The intaglio printing of Newfoundland’s 1932–1941 Industrial issue by Perkins Bacon

AB Thompson

NEWFOUNDLAND’S last definitive stamp issue was a set of 13 values depicting the Royal Family, and Newfoundland’s industry and natural resources. These stamps were printed by Perkins, Bacon & Co (and latterly by WW Sprague & Co), London, from 1 January 1932 to 10 May 1941 when their Southwark Bridge printing works was destroyed during a German bombing raid. The original colours for the 1¢, 2¢, 4¢, and 5¢ were changed after only eight months and reissued in new colours on 15 August 1932. The 48¢ value was issued on 1 January 1938. This set continued to be issued from 1942–1949, when Waterlow & Sons Ltd, London, took over the printing. New designs were adopted for the 2¢, 3¢, 4¢, and 7¢, to update the portraits of the Royal Family, and the 6¢ value was withdrawn. The other values, depicting Newfoundland’s industry and natural resources, continued to be printed. This article focuses primarily on the printing methods used by Perkins Bacon; however, for completeness, it also includes additional information on printing methods used by Waterlow.

Examination of the stamps clearly shows that they were line-engraved and printed by the intaglio process that has been well described [1, 2, 3]. The process of transferring the ink from the printing plate to the stamp paper can be undertaken on a flatbed press or on a rotary press. The flatbed press is the earlier process and was used by Perkins Bacon for printing the 1840 Penny Black. Flatbed printing is a labour intensive and rather slow task, with the excess ink on the plates being fully or partially wiped and the plates polished manually. There is little mechanization involved, although the first wipe could be mechanically achieved in later flatbed presses. The sheets of stamp paper used on these presses were dampened (and hence ungummed) to ensure that the paper was pliable enough to be pressed fully into the engraved lines, under the limited pressures possible with flatbed printing. The rotary press, which came into use later, has a curved plate affixed to a roller and is a faster and more mechanical operation. Earlier machines could use dampened sheet-fed paper, but normally the higher pressures allowed for the use of dry pre-gummed paper, as used by Waterlow for the 1942–1949 reissue of the Newfoundland industrial issue [4]. Wiping and polishing was mechanical.

There appears to be little published information on the details of the processes used by Perkins Bacon and Waterlow in the 1930s and 1940s. The most informative article on the preparation of the dies and plates of the 1932–1941 industrial issue printed by Perkins Bacon is by Pratt [4]. In it, he also identified Waterlow as the printer of the 1942–1949 reissue. The Pratt article also contains supplementary information from an interview with Mr AJ Hubbard, who was the Managing Director of Perkins Bacon Ltd [4]. The following points were made in, and are quoted from, the article:

Keywords & phrases: Large Queens, military, postal markings, plating

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1. Perkins Bacon “carried on” with the same plant and equipment, producing the Newfoundland stamps in 1937 and 1938. [Referring to the change of ownership to WW Sprague in 1936]
2. ... due to the use of the thin wove paper and a dry printing method ... [referring to the wider stamps of the Waterlow printings].
3. With the change in printers came a change in equipment and printing method. Perkins, Bacon always printed to damp paper which shrinks in drying. It is presumed that Waterlow and Sons used the dry method, which shows no shrinkage.
4. Dry printing and different presses used by Waterlow ...

Pratt’s article does not mention the use of flatbed or rotary printing presses by either company. It only mentions that there was a change of equipment and a change from wet to dry printing when Waterlow took over the printing [4].

Keach provides details of the printing of engraved stamps by Waterlow [5]. He records that a hand-operated press (see picture of flatbed press [2a]) was used for die proofs and some miniature sheets, and that a rotary press was used for printing sheets of postage stamps. The printing plates for the rotary press were copper with, initially, a plating of iron (sometimes referred to as “steel plating”) and, later, chromium when the commercial process was established. The “plate” cylinder was about 2 feet 3 inches (686 mm) in diameter and carried the curved printing plate. Ink was transferred to the plate by a felt roller saturated with it. The excess ink was first removed from the printing plate by two successive leather or plastic-covered cleaning rollers, and then by two more oscillating rollers faced with bands of calico. A third similar calico band, moistened with soda ash solution, removed the final traces of ink from the plate surface, and then a fourth calico roller removed any remaining traces of moisture from the soda ash solution. This fourth calico roller was sometimes not used, and it was suggested that the presence of moisture on the printing plate could improve print quality if done correctly. The rotary press used sheet-fed paper. Keach notes: “In the early days the paper had to be dampened before printing and then dried before gumming. In the past fifty years improved techniques have made possible printing on to dry, ready gummed paper and this is now normal procedure” [5a]. Although not categorically stated, it seems reasonable to assume that dry, pre-gummed paper was used in the 1940s. The maximum production was stated to be approximately 5,000 sheets per day for monochrome stamps.

This article examines entries in the Perkins Bacon (Final) Engravings Book 1923–1935 [6], held by the Royal Philatelic Society, London, (RPSL) and material from the Robert Pratt fonds in the Library and Archives Canada, Ottawa [7].

