From the Stamp Specialist:

The Development of Rotary Press Printing

By Max G. Johl *(From The Stamp Specialist Book # 1, published in 1939)*

The Office Department has recently announced that in the future most of the commemorative stamps would be printed from rotary press plates, and in addition to that would be printed on plates especially prepared for use on the electric eye perforator. While this is the latest development, it can hardly be said to be unexpected; for over thirty years the Bureau of Engraving and Printing has been experimenting with methods which would decrease the cost of printing as well as increase the number of well centered stamps.

A Sampling of Early Imperf Coil Issues

Left, A guide line pair of Sc. 316, the 1908 issue with government perforations, 2019 SCV $300,000.

Right, Sc. 314 with Brinkerhoff Type I private perforations, produced from imperf sheets of the 1902 1¢ issue (Sc. 314) supplied to the Brinkerhoff Company by the BEP, SCV $220.

Front cover, an Imperforate Horizontal Coil (Sc. 314H) mint NH guide line strip of seven, part of a roll made from the flat plate regular issue (Sc. 300), 2019 SCV approx. $23,600.

The 2¢ Carmine Type I Vertical Coil, perf 12 horizontally (Sc. 321), tied across both sides (one indication that this is not a fake from a sheet stamp with the side coils trimmed) by an "Indianapolis Ind. Oct. 2 3:30PM 1908" wavy-line machine cancel. This is the only surviving cover with this rare stamp, SCV $250,000. In February 1908 the BEP issued four rolls of 4,000 of these perf horizontally coils for use in private vending machines.

In 1906, the Post Office Department placed on public sale some unperforated sheets of stamps which were intended for manufacturers of vending and stamp affixing machines. This can logically be considered to be the beginning of the trail that led to the recent announcement.

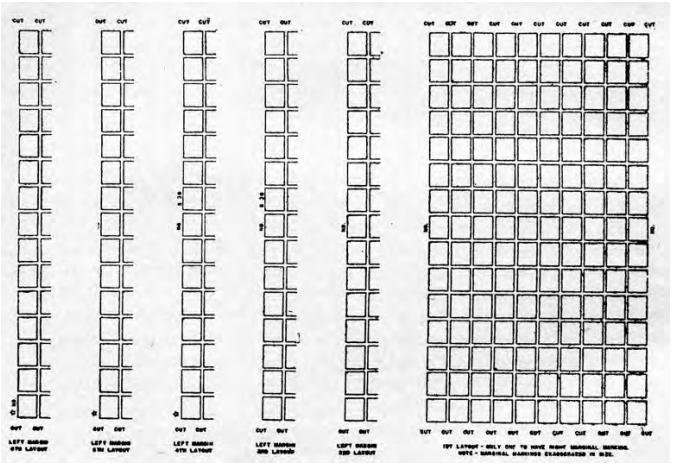
These concerns pasted the sheets end to end or side to side to make the necessary continuous lengths, after which they applied perforations to help propel the stamps through special mechanisms of their machine. Stamp affixing devices found immediate favor with business men and there was a strong demand for the Post Office Department to stock various types of coils in local post offices. Because of the variety of private perfs, some of which were not practicable, the Post Office Department did not stock private perfs but decided to make coils of their own. They found however, that they must a]so paste the sheets end to end or side to side.

The method of cutting the sheets containing one-way perforations into strips was quite burdensome and in 1910 the Stamp Printing Division perfected coiling machines in which strips of ten stamps high or ten stamps wide could be fed continuously. The perfection of this mechanism led them to consider the possibility of printing stamps in endless rows which would greatly decrease the cost of coiling.

On April 20, 1910. J. E. Ralph, Director of the Bureau of Engraving and Printing, approved the first die proof impression of an experimental surface die which was being used by the Bureau in their experiments to print stamps in continuous rows. These stamps were printed by the offset method, which did not meet with the approval of the Secret Service, and it was necessary for the Bureau to continue their experiments still further in an endeavor to produce engraved stamps in continuous form as their experiments had definitely convinced them they were on the right track in their endeavor to decrease the cost of preparing coil stamps. A short time later B. F. Stickney, mechanical expert of the Bureau, designed an experimental press that would print stamps by the engraved method and in continuous lengths.

