

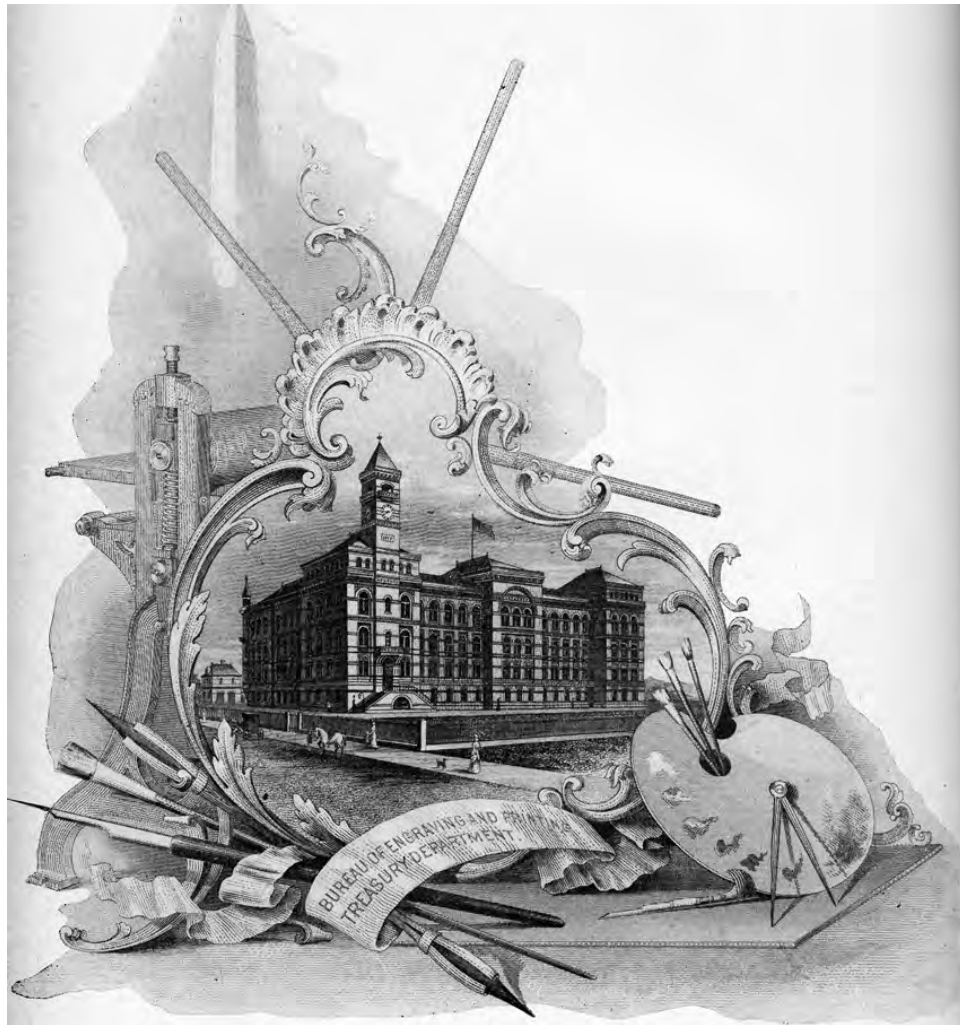
From the Stamp Specialist:
**The History of the Bureau of
Engraving and Printing**

By Thomas F. Morris

*(From The Stamp Specialist Gray Book, #11,
published in 1943)*

I was going to supplement this reprint with additional photographs, but going to the BEP site, decided that it would be best to simply provide this link, where you will find much more information and many more photos than I could possibly provide here. JFD.

<https://www.bep.gov/currency/history/image-gallery/photographs>



OVERLOOKING the Government Parks and the Potomac River, and but a short distance from the great Washington Monument, stands an imposing group of buildings—The Bureau of Engraving and Printing. It is difficult to visualize this government agency had a very humble beginning, and yet as we trace the history of the Bureau back to its origin, we find in August 1862, 81 years ago, it had its inception, and started operations in the southwest room of the basement of the south wing of the present Treasury Building. On August 22, 1862, the then Secretary of the Treasury, Salmon P. Chase, instructed Spencer M. Clark, Chief Clerk of the Bureau of Construction, to carry out a program of work, and the Bureau officially came into being.

Following shortly the outbreak of the Civil War, the Treasury found itself in a state of unpreparedness to meet the extraordinary expenses of the conflict. The act of Congress, July 17, 1861, provided that demand notes be signed by the Treasurer and the Register of the Treasury of the United States. The contract for the engraving and printing of this paper money had been placed with the American Bank Note Company, of New York, one of two companies in the bank note business at that time capable of engraving and printing work of this character. These notes were printed and sent to Washington in sheets of four notes each. Upon their receipt by the Treasury Department, the signatures of the signing officers were attached, and then trimmed and separated by hand labor with shears, two women operators being the first employees to do this work. It soon became apparent the work of signing these notes by the respective officers was too great a task; the volume of work in trimming and cutting by hand became too laborious,—whereupon Congress authorized employment of other persons to sign for these officers. As a result, from a nucleus of two women operators,* a corps of seventy clerks was employed to carry on the work. These clerks were employed at salaries of \$1200 each per year. It was considered too dangerous to have too many different signatures to notes of same issue and provided little security to the public. At this point, and upon the recommendations of Chief Clerk Clark and the Secretary of the Treasury Chase, Congress authorized that the signatures be mechanically attached. Necessary

* The records of the Treasury Department do not establish for a certainty the names of these employees. Other sources, believed to be reliable, state Miss Jessie Douglas was appointed by the Treasurer of the United States in 1862 to cut and trim currency and that later in the same year Miss Fannie L. Halstead and Miss Mary Burke were also employed in that office.



The United States Treasury Building. In the basement of this building the Bureau started its operation.

machinery was procured for the work, and a Treasury seal, which had been designed and engraved by the American Bank Note Company, was also used in the printing process, as a further means of frustrating counterfeiting these notes.

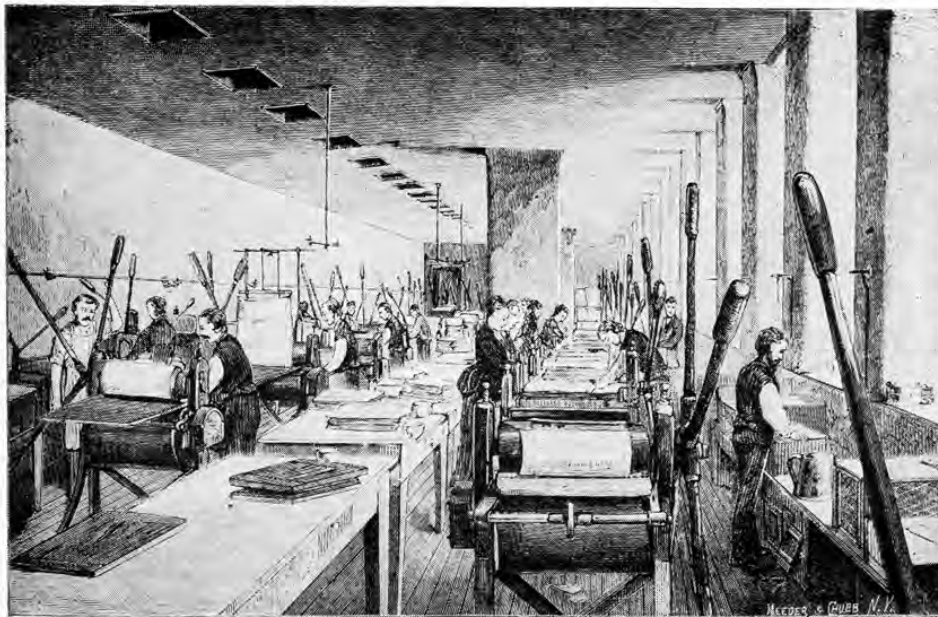
The work of trimming and cutting by hand also proved costly, seventy-five females being employed at salaries of fifty dollars per month to do this



work. Obviously, a quicker and more economical means for performing such work was deemed necessary. Chief Clerk Clark, upon authorization of the Secretary of the Treasury Chase, effected purchase of all the necessary machinery, including steam engine and boiler, with necessary appurtenances, and other fixtures for finishing the notes by mechanical means.

