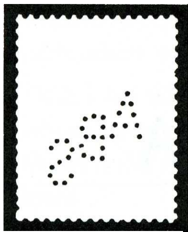
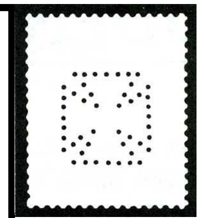


THE BNA PERFORATOR



Published by the British North America Philatelic Society – The BNA Perfin Study Group

Volume 45 Number 1 February 2024 Whole Number 170

Editor's Post:

¶ Welcome to 2024 and the 70th year of the BNAPS Perfin Study Group. BNAPS honoured our Study Group with a short tribute in the 1st Quarter issue of 2024 Topics. There a small number of individuals on our mailing list who are not BNAPS members and for their benefit the article is included on Page 2 of this issue of the Perforator .

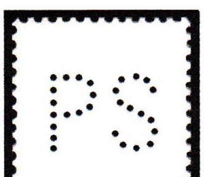
¶ In December 5 emails returned the Perforator as undeliverable thereby reducing our membership to 70. Seven newsletters are still delivered through the mails; 63 by email. Costs for this issue remain at $15.00 for printing and $9.74 for postage (6@ $1.30 and 1@ $1.94). The last of the donated postage just covered the mailing costs reducing the total cost to our Treasury for issue #170 to $15.00 for printing.

¶ The Handbook editors are seeking the memberships assistance in confirming some of the current listings. Pages 7 and 15 have the details.

¶ A special thank-you to Kerry Bryant for both his generosity in offering to share his gifted perfins with the membership and for the effort he is making to expand interest in Canadian perfin collecting through the creation of gift packs. This is the label he has designed for the gift packs.

- An Invitation to Explore Canadian Perfined Postage Stamp Collecting -

(Perfins, aka: postage stamps with 'perforated initials')



(Province of Saskatchewan)
(Pattern # P-19)

With over 300 unique patterns, the potential of 8-different positions for each, plus issue varieties, anomalies, paper types, new discoveries, etc., perfins are a unique and niche realm of philately. Add a dedicated membership, "The Perforator" newsletter, research opportunities and unique Canadian postal history, perfins offer a diverse range of collecting avenues from general to specializing, providing challenge and fulfillment for both the new and established collector alike! ***An introductory assortment of perfins has been enclosed just for you!***

With compliments from your friends at the BNAPS Perfins Study Group!

*For more information about **Canadian Perfins and "The BNAPS Perfin Handbook"**, search "BNAPS Handbook" or scan the QR code*

*To peruse **"The BNA Perforator" newsletter and archives**, search "BNAPS/StudyGroups/Perfins/Newsletter" or scan the QR code*

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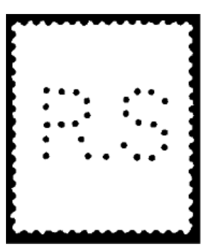

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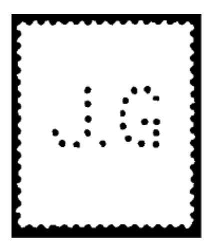

PERFIN Study Group Celebrates 70 Years

Jim Graham & Russell Sampson

PERFINS (Figure 1) are wondrous and tiny windows. They are windows into the history of corporate Canada, our governments, and even the criminal mind. These stamps with **per**forated **in**itials (hence the word "perfin) were used to prevent the theft and misuse of company postage, and their story is both fascinating and full of intriguing puzzles. Most importantly, perfins are insanely collectable, offering the hobbyist a universe of coveted rarities, topical possibilities, research opportunities and – as our Study Group has proven – the ongoing thrill of discovery.

It also helps that they are affordable. If a collector wants a copy of Scott 32 – the 2¢ green Large Queen on laid paper – of which there are less than five known, they will need to shell out the monetary equivalent of a tiny Toronto home. On the other hand, an ultra-rare BNA perfin of which there are less than five known, like the L2 (L&B) from the fabled Calgary law firm of Lougheed & Bennett, may set the happy collector back only a few hundred dollars – and if they're persistent and lucky – sometimes much less.

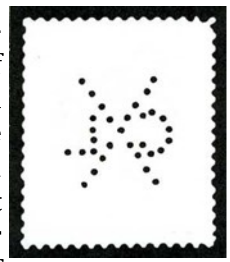

Figure 1. The perfin pattern for Canadian Explosives Ltd in use from 1917 to 1937.

OUR HISTORY

January 2024 is the seventieth anniversary the inauguration of the BNAPS Perfin Study Group in January 1954 by RJ Woolley (Secretary) in *BNA Topics*, Vol. 11 No. 1, Issue 109. Its purpose, building on a compilation of Canadian perfins compiled by Dr. CM Jephcott (Chairman) and published by the Collectors Club in 1951, was and remains, "to pool our experiences, encourage Canadian perfin collecting, and perfin exhibiting and publicize our findings".

Perfins first appeared in Canada in the Small Queen period in 1895, with Post Office approval – "Persons or firms using very large quantities of stamps may also arrange with the Department to have the stamps they purchase perforated with their initials at their own cost". A typical hand-operated perforating machine is shown in Figure 2.

The Study Group's first project was a catalogue, *Canadian Stamps with Perforated Initials* (CSWPI). BNAPS published the first edition and its thirty-one pages in 1955. The page format was a duplication of Woolley's perfin album pages with his perfins securely glued face down on the pages. Imagine the surprise when Jon Johnson OTB purchased Woolley's collection sight unseen in 1985. Fortunately, Woolley had used water soluble glue, and all were happy.

Under the continued direction of Jephcott and Woolley, BNAPS members reported new perfin finds in BNA Topics on an average of three times a year. The new reports of six years provided enough information to warrant publishing a Second Edition which was issued as BNAPS Handbook #5 in 1961. The Perfin Study Group continued to gather more perfin information. Almost like planning a family, after another six years along came the CSWPI Third Edition in 1967.

The Study Group was re-vitalized in 1979 under the leadership of Jon Johnson and Gary Tomasson. Recruiting new members, establishing a regular newsletter and above all, recognizing the need to update the Handbook's Third Edition, they began to gather and organize perfin data from some seventy perfin collectors. This led to the Fourth Edition released by BNAPS in 1985. Its 125 pages included six chapters of introductory information, revised the perfin position designation to numeric from alpha, gave each perfin its own individual number rather than the previous alpha/numeric system for patterns like New York Life, introduced Earliest and Latest Known dates of use and some 40 pages of Addenda covering checklists, insignia, perfin pattern differentiation, etc. Many members have made contributions, but two deserve special mention: Mark Fennell for his support and encouragement in expanding the content of the Perfin Handbook, and Conrad Tremblay for many contributions that increased our collective knowledge of Canadian perfins. Two of note are his work on differentiating and plating the nineteen Sun Life Assurance perfins and the very first perfin position survey in 2002.

Figure 2. A Cummins Model 5 perforating machine, used to produce many of the most common perfins in Canada.

