

HOW MONEY IS MADE.

The most interesting of all the public works in Washington is always closed to the public. It is that of making money, carried on in the upper stories of the Treasury Building. A rigid rule excludes all visitors from this bureau of the Treasury Department. The rule is an eminently reasonable one. Millions of dollars in notes, currency, and bonds, are here undergoing a process of manufacture. It is true that precautions might be taken to prevent light-fingered gentry from carrying off any of this valuable stock; but this is not enough. No rule can prevent employees from abstracting something from the immense piles of money if the public are admitted. To prevent the possibility of such abstraction, no workman or workwoman is allowed to leave the room in which he or she works until the money or stock has been counted, and all that has been brought in through the day is found to be safely there, or to be duly accounted for. If anything is missing, no one can leave the room till an investigation is had and the offender is found. But if a score of visitors have passed through the room, an opportunity is left to the suspected person to lay the theft off upon the visitors, and even to employ a visitor as an accomplice in the theft. For the last two or

three years, therefore, no one has been allowed in that part of the Treasury building in which the manufacture of money is carried on, without a permit from the Secretary of the Treasury himself. The Government, however, is glad to have the public know what it is doing, and how it performs its duties. Therefore, through the courtesy of the Chief Clerk of the Treasury Department, a representative of the press was recently permitted to visit the mechanical establishment of our money-making institution. His description, accompanying the annexed engravings, we copy from the *Christian Weekly*.

To obtain accurate information as to the manufacture of currency and postage stamps, it is not enough merely to visit the Treasury Department; three great printing establishments combine in the manufacture of every bank bill issued by the United States—the Treasury Department, the American Bank Note Company, and the National Bank Note Company. Through the kindness of Mr. J. Macdonough, the superintendent of the latter company, the writer had the opportunity of spending half a day in their manufacturing establishment, which occupies the whole of the upper floors of the Cooper Institute. Many of our illustrations are taken from sketches made there; and the whole article embodies, though necessarily in a very brief form, the results of observation in both visits. Although we are chiefly concerned in the description of the manner in which American money is made, our observation took a wider scope. In more senses than one America makes money for the whole world. Though the United States Treasury Department only prints for the

United States Government, the two bank note companies print not only for our own banks, but also for foreign countries. The National Bank Note Company were, at the time of our visit, printing bonds and paper money for Japan, the South American Republics, and several European governments. Indeed, New York city may be almost said to be the center of the manufacture of paper money for the world.

The printing of money in its various forms is a much larger and more complicated operation than most of our read-

ers imagine. There are, first, the bonds of various descriptions and denominations, which serve in commercial circles in lieu of money; second, the bills which are issued directly by the United States Treasury, and which embody a promise to pay on demand, at the Treasury, to the bearer; third, the fractional currency of ten, twenty, twenty-five, and fifty cent pieces, all of which are printed for the United States, for no bank ever issues fractional currency; fourth, the na-

is in the manufacture of the paper itself. The extent to which this latter business of stamp printing is carried on is indicated by the single fact that the National Bank Note Company, which prints all the postage stamps for the United States, prints 500,000,000 in a year, and sometimes sends off as many as 13,000,000 in a single day—a large wagon load. The reader will hardly expect to get a clear and comprehensive view of these complicated operations in an article confined within two pages of

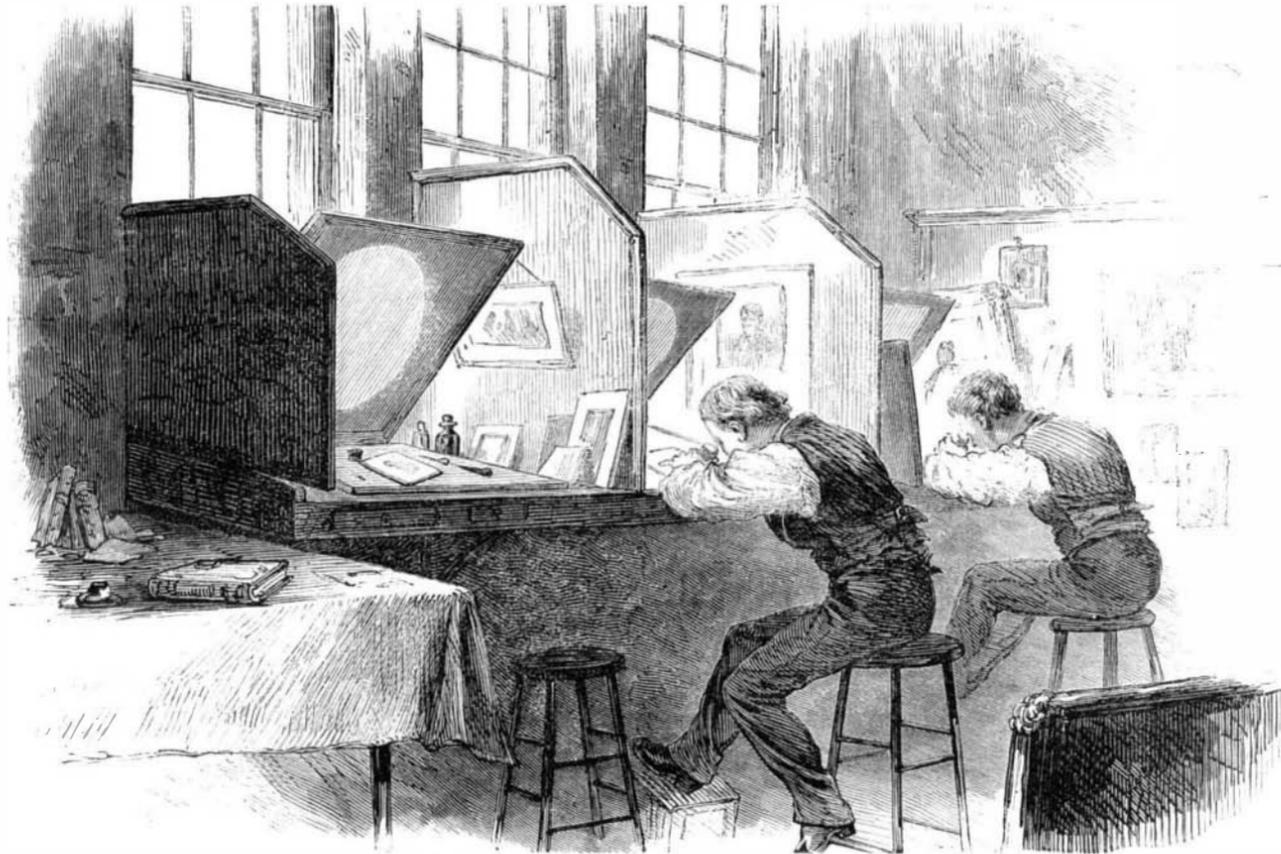
a newspaper; if he does he will be apt to be disappointed.