**The Perkins Bacon Engravings Book**

Many of the Perkins Bacon records were lost when the factory was destroyed in 1941. Some information was saved and is now in the archives of the RSPL, but a personal visit by the author in January 2009 showed that little was left there from the 1930s period. The only information found on the 1932 industrial issue is in the Perkins Bacon Engravings Book 1923–1935 [6, 8]. It provides details of work undertaken presumably by the Engraving Department at Perkins Bacon, mainly on sketches, engraving dies, and printing plates.
Of particular note to the printing of the 1932 Newfoundland industrial issue are four annotations that refer to “press printing,” “machine printing,” “curved plate for machine,” and “bent plate” (see below and Figure 1):

- **Recutting die for press ptg. 2 cts Newfoundland** (11 May 1932)
- **Recutting 2nd die 5cts. Newfoundland postage for machine ptg.** (31 May 1932)
- **Repairing stp on curved plate for machine Newfoundland 2 cents** (13 July 1932)
- **Taking out scratches & touching up bent pl Newfoundland 2 cts** (29 July 1932)

**Figure 1.** Selected extracts from the Perkins Bacon Engravings Book that would appear to indicate the use of both flatbed “press” printing and rotary “machine” printing with curved plates. (a) Recutting die for press ptg. 2 cts Newfoundland (11 May 1932); (b) Recutting 2nd die 5cts. Newfoundland postage for machine ptg. (31 May 1932); (c) Repairing stp on curved plate for machine Newfoundland 2 cents (13 July 1932); and (d) Taking out scratches and touching up bent pl Newfoundland 2 cts (29 July 1932). Abbreviations: cts = cents; ptg = printing; stp = stamp; pl = plate. [Reproduced with permission of RPSL, London.]

Baxter discussed “plate bending (curving)” for use with a rotary press [3a], and therefore the entries on the 13 July 1932 and 29 July 1932 likely both refer to curved printing plates. It also seems likely that “machine” printing refers to a rotary-press printing machine. Re-cutting occurs when there is a need to repair or correct part of the impression [3b]. It is difficult to soften a previously hardened die and often easier to correct a die by making a secondary lay-down die [3c]. This is why two dies with two different die numbers exist for the 2¢ (Dies 967 and 1018) and 5¢ (Dies 960 and 1023) industrial stamps [9a]. The re-cut dies are now referred to in the philatelic literature as Die II dies. These references to machine printing and curved plates would seem to suggest that Perkins Bacon printed the 1932 Industrial issue—at least some values—on a rotary press.

The Engravings Book also makes occasional reference to repairs to copper printing plates. The entry for 13 September 1932 for the 4¢ Newfoundland stamp is an example of this:
Repairing ptg pl (copp) 4 cts Newfoundland (13 Sep 1932)

Four entries relating to Greek stamps are of interest and provide details of the printing plates in use for at least some of the stamps printed by Perkins Bacon:

Eng. new die for stp 1 dr. “Greece” extra deep for press (13 Aug 1931)
Repairing 2 nickel printing plates for Greek stps Erectheum (15 Jan 1932)
Burnishing & repairing nickel pl. vignette Greek stps (10 Feb 1932)
Burnishing nickel pl. for press Greek stamps. (18 April 1932)

It is unclear if these plates were solid nickel or nickel-coated copper plates—the latter is more likely. The reference to “extra deep for press” is again unclear. Typically, dies designed for use with curved-plate rotary printing presses would be engraved with deeper lines [3d]; hence the need for deep lines for flatbed (press) printing seems anomalous.

The term “press” appears infrequently throughout the engraving book, but it is not known if the term refers to another type of printing machine or to the flatbed printing machine that was presumably normally used by Perkins Bacon for printing postage stamps.

Three entries relating to Republic of Columbia stamps are of interest and provide further indication that more than one die could be made:

Repairing ptg pl for press 1 centavos Fosforos stamp (17 Oct 1932)
Eng new die 1 centavos Rep de Colombia Fosforos (11 Jan 1933)
Eng 3rd die for machine Rep de Columbia “Fosforus” (15 Mar 1933)

It is difficult to interpret the precise meaning of the words relating to the various dies, but the word “machine” is presumably a reference to rotary press printing. The following is a complete list of the terms used in the Engravings Book between 1929 and 1935 for the engraved dies:

Eng die, Eng original die, Eng new original die, Eng 2nd die, Eng new die, Recutting original die, Eng add original die, Recutting 2nd die, Eng 2nd original die, Recutting & deepening die for original, Eng 3rd die for machine, Repairing die, Cutting original die.

Material from the Robert H. Pratt fonds (Archives Canada)

2¢ die proofs

The Canadian Archives contains examples of four dated Die I proofs (9/9/31, 11/9/31, 15/9/31, and 19/5/32) and three dated Die II proofs (9/5, 10/5, and 11/5/32). The pencil annotations on two of the Die I proofs read Original Die and 1st original die and on two of the Die II proofs they read new original 11/5/32 final and IV’ Die II (Figure 2). All these annotations appear to be in the same handwriting. The two dies differ in a number of ways. Die I shows the number 967, many more test engraving lines above and either side of the stamp, fine positioning lines, a shorter alignment mark on the right side, and the well-known “scar on the face” and “dot in the O” marks.

Die II bears the number 1018, very few test engraving lines, no positioning lines, a longer alignment mark, and the scar and dot removed. The scar was removed by adding extra engraving lines over the scar. Walsh and Butt lists plates 1, 2, and 3 for the 2¢ rose; plates 1, 2, and 3 for Die I 2¢ green; and plates 2 and 4 for Die II 2¢ green [10].

