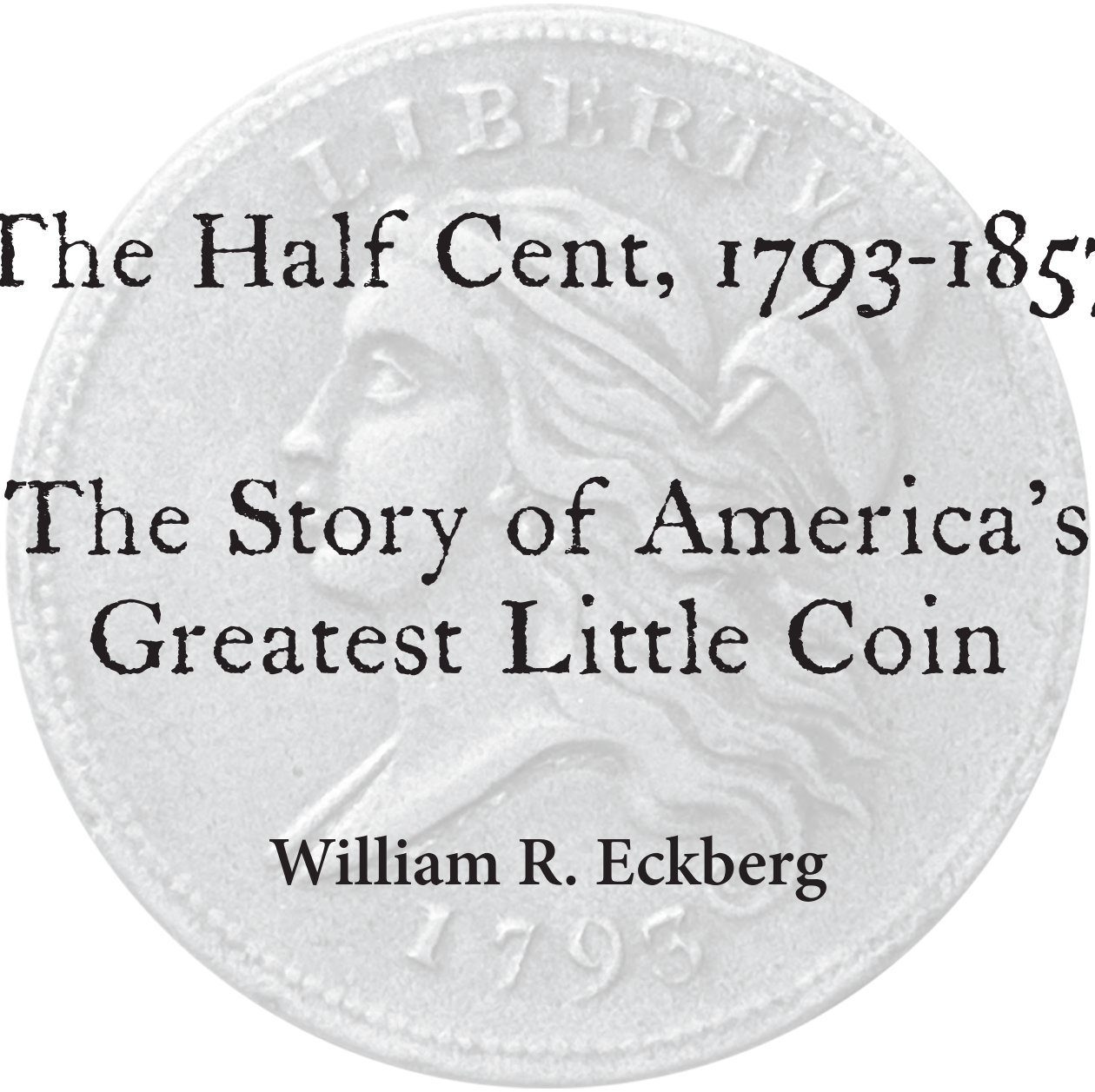

The Half Cent, 1793-1857

The Story of America's Greatest Little Coin

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Dedication

This book is dedicated with love to Susan, without whose love and support this book could not have been written,

and to our kids, Leighsa, Doug, Amy, Jim and the late Cynthia,

and to my parents, the late Irene and Bob, who started me on this journey, and my late brother, Don,

and with deep appreciation to all of my friends who collect and love early U.S. copper.

Preface

America's greatest little coin.

Great in size, history and interest. Little in buying power.

The mint didn't like making them, as it took twice as much work to coin the same dollar amount in half cents as in cents. They sometimes used any copper they had to coin them. Even then, they sometimes melted them down to make alloy for gold and silver coins. We've been told that the public didn't really want them, either. Fewer than 8 million were ever minted, and only a couple percent of those still exist today.

No half cent variety is as common as the "key" 1893-S Morgan dollar, so why are half cents affordable when a very low grade 1893-S Morgan will set you back $2,000? Braided hair half cents can be had for about $100, Classic Heads for $150, and Draped Busts for $500 in attractive Extremely Fine (EF). Half cents *as a denomination* are scarcer than the key Lincoln cent, the 1909-S VDB, which will set you back more in Good than a Draped Bust half cent in EF. *Half cents are truly rare coins, but they remain generally affordable.*

Half cents have fascinated me as long as I have been collecting coins, which I started doing in about 1959. My mother gave me a collection of old coins she had – mostly Indian Head cents, but also some really weird things like two cent pieces and nickel three cent pieces. I don't recall where she got them, as they were long out of circulation when she was a little girl. The prize coin that she gave me was a very nice About Uncirculated 1912 quarter eagle that her grandfather had in his pocket when he died. That is a coin I can never sell, but maybe my kids will after I'm gone.

Mom's little collection, which I carefully taped to cardboard to protect it(!), became the starting point for my work on the Coin Collecting Merit Badge in Boy Scouts. It was one of the first I earned on the way to Eagle. One of the requirements was to put together a type set, and that was how I discovered the smallest denomination the U.S. Mint ever made: the half cent. I couldn't imagine a coin worth so little or especially, that one worth so little could be so big! I managed to acquire low grade Draped Bust, Classic Head and Coronet examples. I learned much later that finding that 1856 half cent in low grade shouldn't have been all that easy.

I also acquired a dateless Liberty Cap large cent. I tried repeatedly to make out the date, but it was impossible. It was lightly corroded but had strong central detail on the obverse and none on the central reverse, which I eventually learned meant that one of the dies had buckled. At various times, I was sure it was a Head of 1793 or a Head of '95, always suspecting, of course, that it was the much more common Head of '94. Still, it was an amazingly old coin to me!

Girls, guitars, cars, college, grad school and a young family kept me from coin collecting for most of two decades. When the price of gold peaked in 1980, I sold a gold eagle that I'd purchased for something like $25 from Stacks in 1965 for a ***very*** handsome profit. I picked the right time to sell, too, as gold didn't reach its 1980 high again until 2007 and still hasn't reached that level in constant dollars!

That sale brought me into a coin shop for the first time in many years, and I started looking at coins again. By the late 1980s, I had a little disposable income, restarted my type set, and joined the ANA. In 1989 or 1990, I checked William H. Sheldon's *Penny Whimsy* out of the ANA Library, mostly in an attempt to see if I could learn anything about the dateless Liberty Cap cent of my childhood. I discovered surprisingly quickly that it was a variety called Sheldon-29. That I could figure the coin out without a date piqued my interest. I was quickly hooked on early copper, but a look at prices told me that collecting nice quality early date large cents would be beyond my budget, and there were too many late date varieties that looked exactly the same to my untrained eye.

At about the same time, I bought a Choice Uncirculated 1826 half cent from a local coin shop for my

type set. It was hard for me to believe that a copper coin so old could be so nice. Plus, the half cent set was a lot smaller, and I decided that as long as I didn't *need* the 1793s, 1796s or 1831, I could probably collect half cents. A visit to a regional Early American Coppers (known throughout the numismatic world as "EAC") meeting in Baltimore convinced me that EACers, and specifically the half cent guys, were great, and I joined. The welcome I got from them and the continued camaraderie with the many friends I've made in the club had a lot to do with my continued interest in early copper. Though I eventually acquired three of the 1793 varieties, the 1796s and 1831 still are beyond me.

I collected "budget quality" half cents pretty aggressively for about 5 years but had to sell my collection through an auction to help buy a house. I lost a little money overall, but I decided that I had had a lot of fun for five years for very little cost and so started collecting again immediately. I sold my second, much finer, collection through a fixed price list in 2008 and continue to collect half cents that catch my eye and that I can afford – a not simple pair of needs to meet simultaneously.

My adult career as a biology professor meant that I was always involved in research as part of my job. I have always loved the process of discovery and the use of the scientific method to challenge old ideas. That led me to study half cents using the mental and experimental approaches I had learned as a scientist, and that led to a substantial number of articles. Most have been in *Penny-Wise*. Others, mostly not specifically about half cents, have appeared in *The Virginia Numismatist*, which I edited for several years, *The Numismatist,* published by the American Numismatic Association (ANA), *Coin World* and *Numismatic News.*

Penny-Wise is the "house organ" of EAC (www.eacs.org). The club has about 1,100 members across the United States and a few more overseas. EAC is unlike nearly every other coin club I've known in that the members truly love the coins and each other. It is the only coin club that puts on an independent national convention every year. The convention moves around the country and features educational seminars that are often better-attended than those put on by the ANA at its much larger conventions, and a private sale that is very popular with the membership. For many of the members, the EAC convention is the only big coin show they attend, and hundreds come every year. I encourage anyone who reads this book to join EAC (www.eacs.org/join-eac). It's the greatest coin club in the United States and a bargain.

All of which brings me to this book. A great deal is known about half cents that was not known in the 20th century. Much of the information is available, but it is in disparate and non-obvious places. It seemed a good idea to bring it all together. Ideally, a secondary bonus would be to stimulate interest in collecting our smallest denomination. These are genuinely rare coins. To repeat what I said at the beginning of this essay, even the most common half cent is rarer than the rarest Morgan dollar. Plus, these coins have historical importance and great charm. As the collecting base is not too large, most are reasonably priced and well within the budget of anyone who can sink a few hundred dollars into coins. Unlike that 1893-S Morgan that costs over $2,000 in Good and 6 figures in UNC, many much rarer half cents can still be had in attractive Very Fine or better for $100. There is great value in half cents both monetarily and for the student of the series.

Their history dates to the earliest days of the United States of America. The congressional act that authorized the Mint also authorized the half cent. The vast majority of the half cents were produced during the presidencies of Washington, Adams, Jefferson and Madison. How much more historic can you get? The artistry behind even the earliest and most primitive half cents is really quite beautiful.

I hope the reader will learn something and will be stimulated to enjoy half cents even more than before. I also hope that others who do not yet know the pleasures of this series will be stimulated to get involved.

William R. Eckberg
West Palm Beach, Florida
January, 2019

Foreword

One half cent: The very words have an odd ring, in an age grown accustomed to nothing less than a quarter dollar having any purchasing power. And yet, as Bill Eckberg notes in this masterful book, when first coined by the Philadelphia mint, the half cent had roughly the purchasing power of our current quarter. Thomas Jefferson in particular had insisted on the inclusion of such a denomination, to facilitate those necessarily small purchases in the day-to-day lives of the poor. It was never glamorous. But once, it was commercially important.

Nor has it ever put a gleam in the eyes of those to whom "coin collecting" implies "big and shiny." Last struck 162 years ago, it has never found much of a place in those odd accumulations of "old coins" of which every grandparent seems to have set aside a handful. At least, not for those of us whose grandparents themselves were born decades after the last half cent fell from the press. Indian cents and bits of old silver were far more likely. Though a second cousin once gave me an 1849 half cent on which the denomination had been tooled off, to facilitate its passage as a full cent!

For decades, the half cent lived in the numismatic shadow cast by its contemporary "big brother," the large cent. It has been suggested that it was less popular because of the several long interruptions in its coinage. I think the explanation may be more nuanced than that. First, half cents, overall, are much scarcer than large cents; 21 times as many large cents were struck over the life of both series, 1793-1857. Popularity is related to collectability, however indirectly. Second, half cents suffered for years from indifferent attention. Frossard's 1879 monograph on both series devoted only 10 of 58 pages of text (and 1½ of nine plates) to half cents. And his half cent descriptions tended to be rudimentary. For example, the dozen die marriages of 1804 are dismissed with "There are several slight varieties of the date." The attribution points for one of these reads, "Plain 4, no stems to wreath, *etc*." *Et cetera*: that's what half cents were to large cent authors!

As Eckberg notes, in the last century, several authors endeavored to correct this sort of descriptive inadequacy. But only Walter Breen, who added a great deal of historic background on the half cent series, is useful today (though Roger Cohen appears to have won the Battle of the Attribution Initial, "C" numbers being far more commonly used than "B" numbers among half cent collectors.) More recently, other authors have offered die state studies or pocket attribution guides. But the strongest recommendation in favor of the volume in your hands is, over the past 20 years, the author's own researches have substantially rewritten the narrative of what we "know" about the first half cents: how they were made, and who created them. These, and his studies of their availability in the numismatic marketplace, make this a unique and valuable addition to the literature of the United States half cent.

Finally, until now, the half cent has lacked an author able to write in an engaging conversational style while incorporating solid research evidence. As a trained scientist and lifelong teacher, Bill Eckberg is well suited to become the first to do so. Among the literature of early American copper as a whole, we have had homey narratives littered with pseudoscience, and *ex-cathedra* pronouncements aplenty. We have also had way too much "history" written in the past subjunctive: narratives introducing each unsupported assertion with a phrase such as, "Surely there would have been. . ."

You will find none of that sort of thing here. What you will find is the voice of an enthusiastic collector who has made some unexpected discoveries over the course of his thirty years' pursuit of the American half cent—a fascinating and still underappreciated series.

--Harry E. Salyards

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Introduction

Numismatists often write the book they wish they could read. This book is no exception, but what is the need for a new book on half cents? Haven't there already been several books on the subject? Why do I wish I could read this new one? The short answer is that there's a lot that is missing or wrong from those earlier books.

There were three major books on the subject in the late 20th century: Roger S. Cohen, Jr's *American Half Cents – the Little Half Sisters* (two editions dated 1971 and 1982), *Walter Breen's Encyclopedia of United States Half Cents 1793-1857* (1983) and Ron Manley's *The Half Cent Die State Book 1793-1857* (1998). However, the reader will note that even Manley's book is now twenty-one years old, and a great deal has been learned about half cents in the last twenty plus years.

There are also older books. Édouard Frossard's 1897 *Monograph of United States Cents & Half Cents* was first, followed by Ebenezer Gilbert's *The United States Half Cents* (1916). Bowers and Ruddy published *United States Half Cents 1793-1857* (1962), though it was actually written by Walter Breen. All of these are of historic interest, only.

Four other books and an important auction catalog have appeared since Manley. Gregory S. Heim's *A Quickfinder for Attributing Varieties of Business Strike United States Half Cents: 1793-1857* (two editions dated 1997 and 2013) and Michael A. Demling's *A Comprehensive Analysis and Attribution Guide of United States Half Cents* (2016) both focus on attributing varieties but provide little beyond that and no new research about the series. *A Guide Book of Half Cents and Large* Cents by Q. David Bowers (2015) is a good introduction that provides a great deal of information on the history, varieties and populations of both half cents (including contributions from the present author) and large cents. The fourth book is the *Grading Guide for Early American Copper* Coins by Bob Fagaly, Dennis Fuoss, Ray Williams and myself. It focuses on grading and provides additional information on collecting, counterfeit detection and attribution. Of equal value for attribution and beautiful photos of beautiful coins is the *Missouri Cabinet Collection of U.S. Half Cents*, a 2014 must-have auction catalog of the fabulous half cent collection jointly assembled and owned by R. Tettenhorst (Bernard A. Edison) and Eric Newman and presented by Ira & Larry Goldberg with Bob Grellman & Chris McCawley. This was the only complete collection of half cents ever offered, and most of the coins were the finest or nearly so of the variety. All were presented in high-resolution, exceptionally clear, color photographs. The author has learned much about half cents from the images in this catalog.

In many ways, we can think of the Cohen and Breen books as the yin and yang of half cent scholarship, with Manley filling an important niche in between. Of the three, Cohen is now only of historical interest, though his book can be said to have begun modern interest in half cents, and he studied both the coins and the then known US governmental documents. Cohen's book ran 105 pages in the first edition and 131 in the second. The "C" numbers we use to identify varieties are derived from the first edition of his book.

Breen's massive tome – 501 pages plus 11 color plates – was a major addition to the literature. It presented vast amounts of information from governmental archives as well as a (usually) better emission sequence. His book is the place to go to find information about copper deliveries and ancillary historical notes. I advise readers to obtain and use a copy; you will find only a little of Breen's

archival information repeated here. Unfortunately, Breen's notes were often unwritten and when written less than precise. He made many conjectures that, in the absence of actual evidence, were stated as (or later became in the minds of many) pronouncements of fact, but were not. He made the first serious attempt to study die states, but too much of what he wrote about them proved to be wrong. He renumbered the varieties ("B" numbers) to correspond to his much more accurate emission sequence, but his numbers never caught on with the collectors and dealers in the field. Unfortunately, the number of errors in Breen has kept many readers from delving into his book as the rich source of excellent information that it is. This book attempts to correct a number of Breen's errors.

When I discuss errors, I'm not just talking about mistakes in die state sequences which can easily be corrected, but mistakes in fact that are difficult to track down and correct. To give a well-known example from the numismatic literature that does not directly relate to half cents, there is no evidence linking the "Continental Dollar" coins to Congress and none demonstrating their existence before 1783[1]. They are now believed by many not to have been made in the US in 1776, but to have been made in Europe after the Revolutionary War[2,3], though there is not universal agreement on the subject[4]. Thanks to many auction lot descriptions, collectors seem to "know" that they were made under Congressional orders in the United States in 1776, though prices have dropped substantially in the last three years because of the revisionist literature. In the half cent world, one great error that has been perpetuated for over 100 years was that the obverses of the 1793s and at least the first 1794 were all hand-engraved. As you will see in this book, they were not, and the hub that created the 1793 obverses pre-existed from a known 1792 pattern for a different denomination! Another is that Adam Eckfeldt designed and engraved the head of 1793[5]. There are many pieces of information in the numismatic literature like these that are demonstrably false, yet believed by almost everyone. This book will correct many such errors, but there are undoubtedly others not yet recognized.

Manley's book, at 300 pages, splits the difference in size. It focuses on die states, with a secondary focus on die rotations. His die state evidence has stood the test of time over the past 20+ years and has supplanted Breen's die state information. Cohen provided little information about die states. Most auction catalogs give the Manley die state of coins.

What does this book offer that is different?

I have tried to do several things with this book that are different from previous publications. Most obviously, the images are large and in color, neither of which was offered by any previous half cent book. Cohen's images were small and of poor quality. Breen's and Manley's were of much better quality, but still, other than Breen's lovely color plates (limited to one image per year), only in black and white. Even the Demling book, which shows images of the Missouri Cabinet coins, only shows images that are largely diagrams. The colors that early coppers develop are a truly beautiful and important aspect of curating (selecting the coins for) a collection. Aesthetics are and should be important to collectors.

1 Eckberg, Bill. 2015.
2 Goldstein, Erik and David McCarthy. 2018.
3 Goldstein, Erik. 2018.
4 Kleeberg, John M. 2018.
5 Taxay, Don. 1966.

Second, I have tried to show coins that normal collectors might actually see, rather than the finest knowns of each variety. Indeed, where possible, the coins used to illustrate die varieties have come from the collections that I have assembled over the past three decades on a relatively modest budget. That said, there are varieties – both of those of 1796, for example – that I have never owned. Decent-looking examples of those were and are far beyond my budget. Maybe they're beyond yours, too. Even for those, I've selected images of coins that were more typical than superior. Most half cents are affordable to most collectors in nice Very Fine or better condition. All images, photographic and otherwise, that are not attributed to another source, are by the author. However, in a few cases, I've added images of coins that are "eye candy," just for your pleasure.

Third, I have avoided showing each obverse and reverse more than once. To my mind, this avoids needless duplication (and helps to keep the price of the book quite a bit lower than it otherwise would have to be). By numbering the varieties by obverse/reverse die pair, I have emphasized the fact that many dies were used for multiple varieties, including sometimes in different years. This emphasis was accomplished by illustrating the first appearance of the die and referring back to the earliest variety in which it was used for subsequent coinages. The Stemless Reverse, for example, used on four different varieties over three years, is illustrated only with its first obverse die, the 1804 Plain 4. I have always thought that repeatedly illustrating products of the same die is confusing and wastes space. The only exceptions to this are two cases where the die changed significantly. Obverse 1 of 1795 was heavily lapped, producing the no-pole varieties of the same year. Obverse 2 of 1804 became damaged, producing the Spiked Chin. Both of these dies are illustrated in both of their incarnations.

Fourth, I have avoided discussing two topics that are addressed extensively in the other books: the history of half cent study and collecting, and pricing. In the former case, both Breen and Cohen addressed the topic well. Since they wrote, the Missouri Cabinet, the first complete collection of half cents, has been sold at auction. There is now, in Texas, the second complete half cent collection. Until a second example of 1794 3-D with large edge letters is discovered, there can only be one complete collection at a time.

It seems that variety collecting may be less dominant than it was a couple of decades ago, but many half cent collectors continue to assemble variety sets. There is controversy over what constitutes a variety set. Cohen listed 99 varieties that, to many, still make up the canonical set. However, he included two striking variants as varieties (the heavy planchet 1795 1a-C and 1a-D) that even ***he*** eventually decided should not be given variety status[6]. He also included the 1831, of which I and others[7,8,9] believe no business strikes exist. Subtracting those reduces the set to 96 coins, and if we are only going to include obverse/reverse die combinations in our definition of "variety," there are six extra edge lettering subvarieties in 1794, one in 1795 and two in 1797, reducing the "variety set" to 87 coins from 62 obverse and 57 reverse dies, all of which are obtainable, eventually, by the serious collector of means, as more than a dozen are known of every variety. Some, however, remain quite costly! Other collectors assemble date, *Red Book* or type sets. I hope this new reference will stimulate half cent variety collecting, as it is the study of varieties from which we can learn most about the artistry and technology that went into the production of these fascinating coins.

6 Packard, Michael. Personal communication.

7 Julian, R.W. 1991.

8 Manley, Ron. 2000b.

9 Julian, R.W. 2000.

With respect to pricing, I have written extensively on the subject in the pages of *Penny-Wise*[10,11,12,13], and I refer the reader to those articles, which can be found on the Newman Numismatic Portal (https://nnp.wustl.edu/library/publisherdetail/511683). Half cents, and early copper in general, do not seem to be subject to the same wild swings in price that many of the more modern coins undergo. Instead, they seem to have fairly long periods of price stability followed by an increase, followed by another period of stability, and so on.

In contrast to pricing, I have addressed grading, albeit rather briefly. When we talk about grading, we have two ways to do it. We can talk about the commercial or the EAC (Early American Coppers) grade[14]. Commercial grades are those assigned by the third-party grading services that put coins in slabs. Those grades are intended to define the coin's price, whereas the EAC grade defines how it has changed since it was struck at the mint. Many copper specialists pay little or no attention to the slab grade and rely exclusively on the more rigorous EAC grade, and the evidence shows that slab grade has little impact on the prices that early coppers bring at auction[15]. Indeed, early copper grading is its own niche in American numismatics. It has stood the test of time, and both collectors and the specialist dealers follow EAC grading procedures[16]. Readers are encouraged to consult the EAC *Grading Guide* for more about EAC grading.

Finally, and most importantly, I have included a great deal of the research that has been done on half cents since the Cohen, Breen and Manley books were published. Better information is always a good thing to have. There are obvious errors in both Breen and Cohen, though Breen's get more attention. A great deal is known about this fascinating series that was not available to those earlier authors. I have tried to emphasize it here, and by doing so, to correct as many as possible of the errors that have crept into the literature over time.

I have made great efforts to stick to rigorous standards of evidence in suport of my conclusions. Too much numismatic "knowledge" is derived from guesses that are presented as facts. Unless we were there and recorded the events around half cent production, we have to rely on various kinds of evidence (see below) and be prepared to make conclusions from them. We must follow the evidence objectively, wherever it leads. We do this by weighing the evidence in terms of its quality and specificity. **In general, information that is closest to the origin (the coins themselves and *contemporary* Mint records) is best. Later authors and even later Mint reports are less reliable, as errors accumulate in the record in the same way that mutations (errors) accumulate in genes over time.** Secondary sources of numismatic information degrade knowledge over time, whereas new information helps numismatic knowledge evolve in a more productive direction.

When we provide facts, we must do our best to provide the evidence behind them. When we speculate, we must make it clear that is what we're doing. Too often, numismatists have provided their conclusions and speculations, but not the evidence behind them. A healthy skepticism has allowed me and others to reinvestigate a great deal that we thought we knew about early coppers and to come up with, in many cases, radically different understandings. We should expect all authors

10 Eckberg, Bill. 2013a.
11 Eckberg, Bill. 2013b.
12 Eckberg, Bill. 2013c.
13 Eckberg, Bill. 2013d.
14 Eckberg, Bill. 2018a.
15 Eckberg, Bill. 2018b.
16 Eckberg, William R., Robert L. Fagaly, Dennis E. Fuoss and Raymond J. Williams. 2014.

to provide the evidence behind what they say, and I hope you, the reader, will hold all of us to that standard. Fortunately, this is the trend among the newer generation of numismatic researchers, so we can look forward to better information about many areas of American numismatics.

How do we study half cents?

New research sources and techniques have yielded substantial new knowledge in the 35+ years since Cohen and Breen published. I have found two general sources of information to be equally and synergistically valuable: the coins, themselves, and records of the Mint and other governmental entities.

Coins have always been able to tell us approximately how many of them exist, and, by studying die states and features of their engraving, much about the order in which their dies were made. That is not necessarily the order in which the *coins* were made. For example, I have provided evidence suggesting that the AMERI. reverse was not the first Chain cent reverse made[17]. It was the first used, but probably not the first made.