The circumstance which gives to this manufactory its peculiar character and its peculiar interest is a singular one; it is the fact that all over the country are shrewd men, and often men of large resources and extensive capital, who are watching for the opportunity to imitate the legitimate paper money. The utmost skill and the most elaborate system of precautions are necessary to produce an article which private coining cannot successfully imitate. It is this skill which gives to the manufacture of money a character quite different from that of any other branch of mechanical industry. Nor is less precaution taken to prevent the many hundreds who are engaged in the various processes from abstracting any of the money for their own use.

The first precaution

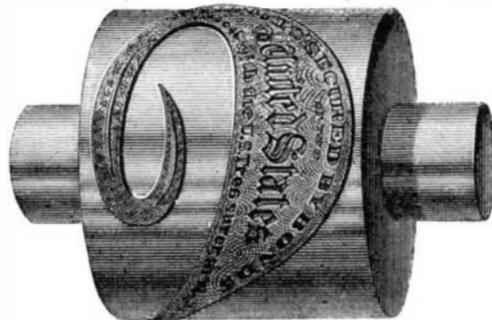
is in the manufacture of the paper itself.

If the reader is so fortunate as to have a fresh piece of fractional currency in his pocket, a ten cent or twenty-five cent piece, and will take it out and examine it, he will detect what at first sight appear to be imperfections in the paper on which it is printed. It is full of little specks and shreds of what seems like colored silk. But if he attempts to pick these shreds off, he finds that they are in the texture of the paper itself, and cannot be got off without tearing the paper to pieces. This is the first precaution against counterfeiting. All the money made by the United States Government is printed on this peculiar paper. It is made only at one mill, in the vicinity of Philadelphia. It is a penal offence for any other manufactory to make it. It cannot be made without large and heavy machinery. All the paper on which United States money is printed is manufactured at this one mill. The machine, by means of an automatic register, keeps an account of every sheet of paper manufactured. For every sheet which this tell-tale instrument declares has been made, the proprietors of this mill must account to the United States Government, so that none of the paper can get into the market except by the United States authority. If the reader finds his fractional currency, or his United States note, printed on this paper, he has one evidence of the genuineness, and one which the counterfeiters find it very difficult to copy. They avoid the difficulty by so soiling their bills that this feature, or rather the absence of it, is no longer discernible. Many persons imagine that a well worn bill is certainly genuine. This is a mistake. The appearance of being well worn



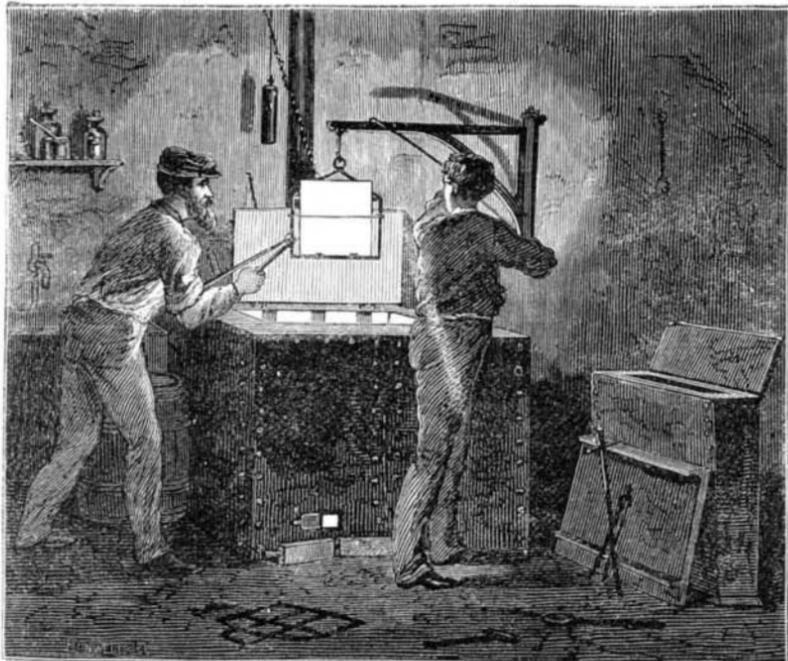
BANK NOTE ENGRAVERS AT WORK.