The first designs of the offset method showed a picture of Alexander Hamilton with the numbers 1, 2, 3, 4, in the corners (page 28). The first experiments on the engraved stamps showed the frame design with no head in the vignette; the second stage of the experiment showed the complete design with the head of Hamilton again in the center.

It is interesting to note that the copies now in the hands of collectors show the 12 gauge perforations then used by the Bureau, while the rotary press printed copies of the same design are imperforate. A study of the two stamps shows the engraved stamp is somewhat taller. This last experiment was found entirely satisfactory and the Bureau started the next step and prepared six plates each showing 150 subjects of the regular 2¢ Washington stamp. These plates showed a variety of spacing as Bureau experiments clearly indicated that the curving of the plates changed the size of the stamps

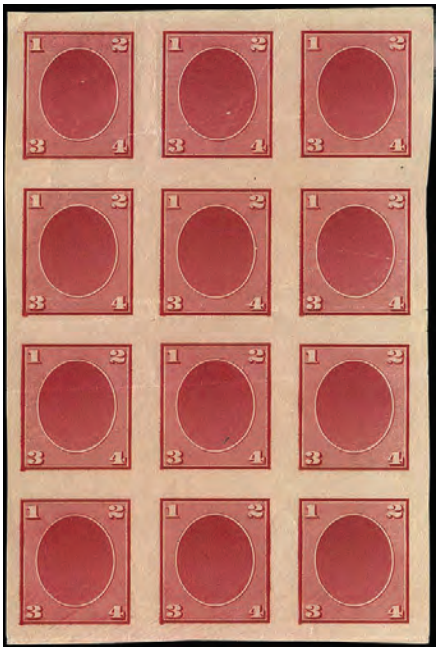


150 Subject Plate-Endwise Rotary Press Coil. This layout shows the six different marginal markings used on this type of plate. Some of these markings were only used on the Two Cent plates.

and it was necessary to do considerable experimenting to try to determine the proper spacing to be allotted to a flat plate that was intended to be curved prior to its use on the printing press. Undaunted however, Mr. Stickney, with the help and encouragement of Director Ralph, continued his experiment and on June 30, 1914 the first stamp printed on the rotary press was officially issued. This was the 2¢ unperforated sidewise coil, #459. This was followed by other values with a complete set of the 1¢, 2¢, 3¢, 4¢ and 5¢ perf. 10 sidewise coils had made their appearance.

These stamps were printed from special 170 subject plates, 17 wide by 10 high.

Test Coils



Block of 9 of the engraved test stamp, Sc. TD18, with pencil notation on the reverse, "first impression printed from an experimental press designed by J E Ralph and B F Stickney from an intaglio roll. JER". The piece is footnoted in Scott below the listing for TD18.

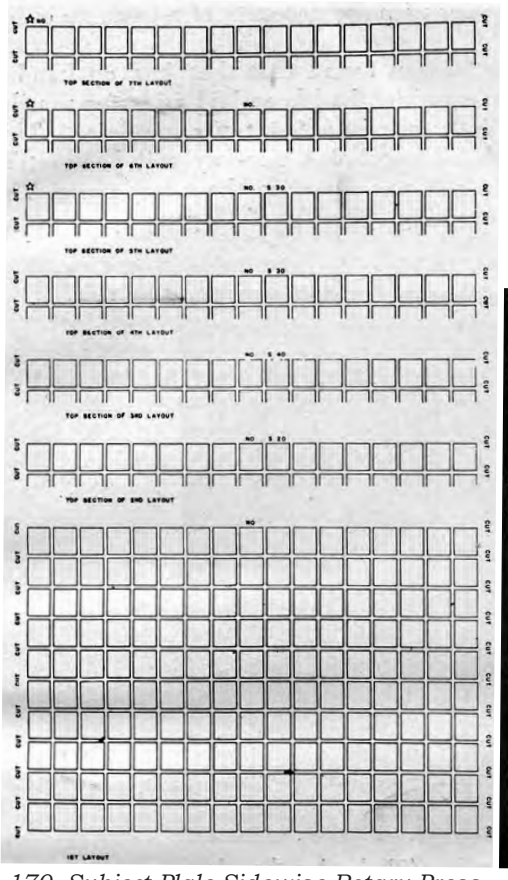
Deep red Die Essay on Thick Glazed Card (Scott TD20P1) with manuscript notation, "Sample of surface printing from die: done by Bureau E & P 5/20/1910"

Large black die essay on card with notation on the reverse, "first die proof impression of experimental surface die from surface print. JER April 25/10" (the inscription being that of BEP Director Joseph E. Ralph.) The reference to "surface die" and "surface print" do not refer to offset printing, but to letterpress printing, which—unlike offset—required a special die to be prepared.