Better information on rarity has been discovered by the statistical analysis of random populations of coins and from new information from collectors. This had apparently not been done systematically with half cents as it had been with early date large cents. It can have a dramatic effect on the supposed availability of varieties. For example, there is no longer ***ANY*** half cent die variety that is considered R7 or R8. 1804 2a-C (Spiked Chin with triplet leaves at F) was thought to be high R5 until Ron Manley identified over 100 unique specimens making it no scarcer than mid R4. 1809 2-B, unknown until 1954 and believed to be high R6 in the 1980s, is now considered only high R4! Rare coins can get much more common over time, if they closely resemble a much more common variety. Knowledge of these unusual varieties is the basis of cherrypicking.

As might be expected, the discovery of many more specimens over the past 35 years has affected condition censuses. Nobody has ever kept an accurate condition census of half cent varieties, despite Roger Cohen's limited attempt many years ago, largely because half cents had not been studied as intensely as large cents over the years. It would be extremely difficult to attempt such a project today, as many high-end half cents have found their way into type or registry sets and are probably unavailable to the half cent community. Thus, the coins would have to be rated from photographs, and that is far from ideal. Because of all this, identifying the best of each variety has become all but impossible. Where relevant, I have attempted here to give information on the grade ranges of the finest examples of each variety without enumerating which coin is #1, #2, *etc*. The owners of the finest half cent collections have always been extremely generous in sharing their coins with others, enriching us all. However, identifying the "finest known" is a matter of opinion, not of fact. I believe the facts are more important than my opinions or anyone else's.

We cannot forget the importance of new technologies in the study of the coins. Digital imaging and image analysis have opened up completely new areas of research. We now know things about the dies and hubs that created our coins about which researchers of previous generations could not even dream. The author has been deeply involved in such research in recent years, leading to new discoveries about the ways in which our half cents and other coins were produced from the very beginning. Also, the great explosion of information on the Internet has influenced our knowledge

17 Eckberg, William. 2018c.

and study of coins. We now have relatively easy access to information that was either completely hidden or very difficult to access, thanks in a large part to the Newman Numismatic Portal (http://nnp.wustl.edu). Additionally, many early government documents have been placed online for our use, thanks to our tax dollars. These create research opportunities, of which we could only have dreamed a few short years ago.

Some sources of information have to be used carefully. Do you believe everything you read online? I hope not. But do you believe everything you read in books and scholarly journal articles? I hope you have a healthy skepticism about those, too. We should all be careful to demand the evidence behind published statements. Frequently, I have found when researching old information that the supporting data cannot be found and probably often do not exist.

Another source, the *1/200 Survey and Directory* languished for a number of years, and the 2015 version, the most recent, only featured about 50 collections. Such surveys can be of value as well as interest, and they promote the hobby in important ways, but we need to be careful how we use them. One can tell a little about the relative rarity of varieties from such a survey, but there are limits. Collector surveys inherently distort the availability of varieties in the R1-R4 range, unless they are *Red Book* varieties, for which the target audience is much wider. If only 100 collectors are seeking a given variety, a coin of which 200 exist can be almost as easily acquired as a coin of which 2000 exist, and coins with very different surviving population sizes appear at relatively similar numbers. For example, in the 2005 *Survey*, which featured a much larger collector base, the 1804 5-G (plain 4 without stems), by far the most common half cent of all, was represented by a total of 166 specimens, the far less common 1808 2-B by 178, and the 1807 by 185. Obviously, dates with a single variety will be represented heavily in such variety databases, because some collectors pursue date sets. By contrast, 100 of the scarce 1804 2a-A were reported. Nobody could guess the actual availability of these varieties from the *Survey*, but that doesn't take away from its value. On the other hand, more examples of some varieties have appeared in the surveys than the total that was believed to exist. Thus, they have been used to correct rarity ratings.

Additional governmental records have been discovered and consulted. In particular, the *Treasurer of the Mint Receipts for Copper Coins*, rediscovered by Craig Sholley, has been a critical source of information about the dates the early half cents were struck and delivered. It provides much more detail and specificity about when and how many coins were delivered in the early years than was available from the Director's warrants. In many cases, it is possible to give a solid estimate of the actual dates varieties were delivered by comparing the Treasurer's receipts to the sizes of the surviving population. Study of the Treasurer's receipts and surviving population has also been used to test proposed emission sequences and has disproved some that had been published.

Much new information has been developed through the use of these sources. However, much of it is either unpublished or has been published piecemeal over 20 years, mostly in the pages of *Penny-Wise*, EAC's journal, but also across a variety of other numismatic periodicals. To assemble an up-to-date compendium of all of the recent research would be a challenge, so when I set out to do it, I thought that it would be useful to half cent collectors and others interested in the field if it were made available to everyone. Hence, you have this book in your hands. I hope you find it interesting and enjoyable.

I also hope that this book will stimulate interest in and enjoyment of these fascinating coins.

Variety Identification

How should the varieties be identified? By nickname or by number? If by nickname, whose? If by number, how and whose?

Maris gave us charming and erudite nicknames for the 1794 large cents[1] that some still use today. Alas, the only half cent nicknames we have are rather pedestrian and refer to mundane die characteristics: 1802/0, Spiked Chin, Stemless Reverse, no pole, *etc*. One could wish for greater creativity on the part of past students of half cents, but we have what we have.

Several attempts over the years have been made to number the half cent die marriages (varieties). Édouard Frossard's[2] is only of historic interest. Ebenezer Gilbert[3] was the first to number the whole series, and we occasionally see old envelopes with "G" numbers today, but his numbering had no logical basis. Walter Breen developed three different numbering series for half cents. The first, a straight through system similar to Sheldon's for early large cents, but that otherwise followed Gilbert's sequence, was published in *United States Half Cents 1793-1857* by Bowers and Ruddy[4] ("E" numbers for Empire, Bowers and Ruddy's company at the time, when referred to at all). The second was in his familiar half cent *Encyclopedia*[5] ("B" Numbers). The third was part of his system for numbering all varieties of all US coins in *Walter Breen's Complete Encyclopedia of U.S. and Colonial Coins*[6]. Roger Cohen's numbering system, "C" numbers[7], seems to be the one that is in general use, but it suffers from being based on his original and incorrect emission sequence.

More recently, Greg Heim[8] has suggested a return to numerical obverse, alphabetical reverse designations. For example, the first variety of a year would be 1-A: Obverse 1 and Reverse A. I concur that this is an excellent idea and have adopted the system, except I have numbered the varieties in their emission sequence, as it is understood today, rather than in Cohen's sequence. In the cases where a die was modified, whether intentionally or by accident, and then used later with other reverses (Obverse 1 of 1795; Obverse 2 of 1804), the modified dies are referred to as 1a and 2a, respectively.

As all of this may confuse some readers, I have cross-referenced the variety designations to the Cohen and Breen variety numbers as well as the *Red Book* descriptions. I have no doubt that Cohen's numbering system will continue to dominate half cent collecting, but I present the new system in hopes that it will make the half cents more understandable to collectors by emphaizing the second, third, fourth and fifth marriages of dies over the years.

1 Maris, Edward. 1869. Updated with additional charming names in 1870 under the same title and publisher.
2 Frossard, Édouard. 1879.
3 Gilbert, Ebenezer. 1916.
4 Bowers, Q. David and James F. Ruddy. 1962.
5 Breen, Walter. 1983.
6 Breen, Walter. 1988.
7 Cohen Roger S., Jr. 1971, 1982.
8 Heim, Greg. 2017.

Grading[1]

There is no topic in numismatics that is more controversial than grading. It shouldn't have to be that way, but it is. Grading a coin is just a means to tell its quality relative to others of the type. Quality, by definition, is NOT quantitative; not everyone will agree that coin A is nicer than coin B. Beauty is in the eye of the beholder. Chacun son goût. We all have different tastes. *Et cetera.* Therefore, Sheldon's "quantitative" grading scale was beyond doubt the worst mistake ever foisted on coin collectors. I realize that most early copper collectors just use the numbers as a shorthand for adjectival grade, but that wasn't their purpose, and it isn't the way most other collectors think of them. It was not even supposed to be a grading scale, but a scale that related the *prices* of 1794 large cents in the 1940s to their grade. Nevertheless, he called it "*A QUANTITATIVE SCALE FOR CONDITION*." We can argue that the excesses of quantitative or numerical grading – and especially the inconsistencies of the third-party graders (TPGs) – were the fault of others, but Sheldon started it. We need to face the fact that he did us no favor with his obsession over quantitation. Grading is not and can never be quantitative, and it's harmful to pretend that it is.

To try to bring EAC back to traditional grading, consistent with the usage in the Cohen, Breen and Manley books, I use only adjectival grades:

Basal State (BS) – the coin is identifiable as to type, date and variety and is unmutilated, but it need not show a readable date or legend.

Fair (Fr) - less than half of the legends are readable.

About Good (AG) – most of the obverse and reverse devices are visible; the rims are worn down into the peripheral lettering.

Good (G) – obverse and reverse devices are fully outlined. Peripheral lettering is complete or nearly so.

Very Good (VG) – some hair detail is visible on the obverse. There is a full rim on both the obverse and reverse where struck up.

Fine (F) – at least half the hair detail shows on the obverse; leaves on the reverse are partly separated.

Very Fine (VF) – at least two-thirds of the hair detail shows on the obverse; leaves on the reverse are further separated and often show veins. If any porosity is present, it must be even and microscopic.

Extremely Fine (EF) – nearly all of the hair and leaf detail clearly show, with only isolated spots of wear. Traces of mint luster (cartwheel or frost) may, but need not, be present, mostly around the stars, letters, numerals and within the hair and wreath.

About Uncirculated (AU) – there are tiny rubbed spots separated by remaining luster. Coins at this level and above may not have any porosity, no matter how minor or microscopic.

Uncirculated/Mint State (UNC) – there is no trace of wear on either side of the coin.

1 For a full discussion, see Eckberg, Bill, Craig Sholley and Harry Salyards. 2018.

The astute reader may have noticed that I have thus far said (almost) nothing about third-party slab grades. Early copper grading has almost nothing in common with the slippery and frequently changing "standards" of third-party graders. The reason for this is simple. Commercial (*i.e.*, slab) grades are an attempt to describe a coin's price, so if the market is weak, commercial standards get tougher, and if the market is stong, they get looser. Thus, the slab grade of your coin depends on when it was graded. Of course, that doesn't really work, because if the market is particularly weak, prices drop irrespective of the slab grade.

The EAC grade is an attempt to describe a coin's quality and the way it has changed since it was minted, so the EAC grade should be constant unless the quality of the coin changes. The commercial and EAC grades both reflect a combination of wear and surface quality, but their purposes are different. Thus, comparing the two would be like comparing a Lamborghini Aventator to a Mack truck. Though you can drive from one place to another in either, they have completely different purposes and so cannot be directly compared. But the coin is the same whether graded according to EAC or commercial standards, so its value should be the same either way. If the thing that is most important to you is the price, by all means feel free to pay attention to the commercial slab grade, but know that most early copper collectors don't much care about that. If the quality is what is more important to you, the EAC grade is much more accurate.

The EAC grade begins with the amount of original surface remaining. That gives the basic grade as described on the previous page and illustrated on the next. It then factors in the surface quality. Is it better than what is typical for the sharpness grade? About normal? Worse? How much better or worse? If a coin is substantially more attractive than average for its grade, we call it "choice," and it may price as if it had a higher grade. If a coin is damaged in some way and so is signficantly less attractive than average, it is a problem coin and, unless particularly rare, has far less value, as there is little demand for such coins. Such problem coins are often "net graded" signficantly lower than their sharpness grade would indicate, and the value of such a coin is less than the value of an average coin in the net grade.

The astute reader will note that I have not used numerical grades in this book. That was intentional. Does it make sense to have five different grades to distinguish between two-thirds (VF) and nearly all (EF) of the hair detail? I will not use numerical grades until someone can define for me the exact differences in detail required for the four different grades of VF that Sheldon and the TPGs used, exactly what is entailed in three different grades of Good, *etc*. I don't know of anyone who claims he can do this, so I'm not worried.

Since EAC and slab grades are different creatures for different purposes, the grades obtained by the two methods do not necessarily have anything in common. ***Unless explicitly stated, the grade ranges I give in this book can in no way be correlated to slab grades. Please do not try!*** Having said that, though, the population reports of the TPGs can be useful tools for understanding the extent of availability of a variety in higher grades.

HALF CENT GRADING GUIDE

This guide is based on the standards in the *Grading Guide For Early American Copper Coins* published by EAC. Like any guide, the drawings should be taken as showing the minimum acceptable detail at the grade level indicated. The Braided Hair series is not shown in grades below Fine as that type is rarely encountered or collected in low grades.

The style of the illustrations is adapted after that of *A Guide to the Grading of United States Coins* by Brown and Dunn, with permission of Whitman Publishing.

Rarity

In EAC we have long used a modified Sheldon system for rarity. There are several versions of that, one of the more popular of which is:

2001+	R1	common (some consider R1 to be 1251+)
601-2000	R2	not so common (some consider R2 to be 601-1250)
201-600	R3	scarce
76-200	R4	very scarce
31-75	R5	rare
13-30	R6	very rare
4-12	R7	extremely rare
1-3	R8	unique or nearly unique

The numbers for R3-R1 were added later by others, but what good is it to say a coin is "scarce" if we don't define what "scarce" actually means? And coin rarity is context-dependent. The 1893-S Morgan dollar is considered "The King" by specialists, but over 9,800 have been certified by the two largest third-party grading services. There may not be a single half cent variety that is as common as that "key" variety. So, rare means something completely different to an early copper collector than to a Morgan dollar collector. As of this writing, nine times as many 1909-S VDB Lincoln cents, the key to that series, have been certified by the two largest third-party grading services as *the most frequently certified* half cent variety. We need numbers to talk meaningfully about rarity.

Unfortunately, use of the Sheldon rarity system, like his "quantitative" grading system, sends us down a rabbit hole which we should avoid, if possible. The problem is its imprecision, which is remarkable for a system developed by someone as obsessed with quantitation as Sheldon was. People tend to think of the rarity factors as having discrete meanings. We *know* what R4 means, don't we? It means a variety is tougher and more expensive than an R3. But that simplistic thought doesn't hold up. R4 (76-200) means some number of coins exist of the variety. But are there 200? Or 76? The difference matters. Because we can never know the *exact* number of a variety that exist, such ratings can be very misleading. If approximately 200 of a variety are known to exist, is it R4 or R3? Do we just punt and call it "kind-of-very-scarce?" A coin with just over 75 in existence is much harder to find than one with just under 200, but their rarity ratings are the same. We can even say that a coin with 76-80 survivors is closer in availability to all R5s than to many other R4s.

Knowing a rarity rating only gives us knowledge of its availability within a factor of three. The addition of + and – categories helps, but not enough. Thus, rarity ratings have inherent weaknesses that make them confusing and misleading. I have therefore not used Sheldon-style rarity ratings but have used more precise numbers to describe the surviving population of each variety. This can be done for half cents, as I did a statistical study of all R1-R4 varieties that narrowed down the size estimates of the surviving populations considerably[2]. For the rare varieties, I relied on reports of the existing population sizes. Mike Spurlock did a study to learn the true population sizes of the rarest varieties, and published them[3]. One important discovery he made is that there no longer are any *varieties* that are R7 or R8. Edge device subvarieties of extreme rarity still exist, including a couple that are unique or semi-unique, but there are no extremely rare varieties.

2 Eckberg, William R. 2000c.

3 Spurlock, Michael. 2013.

Master Dies, Hubs, Working Dies and Type Sets

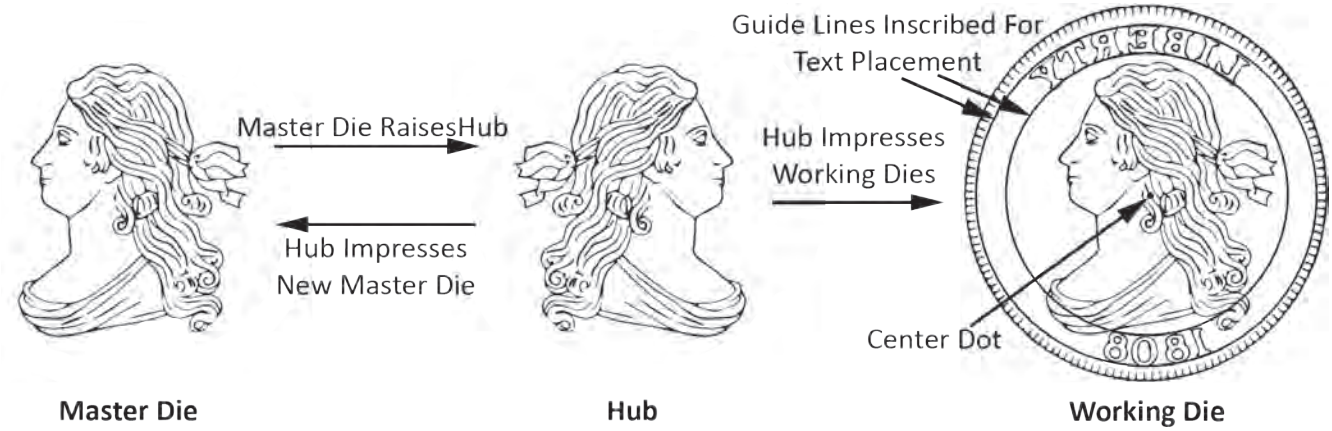
With the exception of the individually-engraved Chain cents, all obverse dies for United States coins, including all half cent obverses, have been produced from hubs. Six obverse and four reverse hubs were created for the American half cents. Each represents a new design, though the 1840 reverse design was closely patterned after that of 1809.

The time to engrave an obverse die or a hub by hand was (and still is) several days. Thus each of the four obverse dies for the Chain cents took far longer to engrave than it survived in coinage. Obviously, that could not continue, and hubbing was the only solution. A die struck from a hub can be completed in a day or less. Also, multiple dies that are virtually identical can be produced from a single hub. The similarity of the coins produced from zzzzhubbed dies made counterfeiting much more difficult. Today's complete hubs require no hand-engraving to finish them.

We know that Robert Scot's procedure was to cut a master die, often called a matrix, which is essentially a die used to make hubs[1]. Its design is incuse and contains all of the elements that are to become part of the hub. Master dies and hubs need not be the size of the final die unless the entire design is in the hub. As we will see, other than a less than satisfactory experiment in 1794, only the 1840 and later dies were produced from complete hubs, minus the date, of course. Most hubs consisted of just the head or wreath, and sometimes not all of the elements of those. The peripheral lettering and date were added manually using punches. Unfortunately, none of Scot's master dies or hubs have survived to the present, but their makeup can be easily inferred based on the known organization of the surviving dies. The inferred structures of each of the hubs are illustrated in the following chapters.

Guide line between S O used to aid the engraver in positioning the lettering.

The center dot seen on early dies had an important function. It was the center point for the compass that the engraver used to



Orientation of master die or matrix (left), hub (center) and working die (right). If the engraver starts with a reversed and incuse master die, it can be used to raise a hub, which is in relief and faces the same way the coins will. The hub can then be used to punch in the working dies, and/or it can be used to punch in new master dies that can be used to raise more hubs. This is how dies get mass produced. The center dot and guide lines were used for text and date placement.

1 Finkelstein, David. 2017.

scribe circles (guide lines) to indicate where he was to punch in the legend. These lines were usually lapped out during polishing and basining of the die, but sometimes remnants were left behind. We recognize many varities of early coppers because the letters and numerals were individually punched into the working dies, and their punching was imprecise.

The methods and procedures used in the production of hubs from master dies and working dies from hubs was straghtforward. Using a large screw press, an annealed (softened) steel die body was impressed into the master die to create a hub with its design in relief, exactly as on the coins that were to be produced. This process is called hubbing. We can think of the master die as the parent of the hub. The hub would then be hardened by heating until red and plunging into cold water. While this process hardened the steel, it also caused it to become quite brittle, so the hub was "tempered" by heating to a deep straw color and allowed to air cool. This tempering reduced the hardness somewhat, but also made the steel far less brittle and far more fracture resistant. The hardened and tempered hub was then polished to remove any heat scale and, in the large screw press, used to impress the design into an annealed die body to create the working die. Thus, the hub is the parent of the working dies and the master die is their grandparent. A hub can also be used to create a new master die by the same process. The "hub flaw" in the Classic Head obverse master die (p. 87) was reduced at least once by tooling a hub that was then used to create a new master die. We should be careful about carrying the ancestry metaphor too far, though. A hub that creates a master die does *NOT* become its own grandparent!

As long as there was no wear or deterioration in the master die or hub, the exact design would be precisely replicated, and this could be done many times, as is done today.

Scot's procedure may have been used by Henry Voigt before him. However, it is also possible that Voigt engraved his hubs directly as cameos. Either approach is equally reasonable, and no records have been found that tell us which way Voigt did it. Either way, the resulting dies are the same, and I have used the term "hub" to describe what made the dies, whether or not it was produced from a master die.

New obverse hubs were first used for half cents in 1793, 1794, 1795, 1800, 1809 and 1840. New reverse hubs were first used in 1794, 1802, 1809 and 1840. Today's master dies and hubs produce large numbers of offspring, but none of the half cent hubs produced more than twenty working dies that produced coins.

Number of dies produced from each new hub.

Year	Obverse	Reverse
1793	3**	N/A*
1794	5	3
1795	7	N/A
1800	19	N/A
1802	–	15
1809	20	18
1840	18	10

** the same hub was used for two half cent dies and the 1792 disme pattern obverse die

* N/A means a hub was not used.

Since all of the obverses were created from hubs, we can easily define the type set of half cents. The question in most people's minds is whether or not the 1794 Liberty Caps deserve inclusion as a separate type. The fact that they were created from a different hub/master die than either the 1793s or 1795s tells us that a complete half cent type set must include a 1794. However, since all of the 1794 dies were created *from the same hub*, any 1794 variety would fit the bill. If we truly want to be complete about the type set, we should add two more coins: a 1794 with the hand-engraved cent-type reverse and the 1800 or 1802/0 with single leaves at the top of the wreath. Eight coins in all, at least four of which date from the 18th century.

Half Cent Type Set

First Liberty Cap (1793)

Second Liberty Cap with hubbed reverse (1794)

Second Liberty Cap with hand engraved reverse (1794)

Third Liberty Cap (1795-1797)

Draped Bust with hand engraved reverse (1800-1802)

Draped Bust with hubbed reverse (1802-1808)

Classic Head (1809-1836)

Braided Hair (1840-1857)

In a way, it seems strange that hubs would have been used at all for half cents. The 1793 and 1794 hubs both produced dies that received substantial additional engraving. Each of the pre-1800 obverse hubs made fewer than 10 dies. As we will see, Engraver William Kneass modified the master die for the Classic Head obverse most years, which meant that a new hub had to be made from it each time. It almost seems that he might as well have engraved each die by hand. But, of course, making half cent dies was not the Engraving Department's most important job. It made many dies for other types, as well as revenue stamp dies, medals, and other items for the government. Any time saved was valuable. Also, and more importantly, the use of master dies and hubs meant greater uniformity in the product, and that meant that the coins were more likely to be accepted and not counterfeited.

Edge Dies

In the early years, there was always an additional pair of dies for each coin: the edge dies. These consisted of a pair of steel bars in parallel, one of which moved by a hand crank, while the other remained stationary. As a blank was fed into the mechanism, it simultaneously became perfectly round, had its rim upset and received whatever edge ornamentation it was to receive. If the dies were blank, the edge was plain.

All six ornamented edge devices are illustrated below. There was one Lettered Edge pair used in 1793, two in 1794, one in 1795 and one in 1797. In addition, a set of edge dies produced the "Gripped Edge" coins of 1797, whether or not the irregular gripping was intentional. It appears that the two edge dies contained TWO HUNDRED and FOR A DOLLAR and the leaf/leaves, respectively. The easiest way to distinguish the 1794 edges is that R E D is widely spaced on the Small Edge Letters. It also appears that the 1795 edge lettering used the same dies as the 1794 Large Edge Letters. The 1797 edge lettering appears to have used a new pair of dies, as it does not match any of the edges previously produced. The 1797 edges are thinner because the planchets were thinner, having been made to the 84 gr. standard instead of the earlier 104 gr. standard.

1793 Lettered Edge

1794 Large Edge Letters

1794 Small Edge Letters

1795 Edge Letters

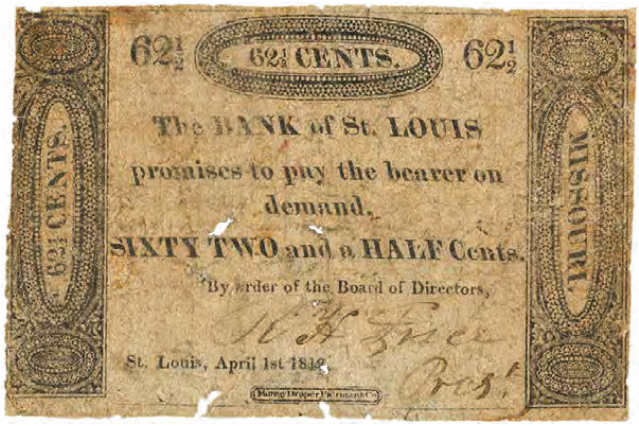
1797 Edge Letters

1797 Gripped Edge
(all images by Tony Butcher)

Getting Started

Half cents are a completely foreign concept to us at a time when most people will not pick up a cent from the ground, and it costs the government more than a cent to coin one, but it was not so in the 18th and early 19th centuries. To make change, Spanish silver dollars, a day's wage or more for most workers, were sometimes cut into eighths (bits, or "pieces of eight") that were worth 12½% of a dollar. Plus, the British had long produced copper pennies, half pence and farthings, the latter of which were worth roughly a half cent. Such coins would have been very familiar to Americans in the early years of the country. Plus, a half cent had real purchasing power back then – very roughly equal to that of a quarter in today's economy. Proof that half cents were significant in commerce can be seen in the existence of scrip and bank notes denominated in half cents as illustrated here.