Accordingly, on the 29th day of August 1862, S. M. Clark, Chief Clerk of the Bureau of Construction, with one male assistant, and four female operators, commenced operations of the Division, to be later known as the National Currency Bureau, First Division. So that this date, August 29, 1862, can be recorded officially as the date on which the operation of the Bureau of Engraving and Printing had its beginning, although, as previously pointed out, much work of cutting and trimming the notes had been performed by hand labor within the Treasury Building at least a few months preceding such period.

Commenting upon the work of the Division, Mr. Clark stated as follows: "This was a small beginning of the present vast work in the Treasury. I assumed the charges of it with nothing but my belief in its economy to encourage me, under much opposition, and with great dread of the magnitude of the trust which was necessarily imposed upon me; as the probable amount of money to be handled by perhaps twenty or more operators, with as yet a new and untried system of checks, seemed likely to exceed a hundred thousand dollars per day. This was a source of ceaseless anxiety to the Secretary, as well as to myself. Had I then supposed that the business would have grown under my charge to its present enormous magnitude—the current issues having exceeded sixteen millions of dollars in a single day, handled by more than five hundred operators, I should have been impelled to shrink from the task and abandon the attempt."



Printing Room of the Bureau in The U. S. Treasury Building Showing Hand Presses Used During that period.

The success of the undertaking was so impressive, the Secretary of the Treasury instructed Mr. Clark to investigate the economies to be gained by the Government itself producing securities and currency issues.

Designing, engraving and printing by intaglio of currency had, after thirty years, become a real enterprise in the United States, both from the standpoint of safety and excellence in artistic achievement. The growth of the country had necessitated the issuing of bank notes, bonds, stamps, and commercial paper of all kinds. This work was then being performed by two New York Bank Note Companies, and practically all the talent and experience were concentrated in these two companies,—The American Bank Note Company (which had in 1857 consolidated several independent companies) and the National Bank Note Company, incorporated in 1859. In 1862, the Continental Bank Note Company was formed, and these three companies contributed their talents to the ever increasing demand of this type of work. It was not strange therefore the Government was required to seek the services of the companies in carrying through its extensive program of producing notes and securities which the Civil War had engendered.

It was believed possible, from an economy standpoint, that this work turned over to the private companies could be produced within the Treasury Department at less cost, and accordingly Congress vested authority in the Secretary of the Treasury to have such securities engraved and printed at the Treasury Department, as set forth in Section 2, Act of July 11, 1862, which reads as follows:

“And be it further enacted, that the Secretary of the Treasury be, and is thereby, authorized in case he shall think it inexpedient to secure such notes, or any part thereof, to be engraved and printed by contract, to cause the said notes, or any part thereof, to be engraved, printed, and executed in such form as he shall prescribe, at the Treasury Department in Washington, and under his direction; and he is thereby empowered to purchase and provide all the machinery and material, and to employ such other persons and appoint such officers as may be necessary for this purpose.”

Also by such act, the Secretary of Treasury authorized the issuance of Legal Tender notes, Second Issue, and authority was given Mr. Clark to proceed and prepare designs for the purpose. Previously adopted designs already engraved were suggested for these notes. They were, however, never issued and in place of the design for the face of the note *‘‘Landing of Columbus,’’ the American Bank Note Co., submitted new designs upon open bid,—the \$1.00 value showing the portrait of Salmon P. Chase, the then Secretary of the Treasury, and the \$2.00 value the portrait of Alexander Hamilton, instead of *‘‘Embarkation of the Pilgrims.’’ The Comptroller of the Currency was adverse to the printing of these notes in the Treasury, and in spite of the views of the Secretary of Treasury and his Chief advisor, The American Bank Note Company obtained the contract, and these notes are now known as the first ‘‘greenbacks,’’ and were the first one and two dollar notes issued by the Government to go into general circulation.

* Engraved by James Duthie, first vignette-picture engraver employed by Treasury Department.

The War of the States caused anxiety among the people of the nation, and as a result much of the country's gold, silver and copper money disappeared from circulation within a short time. Merchants and business enterprises everywhere, faced with the problem of finding a suitable "medium" of exchange, issued all types of money substitutes—metal tokens, tickets, promissory notes, postage stamps and every conceivable piece of "money" that could be pressed into service. General F. E. Spinner, Treasurer of the United States, conceived the idea of the Government issuing paper money in small denominations from 5c to 50c to take the place of specie payments of like amounts. The different values had the resemblance of the United States 1861 5c and 10c postage stamps pasted one upon the other. This idea met with unanimous favor, and by act of Congress July 17, 1862, "Postal Currency" became a reality. Again, the American and National Bank Note Companies were called upon to produce these different values. After being printed, the sheets were forwarded to the Treasury Department for trimming and cutting. Their date of issuance was August 21, 1862, or eight days preceding the installation of the necessary power machinery at the Bureau for the work, so that the earliest issued sheets of notes were engraved and printed in New York and forwarded to Washington, and there cut by hand labor.

The Secretary of Treasury recognized the need of more economy in producing "Postal Currency," and directed Chief Clerk Clark, in the Fall of 1862, to investigate the advisability of carrying through all of the work within the Treasury Department. Acting under such authority, the matter was thoroughly investigated and the Chief Clerk reported, on October 7, 1862, the result of his investigation. The Secretary of the Treasury approved the plan, and the fact that this work was the first currency ever produced by the Treasury Department in the City of Washington, the reader will undoubtedly be interested in some of the details,—The greater the understanding when considering the fact the New York Companies were then producing approximately 16,000 sheets per day. To obtain this production and provide for such a herculean task, meant the preparation and installation of proper machinery and facilities for the designing, engraving and printing of the issue. Requisite talent, and skill in bank note work had to be found. Mr. Clark reported to the Secretary of the Treasury in part as follows:

"Sir: I have the honor to report that I have matured the details for carrying out the Secretary's plan of supplying in place of the present Postage Currency, a currency based on the issue of revenue stamps, as follows: . . . To print 16,000 sheets per day, (if the obverse is of plate-printing, and the reverse of surface-printing, which I very decidedly recommend,) there would be required:—

Thirty 22-inch copper-plate presses.

Ten 18-inch copper-plate presses

Four Gordon presses for surface-printing, similar to those now in use for Bonds.

To trim and separate 16,000 sheets per day, there would be required five trimmers and ten separators.

The power presses, with the trimmers and separators, could be moved by the same power, and in the same room, now used for the small note machinery, without disturbing the present arrangements, except that the present work would require to be suspended for a few days, while the initial machinery was being put in place.