Not satisfied, Jon and Gary led the Study Group in the creation of the fifth Edition of the CSWPI. With the generosity of the Editors and the courtesy of BNAPS and its volunteers, BNAPS hosted the Fifth Edition on its website, making it available to collectors anywhere and anytime, for free. A further leap forward came in 2020 with the Sixth Edition, which listed all known perfin positions for each perfin type. The Sixth Edition was justly recognized with a Large Vermeil award at CAPEX22 international stamp exhibition in Toronto, ranking seventh in forty-seven Canadian entries and nineteenth of one hundred and three total entries in the Literature Exhibit. A great advantage of the electronic CSWPI is that it can be updated as desired. Historically it is updated yearly, on 1 August.

Our newsletter, *The Perforator*, is now in its forty-third year, and averages about four issues annually as there are always new discoveries and new information to share. All newsletters are available on the BNAPS website.

OUR FUTURE

So, this is our past, but what of our future? The two authors have now assumed the editorial reins of the Handbook and, as our Study Group newsletter has clearly demonstrated, the future of perfin study is indeed very bright. Like the game of chess, the basic rules of perfin collecting and studying have been set down by its seventy years of intense investigation, and are now codified in our Handbook. And like chess, the beauty and fun of perfins are not so much in the rules, but in the playing, in the collecting and in the glory of continued discovery. Recent articles in the newsletter have explored perfins using statistics, digital image processing, deep online historical research, and crowd sourcing where vast numbers of perfin specimens can be studied from collectors around the globe, all of this to solve intriguing perfin puzzles.

Perfin studies are also interdisciplinary. Since perfinned postage has been used on mail and documents from just about every corner of BNA society, it also means that it is intensely connected to the wider cosmos of philately. Articles in our newsletter have required the assistance and analysis of slogan cancellations, postal routing, stamp varieties, postal stationery, military mail, censorship, RPO's, revenues, precancels, airmail, and the even the forensic specter of fakes and forgeries. So, come and join us, there may be something for everyone.

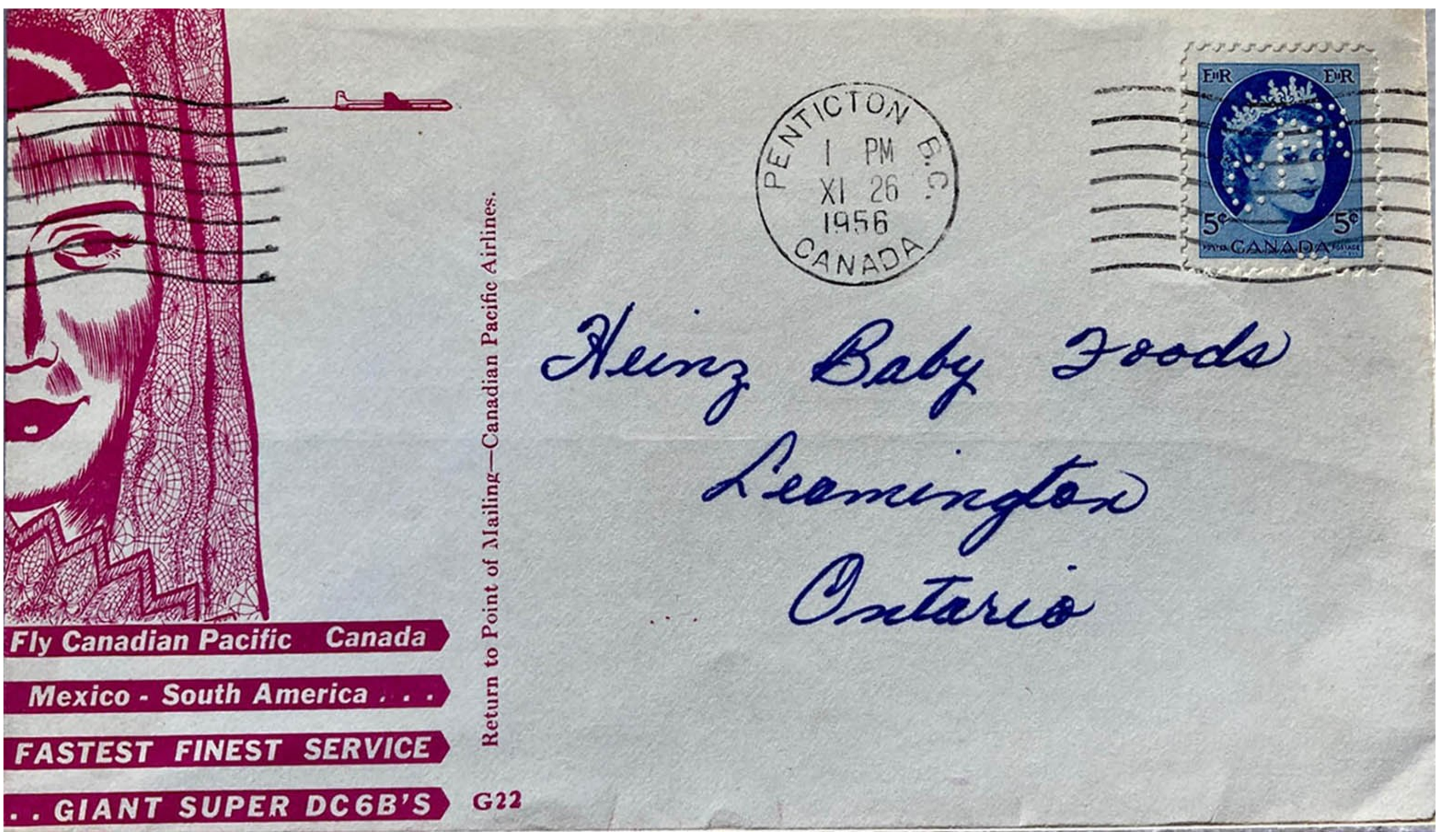

Figure 3: A 5¢ QEII pays the forward letter rate from Penticton BC to Leamington ON November 26, 1956. The stamp has the Vancouver BC CPR perfin on a very nifty Canadian Pacific Airways advertising cover. The cover is courtesy of Russell Sampson.

Canadian Stamps With Perforated Initials Update

1. Below is a revised Table of the reported Scott 106ix - the 2¢ deep rose red with hairlines described in detail in Issue 169. Four have been confirmed—G17-1; I15-1; M4-1 and M23-1. If you have or suspect you have one of the 42 unconfirmed Scott 106ix 's please forward Scans at 400ppi or better to the Handbook Editors.