Spanish milled dollar, or 8 reales, intact and cut into quarter or two bit (2 reales, upper right) and eighth or bit (1 real, lower right) pieces. (left and upper right images courtesy of Ray Williams)



Half cent scrip for a ride on the New York City Roosevelt Street Ferry from 1850s and a "5 bit" note of 1819 from the Bank of St. Louis. (images courtesy of Heritage)

A sort-of half cent was one of the first coins produced for the new country under the Articles of Confederation. Robert Morris devised an excessively complex coinage system and had sample coins produced in silver (1,000 Unit or Mark, 500 Unit or Quint, 100 Unit or Bit) and copper (...5 Unit). These were the famous Nova Constellatio patterns of 1783, one of which was "the first … struck as an American Coin[1]."

1783 Nova Constellatio Five. America's first half cent prototype. (images courtesy of PCGS)

Though Morris' plan went nowhere, in 1785 Congress resolved that "the smallest coin be of copper,

1 McCarthy, David. 2017.

of which 200 shall pass for one dollar[2]." Nevertheless, such pieces were never coined for circulation by or for the federal government of the time. Indeed, the only coins struck for the Confederation (under a contract) were the *Fugio* coppers, or Franklin cents. Taken from designs by Benjamin Franklin, the obverse and reverse were copied from those of some 1776 fractional Continental Currency notes. These coins have their own fascinating story to tell[3,4].

1787 *Fugio* copper. The only copper produced by the government under the Articles of Confederation

However, the Commonwealth of Massachusetts produced cents and half cents that varied in weight but were intended to adhere to the federal standard. The Massachusetts half cent was thus the first circulating American half cent.

1776 Continental Currency half dollar note. Notes from this series are obviously the source of the *Fugio* design.

Recognizing that the government under the Articles of Confederation was ineffective, the states established a Constitution and a new government in 1789. Still, it took three years for the new government to get around to establishing a mint. An Act establishing a Mint and regulating the coins of the United States of April 2, 1792[5] established the smallest denomination as the half cent, to be composed of 5½ dwt (8.56 gm, 132 gr) of pure copper. Recognizing that the cent, twice as heavy, would be too large and expensive, the weight was reduced to 104 gr (6.74 gm) by act of Congress on January 14, 1793. Within six weeks, the Mint was striking Chain cents for circulation.

Massachusetts half cent. America's first circulating half cent.

The Mint Act also established that

2 Journals of the American Congress from 1774-1788
3 Nipper, Will. 2008.
4 McDowell, Christopher. 2015.
5 *Coinage Laws of the United States, 1792-1893.*

David Rittenhouse, first Director of the United States Mint. National Portrait Gallery, Smithsonian Institution; bequest of Stanley P. Sax

Tristram Dalton, first Treasurer of the United States Mint. Yale University Art Gallery

the officers of the Mint would be the Director at a salary of $2,000 *per annum*, an Assayer at $1,500, a Chief Coiner at $1,500, an Engraver at 1,200, and a Treasurer at $1,200. Initially, the duties of the Chief Coiner and Engraver were "to be performed by one person." The assayer, chief coiner and treasurer, who were responsible for precious metals, were each expected to pay a $10,000 bond to the government "for the faithful and diligent performance of the duties of his office." Imagine having to pay $10,000 up front to get a job that paid only $1,200 a year!

Initially, only three of the officers were engaged. The Director was David Rittenhouse, the most prominent scientist in the country after the death of Benjamin Franklin. Appointment of a prominent scientist to such a position seems strange to us, but Sir Isaac Newton, one of the most prominent scientists of all time, served as Master of the Tower Mint in London as his main paying job.

The Director's job was to:

> *have the chief management of the business thereof, and … superintend all other officers and persons who shall be employed therein.*

The first Treasurer was Tristram Dalton, a former senator from Massachusetts. His job was to:

> *receive from the Chief Coiner all the coins which shall have been struck, and … pay or deliver them to the persons respectively to whom the same ought to be paid or delivered: he shall moreover receive and safely keep all monies which shall be for the use, maintenance and support of the mint, and shall disburse the same upon warrants signed by the Director.*

It might be supposed that the chief coiner's job was to run the coinage presses. That is not true. He was the manager in charge of the coining shop and the personnel working in it, including the pressmen and a foreman. According to a 1795 Congressional report[6]:

6 Boudinot, Elias. 1795.

The Chief Coiner prepares all the necessary machines, belonging to the different branches of coining the several metals directed by law; works all the ingots, received from the melter and refiner, into a proper state for coining, and, when completed, delivers them over to the treasurer, and lastly, oversees all the different workmen employed in the coinage, and keeps them in their duty.

If that were all he had to do in 1792-1793, it would be plenty, but the report goes on:

All the tools, necessary to make the machines, were first to be made themselves. Not only the whole machinery, in all its parts, but all the tools necessary for their formation have been executed at the mint. This could not be effected by an union of all the proper artizans, each a complete workman in his own department, but, from necessity, was confined to the principal officer of the coining department, who could only proceed from theoretic principles, with the assistance of such workmen as could be procured, to whom most of the machines, however common in Europe, were entirely new. Add to this, that mere theoretic knowledge has produced greater complexity in the system, and, of course, greater delay and expense than full practical knowledge would have found necessary.

WOW! The Chief Coiner was in charge of and responsible for constructing and furnishing the fledgling mint. To whom did this critically important position go? Thomas Jefferson, Secretary of State (the Mint was under the State Department at the time), wanted to hire someone from France or England, as those countries had more experience and better coinage technology than the U.S. Washington wrote him, "I should be mortified to import men not more understanding in the business of Assaying, Engraving and Coining than those who are already among us[7]." As noted above, the plan was to hire one person to serve as both Chief Coiner and Engraver. Jefferson had been particularly interested in Jean-Pierre Droz, a former engraver at the Paris Mint, who was then working at Matthew Boulton's private facility in England, but nothing ever came of it. In June, 1793 he gave up on finding someone from Europe. Meantime, several Americans had cut dies for pattern coins and a medal in 1792. Among them were Robert(?) Birch, Joseph Wright and Henry Voigt. Birch engraved the cent pattern that bears his name, and Wright engraved dies for the *Comitia Americana* medal presented to Henry "Light Horse Harry" Lee for his valor at the balttle of Paulus Hook in New Jersey. Wright also requested to be paid for dies for a quarter dollar pattern that broke in hardening. His estate was paid only for the medal dies.[8]

Voigt had been hired in 1792 as chief coiner *pro tem*. He remained in that position until the end of 1793 when Jefferson told Washington that nobody better could be obtained from Europe, and he became Chief Coiner, holding that position until his death in 1814. Though Jefferson's effort to bring in someone from Europe makes it sound like he settled on Voigt as a second choice, in fact he was something of a polymath – an exceptional craftsman, a business associate of Rittenhouse, as well as a friend of Jefferson. A professional clockmaker, he produced mathematical instruments and was deeply involved in the development of the first practical American steamboat. A surveying instrument he produced determined the prime meridian in the United States and was used in the Lewis and Clark Expedition. He even tried to establish a new humanist religion called the Universal Society in which good works would be done because they were the right thing to do, and not

7 Washington, George. 1792.

8 Eckberg, Bill. 2017c.

out of fear of divine punishment. Most importantly, he had the right experience, having worked at the mint at Saxe-Gotha in Germany. He was without a doubt the best person in the country to oversee the setup and operation of the new mint. Alas, no portrait of this immensely talented and historically important man is known to exist.

Voigt engraved two patterns in 1792, both shown below. One was the Silver Center cent, which he intended as a means to produce a smaller, bimetallic cent with the full metallic value. He also engraved an interesting 1792 disme pattern. Like his Silver Center cent, the obverse features the statutory image emblamatic of Liberty with flowing hair. As it was a pattern for a silver coin, the reverse features the required eagle. We shall revisit this pattern, which proved very important in the development of the first half cents that were coined.

Henry Voigt's 1792 Silver Center Cent pattern. (images courtesy of PCGS)

Henry Voigt's 1792 disme pattern, struck in copper. This is the true half cent prototype. (images courtesy of PCGS)

The Mint produced a few hundred half dismes for circulation and samples of cents, dismes and possibly quarters as patterns, but it struck no other circulating coinage that first year. The story of the 1792 coinage is thoroughly and interestingly told in *1792: Birth of a Nation's Coinage* by Pete Smith, Joel J. Orosz and Leonard Augsburger. I refer the reader to that excellent book for far more information.

1793

The obverse design of the first half cents is considered to have been derived from that of the 1783 *Libertas Americana* medal designed by Augustin Dupré and struck by the Paris Mint for Benjamin Franklin to celebrate the surrender of British armies to the Americans at the battles of Saratoga in 1777 and Yorktown in 1781. A similar medal, the 1792 Liberté Françoise, often called the Lyon Convention medal, may also have been a model, as it is in some ways even more like the first half cent than the *Libertas Americana*.

Libertas Americana **by Dupré (left) and Liberté Françoise by Galle (right) obverses. It is easy to see how the 1793 half cent obverse design owes a debt to these. (left image courtesy of Kevin Vinton)**

However, the story of half cent design and production begins not with either of those but, perhaps surprisingly, with the 1792 disme pattern that is believed to have been engraved by Henry Voigt. A small number of these coins, of which about twenty survive, were struck in copper, and a few more, of which three survive, were struck in silver[1].

1792 disme and 1793 half cent obverses. The resemblance between the heads is striking. (left image courtesy of PCGS, right image courtesy of Goldbergs)

1 Smith, Pete, Joel J. Orosz and Leonard Augsburger. 2017.

Overlay of 1792 disme and 1793 half cent obverses. The faces are identical.

The resemblance between the portraits of the 1792 disme pattern and the 1793 half cent has been noted for many years. Crosby[2] commented on the similarity between the heads of the pattern disme, Wreath cent and 1793 half cent. Breen[3] called the portraits on the disme and half cent "a startling resemblance, indeed" and suggested that they were products of the same hand. In this, he was correct, but he missed the reason for the "startling resemblance." The heads of the two denominations were produced from the same hub[4]! We know this is true, because photographic overlays, as shown on the left, clearly demonstrate that the faces of Liberty from the forehead to the bustline, including the eye, ear, nose, jaw and mouth are identical on the two coins. The advantages of using a hub are discussed on pp. 12-13.

The overlays tell us much about what was included in the hub and what was excluded (see image on the right). The liberty cap and pole were obviously not included, as they are not present on the disme. Also, the hair differs greatly between the two, as it also does between the two half cent obverse dies that were produced. Indeed, it is almost certain that the differences in the hair and liberty caps was the reason that it had never been noticed that the half cent dies were produced from a hub until 224 years after the coins were produced[5]. Re-use of the disme hub also explains why the head of the 1793 half cent faces left, unlike the heads of the 1793 cents and 1794-1808 half cents.

Recreation of Voigt's hub for the 1792 disme and 1793 half cent. The hair is softened, as we cannot tell how much, if any, was included in the hub.

Voigt had created the hub for the disme in 1792. But why would he have done so? There is no evidence of intent to strike the dismes in quantity, and a single die pair was used for all of those known. We can only speculate on Voigt's motives, but he was in a temporary position as Chief Coiner. He knew that Jefferson had been trying to find someone in Europe to serve as both Chief Coiner and Engraver and thereby save a salary. Thus, it seems reasonable to suggest that he was trying to prove he was up to both jobs. Whether or not this speculation is true, he did not receive the appointment as Engraver.

Washington and Jefferson did, however, give up on finding someone in Europe to take both positions at a single salary. At some point in the summer, when Congress was not in session, they evi-

2 Crosby, Sylvester S. 1897.
3 Breen, Walter. 1954.
4 Eckberg, William R. 2017b.
5 Eckberg, Bill. 2017a.

dently decided to give Joseph Wright a recess appointment as Mint Engraver[6,7]. However, no records or letters have been found confirming such an appointment. Wright died of yellow fever on September 13, 1793, a Friday, of course[8]. On his deathbed he requested to be paid for engraving the dies for the *Comitia Americana* medal honoring Henry Lee, and for two essays of a quarter dollar that broke in hardening. His estate was paid only for the former[9]. He was not paid – and did not request to be paid – for *any* work at the Mint in 1793. Thus, it is highly unlikely that Wright engraved any dies or performed any other work at the Mint in 1793.

Two 1793 half cent obverse and three reverse dies were used. A hub was used to impart the profile of Ms. Liberty[10]. The obverse dies were finished by engraving the cap, pole and hair by hand and by punching in the date and LIBERTY. The reverse dies were entirely hand engraved. Interestingly, it appears that the font (set ot punches) used to enter the lettering was the same as that used for the disme and other 1792 patterns, including the half disme and silver center cent.

Cents were the priority denomination at the Mint in 1793. Chains were coined from late February through early March, with the last examples delivered on March 12[11]. It has been reported that public condemnation of the Chain design led to its early retirement. However, there is good reason to believe that this is a fairytale. First, most Philadelphians had probably never even seen one among the imports, colonials and counterfeits then circulating, as there were far more people in the Philadelphia area than the number of Chain cents coined. The four Chain cent obverse dies had gone through the time-consuming process of being hand engraved, at about a week each, and thus it took far longer to make each die than it lasted in the coinage press, making it immediately obvious that hubbed dies would be essential Also, by the time the critical newspapers had been published, the Mint had already moved on to the production of the hub for the Wreath cents. Most of the Wreaths had been coined by April 19, though more were made at the end of June and the first of July[12].

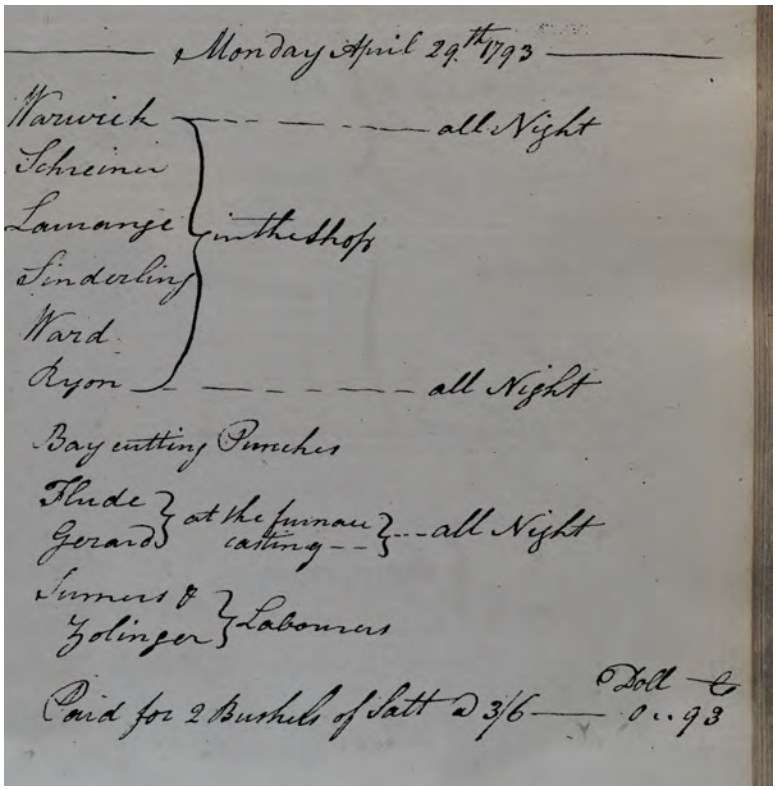
There has been substantial controversy over who the engraver of the 1793 half cents was. Taxay[13] and Breen[14] attributed the dies to Adam Eckfeldt on the basis that he had described one as an example of his work. They also attributed the 1792 disme to him, probably because of the stylistic similarity. Cohen[15] and Julian[16] attributed the obverses to Joseph Wright. It seems that everyone got it wrong, including this author[17]. No evidence has ever been found that Wright did any work for the Mint in 1793, and Eckfeldt was not an engraver. Though he did some contract work forging dies and the like, there is no evidence that he ever did any engraving work for the Mint. There can be no doubt that Henry Voigt engraved the 1793 half cents and created the obverses from his 1792 disme hub. The engraver of the reverses is less certain, but there is no reason to attribute them to anyone other than Voigt. According to Elias Boudinot's report to Congress in 1795,

6 Eckberg, William R. 2018c.
7 Eckberg, William. 2019.
8 Fabian, Monroe H. 1985.
9 Jefferson, Thomas. 1793.
10 Eckberg, Bill. 2017a.
11 Dalton, Tristram. 1793.
12 Eckberg, Bill. 2017a.
13 Taxay, Don. 1966.
14 Breen, Walter. 1983.
15 Cohen, Roger S., Jr. 1982.
16 Julian, Robert W. 1992.
17 Eckberg, William R. 2000b.

It was also a considerable time before an engraver could be engaged, during which, the chief coiner was obliged to make the dies for himself[18].

Thus, I attribute all dies produced before the appointment of Robert Scot to Voigt.

We know exactly when the half cents were coined because Voigt kept a ledger that described the jobs involved with coin production that the men in his shop did. The first entry that can be associated with half cent coinage appears Monday, April 29[19]. Thomas Flude and Daniel Gerard are described as "casting [copper ingots] all night." Flude had been repairing the furnace the preceding Fryday [*sic*] and Saturday. Flude and Gerard continued casting on April 30. On May 1, 2, 3, 4 and 6 the same men spent their time rolling, annealing and cleaning the copper strips. Cast ingots were washed with soap and water, rinsed and wiped with tallow or the like before going to the rollers; the rolled strips were washed in hot water, probaly with lye soap to remove lubricants, followed by a water rinse. They were then annealed by heating and sent to the planchet cutter. After punching, the planchets were brightened for striking with a soak in vinegar and salt (added to increase the acidity), dried with heated sawdust in rotating barrels, screened, and sent to coining.


Monday April 29th 1793
Warwick ---- all Night
Schreiner
Lamarge } in the shop
Sinderling
Ward
Ryon ---- all Night
Bay cutting Punches
Flude } at the furnace } all Night
Gerard } casting
Sumers & } Labourers
Zolinger }
Paid for 2 Bushels of Salt @ 3/6 Doll ¢ 0..93

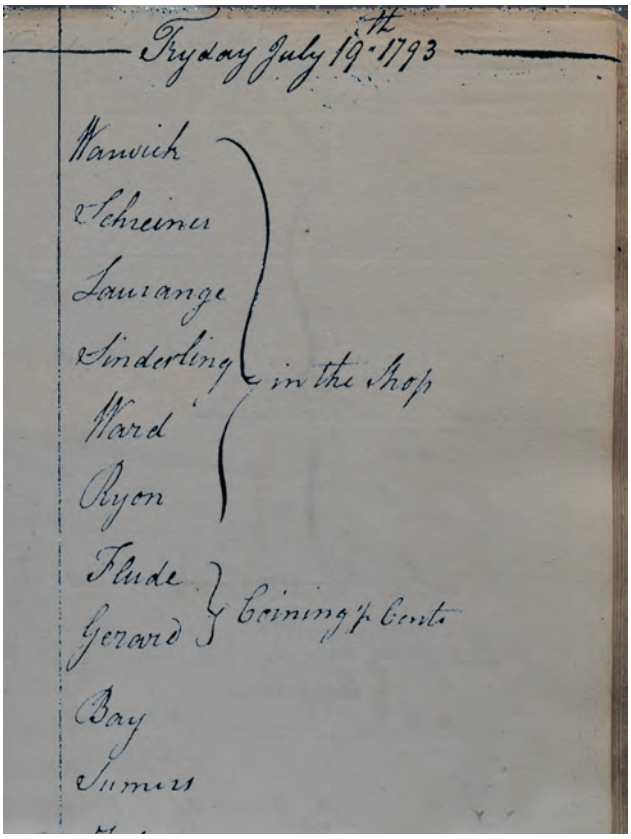
Monday April 29th, 1793. Thomas Flude and Daniel Gerard begin casting copper ingots for half cents.

William Ward and Mathias Sumers first spent "¾ day milling ½ Cts" on May 3. This milling consisted of using a hand-turned mill (often called a Castaing press for the same reason that any brand of facial tissue is often called a Kleenex™) to upset the rims and add the edge lettering (see p. 15). Ward continued milling the half cent planchets on May 4, 6, 7 and 8, finishing with a half day on May 9. All planchets produced at the Mint were run through the upsetting mill, which could mill as many as 8,000-10,000 blanks per workday. For the earliest types, the mill made the blank round, raised the rim and imparted lettering or other ornamentation to the edge. After 1795 (with the exception of some 1797-dated coins) the upsetting mill just made the blank round and upset the rim to make the coins stack better.

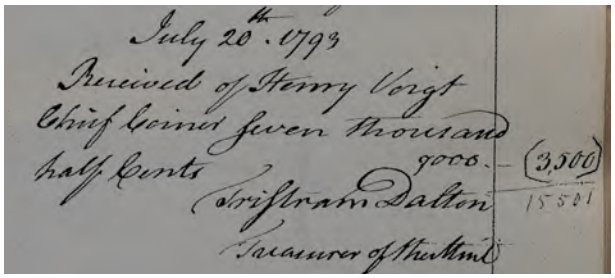
Flude and Gerard spent May 7 and 8 "cleaning copper." On May 10 and 11, they further cleaned and annealed the planchets. On May 14, Gerard spent ¾ day cleaning planchets; on May 15, Flude spent all day and Gerard ½ day "Cleaning ½ Cts." Thus, by May 15, 1793 all of the half cent planchets were blanked, milled and annealed—ready to be coined. The finished planchets then remained untouched for over two months.

18 Boudinot, Elias. 1795.

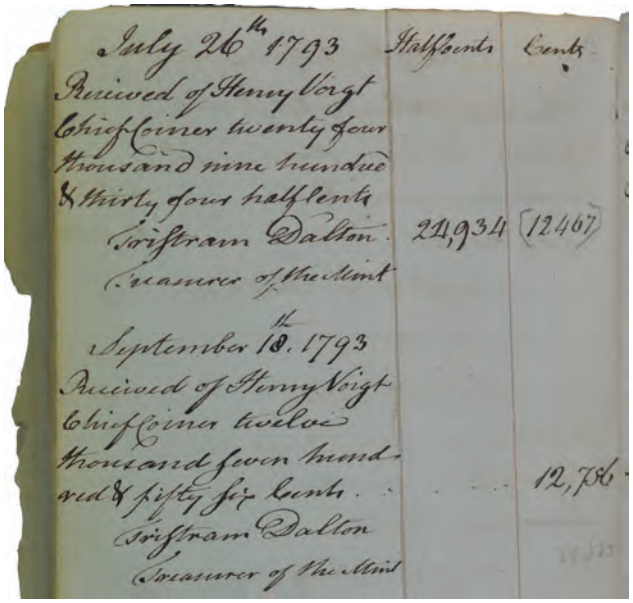
19 Voigt, Henry. 1793.



"Fryday" July 19th, 1793. Thomas Flude and Daniel Gerard coin the first United States half cents.



Mint Treasurer Tristram Dalton's receipt for the first delivery of half cents, July 20, 1793.



Mint Treasurer, Tristram Dalton's receipt book page showing that half cents were delivered on July 26, but not on September 18, 1793.

It is not known why half cent production did not continue, and we don't know when the dies were cut. Since the obverse had been hubbed, it can only have taken a couple of days to produce the two obverse dies and a few more days to produce the three reverse dies that were used. At most, die production should have taken no more than a week. However, we know that half cent coinage did not begin until July 19. Flude and Gerard were listed in Voigt's book as "Coining ½ Cents." The first 7,000 half cents, presumably all or most of the output from July 19, were delivered to the Treasurer on July 20.

Flude and Gerard coined the rest of the half cents on July 23-25, and Voigt delivered them to the Treasurer on July 26. 24,934 were delivered on that day for a total of 31,934 1793 half cents[20] worth a whopping $159.67. It is widely reported that an additional 3,400 were delivered with the Liberty Cap cents on September 18, but this is inconsistent with Dalton's records. Dalton's receipt for that day, shown here, unambiguously specifies that all of the coins delivered were cents. The error apparently comes from a transcription error by someone at the Mint that has been perpetuated in the literature ever since. It is, of course, conceivable that Dalton's ledger is incorrect and the later reports are correct, but Dalton is the primary source, and primary sources are generally the best evidence.

20 Dalton, Tristram. 1793.

We know from die state evidence[21,22] that the order of the mintage is 1-A > 1-B > 2-B > 2-C. Obverse 1 is always rough on 1-B; Reverse B is rough on 2-B; Obverse 2 develops minor defects during the striking of 2-C. The only die that developed a major break was reverse A; the obverse roughness was evidently not considered serious as much of 1-A and the entirety of 1-B were coined from the deteriorated die.

Which variety(ies) were coined on which day? The answer to this question is very simple but raises one intriguing question. The simple interpretation is that a different variety was struck in its entirety each of the four days in which half cents were coined. As the dies were locked away at the end of each day, getting one or more new dies each new day would be simple. Thus, 1-A would have been struck on July 19 and delivered the next day, 1-B would have been struck on July 23, 2-B on July 24 and 2-C on July 25. By this reasoning, the entire mintage of 1-A was coined the first day. Independent support for this interpretation comes from the relative abundance of the varieties. All four are of approximately equal availability, indicating that they were struck in roughly similar numbers, which also supports the conclusion that they were struck over four days. If the coins were struck over five or six days, we would not expect the varieties to be so equally abundant, unless they swapped dies at exactly the right time during each day. Lacking evidence of die failure other than reverse A, there is no reason to suspect this.

The intriguing question is that if the entire mintage of 1-A was done in one day, what happened to the obverse die to make it deteriorate in the middle of the mintage? The deterioration of obverse 1 has been called rusting[23,24], but it is unclear how a die can rust significantly during one day of use. This kind of damage can also be caused by mechanical injury or flaws in the metal and is generally called "spalling." It seems that many cases that are called "die rust" are more likely the result of mechanical spalling.

Production costs

How much did it cost the Mint to produce $159.67 worth of half cents in 1793? Voigt's book tells us that Flude earned $1 per day; Gerard, W. Ward and Sumers were each paid 80¢ per day. Their labor for casting, rolling, annealing, blanking and coining comes to $27.68 (Flude: $13.00, Gerard: $9.80, Ward: $4.20, Sumers: $0.68). If this sounds like a good deal, there were many more costs.