Deep red Test Stamps block of four with right sheet margin, Sc. TD19

Sc. TD28, 1910 Minerva offset test stamp, used by the BEP to test the Harris offset press, this being what that press was able to produce, and not deemed satisfactory.

Coil stamps, left, Sc. TD20, with vertical perfs; right, Sc. TD 21, test stamp perf 12 horizontally. The perf vertically test coils were offset-printed by letterpress and show an entirely different method of depicting the shading. In particular, face shading is composed of open squares, while the intaglio test stamps show line shading. Comparison with intaglio printing shows a clearly inferior rendition of the portrait. In addition letterpress printed stamps were determined to be an easier form of printing to counterfeit, and the experiment was considered unsuccessful.



170. Subject Plale Sidewise Rotary Press Coil. This layout shows the seven different marginal markings used on this typc of plate. Some of these markings were only used on the Two Cent plates.

Second stage Rotary Coil Experiment

The rotary press plates were made in the same manner as were the flat plates, but after the design had been transferred to the plates the latter were curved to fit one-half of the rotary press bed. These plates were always used in pairs and one complete turn of 11 press made 340 stamps, ten continuous rows of 34 stamps placed side to side. This sidewise curving of the plates widened the stamps to 23 mm, those from the flat plates being only 22-1/4 mm, the height remained the same.

As there was very small demand for the endwise coils it was almost a year later that the endwise coil stamps 1¢ and 2¢ denominations were placed on sale.

These stamps were printed from 150 subject plates ten wide by fifteen high, curved endwise to the stamp, which resulted in an elongated impression, the width being the same as the flat plate stamps but the height became 23 mm instead of the usual 22-1/4 mm.

A pair of plates are always used on a rotary press and where these plates meet a small crevice is formed, which in inking the plates also takes the ink and appears as a horizontal line after every fifteen pairs. Pairs showing this line are known as "joint line pairs." There are no constantly recurring "paste up" but occasionally some are found. These are caused by the joining of two rolls of paper or where a break has occurred.

These rotary printed coils were found acceptable to the public as well as to the Bureau and flat plate coil stamps with the necessity of a paste up every 20 stamps soon disappeared.

In the manufacture of coils, the Bureau found that they had on hand a supply of 170 subject sidewise coil sheets which had been laid aside for mutilation because they could not be made into coils on account of some defect. This "coil waste" had, of course, received the regulation one-way coil perforation while forming part of the long rolls of stamps printed on the rotary press. The coil perforating machines with the revolving cylinders of 10 gauge perforation and only fitted for perforating rolls of stamps, could not be used to perforate sheets, so these 170 subject lengths had to be perforated the other way (horizontally) on the regulation eleven gauge flat plate perforating machines.

Sc. 443 flat plate, bottom, superimposed on Sc. 452, Rotary, showing the added width of the Rotary Press sidewise coil.

Sc. 441 flat plate, left, superimposed on Sc. 448, Rotary, showing that the Rotary Press endwise coil is taller.

These were the first of a series of "coil waste" stamps placed on general sale at post offices and which caused considerable confusion to collectors. A study of the differences between the flat plate and the sidewise rotary coils previously described will clearly indicate the identifying variations in addition to the differences in the perforations.

In 1921, the next step took place and the Bureau issued some 1¢ stamps printed in sheet form on the rotary press. In spite of the fact that these were sheet stamps they were longer than the flat plate and were similar in size to the endwise coils previously mentioned.

These stamps were perforated 10 horizontal by 11 vertical, which perforation caused no end of trouble to the postal

clerks as they found the vertical perforations cracked on the post office shelves, causing the sheets to fall into strips. A change was next made in the perforating and the stamps were issued perforated 10 by 10. Various changes were made in the marginal markings as illustrated on the cuts.

While these 10 gauge perforations eliminated the trouble above mentioned, they tended to make the sheets too hard to tear apart and the Post Office was deluged by a storm of criticisms similar to that directed against the flat plate stamps of 1915.

