

## The Paper Column

Peter Huntoon

# Early Web Currency Proofs

A web press is a press that prints images on a continuous roll of paper called a web. This contrasts with printing on individual sheets of paper. Web presses have the advantage of great speed so their use for currency production has been a Holy Grail objective of Bureau of Engraving and Printing management for many decades.

The Bureau began modern development work on web presses in 1983, which culminated in the purchase of the Alexander Hamilton Web Currency Press, a 120-foot-long custom-built web printing system manufactured by the Hamilton Tool Company of Ohio. The machine was used to produce \$1 Federal Reserve notes, but serious technical difficulties and excessive spoilage rates that reached 28 percent were not readily overcome.

The Bureau spent \$32 million on the project as of mid-1995 without achieving operational success. Consequently, the press found itself squarely in the sights of Congressional overseers who directed the Bureau to suspend work on the project in a Treasury, Postal Service and General Government Appropriations Bill report. The curtain was drawn on the project in 1996 and the press was sold in 1997.

Limited quantities of Series of 1988A, 1993 and 1995 \$1 Federal Reserve notes reached circulation from the press. They are very readily distinguished because their faces don't carry plate position identifiers, but instead have a lone plate serial number in the lower right corner. They have become classic numismatic items owing to their distinctive character and brief production life.

Numismatic son-father team Bob Kvederas Jr and Bob Kvederas chronicled every aspect of the Hamilton press and the varieties produced from it in a series of definitive catalogs. The culmination of their efforts was the invaluable 2nd edition of *The Standard Handbook of \$1 Web-Fed Test Notes, 1988A, 1993, 1995*. The information above came from that book.

The Bureau's brush with the Hamilton press was not their first attempt to adapt web printing technology to currency. The fact is that they had been dabbling with the idea for decades.

Benjamin F. Stickney, the Bureau's mechanical expert, began drawing up plans for such a press as early as 1909. A machine made to his specifications that could print from intaglio plates was built by the Universal Telegraphic Company in Baltimore and became operational at the Bureau beginning in 1914 (BEP, 1962). That press bore his name.

The development of the Stickney press was carried out as a low-profile endeavor to avoid inflaming labor opposition not only at the Bureau but within the printing trade in general. The Stickney press was used to print postage stamps, the first being 2-cent ordinary coil stamps featuring a profile of Washington facing left that began to be sold in Post Offices on June 30, 1914 (Collins, 2012).

In time, larger Stickney presses were made and they produced the lion's share of postage and revenue stamps through 1957. They numbered 29 and the last of them was decommissioned on March 15, 1962 (Agris, 1987; BEP, 1962).

Of course, new generations of higher speed web presses replaced the Stickney's; the first bearing the names Huck and Cottrell after their manufacturers. They were used for stamp production, but of course interest in using them for currency production never was off the horizon. The following information about them is taken from BEP (1962, p. 167-169) and Agris (1987, p. 4-9).

Two of the Stickneys were taken out of production and installed in the BEP development lab so that engineering work could be carried out to develop a new generation of higher speed web presses. The ultimate objectives were to print from dry web paper using fast-drying heat-set inks, and to utilize multiple colors.