Assuming no wastage, the 31,934 planchets at 104 grains each weighed approximately 475 pounds. During June, the coiner paid 17-20¢ per pound for copper. At 17¢ the 475 pounds would have cost $80.66; at 20¢ it would have cost $95.00. So far, so good.

Then, however, there were the salaried employees. Henry Voigt, as Chief Coiner, received a salary of $1,500 per year. David Rittenhouse, Director, received $2,000 and Tristram Dalton, Treasurer, received $1,200. During 1793 the large cent coinage amounted to $1,115.66. Prorating their salaries at 13.7% for the half cents, their work cost $643.90. Thus, the cost to the Congress of the work on the half cents was a minimum of $752.24 and probably more to produce $159.67 in coins. This does not even include the cost of forging and turning the dies or the supplies needed to clean

21 Breen, Walter. 1983.
22 Manley, Ronald. P. 1998.
23 Breen, Walter. 1983.
24 Manley, Ronald P. 1998.

and roll the copper, provide forage for the horses, and other incidental supplies.

You may think it is no wonder that Congress wanted to abolish the Mint and contract out the coinage, but, as usual, Congress wasn't considering the most important fact. The Mint had a lot of startup costs. Boudinot's report to Congress in 1795 includes the following[1]:

> *Your committee have made a strict inquiry into the causes, why the product has not been greater in so long a time as two years and an half from its institution, and find that, in general, the difficulties attending all establishments, that are, in their formation and operation, new and uncommon, and which, therefore, require experiments to be made in every step of their progress, have attended this institution. No works of this kind, requiring equal force and equal precision, ever having been made in this country, workmen, those expected to be obtained from Europe, by some means, having failed in the different branches, were hard to be got, and many, when engaged, were not masters of their business; the materials were difficult to be obtained, and often proved insufficient for the force required — even bar iron, from the large size required, as well as the castings, caused great delay before they could be had; oftentimes, when the machinery was finished and set to work, it gave way, and all was to be done over again.*

Thus, instead of the expected condemnation, Boudinot provided a full-throated commendation of Rittenhouse, Voigt, Dalton and their staff's efforts. He was impressed enough that he became the Director of the Mint the next year.

We might ask why so few half cents (and cents) were struck in 1793. It has been suggested that the yellow fever epidemic was the cause for the stoppage in July, but it was not known that yellow fever was in the city when coinage stopped, and the first death was not until August 7. The Mint was fully staffed until early September. Similarly, it was not for lack of copper, as there was a substantial amount on hand at the end of the year.

We can only conclude that it was a management decision to stop coinage. I suspect that the most likely reason was that more work on the physical facilities was needed, for example, the rolling mills were of poor quality, and getting the Mint ready for full coinage took precedence over what actual coinage could be accomplished in 1793. Alternatively, it may have been a decision to wait for the appointment of a permanent Chief Coiner and Engraver. Or, even more likely, both.

Possibly as many as 25 MS survivors of the type exist with a like number in AU, most of which are probably in type sets. The vast majority are heavily worn, and most are corroded or otherwise damaged; plus, they are the only half cent type struck without a raised rim, so the devices wore down quickly. As it is an 18th century one-year type and the first of all half cents, the 1793s are expensive in all grades.

1 Boudinot, Elias. 1795.

Varieties

1-A; C-1, B-1.

Obverse 1 is easy to determine from even very low-grade coins, as the bustline forms a smooth curve from the tip to the hair (arrow). The hair lock at the forehead points to the I, and the cap is very crooked **Also used with Reverse B.** (image courtesy of Goldbergs)

Reverse A is most easily identified from the fact that the last leaf on the right branch extends above the A in HALF (arrow). HALF CENT is high in the wreath but is often not visible due to die buckling. That illustrated is among the sharpest in the center. (image courtesy of Goldbergs)

Edge lettered TWO HUNDRED FOR A DOLLAR followed by two leaves (p. 15). The same edge was used on all varieties of the year.

Estimated survivors: 250-300.

This variety was struck on July 19 and delivered the next day. These were the first half cents struck by the U.S. Mint. The reverse develops a cud break from F AME. This break has been used to attribute examples on which no other detail can be seen. On higher grade specimens, roughness can be seen to develop in the obverse fields; this has been called die rust in the past, but since the variety was struck in a single day, it must be due to mechanical spalling. Extremely rare in grades above Extremely Fine.

1-B; C-2, B-2.

Obverse 1 as above. All examples show heavy spalling ("die rust") on the obverse.

Reverse B is easily attributed because the berries at the left top of the wreath form a prominent "C" shape (arrow) with the uppermost berries forming a heavy line that curves to the right. **Also used with Obverse 2.**

Estimated survivors: 250-325.

Extremely rare in grades above Extremely Fine. Struck on July 23 and delivered with the following two varieties on July 26.

2-B; C-3, B-3.

Obverse 2 is easily attributed by Cohen's "hooked bust line" (arrow) which can be seen even on very low grade coins. Close examination of the "hook" shows that it is not a part of the bust line at all, but rather an extra lock of hair. The first hair lock points to the L. **Also used with Reverse C.**

Reverse B as above.

Estimated survivors: 250-325.

This variety is extremely rare above Extremely Fine, but it seems to be the most common 1793 half cent in Mint State. Struck on July 24, it was delivered with the preceding and following varieties on July 26.

2-C; C-4, B-4.

Obverse 2 as above.

Reverse C is most easily recognized by the very long tails to both of the reverse ribbons (arrows) and the nearly vertical path for the uppermost berries on the left side. (image courtesy of Goldbergs)

Estimated survivors: 250-325.

Historically, this variety has been thought to be the most common of the date, but my own studies and those of Tom Reynolds indicate that all four varieties are of about equal availability. Struck on July 25 and delivered with the preceding two varieties on July 26.

Eye Candy

This gorgeous 2-C has a fabulous pedigree. Ex-Earle/Bement/Allenburger/Showers/duPont/Werner/Flynn/Tettenhorst. (images courtesy of Goldbergs)

1794

Robert Scot[1] was appointed Engraver on November 23, 1793. As Congress was not in session, he received a recess appointment, receiving his Congressional approval at the end of the year. In January, 1794, he was paid $125.00 for the time he spent in the recess appointment[2]. He served as Engraver until his death in 1823.

We know from a report Scot made to Congress[3] that his method was to cut a master die or matrix incuse into steel and raise a hub from that. The hub was then used to sink the working dies as described on pp. 12-13.

The first three reverses, called the "heavy wreath" type, are of particular interest, as they were created from a complete hub containing all leaves, berries, lettering, the denomination and even the dentils. Unfortunately, the complete hub proved unsatisfactory, as each of the three dies produced from it required enough recutting that, although the differences between them are small, they are not difficult to tell apart. Also, hubbing the reverse saved little time. The other two reverses were individually engraved and not made from a hub. They look much

Overlay of reverses A, B and C showing that they were from the same hub, but reworked. Where the red, yellow and blue colors appear, the dies differ.

Overlays of obverses 1 (cyan) and 4 (yellow) on the left and obverses 4 (yellow) and 5 (cyan) on the right. All of the obverse dies were made from the same hub.

1 Nyberg, William F. 2015.
2 Eckberg, Bill. 2017c.
3 Finkelstein, David. 2017.

like those on the cents of the era.

There has been controversy about which obverse dies were created from the hub. Some heads differ from others enough that Breen thought Obverse 1 to have been hand-engraved and named it the "Gynandroid head[4]" (see p. 34). Obverses 2-4 he called "normal heads." He called Obverse 5 the "high relief head" and suspected that it might have been produced from the same hub as the others, though earlier authors did not agree.

Obverse 1 is in lower relief and is positioned much higher in the field than any of the others. Obverse 5, the last used, is very deeply impressed into the die and has hair which is very differently engraved from the rest. However, I was able to show by using photographic overlays such as those on the prvious page that *all* of the obverses were created from the same hub, and that the hub contained all of Ms. Liberty and her cap and pole[5]. Like in 1793, the hair was retouched in each working die. In particular, obverses 4 and 5 were heavily retouched; each hair strand was indivudually engraved in Obverse 4, and the hair is in heavy waves in Obverse 5. As a result, the exact look of the hub cannot be determined. Speculating that Obverse 1, the first one used, was the least modified, I present a possible mockup of the hub on the right.

Reconstruction of Scot's 1794 obverse hub.

The descriptions of the last obverse are also entertaining. Gilbert[6] called Obverse 5 the "Small Head," whereas Breen[7] called it the "High Relief Head." Why did Gilbert think this head small? It certainly is not! At least Breen's description makes sense.

A total of 81,600 half cents from nine varieties were delivered in five batches: February 22, 10,000; June 4, 16,000; June 26, 16,000; June 27, 16,000; and July 8, 23,600. Cohen and Breen proposed different emission sequences. Breen's proved to be correct, and in the second edition of his book, Cohen accepted it. Subsequently, Ron Manley and I confirmed Breen's sequence[8]. The emission sequence for the varieties is 1-A > 2-B > 3-C > 3-D > 3-E > 4-E > 5-D > 5-C > 5-B. Knowing the emission sequence and the surviving population size of each variety allowed us to determine which day(s) each variety was delivered. 1-A was delivered on February 22; 2-B and 3-C were delivered on June 4; 3-D, 3-E, and part of 4-E were delivered on June 26; the rest of 4-E was delivered on June 27; 5-D, 5-C and 5-B were delivered together on July 8.

Unfortunately, no version of Voigt's day book for 1794 or thereafter is known, so the names of those who coined the 1794 half cents are unknown. However, we do know that it took three men two and a half days to coin about 20,200 cents in 1794[9]. That works out to roughly 8,080 coins per

4 Breen, Walter. 1983.
5 Eckberg, Bill. 2017d.
6 Gilbert, Ebenzer. 1916.
7 Breen, Walter. 1983.
8 Eckberg, Bill and Ron Manley. 2001.
9 Rittenhouse, David. 1794.

day, a number that we must take as an approximation. We assume that it took no longer to strike half cents than cents, since the labor would have been the same. Thus the deliveries of June, 4, 26 and 27 must have each included two days of coinage; that of July 8 must have included three days coinage, and that of February 22 a bit more than one day. These numbers are also consistent with the reported half cent coinages of 1793 (7,000 on one day and 24,934 over three additional days).

The two edge lettering variants are illustrated on p. 15. The ratio of large to small edge letters in the February delivery was about 14:1. That of the June 4 and 22 deliveries was 1:34, indicating different batches of planchets for the February and first two June deliveries. This is surprising given that the blanks were cut, milled and cleaned long before the coins were struck. Possibly, the planchets were milled in two or three batches that were not completely mixed. Despite years of hope and effort by many collectors at cherrypicking an example of Obverse 5 with large edge lettering, it appears that the June 27 and July 8 deliveries were all struck on small edge letter planchets. There might be one with large edge letters, but don't bet the farm on it.

It is perhaps of interest that sometimes two different sets of edge dies were used, and other times only one. In 1793, one set of Vine and Bars edge dies was used for the Chain cents; that one and another were used for the Wreaths, and eventually, two different Lettered Edge die sets were used for the last Wreaths and the Liberty Caps. However, only one set was used for the 1793 half cents. In 1794, two sets were used for most of the half cents and for the Head of '93 large cents. I am unaware of multiple edge variants on the cent Heads of '94 and '95. It would not seem that any of this represented an intent to create different products, but rather the use of similar but non-identical dies in the shop. As the letters on the edge dies had to be in relief to impress them into the edges of the planchets, one would think that the edge dies must have been fragile and subject to frequent breakage. This, however, was evidently not the case. Perhaps their low relief protected them.

Because these coins were in circulation for 63 years before the half cents were redeemed by the government, most are heavily worn, and many are corroded or otherwise damaged. Like the 1793s, the 1794s represent a distinct, one-year type, different from the 1793s and the later Liberty Caps, so they have heavy collecting pressure on them.

Varieties

Robert Scot, the new engraver, somewhat modified the design. Ms. Liberty now faced to the right as she did on all other coins of the era. Scot's new hubs produced five obverse and three reverse dies. Together with the two reverses not from the hub, they produced nine varieties. In addition, edge devices, TWO HUNDRED FOR A DOLLAR in two different sizes (see p. 15), produced a second subvariety for each of the first six varieties.

Despite the suppositions of Cohen, Breen and earlier researchers, photographic overlays clearly show that all five obverse dies were created from the same hub. The three hubbed heavy wreath reverse dies were used first to create, in order, 1-A, 2-B and 3-C. Then Obverse 3 was paired with a hand-engraved cent-type reverse to create the 3-D and then with another cent type reverse to create 3-E. Reverse E was then paired with Obverse 4. Finally, Obverse 5 paired with reverses D, C and B that had been used previously completed the coinage in late July, 1794. It may or may not be signficant that the reverses were re-used in the reverse order that they were first used.

1-A; C-1, B-1; Normal Head.

Obverse was called the "Gynandroid Head" by Breen[10] suggesting gender ambiguity, though the gender is equally ambiguous on all of the 1794 obverses, as all were produced from the same hub. It is easy to identify in all grades, as the head is very high in the field. It is also weakly impressed into the die, with a weak and incomplete pole, all of which made previous writers believe, incorrectly, that it had not been produced from the hub.

Reverse A, like the next two, was created from a complete hub, and the differences between the three are minute. The easiest "tell" is that the leaf under C in CENT (arrow) is almost vertical and nearly touches the letter. Like Reverse B, the inner leaf of the upper left pair points at its counterpart on the right.

Edge lettered TWO HUNDRED FOR A DOLLAR followed by one leaf. Two different sets of edge dies were used, one with larger letters than the other. (see p. 15)

Estimated survivors: 400-430 with large edge letters; 35 with small edge letters.

By the standards of 18th century half cents, this one is relatively common in high grades. Probably 15-20 exist in AU or better.

10 Sheldon (or Breen, who collaborated on Sheldon's book) also used this bizarre term to describe the large cent Head of '93. See p. 76 in *Penny Whimsy*. However, as early as 1861, Alexandre Vattemare commented on the "traits plus masculins" of the '93 cent head.

2-B; C-2, B-2; Normal Head.

Obverse 2 is another of the "normal" heads. It is best identified by the fact that all numerals in the date are under the bust and to the right of the hair (arrow). This die develops heavy clash marks from the wreath as shown.

Reverse B was the second used from the Heavy Wreath hub. It is most easily identified by the fact that the T in CENT (arrow) leans slightly left. The leaf under C is lesss robust than that on Reverse C. **Also used with Obverse 5**.

Edge lettered TWO HUNDRED FOR A DOLLAR followed by one leaf. Two different sets of edge dies were used, one with larger letters than the other.

Estimated survivors: 15 with large edge letters; 475-500 with small edge letters.

For a relatively common variety, this is extremely difficult to find in high grade. The finest known is AU, and coins in EF and above are extremely rare.

3-C; C-5, B-3; Normal Head.

Obverse 3 is another of the "normal" heads. It is impressed more deeply than Obverse 2, and high-grade coins show that the hair is noticeably strengthened. It is most easily identified by the spacing of the date as 1 79 4. **Also used with Reverses D and E.**

Reverse C, the last of the "heavy" wreaths is most easily identified by the fact that the leaf under C is heavy and points just to the left of the C, and the inner leaf of the upper left pair (arrow) points above its counterpart on the right. **Also used with Obverse 5**.

Edge lettered TWO HUNDRED FOR A DOLLAR followed by one leaf. Two different sets of edge dies were used, one with larger letters than the other.

Estimated survivors: 3 with large edge letters; 115-125 with small edge letters. Unknown in UNC; a small handful are known in EF or AU.

3-D; C-6, B-4; Normal Head.

Obverse 3 as above.

Reverse D differs from all of the preceding in being modeled after that of the cent and engraved entirely by hand. It is most easily recognized in that the upper leaves on the right and left sides are well separated, and the ribbon ends are very short. **Also used with Obverse 5**.

Edge lettered TWO HUNDRED FOR A DOLLAR followed by one leaf. Two different sets of edge dies were used, one with larger letters than the other.

Estimated survivors: 1 with large edge letters (many hope another will be found); 30-35 with small edge letters. This and 5-D are the scarcest varieties of the year. The finest known grades VF.

3-E; C-3, B-5; Normal Head.

Obverse 3 as above.

Reverse E is the second hand-engraved cent-type reverse. It is easily differentiated from Reverse D in that the upper left and right leaves nearly touch (arrow), and the ribbon ends are very long. **Also used with Obverse 4.**

Edge lettered TWO HUNDRED FOR A DOLLAR followed by one leaf. Two different sets of edge dies were used, one with larger letters than the other.

Estimated survivors: 5 with large edge letters; 55-60 with small edge letters. It is extremely rare in VF and higher grades.

4-E; C-4, B-6; Normal Head.

Obverse 4 is the last "normal" head. Probably the most beautiful 1794 half cent in grades of EF and higher, it features sharply defined hair. The best way to identify the variety in lower grades is that the 9 in the date is much lower than the 7. This die develops extremely heavy clash marks.

Reverse E as above.

Edge lettered TWO HUNDRED FOR A DOLLAR followed by one leaf. Two different sets of edge dies were used, one with larger letters than the other.

Estimated survivors: 8 with large edge letters; 1,000 with small edge letters. This is the most common variety of the year and appears to be about twice as common as previous writers had thought. About 10 are known at the AU level or above.

5-D; C-7, B-7; High Relief Head.

Obverse 5 is the easiest to identify. The entire head is double-punched making the lips and chin doubled (visible only on very high-grade examples), and the hair has been heavily re-engraved with waves that are in much higher relief than on any other obverse. The 4 nearly touches the bust. Because the relief is so high, the reverses of the coins struck from Obverse 5 are generally far weaker than the obverses. Coins with Good-VG obverses can be found with slick reverses that make them unattributable. **Also used with Reverses B and C.**

Reverse D as above.

Edge lettered TWO HUNDRED FOR A DOLLAR followed by one leaf. Only found with small edge lettering.

Estimated survivors: 35-40. This is the scarcest of the high relief heads and is of about the same availability as 3-D. Two Mint State coins are known, including the fabulous example from the Missouri Cabinet that is easily the finest 18th century half cent known and the first half cent to sell for over a million dollars (see Eye Candy on the next page). Six are known in EF and better.

5-C; C-8, B-8; High Relief Head.

Obverse 5 as above.

Reverse C as above.

Edge lettered TWO HUNDRED FOR A DOLLAR followed by one leaf. Only found with small edge lettering.

Estimated survivors: 45. This variety is unknown in AU or MS and is exceedingly rare in EF.

5-B; C-9, B-9; High Relief Head.

Obverse 5 as above.

Reverse B as above.

Edge lettered TWO HUNDRED FOR A DOLLAR followed by one leaf. Only found with small edge lettering.

Estimated survivors: 750. This variety was long thought to be the most common of the year, but it takes second place to 4-E. With at least 10 known in Mint State and a similar number in AU, this variety is the easiest to obtain in high grade.

Eye Candy

This is the fabulous Missouri Cabinet/Pogue 5-D. It was graded MS-67 by both EAC and commercial standards and is considered the finest known 18th century half cent. It was also the first half cent to sell at auction for over $1 million. (Images courtesy of Ira and Larry Goldberg, Auctioneers).

1795

Scot introduced a new master die for the obverse in 1795. It featured a somewhat smaller, lower relief head that was modeled after that on the 1794 dollar and half dollar, even though the design was no longer current, as the first of Scot's Draped Bust dollars had been delivered earlier[1]. There has been controversy over who designed it. Elias Boudinot's report to Congress of February 9, 1795[2] states that the Engraver

has an assistant, occasionally, as the business is urgent.

John Smith Gardner, assistant to Scot, was paid $70.40 for working 44 days in the last quarter of 1794, $121.60 for working 76 days in the first quarter of 1795, $174.88 for 78 days to June 30, $174.72 for the quarter to September 30, $234.00 for 78 days in the last quarter, $234.00 for 78 days in the first quarter of 1796 and $150.00 for work until August 26, 1796. This was more than "occasional" work.

Reconstruction of Scot's Head of '95 hub.

Breen[3] attributed the Head of '95 to Gardner. He reported no evidence for his conclusion, and it is not supported by any evidence I can find, including from Gardner. He claimed to have made punches, hubs from master dies, and working dies from hubs; he also engraved reverses, entered legends and border dentils for all denominations and assisted in hardening and polishing dies[4]. However, there is no evidence that he claimed to have designed or engraved any master dies. He also had no professional experience as an engraver either before or after his employment at the Mint[5]. Since it seems unlikely that Scot would farm design work out to an inexperienced underling, and Gardner never claimed to have designed or engraved any master dies, we must reject Breen's conjecture and conclude without a doubt that *Robert Scot was the designer and engraver of the Head of '95*. Scot's attractive new hub, consisting of the bust and cap but not the pole, produced two obverse dies used in 1795, two more in 1796 and three more in 1797. The reverses were not hubbed, and Gardner may have produced some or all of the four reverse dies that were used to strike the 1795s and '96s, more-or-less copying Reverses D and E of 1794.

Gold and silver coinage ramped up in 1795, leaving the Mint less time to produce copper coins. Indeed, 1795 saw the coinage of all authorized denominations from half cents to $10 eagles with the exceptions of dimes, quarters and quarter eagles. The price of copper had increased, and the government had begun losing money coining cents and half cents. That and the emphasis on precious metal coinage meant that the yearly copper production was 37,000 cents (about three days coinage) and 25,600 half cents (two or possibly three days coinage). The half cents were delivered

1 Breen, Walter. 1988.
2 Boudinot, Elias. 1795.
3 Breen, Walter. 1983.
4 Stewart, Frank H. 1924.
5 Nyberg, William F. 2015.

on October 27 and December 1. The first delivery consisted of the 1-A variety and the second of the 2-A. On December 27, President Washington ordered a reduction in the weight of the copper coins to 168 gr (10.89 gm) for cents and 84 gr (5.44 gm) for half cents. These weights would continue until the end of the large and half cents in 1857. Most 1795-dated half cents were actually coined in 1796, after the change to the lower weight.

Thirty thousand were delivered on January 22. The 2-A dies remained in use at the lower weight standard and with a plain edge, creating the rare 2-A with Plain Edge. The same delivery also included another rare variety, 2-B and a somewhat more common one, 2-C. Obverse 1 was reground, obliterating the pole, and mated with Reverse C. This variety, 1a-C, was also included with the January delivery. Finally, Obverse 1a was mated with a new Reverse D which was struck in large numbers and delivered during February and March. The total 1795-dated mintage was 134,600, of which 109,000 were struck in 1796.

Talbot, Allum & Lee token from 1795. Most, if not all, half cents coined in 1796-99 were overstruck on these tokens, often leaving traces of undertype. (images courtesy of Goldbergs.

The coins struck at the heavier standard are all believed to have been struck on copper rolled at the Mint. Those struck at the lighter standard in 1796 were struck on pretty much anything on which the Mint workers could get their hands. Most were struck on cut down Talbot Allum & Lee (TAL) tokens. Others were struck on cut down and rolled out (or not rolled out) spoiled large cents, die trials for 1794 half dollars and even a leftover 1794 half cent planchet with edge lettering. Others may even have been coined on rolled copper, but this is uncertain. Trace element analysis, for example by X-ray fluorescence, might determine if any were struck on something else, but nobody has tested this.

1795 1a with multiple errors. The planchet is split and clipped, as it was incorrectly punched from the TAL token and reads "STORE O" on the edge above LIBE.

Errors and more errors!

It is clear that the Mint was willing to place into circulation coins that it would have rejected in earlier years, as 1795 half cents struck in 1796 show a greater number of errors, as a proportion of those surviving, than any other year. The Plain Edge Liberty Caps struck in 1796 (the 84 gr. 2-A through 1a-D and both varieties of 1796) have the highest proportion of errors of all half cent types. Fifty six significant errors are reported among the approx-

imately 2,000 surviving coins of these varieties (2.8%). This is about 10 times the error frequency of the previous three years. Another 34 (1.9%) errors are found among the 1797-dated mintage that also used token and spoiled cent stock as planchets. The only other date with aa error frequency higher than 1% is 1802, which was struck on spoiled cents. This gives us a very strong clue as to the reason that so many errors were released.

Cracked and split planchets were more frequent in 1796 than in any other era. It seems obvious that most of the cracks and splits must have resulted from damage to the host coins on which the plain edge Liberty Caps were struck.

1795 Obverse 1a showing a dropped fragment error.

About 50 multi-strikes, or about 20% of all multi-strikes in the half cent series, are found among these coins. 1795 1a-D was the most common of all off-center strikes. Severely clipped planchets also appeared most commonly on plain edge Liberty Caps. Seven examples were reported in this series (approximately 12.5% of the clipped planchets), whereas the surviving coins of this type represent about 2% of the total. Over half of the cracked/split planchet errors were found among the plain edge Liberty Caps.

Why should quality control have slipped so badly in 1796? Three possibilities come to mind. First, most of the workmen in the coining room were different. Of the thirteen men working in the shop in 1793, only two were still there at the end of 1795. Is it possible that the Mint had worse personnel two years after it started than at the beginning? This seems farfetched. Second, it could

1795 Obverse 1a boldly double-struck over a TAL token with undertype from both host coins. (image courtesy of Goldbergs)

1795 Reverse D double-struck and off center. (image courtesy of Goldbergs)

have resulted from poor morale by Mint personnel leading to less pride in workmanship. This was a time when the Mint was under heavy pressure to be less costly. However, this kind of stress was apparently constant at the Mint in the early years. Lastly, it is possible that the Mint simply couldn't afford to waste any planchets at that time. Nearly all of the half cents struck from 1796-99 were on token or spoiled cent stock. Since they had no real planchets to work with, they could ill-afford to be picky about their output. It is thus quite possible that the Mint cared deeply about the quality of its half cents but was unable to produce the quality it wanted in the last part of the 18th century. From the beginning, quality control was much improved during the coinage of the Draped Busts (except the aforementioned 1802 for the same reason). Though the Draped Busts account for nearly half of the errors, the proportion of errors is about one-fifth that of the Plain Edge Liberty Caps.