ers imagine. There are, first, the bonds of various descriptions and denominations, which serve in commercial circles in lieu of money; second, the bills which are issued directly by the United States Treasury, and which embody a promise to pay on demand, at the Treasury, to the bearer; third, the fractional currency of ten, twenty, twenty-five, and fifty cent pieces, all of which are printed for the United States, for no bank ever issues fractional currency; fourth, the na-

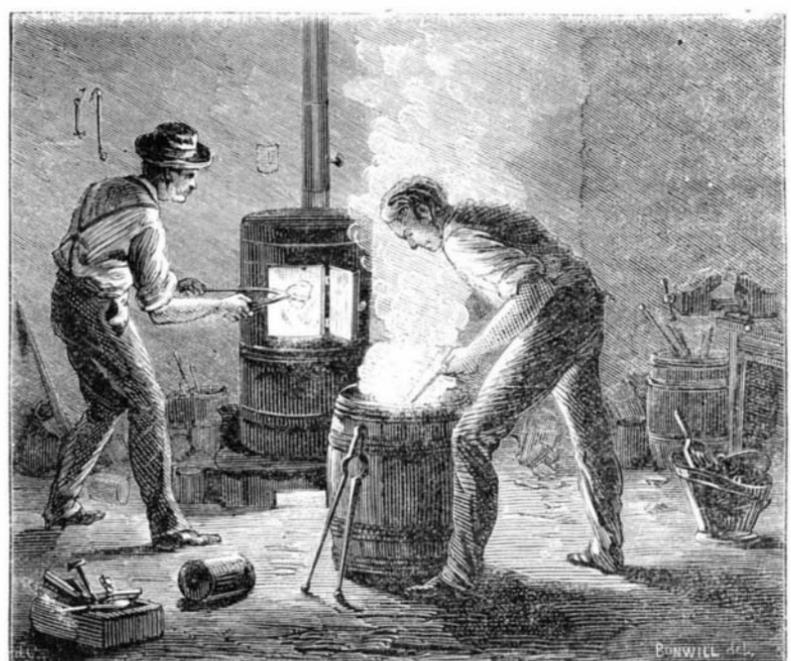


THE ROLLER DIE.

tional currency, that is, the notes issued by banks and redeemable by them, but secured by a deposit of United States bonds in the Treasury Department. There are four kinds of money, each of which is, in turn, divided into various denominations, each one having its own peculiar design. Besides these forms of money, there are other forms of paper value which are in the nature of money, such as postage stamps and internal



HARDENING THE DIES



HARDENING THE PLATES.

is one easily counterfeited. The national currency, that is, the bills which are issued by the national banks and not by the United States Government, are not printed on this paper.

The next step in the manufacture of money is the printing. If the reader will examine with care a United States bank note, that is, one which embodies a promise to pay, not by a bank, but directly by the United States Government, he will observe that the back is printed in green, which gives to it its title of greenback, while the front, besides the figure and the pictures and the red stamp, which combine to cover the surface pretty effectually, has upon its groundwork a tint, also of green.

The paper when it comes from the manufactory goes to one of the bank note companies of New York, which prints the green back; the sheet so printed is then sent to another bank note company, which prints a green tint upon the face of the note; and the half-printed note is then forwarded to Washington, where the process is completed by printing the pictures, the number, the denomination, the signatures, the words, and the red stamp. The company which receives the paper from the mill gives a receipt for the paper received, which is the voucher of the mill owner to the United States. That company must then turn over to the other company notes equivalent to the full amount of paper received, and must account to the Government for any that are mutilated in the process of printing; and the second company, which gives, in turn, a receipt for the incomplete bank notes, must give to the Government as much as it has received from its associates in the work. Thus, if there were a fraudulent workman in either company he could not defraud the Government without a confederate in the other company, and both must have a third confederate in the Treasury Department. In short, it would seem to be impossible to foist upon the market any money manufactured for the Government, which it has not duly received and got the value for, without a gigantic conspiracy, involving not only the Treasury Department itself, but also the two greatest bank note engraving corporations in the United States, and probably in the world. Not even a dishonest Secretary of the Treasury has it in his power to defraud the Government by manufacturing money for his own use.