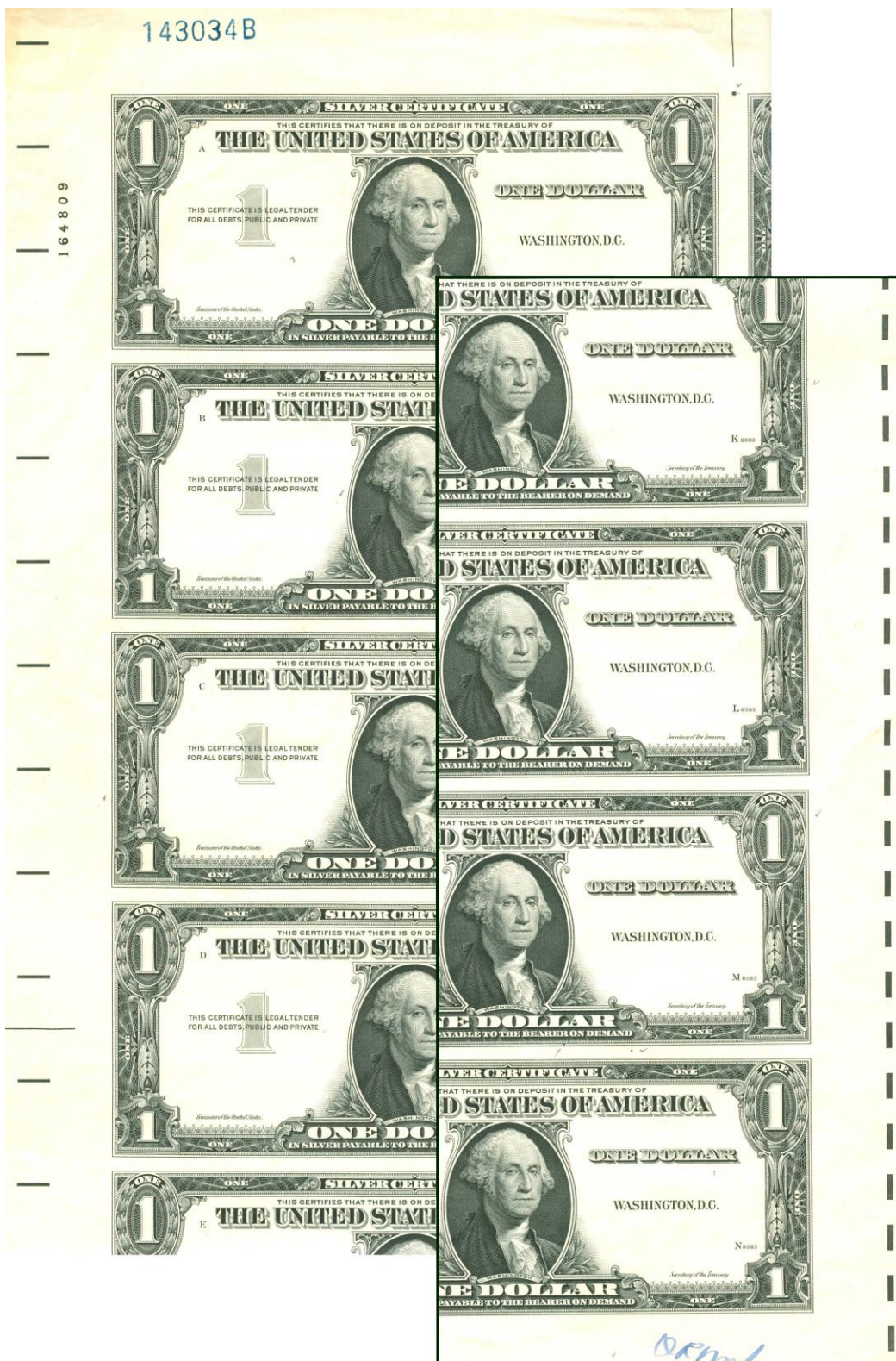


Figure 1. Upper left and lower right corners of a plate proof from a 14-subject plate made for a Stickney web-fed rotary press. The format was 2 subjects across and 7 down. The heavy lines in the left and right margins are electric eye guidelines, wherein the vertical dashes on the right are oriented in the feed direction of the web. Plate number 164809 is adjacent to the upper left corner of the proof.

The Huck Company of New York City delivered an improved press to the Bureau in 1950 based on this work. This machine was perfected to the point that in 1952 it produced its first stamp, the 3-cent bi-color International Red Cross commemorative.

Bids were solicited by the BEP for five similar production presses. That competition was won by the Cottrell Company of Pawcatuck, Connecticut, and the Cottrell machines were delivered in late 1955 and 1956. The Huck and five Cottrell presses then served as the workhorse stamp presses for more than 25 years, when a fire destroyed several of them. The last Cottrell was taken out of service on November 20, 1985. The Cottrells operated at triple the production rate of the Stickneys.

A nine-color second generation Huck web press was acquired in 1968. Eventually it was taken out of service in 1978, having been plagued with high spoilage rates.

Experiments to determine if the various web presses could be used for currency production were undertaken outside the glare of the press. Presses considered were the Stickneys, Cottrells and second-generation Huck. Fortunately, a handful of certified proofs have been found scattered among the 305,000 proofs that were turned over to the National Numismatic Division that bear silent witness to experimentation along these lines.