Varieties

There are six 1795-dated varieties from two obverse and four reverse dies. After coinage began, Washington changed the weight standard from 104 gr. (6.74 g) to 84 gr. (5.44 g). All of those minted at the lighter standard and with a Plain Edge were struck in 1796. Two varieties were produced at the heavier standard; five, including a small number of 2-A, a variety originally struck in 1795 at the heavier standard, were produced at the lighter standard. Obverse 1 was ground down after its initial use, resulting in a greatly weakend date and the loss of the pole. As the die is the same but in a very different state, I have labeled it 1a.

1-A; C-1, B-1; Lettered Edge.

Obverse 1. This is easily identified as the 1 in the date (arrow) used the same punch as the I in LIBERTY. The pole is present but very weak. **Later reground as Obverse 1a.**

Reverse A has four berries on each branch. The lowest leaf on the left points just past the U in UNITED. The right outer leaf points to the M (arrow). HALF is below the upper points of the two nearest leaves. **Also used with Obverse 2**.

Edge lettered TWO HUNDRED FOR A DOLLAR followed by one leaf. It appears to be a reuse of the Large Letter Edge dies from 1794.

Estimated survivors: 450. Probably 15-20 are known in AU and above.

These were struck at the 1793 weight standard of 104 gr. or 6.74 g. They probably made up nearly all of the October 27 delivery.

2-A; C-2a, B-2a; Lettered Edge, Punctuated Date.

Obverse 2 is easily identified by the comma-like defect in the date (arrow) such that it reads 1,795. **Also used with Reverses B and C**.

Reverse A as above.

Edge lettered TWO HUNDRED FOR A DOLLAR followed by one leaf, as above.

Estimated survivors: 200. Possibly a dozen are known in AU and above.

These were struck at the 1793 weight standard of 104 gr. Or 6.74 g. Some may have been included in the October 27 delivery; most were delivered on December 1.

2-A; C-2b, B-2b; Plain Edge, Punctuated Date.

Obverse 2 as above.

Reverse A as above.

Edge plain as all to follow, except where indicated.

Estimated survivors: 35. Nearly unique in grades above Fine.

These and all to follow were struck at the 84 gr., 5.44 g standard.

2-B; C-3, B-3; Plain Edge, Punctuated Date.

Obverse 2 as above.

Reverse B is easiest to distinguish by the lower left leaf pointing to the left upright of N of UNITED (arrow) and the outer leaf pointing the first A in AMERICA.

Estimated survivors: 40. About ten are known in F-VF. Unknown finer.

2-C; C-4, B-4; Plain Edge, Punctuated Date.

Obverse 2 as above.

Reverse C is easiest to distinguish by the lowest left leaf pointing to the right upright of N of UNITED (arrow). Also, there are no berries at the bow. It is usually seen in its cracked state as illustrated.

Estimated survivors: 150.

This is the most common of the plain edge, punctuated date varieties. Perhaps 10 are known in AU and better.

1a-C; C-5, B-5; Plain Edge, No Pole.

Obverse 1a. Obverse 1 was reground to such an extent that the pole is no longer visible (arrow) and some of the hair locks are weaker. The date is now weak and the 5 is often not visible, even in Fine. **Also used with Reverse D**.

Reverse C as above; always in the cracked state.

Estimated survivors: 300.

Very rare in grades above EF. Many of these were struck on cut down, defective large cents. Some of those are heavier and were at one time described as a different variety by Cohen. However, as there was no intent on the part of the Mint to create coins at different standards, they should not have variety or subvariety status. That said, I have no doubt that some collectors will continue to pay a premium for the heavier examples.

1a-D; C-6, B-6; Plain Edge, No Pole.

Obverse 1a as above.

Reverse D is easy to attribute as it is the only one with a leaf tip just below the I in AMERICA (arrow).

Estimated survivors: 1,300.

This is easily the most common 1795 half cent and is probably the most common half cent of the 18th century. At least a dozen UNCs are known. As with 1a-C, many were struck on cut down large cents, resulting in thicker planchets: others were struck over copper half dollar die trials, and at least one was struck on a leftover 1794 planchet. However, as with the preceding variety, there was no intent on the part of the Mint to create coins at different standards, they should not have variety or subvariety status. Many collectors still pay a substantial premium for the heavier examples and probably will continue to do so.

Interestingly, this variety is the second most common (after the Plain 4 Without Stems) as an error coin. I was able to tally 36 coins with significant errors, or just about 3% of the total.

1796

1796 was the first year that saw coinage of all authorized denominations. Though this date is legendary for its half cents' rarity, the number of 1796-dated half cents struck has been a matter of conjecture. The strike order of the two varieties is also uncertain. Though the varieties are die chained through a common reverse, so few were struck that the reverse die did not deteriorate enough to permit identification of multiple states.

There seems to be common consent that all deliveries through March consisted of 1795-dated coins. Three small deliveries: 3,350 on April 19, 1,740 on June 8, and 1,390 on October 14, completed the deliveries for the year. Interestingly, each of these deliveries may have resulted from only a few hours of coinage. What date(s) did these coins bear? It has been presumed by some earlier researchers that the last of these three deliveries comprised the entire 1796-dated mintage[1]. However, it has also been suggested that the last two or even all three of these were dated 1796[2,3]. If the combined mintage of the two 1796-dated varieties was only 1,390, it should have taken only a couple of hours to strike both. However, Obverse 2 (the no-pole) was apparently badly cracked from the start. Such a poor obverse would certainly not have been used to strike a few hundred coins if a much better obverse were immediately available, and there is no evidence that Obverse 1 suffered any damage. On this basis, it defies logic to suggest that the total mintage of 1796-dated half cents was only 1,390.

Furthermore, if the original mintage was only 1,390, the 1796 issues survive at ~7% of the original mintage, or about four times the fraction of the other Plain Edge Liberty Cap half cents. One general finding of my study of half cent survivorship is that dates known to be rare when the half cents were recalled in the 1850s-1870s are somewhat over-represented in the surviving population[4]; certainly, the 1796 issues would qualify, having been known to be rare for over 150 years. However, the over-representation of 1796 issues is troublingly large—more than double that of the 1802s. The apparent survivorship of 1796 issues can be brought into line with that of the 1802s if the June 8 delivery also was comprised of 1796 dated coins. Unfortunately, this interpretation, like the interpretation that only the last delivery was dated 1796, defies logic in that it requires the no-pole variety to have been minted the same day as the with-pole variety.

Alternatively, if the 1796-dated mintage has essentially the same survival rate as the 1802 half cents, the 5,090 delivered in April and June could have comprised the 1-A and the 1,390 in the October delivery the 2-A. The survivors predicted by these assignments agree well with the numbers estimated extant of each variety[5]. Thus, it would seem that the favored dealers in Philadephia saved the 1796 Liberty Cap half cents, just as they did other known rare dates, when the small cents were issued (see discussion on p. 60). We cannot be certain that this interpretations is correct, but the original mintage of 1796 half cents is certainly much greater than the previously supposed 1,390 and is most likely 6,480; still, a tiny number.

Two varieties were produced from two obverses and a single reverse.

1 Cohen, Roger S., Jr. 1982.
2 Breen, Walter H. 1983.
3 Guth, Ron. 1983.
4 Eckberg, William R. 2000c.
5 Eckberg, Bill and Ron Manley. 2001

1-A; C-2, B-2; With Pole.

Obverse 1 is characterized by the presence of a pole to the cap. (image courtesy of Goldbergs)

Reverse A is the only reverse used to strike 1796s. Its most distinguishing feature is a triple leaf at F in HALF. **Also used with Obverse 2.** (image courtesy of Goldbergs)

Estimated survivors: 110 (three times as many as Breen thought). About a dozen, 10% of the total, are known in AU or better. This may indicate that about a dozen collectors were active in Philadelphia in the late 18th century. A single example is known on a thick planchet, probably struck over a cut down, spoiled large cent.

Most likely delivered in April and June, 1796. The 5,090 estimated to be the mintage of this variety probably could have been coined in about a half a day, but if so, why would the coins have been delivered in two different months?

2-A; C-1, B-1; No Pole.

Obverse 2 is the famous no pole obverse. Unlike Obverse 1a of 1795, the other no-pole, the engraver did not include the pole in the die. It is also characterized by a pair of heavy cracks that together nearly bisect the coin from 9:00-3:00. One wonders why such a defective die was used. (image courtesy of Goldbergs)

Reverse A as above.

Estimated survivors: 30. Three are known in UNC, but the next finest barely makes VF.

Most likely delivered in October, 1796. Coinage of this variety can only have taken about an hour.

Eye Candy

The famous Eliasberg/Pogue 2-A was the first copper coin to sell (in 1996) for $500,000. (images courtesy of PCGS)

1797

The 1797 half cents, comprising only three varieties, offer a great deal of interest to the collector. Evidently, the Mint had only slightly improved its quality control from the previous year. It must have continued to use whatever it could get as planchet stock, as many, if not all of those dated 1797, are overstruck on Talbot, Allum & Lee (TAL) tokens or misstruck large cents.

Varieties

All three varieties are very easy to identify. One had the date placed too high, then almost completely erased and repunched, leaving a weaker 1 above the 1 of the date; another had the bust punched in much too low and off-center to the right. The other variety, however, has a beautifully centered head in a field framed by long dentils, making it the most attractive of all of the varieties produced from Scot's Head of '95 master die.

The dates of delivery and varieties contained in the deliveries have been controversial. Manley[1] has presented solid evidence, consistent with the surviving populations, that most of 1-A was delivered between April 24 and May 3, 1797. 2-A was delivered on May 6 and 8. An additional 12,170 delivered in the spring of 1799 are believed to be the shattered die states of 1-A (perhaps held back when struck?). A final 20,978 comprised of 3-B, the Low Head, were delivered in the spring of 1800. Thus the total mintage of 1797-dated half cents was 140,196.

Most, if not all, of 1-A and 2-A were struck on TAL tokens, somewhere around 90,000 of which were received in December, 1796. All of 3-B apparently were struck on spoiled large cents, many of which were not even rolled to proper half cent thickness. Some show dramatic undertype. One is known dramatically overstruck on a 1798 Sheldon 164 large cent, which proves that, though dated 1797, it was struck in a later year (see "Eye Candy" on p. 55).

1-A; C-1, B-1; 1 Above 1.

Obverse 1 is easy to identify by the thin 1 above 1. There are remnants of what probably represent the other three digits to the right of the 1. This die undergoes the most dramatic deterioration of any half cent die. It rapidly develops multiple bulges and several cracks that branch. Eventually, the die shatters as shown, weakening or obliterating Ms. Liberty's nose and forming a bulge in the obverse field that is so strong that ICA on the reverse can no longer strike up. Because of the interesting die state sequence, many collectors attempt to obtain examples of both early and late die states.

1 Manley, Ron. 2000.

Reverse A is characterized by two leaves and a berry at ME and a very crowded fraction with the first 0 high and nearly touching the fraction bar. **Also used with Obverse 2**.

Estimated survivors: 1,100. At least twenty are known in AU or better.

2-A; C-2, B-2; Normal Head.

Obverse 2 is thought by many, including this author, to be the most beautiful of the Heads of '95. The head is nicely centered, with the date and LIBERTY close to the long, well defined dentils. See "Eye Candy" on p. 55.

Reverse A as above, but in later states.

Estimated survivors: 500-600. Very rare in grades above VF. The stunning Clenay/Bareford/Tettenhorst/Pogue example is perhaps the most beautiful example of the type. See "Eye Candy" on p. 55.

3-B; C-3. B-3; Low Head.

Obverse 3 is the famous Low Head. The head was punched much too low in the field, and the date is crowded between it and the dentils. (image by Tony Butcher)

Reverse B is identifiable by triplet leaves at ME (arrow) and the first 0 low and distant from the fraction bar. RICA is very widely spaced.

Estimated survivors: 300. Unknown in UNC and only a single AU; perhaps ten grade EF.

This variety exists in three different edge subvarieties: lettered, gripped and plain (see p. 15 for images of the Lettered and Gripped Edges). The Lettered Edge reads TWO HUNDRED FOR A DOLLAR with no leaf. The grip marks were added by the upsetting mill, as there is overlap from the two edge dies (p. 15). Breen suggested that they may have been imparted by a rough planchet cutter, but that is incorrect. If that were the source, the upsetting mill would have smoothed them away as it made the planchets round and narrower. About 75 are known with the lettered edge and 15 with the gripped edge.

Eye Candy

The coin pictured is the stunning Clenay/Bareford/Tettenhorst/Pogue 2-A. In the author's opinion, this is the most beautiful coin of the type. (images courtesy of Goldbergs)

The coin shown below is the fascinating Dupont/Davy (*i.e.*, Tettenhorst) 3-B overstruck on an off-center 1798 Sheldon 164. It is hard to tell from the images whether the cent or the half cent was struck first. It is likely, though it cannot be proved by this coin, that a misstruck cent was cut down and struck with the half cent dies without being softened by annealing, leaving the cent impression nearly as strong as the half cent impression. (images courtesy of Goldbergs)

1800

In 1800, Scot finally replaced his flowing hair design with the Draped Bust design that he had introduced on the dollar five years earlier. The smallest denomination, the half cent, was also the last to adopt the new design. Traditionally, this design is based on a drawing of Anne Willing Bingham, prominent Philadelphia socialite and Federalist, by Gilbert Stuart. Stuart's involvement was first reported by James Ross Snowden in 1861 from "a relation of the family[1]." However, this was 66 years after the fact. I have been able to locate no reasonably contemporary evidence for it, and the drawings and paintings of Mrs. Bingham by Stuart show a very different hair, chin and jaw line than is found on the Draped Bust coins. In my opinion, the lady on the Draped Bust coinage is an archetype of Liberty, as on all of the earlier and later coins, and does not represent a portrait of Mrs. Bingham.

Reconstructed Draped Bust half cent obverse hub.

Overlays confirm that a single Draped Bust master die/hub created all of the half cent obverse dies used from 1800-1808. A total of nineteen dies were used: one each dated 1800, 1802/0 and 1807, two dated 1808, three each dated 1803, 1805 and 1806 and five dated 1804.

Authors frequently talk about "average die life." Draped Bust obverse dies averaged about 185,000 ± 166,000 coins per working die. With a standard deviations nearly as large as the average, the term "average die life" is a meaningless concept for the Draped Bust half cents (see p. 86 for the data and a full discussion).

Contemporary portrait of Anne Willing Bingham by Gilbert Stuart. The lady in the portrait hardly resembles the lady on the coins.

Draped Bust half cent design as reimagined for the 2007-W gold Jefferson First Spouse Bullion Coin.

It is the only half cent design that has ever appeared on a gold U.S. coin, it having been adapted to produce the reverse of the 2007 Jefferson Spouse gold bullion piece.

The reverse die is the only one of the earlier type used with Draped Bust half cents. Therefore, this variety and the 1802/0 1-B can be considered to be a separate type from the other Draped Busts.

1 Snowden, James R. 1861.

Many half cents delivered in 1800 were dated 1797 as discussed in the previous chapter. Those dated 1800 were delivered in September, October and December. Thus, the actual mintage of 1800-dated half cents was almost certainly 190,552.

1-A, C-1, B-1.

Obverse 1 was the only die used to strike 1800-dated coins. The date is weakly impressed and the last 0 is large and touches the drapery.

Reverse A is unlike any other reverse used for the Draped Busts in being of the design with single leaves at the top of both sides of the wreath as used from 1795-1797. It had a defect from the second berry on the left to the E in UNITED. This defect was small and light at first and became much heavier as the die wore. **Also used with 1802/0 Obverse 1**.

Estimated survivors: 1,600. By the standards of Draped Bust half cents, this variety is relatively easy to obtain in UNC. About sixty UNCS remain from at least two small hoards discovered by the middle 1930s.

1802/0

Though there are only two varieties, this is a fascinating year for half cents. Scot's obverse hub from 1800 continued in use. The obverse die had originally been dated 1800 but not used, and the 2 was punched over a minimally erased cipher.

Reconstruction of Scot's Draped Bust Reverse of 1802 hub.

Scot developed a reverse hub in 1802. Fifteen reverse dies were used from 1802-1808. All were produced from the same hub/master die. It differs from the earlier type in that the upper right leaves are paired like those on the cent wreaths of the time and some half cents of 1794. Often called the Reverse of 1803, though it should more properly be called the Reverse of 1802, as that was its first appearance. It was a marvel of minimalism, as it included only the leaves, branches and ribbon. The lettering, fraction, wreath stems, berries and their stems were individually engraved. All of the lettering, numerals and dentils were punched in separately.

The concept of "average die life" is at least as absurd for the Draped Bust reverses as it is for the obverses. The average was about 195,000 ± 270,000 coins per reverse die; note that the standard deviation is larger than the average! (see p. 86 for the data and a discussion)

No half cent planchets were available in 1802, so Voigt had these coined on spoiled cents and the clipppings therefrom. Consequently, many show cent undertype, and examples with attributable undertype command a premium.

The total mintage is uncertain. 14,366 half cents were reported coined in 1802. However, a delivery in August, 1803 of 5,900 coined from spoiled cents was almost certainly also dated 1802, making the actual total 20,266. Had those been dated 1803, many examples of the date struck on spoiled cents should be known, but almost none are.

Varieties

Two die varieties are known, differing in the reverse die used. One, which I call Reverse B, was the reverse die from 1800. The other was from Scot's new Reverse hub. Cohen and Breen both placed 1-B as the first variety coined, presumably on the basis that it used the preexisting die. However, Manley showed conclusively that 1-B was coined after the early states of 1-A.

1-A; C-2, B-2; Reverse of 1803 (actually, Reverse of 1802).

Obverse 1 is the only 1802-dated obverse. It was created by punching a 2 over the final zero of an existing but unused 1800 die. It may have been poorly hardened, as it quickly developed pitting that became extensive. This has been called die rust, but it is likely that much of it, at least, is due to mechanical damage.

Reverse A was the first one from Scot's new hub to be used. It differs from previous reverses most obviously in having two leaves at the top of the right wreath. Small rim cuds are visible in the latest states.

Estimated survivors: 600. This is about twice what would be expected based on the overall survivorship of Draped Bust half cents. See the next page for the explanation. Unknown in Extremely Fine or better and very rare in VF

1-B; C-1, B-1; Reverse of 1800.

Obverse 1 as above but in later, though not the latest, die states.

Reverse B is the same as **Reverse A of 1800** (p. 57), but in a very late die state

Estimated survivors: 35. Unknown in grades above Fine.

1802/0 has been known as a rare date for many years. It is overrepresented in the surviving population because favored Philadelphia rare coin dealers were allowed to select coins to save from the coppers turned in to the Mint when the Flying Eagles were first released[1]. As some still find this hard to believe, it seems worthwhile to quote the 19th century spin doctor, Édouard Frossard, directly on the matter:

> *During the last fifteen years the vein of collecting coins has greatly increased in the United States. Before that time there were collectors, men of note, perseverance and genius, like Dr. M. W. Dickeson, Edward Maris, J. J. Mickley, and a few others, whose opportunities for collecting the various issues of Colonial and old mint pieces have not since been equalled. Had it not been for the spirit of research of these gentlemen at a time when old American coins were sent to the United States mint·for recoinage by the thousand; many rare varieties … would have been utterly lost to us. The facilities extended those gentlemen by a liberal mint government enabled them to handle thousands of coppers, and to select from the mass such specimens as they considered worthy of preservation.*

This "spirit of research" also explains why the lettered edge varieties of 1793-1795 survive in a higher proportion than the plain edge Liberty Caps, Draped Busts and early Classic Heads. It must have been wonderful to have been a coin dealer in Philadelphia in the late 1850s and 1860s when the "mint government" so generously helped to make your business profitable. On the other hand, we should be be grateful that this shady practice was carried out, or the coins we love would have been much less available to us.

1 Frossard, Édouard. 1876.

1803

The 1803-1808 half cents continue the designs from 1802 using the obverse hub of 1800 and the reverse hub of 1802.

The exact mintage of this date is not knowable, but everyone agrees that the reported mintage of the year does not in any way represent all the half cents dated 1803. The Mint reported only two deliveries during the year: 5,900 that we have already accounted for as having been dated 1802/0 and 92,000 on December 31. If that were the total mintage of the year, we would expect about a thousand survivors for the entire date. However, about four times that number are known to survive. Thus, most of the coins must have been delivered in subsequent years. Indeed, the 1-D variety is known to have been entirely coined in 1805, because Reverse D was first used with an 1805-dated obverse. Most 1803-dated half cents were struck and delivered in 1804. Based on survivorship, the mintage of coins dated 1803 must have been *at least* 350,000.

Manley has demonstrated that the emission sequences proposed by both Cohen and Breen are incorrect[1]. The first variety struck was 1-A, which Cohen and Breen thought was the second variety coined. All of this variety and part of 1-B were included in the December 31 delivery. The rest of 1-B comprised the 135,000 delivered on February 7, 1804[2]. Most of 2-C was delivered on February 14; the last of those were delivered with three 1804-dated varieties on February 24. All of 1-D was evidently delivered with three 1805-dated varieties on June 29, 1805. Because two varieties were delivered with varieties of other dates, the exact mintage of 1803-dated half cents cannot be precisely known. The same is true of the 1804- and 1805-dated half cents. The best estimate is that approximately 388,000 were struck bearing the 1803 date. My rationale for the estimate is given on p. 84.

Varieties

1-A; C-2, B-2.

Obverse 1 is found on the majority of 1803 half cents. It is most easily distinguished from obverse 2 by the fact that the date is evenly spaced, as 1803. There is a remnant of a larger 3 under the 3 in the date that quickly fades. **Also used with Reverses B and D.**

1 Manley, Ronald P. 1998.

2 Eckberg, William R. 2001. Estimated delivery dates of all Draped Busts to follow are from this article.

Reverse A is most easily distinguished by the fraction; the fraction bar is short (arrow), and the digits in the denominator are widely and evenly spaced. The die develops a large and interesting cud over STAT, as illustrated.

Estimated survivors: 100. Unavailable in AU or better, and only two are known in EF. Perhaps 10 are known in VF. Very few are better than VG.

1-B; C-1. B-1.

Obverse 1 as above but in later states. The remnant of a larger 3 in the date is less pronounced, and the dentilation is weaker than on 1-A. In late die states, a bulge in the obverse field surrounds Ms. Liberty that makes it look like she is floating in waves or surrounded by an aura.

Reverse B is easily identified by a heavy engraver's scratch from the right end of the fraction bar to the right ribbon (arrow). It is visible even on low-grade examples.

Estimated survivors: 3,000+. By far the most common variety of the date, it remains surprisingly rare in UNC. AUs are sometimes available for a price, but most collectors would be happy to have a nice example in EF.

2-C; C-3, B-3.

Obverse 2 is easily identified by the spacing of the date as 180 3. In later states, it develops heavy bulges through the date and at the shoulder that obliterate the drapery and hair curls at the shoulder. That shown is in a fairly early die state with the date only slightly bulged.

Reverse C is easy to identify as the two zeroes in the denominator touch, which led Cohen to call it the "cross-eyed zeroes" reverse. In die states where the shoulder is bulged, the leaves above HA are struck up weakly or not at all. **Later used as 1804 Reverse A**.

Estimated survivors: 1,300. Though significantly scarcer than 1-B, it seems to be slightly more available in high grades. Perhaps 10 true UNCs survive.

1-D; C-4, B-4.

Obverse 1 as above but always with very weak obverse borders.

Reverse D is the **same as Reverse A of 1805.** It is most easily characterized as the only 1803 die with eleven berries, including two at the first T in STATES (arrow).

Estimated Survivors: about 175. Fewer than five are known in AU and better.

1804

1804 is without a doubt the most fascinating date in the entire half cent series. Not only are there more varieties than in any other year, the mintage was larger than that of any other year. It can be no coincidence that the two half cent dates with the largest mintages, 1804 and 1809, correspond to dates that are scarce in the large cent series. Whatever you like in half cents, you can find it among the 1804s. UNCs? Check. Great rarities? Check. Interesting die states? Check. Errors? Check. Controversy? Check.

The reported mintage for the year was 1,055,312, which would be the largest of all the Draped Busts and second only to 1809 for the entire series. My study of the surviving population and the delivery dates suggests that the actual mintage of 1804-dated half cents was approximately 1,275,000, or about 25% larger than the Mint's report. Even though most of the 1803s were delivered in 1804, hundreds of thousands of specimens dated 1804 were delivered in 1805.

The first controversy is what to call the Spiked Chin obverse? It is an injured Obverse 2. Cohen gave it a new variety number after the spike and protruding tongue formed. Breen placed a lowercase a after the variety number in which the damage occurred to distinguish it from the early die states and to distinguish it from another variety struck before it; Breen's apparoach seems far more reasonable. The damage occurred during the striking of variety 2-A. It is uncertain what caused it. Breen speculated that a small bolt landed on the die and clashed it, creating the spiked chin and protruding tongue, as well as some curved lines in the field in front of the throat. That makes as much sense as anything. In addition, a bulge develops in the field in front of the face. I believe that a planchet came between whatever caused the damage and the reverse die, as the reverse is minimally disturbed in the corresponding area, though it quickly developed a bisecting crack.

Varieties

There are twelve varieties of the year, produced from 5 obverses and 6 reverses. Cohen listed thirteen; one of his varieties, "C-3," proved to be an early die state of my 2-A. He delisted it in his second edition, but some collectors continue to treat it as if it were a different variety rather than a die state.

Photographic overlays and image analysis demonstrate that Reverse G, the stemless reverse, had two of its leaves repunched, the only such variety. Another controversy derives from this "defective" die. Based on the number of survivors, it must have struck over 600,000 half cents dated 1804 and nearly as many dated 1805-1806. Was a mintage of over a million from one die even possible? See the discussion on pp. 73 and 86.

Side-by-side comparison of the upper left outside leaf pair on Reverses G (left) and E (right), which is typical for the entire type. The leaves punched by the hub were partly effaced (red arrow) and re-engraved leaning left instead of right.