The plate presses, which would be worked by hand, (and for which I do not think machinery can be substituted, as it requires the varied action of the brain, as well as the hand at each printing) could be placed in a portion of the new attic, designed for the west wing, to and from which the paper could be elevated, and the printed sheets lowered, by a dumb-waiter, constructed in the southeast corner, on the extreme courtyard side.

The engraving of the bed-plates could all be done in the Department by three artists, and would take about thirty days. After the bed-plates were made, eighty-four plates would be required; these could be made by one transfer press, to be worked day and night, which would make one plate by day and one by night; taking forty-two days to produce the eighty-four plates, making say seventy-two days in all; but in view of possible failures, I should think it safe to say it would take three months.

I have a design prepared for the Secretary's inspection, whenever he has time to examine it.

The trimmers and separators, with the paper, etc., could all be prepared within the same period.

The cost of the whole, presses, cutters, separators, etc., with fixtures, I estimate will be less than \$20,000; the machinery about \$16,000, and allow \$4,000 for fixtures and contingencies. Making the paper would be in addition to this.

I would certainly suggest that the product be packed in neat boxes, in packages of \$10, \$20 and \$50 each, with boxes, for transmission, could be packed in hermetically sealed tin boxes, in such quantities as may be required, and then enclosed in wooden cases for transportation.

If these details meet the Secretary's approval, I respectively recommend that Mr. Neale be placed in charge of the printing department, at a proper compensation, to be under my general direction, and that he be immediately detailed to go to Philadelphia and New York, etc., to secure the necessary plate presses and workmen. These press workmen would be hired "by the piece," probably at not over 75 cts. to \$1.00 for 100 sheets. (The Secretary can compare this price with the price paid for printing to the Bank Note Companies.)

I further respectively recommend, as it is impossible for me to get away from Washington until the small-note room is more perfectly systematized, and operatives more experienced than now, that I be authorized to send for such parties to confer with as may be necessary, or to send parties to them if desirable.

I respectively suggest to the Secretary, if these details are to be carried out, that he should give me some title—(not to carry any pay)—but to give more of an air of official authority, than a naked signature will carry.

If the Secretary approves this project, and endorses it, I will take immediate steps for its prosecution. How soon Mr. Rogers will get his new roof ready, so that the attic can be occupied, I can only conjecture; he will, doubtless, anticipate finishing it before it will be needed, but I have much fear that he will be disappointed.”

Thus Mr. Clark had projected a plan of producing within the Department one and one-half times the number of sheets originally anticipated, or 40,000 sheets per day.

The projected plan included a complete change in design of the small currency notes in all denominations to bear the head of Washington. This change was made necessary for two reasons: first, because of certain spurious notes of the original issue of Postal Currency were in circulation; and secondly it obviated the divided responsibility between the New York bank note companies and the Government in the production of notes from the same plates.

Agitation against the plan of the Secretary of the Treasury for establishing an Engraving and Printing plant was publicly expressed by the Washington correspondent of the New York World in December 1862 as follows:

“Secretary Chase has been for some time organizing an immense government engraving and printing establishment in Washington. For this purpose he has set apart an extensive portion of the Treasury building, and made costly purchases of machinery and materials, and engaged a small army of engravers and printers and other employees. At the head of this concern he has placed a superintendent who is not an engraver or printer and who was a well known member of the lobby. The strangest part of the business is that Mr. Chase’s proceedings have no warrant in law, and Congress will shortly be called upon to foot a pretty bill for this new engraving establishment. From this it will be seen that Mr. Chase has no notion of stopping the issue of paper money.”

Mr. Clark immediately took issue with the statement and directed the following letter to the Secretary of the Treasury:

“Treasury Department
Bureau of Construction
Washington, D. C.
December 13, 1862

Hon. S. P. Chase,
Secretary of the Treasury.

Sir:

I have the honor to enclose an extract from the New York World, commenting upon the preparations for engraving the fractional currency in this Department, with the following report of facts upon its allegations.

The “extensive portion of the Treasury Building set apart for the purpose” so far consists of one room each in the attic, basement, and cellar. The rooms so used in the attic and cellar, would, if not finished for

these purposes have been used as waste lumber rooms. Other rooms on the same floors may be hereafter added, but it is not intended at present, to "set apart" any rooms for this purpose which were originally designed for clerks.

The "costly purchase of machinery and materials," so far, does not amount to Two thousand dollars, irrespective of the Steam Engine and Boiler, and the whole, when completed, will not, I think, exceed the original estimate submitted to you of \$25,000.

The "army of engravers" consists all told of four. The original design was to employ six, but I think these four will finish the work, now all advanced, seasonably for the printing. No printers are yet employed. The number to be employed will depend upon the number of sheets to be issued daily.

I suppose that I am the person alluded to as the "well known member of the lobby" inasmuch as you have directed me to carry out the details of an experiment to test the practicability and economy of preparing the Treasury issues in this Department, in accordance with the discretionary authority vested in you by the Act of Congress of July 17th, 1862.

It is not as new to me as it will be to all who know me, that I am a "member of the Lobby." I have neither time nor inclination for such membership; I have not now nor have I ever had any connection with it whatever.

I have the honor to be,
Very respectfully,
Your Obt. Servt.

(Signed) S. M. CLARK,
C. C. in charge."

An elaborate system of checks from one division to the other, similar to that already in vogue with the independent bank note companies, during the period of production of these notes was worked out by Mr. Clark, and upon presentation of the whole scheme, the Secretary of Treasury returned the plan with the following endorsement:

"The within system of checks and balances is approved; The currency is to be called "Fractional Currency" instead of Revenue Currency.
S. P. CHASE."

This may be considered the beginning of the elaborate system of checks and balances which is now being employed at the Bureau.

As New York and Philadelphia were then the two cities which were producing most of the bank note work, Mr. Clark came North and employed two engravers, one a vignette engraver, the other a scroll and letter engraver. The vignette engraver's name was James Duthie,* but the name of the letter engraver is unknown. He also employed a transferer whose name was Elisha Hobart.**

* Excerpt from Reports of Committee of H. R., 1st Session of the 38th Congress (1863-1864).

** Excerpt from Senate Reports—40th Congress, 3rd Session, 1868-1869.

On November 20, 1862, with this nucleus of three men, the first work of engraving the plates for the production of the second issue of Fractional Currency was inaugurated.

ORGANIZATION OF THE 1ST DIVISION OF CURRENCY BUREAU

“In order to a complete understanding of the operations of this bureau it will be necessary to detail at some length the various departments of work. A large part of the basement story of the treasury and of the attic of the north wing are now devoted to the manufacture of public money. The Division is under the charge of S. M. Clark, whose office is in the basement story. The first preparatory process is begun in the artists’ room under the charge of its superintendent, *James Duthie*. There are 6 artists employed who engrave the original plates, or bed pieces, as they are called. (Description of processing an engraved plate then follows. This last work (transferring) is done in the transferring room, under the charge of *E. Hobart*, the superintendent.)”

“The select committee appointed under resolution of the House of Representatives of the 30th of April, 1864, to investigate certain charges against the Treasury Department.