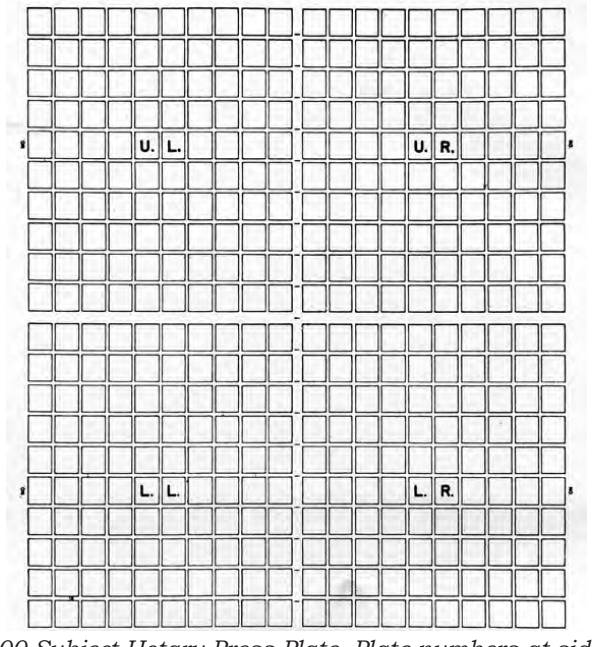
At this time the Bureau began experimenting with changes in the type of perforations used on the rotary press products. There is little definite knowledge about these experiments other than the fact that there are at present in the hands of collectors about 20 or 30 copies of a 1¢ endwise rotary press stamp which instead of being perforated 10 by 10 is perforated 22 by 11 and is identical in size to those perf. 10 endwise designs.

Sc. 544

Copies of this new variety were recently cataloged as 544B [now 544] and no doubt exists about their authenticity although no further information is available.

To make matters more complicated for collectors, the Bureau added one more variety before the Washington-Franklin designs passed into history. In May 1921 the Post Office Department issued some sidewise coil waste stamps of the 1¢ and 2¢ values which, unlike the previous issue, were perf. 11 by 11 and were immediately confused with the flat plate issue.

Like the previous rotary press coil waste, 11 by 10, perforated, these stamps were also made from "sidewise coil" sheets of 170 subjects, with the exception that the sheets had not been previously perforated. These unperforated sheets were perforated both horizontally and vertically on flat plate 11 gauge perforating machines especially set for sheets 17 subjects wide. The majority were issued in sheets of 170 subjects, but a small number were prepared in both 70 and 100 subject panes. Comparatively few were issued, and this 11 by 11 variety is becoming more difficult to obtain than any of the others in this group.



400 Subject Hotary Press Plate, Plate numbers at side

The difference between it and the flat plate printing is easily distinguishable by the width of the stamps, as having been printed from sidewise curved plates the stamps are 19-1/2 to 20 mm wide, the flat plate stamps being but 18-1/2 to 19 mm.

While the 1¢ sheet rotaries issued in 1921 had not been as satisfactory as coil stamps, the Bureau did find that stamps printed on the rotary press could be printed much more rapidly than could the products of flat bed presses.

In the late Summer of 1923 when the Post Office found it impossible to meet the public demand for the 2¢ Harding Memorial stamp by printings from flat plates, it became necessary for them to authorize the Bureau of Engraving and Printing to supplement the flat bed presses with rotary press printings.

Harding Memorial flat plate, No. 610, left, superimposed on No. 612 showing the added length of the Rotary Press printing.

This Harding Memorial stamp was the first 2¢ sheet rotary. These stamps should cause collectors no confusion as they were perforated on 10 gauge rotary perforators while the flat plate issue was perforated 11. Merely as a record however, it should be remembered that these stamps are taller than the flat plate printings. In addition to the difference in height and perforations, there should be little confusion between these 2 stamps as the rotary press printings were extremely poor and seemed to lack most of the sharp details of the flat plate printings, and their unsatisfactory appearance prompted the Bureau to discontinue this method of printing as soon as the demand was satisfied.

Rare Sc. 613

It was previously mentioned that these Harding rotary press stamps were perforated 10 gauge. A recent discovery of two or three copies of this stamp perforated 11 (Sc. 613) seems to indicate that the experimenting with 11 gauge perforation for rotaries was still being made.

In the Fall of 1922 a new series of postage stamps was issued, all sheet stamps being printed on flat bed presses while the coil stamps were printed from curved rotary press plates. As in previous issues, the sidewise coiled stamps were wider than the flat plate issues while the endwise coiled stamps were taller.