Finally, the emission sequence is also controversial. Cohen and Breen proposed different emission sequences for the 1804 varieties. Manley proposed a third, and my suvivorship findings are completely consistent with his, so I have adopted it here.

1-A; C-4, B-2; Crosslet 4 With Stems.

Obverse 1 features a large and very low crosslet 4 that leans left and is noticeably below the arc of 180. **Also appears with Reverse B.**

Reverse A features a very wide denominator and a very short fraction bar. The 2 is completely left of the fraction bar, and the bar barely reaches the second 0. **Also appears with Obverse 2**.

Estimated Survivors: 80. Nearly unique in AU and EF; perhaps twenty exist in Fine or better. Probably, all of the variety were struck on a single day and delivered on February 24 along with the next two and 1803 2-C.

1-B; C-2, B-3; Crosslet 4 With Stems.

Obverse 1 as above. It develops a heavy rim break over RTY and a crack from the 4 to the rim opposite the forehead.

Reverse B is the same as **Reverse C of 1803**, the cross-eyed zeroes (illustrated on p. 63).

Estimated survivors: 30. Probably included in the February 24 delivery. Discovered in the late 1960s, only two were known when Cohen's first edition was published. Eight were known when Breen published. A number have been cherrypicked over the past two decades. One is known in Fine; none better. The dies were out of alignment during the striking of this variety, which probably led to the rapid demise of the obverse.

2-B, C-1, B-1; Crosslet 4 With Stems.

Obverse 2 is another example of the crosslet 4. The 4 is very high, nearly touching the drapery. **Also appears with Spiked Chin with Reverses A, C, D and E.**

Reverse B as above, but later. The curved crack from the rim through the second T in STATES to the F that develops on the 1803 2-C eventually obliterates the upper middle of the reverse.

Estimated survivors: 550-600. Approximately 10 in EF-AU plus a single UNC. Probably the March 8 and part of the February 24 deliveries.

2-A and 2a-A; C-5, B-4 and -4a; Spiked Chin.

Obverse 2 as previously but almost always **as 2a with the Spiked Chin**. During this mintage it receives the damage that forms the Spiked Chin. Early die state examples without the spike, called the "Spikeless Chin," are rare, but not extremely so; several have been cherrypicked in the last couple of decades. It is uncertain what caused the injury. Most likely, a very small bolt or the like came between the die and a planchet. It is a bit of a surprise that such a damaged die continued in use and even more surprising that it struck almost 250,000 more coins after the injury!

Reverse A as above. It develops several cracks, including a bisecting crack, from the A in STATES to the C in AMERICA.

Estimated survivors: 200. Extremely rare in EF and better. The second scarcest of the Spiked Chin varieties. Probably delivered with the next two varieties on March 31. This suggests that the injury causing the spiked chin and protruding tongue happened in mid-late March.

2a-C; C-7, B-5; Spiked Chin.

Obverse 2a as above, always with the Spiked Chin.

Reverse C is easily identified by triplet leaves at the F in OF; they are closer to the O on all other dies used with this obverse. Like reverse D, it forms substantial cuds and is collected by die state, despite it being relatively scarce.

Estimated survivors: 150. Unknown in UNC and only two are known in AU, with perhaps 5 in EF. Fewer than 30 were known in 1960; by the mid-1980s, that number had grown only slightly. Many have been discovered since then. As it is very similar to the common Spiked Chin (2-E), many examples were not accurately attributed in the past. It seems to be a common situation that rare varieties that are very similar to common varieties were not often attributed until recently. Probably the Breen and Manley books with their quality illustrations promoted this cherrypicking.

2a-D; C-6, B-6; Spiked Chin.

Obverse 2a with Spiked Chin as the previous two varieties.

Reverse D would have been the most pleasing of the Spiked Chin reverses. The text is evenly spaced, and the fraction is compact, but the zeroes do not touch. Mostly, however, it is attributed by the extensive cracking and cud formation it undergoes. Breen identified fourteen distinct die states, while Manley recognized nineteen. Cohen is said to have remarked that to have a complete die state series, one would have to collect every example. See "Eye Candy" on p. 74.

Estimated survivors: 1,000. Fewer than 10 UNCs, but AUs are more available. At one time this variety was challenging to obtain, because several collectors attempted to obtain examples in each die state.

2a-E; C-8, B-7; Spiked Chin.

Obverse 2a with the Spiked Chin as the previous three. It develops a cud beginning at L and extending gradually over IBE.

Reverse E is very similar to Reverse B except the zeroes do not quite touch and the A nearly touches the ribbon. Nearly always seen with a die defect through R. **Also seen with Obverses 3 and 4**.

Estimated survivors: 2,000+. This is the most common Spiked Chin variety, and at least 30 survive in UNC. Almost certainly delivered on June 26 or 30.

3-E; C-9, B-8; Crosslet 4 With Stems.

Obverse 3 has the date widely spaced with the 4 leaning left but not below the other digits. As shown, it develops a cud over RTY and a crack from the 4 to the rim in front of the drapery.

Reverse E as above but always with the die defect at R more prominent.

Estimated survivors: 1,200. Perhaps 15-20 exist in AU-UNC. Delivered in June.

4-E; C-10, B-9; Crosslet 4 With Stems.

Obverse 4 has a closely spaced date with the 4 vertical, slightly high and close to the 0.

Reverse E as above. Always with the die defect very heavy.

Estimated survivors: 3,000+. This is the most common Crosslet 4 with Stems variety. Perhaps 20-25 UNCs exist. Almost certainly delivered September 29, 1804 and not in 1805 as Breen speculated.

5-F; C-11, B-12; Plain 4 With Stems.

Obverse 5 is easily identified as the only one with a plain 4. This obverse must have struck about two-thirds of a million coins. **Also used with Reverse G.**

Reverse F has a wide fraction with a very wide fraction bar.

Estimated survivors: 1,200. UNCs are all but unknown, and perhaps 10 exist in AU. This is the Plain 4 with Stems variety. Formerly thought to be rare, it is now known to be fairly common, but it still brings a significant premium, perhaps due to a persistent impression of scarcity and perhaps also due to its status as a *Red Book* variety and its unavailability in UNC. It probably comprised part of the mintage delivered on December 31.

5-G; C-13, B-10; Plain 4 Without Stems.

Obverse 5 as above.

Reverse G is the Stemless Reverse. The Wreath Stems were omitted, and the outer leaves at ST have been repunched. A thin die scratch extends from the tip of the leaf at the first T to the E. **Also used with Obverse 4, 1805 Obverse 3 and 1806 Obverse 2.**

Estimated survivors: about 8,000. This is by far the most common of all half cents. UNCs are probably more available than for any other non-hoard Draped Bust variety. More than 100 UNCs survive. Based on survivorship, the mintage must have exceeded 600,000. More than a month of full-time coinage must have been devoted to this amazingly long-lived die pair. This reverse die later created the most common varieties of 1805 and 1806 as well! It was likely delivered on December 31, 1804 and March 30, 1805, with most of the mintage delivered in the second batch.

As the most common variety, it should not be surprising that errors are also fairly common on this variety.

4-G; C-12, B-11; Crosslet 4 Without Stems.

Obverse 4 as above.

Reverse G as above.

Estimated survivors: 1,800. This is the Crosslet 4 Without Stems variety. It was presumably delivered on May 10, 1805 as the last variety of 1804. Probably 25-30 UNCs exist.

Eye Candy

A set of Manley die states of 1804 2-D from 1.0, the earliest seen, to one reported by Breen that nobody else had ever seen, so Gene Braig had some made, "13.0."

1805

The reported mintage for 1805 was 814,464. However, we know that much of the 1804 mintage was actually delivered in 1805, as was one scarce variety of 1803. If we subtract the coins of earlier dates that were delivered in 1805, we arrive at 245,000, the approximate number of 1805-dated coins that were struck.

Varieties

1-A; C-2, B-2; Small 5 With Stems.

Obverse 1 has a 5 that is squat and odd-looking, much smaller than the other digits and is distant from the 0. **Also used with Reverse B.** (image courtesy of Goldbergs)

Reverse A is the same die as **Reverse D of 1803** (illustrated on p. 64), in earlier states here. The A in HALF leans noticeably right.

Estimated survivors: 40. Unknown in EF or better and very rare above VG. These represented a small minority of the June 29, 1805 delivery.

1-B; C-3, B-3; Small 5 With Stems.

Obverse 1 as above except always with a heavy bulge in the field before Ms. Liberty's face.

Reverse B. The fraction is very wide, and the fraction bar almost completely covers the 2. **Also used with Obverse 2.**

Estimated survivors: 150. Very rare above Fine. The finest known grades EF. It makes up a small fraction of those delivered on June 29.

2-B; C-4, B-4; Large 5 With Stems.

Obverse 2 has a large also oddly-shapted 5, distant from 0 and touching the Drapery.

Reverse B as above.

Estimated survivors: 1,750. Relatively common, but only one or two UNCS are known, with perhaps a dozen in AU. This variety probably made up the majority of those delivered on June 29.

3-C; C-1, B-1; Medium 5 Without Stems.

Obverse 3 has yet another weird 5 that is slightly taller than the other digits but does not touch the drapery and is not quite as large as that on Obverse 2. It is often called "Small 5 Without Stems," but the 5 is noticeably different from that on Obverse 1.

Reverse C is the same as **1804 Reverse G**, the stemless reverse (p. 73).

Estimated survivors: 2,500. The commonest variety of the date. UNCs are tough but occasionally available. Delivered in December, 1805.

1806

Walter Breen speculated that the 356,000 half cents delivered in 1806 may have included many of earlier dates. He also speculated that many of the 199,000 half cents delivered through September of 1807 were dated 1806. The Treasurer's receipt book for copper coins breaks the six deliveries Breen quoted into thirteen, giving us a finer tool with which to examine the deliveries. Comparative study of the Treasurer's receipt book and survivorship makes it unlikely that any earlier dated coins were delivered in 1806. However, even so, the population of 1806-dated half cents is much too large to accommodate only those struck in 1806. It appears that the entire mintage of the Large 6 variety was struck in 1807. Estimated actual mintage: 555,000.

Varieties

There are four varieties dated 1806. Two are common, the Small 6 Without Stems, and the Large 6. The other two are scarce to rare, and both of those are Small 6 With Stems.

As with 1804 and 1805, the Stemless Reverse coins make up the largest number. Breen suggested that this die likely struck over 500,000 coins. However, the surviving population from that reverse is approximately 17,000, suggesting a mintage of over 1.1 ***million*** coins. This is by far the largest number of coins struck from any half cent die. One might wonder if it is even *possible* that a die of that era struck that many coins. Even modern dies are supposedly retired after striking 250,000 coins. But if the stemless die struck only 250,000 coins, about 7% of the original population must survive. Draped Busts, Plain Edge Liberty Caps and early Classic Heads all survive at a little over 1% of the original mintage. So, *either the stemless coins were preferentially hoarded in massive numbers, or the die truly DID strike an amazing number of coins*. We find from studying the population that where hoards exist, they tend to exist in UNC. However, there is no evidence of any hoard of UNC stemless reverses (see p. 85). All stemless varieties are available in UNC, but not in unexpectedly large numbers, given the number of survivors. Is it possible that someone, somewhere in the past 200 years decided to save as many stemless reverses as possible? We, of course, can't prove it did not happen, but why would anyone do such a thing? And if he did, why has nobody ever heard about it? We are, thus, left with the conclusion that the Stemless Reverse die was a major outlier in the number of coins it struck. See p. 85 for additional evidence.

1-A; C-2, B-1; Small 6 With Stems.

Obverse 1; small 6 in an arc with the baseline of the other digits. Sometimes called the small, low 6, as it is lower than that on Obverse 2. The top of the 6 is noticeably separate from the drapery.

Reverse A has a wide fraction with a short fraction bar (arrow). It **also appears with Obverse 2**.

Estimated survivors: 175. Three UNCS and a like number of AUs exist. This variety is extremely rare in EF and better. Probably delivered on July 11, 1806.

2-A; C-3, B-2; Small 6 With Stems.

Obverse 2; small, high 6. The 6 is noticeably above the baseline of the other digits and nearly touches the drapery. It also appears with the stemless reverse, **Reverse G of 1804**.

Reverse A as above.

Estimated survivors: 45. By far the scarcest variety of the year. Always in low grades; unknown above Fine. Probably included with the previous variety in the July 11 delivery.

2-B; C-1, B-3; Small 6 Stemless.

Obverse 2 as above.

Reverse B, the Stemless reverse, is **Reverse G of 1804** (p. 73).

Estimated survivors: 5,000+ This is the second most common Draped Bust half cent, surpassed only by the 1804 Plain 4 using the same reverse. About 100 UNCs are known. Some were probably included with the July 11 delivery. The rest followed from September through December.

3-C; C-4, B-4; Large 6 With Stems.

Obverse 3 is the Large 6 obverse. The 6 is repunched and noticeably larger than any of the other digits, yet it does not match those on the cents and half dollars of the date. Its base is on the line with the rest, and its top is embedded in the drapery.

Reverse C differs from the other reverse with stems in that the fraction bar is very long, extending as a scratch (arrow) nearly to the right ribbon. **Also used with Obverse 1 of 1807**.

Estimated survivors: 2,000. A hoard of red UNCs, apparently amounting to roughly a quarter of the surviving population, was dispersed over a century ago. Over 50 still retain significant red color. This variety was most likely struck over the first 6 months of 1807.

3-C comes in two different striking variants. The common one (shown) has the drapery and the upper leaves very weak. A far scarcer variant is weak at the top back of Ms. Liberty's head and LIB and at the fraction. I have searched for but never seen an example that is fully struck all over. The dies must have been out of alignment. But why would they be misaligned in two different ways?

1807

There is only one variety with the 1807 date. The reported mintage is 476,000 which would make the surviving population too large. 199,000 of the mintage can be attributed to the Large 6 from the previous year. The actual delivery dates of 1807-dated half cents are from August 4, 1807 to March 31 or April 4, 1808. I estimate the mintage to be about 356,000.

Variety

1-A; C-1, B-1.

Obverse 1 is the only 1807 obverse. The 7 is very large and most likely from the cent font. In high grade very early die states as illustrated, it can be seen to be triple-punched. This was first reported by Howard Barron. The hair is always weakly struck and appears worn even in AU, as illustrated.

Reverse A is the same as **Reverse C of 1806** (p. 80). Usually well-struck on this variety, supporting the conclusion that the 1806 dies must have been out of alignment. It would appear that this die struck 555,000 coins between the two dates. While not approaching the output of 1804 Reverse G, this was still a prodigiously prolific die.

Estimated survivors: 4,000. For such a common variety, true UNCs remain surprisingly elusive, as fewer than 20 are known. Early die state examples with full dentilation on the obverse and reverse are very rare and generally command a significant premium, especially in higher grades, as the typical later strike is very mushy. The obverse die wears quickly, weakening the dentils and developing heavy flowlining that gives EF coins a cartwheel luster resembling that of UNCs. The obverse fields develop a rough, orange-peel effect.

1808

1808 was the last year of coinage of Draped Bust half cents. The large cent design changed to the Classic Head that year. As usual, half cents were the last denomination to change designs.

Coinage of 1808s began in April. There were two small deliveries that month: 14,000 on April 4 and 28,000 on April 29. It seems most likely, based on the surviving population size, that the April 29 delivery contained 1-A and part of 1-B, with the rest of 1-B delivered on May 11. Two more deliveries were made: 210,000 on May 16 and 60,000 on June 29. Those two deliveries made up the 2-B.

Varieties

1-A; C-1, B-1; 1808/7.

Obverse 1 has the 8 clearly punched over a 7 such that the top of the 8 looks flat. **Also used with Reverse B.**

Reverse A has a leaf that nearly touches the base of the D. It rapidly develops a die break over ITED STAT. (image by Tony Butcher)

Estimated survivors: 16-20. The finest known are in two in VF. The reverse die was badly out of alignment, which caused too much striking pressure on its upper left side, cracking and breaking the die. In all likelihood, the die survived only 2-3 hours in the press before it had to be discarded.

1-B; C-2, B-2; 1808/7.

Obverse 1 as above.

Reverse B is easily identified by the fact that the outermost leaf is distant from the D. **Also used with Obverse 2**.

Estimated survivors: 650. The variety is extremely rare in grades above VF, but a single UNC is known.

2-B; C-3, B-3; Normal Date.

Obverse 2 has a large 8 that was made by punching the zeroes of the denominator one over the other. Perhaps the punch used on Obverse 1 had broken and was unusable?

Reverse B as above.

Estimated survivors: 3,500. Fewer than a dozen UNCs are known. Like the 1807, the hair seems to have been weakly impressed into the die, or the striking pressure was weak, as many are blunt. That illustrated is unusually sharp.

Probable Mintage of Draped Bust Half Cents

Students of half cents have long recognized that the mintages reported for the various Draped Bust (among other) half cent dates are inconsistent with the surviving population sizes. That the reported mintages of these dates do not correspond to the exisiting populations has been clear for many years. Breen[1] listed many of the deliveries as being comprised entirely or largely of coins dated earlier, usually with no reported rationale for why other than pure speculation. My own findings from an extensive statistical survey[2] concur with some of his conclusions. His findings were limited by the information available at the time, and my more complete analysis of the surviving population refined and corrected Breen's conclusions. The collector interested in this series is wise to ignore the mintage figures released by the government and repeated in other publications if he wishes to know the relative availability, and therefore the number minted, of these dates.

It is well established that the Mint struck coins well after the date on the coins in the early days. The most infamous and obvious example is that 19,570 silver dollars were reported minted in 1804 (and 321 in 1805!), yet no dollars bearing the 1804 date were struck before 1834, and none were ***ever*** struck bearing the 1805 date.

The table below represents the best estimate of the actual mintage of coins bearing each date. It can immediately be seen that 1803s, 1804s and 1806s were minted in much larger numbers than the reported output of those years and 1805s and 1807s in far smaller numbers than the reported mintage for those years.

Date	Reported Mintage	Probable Mintage
1800	211,530	190,552
1802	14,366	20,266
1803	97,900	~388,000
1804	1,055,312	~1,275,000
1805	814,464	~245,000
1806	356,000	555,000
1807	476,000	356,000
1808	400,000	312,000

The probable mintages of 1803, 1804 and 1805 can only be approximated. Because some deliveries included coins of more than one date, it is and always will be impossible to know the *exact* mintages of those dates.

It may be of interest that, except for 1800, all of these coins were struck during the Jefferson administration. Recall that the Mint was established under his jurisdiction when he was Secretary of State. The mintage during the Jefferson administration amounted to nearly 3.2 million half cents, or just about 40% of the total struck from 1793-1857.

1 Breen, Walter. 1983.
2 Eckberg, Bill. 2001.

Grade Ranges of Surviving Early Half Cents

As noted earlier, thanks to a "liberal mint government," favored Philadelphia coin dealers were allowed to go through many of the early coppers that were turned in the the Mint in exchange for the Flying Eagle "nickels" beginning in 1857[1]. That the Lettered Edge types survive in substantially greater numbers relative to their original mintage than do the slightly later Plain Edge coins is testimony that these dealers saved a very high percentage of the thicker coins – perhaps all they saw, irrespective of grade. Thus, we might expect a particularly large proportion of them to be in very low grades. In fact, this is what we see.

1793s, a unique type and the first American half cents, appear to be somewhat of an outlier in that the percentage in high grades (AU-UNC) is atypically high. Evidently, some were put aside as the first of their kind. Best estimates are that about 4% of survive in AU-UNC, 6-7% in VF-EF and about 90% in low grades. These are expensive and difficult to get in attractive middle condition.

The Lettered Edge coins of 1794-5 survive in high grades at lower percentages, but in middle grades at higher percentages: AU-UNC about 2.5%, VF-EF about 12-15% and about 85% in lower grades. They are still quite scarce in middle grades.

The Plain Edge Liberty Caps are an interesting case. The 1795 and 1797 dates, like the 1794 and 1795 Lettered Edge coins, survive at about 2% in AU-UNC, 15% in VF-EF and nearly 85% in lower grades. Those of 1796 differ substantially. Nearly 10% of the 140 or so known coins survive in AU-MS, 9% in VF-EF and just over 80% in lower grades. Thus, 1796 is quite scarce as a date, but substantially overrrepresented in the highest grades. We can only speculate about the explanation for this, but it may suggest that somewhere near 10-12 collectors existed in Philadelphia at the time. Roughly 30-50 AU-UNCs seem to survive of the other dates. The additional coins can be explained by people who decided to save them as curiosities and by foreign travelers who brought them back to other countries. A number of these coins have been repatriated from Europe.

Draped Bust survivorship overall is slightly lower than for the earlier types[2]. Apparently, they weren't as attractive to the Philadelphia coins dealers in the late 1850s. Taking the hoard varieties (1800 and 1806 3-C) out of the calculation, Draped Busts appear to survive at about 3% in AU-UNC, and 22-25% in VF-EF, with 70-75% in lower grades. Certainly, survivorship is noticeably higher in the middle grades than for the earlier types. 1806 3-C is the real outlier, with only a bit more than half in lower grades. The hoard of this variety must have equalled several hundred coins[3], roughly a quarter of the surviving population.

If we consider the Stemless Reverse coins (1804 4-G and 5-G, 1805 3-C and 1806 2-B), chosen as including three of the most common, we see about 4% in AU-UNC and 25-30% in VF-EF, leaving about 70% in lower grades. These numbers agree reasonably well with those for the type as a whole, giving us confidence that there were no substantial hoards of Stemless Reverse half cents.

The numbers give us a reasonable understanding of the difficulty or ease of obtaining these verious types in different grade ranges. It should be obvious that the great majority of these coins are available mostly in lower grades, and those from the 18th century are truly rare in high grade. Dates after 1811 are much more available in high grades, as they circulated very little.

1 Frossard, Édouard, 1876.

2 Eckberg, William R. 2000c.

3 Bowers, Q. David. 1997.

Lives of Draped Bust Half Cent Dies

Collectors often speak of "average die life." It can be easily calculated by dividing the total number minted over a period of time by the number of obverse and reverse dies used. However, averages are meaningless without an understanding of the variability of the numbers averaged. For example, the average of 24, 25 and 26 is 25 (24 + 25 + 26 = 75; 75 ÷ 3 = 25). Similarly, the average of 1, 2 and 72 is also 25 (1 + 2 + 72 = 75; 75 ÷ 3 = 25). The first group of numbers may well represent a reasonably consistent population, as they are all reasonably close to the average. However, calculating an average of the second group is obviously meaningless.

So it is with Draped Bust half cent dies, as shown by the following table of coins struck by each. Most numbers are approximate; when coins in the same delivery were struck from multiple dies, we can't know *exactly* how many of each variety were struck, but we can get very close.

die	obverse	reverse
1800-1	190,552	
1800-A		191,200
1802-1	20,266	
1802-A		19,500
1803-1	263,000	
1803-A		10,000
1803-B		228,000
1803-2	100,000	
1803-C		145,000
1803-D		15,000
1804-1	9,000	
1804-A		23,000
1804-2	300,000	
1804-C		12,500
1804-D		86,000
1804-E		443,542
1804-3	119,000	
1804-4	178,312	
1804-5	670,000	
1804-F		100,000
1804-G		1,037,000

die	obverse	reverse
1805-1	20,000	
1805-B		125,000
1805-2	105,000	
1805-3	120,000	
1806-1	14,500	
1806-A		18,300
1806-2	341,000	
1806-3	199,000	
1806-C		555,000
1807-1	356,000	
1808-1	52,000	
1808-A		1,600
1808-2	270,000	
1808-B		310,000

Obverses: 184,868 ± 168,258
Reverses: 195,332 ± 270,637

The table clearly shows that the variances from the average die life are extremely large. Nearly half of the dies are extreme outliers. Twelve (shown in red) lasted well under half of the average, six of which struck less than 10% and one of which lasted less than 1% of the average. Four (green) lasted more than twice the average; one lasted more than 5 times the average! In other words, some dies struck very few coins before they had to be taken out of service, whereas others struck massive numbers of coins. The Stemless Reverse struck more than a million coins over three years!

Given this obviously huge variability of die survival, the concept of "average die life" is meaningless for this series. If, as seems reasonable, a similar situation holds for other types, we must be very careful applying the notion to our understanding of the activities of the early United States Mint.

1809

In 1809 the half cents finally caught up to the other denominations with a new design, the Classic Head. It was copied fairly closely from the cent design of a year earlier.

There were now two men in the Engraving Department, Robert Scot and his assistant, John Reich. Breen attributed all coinage redesign from 1807 until Reich's resignation in 1817, including the Classic Head cents and half cents, to the assistant, though he never provided any supporting evidence. What does the evidence tell us about which of them engraved the new design?

Reich was hired as assistant engraver in 1807. He had come to the United States in 1800 as an indentured servant, serving two years under John Brown, Silversmith[1]. Thereafter, Reich designed medals, including the Jefferson Indian Peace medals, for the U. S. Government as a contractor, but he sought full time employment. Director Patterson wrote President Jefferson that "should this gentleman be employed [at the Mint], perhaps more than his salary would be saved to the public in what is usually expended on the engraving of dies for medals, but which might then be executed by an artist in their own service, with little or no additional expense." He continued to make medals at the Mint and even exhibited some at the society of Artists of the United States.

It seems hard to reconcile the fact that Reich was an assistant to the engraver with the notion that he redesigned *all* of the coins. Why would Scot cede the most interesting and important part of his job, coinage design, to an assistant? We read[2] that Scot was too old, but he was by no means incapable of continuing his work as engraver. He was only 62 when the cent was redesigned, and he served as Engraver for another fifteen years, until well after Reich left. We also know from Gardner's own words that when he was assistant engraver, he designed no coins. Accordingly, the designer of the Classic Heads was probably Scot, though we can't be positive. Certainly, the blanket notion that Reich designed everything cannot be supported. Consequently, I attribute the Classic Head device to Robert Scot and wonder why Breen was so hostile to him.

Reconstruction of Scot's original hub, complete with the hub flaw, used for Classic Head half cent obverses.

Breen also wrote that Reich introduced "the use of original dies or matrices, from which hubs could be raised to make working dies." This is demonstrably incorrect. As we have seen, Scot worked that way from the beginning of his employment at the Mint at the end of 1793, and Henry Voigt may have introduced the procedure as early as 1792.