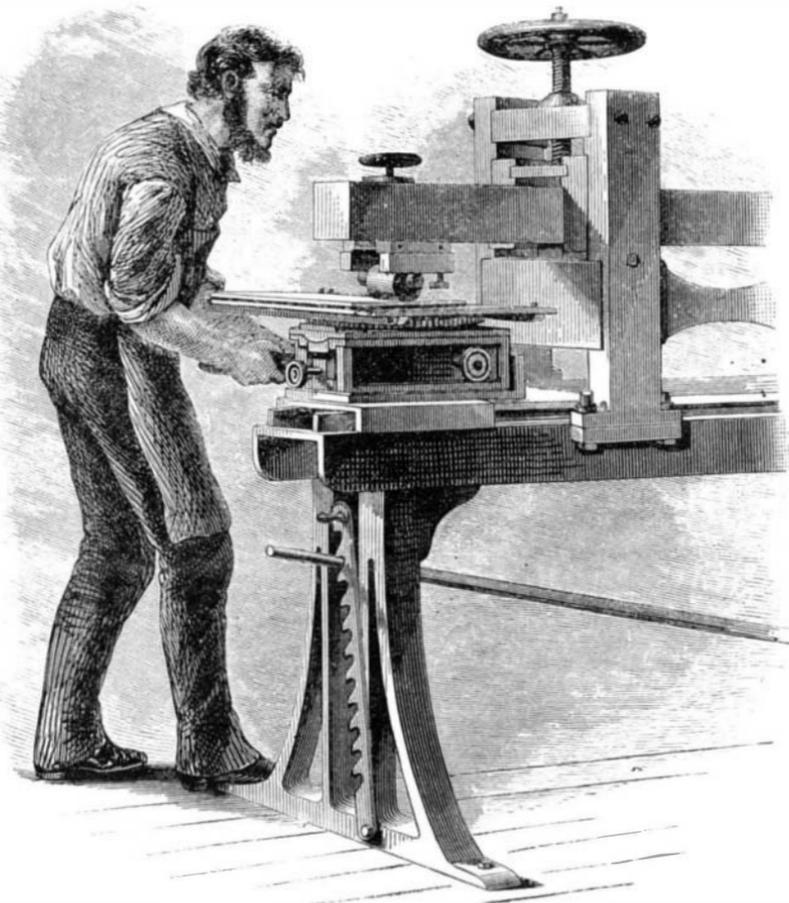
The bill having now passed through three hands—the paper manufacturer and the two bank note engravers—comes into the Treasury Department, where it undergoes the third series of operations, to still guard against the counterfeiters.

The United States Treasury never prints the green back nor the tint upon the face of the bill; but in all the subsequent operations the method is substantially the same, whether the bill be a United States bill printed by the United States Treasury, or a national bank note printed by the National or the American Bank Note Company. One description, therefore, must suffice for both.

The first safeguard in these printing operations against counterfeiting is the portrait. There are no artists in their profession superior to those who are employed in the designing and engraving of bank notes. By the side of these genuine artists the counterfeiters are blunderers. In a good bill the portrait is always the accurate likeness. To secure it, a daguerreotype is first obtained. This gives a picture on a metallic plate. The features are then drawn lightly on the plate with a sharp-pointed instrument by an artist, who follows accurately the outlines of the portrait. From this outline an impression is printed. The operation of printing, from what is little more than the scratch of a pin, is a delicate one, as may be well imagined. The impression thus obtained is transferred by a chemical process to a steel plate, which is covered with a preparation of wax, the better to receive the impression. The artist then has before him a steel plate covered with wax, on which the outlines of the portrait which he is to engrave have been mechanically transferred from the sun's own painting. These outlines are then traced on the steel beneath by a sharp tool; the wax is removed, and the face is still presented in outline on the steel. The shading is then completed by the workman, who, to accomplish his task successfully, must possess at once the artistic skill of a draftsman and the mechanical skill of a perfect engraver.

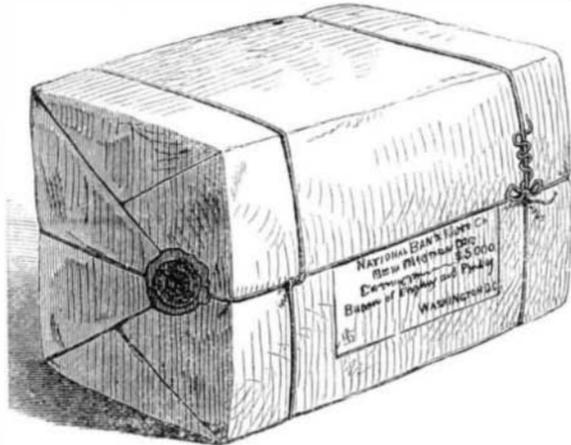
This work of engraving is one which requires the utmost accuracy of eye and steadiness of touch. Both in the Treasury and in the bank note company's buildings, there is a large room devoted to the engravers, whose eyes are carefully screened from the light, which is skillfully adjusted to their work by large muslin curtains which surround each workman on three sides. On our visit to the Treasury Department our lady companion asked an old man, who was busily engaged with the engraver's tools, if his work was not very injurious to the eyes. "I have been at work at it these fifty years," said he, "for I am over seventy years old, and you can judge for yourself;" saying which, he pushed his glasses up from his eyebrows, and turned on her a pair of eyes as bright and clear as one often sees beneath the brows of eighteen.

