

Will You Have Your Money by the Yard?

Government to Use New Machine That Will Print Currency in Continuous Strip.

BY RENE BACHE.

WASHINGTON, D. C., Feb. 26.—Money by the mile. Think of it! Just imagine what it would be like to have a mile of paper dollars to spend. That many ought to last even the most extravagant person quite a while.

Uncle Sam is getting ready to print his paper money in that way—that is to say, in continuous strips a mile long. Such a strip will be exactly 7 1/2 inches wide, its breadth being equal to the length of a dollar bill. Which means, of course, that the notes or certificates will be printed crosswise on the paper ribbon.

Each note is 2 1/2 inches wide; so that, as a simple calculation will show, a mile of dollar bills would represent \$20,275—a fairly comfortable little fortune for the average hard-working man. A mile of \$100 notes would make one more than twice a millionaire.

Until very recently all of our paper money has been printed on hand presses. It is an old-fashioned method, and unnecessarily expensive. But the influence of organized labor in Congress has prevented the substitution of automatic machinery for doing the work.

It was only a short time ago that Congress was at length persuaded to authorize the use of machinery for printing the backs of the notes and certificates. The faces are still printed by hand, on old-style presses.

The bureau of engraving, which is the Government's paper money mill, is anxious to do away with this wasteful system, and, in expectation of favorable action by Congress, is getting ready to revolutionize things entirely by the employment of new machines for printing both faces and backs without intervention by human hands. Some of the machines, which will turn out the dollars in continuous ribbons, are already built, and space for 36 of them—enough to print all the paper cash required by the Government—has been set aside in the bureau's new building at Washington.

The director of the bureau, Joseph E. Ralph, asserts that by this mechanical method, putting the dollars through by the mile, the paper money can be much better, as well as more cheaply, printed than by expert hand labor.

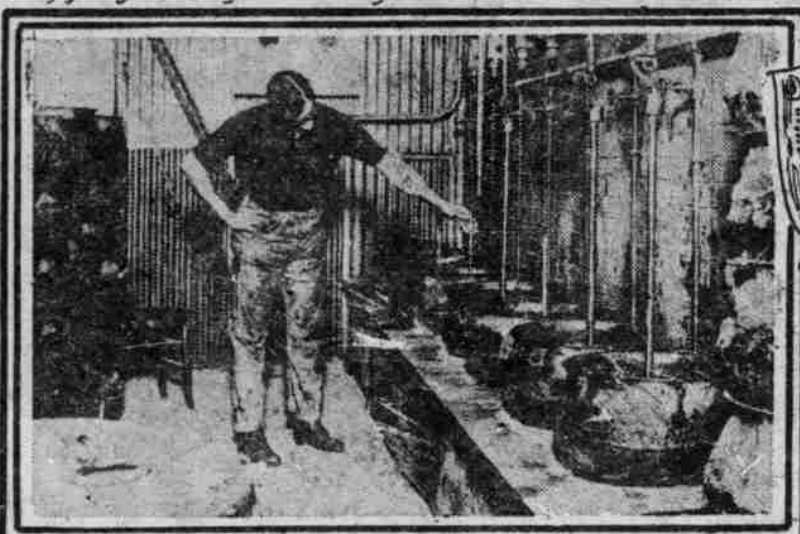
The cost of printing the money by this new mile-strip method will be less than half what it is today. A roll of paper a mile long will be put into an aluminum box that opens in halves to receive it. Then the box will be locked. When the machine is operated the paper will come out through a slit in the top of the box, in a strip exactly as wide as a dollar is long, and, carried along by rollers, will pass over a steel cylinder on which the design of the face of a note is engraved. Further along, it will pass over another cylinder that is engraved with the design for the back.

By this simple process the ribbon of paper will be converted into a continuous strip of Uncle Sam's printed promises to pay, arranged side by side. As it passes through the machine, the ink will be dried by steam pipes; an automatic attachment will number the notes or certificates consecutively, and, incidentally, they will be counted.

As recently announced in the news dispatches, the Government money mill has succeeded in obtaining from Germany a cargo of pigment materials—enough to print the paper currency and postage stamps for a whole year.