The 1809 obverse hub consisted of the bust of Ms. Liberty, including the hair and headband with LIBERTY on it. Breen suggested that placing the word LIBERTY in raised letters in the hub meant "it would not differ from year to year, though dozens of working dies might be sunk from the hub; any difference would be grounds for suspecting counterfeiting." As we shall see, Breen was flat wrong. The word LIBERTY ***did*** change from year to year, as did other aspects of the master die.

1 Witham, Stewart. 1993.

2 Breen, Walter. 1983.

Recutting of LIBERTY on the master die. In 1809 (top) I is too high, B leans left, and E is too low and leans left. In 1811 (middle) I, E and R are all obviously recut. In 1826 (bottom) I, B, E and R are repaired, but the base of the L is gone.

LIBERTY was initially sloppily placed on the headband, with the I very high and BER leaning left. The I was repunched in 1810, and I, E and R were all repunched in 1811. Somebody again modified the master die to clean up LIBERTY sometime between 1811 and 1825. Thereafter, I, B, E and R were all more even. The base of the L was lost in this last tooling, though it was replaced by direct engraving on many dies.

Scot's reverse contained the entire wreath, including berries, HALF CENT, center dot and the bar beneath CENT all in the master die, which did not change through the production of the type.

All obverses of this type show, to one extent or another, what has been called a "hub flaw" that manifests as a pair of nearly continuous raised lines from the hair behind Y to the base of the throat. It is most evident on 1809 obverses 1, 3 and 5, both 1811 obverses, 1826 obverse 2 and 1828 obverse 1, but it is visible to one extent or another on all Classic Heads through 1836[3]. Since the procedure was to make a master die and raise hubs from it, it would seem that the flaw must have been in the master die, where it would have been incuse. Individual hubs raised from it were tooled to reduce it further. A tooled hub was used to create a new master die in the same way it would be used to create a working die, reducing the flaw on future dies.

The Mint reported coining 1,154,572 half cents in 1809. Julian[4,5] and Breen[6] had speculated that many 1809 half cents were delivered in 1810, and many dated 1810 were delivered in 1811. A study of 514

The "hub flaw," actually a flaw in the master die, is indicated by blue arrows in each image. Upper left, 1809 Obverse 1. Upper right, 1809 Obverse 2; much of the flaw has been tooled away. Lower Left, 1826 Obverse 2. Lower right, 1833; only faint traces of the flaw remain. The hair is strenthened by engraving on the 1826 and 1833 dies.

Scot's reverse hub for the Classic Head half cents.

3 Eckberg, Bill. 2017d.
4 Julian, R.W. 1973.
5 Julian, R.W. 1993.
6 Breen, Walter. 1983.

randomly-selected coins from the surviving populations shows that this speculation is incorrect. All 1809-dated half cents were delivered in 1809, as were all 1810s in 1810 and all 1811s in 1811. It is significant that 1809, like 1804, the only other year where the half cent mintage approached a million, produced relatively small numbers and only a single variety of cent. Evidently, the Mint had a lot more half cent than cent planchets on hand.

Reported mintage and observed population of 1809-1811 half cents by date[7].

	mintage	% of total	expected	observed	χ^2
1809	1,154,572	80.6	414.2	396	0.801
1810	215,000	15.0	77.1	80	0.107
1811	63,140	4.4	22.7	38	10.399
Totals	1,432,712	100.0	514.0	514	11.306

The table shows a chi-square (χ^2) test to determine whether the dates survive in proportion to their reported mintages. The critical value of χ^2 for $p < 0.05$ and two degrees of freedom is 5.991. Since the total is much larger than that, we conclude that all three do not survive in the same proportion. Nearly all of the deviation is from the 1811 population. If, as Julian and Breen suggested, many 1809s were struck in 1810 and many 1810s were struck in 1811, we should observe more than the expected number of 1809s and 1810s and fewer than the expected number of 1811s. The opposite was true. The results, therefore, disprove the notion that these half cents were struck in any year other than that on the coin. The likely explanation for the over representation of 1811 is that the 1811 date has been known to be scarce to rare for a century and a half, and favored Philadelphia coin dealers were allowed to check through the half and large cents that were exchanged beginning in 1857 and select out rare dates[8] (see p. 60).

The percentage of 1809s in high grade is similar to that of the Draped Busts, but the mintage was so large that UNCs are available for all of the common varieties.

Varieties

Six die varieties are recognized from five obverse and five reverse dies, of which three, Circle-in-0, overdate and normal date, are considered major enough to be listed in the *Red Book*. None of the six are legitimately rare, though one is quite scarce and commands high prices in grades of Fine and better. Breen, Cohen and Manley all proposed different emission sequences for the 1809s. By careful comparison of delivery dates and population sizes of the varieties, I was able to show that none of the proposed sequences was likely to be correct, but another one that had not previously been suggested was. That sequence, 1-A > 2-B > 2-C > 3-D > 4-E > 5-C, is presented here.

It is notable that all but one of the obverses was used with a single reverse, and all but one of the reverses was used with a single obverse. Large cents of the period also generally had each obverse mated with a single reverse.

There are two obverses with repunched numerals. Obverse 1 initially had the 0 in the date too small, and it was repunched with a larger 0. Obverse 4 has been of interest for many years. It has been variously called 1809/8, 1809/6, or 1809/inverted 9. It is none of those. Careful image analysis showed that it is actually a repunched 9.

7 Eckberg, William R. 2000e.

8 Frossard, Édouard. 1876.

1-A; C-4, B-1; Circle-in-0.

Obverse 1 is easily identified by the fact that the 0 is punched over a smaller 0. This was the first die from the new master die/hub as the flaw (arrows) is more prominent on it than on any subsequent variety.

Reverse A is easily identified as STATES OF was punched too far to the left, leaving the topmost leaf closer to O in OF than the last S in STATES and the F very distant from the second A.

Estimated survivors: 1,300. This variety is touted as rare, but it is actually fairly common. It is, however, very rare in AU and above. Perhaps 5 UNCs and 10 AUs exist.

Delivered in March.

2-B; C-1, B-2; Normal Date.

Obverse 2 has a straight date with the tops of 809 aligned. The 9 is a bit smaller than the 0. **Also used with Reverse C.**

Reverse B is the only one on which the point of the highest leaf does not extend past the second S in STATES (arrow). The diecutter overcompensated for the lettering on Reverse A. A cud develops over MERI.

Estimated survivors: 65+. Very rare in grades of Fine and better. This variety is still cherry picked in low grade. Thought unique in 1960, only about 15 were known in the mid-'80s. New examples now seem to appear fairly regularly. Evidently not too many dealers attribute "Normal Date" 1809s, so unattributed examples are still out there. As the population has swelled, the prices they bring at auction have dropped substantially, though the prices of those in some dealers' inventories have dropped less.

2-C; C-2, B-3; Normal Date.

Obverse 2 as above.

Reverse C is similar to the last, but the point of the highest leaf extends just past S (arrow). ES is higher than TAT. **Also used with Obverse 5**.

Estimated survivors: 570. Delivered with the previous variety on May 16. Perhaps 10 are known in UNC and AU, but the variety is very rare above VF.

3-D; C-6, B-6; Normal Date.

Obverse 3 has a curved date with the 9 noticeably higher than the 0. The lowest curl is over the right side of the 0.

Reverse D has a small space between ED ST, and STATES is closely spaced, so the point of the upper leaf is almost midway between S O.

Estimated survivors: 4,200. By a narrow margin, this is the second most common variety of the year. Perhaps 30 UNCs exist. This variety probably made up the May 31 delivery of 344,572.

4-E; C-5, B-5; Overdate, 9/6 or 9/9.

Obverse 4 is the overdate. Though it is usually called 9/6 or 9/inverted 9, the anomaly is actually best explained as a 9 repunched, slightly shifted, over another 9.

Reverse E is very similar to Reverse C, except ES is on the same arc as TAT.

Estimated survivors: 4,500. By a small margin over the 3-D, it is the most common variety of the year. Some tout it as rare because of the repunching on the date, but it is not. UNCs are plentiful; probably at least 60 exist. This variety probably made up the 392,000 delivered in June-September.

5-C; C-3, B-4; Normal Date.

Obverse 5 has the date spaced 1 8 09. The lowest curl ends midway over the 0.

Reverse C as above was resurrected for the delivery of 258,000 in October-December.

Estimated survivors: 3,400. Quite common, but less so than 4-E and 3-D. Perhaps 20-30 UNCs exist.

1810

The mintage for 1810 was 215,000, as reported. A single pair of dies was used. The I in LIBERTY is now repunched with the replacement a bit lower than the original. The right side is almost always weakly struck. The stem end was apparently not punched into the die.

1-A; C-1, B-1; the only dies of the year.

Obverse 1. A crack quickly develops near the hub flaw. It becomes stronger, eventually forming a heavy arc crack into the cheek. A die clash eventually makes it look like Ms. Liberty has a moustache. Never seen with all stars sharp.

Reverse A. Widely spaced legend. The stem end was apparently not punched into the die, as none have been seen that show it. The earliest die state seen is illustrated.

Estimated survivors: 2,000. At least 30 UNCs are known.

1811

The mintage for 1811 was 63,140, as reported. Breen and Julian believed that this must have included many dated 1810, but my study showed otherwise (See discussion on p. 89). As for the 1802 and 18th century issues, dates recognized as scarce by the late 1850s-1870s were selectively saved as rarities (see Frossard's report on p. 60).

Varieties

1-A; C-1, B-1; Wide Date.

Obverse 1 is the wide date with the first 1 distant from the 8 as 1 811. All digits lean noticeably to the left. A substantial cud breaks through the first two stars and grows to cover the first four. Extremely rare with the two-star break, but about a third of the existing coins show the four-star break. Therefore, the die state is avidly collected.

Reverse A is the only reverse die used in 1811.

Estimated survivors: 150. A half dozen or so UNCS survive as do a few in EF and AU, but most examples are in low grades. See "Eye Candy" on the next page.

2-A; C-2, B-2; Close Date.

Obverse 2 is characterized by the a more closely-spaced date; the first 1 is particularly close to the 8, as 181 1. All of the digits lean noticeably to the left.

Reverse A as above.

Estimated survivors: 1,200. One or two UNCs are known, and the variety is extremely rare in AU. EFs are sometimes available for a price.

There is a "restrike" that pairs a very rusted version of Obverse 2 with, of all things, Reverse A of 1802. Collect it if you wish, but as it was not a product of the Mint, it will not be discussed here.

Eye Candy

The gorgeous Hall/Brand/Green/Johnson/Newman/Pogue 1-A. What more needs to be said? (image courtesy of Goldbergs)

Mintage of the Late Classic Heads

The mintages of the late Classic Heads, unlike those of 1809-1811, are uncertain and can only be estimated. Mint reports are inconsistent with the surviving population sizes.

The existence of hoards[1] is one important factor that skews the surviving populations of several of these dates. As of this writing, PCGS and NGC have certified 166 UNC examples of 1825, 230 of 1826, 305 of 1829 and 374 of 1832 (many of those would not grade UNC by EAC standards, but that's another issue). However, they have certified 688 1834s, 827 1833s, 1,307 1828s and 1,459 1835s as UNC. The Sears hoard of 1835s was probably about 1,000 coins. The much older Collins Hoard of 1828s evidently also contained about 1,000 coins. The Guttag Brothers' hoard of 1833s must have been much smaller than the Sears and Collins hoards. Interestingly, there have been no reported hoards of 1834s, though the data strongly suggest that one existed.

Suppose we subtract 400, about the same as the number of 1832s certified as UNC, from each of the later dates. That leaves estimated approximate hoard sizes of about 300 1834s, 400 1833s, 900 1828 2-Bs and 1,000 1835s. The estimated sizes of the hoards agree surprisingly well with what is known. Now, suppose we "correct" the existing population sizes by subtracting the hoard to get relative estimates of the numbers surviving *from circulation*:

Date	Survivors	Hoard size	Circulation survivors
1828	13,200	900	12,300
1833	4,600	400	4,200
1834	5,300	300	5,000
1835	8,900	1,000	7,900

The 2,600 hoard coins represent only about 5% of the 50,700 survivors of the type that I estimated in 2000. This percentage is small relative to the existing population of Late Classic Head half cents, but it represents a much more significant 10% of the existing population of 1835s and 1833s and nearly 20% of 1828 2-B.

Mint reports give the following mintages:

Date	Mintage
1825	63,000
1826	234,000
1827	0
1828	606,000
1829	487,000
1830	0
1831	2,200*
1832	0
1833	154,000
1834	120,000
1835	141,000**
1836	398,000**

* Never delivered.

** Both delivered December 31, 1835

1 Bowers, Q. David. 1997.

The total mintage for the era was 2,203,000, or about a quarter of the total mintage of half cents. Unfortunately, the numbers by date are not consistent with the sizes of the surviving populations. In a few cases, we can explain why, but in others, we can only speculate. R.W. Julian[2,3] and Ron Manley[4] have both written on the subject, and I refer the reader to their articles, with much of which I agree. What follows are my own thoughts on the subject, informed in part by the work of Manley and Julian, though neither of them discussed the hoards in their analyses.

First, the 1825s and 1826s are of approximately equal availability[5]. As no half cents were made in or dated 1827, we can group 1825s and 1826s together and say that 297,000 of the two years were struck and that the mintage of each approximated 150,000. That suggests a 2.8% survivorship for each year.

As none were struck in or dated 1830, we can group the 1828s and 1829s together. However, we immediately run into trouble. The reported mintage for 1829 was 487,000, but there is only one variety of the year. Its availability is about one quarter that of 1828 with three common varieties and no greater than that of 1825 and 1826 with only a third of the mintage. It would seem, then, that either the reported mintage is vastly in error, or else many of the coins never entered circulation. In fact, Julian reported that 160,186 struck half cents were melted for alloy with gold and silver. Ron Manley has calculated that about 500,000 must have been melted, which, interestingly, leaves about 2.8% of the non-melted population surviving to this day. Where did the rest of them go? On May 11, 1832, someone named Washington Cilley (really!) ordered 400,000 half cents[6]. It is hard to imagine any person ordering that many for any purpose other than to melt them down for the copper, so that may account for the remaining "missing" half cents. If that is correct, the surviving percentages of both 1828 and 1829 can agree with those of other dates in the late Classic Head series. This is, as best as I can determine, the only example of substantial selective destruction of half cent varieties. A few others of several dates may have been melted in the 1830s and many more were melted in 1857, but some of those were probably dated earler than 1857.

1831 is a conundrum. The often-cited mintage, 2,200, is too large to account for the small number of alleged business strike specimens known. If 2.8% survived from a mintage of 2,200, about 60 examples should be known. As only about 20 are known, and none of those can be called Mint State, it is quite reasonable to conclude that all of the alleged business strikes are actually circulated proofs. We cannot, of course, exclude the possibility that business strikes were produced, but all were destroyed. In any case, if any other than proofs were struck, there is no official record of them. My view (in agreement with those of Manley and Julian) is that, whether or not any were struck, no business strike 1831 half cents exist *today*. Hence, I have not included a chapter on the date in this book.

The zero mintage for 1832 is obviously incorrect, as thousands of coins exist with that date. It is likely that the reported deliveries of 1833 and 1834 actually represent coins dated 1832 and 1833, respectively. Breen supposed, based on his belief that there are about twice as many 1833s as 1832s, that about 2/3 of those were dated 1833 and the remainder 1832. However, my statistical study showed that the three 1832 varieties combined appear about as often as does the single vari-

2 Julian, R.W. 1991.
3 Julian, R.W. 2000.
4 Manley, Ron. 2000.
5 Eckberg, William R. 2000d. (survivorship of all late Classic Head and Braided Hair varieties are from this study.
6 Breen, Walter. 1983.

ety of 1833. Plus, a hoard of UNCs swells the number of surviving 1833s, so it seems that the likely mintage of 1832 was the 154,000 reported for 1833 and that of 1833 was the 120,000 reported for 1834. Correcting for the size of the hoard (see above) allows us to calculate that about 3.1% of the mintage of those two years survives. That is in reasonable agreement with the 2.8% calculated for 1825-1829.

Similarly, the 398,000 reported for December 31, 1835 must represent more than just the 1835-dated mintage. The 7,900 non-hoard 1835s estimated to survive would suggest that only about 2% survive. 1834, however, is a very common date with 5,000 estimated non-hoard survivors, suggesting a mintage of over 200,000, much larger than the reported 141,000. A solution may be found if either or both deliveries contained coins of both dates. In that case, the mintage of the two years was 539,000 and the surviving non-hoard percentage is 2.4%, reasonably close to that of the earlier dates. Perhaps some of these, too, were melted, which would account for the small discrepancy.

With the above information, we can calculate what the approximate ***effective*** minages of these dates were. By effective mintages, we mean the numbers that actually went into circulation, which were calculated from the surviving populations and the estimated fraction of non-hoard coins surviving.

Year	Mintage
1825	149,000
1826	148,000
1828	400,000
1829	140,000
1831	0
1832	154,000
1833	119,500
1834	210,000
1835	328,000

Thus, it appears that about 1,649,000 half cents of the era actually entered circulation. If we add the 2,700 estimated hoard coins, the effective mintage becomes about 1,652,000, or about 75% of that reported. If we then add in the 160,186 Julian reported as melted and the 400,000 purchased by Washington Cilley, we can account for the entire mintage of the period, which strongly supports the values given in the table above.

One important ramification from these mintage numbers is that the coining room staff spent very little time coining the late Classic Head half cents. A mintage of 150,000 could have been accomplished in ten days or so. Even the huge 606,000 mintage reported for 1828 could have been accomplished in 40 days, a small fraction of the year.

As of June 30, 1836, 539,000 half cents (all of those reported as delivered on December 31, 1835) were still on hand at the Mint. Records show that they were slowly paid out into circulation. By September 30, 1848, only 70,258 remained. Quite probably, these included the hoards dated 1833-1835.

The 1828 2-B Collins hoard might have been paid out earlier. It is unknown where it resided until its discovery in 1884 (early reports say 1884; Breen "corrected" it to 1894). The size of the hoard is unknown, but it was most likely about 1,000 coins.

Henry Chapman wrote the following in his 1918 catalog of the Jackman collection[7]:

> *[Lot 879, an UNC 1811 half cent] was discovered in 1884, being brought by an old colored woman of Alexandria, VA., to Mr. Benjamin H. Collins of Washington [DC], to whom she stated she had a bag of them! He, thinking there was not any mistake about the hoard, sold it to S.H & H. Chapman for $3! with the remark, "How many more will you take?" We said the lot. The woman subsequently brought him the bag, but to his astonishment they were all 1828 13 stars! and it has always been a mystery to me that an 1811 equally fine as the 1828s should have been in with the later date, and that her pick at random should have alighted on the only 1811 in the bag! It was subsequently sold in the Warner Sale, $67 and there bought by Mr. Jackman.*

Walter Breen wrote about this hoard[8,9,10] as did Q. David Bowers[11]. Both of them "corrected" some of this information. Breen reported having seen a remnant lot of 140 red UNCs in 1955, making the 1,000-coin number most probable. Both wrote that Collins sold the 1811 to the Chapmans for $18, not $3, that the Jackman 1811 half cent was not from the Warner Sale, and that the woman brought the coins to Collins in 1894, not 1884, as they believed that Collins was not a coin dealer until after his retirement in 1894. Breen also wrote that Collins sold the coins for 40¢ each.

"An old colored woman" brought the bag, which also contained the finest known 1811 1-A, to the Washington, DC shop of Benjamin H. Collins? In 1884 or 1894? Of course! That happens all the time. We can be sure there was a bag that came from somewhere. Whether it contained 50, 100 or 1,000 coins is uncertain; all three numbers have been reported, but it was most likely the latter, based on the number of high grade survivors.

Is it likely that "an old colored woman" walked into Collins' shop with 1,000 mint red half cents? Admittedly, they had a combined face value of only $5.00, but a bag of red fifty-six or sixty-six year old half cents when half cents had been removed from circulation at least 27 years before? If you're as skeptical of that story as I am, note that *Collins worked for the Treasury Department in Washington, DC until his retirement in 1894*[12]*, though he was a coin dealer at least from 1884*. Where did she get them? How and why would an old woman, presumably not of means, have kept them in pristine condition for so long? And why bring them to Collins so conveniently close to his retirement? Could he have used insider information or connections to get these coins and created a cover story to hide the truth?

Alas, we'll probably never know, but the plot sickens!

7 Chapman, Henry. 1918.
8 Breen, Walter. 1952a.
9 Breen, Walter. 1952b.
10 Breen, Walter. 1983.
11 Bowers, Q. David. 1997.
12 Lupia, John N.

1825

Coinage of half cents stopped after 1811. There apparently was minimal demand at best. According to Montroville W. Dickeson, "people had acquired the habit of disregarding fractions, and had no disposition to renew them for making change. We can recollect, however, when in some portions of our country the half cent was rigidly exacted, and where many a war of words, and sometimes of fists, grew out of such a controversy[1]." Thus it was, the new Mint Director, Samuel Moore, ordered planchets from Matthew Boulton in 1824.

Reich had left the Mint in 1817. Scot died in 1823 and was replaced by William Kneass at the end of January, 1824. Fortunately, the engraver's shop had managed to keep a pair of master dies or hubs in good condition for fourteen years. According to Breen, Kneass used the old 1809 obverse and reverse hubs unchanged, making only "minor modifications on the working dies." This is incorrect. Kneass modified the obverse master die repeatedly, beginning in 1825.

First, the good news. We can guess that Kneass was the one who fixed LIBERTY on the headband as discussed on pages 87-88. He did not otherwise modify the master die before the hub used for the 1825 dies was produced, but every die thereafter shows some evidence that the master die or hub was retouched (see the illustrations on page 116). Kneass evidently liked to tinker with his dies. He also modified his working dies; many from 1825-on show evidence of strengthening in the hair, but this is not consistent from year to year, so it must have been done to the working dies. The L is complete on all dies from 1829-1836 except 1835, so it, also, must have been repaired in the working dies. It does not appear that he did such tinkering with hubs and master dies for other denominations. Instead, he created completely new master dies.

Errors!

The resumption of half cent coinage in 1825 also meant a small increase in the output of errors as a percentage of the whole. There are a number of off-center strikes from 1825; that illustreated is the most extreme I've seen. How did such an obvious error circulate long enough to get reduced to VG?

Dramatically off-center 1825 2-A.

Edge Lumps

The "edge lump" is a curious feature of some 1825 half cents. Never reported to the best of my knowledge until the first edition of Cohen's book[2], subsequent authors (Breen[3], Manley[4]) have all noted their existence. Cohen initially reported that they were a feature of all examples of 1-A, but he did not indicate whether or not they exist on 2-A. By the second edition of his book, Cohen says only

1 Dickeson, Montroville, W. 1860.
2 Cohen, Roger S., Jr. 1971.
3 Breen, Walter. 1983.
4 Manley, Ronald P. 1998.

that "many specimens" of both varieties show the lump. Breen indicates that "most specimens" of 1-A show the lump and that it is found on 2-A as well. Manley says both varieties are "usually found" with the lump. The only previous attempt of which I am aware to provide any quantitative information about this came from Ron Guth[5], who found the lump on four of five examples of 1-A that he examined and on two of twenty-four examples of 2-A.

The lump appears as a vertical bar across the edge. All of those seen have been somewhere between stars 10-13. Examples of 1-A (left) and 2-A (right) showing lumps are illustrated above.

In a larger study, edge lumps were found on both varieties[6], as Guth and the others had reported. However, they were by no means present on nearly all examples of either variety. Seventeen of the thirty-five examples of 1-A examined, or very close to half, showed the lump. By contrast, only five of forty-eight, or approximately 10%, of examples of 2-A showed a lump. Because Guth's sample size is much smaller, adding his to mine has a minimal effect on the proportions. Extrapolating to the estimated population sizes of the two varieties, about 200-225 examples of 1-A and about 400-450 of 2-A should exist with the lump (2-A makes up about 90% of the population of the 1825s). Examples with edge lumps are a small minority of the 2-As, but the coin is so common that such coins should be easy to find, unless, of course, they are entombed in slabs (in case you need yet another reason to shun slabbed half cents).

While their positions relative to the obverse are fairly consistent, they vary widely relative to the reverse. These varieties come in many reverse rotations, and there is no evidence that any of these rotations correlate with the presence or absence of the lump; the lumps can appear anywhere with respect to the reverse lettering.

What is the cause of the lumps? There are two possibilities. First, it could be a defect in the planchet cutter or upsetting mill. This is exceedingly unlikely, as the position of the lumps would be random if either were the case. Second, it could be a defect in the collar in which the coins were struck. The Mint used collars on some types of coins as early as 1795; John Dannreuther[7] found that gold and silver coins with reeded edges were struck in a close collar from the very beginning. Craig Sholley[8] has found that large cents were struck in a collar beginning in 1816, but since no half cents were produced from 1812-1824, 1825 was the first time half cents would have been struck in a collar. Indeed, the photos above clearly show the flattening of the edge by the collar, so the edge lump is a collar defect. It's likely the collar cracked about halfway through the mintage of 1-A, and

5 Guth, Ron. 1975.
6 Eckberg, Bill. 2011.
7 Dannreuther, John. 2010. Personal communication.
8 Sholley, Craig. 2010. Personal communication.

the broken collar was replaced early during the striking of 2-A.

Examination of surviving dies from the early years of the Mint shows that they were locked in place by setscrews fitting in indentations in the die shaft. From the widely varied positions of the edge lumps relative to the reverse and the smaller variation with respect to the obverse, it is clear that the reverse die was very loose through much of the mintage of 1-A and a smaller part of that of 2-A. Because the position of the lumps varies less with respect to the obverse but does vary, we can conclude that the obverse dies were not tightly locked in place, either.

Varieties

The reported mintage is 63,000. If that were accurate, over 7% of the mintage must survive. However, my statistical study of survivors[9] indicates that about 2.8% of the 1825s and 1826s, combined, survive. Thus, most of the 1825s must have been delivered in 1826.