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Figure 2. Die proofs of the 2¢ Newfoundland industrial issue (Scott 185, 186) with annotations in the margins of the Die I proofs: (a) Original Die [Item: 1989-036.1166], (b) 1st original die [Item: 1989-036.1322], and the Die II proofs (c) new original 11/5/32 final [Item: 1989-036.1171], and (d) IV Die II [Item: 1989-036.1326]. National Archives of Canada [7].
**4¢ plate proof**

The two most important items in the Canadian Archives, in relation to printing methods utilized by Perkins Bacon, are plate proofs of the 4¢ rose lake (Figure 3). One has the marginal pencil note *Final print (Flat bed-plate, cut down) 12/11/35 A.S.C.* and the other has *Copper Rotary No 3 Destroyed Last print 5 Oct/32*. This clearly links copper plates to rotary printing and suggests that the 4¢ stamp was printed by both flat/bed and rotary presses.

![Plate proof](image)

**Figure 3.** Plate proofs of the 4¢ Newfoundland industrial issue (Scott 189) with annotations in the margins (a) *Final print. (Flat bed-plate, cut down) 12/11/35 A.S.C.* [Item: 1989-036.1491], and (b) *Copper Rotary No 3 Destroyed Last print 5 Oct/32*. [Item: 1989-036.1489].

National Archives of Canada [7].

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**5¢ die proofs**

The Canadian Archives contains examples of two dated Die I proofs (29/7/31 and 29/7/31) and three dated Die II proofs (27/5/32, 31/5, and 31/5) of the 5¢ violet. The annotations on one of the Die I proof reads *Original die.* written in ink and on the three Die II proofs reads *new original for machine ptg final 31/5/32, Die II, and IV Die II* written in pencil.
Figure 4. Die proofs of the 5¢ Newfoundland industrial issue (Scott 190, 191) with annotations in the margins of the Die I proof (a) Original die. [Item: 1989-036.1323], and Die II proofs (b) new original for machine ptg final 31/5/32 [Item: 1989-036.1300], (c) Die II [Item: 1989-036.1299], and (d) IV Die II [Item: 1989-036.1325]. National Archives of Canada [7].
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(Figure 4). The two dies differ in a number of ways. Die I has the number 960, fine positioning lines, apparently no alignment mark on the right side in the final state, and the antlers are of equal height. Die II has the number 1023, no positioning lines, an alignment mark, and the antlers are extended so that they are more pointed and uneven in length. There are no records of plate numbers being used for the Die I 5¢ violet, and plates 2-7 have been recorded for the Die II 5¢ violet.

5¢ plate proof

The Canadian Archives also have a 5¢ Die II plate proof with the word Flatbed written in pencil in the margin (Figure 5). This again shows that flatbed printing was used and implies, as mentioned above, that a second printing method was also utilized.

![Figure 5. Plate proof of the 5c Die II Newfoundland industrial issue (Scott 191) with annotations in the margin. Flatbed [Item: 1989-036.1471]. National Archives of Canada [7].](image)

Discussion

The entries in the Perkins Bacon Engravings Book 1923–1935 and the written notes on the proofs indicate that Perkins Bacon were using both flatbed printing and rotary press printing during the early 1930s for at least some of their stamp printing runs. Flatbed printing was used by Perkins Bacon since the printing of the penny black in 1840. However, the use of rotary press printing by Perkins Bacon in the early 1930s does not seem to have been recorded in the literature.

There is no evidence on the printed sheets, by way of changes to guide and cutting lines, and so it would seem that the plates were laid down in the same way. It is likely that steel plates were used for the flatbed printing and nickel-coated copper plates for the rotary-bed printing—copper being easier to curve, and the nickel coating used to decrease wear and increase the life of the plate.

Measurements of stamp size reported in the literature give no indication that Perkins Bacon ever dry-printed its stamps, and so it is likely that the rotary press used ungummed, dampened, sheet-fed paper in a way similar to that required for flatbed printing. Perhaps the rotary press could not deliver the pressures required for dry printing, or perhaps this had not been attempted or realized.

Acknowledgements

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References and endnotes

[3a] Ibid, p. 180
[3b] Ibid, p. 83.
[3c] Ibid, p. 28.
[9a] Ibid, p. 122, 125.
Intaglio printings of the Newfoundland 1¢ “Pile of Cod” stamps

AB Thompson  This article examines fine details in the image of the 1¢ “Pile of Cod” stamp, printed by Perkins Bacon in the 1930s and by Waterlow in the 1940s. The grey-black stamps printed by Perkins Bacon can be divided into three categories, indicating that the company used different printing methods for producing these stamps during this period. This difference is reflected in the overall appearance and has resulted in three distinct shades. No differences were seen in this stamp when printed by Waterlow, indicating a more consistent production process.

NEWFOUNDLAND issued a new series of definitive stamps in 1932. Variously referred to as the Industrial, Resource, or Pictorial issue, it replaced the Publicity issues in circulation since 1928. The new issue was printed in London, England, by Perkins Bacon (PB) from 1932–1937 (or 1938), first in green (Scott #183, SG #209, issued 2 January 1932) and then in grey-black (Scott #184, SG #222, issued 15 August 1932), and by Waterlow (W) from 1942–1949 in dark grey (Scott #253, SG #276, no issue date, first printed May 1942 [1], eku c.15 August 1942 [2]). The colours follow the Unitrade, Scott, and NSSC catalogue listings; Stanley Gibbons catalogues list the latter two printings as grey.