Uzal C. Ryerson in testimony given before the Joint Select Committee on Retrenchment, investigating the method adopted by the Treasury to print the bonds, notes, and securities, what guards have been adopted to prevent fraud or mistake, etc., states that he came to Washington in July 1862 or 1863 to work in the Treasury Department as a transferer. He was hired by Mr. Clark and was one of the first to come. When he came there was but one other man working as transferer. His name was *Elisha Hobart*. Ryerson also testified that at the time he entered the service Mr. *Duthie* was engraving a dock scene which he believed was later used on the 25c fractional currency.”*

The first portrait vignette to be engraved for the Treasury Department, Joseph Prosper Ourdan’s “George Washington,” was used on the second issue of Fractional Currency. Ourdan was an exceptionally fine portrait engraver, who had done meritorious work for the National Bank Note Co. in engraving some of the portraits for the 1861 United States postage issue. And incidentally, as future developments proved, some of the finest work ever produced by the Bureau was to be engraved by Ourdan while in the Government’s employ.

In all, 256 finished plates were made from October 1863 to November 1864, from which the printings were made of this second issue of Fractional Currency notes by the Treasury Department. This was indeed a creditable showing for the first engraving and printing work performed by the Bureau.

Mr. Clark’s progressiveness also manifested itself when he proposed that the Government undertake the manufacture of a distinctive paper for the printing of its securities by dry process. He had frequently reported to the Secretary the large item of expense and “the propriety and economy of manufacturing paper of a distinctive character in the Department.” Dr. Stuart Gwynn of New York, a specialist in the manufacture of paper was called to Washington and entered into a contract, dated October 13, 1863, to provide for

* (No “dock scene” appears on any Fractional Currency issues—*Author’s note*).

producing membrane paper. After many experiments, of which early trials proved unsuccessful, Dr. Gwynn succeeded in producing a paper and Mr. Clark reported upon it as follows:

“He now produces a paper under his contract which cannot be dissolved in hot or cold water, which cannot be split, which has an irremovable non-photographic tint in its spider-leg fibre, and which takes ink more readily, retains it longer, and wears better than any paper heretofore manufactured for the purposes of currency in any country. This was the origin of the so-called “spider-legs” in the membrane paper, and which has been adopted as one of the distinctive characteristics of the National Paper now made in the Department.”

The Government continued to manufacture this special membrane paper; but the volume required overtaxed the Government’s manufacturing facilities to such an extent that it was necessary later to turn to an outside source of supply, a private manufacturer at Glenn Mills, Pa. This paper was of a localized and distinctive fibre and was used in printing of bank notes until June 30, 1879.

From that period to July 1, 1885, a silk-threaded paper was used, and then abandoned for a more distinctive paper finished on both sides and having a silk fibre imbedded in it. From 1886 to the present day, this type of paper has been used for the currency, and has been obtained from an outside commercial source.



“Ye Olden” Money Wagon used in transporting money from the Bureau to the Treasury Building after 1880.

The increase in Printing of Fractional currency, trimming and cutting currency received from the bank note companies, and the printing of autographed signatures and the Treasury seal to these securities added greatly to the personnel of the Division; but even in the Spring of 1863, the Department was still, due to lack of skilled engravers, unprepared to engrave and print a new issue of Bonds to be floated by the Government. It appeared desirable to obtain if possible the engraved stock and plates from the Continental Bank Note Company, and a Mr. Baldwin, of New York. By agreement, each of them supplied stock and plates for two of the four denominations of the new bonds to be issued. The other New York bank note companies, having withdrawn their refusal to supply engraved stock, were later employed to make it as well as one set of plates for these new bond issues.

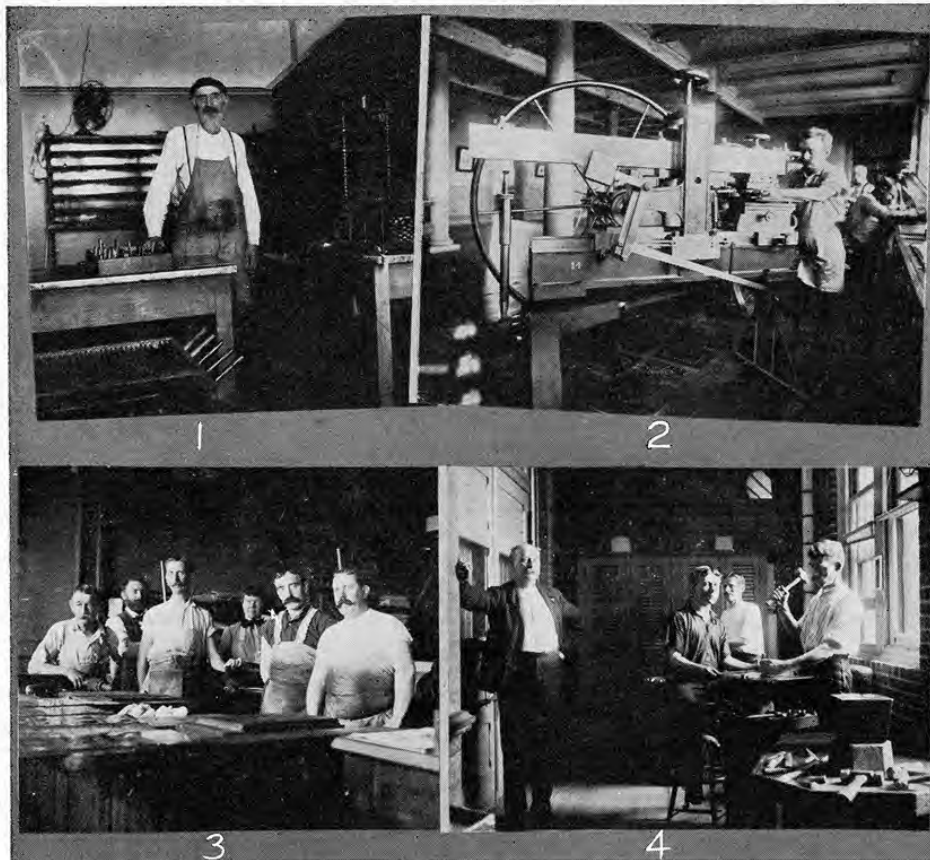
“The engraved stock purchased from the Bank Note Companies,” stated Mr. Clark, “added to that produced in the Department, together with that which its staff of artists was capable of producing, rendered the Department entirely independent of these monopolists. The change from a condition of complete dependence upon them to a condition of complete independence, with a large saving of cost and great increase of convenience, was no inconsiderable result, and involved great and anxious labor.”

These dies gave the Department sufficient stock from which was made the plates for printing all subsequent Government bond issues. It is interesting to record that from the middle of 1863, fractional currency and securities printed and finished in the Division totaled 6,693,257 sheets, amounting to \$1,636,281.39, —a very creditable showing for such a new enterprise, and much credit must be given to the resourcefulness and efficiency of the administrative head of the Department during this short period of growth.

To further facilitate the Bureau’s work, Mr. Clark established a small experimental printing office for letter-press printing of endorsements upon all the Bonds and securities deposited with the Comptroller and Treasurer by the National Banks. Small fonts of type were procured and one compositor employed. In connection with this work Mr. Clark later reported: “The great convenience resulting from the arrangement gradually led to the enlargement of these facilities, as well as the addition of a ruling machine for ruling blanks, etc. Step by step, this business increased, until a sufficient amount of type and presses have been accumulated for all Treasury letter-press printing with appliances for ruling all its forms and tables, as well as for ruling all the blank paper required, by the Department at much less cost than formerly.”