Patttern	Company	No Position	Position 1	Position 3	Other	EDU
B10	LaMontagne Ltd Montreal		x			1914-10-26
B 15	Bell Telephone		x			1911-11-12
C8	Canada Cement Co Ltd	x				1914-11-11
C14	Canadian General Electric		x	x		1905/-/-
C15	Canadian General Electric		x	x		1910-12-30
C20	James Coristine & Co		x			1913-09-13
C25	Canadian Northern Railways	x				1910-11-09
C30	Toronto Saturday Night	x				1910-06-21
C33	CPR Montreal		x			1911-10-30
C36	CPR Vancouver				8	1913-06-22
C48	Canadian Explosives Ltd	x	x			1917-11-03
F2	Fowler's Canadian Co	x				1911-10-22
G13	Grand Trunk Pacific		x			1911-05-08
G14	Grand Trunk Railway		x			1909-12-04
G23	Great West Life Calgary	x				1921/-/-
I16	International Harvester M'tl.		x	x	7	1909-09-24
I20	International Harvester Saskatoon				7	1910-05-11
I24	Imperial Optical	x				1911-08-21
I26	Imperial Tobacco Co of Canada	x				1908-11-2-
J10	John MacDonald & Co Ltd	x				1906-05-01
J13	James Robertson Co		x			1912-01-26
M6	McClary Manufacturing Montreal	x				1912-11-22
M7	W. S. MacLaughlin	x				-
M8	Michigan Central Railroad	x				1913-03-20
N5	National Elevator Company	x				1917-06-09
N17	New York Life - Quebec		x			1911-10-16
N30	New York Central System		x			1915-01-15
O1	Ocean Accident & Guarantee	x				1914-07-14
O5	Ogilvie Flour Mills Montreal	x				1910-05-04
O6	Ogilvie Flour Mills Winnipeg	x				1912-04-22
O14	Office Specialty Manufacturing	x				1910-11-04
P21	P. T. Legare	x				1912-05-22
R1	Ryrie Brothers	x				1910-06-18
R7	Royal & Queen Insurance			x		1908-09-05
R8	Robert Simpson	x				1911-02-02
S4	Swift Canadian Moncton	x				1915-07-07
S15	Sun Life Insurance	x				1899/12/20

2. The Handbook lists 3 Scott 247i (*War Memorial with re-entry on lower ste*ps) without position— C25, C28 and I4 (2). The Editors believe these were reported by Ron Whyte before the CSPI Handbook included perfin positions. If a Study Group member has acquired these particular stamps the Editors would appreciate receiving scans (at minimum of 400 ppi) to confirm both the Scott 247i variety and the perfin position.

Sheet Stacking and Variability in Perfin Perforation Diameters

A Possible Model Based on Evidence from the C16 (C/GE) Perfin

Russell D. Sampson

ABSTRACT

Anecdotal evidence suggests that when sheets of stamps are stacked into a perforating machine, that the lower sheets exhibit smaller diameter perfin perforations than those found on the top sheet. Measurements of the diameters of perfin perforations of two C16 (C/GE) perfin samples clearly show that not only are the perforations smaller, but more irregular in shape and exhibit distinctive ridges surrounding the exit-wound side of the perfin perforations and craters surrounding the entrance-wound side. An evidence-based model is presented to explain these phenomena. This model suggests that the top sheet of perfins are larger and more uniformly circular because the pin is clean of paper chads and therefore the paper is cleanly cut away with the sharp edges of the steel pin. However, the lower sheets of perfins are more irregular in shape due to the tearing action produced by a blunt-force produced by a chad-tipped pin. Their surrounding ridges and craters are a result of the paper being deformed and compressed as it is torn and pushed-aside by the blunt pin. As the pin is retracted, this bunched-up paper relaxes back towards the center of the perforation, like a compressed spring, thus partially refilling the hole.

INTRODUCTION

Why do some perfin perforations produced by the same machine appear more uniform and larger than others? Anecdotal evidence [1] has suggested that stacking sheets of stamps in the perforating machine may cause those perfins underneath the top sheet to have smaller diameter perforations. In this paper an evidence-based model is presented to explain both the variations in diameter and the non-circular or "irregular" shape of some perfin perforations. This model could be useful in the forensic analysis of perfin samples in order to determine their origins and their authenticity.

The investigative path that led to this project was somewhat indirect yet at the same time, instructive and fascinating. While sorting a hoard of C15 and C16 specimens the author noticed that a small number of perfins on the QEII Wilding issues, that were clearly within the period of use of the C16, had decidedly smaller perfin perforation diameters. The perforation diameters of these few perfins appeared to make them visually closer to the earlier C15 than to the C16. This prompted an investigation into the possibility that the C15 machine may have still been in operation during the C16 era which occurred between about 1953 and 1971. However, a conversation with Gary Tomasson [1] clearly eliminated this hypothesis. During the C16 era, Tomasson had actually met with the CGE mailroom workers in their downtown Toronto headquarters. The recalled conversation clearly indicated that the dies that produced the C15 no longer existed but had been retooled into the C16, so the two machines never existed together. Yet, how to explain these two Wilding samples that more closely resembled the C15? Out of the author's 106 specimens of the C16, these two perfins visually exhibited the most extreme difference in relative perforation size. In science it is often the extremes – the outliers – that are the most revealing when attempting to understand the mechanisms behind nature or technology. What tales could these freaks tell us?

PERFORATION DIAMETER AND ROUNDNESS

Figure 1 shows a scan of three samples of the C16 perfin (retooled C/GE, ERU; May 7, 1953), all on Scott 340, the 4-cent violet Wilding (Issue date; June 10, 1954

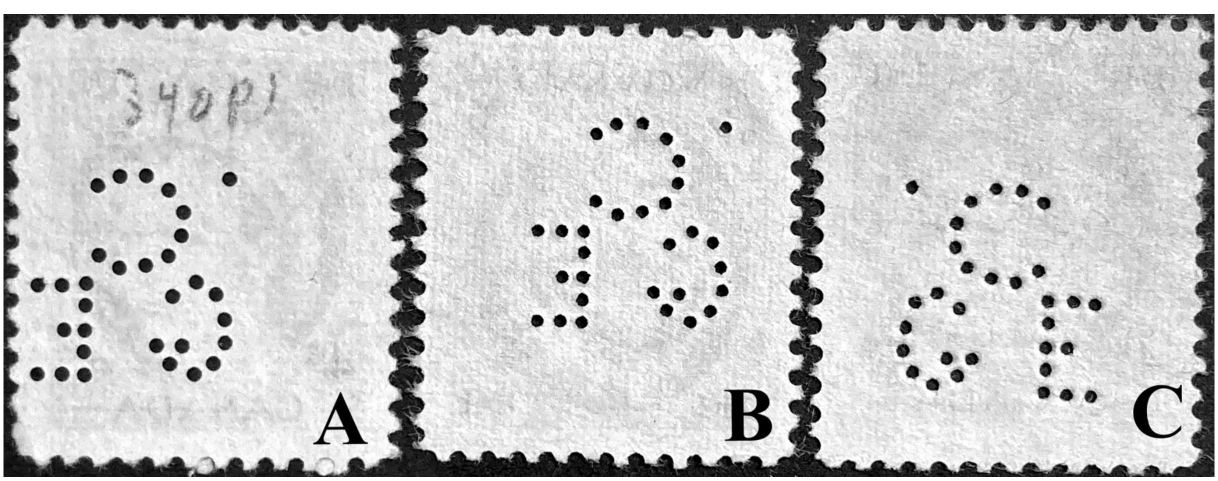

Figure 1: A scan of the three Scott 340 with C16 (C/GE) from a retooled 5-die Cummins Model No. 52. From left to right the perfins are positions 1, 3 and 5.