The work of engraving even a single bank note



THE TRANSFERRING PRESS AND ROLLER DIE.

plate requires very diverse kinds of skill. One artist has success with portraits, another with buildings, a third with lettering, another with ornamental work. No one artist ever engraves an entire note; several different artists are always employed to each bill. The processes by which their various operations are combined in one constitute, perhaps, the most



PACKAGE OF NATIONAL BANK NOTES.

curious and interesting of all the various operations in the manufacture of paper currency; but we despair of explaining that process, even aided as we are by the pencil of the artist. We shall make the attempt, but we assure the reader that the operation will not be understood by him, however

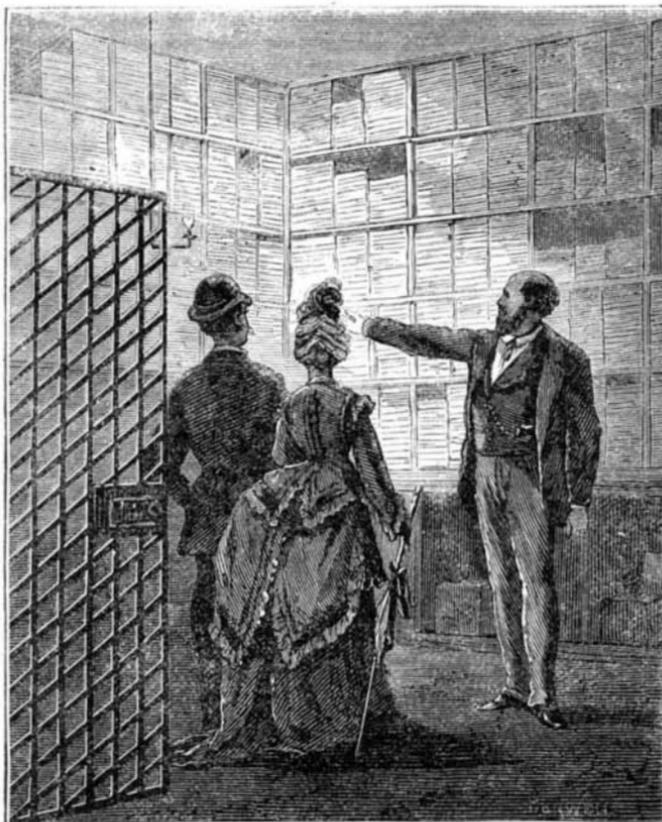
successful we may be in describing it, without careful attention on his part. The possibility of the feat, we can give it no other name, almost passes our belief, although we have seen it performed. After the design of a bank note is fixed upon, it is given out in separate pieces to separate artists. There lies before us, as we now write, a two dollar treasury note; on it is a picture of Jefferson, a picture of the Capitol at Washington, the printed lettering, "United States will pay to bearer two dollars," the signatures, John Allison, F. E. Spinner, the large figure 2 in one corner, and a great quantity of twos printed in very fine lettering all around the margin, and moreover an elaborate ornamentation in various parts of the bill. One man probably engraved the portrait of Jefferson on one piece of steel; another workman, at a separate desk, engraved, on a separate piece of steel, the printed letters; a third the signatures; others the view of the Capitol building, and still others engraved the small letters on its margin, while still another probably engraved the large figure 2, and one or two more did the ornamental work. Each of these bits or pictures and lettering was engraved, the reader will understand, on a separate piece of steel. Sometimes as many as thirty steel plates are combined in a single note. It is the process by which this combination is effected that is so extraordinary.

The reader must not imagine steel to be necessarily a hard piece of metal. Hard and soft are but relative terms, and the steel of the engraver is made hard or soft, according to his desire. Steel rollers are prepared. They are softer than the steel plates on which the separate fragments of the bank note lines are engraved by the separate artists. By a powerful pressure the various pictures which the artists have en-

graved are impressed on these steel rollers. They take the impression much as subsequently the bank note itself takes the impression, or as a piece of wax would take it. The work of the artist is, of course, reversed, and the picture, or rather the fragment of the picture, appears on the roller in a legible form, as it will subsequently appear on the note. The artist now has his bank note still in fragments, that is, in separate pieces, but on separate rollers instead of on flat plates. These rollers are now hardened by the action of fire, and thus prepared for the next process. It is the process of transferring. Our artist gives to the reader a picture of the transferring machine. In this machine a flat plate of soft steel is placed, the roller containing some fragment; the portrait, for example, is adjusted by the workman in its proper place over and upon the steel plate, and a pressure of from fifteen to twenty tons is brought to bear upon it. This pressure transfers the portrait to the steel plate below. The roller is then taken out and the next roller put in its place. This is adjusted so as to bring it in its proper place, and the pressure is again applied. The roller itself is moved gently back and forth by the hand of the operator so as to distribute the pressure equally on all parts of the picture. Thus one roller after another is introduced, the operator depending on his skill of eye and hand to adjust perfectly the various fragments of the complete design to each other until the whole bank note is impressed upon the soft steel plate. The skill and accuracy required in the operation are almost beyond conception. The most powerful magnifying glass brought to bear upon the bank bill fails to show where the various parts of the completed picture have been joined.

This plate is now to be prepared for the press by being hardened. For this purpose it is taken to the furnace and there immersed in a fireproof box containing carbon, and plunged into the furnace. When the requisite heat has been obtained, it is taken out and dipped quickly into oil or brine, or transferred to a vise, which screws its surface hard upon a plate of lead, where it is left to cool. This operation is one requiring the utmost judgment, skill, and dexterity. The heat must be of just the required amount, neither too much nor too little, and when the heated plate is ready to be taken from the fire it must be transferred so instantly from the carbon box to the plate of lead or liquid that the air shall have no opportunity to perceptibly cool its surface. This annealing being completed, the plate is ready for the printer.