Perkins Bacon was in fact two companies. Perkins Bacon and Co Ltd, was established in 1852 and went into liquidation in December 1935. Another security-printing firm, WW Sprague and Co Ltd, acquired the company in January 1936 and operated it under the same name [3]. The staff, plant, and equipment apparently remained the same [3], although it is known that there were some changes. For example, the locator marks on the dies were changed from a single short line for the 1929–1933 issues to a pair of crosses for the 1937–1938 issues [4]. Another change occurred when plates 5 and 6 were printed, as both had lathework down their left sides, as can be seen on some imperforate proofs of plate 5 and, partially, in the stamp selvage of plate 6. Lathework is also seen on some of the 1937 Long Coronation issue and on the 1938 Royal Family Issue printed by Perkins Bacon.

Examination of the grey-black 1¢ PB stamp shows that there is more than one shade of it. In 1961, Hamilton recorded the existence of five plate numbers for this stamp, numbered on the sheets as plate 1 to plate 5. He noted that “[s]tamps from plate 3 are much lighter in appearance owing to the plate being less deeply engraved. The detail is sharper and the whole effect gives the impression of a shade variety though the ink employed was the same as that used for the printings with the other plates” [5]. Although not mentioned in Hamilton’s article, a plate 6 was actually known by 1958 [6]. No shade differences have been observed for the 1¢ green PB stamp or the dark grey 1¢ W stamp.

Die proofs exist in green and black for the 1¢ PB stamp and in black for the 1¢ W stamp. The Waterlow die proof was not available for examination in this study. The colours of the die proofs are those given by Minuse and Pratt [7], but they appear to be the same shade and colour used for plates 1 and 2 of the issued green and grey-black 1¢ PB stamps.

Keywords & phrases: Newfoundland, 1¢ “Pile of Cod” stamp

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This paper examines fine details in the printed images of the green 1¢, grey-black 1¢ PB stamps, and the dark grey 1¢ W stamp using die proofs, imperforate plate proofs, and perforated plate blocks bearing the plate number in the selvage. The findings are then related to previously identified shades of the grey black 1¢ PB stamp.

Materials and methods
The fine printing details of two regions of the image on the printed stamps were viewed under a Wild M3Z zoom stereo dissecting microscope with an overall magnification of 13×-80×. These regions were photographed with a Canon EOS 500D digital camera using bellows and a 35mm or 20mm Canon FD macrophoto lenses, giving respective maximum magnifications of 5× and 20× on to the film plane. The original widths of the images in Figure 2 and Figures 3–7 were 2.5mm and 6mm, respectively. The stamps photographed and illustrated in this article were typical of the material examined and do not represent extreme examples. An example of the green 1¢ PB stamp of plate 1 is shown in Figure 1. The grain direction in the paper runs vertically. The quantity of proofs and plate-numbered stamps examined under the microscope is shown in Table 1.

Table 1. Numbers of proofs and stamps examined

<table>
<thead>
<tr>
<th>Die proofs</th>
<th>green (1, 1ª) and black (1, 1ª) 1¢ PB - Scott # 183, 184.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate Proofs</td>
<td>imperforate and showing plate number in selvage for plates 1 (1ª), 2 (1ª), 4 (3), and 5 (1, 1ª, 2ª) grey black 1¢ PB - Scott # 184.</td>
</tr>
<tr>
<td></td>
<td>imperforate security punched archival proofs for plates 41711 (4), 42430 (5), and 43965 (4) dark grey 1¢ W [8] - Scott #253.</td>
</tr>
<tr>
<td>Stamps</td>
<td>perforated and showing plate number in selvage of plates 1 (4) and 2 (2) green 1¢ PB - Scott #183.</td>
</tr>
<tr>
<td></td>
<td>perforated and showing plate number in selvage of plates 1 (3), 2 (3), 3 (2), 4 (3), 5 (6), and 6 (2) grey black 1¢ PB - Scott #184.</td>
</tr>
<tr>
<td></td>
<td>perforated and showing plate number in selvage for plates 41711 (5), 43420 (17), and 43965 (21) dark grey 1¢ W - Scott #253.</td>
</tr>
</tbody>
</table>

The size of the grey-black 1¢ PB stamps was measured from scans made at 1200 dpi on a CanoScan 8800F scanner, using Coral Paint Shop Pro Photo X4 software, assuming that 1 pixel is 0.02117mm (=25.4/1200). The absolute error was checked against a 30cm stainless-steel ruler and found to be less than 0.1 percent. Postally-used stamps were classified as Type I, II, or III, based on the criteria given in this paper, so that there were 30 of each type. Stamps that could not be assigned with certainty to a type were not included. Size was determined by taking the average of the outside measurements of the vertical and horizontal frame lines, excluding any protrusions caused by spewing, feathering, or shadowing.

The stamps examined for shades were postally cancelled and soaked in water to remove the gum.

Figure 1. Newfoundland Pile of Cod 1¢ green stamp printed by Perkins Bacon showing Plate 1. The red arrow shows the grain direction of the paper.
Shades were determined by examining stamps under natural light and sorting into as few groupings as possible [9]. The stamps were re-soaked in water and then dried under constant conditions to remove any residual “stress” in the paper. No attempt was made to classify less-common shades, which were probably caused by changes occurring after production, and due to variations in storage conditions.

**Definition of terms**

**Feathering:** Fine streaks of ink running away from the printed lines in the direction of the paper fibres (Figure 2a).

**Mottling:** The ink has not penetrated the paper and shows a heavy mottled appearance on the surface, often with circular, less-inked areas separated by thickly-inked borders, giving a honeycomb effect (Figure 2b).