A stereotype foundry was added, which later led to the erection of suitable batteries for electrotyping, and soon the Division became indispensable to other departments of the Government for work which formerly had been obtained from outside sources.

In November 1864, when the Division had been in operation for two years and three months under the title of “First Division National Currency Bureau,” Mr. Clark made the following report to the Treasury Head:



(1) "Capt. Wax" Graves, die waxer in hardening room; (2) Geo. Mason, Gilman & Brook Transferring Dept.; (3) Proving room printers; (4) Hardening room.

"The labors of this Division has therefore largely increased beyond what the mere issue of Government notes and securities would have required, and far beyond what anyone would have imagined at the outset, but the convenience of the Department has thereby been materially promoted, with a large saving to its revenue; while it has enabled the Treasury force to transact the enormous amount of business which the war has engendered, more readily and promptly and satisfactorily than could possibly have been done if this Division had not been called into existence."

At the time this report was made there were in the Bureau 15 transfer presses, 72 hydraulic presses, 96 roller presses, 6 Hoe and Company's cylinder presses, 6 ink mills and all types of miscellaneous machinery necessary for bank note work—a total of 324 engines, machines, etc. Employees in the Division totaled 237 male and 288 female operators.

In this same month, November 1864, the Secretary of the Treasury asked for suggestions as to necessary legislation for future operations and improve-

ments of the Division. Clark recommended that legislation be enacted which would make the Division a distinct and separate Bureau, to be entitled: "The Engraving and Printing Bureau of the Treasury Department." There is no record as to just when the present name of the Bureau of Engraving and Printing was adopted, but in any event it was so referred to in a report of the Secretary of the Treasury in January, 1869.

At that time, it was recommended that all Internal Revenue stamps, postage stamps, envelopes, postal money orders, and all other similar work for other Departments could be produced in the bureau. It was also recommended a fire-proof building be erected on the grounds adjacent to the Treasury Building with a subterranean passageway between the two buildings. This passageway was suggested as a means of insuring safety of transmission of the printed values of finished money, and in preference to the current practice of carrying it through the main halls and passages of the Treasury buildings. "One Chief, and one alone, should guide its details, under the direction of the Secretary of the Treasury to ensure its economy, safety and efficiency. Perfect integrity, with a familiar knowledge of all the details of the work to be done, should be combined in this Head, and about him, every possible guard should be thrown, to prevent all opportunity for fraud or malfeasance," was suggested by the Head of the Division. Clark also stated that "men of such character, amply qualified are readily found, if sought for in the proper walks of life." It was also recommended that the Head of the Bureau should have full authority to select his aides "solely for their fitness for the work and its responsibilities, irrespective of the locality of the applicant, or his professed claims for Government patronage, or of any political or partisan influence which may be brought to guide such selection."

It is perhaps interesting to pause at this point to remark that one of the "aides" chosen was George Washington Casilear. He had been called to Washington in 1862 (December 1, 1862 date of his employment) to assist in the designing work, but previous to his becoming Superintendent of the Engraving Division he carried the title of "Custodian" (Nov. 1864). And while we are on the subject a further word concerning Casilear's background will not be amiss. He was a nephew of John W. Casilear, the early bank note engraver of the firm of Toppan, Carpenter, Casilear & Co., producers of the United States Postage issue of 1851. John W. Casilear later became a wellknown landscape artist. His son in 1849 went to California, and upon his return engraved from sketches large plates of San Francisco and Sacramento. He was to hold the title of Superintendent of the Engraving Division longer than any other man, and almost every issue of U. S. securities, Revenue stamps, etc., produced in his time at the Bureau, bear marks of his genius and handiwork. Upon his retirement on Nov. 1, 1893, he had served approximately 31 years in continuous Government service.

To return to our story of the development of the Bureau, American and National Bank Note Companies continued to print the United States notes until 1869, when Secretary of the Treasury divided the work between the Bureau and the commercial companies. National Bank Notes,* from 1863 to July 1875, had been engraved and printed by the Continental Bank Note Co.,

but an Act of Congress, March 3, 1875, provided that not more than one printing should be done by commercial establishments and the final printing be executed by the Treasury Department. As a result of this only the faces of these notes were thereafter printed at the Bureau and the backs by the Continental, which company held the contract from the beginning.

Following the Civil War, all internal revenue, match and medicine, beer stamps, etc, had been engraved and printed by Butler & Carpenter of Philadelphia, and the National and Continental Companies in New York. Again the Bureau in 1872 took a distinct part in the printing of revenue stamps, when the work was divided between the Bureau and the private companies. It was not until 1882, only a few years after the consolidation of the National & Continental Bank Note Companies by the American Bank Note Company that the printing of all types of Internal Revenue stamps was discontinued.

An act of Congress for the fiscal year 1878, provided that all work in the printing of United States notes and securities be executed at the Bureau, and the private companies were therefore forced to abandon all work previously done for the Government. In their sixteen years of service to the Government their role had been an important one in the production of bank notes, securities, Revenue Stamps, etc. Were it not for the skill, efficiency, the ingenious methods they used for frustrating counterfeiting by high quality workmanship, in designing and engraving, and the speed and accuracy with which these private firms worked so assiduously throughout the years, the Government would have been hard put to meet the demands of Civil War needs, and the reconstruction period which followed.

While it is true that the profits to these private companies from this work were enormous, they had a tremendous responsibility placed upon them, and it is to their credit that they did the job without the loss of a single dollar in securities or currencies to the Government.