Shipping Money in Strong Boxes from Bureau of Engraving to the Treasury.



Heating Oil to Mix With Pigments for Printing Money.

Recently, for the stamps, the bureau of engraving has been obliged to use American pigments, which were found very inferior for the purpose, lacking the brightness of the imported product.

Back of this statement is quite an interesting story, which has to do with the reason why German color stuffs are so superior to our own. Much has been said in print on the subject, but nobody has explained that the principal cause of our failure to produce equally good coloring materials is that the patents taken out by German concerns in the United States stand in the way. Some of the older German patents have run out, and the processes they covered are the ones now being used experimentally by manufacturers in this country.

For the printing of our paper money, as well as postage stamps, the colors chiefly employed are red lake, carmine, blue, green, and black. The reds are used for seals and the backs of bonds. Green is for the backs of "greenbacks." Black is for the faces of notes. The main use of blue is to give intensity to the black.

In former days red lake was obtained from the madder plant; and carmine was derived from cochineal insects (found on certain tropical cacti). 70,000 of which were required to make a pound. These bugs, by the way, native of Mexico, were largely cultivated a while ago in the West Indies, the Canary Islands, and Algeria. But at the present time both red lake and carmine are produced from coal tar.

The blue pigment used by the Government money mill is Prussian blue (prussiate of potash), and, like the carmine and red lake, is imported from Germany. Green is obtained by mixing this same prussiate of potash with yellow chromate of lead. The black is a composite, its chief ingredient being "vine black," made in Germany by carbonizing the "pomace" (residue) from wine presses.

All these coloring materials reach the Bureau of Engraving in the form of dry powders, packed in barrels. They are converted into printing inks by mixing them with linseed oil and grinding the compound to a homogeneous fluid between steel rollers.

The oil, before being used for this purpose, is heated to a high temperature in huge iron pots and then set on fire. It is allowed to burn from 20 minutes to three hours, according to the kind of ink that is to be made—the object of this performance being to render it thick and sticky, so that it may cling to pigment and paper. Ink thus made will not blur.

The money mill maintains the largest plant in the United States for the manufacture of printing inks, more than 300 different grades and tints of which are employed for printing currency, postage stamps, and internal revenue stamps. Stamps, of course, are of all colors, and the revenue hues are much more varied, special ones being used for playing cards, cigarettes, etc. The "postage 2-cent red" is an aniline (coal tar) pigment, guaranteed not to fade under any circumstances.