We ought not to pass by the engraver's operations without mentioning the geometric lathe. The reader will observe, on many of the national bank notes, and on almost all of the United States bank notes, a series of very intricate and involved lines, running to and fro in involutions which defy imitation. In the bank note before us, as we write, the figure 2 is printed on a background formed by these snaky lines. This is done by means of the geometric lathe, an instrument which, by a singular combination of wheels, can be set to marking out almost any conceivable combination of curved lines. The number of combinations is practically without limit. The machine is an expensive one, and can only be made by machinery; the counterfeiters are supposed not to possess one, and they are not able to imitate successfully its work. To the casual observer, the portrait is the best test of a counterfeit bill; to the detective, the lathe work under a magnifying glass affords the final test.



POSTAGE STAMP DEPOSITORY.

We have left but a word to speak of the printing process. This does not differ very widely from other printing processes, except in being done wholly by hand. Two persons operate the press together. The first inks the plate and so prepares it for the press, adjusts it in its place, and by a turn of the wheel applies the pressure; a second cleans the plate off and prepares it for a second printing. This is done, first, by wiping off the remaining ink with a cloth, and then polishing the plate with whiting, rubbed on with the palm of the hand. Long experience has demonstrated that there is no such polisher as the human hand; but it gets fearfully dirty in the operation. In Washington a register, analogous to that attached to an ordinary gas meter, is connected with every machine, which thus registers every impression taken. This register is locked and the key is in the possession of the superintendent, who thus has a means of proving that no money has been abstracted from the printing room. In the printing room at the Treasury Department eighty of these presses are in simultaneous operation; in one of the print rooms of the National Bank Note Company of New York there were one hundred and sixteen. The men are paid by the piece, and work with marvelous rapidity, and the room presents a very striking picture of busy activity. It can hardly be credited, but it is the fact, that the wiping of the plate by the hand sensibly wears away the steel, and the difference in value of different workmen is measured by the skill with which they succeed in polishing the surface with the least wear—producing the greatest cleanliness and the least attrition of the plate.

The money is now substantially ready for the market. It only remains to print upon it the seal of the United States—a red stamp, which is affixed to all bills, whether issued by the United States or the National banks, and is always printed at the Treasury Department—to add the number, which is changed with every printing by an ingenious contrivance, which our space does not permit us to describe but which gives to every note its own number—and finally to divide the notes, which are printed six or eight on a single sheet and must be separated, an operation which is done in Washington by an ordinary bookbinder's cutting machine but which requires the greatest skill in its manipulation, in order not to mutilate any portion of it. The money is then packed in boxes; if printed by a private bank note company, it is sent to Washington to receive the Government stamp; if in the Treasury Department, it is sent down to the Treasurer, where it is stowed away in vaults, ready for use. Just before our visit to the Treasury Department there had been a careful counting of the money in the vaults. It amounted to \$1,038,000,000: or, if the reader gets no very clear idea from figures expressed in billions, and we confess we do not, he may get a better conception from the statement that it comprised ten cords of paper money.

There are some of the products of the press room which, however, never get to the Treasurer. These are the mutilated and imperfect bills. Along with these are bonds and bills worn out by long use and sent to the Treasury to be redeemed. These are carried to a furnace room a few rods from the main Treasury building, and there, in the presence of a committee appointed to witness their destruction, they are burned, the smoke being forced through water to prevent any part of the charred paper from being carried off and picked up for future presentation.

The most wonderful thing concerning these operations remains to be told—the accuracy with which they are conducted. A single sentence from the report of Mr. George B. McCartee, chief of the Bureau of Engraving and Printing, sums up the results of this painstaking care: "It affords me great pleasure to state that, in the engraving, printing, and finishing of \$890,483,995, notes, bonds, and other securities, and 104,140,286 stamps during the year (1871), not one note or sheet of paper has been lost to the government."

The Cat Show at The Crystal Palace.

There can be very little question as to when the first animal show occurred. According to Archbishop Usher's calculation, it was in the year 2349 B. C., and the place where it was held was Noah's Ark. It lasted for at least nine months, says *Land and Water*, and must have been a hard time for Noah and his family if the antediluvian animals wanted anything like the attention that their descendants get in these days at the Regent's Park. How they fed the *carnivora* at all, and how they stowed away enough green food or hay for the *graminivora*, is an interesting subject of inquiry which I must pass over for to-day. Further on in history there were grand beast shows at Rome. Sulla exhibited 100 lions, Scaurus a hippopotamus and five crocodiles, Pompey 600 lions and twenty elephants, Julius Cæsar several giraffes, Augustus a snake fifty cubits long, Trajan 11,000 animals in all, and Probus 1,000 ostriches, among other live luxuries. In all these cases the enjoyment of the Roman citizens, who were the principal witnesses of the show, was heightened by the death of the curious beasts which had cost their exhibitors so much money and trouble; and the same strange principle was adhered to later in history, when the Smithfield Club, so lately as in 1798, took to exhibiting fat cattle, which were killed by the butcher instead of killing each other. It was not till 1838 that the Royal Agricultural Society hit on the brilliant idea that an animal need not be killed because it had been exhibited, and as soon as mercy prevailed over sacrifice the system became popular.