To be Continued

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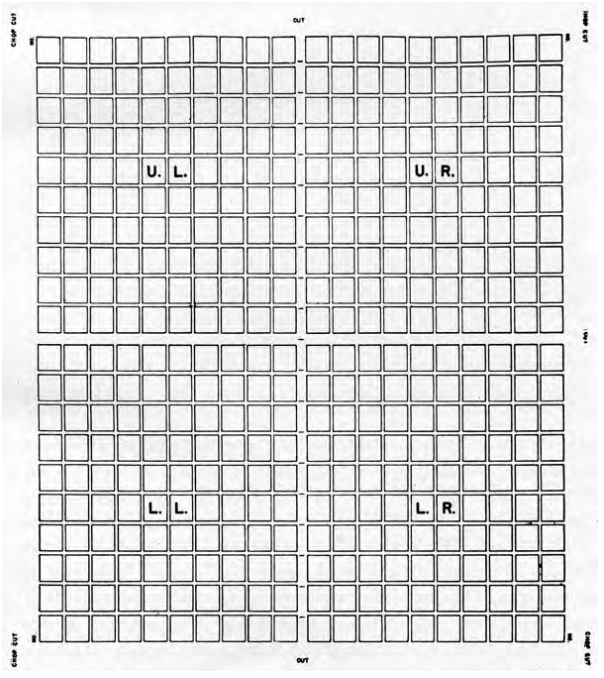
In the Fall of 1922 a new series of postage stamps was issued, all sheet stamps being printed on flat bed presses while the coil stamps were printed from curved rotary press plates. As in previous issues, the sidewise coiled stamps were wider than the flat plate issues while the endwise coiled stamps were taller.

A short time after these coil stamps had appeared the Bureau found themselves with a supply of sheets of 170 subjects which had been prepared for sidewise rotary press coils, but due to "short lengths" and imperfect sheets they had been set aside as waste. These sheets had received the vertical 10 gauge perforations as part of a long roll and in reclaiming this waste for issuance in sheet form the stamps were perforated horizontally on the flat plate machines, then set at 11 gauge. The Bureau had an additional supply of sidewise coil waste which had not been previously perforated. To utilize these sheets of 170 subjects they were perforated both horizontally and vertically on flat bed machines especially set to take this type of sheet. These stamps having been printed on sidewise curved plates, are wider than the flat plate printings and of the same height. An easy method of ascertaining the correct dimensions of these stamps is by the use of a sidewise coil stamp of the same issue and the same denomination.

A plate block of the perf 11 x 10 Rotary Press 1¢, Sc. 538



400 Subject Hotary Press Plate, Plate numbers in the corners

The coil waste of this series was issued in the 1¢ and 2¢ denominations. These being rather common, most collectors gave them scant heed and most of the supply of coil waste was used before collectors realized their existence. The compound perf of the first type of this coil waste (perf 11 x 10, Sc. 538, 540) was sufficient to attract some attention and collectors were able to save copies of these varieties of 1¢ and 2¢ stamps.

1922 Coil waste issues, Sc. 545-546

1922 Rotary perf 11, Sc. 544

The perf 11 stamps having the same perforations as the flat plate issued were almost entirely overlooked, with the result that the 2¢ stamp of this variety (Sc. 546) is very scarce especially in well centered condition, while the 1¢ is almost a rarity. Of the latter (Sc. 544) no blocks are known, and only a limited quantity of used copies have ever been found.

The Bureau continued with its experiment of sheets stamps on the rotary press. A short time after the Harding Memorial stamp was issued, the Post Office Department placed on sale the 1¢ Franklin, perf 10 printed on the rotary press, which was being used in large quantities for precanceled stamps. These rotary press stamps were still far from satisfactory as the sheets had a tendency to curl when lying loose in Post Office stocks. The introduction of a gum breaker on the Stickney Rotary Press went a large way to overcoming this difficulty, and the Bureau decided to print the lower values by this less expensive rotary press method.