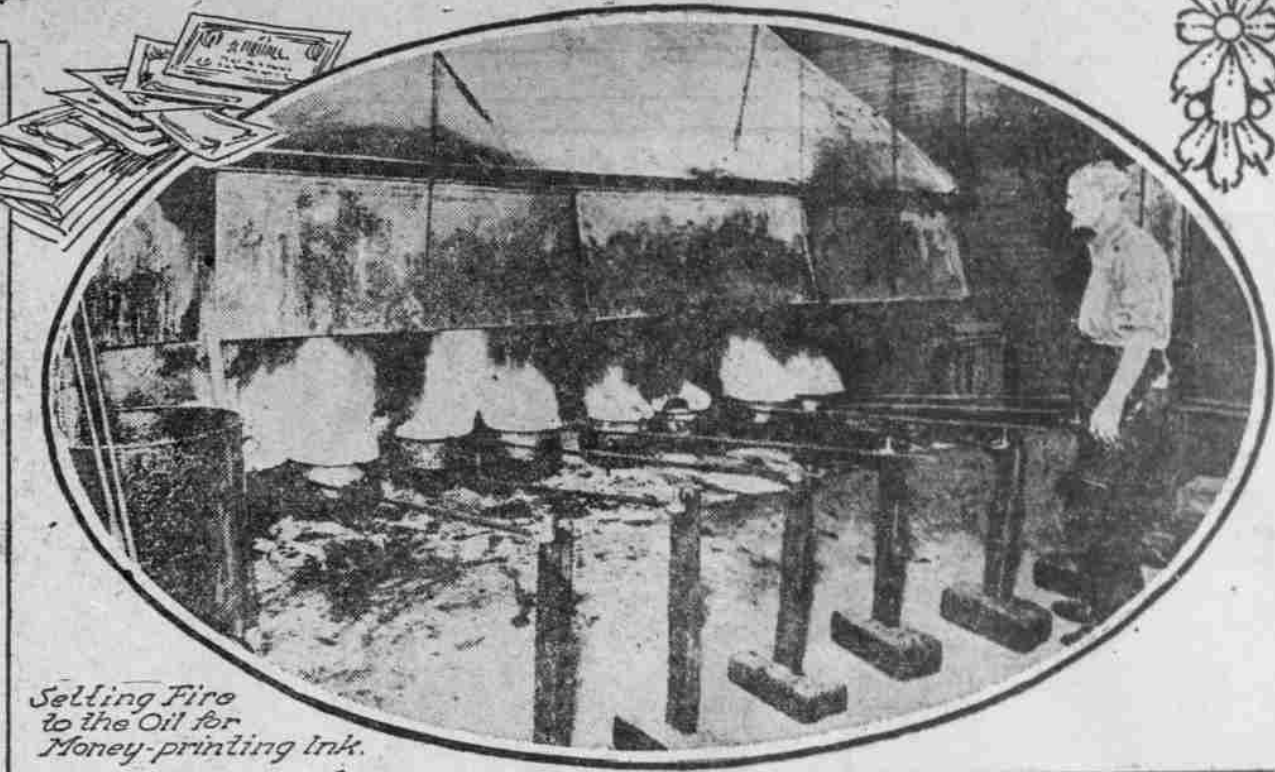
All the inks used, indeed, are understood to be fade-proof. Whenever a fresh batch is made, a print is made with it on a paper strip, and the latter is exposed to powerful ultra-violet rays in an electric cabinet. Part of the strip is covered, to protect it against the rays; and if after several hours the covered portion and the exposed portion are found not to match, the pigment from which the ink was manufactured is rejected and returned to the contractor who furnished it.

For each of the 300 and odd grades and tints a standard sample is kept in stock, to afford means of comparison. The "gold tint" used for the faces of gold certificates, by the way, is chrome yellow—a mixture of lead chromate and red lake. For the gold figures on these securities chrome yellow is likewise employed.

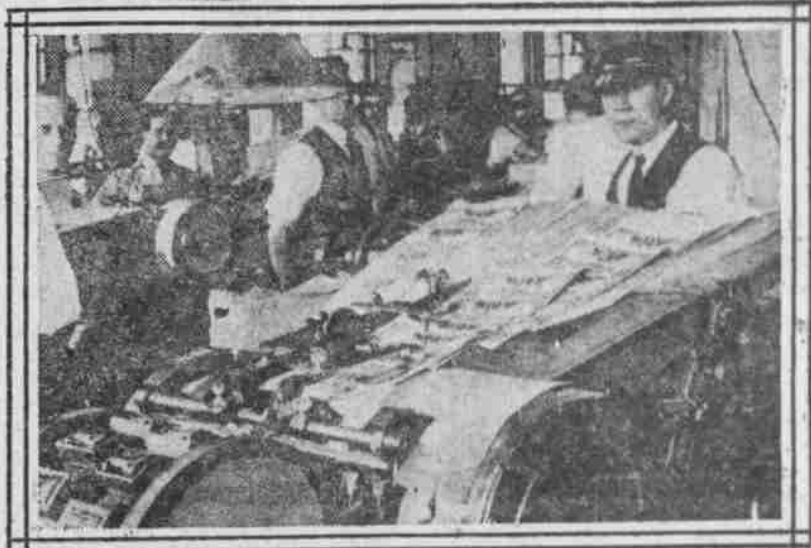
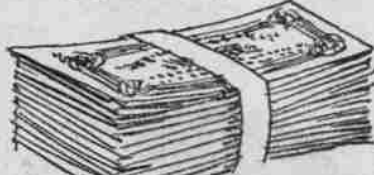
For the pigments required for our money-printing we depend upon the Germans because it was they who first worked out the problem of setting colors from coal tar. The latter—a by-product, and formerly a waste product, of gas works—is an exceedingly complex substance, admirably adapted as a base for chemical manipulation.

