedberg or Ken Trettin. *2039*

Wanted: License & royalty stamps. I will trade Revenues, Express, college stamps for needed items. Mike McBride, PO Box 270417, Louisville, CO 80027 or email mikemcbride@q.com.*2042*

Wanted: Puerto Rico Revenues. Spanish era and U.S. Administration, to buy or trade for my collection. Gregg Greenwald, 2401 Bluebird Ct, Marshfield, WI 54449. (715) 384-4527 (evenings) or bluebird@tznet.com. *2044

US Sales Circuit Program Notes

The ARA sales circuit program wants your excess revenues. There are hundreds of fellow members waiting to buy your duplicates. One member recently purchased $500 from one circuit. Another member has netted over $3500 in sales of his unwanted revenue material.

Now is a great time to submit a salesbook, as stocks are low. Need a salesbook? Blank books are fifty cents each, available in five formats: 1, 4, 6, 9, and 12 spaces per page. An oversized book is also available for large material at the same rate. The commission is only 10%, all of which goes back into the ARA's membership services.

Send me an email at pweidhaas@twinvalley.net, or drop me line at PO Box 147, Leonardville KS 66449. Common and damaged material seldom sells, so don't waste time mounting undesirable stamps. But nice revenues attractively priced will sell. Why not do yourself and your society a favor? A little effort can reap big bucks.

Paul Weidhaas, US Sales Circuit Program Manager