**Ragged edge:** Ink pulled outwards from one or, occasionally, both sides of the line, to give it a ragged edge. A likely cause is that the ink is “pulled” when the paper is peeled off the plate, drawing the ink away slightly in one direction (Figure 2c).

**Shades:** Variations in the intensity of a colour or the presence of differing amounts of other colours [10].

**Slip print:** A blurred shadowing that appears to one side of fully-inked areas (Figure 2d). (See discussion below, as it is suggested here that this effect is caused by plate wear and not a paper slip on the printing plate. The term “slip print” may therefore be misleading, but we use it here as it is currently used in the philatelic literature.)

**Spewing:** Ink forced out of engraved lines during printing and often forming “half-puddles” on the surface of the paper (Figure 2e).

**Underinking:** Lines that do not contain enough ink and appear pale, sometimes with white areas where ink is absent, producing a *dry print* flaw (Figure 2f).

![Figure 2](image_url)

**Figure 2.** Photographs of 1¢ stamp showing examples of terms defined and used in this paper. (a) Feathering from Plate 42430, dark grey, Waterlow, (b) Mottling from Plate 2, green, Perkins Bacon, (c) Ragged lower edge from Plate 1, grey-black, Perkins Bacon, (d) Slip print from Plate 5, grey-black, Perkins Bacon, (e) Surface bleeding from plate proof of Plate 3, grey-black, Perkins Bacon, and (f) Underinking and dry print from Plate 3, grey-black, Perkins Bacon.
Results

Die proofs (Perkins Bacon)

Figure 3. Photographs of parts of die proofs of 1¢ stamp printed by Perkins Bacon, (a) Central vignette in black with die no. 954, and (b) Lower left corner in green and dated 6 June 1931.

The green and black die proofs of the 1¢ PB stamp had much clearer and sharper images than seen on the plate proofs or the stamps. This was most noticeable in the fine engraved lines in the central vignette depicting the pile of cod (Figure 3a). The more thickly-coloured areas of the die proofs showed mottling of the ink, with this being more noticeable in the green die proofs (Figure 3b).

Type I: Plates 1 and 2 (Perkins Bacon)—green 1¢ and grey-black 1¢

Figure 4. Type I: Plates 1 and 2 - Perkins Bacon. (a) Imperforate proof Plate 1 in grey-black on thick, un-watermarked paper, (b) Imperforate proof of Plate 2 in grey-black on thick, un-watermarked paper, (c) Perforated stamp Plate 1 in green, (d) Perforated stamp Plate 2 in green, (e) Perforated stamp Plate 1 in grey-black, and (f) Perforated stamp Plate 2 in grey-black.
The paper used for the printing of proofs of Plates 1 and 2 of the grey-black 1¢ PB stamp was un-watermarked and thicker than the paper used to print the stamps. The impressions for the proofs of Plates 1 and 2 were reasonably clear and sharp but showed a marked tendency for spewing (Figure 4a and b). Mottling of the ink was seen on the grey-black plate proofs, but it was less obvious than that seen on the 1¢ green stamp impressions. No plate proof of the green 1¢ PB stamp is known.

The images on the green 1¢ PB stamps of Plates 1 and 2 were generally clear and of good quality, but showed distinct mottling and the tendency for ragged edges and spewing that formed blotches of ink on either side of the frame line (Figure 4c and d).

The images on the grey-black 1¢ PB stamps of Plates 1 and 2 were generally of poor quality. The printed lines were excessively thick and over-inked and often showed ragged edges, usually most apparent on just one side of the line (Figure 4e and f). The range of image quality varied, from the poor quality shown on Plate 1 in Figure 4e to the better quality seen on plate 2 in Figure 4f. The embossing of the paper, caused by the paper being pressed into the engraved lines, appeared to be minimal, although the stamp itself was clearly embossed due to the raised ink.

**Type II: Plates 3 and 4 (Perkins Bacon)—grey-black 1¢**

![Image 5a](image5a.png)

![Image 5b](image5b.png)

![Image 5c](image5c.png)

![Image 5d](image5d.png)

*Figure 5. Type II: Plates 3 and 4—Perkins Bacon. (a) Imperforate proof Plate 4 on watermarked paper, (b) Perforated stamp Plate 3, (c) Perforated stamp Plate 4, and (d) Perforated stamp Plate 3. All printed in grey-black.*

The plate proofs examined here for plate 4 of the grey black 1¢ PB stamp were on watermarked stamp paper (Figure 5a). The image was very similar to that seen in the plate proofs of Plates 1 and 2 (Figure 4a). The image was fully inked, with the spewing still apparent, but the mottling on the darker-inked areas appeared to be reduced. No plate proof of Plate 3 was available for examination. The images for the stamps of Plates 3 and 4 were sharp with clear lines, but were almost always under-inked, producing pale impressions often...
with un-inked areas in the embossed lines of the stamps, producing dry print flaws (Figure 5b and c). There was little or no spewing or feathering. Some of the finer details provided by fine engraved lines was often missing, most noticeably from the central vignette where the pile of cod was depicted (Figure 5d). The paper was clearly embossed. The earliest postal usage of a Type II 1¢ PB stamp in the author’s collection is dated 2 June 1934.