In 1820 "naphthalene" (the stuff moth balls are made of) was separated out from coal tar; and, later on, the most beautiful colors were derived from it, ranging from buttercup yellow to reds, greens, and scarlets.

Then came "anthracene," from which, in 1858, two German chemists obtained the beautiful pigment called "Turkey red" (previously derived from the madder plant), thereby revolutionizing the dyeing and calico-printing industries. Discovered in 1832, anthracene was long employed only for wheel-



Setting Fire to the Oil for Money-printing Ink.



Printing Paper Money at the Bureau of Engraving.

grease, but the above-mentioned invention raised its market value suddenly from almost nothing to \$500 a ton.

Carbolic acid (a coal tar product so useful as an antiseptic and disinfectant) yields a valuable series of colors, from gorgeous yellow to reds, oranges and browns. But the great discovery in this line was "aniline," which, in 1858, was accidentally obtained from coal tar by a German chemist who was trying to get an artificial quinine out of that fruitful material.

The first aniline color produced was mauve. Aniline red, one of the most brilliant hues known to the dyer, followed in 1858. Then in quick succession came greens, violets, and yellows—all the tints of the rainbow.

The Germans, as fast as they invented these processes, patented them in their own and every other country, including the United States. Many of the older patents, as already stated, have run out, but the newest and most valuable ones are still in force, and American color makers do not dare infringe them. Hence their inability to produce pigments that vie with the German in brilliancy and permanence—the latter being, of course, a very important requisite.

It takes a lot of pigment powders to meet the requirements of the Government money mill for a twelvemonth.

During the last year that establishment consumed of the manufactured inks, 1,300,000 pounds of the mixture of Prussian blue and lead chromate called "chrome green" (mainly for the green backs of notes); 600,000 pounds of "mott black," for the faces of notes; 100,000 pounds of "power-press black"; 50,000 pounds of "internal revenue green"; 250,000 pounds of "postage 1-cent green"; and 200,000 pounds of "postage 2-cent red."

As above mentioned, all of the paper money is now printed on sheets exactly big enough to make four notes each. The paper is made by a private concern at Pittsfield, Mass., under rigid supervision by agents of the Treasury Department. It is of the very best linen rags, and lengthwise through each sheet run two bands of scattered fibers of red and blue silk—a device the limitation of which is a most serious difficulty to the counterfeiters.

Ninety millions of these sheets were used last year for the printing of money, and the total amount of new currency turned out during the twelvemonth by the Bureau of Engraving was about \$1,500,000,000. Eleven billion postage stamps were printed during the same period, the number of these required by the people of the United States being approximately \$1,000,000 for every day, including Sundays.

TOURING AMONG THE STYLE SHOPS

STERLING HEILIG WATCHES FIRST SPRING HATS BLOSSOM IN PARIS.

BY STERLING HEILIG.

I WENT with a lady to a famous Paris milliner's.

"Please don't hurry me," she said outside.

I didn't. Immediately on entering, we passed the inspection of a stylish blonde cashier, whose desk leaves just room for it, in a narrow passage flooded with electric light, before you reach the "parlors"; but the latter are discreetly, softly lighted—some with filtered daylight, even—against white-lacquered panels and pale-green silk hangings. It gives a sense of peace.

"She looked me in the eyes!" the lady said; but, in reality, she didn't. Who can know what's in that blonde head, wise with the wisdom of all women—and a lot of men, too? How does she do it? The deferential welcome never changes. Who can read its modulations? Yet I have known shabby ladies from Seattle, passing to the parlors, to find the whole shop at their disposal, while smart women, with the "hatter," in adjoining saloons, sat and viewed today's styles, their hearts raging—never seeing the styles of tomorrow!

"Morning hats? Traveling hats? Afternoon hats?"

"Yes," the lady answered. (It is a good old American standby, to pretend not to understand completely.)