The retooling of the C15 to produce the C16 resulted in the insertion of pins of slightly wider diameter. Figure 1 was produced using the near-direct lighting from a flat-bed scanner. Here the linear array of LED lights are very close to the linear array of CCD light detectors. The relatively small angle between light sourand light detector produces relatively short shadows – like those from the noonday sun in the tropics. This even illumination is optimal for measuring the diameters of the perforations but as explained further on, is not optimal for detecting subtle topographic features such as tiny ridges, grooves and dents.

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It is crucial to the understanding of the model described at the end of this paper, to note the positions of these three perfins. Sample A is position 1 and as such, the pins from the machine would have entered the stamp from the ink-side (front) and exited out the gum-side (back) of the stamp. Sample B is a position 3 and would also have the pins enter the stamp from the ink-side. Sample C, on the other hand, is a position 5, which means the pins entered the stamp from the gum-side and thus exited the ink-side.

It is apparent from a cursory examination of the three samples in Figure 1, that Sample A has larger and more uniformly round perforations. Even though these samples are all from the same machine, Samples B and C have distinctly smaller perforations and their profiles are more irregular in shape.

Figure 2 shows a highly magnified view of the code-holes from 1200 ppi scans of the three samples. One can easily see that the perforations from Samples B and C are smaller than Sample A and that Samples B and C also show a distinct lack of roundness when compared to Sample A.

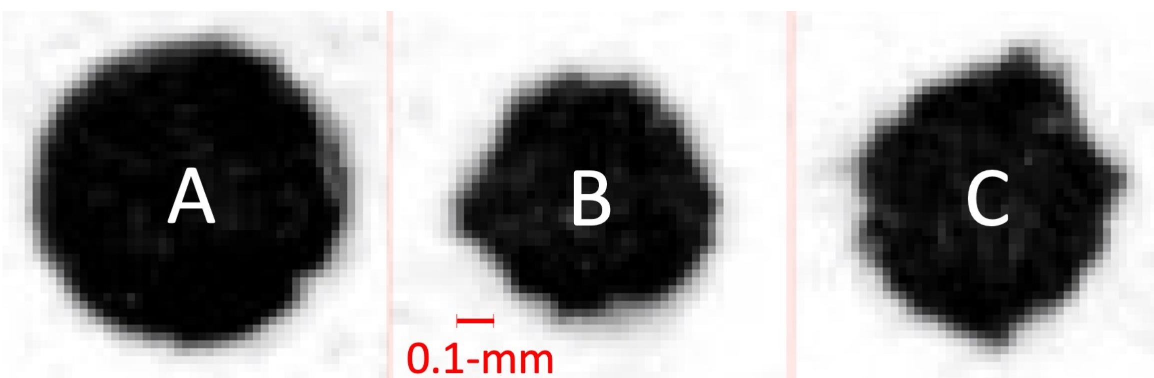

Figure 2: Highly magnified images of 1200 ppi scans of the code-holes for each sample. Notice how much smaller and irregular the perforations are from Samples B and C.

To explore this more rigorously, pixel measurements from 1200 ppi scans of each of the three samples were obtained. The pixel width (x) and height (y) of the 10 perforations making up the "C" of C/GE were found and then converted to millimeters. Dimensional calibration of the Epson V850 Pro flatbed scanner has been successfully performed and the measured instrumental error of the scanner once scaled to the perforation diameters was estimated to be between ±0.03 and ±0.04-pixel in both the x and y-direction [2]. Since this error is much less than a single pixel it was deemed insignificant and thus unnecessary to apply any correction.

The resulting diameters were then averaged and the sample standard deviation (s) calculated in Microsoft Excel in order to estimate the variation in the average measured diameters (i.e., the "plus or minus"). The sample standard deviation is also a measure of the irregularity of the perforation. The closer this value is to zero, the closer the perforation is to a perfect circle. On the other hand, the larger this value, the greater the irregularity of the perforation's shape. The results appear in Table 1. (Page 10)

The results clearly indicate that Sample A has both the largest perforations, and are the most uniformly round. Therefore, according to [1], Sample A was likely from the top sheet of stamps and Samples B and C were from sheets underneath the top sheet.

What is most curious is the fact that the C16 perforation in Samples B and C are actually smaller in diameter than the nominal pin diameter of the earlier C15 machine by about 8% (i.e., the Cummins Model No. 52 is advertised to have 1/32-inch or 0.794-mm diameter pins). This explains why Samples B and C were originally mistaken for the earlier C15 pattern.

To further explore the shapes of the perforation holes and their possible cause, additional evidence was gathered using oblique lighting.

OBLIQUE LIGHTING IMAGERY

Figure 3 employed oblique lighting (i.e., low angle lighting) which is used to accentuate small topographic features, making mole-hills appear to be mountains and ditches appear as canyons. These oblique lighting images were produced by setting a small LED lamp about 1-metre away from the stamps (see Figure 4 Page 11). The stamps were set upon a flat surface which was adjusted in height until the angle of the lighting at the level of the stamps was about 3° from the horizontal (i.e. the LED lamp was about 5cm above the level of the stamps and 1-metre away). The images were captured using the camera in an iPhone 8.

	Sample A (Position 1)	Sample B (Position 3)	Sample C (Position 5)
Average diameter [mm]	0.850	0.730	0.726
Sample Standard Deviation (s) [mm]	±0.014	±0.040	±0.085

Table 1: Averaged perforation diameters from measurements of all 10 of the perforations in the "C" of CGE. The value of the sample standard deviation gives a measure of the irregularity of the shape of the perforation. The higher this value the more irregular the perforation. It is noteworthy that the average perforation diameters for Samples B and C of the C16 are *less* than the nominal pin diameter of the C15 (i.e., 1/32-inch or 0.794-mm) by about 8%.

What is apparent in this image is that Sample B shows distinct donut-like ridges around each perforation, while Sample C shows the opposite, depressions or craters around each perforation. Sample A, with its relatively large and uniformly circular perforations shows little evidence of either ridges or craters.