There are three sets of such \$1 face proofs respectively certified June 3, 1954, March 25, 1969 and April 30-May 14, 1969. Each set represents plates made respectively for Stickney, Cottrell and Huck presses. Notations written in the margins reveal the intended presses for the plates, so I have reproduced them exactly as they appear.

#### Stickney Press Plates

\$1 silver certificate  
 14 subjects, 2 across, 7 down  
 plate numbers-plate serial numbers 164809-8083 and 164810-8084  
 certified June 3, 1954  
 margin notations:  
 (Steel) Experimental Printing \$1 S.C. Face  
 Ser. 1935A  
 on Bi-color Rotary Web Fed Press Curve (14 sub. - Elec Eye)

#### Cottrell Press Plates

\$1 Federal Reserve note  
 14 subjects, 2 across, 7 down  
 plate numbers 170694 and 170695, no plate serial numbers  
 certified Mar 25, 1969  
 margin notations:  
 Exper. Cottrell  
 Exper. - non security plates  
 for Cottrell Press for printing  
 \$1 F.R. note Face - 14 sub

#### Huck Press Plates

\$1 Federal Reserve note  
 18-subjects, 3 across, 6 down  
 each row of 3 subjects has a separate plate number  
 five plates numbered upward from the bottom:  
 certified Apr 30, 1969 170714-170713-170712-170711-170710-170709  
 certified Apr 24, 1969 170721-170720-170719-170718-170717-170716  
 certified Apr 24, 1969 170732-170731-170730-170729-170728-170727  
 certified May 14, 1969 170744-170743-170742-170741-170740-170739  
 certified May 14, 1969 170756-170755-170754-170753-170752-170751  
 margin notations:

Experimental - non Security plate  
for 9 color Huck Press - 3 sub each number

I found no back proofs for any of these presses so it is safe to assume that corresponding back plates were not made.