In April 1924 the 2¢ appeared, and before the end of the fiscal year of 1926 all values up to the 10¢ had appeared printed on the rotary press. These stamps were all curved endwise and were taller than the flat plate issue. They were all perforated 10 x 10. In 1926 an order was received at the Bureau for some imperforate sheets of 400 of the 1-1/2¢ value and by mistake rotary press sheets were delivered. Because of the wide space of 5/16" between the 100 subject panes (see page 28), these could not be used for private coils and were rejected. Rather than destroy these, they were placed on sale at the Philatelic Agency in Washington. These stamps differ from the flat plate imperforate

stamps in being taller, having been curved endwise on the plate.

It will be remembered that the regular issued rotary press stamps were all perforated on the machine set at 10 gauge. This was entirely satisfactory for coil stamps as it left sufficient uncut space to prevent the strips from breaking apart on the vending and stamp affixing machines. This same type of perforation however, was unsatisfactory to the public for sheet stamps and the Bureau was severely criticized, many people believing that the difficulty was caused by the poor quality of the paper. Actually the difficulty was caused by the 10 gauge perforation. The Bureau's earlier experience with an 11 gauge perforation had left too little uncut space in the vertical gutters and it was therefore decided to prepare a new type of perforation, perf 11 horizontally and 10-1/2 vertically. To do this special equipment had to be perfected at the Bureau.

1926 Rotary Press imperf showing the wide gutters between the 100 stamp panes, this being the center block in the full sheet of 400.

In December 1926 a supply of 2¢ stamps perforated on this new equipment was issued in Washington, D.C., and New York City. This type of perforation was found entirely satisfactory, and starting early in 1927 all values previously appearing perf 10 were issued perf 11 x 10-1/2.

Top right perf 10 stamp, Sc. 591 next to a perf 11 horizontally x 10-12 vertically

By 1931 the work turned out by the rotary press was on an average fully equal to that of flat bed presses. This fact, coupled with lower cost of work caused the Post Office Department to order all values up to and including the 50¢ denomination to be printed on the new rotary press for the fiscal year beginning July 1, 1931. These were issued as soon as the stock on hand was depleted, and by September 1931 all values up to the 50¢ had appeared.

The size of these rotary press stamps differ only in the direction of the design. The vertical designs up through the 15¢ are taller than the flat plate issues, while the sidewise designs from the 17¢ through the 50¢ are longer. These horizontal design stamps were perforated 10-1/2 x 11 instead of 11 x 10-1/2. This was due to the stamps being printed and perforated sidewise on the sheet instead of vertically as in the case of the lower values.

In 1929 the Post Office Department issued a stamp in commemoration of the 50th anniversary of the invention of the electric light by Thomas Edison. To take care of the demand for this issue, the Bureau issued the sheet stamps from flat bed as well as rotary presses. The sheet rotaries are taller than the flat bed printings. In addition, the Bureau also issued a sidewise coil which is wider than the flat plate issue.

Left to right, flat plate, rotary sheet, rotary coil, Sc. 654-56

In 1933 1¢ and 3¢ stamps were issued to advertise the Century of Progress International Exposition at Chicago. These were printed on the rotary press and because the design was horizontal instead of vertical the stamps were perforated 10-1/2 x 11. Later on in the same year they issued unperforated souvenir sheets of 25 in honor of the American Philatelic Society Convention. These souvenir sheets were printed on the flat bed presses. The stamps from these souvenir panes were imperforate and are shorter than the rotary press issue.

In 1934 the Post Office Department issued a stamp to commemorate Mother's Day. To supply the expected need, these stamps were printed by both flat bed and curved rotary press plates. The rotary press stamps are higher than the flat plate.

Left, Mothers of America flat plate printing, Sc. 738, superimposed over Rotary Press, Sc. 737 showing added height of Rotary issue.

Beginning in 1935 most of the commemorative stamps were printed on the rotary presses. The size of most of these are of no special interest to collectors as practically none of them are available in two types of printing. There is however, one classic exception—in 1936 in honor of the Third International Philatelic Exhibition the Post Office Department issued souvenir panes containing one stamp each of the 3¢ Connecticut Tercentenary issue, the California Exposition issue, the Michigan Centenary issue and the Texas Centennial issue.

These later stamps are all shorter than the original rotary press issues. They are not available in blocks of four of the same design and should cause no confusion to collectors.

The Bureau continued printing most of the commemoratives on the rotary press and when the new Presidential issue was introduced in 1937 all values up to and including the 50¢ were printed only from rotary press plates [the $1, $2 and $5 values, Sc. 832-834 being flat-plate printed.]