**Type III: Plates 5 and 6 (Perkins Bacon)—grey-black 1¢**

![Image](6a.png)  ![Image](6b.png)  ![Image](6c.png)  ![Image](6d.png)  ![Image](6e.png)  ![Image](6f.png)

*Figure 6. Type III: Plates 5 and 6—Perkins Bacon. (a) Imperforate proof of Plate 5 on un-watermarked paper before burnishing, showing horizontal guide line of left stamp, (b) Imperforate proof of Plate 5 on un-watermarked paper before burnishing, (c) Imperforate proof of Plate 5 on red bookend paper, (d) Perforated stamp Plate 5, and (e, f) Perforated stamp Plate 6. All printed in grey-black.*

The imperforate plate proofs of the grey-black 1¢ PB stamp of Plate 5 examined were printed on three different papers. A pair of opposite corner blocks from the top row, one bearing full lathework and the other the Plate number 5, were printed on un-watermarked paper (unique, see [11] for full illustration). These corner blocks are very unusual, in that they show the guidelines used to lay down the plates prior to their removal by burnishing (Figure 6a). The image on this plate proof was similar to the images seen for the plate proofs of Plates 1, 2, and 4. The spewing and mottling of the ink can be clearly seen (Figure 6b). Imperforate plate proofs for Plate 5, printed on red bookend paper (Figure 6c), and the perforated stamps of Plate 5 on watermarked stamp paper (Figure 6d), were also examined. These had a different appearance from the impressions seen on all the plate proofs and on stamps of Plates 1–4 described above. The impression itself was good quality and fully inked, but with a tendency to show feathering and shadowing to one side of the image, known as a slip print.
Intaglio printings of the Newfoundland 1¢ “Pile of Cod” stamps

This was a very consistent feature of stamps of Plate 5, with the shadow being generally to the right of the impression by \( \pm 0.2 \text{mm} \) and only rarely to the left. The intensity of the shadow varied, from being absent to very obvious (Figure 6d). The shadowing produced a most undesirable effect, making the image appear doubled and blurred, totally detracting from the otherwise generally clear impression. The ink of these two plates appeared to show better penetration into the paper, with no hint of mottling seen on the earlier plates where the ink appeared to sit more on the surface of the paper. The paper was clearly embossed with the relief impression.

Only two blocks of Plate 6 stamps were available for examination, and both were perforated stamps (Figure 6e and f). The impression was clear, and there were no signs of feathering or the shadowing of a slip print. They did, however, give the general appearance of being similar to the Plate 5 impressions in other respects and here are placed with them.

The earliest postal usage of a slip print of the 1¢ PB stamp in the author’s collection is dated 4 August 1938.

**Plates 41711, 42430 and 43695 (Waterlow)—dark grey 1¢**

The appearance of the dark grey 1¢ stamp printed by Waterlow, including all the punched archival proofs, appeared to be the same. The image is sharp and clear, but with a strong tendency to show feathering (Figure 7a). There is good reproduction of the fine engraving lines (Figure 7b). There was no hint of mottling seen in the more heavily inked areas. This was probably because the ink appeared to penetrate the paper more so than was seen for plates 1-4 of the Perkins Bacon printings. The paper was clearly embossed with the stamp impression that was more pronounced than seen on any of the Perkins Bacon printings.

**Shades (Perkins Bacon)—1¢ grey-black**

Thompson identified four shades of grey-black 1¢ PB stamps [9]. These could be assigned to the three types listed above. The corresponding shades were:

- **Type I**: Charcoal-like grey-black.
- **Type II**: A paler grey-black and a pale grey-black, with a brownish tinge.
- **Type III**: An almost bluish black.

No shade differences were seen on the green 1¢ PB stamp or the dark grey 1¢ W stamp (except for the first archival proof sheet of the first printing of plate 41711, which is recorded as a bluish grey [1]).
**Size**

The size of the 1¢ stamps, measured to the outside of the frame line (excluding any protuberances) showed that the width was greatest for the Type II stamps and narrowest for the Type III stamps (see Table 2 for stamp sizes). The Type I stamp was of an intermediate width. The average width of the Type II stamp was 0.3 mm wider than that of the Type III stamp. The height of all the stamps was similar.

**Table 2. Summary of the differences seen for the grey black 1¢ Perkins Bacon and dark grey 1¢ Waterlow stamps printed in the 1930s and 1940s**

<table>
<thead>
<tr>
<th>Grey-black 1¢ Perkins Bacon</th>
<th>Grey-black 1¢ Perkins Bacon</th>
<th>Grey-black 1¢ Perkins Bacon</th>
<th>Dark grey 1¢ Waterlow</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Catalogue numbers</strong></td>
<td>Scott 184, SG 222</td>
<td>Scott 184, SG 222</td>
<td>Scott 253, SG 276</td>
</tr>
<tr>
<td><strong>Plates</strong></td>
<td>1 and 2</td>
<td>3 and 4</td>
<td>41711, 42430, 43965</td>
</tr>
<tr>
<td><strong>Colour/shade (SG colour [17])</strong></td>
<td>Pale grey black (grey)</td>
<td>Bluish black (blue-black)</td>
<td>Dark grey (grey-black)</td>
</tr>
<tr>
<td><strong>Fine detail</strong></td>
<td>Under-inking, some surface bleeding and feathering</td>
<td>Feathering and slip prints</td>
<td>Feathering</td>
</tr>
<tr>
<td><strong>Ink penetration into paper</strong></td>
<td>Poor to better, no motting</td>
<td>Good, no to very slight motting</td>
<td>good</td>
</tr>
<tr>
<td><strong>Relief embossing on paper</strong></td>
<td>Medium</td>
<td>Medium</td>
<td>Most</td>
</tr>
<tr>
<td><strong>Little Paper</strong></td>
<td>Proofs on watermarked stamp paper</td>
<td>Plate 5 proof generally on bookend paper. Plate 6 proof unknown (?)</td>
<td>Archival proofs on watermarked stamp paper</td>
</tr>
<tr>
<td><strong>Lathework</strong></td>
<td>No</td>
<td>Yes</td>
<td>Yes (?) rarely seen</td>
</tr>
<tr>
<td><strong>Size mm: width (range), height (range)</strong></td>
<td>20.4 (20.2-20.6)</td>
<td>20.6 (20.4-20.7)</td>
<td>20.3 (20.1-20.4)</td>
</tr>
<tr>
<td></td>
<td>26.9 (26.8-27.0)</td>
<td>26.9 (26.8-27.0)</td>
<td>26.9 (26.8-26.9)</td>
</tr>
</tbody>
</table>