The fourth cat show, which lately closed its doors, was an improvement, both as to the quality and the number of entries, on any previous. The arrangements were very good and the comfort of the animals so strictly studied that they suffered as little as possible from their confinement, and only lifted up their sweet voices occasionally. But five days in a

cage is a great trial for a cat which is used to liberty, and it is no matter of wonder that some of the prisoners were looking very weary before the time came for their release. Perhaps variety of color was the most striking feature of the show. White and black, tabby and tortoiseshell, and their various combinations, are familiar to all of us, but here in addition were mouse color, whity brown, bright reddish yellow, pale grey, pug dog brown, a greenish grey, like a Scotch hare, and other strange shades, causing the visitors to play desperate havoc with the tenth commandment. Cats and kittens all told, and without including certain interlopers in the way of puppies and birds which were in the cages with the cats, there must have been about four hundred animals in the show, the largest and finest being No. 257, a monstrous tabby tallow cask of a cat, with a splendid skin, weighing nearly twenty-two pounds, and superior in all respects to the well known "Museum Street Jack," the heavy weight champion of previous shows, who never quite reached twenty pounds in weight. Perhaps the handsomest cat exhibited was No. 281, a magnificent *van doré* from Paris, "Fritz" by name, only two years old, and with a face like an eagle owl's, beautiful to the last degree, and capable of looking exquisitely savage on very slight grounds. Most cats are self-satisfied enough, but "Fritz" was absurdly consequential, and held his dainty little nose in the air with the look of an opera *prima donna* obliged to sing in a barn.

Erratum.

In our article entitled "Scientific and Mechanical Possibilities," on page 329 of the current volume, it is stated that "it is not within the possibility of mechanism to bore 4,000 feet more." It should read: "Is it not," etc.

CROSS BREEDING OF FISHES.—Mr. B. Hanson, of Stavanger, in Norway, has, according to a correspondent of the *London Athenæum*, accomplished a novel feat in pisciculture by producing a new hybrid species, a cross between *Salmo alpinus* and *Salmo eriox*, the former species spawning four weeks before the latter. Mr. Hanson's manner of bringing together the spawning maturity of the two species is ingenious. When *Salmo alpinus* has been spawning for some time, Mr. Hanson secured a female fish in an interesting condition, and imprisoned her in a perfectly dark tank, where he left her alone. In a like manner Mr. Hanson, as soon as possible, secured the sire of the first couple of *Salmo eriox* he found in mature condition for spawning, and put him under a similar arrest, and kept a close watch over both until the time of the sire came. In this manner Mr. Hanson has succeeded in rearing, with only a loss of one per cent, in his spawning boxes (supplied from a subterranean well which flows with a uniform temperature of +5° Réaumur all the year round) a new species, which attains full development in four years, and is remarkable for its exceeding vigor and wildness in water, and its palatableness on the table. Mr. Hanson entertains sanguine hopes of this species becoming self-productive in course of time, contrary to all experience of hybrid fish, because he has already caught in his pond several individuals with roe in them.

DANGEROUS DIETS.—The failure of the potato crop in England is likely, from what we read, to bring about an epidemic of scurvy, unless the public can be better informed of the requirements of an antiscorbutic diet. The fact, therefore, cannot be too widely made known that pease pudding, haricot beans, and boiled rice, which have been suggested in the journals as substitutes for potatoes, will not prevent the occurrence of scurvy. In the absence of the potato, an excellent antiscorbutic, fresh green vegetables or fruits will be requisite, or the health will certainly fail, even though fresh meat be taken. Amongst the vegetable material which may be used, the *Lancet* states, are the various forms of cabbage, lettuce, oranges, lemons, onions, mustard and cress, dandelion, and sorrel. The experience of the crews of vessels on long voyages has shown, over and over again, the uselessness of the pea and bean tribe in preventing scurvy.

VELOCITY OF NINE-POUNDER SHOT.—Experiments have recently been made to determine the velocity of the nine-pounder shot when fired with various charges of powder. From the nine-pounder gun of 8 cwt., with 3½ lbs. of rifle large grain powder, a velocity of about 1,500 ft. per second was registered, the gun being quite uninjured. In order to obtain these results on service a stronger carriage is required, and will probably shortly be made. The carriage on which Sir J. Whitworth's new gun was fired on the sands at Southport has endured the strain of the heavy charges exceedingly well.

AIR was compressed by Professor Tyndall, by means of a column of water 260 feet high, to one eighth of its original volume (120 lbs. to the square inch) and then allowed to escape. As it rushed out, it expanded so violently and caused such an intense cold that the moisture in the room was congealed in a shower of snow, while the pipe from which the air issued became bearded with icicles.

SCIENCE is studied by the observation of facts. But observation is not easy. It requires more memory and a further perspective than most men possess. Experiment, too, is necessary, which is a series of questions put to Nature, and no witness can be found more difficult to examine.

MANUFACTURE OF LETTER ENVELOPES.—One establishment in New York city, that we know of, is now turning out nine hundred thousand letter envelopes daily.