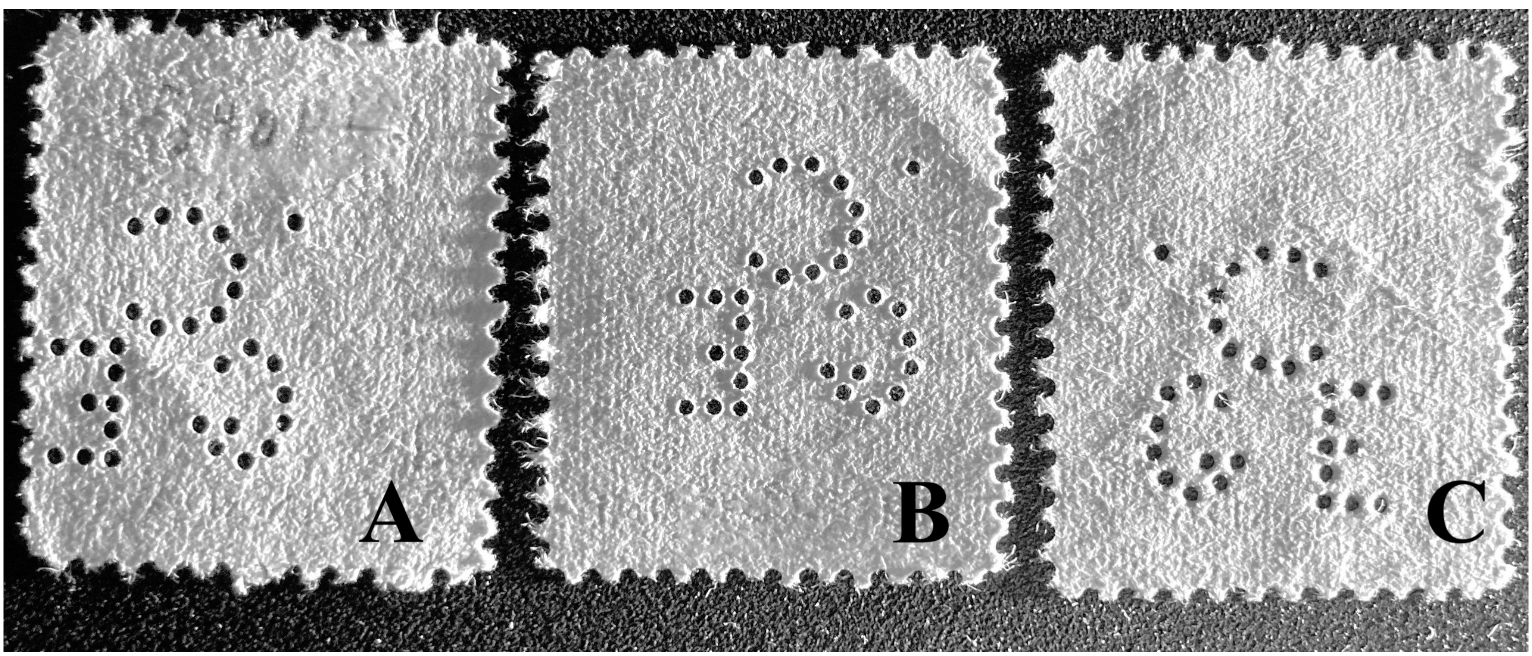

Figure 3: Oblique lighting of the three samples. Notice the donut shaped ridges around the perforations in Sample B and crater-like depressions around the perforations of Sample C and the lack of obvious ridges or craters around the perforations in Sample A. It is also noteworthy that the vertical ribbing of the paper is very obvious in Samples B and C.

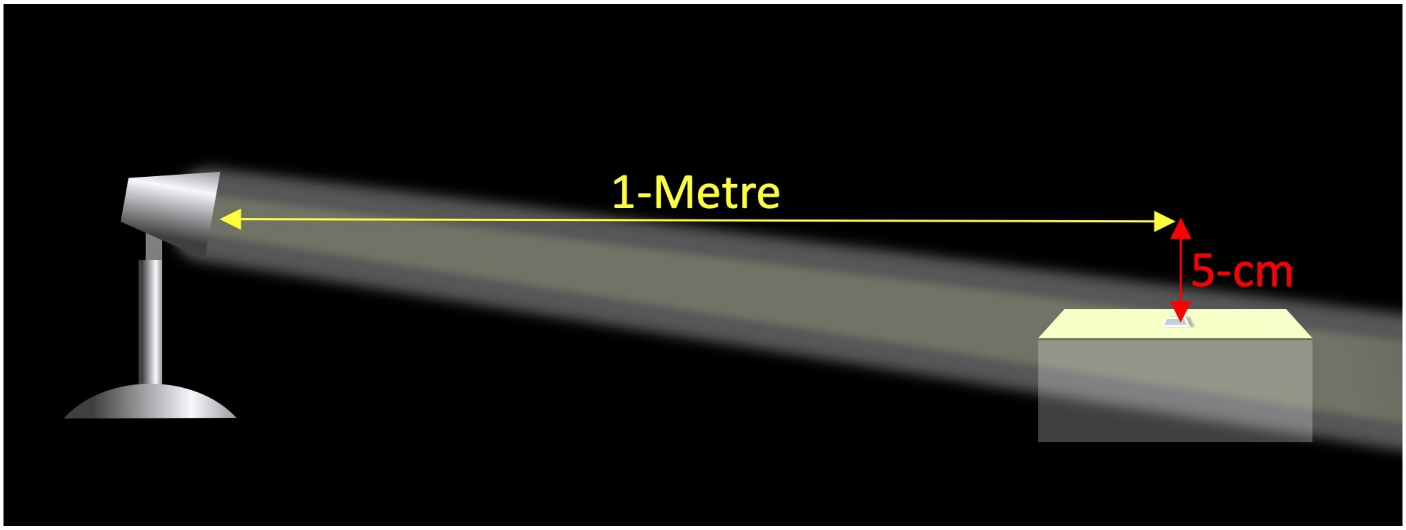

Figure 4: A schematic showing the basic set-up used in this study to produce the oblique lighting of the samples.

These differences along with those differences discovered in the previous section clearly suggest that the exact process that removed the chad from the stamp to form the perforation were different in Sample A than that in Samples B and C. This then leads to the following perforation model.

THE MODEL

The irregular shape of the perforations from Samples B and C in comparison to the more circular shapes in Sample A, suggest that the perforations in Samples B and C were produced by a tearing or ripping action of the paper by the descending pins. On the other hand, in Sample A the more circular and sharp-edged perforations suggest they were produced by a cleaner and sharper punching-out action.

The lack of cratering or ridging in Sample A also suggests that as the chad was cleanly cut-away from the stamp there was little force being transferred to the area of the paper immediately surrounding the perforation. In other words, there appears to be little evidence for compression of the paper surrounding the perforation in either a lateral direction (i.e., along the plane of the stamp), or in a downward/upward direction (i.e., towards or away from the plane of the stamp). This further suggests that what met the paper in this case of Sample A were the sharp and clean edges of the pins of the perforating machine. A specimen of a Cummins replacement pin owned by Jon Johnson clearly shows that these pins were not hollow tipped but solid, and were likely made from tempered high-carbon steel like that for piano wire [3]. On the other hand, in Samples B and C the presence of the ridges and craters surrounding the perforations suggest that a more extensive force was applied to the surrounding paper while the perforation was being made. This further suggests the paper was not being cleanly cut-away, but instead was deformed. This is further supported by the direction in which the pins travelled through Samples B and C. . In Sample B, the pins entered the stamp from the ink-side, therefore, upon exiting the stamp, the force of the pins pushed the surrounding paper outward producing the telltale ridges surrounding the perforations as seen in Figure 3. Since Sample C is a position 5 perfin, the pins entered the stamp from the gum-side. Here, the downward blunt force of the pins caused the paper surrounding the perforations to deform downwardly to form a crater-like depression seen around each perforation.