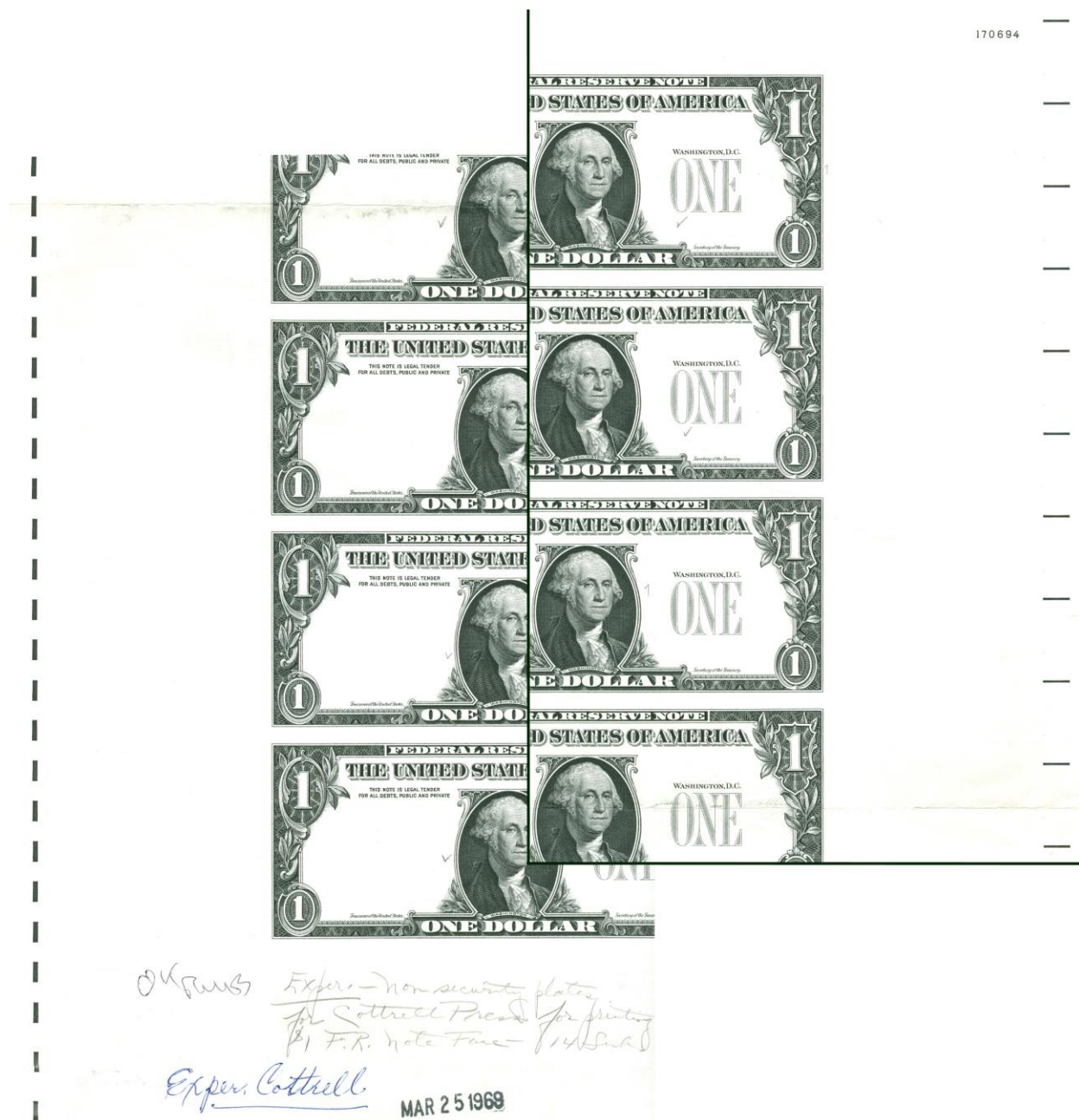


Figure 2. Upper right and lower left corners of a plate proof from a 14-subject plate made for a Cottrell web-fed rotary press. The format was 2 subjects across and 7 down. Plate number 170894 is in the far upper right corner of the sheet.

### Additional Details

All three of the presses utilized two curved intaglio plates that fit around the cylinder of the press. The experimental Stickney currency plates were made in 1954. Those for the Cottrell presses and second-generation Huck press were made in the spring of 1969.

An eye-catching characteristic of the experimental currency proofs are the electric eye markings in the sheet margins. There are two types of electric eye marks. A series of bold dashes progresses vertically down the sheets in the direction of the movement of the web through the press. Horizontal lines called frame lines by philatelists occur in the opposite margin and were used by light-sensitive sensors to actuate perforators that punched holes between the stamps.

The purpose for the frame lines on the experimental currency plates is uncertain. Their use on the Stickney and Cottrell plates appears to have been solely for gaging alignment and possibly to actuate cutting of sheets from the web; however, this is speculation. Four frame lines occur adjacent to each row of subjects on the Huck plates and they are separated from those in the next row by a wide space. If the top and bottom lines adjacent to the subjects are used as trim lines, the notes come out perfectly centered with nice margins in the vertical direction.

There is a bit of ambiguity about the character of the Huck experimental currency plates. Good descriptions exist for the Huck plates used for stamp production, at least for the early Huck plates. The Huck stamp plates consisted of 30 small, thin plates stretched across the printing cylinder. The images of ordinary postage stamps on these plates were oriented on their sides in strips 4 high and 20 across. The joints between the plates collected ink that printed as very distinctive joint lines that appeared between every fourth row of stamps in the direction of travel of the web.

The \$1 FRN proofs lifted from the Huck plates are notable for the huge vertical separations between the rows of notes and the fact that each row of three notes has a separate plate number. This arrangement speaks to multiple plates mounted on the drum, each containing 3 notes. In this scenario, the wide vertical spacings were left so that images of notes weren't split by joint lines had they been arranged with normal spacing.

However, this does not jibe with the margin notes on the Huck proofs that reveal that the plates were large and consisted of 6 rows of 3 notes. Furthermore, there are no vestiges of joint lines as should be the case if each row of notes was on a separate plate. This reveals that the currency plates were large and mounted two at a time on the press rather than 30 at a time for postage stamps. However, the large plate size does not explain the large vertical separations between the subjects.

Too bad they didn't produce actual notes from these plates. Talk about Broadway margins! How would the grading services deal with those?

Even though the 1954 experiments with web-fed currency production did not bear fruit, coincident developments involving dry paper and quick drying ink did. The first dry printed notes were \$1 Series of 1957 silver certificates carried out on newly acquired high-speed Giori 32-subject sheet-fed rotary presses.

### Findings

The findings presented here add a totally new chapter to our knowledge of the development and implementation of web-fed printing technology for U. S. currency. Web press technology for printing from intaglio plates was invented at the Bureau of Engraving and Printing, and was used for the production of postage and revenue stamps.