**Discussion**

The printing of postage stamps is a complex process involving, at its simplest, engraved plates, inks, paper, and printing machines. Differences in any of these will affect the final appearance of the stamps. In the material examined here, it is not necessarily certain that the plate proofs would have been printed in the same way as the final stamps, although in this case it seems likely. A summary of the conclusions is shown in Table 2.

Overall, there appear to be differences in the penetration of the ink into the paper. This resulted in two different forms of bleeding of the ink away from the inked lines: spewing and feathering. For Type I of the 1¢ PB stamp, the penetration of the ink into the paper appears to be poor, and the ink sits more on the surface resulting in the mottled appearance. The spewing is over the surface of the paper and forms round “half-puddles” of ink adjacent to the lines. For Type III of the 1¢ PB stamp and the 1¢ W stamp, the ink appears to have...
Intaglio printings of the Newfoundland 1¢ “Pile of Cod” stamps

penetrated the paper, and the bleeding is along individual paper fibres, resulting in the feathered appearance. The Type II of the 1¢ PB stamp shows both spewing and feathering, but not to any marked extent, as the under-inking has reduced bleeding to a minimum. Examination of cut sections, though difficult to see with the equipment available, showed that the ink on the Type I 1¢ PB stamp was on the surface of the paper, whereas the ink on the Type III 1¢ PB stamp had to some degree—and even more so on the 1¢ W stamp—penetrated into the matrix of the paper (Figure 8).

Figure 8. Diagrammatic representation of cross-sections of (a) Type I PB 1¢ stamp with mottled ink on the surface of the paper and no embossing with a surface bleed to the right, and (b) Type III 1¢ PB stamp and 1¢ W stamp showing ink penetration and embossing of the paper with feathering on the right.

Exaggerated and not drawn to scale.

The PB die proofs, both in green and in black, displayed a superior image quality, which is commonly seen in die proofs. For plates 1 and 2, the plate proofs are similar to the green 1¢ PB stamps but different from the grey-black 1¢ PB stamps. The plate proofs are clearer, but show more spewing, and lack the ragged edges sometimes seen on the grey-black stamps. Differences in the green and grey-black inks could play a role, as the pigments used may require different formulations that behave differently when printed.

Plate wear will also affect the impression and image quality. Plates 1 and 2 were first used to print the green 1¢ PB stamp and so would be expected to produce clearer images than those seen for the later issued Plates 1 and 2 of the grey-black 1¢ PB stamp. This does seem to be the case where the grey-black impressions can beare both fuzzy and apparently over-inked. It may also be that the lighter inking on Plates 3 and 4 was an attempt to correct the apparent over-inking that occurred on the first two plates. It may also be that Perkins Bacon was experiencing difficulties with its “black” inks, and that a new formulation was being used. Hamilton [5] claimed that the inks were the same and that the plates were less
deeply engraved. Again this is possible, and one could even speculate (perhaps rather wildly) that Plates 3 and 4 were curved to fit on a rotary press that would have reduced the depth of the engraved lines [12], as there is evidence that Perkins Bacon used rotary presses [13].

Slip prints were common on the 1¢ stamp of Plate 5, though with the material examined here it is not certain if this occurred on the 1¢ stamp of Plate 6. The earliest postally-cancelled 1¢ PB stamp in the author’s collection with a slip print is dated 4 August 1938. Slip prints have been known at least since the 1890s, when only flatbed printing was used [14].

There are only a few references that discuss the causes of slip prints, and these do not seem entirely satisfactory. Slip prints have been stated to occur when the paper is laid upon or removed from the printing plates with a slight lateral movement [12, 14]. Because of this, slip prints have also been referred to as “kiss prints” [12] or “slurred prints” [14]. It has been noted that the shadowing on slip prints is remarkably constant, and it has been suggested that they are caused by mis-adjustment of the printing press [14]. However, printing experts with direct experience of working in the stamp printing industry in the 1960–1980s assert that this shadowing effect is caused by plate wear.

They suspect that the plates could have been made of soft steel or copper and not electroplated with nickel or chromium [15]. The lifespan of a copper plate could be as little as 2,000 impressions, due mainly to the use of abrasive ink extenders, such as calcium carbonate (probably ground up natural chalk) and barium sulphate [15]. Hardened-steel and chromium-faced plates could extend plate life to more than 50,000 impressions [12]. The Perkins Bacon Engraving Book records the use of steel, copper, and nickel plates by Perkins Bacon in the early 1930s, but no details are provided on plating (perhaps because the engravers would never have worked on plated plates) [16].