The accumulated evidence strongly suggests that in Samples B and C the stamps were not perforated by a clean and sharp-edged pin but rather by a pin tipped with a blunt chad of paper from the perforation or perforations above it. Therefore, the evidence suggests that Samples B and C were produced from a stack of sheets fed into the machine and were located underneath the top sheet.

For those sheets underneath the top sheet, the blunt-force produced by the chad-tipped pin pushes the paper aside before tearing it in a relatively uneven fashion. In addition, the compression of the bunched-up paper surrounding the pin produces an opposite and restorative force against the pin. This is like pushing on a sponge with your finger, then retracting your finger and observing that the sponge returns to its original shape. After the pin is retracted from the paper, the outward compressional force from the pin against the paper surrounding the perforation is now removed. The previously pushed-aside paper surrounding the perforation is now removed. The previously pushed-aside paper surrounding the perforation relaxes back towards the opening of the perforation and like in the sponge analogy the paper partially refills the perforation. The relaxation of the compressed paper back towards the perforation causes the perforations to appear smaller in diameter than those produced by the clean punching-out mechanics found at the top sheet of stamps, as seen in Sample A (see Figure 5). A scale diagram of the process (see Figure 6) provided further insights.

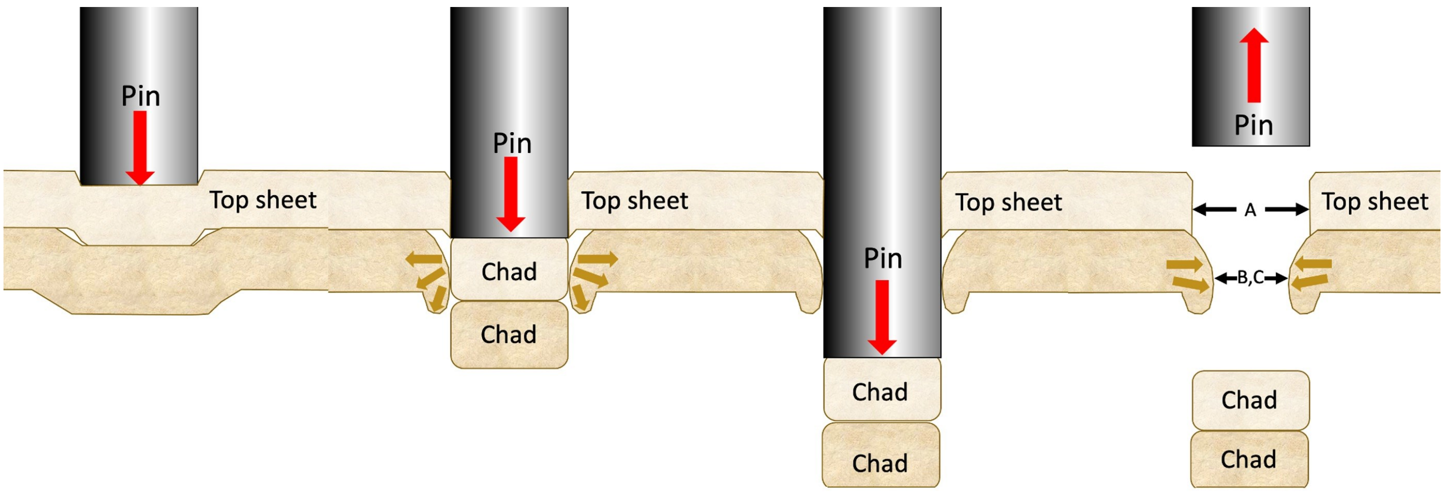

Figure 5: A time-series cut-away showing a side-view of the essential concepts of the model. The perforation action proceeds from left to right. The brown arrows in the paper indicate compressional motion of the paper as the chad-tipped pin pushes the paper away and then when the pin is retracted, the compressional forces within the paper relax causing the paper to partially refill the perforation. Also illustrated are the exaggerated cratering and ridging produced by the blunt force of the chad-tipped pin on the sheets of stamps underneath the top sheet. This image is not to scale.

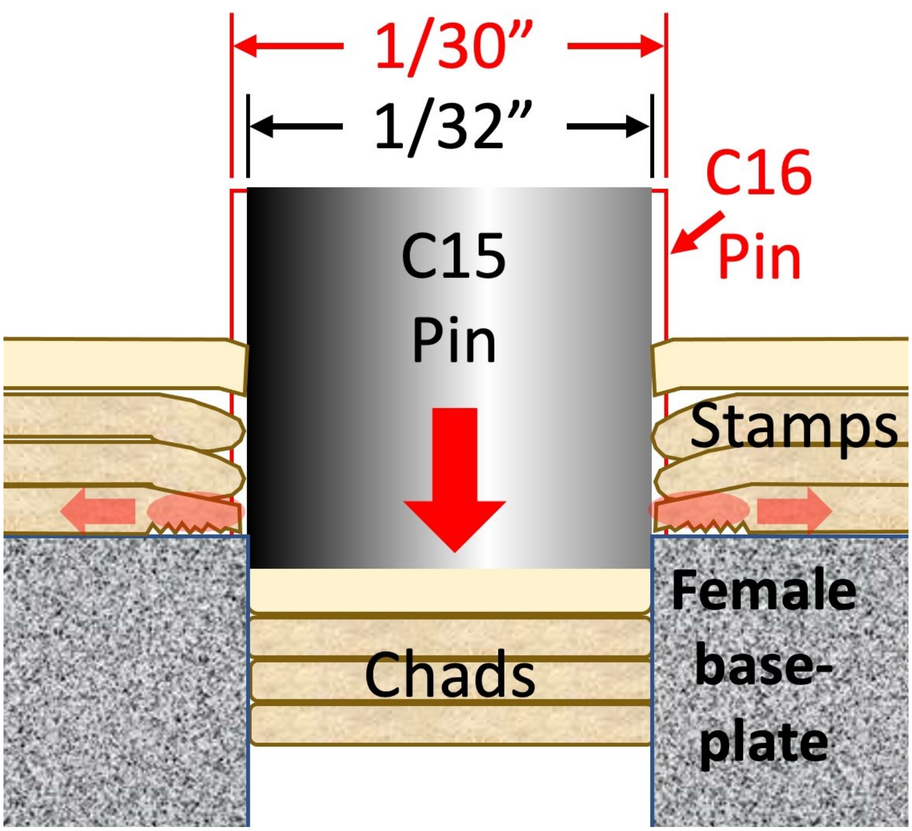

Figure 6: Scale diagram of the C15 and the assumed diameter of the C16 plus a properly scaled stack of stamp paper where the thickness of each sheet is 0.01-mm. The actual diameter of the C16 pins has not been confirmed. This illustration raises the possibility of the bottom sheet experiencing significantly different forces than the sheets above it since the downward movement of the paper immediately surrounding the perforation would be severely restricted by the metal base-plate of the machine. English units (i.e., inches) are used for the diameter of the pins in order to be consistent with the 1/32-inch diameters quoted in the B. F. Cummins perforator catalogue for their postage perforators. The metric conversions of 1/32-inch is 0.794-mm and 1/30-inch is 0.847-mm.