It is clear from the proofs in the Smithsonian holdings that Bureau management wanted to extend this technology to the production of currency. The first attempt seems to have been made in 1954 when plates were made for the Bureau's then venerable Stickney presses. Interest bubbled up again in 1969 after the new generation Cottrell presses had proved their worth for stamp production and a second-generation Huck press was being tested. Currency plates were made for both of those presses at that time.

The 1954 plates were made at the end of Alvin Hall's long tenure as BEP director. Hall had navigated the Bureau through more radical technological innovations than any other Bureau director. His successor in 1954 was Henry Holtzclaw, a former Bureau mechanical expert and designer who led the program to develop electric eye perforators in the 1930s.

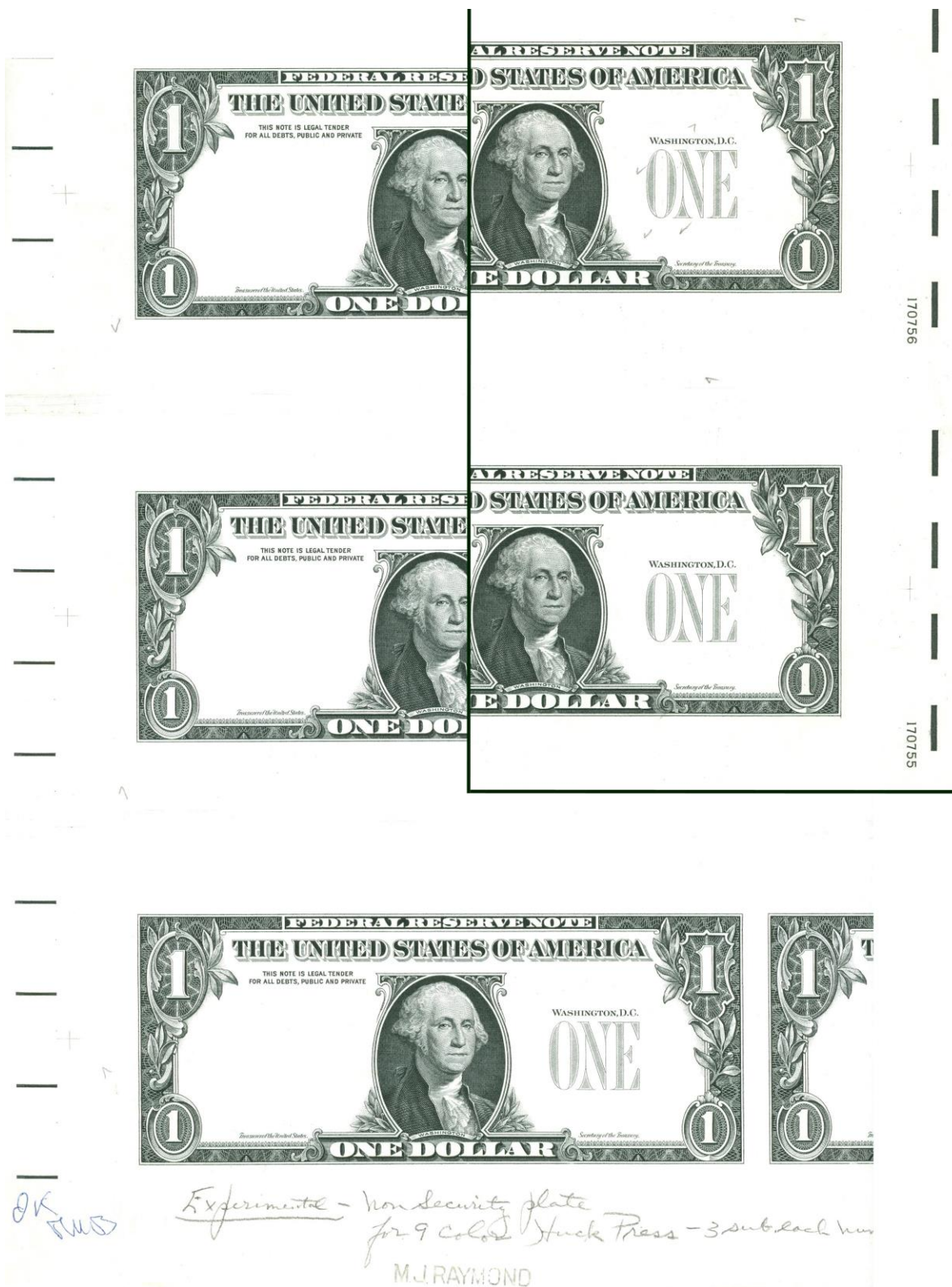


Figure 3. Upper right and lower left corners of a plate proof from an 18-subject plate made for the second-generation Huck web-fed rotary press. The format was 3 subjects across and 6 down. Notice that each row of three has its own plate number in the right margin. The heavy lines in the left and right margins are electric eye guidelines.

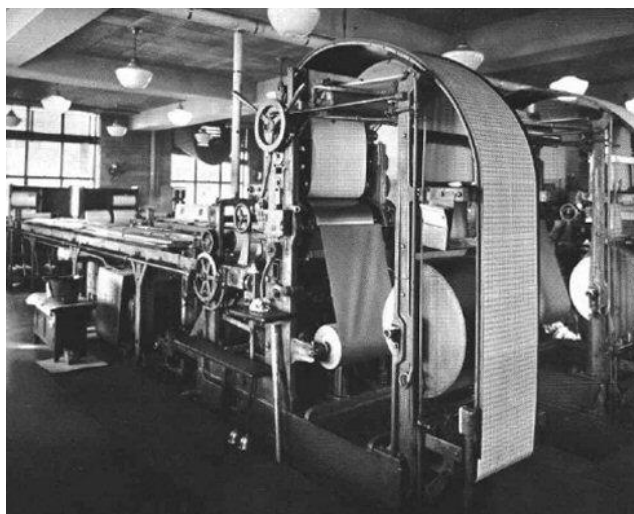
James Conlon was director during the 1969 Cottrell and Huck plate making experiment. He had come up from serving as Chief of the Office of Currency and Stamp Manufacturing. His tenure as director was notable for procurement of high-speed sheet-fed currency presses, installation of prototype currency overprinting and processing equipment and advanced high-speed multi-color presses for printing stamps.

It comes as no surprise that work on web-fed currency production occurred during the tenures of these men.

#### References Cited and Sources of Information

- Agris, Joseph, 1987, The transportation coils and other plate number coil issues: Eclectic Publishing, Houston, TX, 332 p.  