We were in one of those small rooms you've heard about, a dozen in a suite, all emptying into each other, yet separate. They bring the hats from Bluebeard's Chamber.

"Traveling hat," the salesgirl murmured. "Angora straw, silver-gray, lined with dark blue satin, very effective for traveling."

Did you ever see a fluffy, woolly straw? The thing looked whooping on the lady; but she sighed and passed it. She looked whooping in a round hat, kind of sailor, crown-blue taffetas, lined with blue straw, ribbon-trimmed and bouquet of flowers; but she sighed and passed it. They brought a black taffeta sailor, half-lined with turquoise-blue taffetas; and a nice, black, manilla sailor hat lined with light gray taffetas and trimmed with gray taffeta ribbon.

"Not these. Toques," explained the lady.

The two salesgirls started off.

In the next room, a party of Americans had entered. Evidently they were buyers for some big firms. Going on the good old American principle that nobody in Paris understands our language, they were talking shop. Their words came vaguely to us.

"Leather and kid roses, never seen before, two shades of the same color.



Evening Hat, Style 1870, of Black Chantilly Lace, Trimmed with Nattier Blue Ribbon and Nattier Blue Roses.



Round Hat of Crown-blue Taffetas Lined with Blue Straw, with Ribbon and Bouquet.



Dressy Toque of Dubarry Rose Straw with Wreath of Small Shaded Pink Roses, Green Leaves.



Hat, Style 1830, of Very Dark Pink 'Starred' Straw or Horsehair Lace.



Dreamy Afternoon Toque Made in Draped Lace Horsehair Straw and Trimmed With a Small Flower.

Got that? Beaded roses, petals just outlined with tiny beads. Put down, a growing craze, smart hats for sports. Golf hats with little jackets to match. Excuse us just a minute, Mary!" (bzz! bzz!)" "Bamboo faced with silk. I told them, it's manilla! (bzz! bzz!) Has no confidence in the small high shapes" (bzz! bzz!) "The Angora has been blocked, I tell you!" — "I know. Keep it dark. I have bought 40! Just the thing for traveling!"

My companion motioned me to silence.

"I am listening!" she murmured; but the conversation died out in the distance, as a premiere led the important buyers to show-room. We heard:

"Large, flat, graceful hats for large, flat, graceful women..." Silence.

My companion grabbed the hat.

"It's this Angora," she said, as the good girls came back with five nice toques.

"Many grays, pigeon-gray, a darker gray called 'mitraille,' also dark green, black with turquoise, black with tilleul (weak tea), black with silver-gray in sailor-forms."

The lady said she meant the toques.

"The toques of horse-hair straw, all mixed with lace or tulle, giving fluffy effects," replied the patient creature.

"Many horse-hair large hats, also which look lacey and transparent."

I could almost hear the lady's brain work.

"Friends of mine," she said, "wear early Victorian and Empress Eugenie periods."

The slender brunette girl with purple lips tilted to the distance and returned with an 1830 hat of "starred straw," or "straw horse-hair lace" of the new color, Rose Dubarry, very dark rose, trimmed with flowers and Nattier blue ribbon. "Framing the face nicely," she said. "All sewed by hand. Not blocked."

"I know," the lady said. "I know."

"This 1870 hat is very newest," she affirmed with gladness. "An evening hat, habille, and now coming for the victory! Black taffetas covered with black Chantilly lace, trimmed with Nattier blue ribbon and Nattier blue

roses. The length of the veil covers just the eyes."

"It has been blocked?" murmured the salesgirl, politely.

"It has been blocked?" replied the lady, firmly.

Nothing could show better the march of Paris millinery during the war. Two years ago the great straw houses still originated all the straw forms, which they dealt out to the milliners in varying categories of aristocracy. A middle-class milliner could not buy, for any money, the straw forms allotted to some 10 or more "creating" milliners, whose names are famous. Our American firm, however, could procure them, because, buying the trimmed model they obtained from these foremost milliners a "devil"—list of materials and addresses, "with permission." All right. Little by little the great Paris department stores obtained them also—the exclusive straw forms—which is quite another story! This is said to be the reason why, in the past two years, the great milliners have made their own straw forms.