It is apparent from this illustration that the sheet of stamps at the bottom of the stack would experience significantly different forces than those above it. The base-plate of the perforating machine would severely restrict the downward movement of the paper immediately surrounding the perforation, thus forcing an increase in the lateral compression of the paper, and thus possibly increasing the subsequent relaxation of the paper once the pin is retracted. This may explain the extreme smallness of the perfin diameters in Samples B and C plus the ridges and craters surrounding the perforations.

CONCLUSIONS

The B. F. Cummins Perforating Machine catalogues recommend that their stamp perforators could work with stacks of stamps as great as 4-sheets thick [4] depending on the number of initials in the perfin pattern. The C16 has three letters and one code hole. Cummins suggested that a die with only three initials could handle four sheets of stamps at once.

The evidence presented in this paper suggests that for sheets of stamps below the top sheet, the resulting blunt force from the chad-tipped pin causes the paper to be pushed aside before tearing open the perforation in an irregular fashion. When the pin is retracted, the bunched-up paper surrounding these torn perforations relaxes back towards the centre of the perforation, partially filling the hole, and thus producing a smaller diameter perforation. This explains not only the perforation's reduced diameter, but also its irregular shape and the presence of the ridges and craters surrounding the perforations.

It is interesting to note, that according to the 6th Edition of the Handbook [5], the C15 era actually does overlap with the latter C16 era. The latest reported usage (LRU) of the C15 is June, 14, 1955, and the earliest reported usage (ERU) of the C16 is May 7, 1953 – an overlap of 768-days. Yet, as mentioned in this paper's introduction, anecdotal evidence from Gary Tomasson, clearly suggests that the C15 machine was retooled into the C16 and so the two machines most likely never overlapped in time.

Possible solutions to this apparent paradox are two-fold; a) that at the time of the retooling, CGE had a stockpile of C15 perfins and it took over two years to deplete that stockpile, and/or b) like the two Wilding samples in this study, there are samples of the C16 that have been mis-identified by collectors as the earlier C15 with their smaller diameter perforations.

This confusion in identification is likely due to the smaller diameter perforations resulting from their position in the stack of sheets as they were fed through the C16 perforating machine. This is a likely explanation for the appearance in the 6th Edition of the Handbook of Scott 325 and Scott 340 under the C15 listing. These two stamps were issued *after* the ERU of the C16 and therefore, if the C15 die no longer existed at that time, then they could not have been perforated by the C15 machine. It is very important to note that the average perforation diameter of Samples B and C of the C16 are actually less than the advertised pin diameter of the C15 [4]. In other words, if the C15 is from a 5-die Model No. 52, then according to the B. F. Cummins catalogue, the C15 should have 1/32-inch diameter pins (0.794-mm) and the average perforation diameters from Samples B and C are about 8% *smaller* than the nominal pin diameter of the C15. Curious indeed.

It is hoped that the results and methods outlined in this study will assist future collectors and researchers in their quest to understand these and other enigmatic perfins.

APPENDIX:
FURTHER AND FUTURE WORK

Like all evidence-based models, there is always room for additional evidence that may be used to modify the model – or even to disprove it. The fact that out of 106 samples in the author's collection, only two showed the most obvious difference in perforation size, suggests that the frequency of the modelled process may not be very high, or worse, the model may be an illusion caused by an unrelated coincidence of events and effects. Thus, there may be other factors involved that have not been observed or realized. With this in mind and after discussions with Jon Johnson, a set of additional tests and questions were proposed.

1. What is the statistical variance of the perforation size as measured over a larger population of perfin specimens? Is there a continuous or a discrete distribution of perfin perforation diameters? In other words, do the perforation diameters get progressively smaller as one goes down the stack of stamps? This could easily be determined if someone had access to a working perforating machine. If done with existing perfin collections in order to reduce experimental variables (e.g., die-to-die variations), one might be best to test this hypothesis with those perfins produced by confirmed single-die machines such as the J10, O4, W9 and W10. Caution should be used with the W9, since its pins were significantly smaller in diameter. Also, one should be mindful that there is no guarantee that the operator will always insert a stack of four sheets.

The number of measurements to achieve statistical validity would be fairly large [6], and thus a rather challenging undertaking. Thus, it might be best to conduct this with a team of perfin collectors and researchers. Interested collectors should contact the author in order to ensure that consistent measurement techniques are used. Caution should be used with the W9, since its pins were significantly smaller in diameter. Also, one should be mindful that there is no guarantee that the operator will always insert a stack of four sheets. The number of measurements to achieve statistical validity would be fairly large [6], and thus a rather challenging undertaking. Thus, it might be best to conduct this with a team of perfin collectors and researchers. Interested collectors should contact the author in order to ensure that consistent measurement techniques are used.

2. Could variations in the quality of the paper be a factor? It is interesting to note that the two samples with the smallest perforations, (B and C), are both vertically ribbed paper.

3. Could outside factors have played a role in the different perforation diameters? For example, flattening a stamp after soaking it off of the cover with a press has been shown to change the dimensions of the perfin and the stamp [7]. In the samples presented in this study this appears to not be the case, since the full width of the perfin patterns are constituent to within about 1% and this small difference is an order of magnitude smaller than the near 14% difference in perforation diameters found between Sample A versus Samples B and C. Therefore, this 1% difference may be simply due to normal die-to-die differences in the 5-die C16 machine (see point 4 below).

4. There is even the possibility of fakery since the C16 is less common than the C15 (C16 Rarity factor F versus H for the C15) and thus the temptation should increase, even though the profit and prestige from faking a rarity factor F perfin is somewhat questionable. Therefore, it would be expected that the high cost-to-benefit ratio of forging a rarity factor F perfin should dissuade those who are more prestige or profit-minded. Nonetheless, die-to-die comparisons of the three samples in this study appear to show no evidence of any significant die-to-die variations that should be evident if the samples were faked using the common and rather crude techniques seen on other forgeries (see Figure 7).