 Bureau of Engraving and Printing, 1962, History of the Bureau of Engraving and Printing, 1862-1962: U. S. Government Printing Office, Washington, DC, 199 p.  
 Bureau of Engraving and Printing, 2004, A brief history of the Bureau of Engraving and Printing: BEP Historical Resource Center, 30 p.  
 Bureau of Engraving and Printing, undated, Certified proofs from intaglio plates: National Numismatic Collection, National Museum of American History, Smithsonian Institution, Washington, DC.  
 Kvederas, Bob Jr., and Kvederas, Bob, 2004, The standard handbook of \$1 web-fed test notes, Series 1988A, 1993, 1995: privately printed, 147 p.  
 Collins Jr., Harold B., 2012, A categorization of marginal markings, rotary plate production, part IIIa, sheet stamps: The United States Specialist, Journal of the United States Stamp Society, p. 411-425.

**Figure 4. Stickney web-fed intaglio stamp press. The shiny cylinder in the center is the plate drum. The web is fed from a roll of paper in the large drum to the lower right. It passes out-of-view upward and over the inside top to a wetting mechanism above the plate drum. The wetted paper is the white paper descending downward toward the plate cylinder where it is printed. It then passes to the back, then up and over the top of the machine where it is dried. It then tracks downward in full view where it wraps under the machine to a gumming mechanism below and behind the print cylinder, passes over the long table in the back, which houses the gum drying unit, and is taken up on a spool at the far end. The roll of paper feeding upward below the print cylinder is plate wiper paper that is taken up out-of-view behind and below the plate cylinder on the back side. The stamps were perforated and cut on a separate, slower machine. BEP photo.**



**COLLECTOR INTERESTED IN PURCHASING  
 SERIES 1883-1894 U. S. POSTAL NOTES.**

**PRICE ACCORDING TO LOCATION AND CONDITION.**

**PLEASE CONTACT ME AT**

**BRIVEADUS2012@YAHOO.COM FOR A QUICK RESPONSE.**