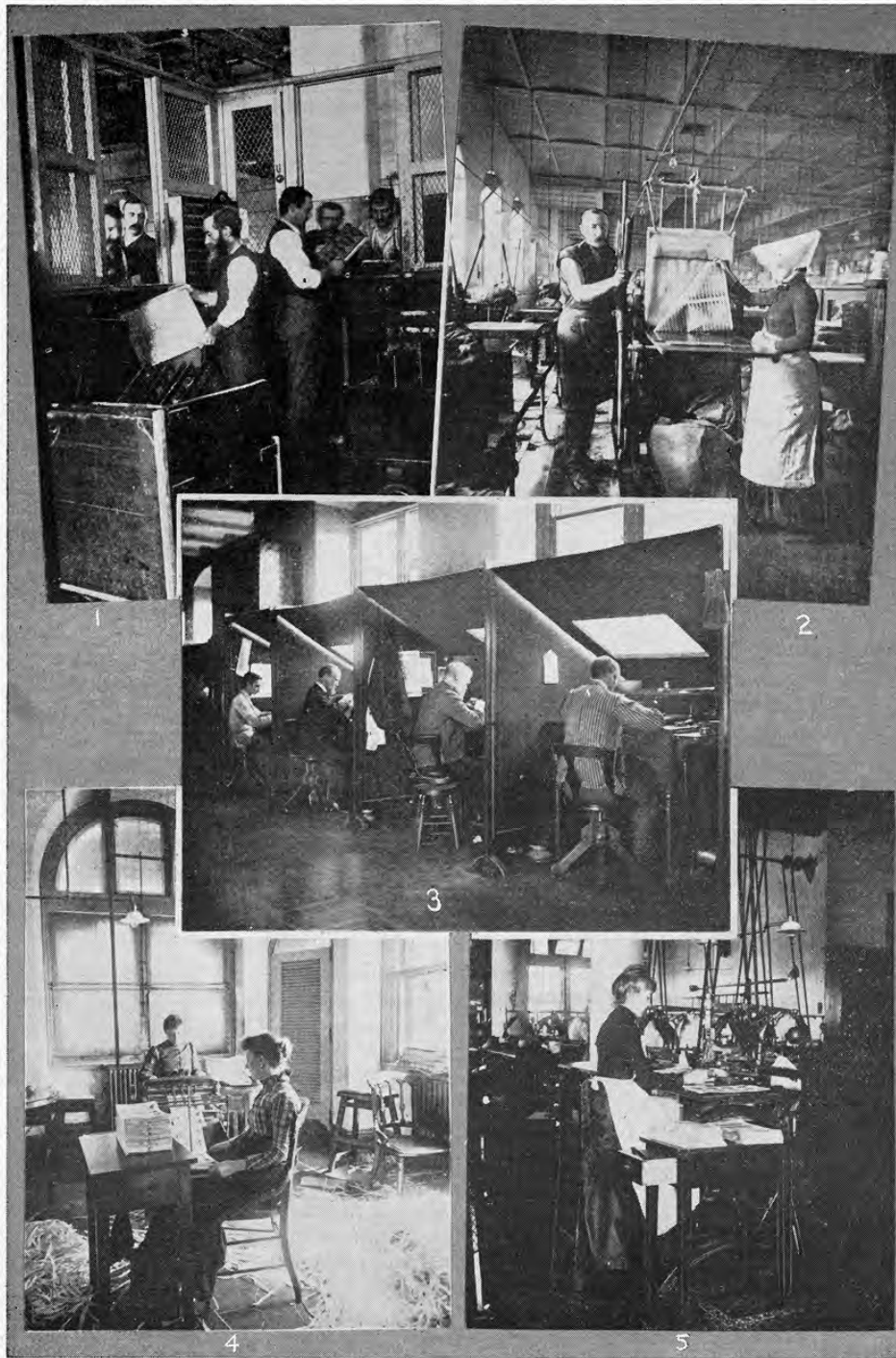
The Proposal to give the Bureau a building of its own was finally acted upon when it became apparent that the facilities of the Treasury Building were inadequate to accommodate the expansion made necessary for the increased activities of the Bureau as the country grew. On June 30, 1878 Congress appropriated \$300,000 for the purchase of a site and the erection of a building at Fourteenth and B Streets S. W., for the sole use of the engraving and printing of United States securities.

The building was first occupied on July 1, 1880, and by 1905 two wings had been added and further buildings erected for necessary machine shops. In 1878 the Bureau inaugurated power plate printing of its securities, similar to that which had been in use by the American Bank Note Company. A plate printing press adaptable to bank note work was the ingenious invention of Touro

* Excerpt from Reports of Committee of H. R., 1st Session of the 38th Congress (1863-1864).

NATIONAL CURRENCY

"All the notes for the national banks are engraved and printed by the American Bank Notes Companies of New York; forwarded to the Comptroller of Currency; delivered to the Superintendent of the Printing Bureau, where they are numbered, sealed, trimmed and separated; again returned to the Comptroller of the Currency, and by him delivered to the national banks, where they are perfected by receiving the signature of the president and cashier."



(1) Giving out plates on orders to plate printers, Mr. Ryley and Mr. Blue; (2) Hand press printing revenue stamps; (3) Earliest known photograph of engravers, about 1881, Ed Hall Helm, Cooper, Copenhagen; (4) Trimming & Stacking printed sheets of money; (5) Numbering Machine.

Robertson, vice president of the American Bank Note Company, who had also been one of the founders of the Continental Bank Note Company.

This new unit of the Bureau, known as the "Steam Plate Branch," was destined for a short life, however, for the Plate Printers Union raised the objection that many previously employed would be thrown out of work by the power presses. Their opposition resulted in the Bureau reverting to the hand press method, and with the exception of postage stamps, no other securities were printed by power presses in the Bureau from July 1, 1889 until 1912.

Apparently, there were no objections made by the Union to the printing of the 1894 postage stamp issue by power presses, but when in 1898 it was proposed to print the backs of currency by this method, a vigorous protest was raised. A compromise was finally reached by which only one fifth of the total number of hand roller presses required to produce the estimated quantity of this work in any fiscal year was to be displaced in such fiscal year.

However, following our entrance into the World War, the needed speed-up in production to meet demands made on the Bureau during the emergency resulted in enactment of legislation suspending previously enacted laws limiting the printing to hand roller presses. When the emergency war period had passed, further legislation was enacted, and by the act of January 3, 1923, the discretionary power of the Secretary of the Treasury was made permanent, but the Bureau even then could employ not less than 218 press operators.

Secretary of the Treasury Carlisle, soon after taking office in 1893, appointed Claude M. Johnson of Lexington, Ky., Chief of the Bureau. Johnson felt the necessity of seeking the services of younger men, trained in the bank note field, to take charge of the designing and engraving end of the Bureau's work and on Nov. 1st, 1893, Thomas F. Morris was appointed Chief of the Engraving Division and George F. C. Smillie, Chief Engraver. Mr. Casilear, having resigned, Mr. Morris then became second appointee as Chief of the Engraving Division since its establishment. Undoubtedly, Johnson had in mind the Bureau producing within a short time a new issue of bonds, a new series of currency and the printing of regular postage stamp issues. The American Bank Note Company had held the stamp contract for fifteen or more years, and Johnson felt conditions were favorable for the Government to perform this work. Accordingly, when the Post Office invited proposals for furnishing adhesive postage stamps during the period of four years, the Bureau made its bid, and having been the lowest bidder, it was awarded the contract. This marked the end of that work by commercial houses and from that time to the present, it has been done entirely within the Bureau.

Certain new machinery was installed to meet the requirements of the new undertaking. Some time later, Johnson reported: "I am glad to be able to state that despite many delays and embarrassments, the Bureau has met every demand for stamps, and has demonstrated its ability to successfully carry out the obligations undertaken with the Post Office Department. As the estimate of the Bureau for the first year of this contract, included the cost of new machinery, amounting to something over \$40,000, an item of expense connected with this work which will not appear in subsequent years, it is safe to predict an annual saving to the Government of over \$50,000."



(1) Stamp Gumming room, Mr. Crocker; (2) Electric Power Plate Press; (3) Engraving Room, Messrs. Schofield, Chalmers, Warren, Weeks, Ellis, Hill, Rose; (4) Hardening Room, Henry Young; (5) Geometric Lathe, Frank Rawdon, operator.

As early as 1893, it had recognized that the Bureau Building was inadequate to meet the ever-increasing demands for production of the class of work it was called upon to perform for the many departments of the Government. Secretary Carlisle, had brought to the attention of Congress the Bureau's limited facilities, and had recommended enlargement of the central projection of the building be undertaken. It was pointed out the original building, erected in 1880, had insufficient space to produce the work, which had increased about fourfold since that time. Many of the employees were obliged to execute the work in the cellar and other unsuitable places. "I am informed", the Secretary said, "that this has resulted in condition of affairs that would not be tolerated in manufacturing establishments by many of the States. The best work cannot reasonably be expected from such conditions."

Additional work due to emergency requirements of the Spanish-American war so taxed the Bureau's facilities that operating difficulties became almost intolerable. Another wing was added in 1904 and fireproof buildings were erected specifically to house the machine shops. But even these additions brought little relief to an already overburdened department of the Government.