"We buy straw by the piece of 10

yards," said the good girl, "and 'create' each form by sewing it round wires of esparto-matting. It began with silk and velvet hats on forms of matting. Now it's straw, too—every hat is a creation. No more forms bought!"

Yes, but when a straw "creation" turns out to be very successful, a real "type," and women clamor for it, they send out and have it "blocked" by a great straw house. It is complicated like all business. The straw house accepts, because it gets a good form. Their best shapes now, while the milliners can give out their "devils," as heretofore, to good American buyers.

"The form is already blocked"—It means two weeks gained, ordering a dozen. And everybody knows that the greatest designers have trouble to duplicate their own creations by hand! Only for Paris does the combination jangle—when the blocking strawhouse prematurely throws an exclusive form on the popular market!

"Monsieur Gaston," said the salesgirl, "madame says that the Angora straw has been blocked!"

It was at Lewis; and the slightly bald young man, immaculately dressed, with twinkling eyes, small black moustache and smile that won't come off, was "Monsieur Gaston," consulting

master in form and color, nephew and heir of the whole shop.

"It won't be on the Paris market," he said, reassuring.

The lady did not seem reassured.

"Perhaps not now," she said, "but when I want to use it in the Summer?"

"No," he answered, "they'll keep that material for the popular trade next year. It's too beautiful to be wasted."

Obviously she hesitated.

Monsieur Gaston seemed to have a moment to spare.

"Madame," he said, "do not worry. It is so difficult to copy a hat that the best milliners' designers, even when the form is blocked for them to work on, cannot reproduce their own originals, unless they have them under the eye."

She answered cheerily that she could understand it might be difficult to drape a toque with horsehair lace, and supposed that many of the big transparent, fluffy forms would never be

blocked, because they couldn't; but, all the same, the quantity of graceful straw we see, where it's all in the shape and very little trimming, ought to be within the reach of imitators.

"Madame," answered the man-milliner, "the simplest hat is the most difficult to copy. You may have the form, but not the tint or the exact material. Where there are few trimmings you'll observe that they are very novel, beautiful, or just so. If you can't unite the very same elements, you fall into a new creation. Take the simplest of all, ribbon trimming. Do you know that we have women who do nothing but make ribbon bows? If they succeed 10 a day, we are satisfied! I could tell you of one who never touches any other work than shirring."

The lady tried to look pleased.

"For the coming Summer season," said the master, warning to his subject, "there is just one great chance for successful copying—so great that it is half the model! Sailor forms! We began the season with them, are continuing, and shall end with them. Silk material, more taffetas than satin, and in all shades. I'm glad of it. Any lady can copy a sailor hat. It is the only hat that a lady can copy. It is suitable for all ages. Taffetas lined with straw, straw lined with silk, anything! I'm delighted when the ladies get a chance to copy!"

The lady took philanthropic interest. "Really," she said, "are you quite sure?"

"That little traveling Angora, I shall take it. It is too sweet. I'll pay for it now, and wear it. Thank you so much. Good-bye!"

On the street, I told her I had not quite caught her drift. When a lady goes to Lewis to buy three dressy hats, with preference for Early Victorians and Empress Eugénies, and comes out with just one wholly straw—

"But isn't it a duck?" she interrupted. "I have some better than three hats. I have a system for the Summer. I'm going in for sailor forms. I'll stick to sailor forms. Of course, I see it now. It is inevitable. After all, what makes the Paris hat? I mean the Paris hat that takes? Why, Paris! Paris women simply must wear something simple, this year, to keep in the measure of good taste, not to be ostentatious; and what is so simple and good taste, yet varied, as the sailor? When I heard Monsieur Gaston going on, I understood at a glance. The great milliners have got to keep sailor forms a-going. I've got five hats, 10 hats! I know where and how to get them!"

"You have stolen a style! I told her, 'Yes,' she laughed, 'but he don't care.'"

"It's a good year," I said, "for honest women."