DECISIONS BY THE COMMISSIONER OF PATENTS.

Horse Rake Patent.

CALISTA E. COX, EXECUTRIX.—*Extension.*

In the matter of the application of Calista E. Cox, executrix of the estate of Harvey W. Sabin, for extension of patent No. 7,813, for improvement in horse rakes, granted December 3, 1850. Extension granted for seven years from June 8, 1872.

Preserving Hops.

BATES vs. SEEGER & BOYD.—*Interference.*

Appeal from the Board of Examiners-in-Chief in the matter of the interference between the application of Benjamin Bates and the patent of Seeger & Boyd for an improvement in preserving hops.

To pack goods of various kinds in bottles or cases made airtight, in order to preserve their contents more effectually, has been common from time immemorial, and cannot be monopolized under a patent.

THACHER, Acting Commissioner:

The patent was granted to Seeger & Boyd, December 12, 1871, application therefor having been filed the 20th of October preceding.

The application of Bates was filed January 13, 1872.

The patent contains two claims. The first is in interference, and is as follows, viz:

As a new article of manufacture and trade, hops ground or pulverized and incased in airtight packages, as and for the purpose set forth.

The gist of the invention is the airtight package. Neither party claims here the article itself, and, in fact, there is proof in the case that it is entirely destitute of novelty.

I can find nothing whatever patentable in what Bates has done. Covered cans and boxes, and corked bottles, are the most common devices in the world for securely keeping solids and liquids of every description. There is no more reason for granting a patent for a bottle or can of ground hops than of ground pepper, ground spice, or any other pulverized substance.

It will undoubtedly be said that objections of this nature apply with equal force to what is called an invention in the patent of Seeger & Boyd. I freely admit it. Why such a patent should ever have been allowed is beyond my comprehension. It has been the practice to hermetically seal cans, bottles, and packages of every description from time immemorial, and for the purpose of preserving their contents in their original condition. The result in this case is precisely what every one would have expected; there is no new discovery whatever. Not even special skill is required to practice the wonderful art described; much less is there the least demand for the exercise of *inventive genius*. A mere child can put ground hops into a bottle and cover the cork with sealing wax.

The grant of such patents, for what is utterly unworthy to be called invention, is a fraud upon the public, and is to be condemned in the strongest terms.

Unfortunately, the patent of Seeger & Boyd is beyond the control of the Commissioner, and it therefore becomes necessary to formally pass upon the question of priority.

Judgment on this point must be given in favor of the patentees.

Lead Pencil Eraser.

Appeal from the Board of Examiners-in-Chief in the matter of the interference between the applications of Samuel D. Hovey, Joseph Illfelder, Philip Hufeland, J. Reckendorfer, and T. H. Muller for letters patent for an improvement in eraser attachments to lead pencils.

THACHER, Acting Commissioner:

The inventor of a short paper sleeve, which serves only to connect an India rubber eraser to a pencil, and does not cover the rubber so as to protect it and make it firm, is entitled to a patent for what he has invented only, and not for such a one as would embrace the latter feature.

Notwithstanding the patent thus allowed, a subsequent inventor of a paper sleeve, made long enough to cover and protect the rubber and strengthen the connection, may have a patent for it.

Where there is reason to doubt whether the only invention to which the successful party in an interference is found to be entitled is new, his application should be referred back to the Examiner to investigate the question.

The testimony in interference cases should be so construed as to conform to the preliminary statement of the party producing it; and such as is inconsistent with it should be disregarded.

The date of an invention originated abroad can be carried back no further than the time when specimens embodying it are shown, on satisfactory evidence, to have reached this country.

Judgment in favor of Hufeland.

DECISIONS OF THE COURTS.

United States Circuit Court, District of Connecticut. RUSSELL AND ERWIN MANUFACTURING COMPANY vs. MALLORY *et al.*

A suit in equity, brought by the Russell and Erwin Manufacturing Company against Mallory, Wheeler & Co., under letters patent granted to Rodolphus L. Webb, December 31, 1867, for "improvement in reversible locks and latches."

Before Judges WOODRUFF and SHIPMAN.

DEFENSES NOT SET UP IN THE ANSWER—COMBINATIONS—ABANDONMENT—ESTOPPEL—WEBB'S PATENT FOR REVERSIBLE LOCKS AND LATCHES.

If Webb's reversible latch was new and useful it was patentable, and his patent is not to be held invalid because he only claims the latch *when used in an outer case containing also lock mechanism*—and this even though there be no relation between the latch and the lock.

The statute secures to the inventor an interval of two years in which to test the usefulness and the value of his invention by putting it into use and on sale, without being thereby barred of his patent; and it necessarily follows that, from the mere lapse of the period mentioned, no presumption of abandonment can arise.

When by express enactment an inventor may have two years of trial in the public markets, putting his invention in use and on sale, and yet be entitled to a patent, there is no reason for concluding that he may not also have the like period at least within which to offer his right as an inventor to others—submit the invention to that test of its usefulness and value—and yet be entitled to his patent.

Where it appeared that, during a period of delay in applying for a patent, the first inventor had asserted a continuous claim as such, and a purpose to secure a patent on his invention, and had shown some, though inadequate, appreciation of its value, although another meanwhile had made the same invention and put it on sale: *Held*, that there was no abandonment.