Congress, realizing the seriousness of the situation appropriated, by Act of March 3, 1907, \$5000 for the development of plans, estimates and specifications for a new building and site. Upon the maturing of such plans, land was bought adjacent to the old building, and Congress appropriated \$2,929,999.60 for the building and vaults, and provided \$681,107 additional for equipment, furniture and expense of moving from the old to the new building. When the new building was occupied early in 1914, the old building became virtually vacated by both operatives and staff.

The Engraving Division was located on the lower floor of the new building, but the noise and vibration of the printing presses above became so bothersome to the engraving staff, it became necessary to transfer the entire Division back to the old building in October 1925, where it remained until November 1938.

By reason of the Federal Reserve system, created by the Act of December 23, 1913, a tremendous volume of new work was imposed upon the Engraving and Currency Printing Divisions. Had it not been for the added facilities of the New Building, much confusion and disorder in production would have resulted.

Then came the World War period, and the attendant difficulties in obtaining the necessary materials, such as aniline dyes used in the manufacture of ink, which source of supply from Germany had been cut off. Added to their troubles, the Bureau was faced with a diminishing supply of linen, used as a base for manufacture of currency paper. As a substitute, a one hundred per cent rag paper was used, with none too good results. It was not until they had overcome certain technical difficulties in the process of wetting and printing the paper that they were successful in obtaining desired production.

Following entry of the United States into the World War in 1917, the Bureau personnel was greatly increased, both in the engraving and printing departments. New bond issues, changes in stamp taxes and the tremendous increase in currency printing resulted in both day and night work during the emergency, and this continued for many months following the Armistice.



Engravers of U. S. Postage Stamps: (1) Louis Schofield; (2) Geo. F. C. Smillie, chief engraver; (3) L. K. Siggons, H. L. Chorlton, E. M. Hall; (4) Robt. Ponickau, Mr. Phillips; (5) Fred Pauling; (6) Marcus W. Baldwin.

The Engraving and Printing Divisions, during the emergency, were so short-handed it became necessary to call upon inexperienced engravers and printers from other trades, and from any place they could get them, to handle the work. During this period there were 8,432 employees on the rolls, the greatest number ever to be employed.

When the new building was erected, it was considered adequate to take care of the Bureau's requirements and output for many years to come, but before the building was completely occupied, it became apparent the new space was not of sufficient area to provide for needed production of the future.

As previously stated, the Engraving Division was housed in temporary quarters in the old building. The rooms used by the designers, engravers, transferrers, etc. were poorly lighted and the difficulties under which the whole department worked was a matter of particular concern to Alvin W. Hall, the Director. As early as 1926, he recommended to the Secretary of Treasury that a new building to accommodate the Division be erected. It was not until 1934 that necessary approval was obtained through Secretary Morgenthau. Plans were formulated to insure the maximum office space and light, and many other advantages which the organization had lacked for many years.

This building, known as The Bureau of Engraving and Printing Annex Building, and located directly opposite the Main Bureau Building, was dedicated on November 8, 1938. Director Hall stated during these ceremonies "We are enabled to keep our engravers together under controlled natural or artificial light. We now have all the stamp activities under one roof."

The engravers now work on the upper floor of the building with overhead sky-lights, and the rooms are so arranged that two engravers work side by side in each room, thus insuring proper environment and quiet for the intricate work they are called upon to perform.

The greater part of the Bureau's production is the engraving and preparation of the plates, and the printing therefrom, of the currency for the Government. The currency which the Bureau now produces is as follows:

United States Notes—\$2.00 and \$5.00

Silver Certificates—\$1.00, \$5.00 and \$10.00

Federal Reserve Notes—\$5.00, \$10.00, \$20.00, \$50.00, \$100, \$500, \$1,000, \$5,000 and \$10,000

The engraving and printing of Savings Bonds & Stamps of the United States, Treasury Notes and Certificates of Indebtedness also are of considerable volume, as well as the work in connection with Farm Loan obligations; and Housing Authority Bonds and other miscellaneous issues required since 1933.

Engraving and printing of both Postage and Revenue stamps for the Post Office Department and the Bureau of Internal Revenue, represent a substantial part of the Bureau's work. Besides ordinary stamps, there are air mail, commemoratives, special delivery, special handling, postage due, ordinary stamps surcharged, and Canal Zone stamps. The Bureau output of Internal Revenue stamps include cigars, cigarettes, snuff, tobacco, overprints, playing cards, oleomargarine, narcotics, documentary and others. Practically all the work for postage and postal savings stamps, postal cards, bonds, checks, internal revenue stamps and Treasury Certificates for the Philippine Islands and bonds and in-

ternal revenue stamps for Porto Rico, the two Insular Governments of the United States, as well as a great amount of miscellaneous engraving and printing for branches of the Government is all handled by the Bureau personnel.

Since the establishment of the Bureau in 1862, there have been in all sixteen men who have administered its affairs, they having held the title either of "Chief" or "Director"; the following are the names of these and others in the capacity of "acting" and their term of office.

No.	Name	Title	Date of Appointment
1	S. M. Clark	Chief Clerk-Treasury Department	Aug. 22, 1862 to approx. Dec. 1864
	S. M. Clark	Chief	Dec. 1864 to March 1869
2	George B. McCartee	Chief	March 18, 1869
3	Henry C. Jewell	Chief	Feb. 21, 1876
4	Edward McPherson	Chief	May 1, 1877
5	O. H. Irish	Chief	Oct. 1, 1878
6	Thomas J. Sullivan	Acting Chief	Jan. 28, 1883
7	Truman N. Burrill	Chief	Apr. 1, 1883
8	Edward O. Graves	Acting Chief	May 20, 1885
9	Edward O. Graves	Chief	June 1, 1885
10	William M. Meredith	Chief	July 1, 1889
11	Claude M. Johnson	Chief	July 1, 1893
12	Claude M. Johnson	Director	July 1, 1896
13	Thomas J. Sullivan	Acting Director	May 11, 1900
14	William M. Meredith	Director	Nov. 24, 1900
15	Thomas J. Sullivan	Director	July 1, 1906
16	Joseph E. Ralph	Director	May 11, 1908
17	Frank E. Ferguson	Acting Director	Oct. 31, 1917
18	James L. Wilmeth	Director	Dec. 10, 1917
19	Louis A. Hill	Director	Apr. 1, 1922
20	Paul E. Twyman	Acting Director	Feb. 15, 1924
21	Wallace W. Kirby	Director	June 15, 1924
22	Paul E. Twyman	Acting Director	Dec. 16, 1924
23	Alvin W. Hall	Director	Dec. 22, 1924

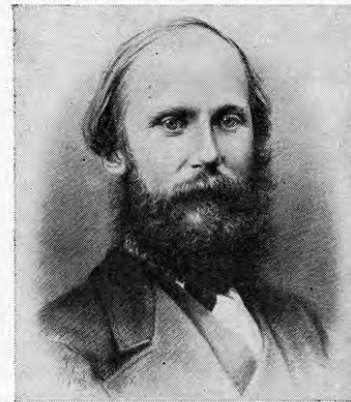
From the beginning of the Bureau's activities to the present day, the Government has refused to accept any other method in printing its obligations, currency and stamps, than by the intaglio method. The importance to which it is held is likewise reflected in the engraver whose responsibility it is to create on steel beautiful works of art, the characteristics of which are very difficult of exact duplication by the unscrupulous. Many years of constant effort and application are necessary in the art of bank note engraving for an engraver to reach the top of his profession. Over a period of years there have been many skilled engravers at the Bureau who can be numbered among the country's best. The Engraving Division should carry an AAA classification in its rank with other Government departments. So important is its work for the United States, if these men were to lay down their tools, the security of our monetary system would likely fall to pieces. We wish there was space to publish all the names of the engravers who have had an important role in the production of currency, bonds, stamps, etc. during the past 81 years. The men chosen for their professional experience and ability to head the Engraving Division during the many years came up through the ranks, either within the Bureau itself or the Bank Note Companies. Messrs. Casilear and Morris were the only ones who alone executed designs and administered the affairs of the Engraving Division, for after 1897 the Bureau employed designers whose sole duty it was to create designs.