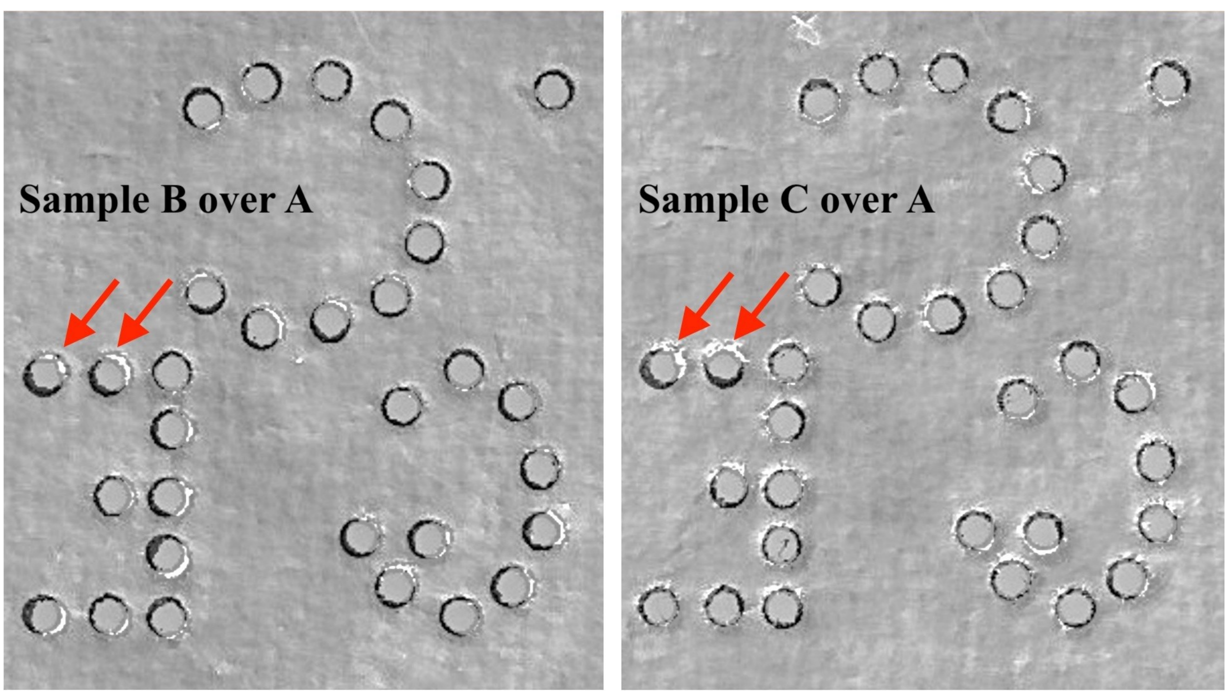

Figure 7: Die-to-die comparisons of Samples B and C placed over-top Sample A. Sample B and C were converted to 50% transparent negative images. Sample B and C appear as grey circles inside the black positive images of the Sample A perforations. Deviations of pin positions appear as offset black or white crescents around the perforations. The very small deviations of the perforations strongly suggest the samples were not faked and the consistent variations seen at the top of the "E" further suggest these two pins are a constant die variety in the machine. The small size of the variations of these two perforations is consistent with unpublished die-to-die variability as measured in a genuine and complete multiple of all five dies of the O8.

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1. Tomasson, Gary and Johnson, Jon, (2022), Personal communications.
2. Sampson, Russell D. **Calibration of Flatbed Scanner for Precise and Accurate Perfin Measurements**, manuscript in preparation.
3. Johnson, Jon (2023), Personal communications.
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5. Johnson, J. and Tomasson, G, (2023), Canadian Stamps with Perforated Initials (6th Edition), British North American Philatelic Society, https://bnaps.org/PerfinHandbook/PerfinHandbook.htm
6. Sampson, Russell D. (2022), **What Causes Perfin Positions?, Part 1**, The BNA Perforator, Vol. 43, No. 3, Whole No. 161, pp. 29.
7. Saskatoon Stamps (website no longer active).

Admiral Booklet Panes Listed in Canadian Stamps with Perforated Initials

Jim Graham

On the surface of it, it does not seem logical to me that companies using perforated postage would be using booklet stamps in their mail rooms. Booklets would be of lesser practical value to any company dealing with large volumes of mail. This said it doesn't necessarily follow that for whatever reason this did happen and that these stamps have found their way into the possession of perfin collectors. The Canadian Stamps with Perforated Initials handbook has 7 Admiral booklet listings-Scott 104a (J1), Scott 106a (H2, R8, S21), Scott 107b(P18), Scott 108a (S10) and Scott 109a (N23).

Randall W. Van Someren's Guide to the Admiral Stamps of Canada[1] states that in 1914 the plate layout was modified. Eliminating the gutters between created panes from sheets of 400 stamps with straight-edged stamps on the other two sides. Fortunately he provides a very good method to differential between a straight-edge Admiral from a sheet and one with a straightedge which came from a booklet pane. (Figures 1 and 2)

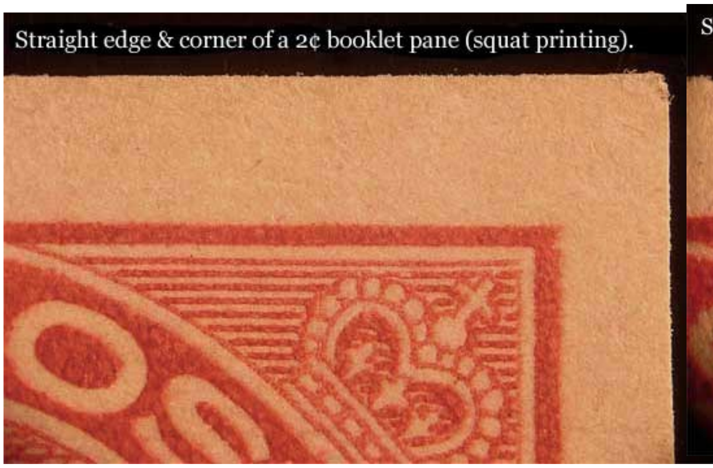

Figure 1.

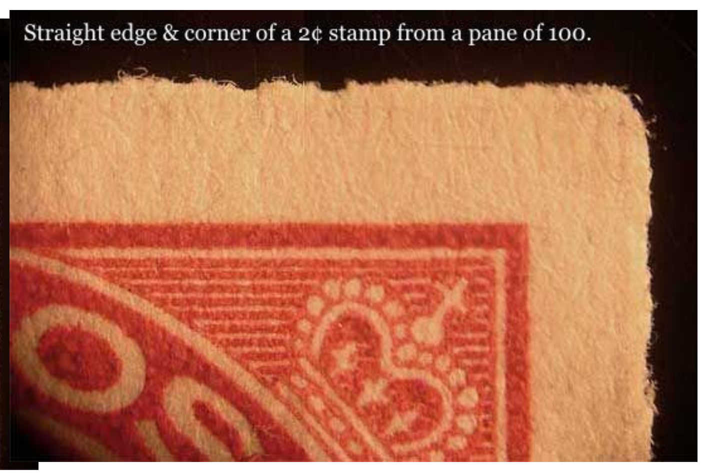

Figure 2.

As the images in Figure 1 and Figure 2 show, the straight edge of the booklet pane is sharp and clean whereas the straight edge of the sheet stamp is 'jagged and fuzzy'. If you suspect you have one or more of the booklet stamps currently listed in the CSPI handbook please forward scans at 400ppi or better to the Editors.

References

1. Guide to the Admiral Stamps of Canada, Van Someren https://bnaps.org/ore/VanSomeren-AdmiralStamps/VanSomeren-AdmiralStamps. The site also provides information on die and paper varieties.