Discussions with printing experts indicate that “slip prints” are most likely caused by plate wear that follows the wipe direction used to remove excess ink from the plates. Furthermore, the presence of the shadowing indicates a constant wipe direction that is likely mechanical in nature, with the direction of the wipe being towards the shadow, i.e., from left to right in Figure 2d [15]. Slip prints also seem to be linked with the presence of lathework. In addition to the 1¢ grey-black PB stamp, lathework has been recorded for the Perkins Bacon printings of Newfoundland for the 5¢ “caribou” in the same issue (Scott # 191 issued 1932-1937), the 1¢ and 3¢ Long Coronation issue (Scott #233, 234 issued in 12 May 1937), and the 1¢, 2¢ and 3¢ of the Royal Family Issue (Scott #245, 246, 247 issued in 12 May 1938). Slip prints are commonly seen on all these stamps, with the exception of the 5¢ value, where no slip prints were seen in over 200 stamps examined.

Colours and shades are difficult to describe and classify. The green 1¢ PB stamp does not have any apparent shades in the 200-plus stamps examined here. The colour “green” assigned by the catalogues would seem appropriate, but the closest colour from the Stanley Gibbons colour key [17] appears to be a yellowish green. The colours for the grey-black 1¢ PB stamp and dark grey 1¢ W stamp are probably also reasonable, as the 1¢ PB stamp does appear to have more black in the colour. The closest colour to both these stamps in the Stanley Gibbons colour key is grey-black, and so the grey assigned by the Stanley Gibbons catalogues would appear to be incorrect. The shades of the 1¢ PB stamp described here correspond quite well with the Stanley Gibbons colour key, with Plates 1 and 2 being grey-black and Plates 5 and 6 being closest to blue-black. Plates 3 and 4 are definitely much paler.
than the grey-black of the earlier plates, but it is not possible to tell if it is another shade or due to the respective over- and under-inking. The mention of a brownish tinge seen in the identified shades of the grey-black may be due to the paper being yellower. This yellower paper appears discoloured and is quite commonly seen.

It is not possible to classify all the grey-black 1¢ PB stamps in one of the three types described above based on their fine printing details and shade, but it is possible to classify perhaps half of them—and to make a good guess about most of the remaining half. The confusing stamps are the sharper images of Type I, the more-heavily-inked Type II, and the Type III not showing signs of a slip print.

Both flatbed and rotary presses could operate with dry or wetted paper [18, 19]. The printing methods employed by Perkins Bacon in the 1930s and 1940s period appear to be poorly documented, although it is believed that the firm used both flatbed and rotary printing techniques [13]. It is generally believed that Perkins Bacon always printed to wet un-gummed paper, and Waterlow to dry pre-gummed paper, and the measurements of the size of the stamps support this. The differences in the width of the Type I, II, and III grey-black 1¢ PB stamps are small but significant. The Type III stamps were the narrowest. Interpretation of these measurements is difficult, as the Type II stamps selected may just reflect those printed on drier (but not dry) paper, or on paper with different shrinkage properties. Experiments show that the differences in size between wet and dry stamps and stamp paper is about 0.6 percent (0.2 mm) in the grain direction (the height of the 1c PB stamp) and 2.6 percent (0.5 mm) in the cross-grain direction (the height of the 1c PB stamp) [20]. It is also known that the bending of plates to fit a rotary press increases the size of the stamps by up to five percent (1 mm) in the direction of the bend [12, 21]. The differences seen for the 1¢ PB stamps are therefore very difficult to interpret because of the possible wet/dry printing and flatbed/rotary press combinations.

Comparison with the die proofs showed that the shadowing on the slip prints of Type III extended beyond the original image, and so it was correct to exclude the shadowing in the measurements. The difference observed when measuring the width of dry and wet stamps (which is in the cross-grain direction) is 0.5-0.6 mm, and none of these measures show such a large difference. There is therefore no reason to suppose that Perkins Bacon ever printed to dry paper for the 1¢ PB stamps.

What is also difficult to explain is the ink penetration, as wetted paper has been reported to absorb ink better than drier paper, but the penetration may be more due to the fact that wetter paper is more pliable and therefore more easily forced into the engraved recesses of the printing plates. The apparent lack of paper-embossing on Type I, perhaps related to ink penetration, is also difficult to explain.

This article serves to record the differences in the fine details of the 1¢ Pile of Cod stamps printed by Perkins Bacon and Waterlow in the 1930s and 1940s. It is not yet possible, however, to explain the reasons and causes for these differences. Nor is it possible at this stage to assign these differences to the flatbed and rotary printing techniques reportedly used by Perkins Bacon [13]. This range of shades and appearances for the 1¢ stamp printed by Perkins Bacon certainly indicates a less uniform printing process than was used by Waterlow, which was either less mechanized or utilized a variety of printing techniques.
Acknowledgements
The author is very grateful to David Pratt, Colin Fraser, Gary Granzow FRPSL, David Pratt, Sicco W Scheen, CA Stillions, and Eric Yendall, FRPSL, for their advice and guidance on intaglio printing methods. The author apologizes that this article contains a lot of detail, making it a hard read, but at the same time hopes that it stimulates readers to take a closer look at the stamps in their collections.

References and endnotes
[2] AB Thompson, Registered cover from St John’s, Newfoundland, to Providence, USA. Date stamp partially unreadable (?? ?? 1942) but clearly back-stamped 20 Aug 1942 in Boston, USA. Typically a cover took five days to reach Boston. Cover in author’s personal collection.

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