S. M. Clark
Aug. 22, 1862 - Nov. 17, 1868



George B. McCartee
March 18, 1869 - Feb. 20, 1876



Edward McPherson
May 1, 1877 - Sept. 30, 1878



Edward O. Graves
June 1, 1885 - June 30, 1889



William M. Meredith
July 1, 1889 - June 30, 1893
Nov. 23, 1900 - June 30, 1906



Claude M. Johnson
July 1, 1893 - May 10, 1900

CHIEFS—DIRECTORS OF BUREAU



Thomas J. Sullivan
Twice Acting Director
Director July 1, 1906 - May 4, 1908



Joseph E. Ralph
May 11, 1908 - Oct. 31, 1917



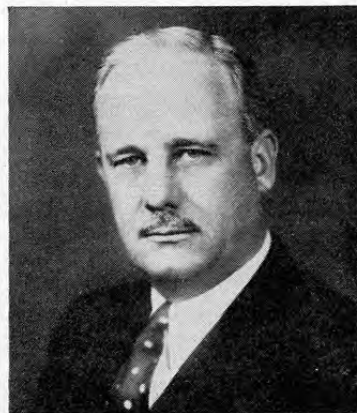
James L. Wilmeth
Dec. 10, 1917 - Mar. 31, 1922



Louis A. Hill
April 1, 1922 - Feb. 14, 1924



Wallace W. Kirby
June 16, 1924 - Dec. 15, 1924

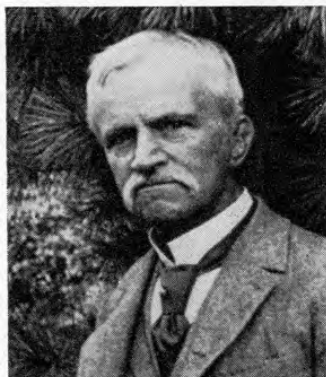


Alvin W. Hall
Dec. 22, 1924 - To Date.

CHIEFS—DIRECTORS OF BUREAU

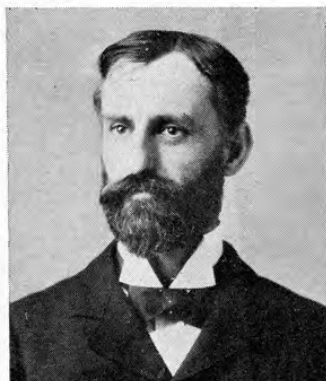
The following men carried the title of "Chief" or "Superintendent" of the Engraving Division:

No.	Name	Title	Term of Office	
			from	to
1	John A. O'Neill	Supt. Engraving	Apr. 28, 1885	Dec. 15, 1889
2	George W. Casilear	Supt. Engraving	Served under Chiefs McCartee and Jewell but exact dates unknown.	
	George W. Casilear	Supt. Engraving	Dec. 16, 1889	Oct. 31, 1893
3	Thomas F. Morris	Chief Engraving	Nov. 1, 1893	July 1, 1897
4	John R. Hill	Chief Engraving	July 1, 1897	Feb. 14, 1913
5	George W. Rose, Jr.	Supt. Engraving	Feb. 19, 1913	Mar. 31, 1922
6	John T. Guilfoyle	Supt. Engraving	Apr. 1, 1922	July 15, 1924
7	H. Preston Dawson	Supt. Engraving	July 16, 1924	July 1, 1926
8	Edward E. Myers	Supt. Engraving	July 1, 1926	Jan. 11, 1933
9	Edward M. Weeks	Supt. Engraving	Feb. 23, 1933	Dec. 16, 1935
10	Joachim C. Benzing	Supt. Engraving	Jan. 10, 1936	to date



George W. Casilear
Supt. Engraving Division

(See Above)



Thos. F. Morris
Chief - Engraving Division
Nov. 1, 1893 - July 1, 1897.

Father of the author of this article.



John R. Hill
Chief - Engraving Division
July 1, 1897 - Feb. 14, 1913



George W. Rose, Jr.
Supt. Engraving Division
Feb. 19, 1913 - Mar. 31, 1922

The same basic principles of engraving on steel developed over one hundred years ago are still being employed, and no better means from standpoint of safety have yet been discovered or devised to replace this old method of printing from intaglio engraved plates. To produce a bank note or stamp it still must first be engraved on soft steel, the piece of steel hardened, transferred to a roll, the roll hardened, and the roll then used for retransferring the engraved design to the plate from which the printing is made. Improvements in printing have, of course, taken place and processes developed for adding to the life of the plate, but the old basic principles of design, engraving and transferring are still considered the highest development and most reliable in the art of bank note design and engraving.

Some changes have taken place in the development of designs. All issues of stamps from 1847 to 1897 were designed either in pencil, black and white wash or water color, to the actual size of the issued stamp; and this was also true in the development of designs for currency where every detail of the design



John T. Guilfoyle
Supt. Engraving Division
Apr. 1, 1922 - July 15, 1924



H. Preston Dawson
Supt. Engraving Division
July 16, 1924 - July 1, 1926.

was worked out for the engraver to follow. Today these designs are greatly enlarged and then reduced photographically, which of course saves much time and labor. But the engraver must produce his engraving of a scale requiring skill and long training, in employing the graver, and a thorough knowledge of the use of acid in "biting" his work. Above all he must be an artist, for he must create line and form on steel, and these are held to be prerequisites to his profession.



Edward E. Myers
Supt. Engraving Division
July 1, 1926 - Jan. 11, 1933.



Edward M. Weeks
Supt. Engraving Division
Feb. 23, 1933 - Dec. 16, 1935.

The engraving work of the Bureau has been recognized and honored in many parts of the world, and has taken the highest awards at the Vienna Exhibition in 1872, at the Centennial Exhibition in Philadelphia in 1876, at the Exhibition at Paris in 1878, at the Columbian Exposition in Chicago in 1893, at the Paris Exposition in 1899, at the Louisiana Purchase Exposition in St. Louis in 1904, at Jamestown Exposition in 1907, at the Alaska and Yukon Exposition in Seattle of 1909, at the Panama Pacific Exposition in San Francisco in 1915 and at the Sesquicentennial Exposition in Philadelphia in 1926.



Joachim C. Benzing
Supt. Engraving Division — Jan. 10, 1936 - To date.



R. Ostrander Smith
Designer
1897 - 1902



C. A. Huston
Designer
1902 - 1920



**James R. Lowe, Bureau Engraver, cutting a Die
for a U. S. Postage Stamp.**

Much has been written during the past thirty-five years concerning the Bureau's activities, its different departments, development of bank notes and stamps and the many processes used in their production. It is not the purpose of this story to provide all of this detail but rather portray the Bureau's early history, of which many have scant knowledge. If the writer has been successful in imparting some details of interest it has been worth the research work incident to bringing the facts before readers interested in the subject.