Price guides list 1825s at higher prices than 1826s, presumably because of the much lower reported mintage, although their actual survivorship and, presumably, their actual mintages, are quite similar. Accordingly, either 1825s are too expensive or 1826s are too cheap. Coin pricing is not always logical.

From the surviving population sizes, we can estimate that, if about 150,000 were coined of the date, roughly 15,000 of 1-A and 135,000 of 2-A were struck. The reverse die states show that 1-A preceded 2-A. We know from other studies that the Mint could produce up to 15,000 cents or half cents per day in the early 1800s, so it is likely that 1-A was produced in one day and 2-A in 8-10 days. All of the 1825s could have been struck in less than two 6-day workweeks.

1-A; C-1, B-1; Curl Above 5.

Obverse 1 has the base of the lowest curl directly over the 5.

9 Eckberg, William. 2000d.

Reverse A. The only reverse of the date.

Estimated survivors: 450. This is the second scarcest variety after 1811. About ten UNCs exist, but the variety is very difficult to find in grades higher than EF.

2-A; C-2, B-2; Curl Above 25.

Obverse 2 has the base of the lowest curl over both the 2 and 5.

Reverse A as above but in later die states.

Estimated survivors: 4,100. Perhaps 50-75 true UNCs exist, but very few have any original color.

Delivery dates of varieties in 1825 and thereafter cannot be determined as such records are not known to exist.

1826

The mintage report was 234,000, which includes many dated 1825. From the surviving population sizes and the known survival rate, we can estimate that roughly 140,000 specimens of 1-A and 8,000 specimens of 2-B were produced. The latter would take about half a day of coining.

Kneass must have been particularly offended by Liberty's small nose and weak chin. Both 1826 obverses have a slightly longer nose and a square chin. Both also show the L in LIBERTY without a base. Since both dies show the same changes, and both involve enlarging a struck area of the coin, they must have been changed in the master die, not a hub. As we will see, Kneass modified the master die several times. A plate showing the changes he made to the profile can be found on p. 116.

Varieties

1-A; C-1, B-1; Die File Marks Right of Date.

Obverse 1 has stars 1 and 2 widely separated. Crosshatched file marks to the right of the date (from removal of a misplaced numeral or star?) are strong in early states, but become weaker in later states.

Reverse A has OF distant from both ES and AM. The point of the hightest leaf is past S.

Estimated survivors: 3,700. 50+ UNCs exist. EF and AU are common enough that there is little interest in these in VF and lower grades.

2-B; C-2, B-2; 6 Over Lazy 6.

Obverse 2 had the 6 first punched horizontally and then partly erased and repunched normally. In early die states, traces of the horizontal 6 are easy to see, but they fade with die usage. The first two stars are close together. A heavy rim cud develops that covers the fifth and part of the fourth stars which undoubtedly explains why the die was quickly retired.

Reverse B has a very heavily impressed wreath and a widely spaced legend with the point of the highest leaf under S. Long spikes protrude from several leaves. These are probably die damage resulting from the heavily impressed wreath hub. Also used with **Obverse C of 1828**.

Estimated survivors: 210. This is by far the scarcest variety after 1811. UNCs and AUs are extremely rare, as are examples with the obverse cud.

I have numbered the varieties to be consistent with the usage of Cohen and Breen, but since the varieties are not die-chained, their emission sequence cannot be determined.

1828

Coinage of half cents resumed in 1828 after a hiatus of one year. Kneass modified the master die again, reducing the hub flaw and slightly changing the line of the chin.

Varieties

Three varieties exist, and, like the varieties of 1826, they are not die-chained, so the order of striking cannot be determined that way. Because one variety reused Reverse B from 1826, Cohen and Breen both placed it first. However, Manley showed that the Mint preferentially used new dies over preexisting ones. Thus, I place it last. I have placed the 12-star obverse first, because both 13-star obverses were produced from a modified hub with the hub flaw reduced and thus were made after obverse 1. There can be no question that obverse 1 was *made* before obverses 2 and 3, but the order of striking cannot be conclusively demonstrated.

This date is interesting in that two varieties are far more common than was long reported in the literature.

The 12-star obverse is very well-known and popular because of the atypical number of stars. The date was entered to the right of where it is on the other contemporary varieties, but even so, there was plenty of room to enter a thirteenth star to the right of it. As illustrated below, even with the additional star, the space between the last star and the date is noticeably larger than on obverse 4 of 1809. If it was truly a blunder, why was it never repaired before about 100,000 of them coined? It hardly seems possible that neither Kneass nor anybody else noticed the die was short one star at the time. It almost seems that the omission must have been intentional, but for what purpose? We can only speculate, so we have another 1828 half cent mystery in addition to that of the Collins hoard!

1809 Obverse 4 compared to 1828 Obverse 1 with an added 13th star below star 12 thanks to the magic of Photoshop™. As the date of the latter was punched lower than that on the 1809 obverse, there would have been more than enough room for the 13th star.

1-A; C-2, B-3; 12-Star.

Obverse 1 has only twelve stars; seven left and five right. It has been suggested that the thirteenth star may have been omitted because the date was punched farther to the right than on the other dies, but as shown on the previous page, there was still plenty of room for it.

Reverse A had its H repunched such that the upper serifs are joined. The words of the legend are widely spaced.

Estimated survivors: 3,500. Quite common but less so than either of the other varieties. Probably 20-25 true UNCs exist, very few of which have any significant amount of original color. Oddly, both Cohen and Breen thought this coin to be R-2, with about half as many specimens in existence as actually survive.

2-B; C-3, B-2; 13-Star.

Obverse 2 has the 2 slightly below the baseline of the other digits and the first 8 slightly above it.

Reverse B has the uppermost leaf end under the right side of the S. Like reverse A, the words of the legend are widely spaced.

Estimated survivors: 5,300. This is the hoard variety, so many UNCs are known, often with at least some original color. Benjamin H. Collins, a Washington, DC coin dealer, allegedly obtained a bag containing about a thousand original red UNCs in 1884 (see p. 101). Roll quantities were still available in the 1950s, but all have supposedly since been dispersed. Somewhat less available in full red than 1835, but more available such than any other Classic Head. As of this writing, PCGS and NGC have together certified 25 as red UNC and 370 as RB. Yes, 25 in red makes it "more available" than other varieties. This was, at one time, thought to be far more common than either of the other two varieties of the date. However, with the exception of the hoard coins, it is about equally common as 3-C, which was thought to be scarce.

3-C; C-1, B-1; 13-Star.

Obverse 3 is the most aesthetically pleasing of the year. It has the most evenly spaced date. All digits are on the same curved base line. It also has the correct number of stars. Kneass set the bar for artistry low in 1828.

Reverse C is the same as **Reverse B of 1826**. The spikes on the leaf ends fade with die use.

Estimated survivors: 4,300. This variety was at one time supposed to be scarce with fewer than 600 examples surviving, but it has proved to be far more common. It is hard to imagine why previous researchers thought the variety to be about seven times scarcer than it actually is. Perhaps the fact that it was not represented in the Collins hoard explains part of the discrepancy, but how Cohen and Breen both missed the mark so badly is a mystery. It is very common except in UNC and AU. True UNCs are extremely rare.

1829

For unknown reasons, Kneass seems to have left the master die alone this year.

1-A; C-1, B-1; the only variety of the year.

Obverse 1 has the first two stars close together and the last two distant from each other. The 1 leans right, but the 829 are in a straight line.

Reverse A closely resembles Reverses A and B of 1828 in that there are large spaces between the words of the legend, but the U is closer to the ribbon.

Estimated survivors: 3,800. This is another very common variety and is easily available in UNC, though it is very challenging to find with a significant amount of original mint color.

1832

No half cents were issued in 1830. There is a vague report of 2,200 in 1831, but what these were and what happened to them is anyone's guess. My view is that no business strikes dated 1831 exist today (see the discussion on page 99). The Mint reported no half cents delivered in 1832, though thousands exist with the date. The mintage of 1832 has been uncertain. Breen suggested that the actual mintage was 90,000, which suggests that about 2,100 survivors should exist, but there are many more than that. Another supposition has been that the 154,000 half cents delivered in June of 1833 were dated 1832. That number is consistent with the surviving population size and so is likely correct. About 2.8% of the Late Classic Heads survive. 2.8% of 154,000 is a bit more than 4,000. The expected surviving population is very close to what is observed.

Kneass somehow managed to restrain himself from changing the Master die further through 1832, so there is little to report that is interesting about the engraving of the obverses. However, three distinct reverses were used. One was the same as that used to strike the 1831 Proofs. Another was of even earlier manufacture, as the border is dentilated instead of beaded. The last was apparently made in 1832.

Some years ago, thanks to support from the EAC community, the author discovered a previously undescribed die break on the obverse that determined five minor die states that revealed the emission sequence:[1]

I	Perfect die
II	Crack at border below star #1 varies in length but does not extend to the bust
III	Crack of state II now extends to the bust line
IV	Crack of state II now extends through the bust, terminating above the 1
V	Crack from above star #7 to the top of the hair

Obverse State I is common with Reverse A and rare with Reverse B. State II has only been found with Reverse B. Thus the die cracked while striking 1-B. State III is found on LDS specimens of 1-A and on many specimens of 1-B. State IV is the usual state with Reverses B and C. State V is the terminal 1-C die state. The emission sequence is thus 1-A > 1-B > 1-A (remarriage) > 1-C. 1832 1-A, 1802/0 1-A and possibly 1797 1-A are the only known instances of die remarriage in the half cent series.

Varieties

1-A; C-1, B-1; Accessory E.

Obverse 1 is the only one of the year. The date is smaller than on those before 1831 or to follow. Small stars like on all dates to follow, but unlike any previous dates, including 1831.

Reverse A is the same as that used for 1831 proofs. It is characterized by the base of what may be an E (arrow), though it may be a different letter or even a 1, protruding under the leaves at ES. The bow and some leaves were strengthened in this die by engraving. That can be taken as evidence that the die was intended only for proofs, as the same is true of the 1836 reverse. A crack from the rim through the A in STATES to the leaves forms and becomes gradually heavier.

Estimated survivors: 1,500. Probably about 100 UNCs are about equally distributed across the three varieties.

1-B, C-3, B-3; Repunched D.

Obverse 1 as above but usually in later states.

Reverse B differs from the others in being of an earlier type having dentils instead of beads that do not extend to the rim. The D is clearly repunched (left arrow), and there is substantial die roughness, particularly in the lower left quadrant (right arrow). This die was most likely created several years earlier as the borders do not conform to the style of 1831 and thereafter.

Estimated survivors: 1,600.

1-C; C-2, B-2; Highest Leaf Under E.

Obverse 1 as above but in the latest states.

Reverse C has its legends widely and unevenly spaced. STATES OF almost reads as one word. Because of the wide spacing of UNITED STAT, the point of the highest leaf is directly under the second E, which is diagnostic.

Estimated survivors: 1,300. The surviving populations of the three varieties are similar, differing by less than 25%. The fact that the last 1832 reverse used was the only one likely made that year suggests that there was no plan to create a new reverse die, but that it became necessary when both of the existing reverse dies deteriorated or became unusable.

1833

Kneass lost all sense of proportion and beauty in 1833. He noticeably enlarged Ms. Liberty's nose, and he substantially enlarged her chin, such that it is now prognathous[1]. This work had to have been done in the master die as it appears on all dies from 1833-1836. Alas, Ms. Liberty is now cartoonish and less realistic and attractive on these last Classic Head half cents. This seems to be something of a feature of Kneass' work, as his gold coin designs also have unattractive heads with long noses and prominent chins, though not as extreme as the chin on the half cents of 1833-36.

Comparison of the 1809 Scot and 1833 Kneass-modified heads. The position of the arrows relative to the neck is the same on both. The shapes of the noses obviously differ as well.

Overlays illustrating major re-engravings of the Classic Head master die. Left, the black line is the 1809 profile; the 1826 chin modification is magenta. Middle, 1826 (black) and 1828 (blue); the chin line is enlarged but shaped similarly to the original; the nose is enlarged. This state of the hub persists through 1832. Right, 1829 (blue) and 1833 (red); the nose, lips and especially the chin are much enlarged. This state persists through 1836.

The mintage of 1833 is uncertain. The Mint report is 154,000. Breen suggested a mintage of 184,000, which would be consistent with the survivorship. However, a large number were dispersed by the Guttag Brothers from a hoard estimated to number at least several hundred in the 1930s. Fairly large groups of these must have survived at least into the 1960s and beyond, as Breen's book illustrates a group of 25 spotty red UNCs. If we take the Guttag hoard out of the equation, the most likely mintage is the 120,000 reported for 1834.

Proofs and prooflike business strikes – often impossible to tell apart reliably – are more plentiful for 1833 than for any other date.

1 Eckberg, Bill. 2016.

1-A; C-1, B-1; the only variety of the year.

Obverse 1 differs from the preceding in that Ms. Liberty's nose and especially chin were substantially reworked as described. The date is much larger than that of the previous year.

Reverse A is the only reverse used. ST in STATES appear well separated because the S leans left. The inscription is unevenly spaced. **This reverse was reused in 1834 and 1835**. Between the three years, it must have struck nearly 500,000 coins without noticeable deterioration.

Estimated survivors: 4,600. Several hundred are still found in UNC. They are of about equal availability to the 1828 2-B in full red. PCGS and NGC have certified a total of 27 in full red and 181 in RB as of this writing.

This obverse has been used as a model to counterfeit every Classic Head date. A protruding chin and/or small stars on an 1809-1832 half cent is a dead giveaway that the coin is fake.

1834

The Mint reported no half cents coined in 1834, yet thousands exist with that date. Two deliveries were recorded on December 31, 1835. The first was 141,000 and the second 398,000. It is tempting to suggest that the first comprised the 1834s and the second the 1835s. However, that predicts that the ratio of 1835s to 1834s should be 2.8:1. It really is about 1.7:1, and there was a very large hoard of 1835s. Thus, it would appear that the 398,000 coin delivery must have contained both dates. The actual mintage of 1834 must have been approximately 210,000.

There probably was a small, unreported hoard of 1834s. My study of the surviving population[1] suggested that the existence of a significant number in red and red-brown was indicative of a hoard.

1-A; C-1, B-1; the only variety of the year.

Obverse 1. Many have been altered to 1831, but the large size of the digits, the shape of the chin and the small stars quickly give the deception away.

Reverse A is the same as **1833 Reverse A**.

Estimated survivors: 5,300. Very common in brown UNC. Red UNCs exist but are rare. PCGS and NGC have certified a total of 4 in red and 82 in RB as of this writing. These numbers are smaller than those of the reported hoards of 1828, 1833 and 1835, but they are considerably larger than for any other Classic Head half cent variety, supporting my prediction of the existence at one time of a small, unreported hoard.

1 Eckberg, William R. 2000d.

1835

The reported mintage is 398,000 if we take the entire second December 31, 1835 delivery to be dated 1835. The surviving population size suggests an effective mintage closer to 330,000.

Varieties

Two reverses were mated with a single obverse to create two die varieties. One of the reverses had been created for the 1833 mintage and used again in 1834. The other was new.

1-A; C-2, B-2; ST Close.

Obverse 1 has a small date unlike those of 1833-1834. The 3 is of a completely different style, like that of 1832.

Reverse A is easy to detect as the ST are closer together at the tops than TA.

Estimated survivors: 4,200.

1-B; C-1, B-1; ST Apart.

Obverse 1 as above.

Reverse B is the same as **Reverse A of 1833**. ST are far apart.

Estimated survivors: 4,700.

Both varieties are relatively common in red-brown and are even available in red UNC from a large hoard dispersed by Elmer Sears. It must have been more than a thousand coins as this date is the most common with red color. PCGS and NGC have certified 63 in red and 411 in RB as of this writing.

1840-1857

While no half cents were coined for circulation from 1836-1848, several changes at the Mint greatly affected the coins that came later. In 1835, Kneass was incapacitated by a stroke, and Christian Gobrecht was hired as his assistant, replacing him on his death in 1840. Gobrecht created the 1836 proof half cents and redesigned the circulating coinage, including the half cent. His new Coronet design made its half cent debut in 1840, more-or-less copying his 1839 cent, but only proof half cents were made for the first nine years. The head was evidently adapted from the Venus figure on the far upper left of Benjamin West's 1809 painting, *Omnia Vincit Amor*, or The Power of Love in the Three Elements. I will leave it to the reader to consult Breen[1] (p. 373) for a discussion of the quality of the image.

***Omnia Vincit Amor,* or The Power of Love in the Three Elements by Benjamin West. (The Metropolitan Museum of Art)**

The other major change was a shift to steam power for coinage and all other coin production activities that required power. No longer would strong men be swinging the arms of a screw press, except for proof coins and medals[2]. The new modified Thonellier-type knuckle-action presses were much faster, capable of producing 6,000 coins per hour[3], though that didn't affect half cent coinage much. Half cents were made in very small numbers after 1835, so most years' production was probably struck in a day or two.

Steam power also changed the way the dies were produced. The obverse hubs and master dies could now contain everything but the date. The entire reverse design was hubbed, finally perfecting what Scot attempted many years earlier with his 1794 reverse hub. Some dies were strengthened slightly by hand engraving, as we will see. This mechanization of the Mint produced much more consistent coinages, and that was important as a deterrent to counterfeiting. The more the coins looked alike, the more difficult it would be for counterfeiters to pass bad ones. That, of course, is what the government wanted. Beauty and artistry were secondary. The downside of this, however, is that the coins lost much of their primitive charm. Charm didn't enter the Mint's equation.

And, frankly, artistry hit bottom. The 1840-57 half cent obverse is the ugliest and least interesting in the entire series, and HALF isn't even centered over CENT! It is unfortunate that James B.

1 Breen, Walter. 1983.
2 Sholley, Craig. 1998.
3 The Franklin Institute.

Illustrations showing what the hubs for the 1840-57 half cents looked like. The entire design was included except the date. Note the lack of a center dot, which was no longer necessary with all lettering in the hub. Note also that Liberty has no cheeks, but she has a huge, protruding chin. Could this possibly have been the image of ideal feminine beauty in 1840?

Longacre was not given the task of redesigning the half cents when they were issued for circulation in 1849, as his gold dollar and double eagle designs of that date are quite superior to Gobrecht's unimaginative and unattractive half cent design. See Taxay for a discussion of the politics involved[4].

Planchet stock was no longer from Boulton & Watt. It now came from Crocker Brothers & Co., of Taunton, MA. Crocker had been supplying cent planchets to the Mint since 1832.

All of the Braided Hair half cents were struck in small numbers. This was indicative of the lack of desire for the coins on the part of the public. However, by 1850 the California Gold Rush had begun to affect copper coinages. Because "bad money drives out good," as the price of gold collapsed, silver coins became worth more as bullion than their equivalent face value in gold. Therefore, the silver coins disappeared from circulation just as they would again in the 1960s when silver was removed from our circulating coinage. The problem was alleviated by a reduction in the weight of the silver coins in 1853, but for a couple of years it may have been difficult to find anything in circulation but copper. That is the presumed reason the mintages of half cents spiked in 1851 and 1853 at about three times the mintages of 1849 and 1850. Cent coinages also spiked in 1851 and 1853. But if half cents were *really* needed, why weren't more struck than that, and why weren't *any* struck for circulation in 1852? It is yet another mystery. Thereafter, mintages decreased substantially.

The steam-powered knuckle-action presses meant that the business strike varieties to follow generally come well-struck with sharp details that make grading strict and relatively easy.

By 1857 the half cent's time was over, as the denomination was abolished by the Coinage Act of February 21, 1857. It is surprising that any were coined in 1857 and even more surprising that any were released into circulation, as the law abolishing the denomination passed only a few days after the coins were struck.

4 Taxay, Don. 1966.

1849

Gobrecht's new Braided Hair half cent design finally made it into circulation in 1849. There are two major varieties for the year, but the small date is proof only and combined with several reverses. A much larger logotype was used for the date on the circulation strikes.

The reported mintage was 39,864. This is an excellent fit to the number of survivors, so it is almost certainly correct.

1-A; C-1, B-4; Large Date.

Obverse 1 is characterized by a very large date. There is an obvious hub flaw in the form of an indentation in the hair just below and to the right of the ear (arrow). This appears on all of the type except 1840, when it had not yet formed, and 1854 on which it was repaired.

If you are offered one with a date noticeably smaller than that illustrated, buy it, as it's a circulated proof.

Unless, of course, it's counterfeit. *Caveat emptor!*

Reverse A, as all to follow, has small berries.

Estimated survivors: 1,900. UNCs are fairly easy to obtain, though finding one with original red is quite a challenge.

1850

The reported mintage for 1850 is 38,912. There is only one variety for the year.

1-A; C-1, B-1.

Obverse 1 has a small, weakly-impressed date.

Reverse A is heavily impressed resulting in the crosslet of the E in CENT touching the upper bar.

Estimated survivors: 1,900, strongly suggesting that the reported mintage for 1850 is correct. UNCs are a bit more elusive than for 1849 and are quite rare with any original color, though one full red example is known. Nearly all examples have depressions just inside the border beads, particularly on the obverse. This was presumably caused by foreign matter on the dies. A few proofs are known.

1851

The reported mintage was 147,672. There was a single variety for the year.

1-A; C-1, B-1.

Obverse 1 has a small date, much more deeply impressed than that of 1850.

Reverse A: small berries.

Estimated survivors: 5,600, indicating a slightly low survivorship relative to others of the type. This variety is easily available in UNC and can often be found with original color. Even red UNCs are not particularly rare by half cent standards. However, finding one that is fully-struck can be a challenge, as these are often bluntly struck.

1853

The reported mintage was 129,694. No half cents were struck for circulation in 1852, and no proofs were struck in 1853. There was a single variety for the year.

1-A; C-1, B-1.

Obverse 1 has a large, deeply impressed date.

Reverse A: small berries.

Estimated survivors: 5,800, which is consistent with the reported mintage for the date. This variety is, by a small margin, the most common of the type. It is very easily available in UNC. However, UNCs with original color were very rare until a small hoard appeared on the market in the 1990s. Unknown with full, original red surfaces.

1854

The reduction in weight of the silver coins in 1853 evidently reduced the demand for half cents, and thereafter, mintages were much smaller. The reported mintage was 55,358, about a day's coinage.

As for each year of the type, there was a single business strike variety.

1-A; C-1, B-1.

Obverse 1 has a small, deeply impressed date. The 5 slants to the right as on many cents of the era. The defect in the hair has been partially repaired (arrow) in this die.

Reverse A: small berries. Examples exist with or without a "rust lump" on the I of UNITED. Breen considered these to be two different dies and therefore that there were two varieties of the year. However, Manley showed that both have the same "rust lump" on the H of HALF; that demonstrates that the presence or absence of the lump distinguishes die states and not separate dies. **Also used with the 1856 Obverse**.

Estimated survivors: 2,600, which indicates that the reported mintage is correct. This variety is very easily available in UNC, including with original color. Full red examples are rare but can be found. The Gies hoard, *ca.* 1935 and dispersed by the early 1940s, numbered 1,000 specimens.

1855

The reported mintage was 56,500. As for each year of the type, there was but a single business strike variety.

1-A; C-1, B-1.

Obverse 1 has a small date with slanting 5s. The defect in the hair was not repaired.

Reverse A: small berries.

Estimated survivors: 4,500. This variety is very easily available in UNC, including with original color. ***Full red examples of this variety are considerably more plentiful than of all other half cent varieties combined***. One dealer friend says he suspects they are still making them, but I'm pretty sure they aren't making real ones in China!

The variety is significantly more common than its mintage would indicate. About 8% survive because of the existence of multiple hoards. It is the commonest half cent in Mint State, both absolutely and relatively, with over 2,500 certified as UNC by PCGS and NGC as of this writing. Nearly a thousand more 1855s than 1854s have been certified in Mint State despite the fact that they have similar mintages. Why is this coin so common? The Elder hoard has not been reported to be exceptionally large, but it may have been better preserved as a result of being kept together longer. Breen reports seeing four rolls (80 pieces, but who put them into rolls?) from it in 1954[1]. There were at least two other hoards of 1855s. Bowers reports a hoard auctioned by W.W. Woodward in 1885 that contained at least 28 red gems and may have contained almost 50 other UNCs. It came from the estate of Judge J.P. Putnam. However, this hoard is too old and too small to affect the numbers substantially. More significantly, Bowers reports another hoard of 500 red uncirculated specimens obtained and slowly dispersed during the 1950s (but not publicized at the time) by Charles French[2]. These last should have significantly swelled the number of Mint State coins from the Elder hoard. The idea of multiple and more recently-dispersed hoards of this date is further supported by the combined PCGS/NGC population of, as of this writing, nearly 400 Red UNCs, nearly double the 230 for all other half cent dates combined.

The 1855 certified UNC population (assuming all are unique coins) represents well over half of the estimated surviving population. If, as seems very likely, the hoards totaled about 2,000 coins, nearly half of the surviving population came from the hoards. Subtracting these, this variety, like all the other Coronet Heads, survives at about 4.4% of the reported mintage. For this variety and 1828 2-B only do the hoards represent a substantial fraction of the surviving population.

Despite being extremely common in UNC, it is nearly impossible to find an example that has fully struck border beads. It is almost always very weak on the lower right obverse quadrant. Even some proofs, such as the Breen plate coin, are incompletely struck in that area. Finding an UNC in full red is not a challenge. Finding one with full border beads is all but impossible.

1 Breen, Walter. 1983.

2 Bowers, Q. David. 1997.

1856

What a difference a year makes! 1856 was not a hoard year. Consequently, its availability does not include large numbers of red and red-brown UNCs. The reported mintage was 40,230, which is probably correct.

Like 1854, there has been controversy over whether one or two different reverses were used. Again, Manley has presented evidence suggesting that there was only one.

This was the year the Mint was considering switching to the smaller copper-nickel cents. A number of pattern half cents were struck in 88% copper/12% nickel. Others may have been produced in 90% copper/10% nickel. They would be impossible to tell apart without chemical analysis. They are considered proofs but it is unclear if they were specially struck or just struck on non-standard blanks.

1-A; C-1, B-1.

Obverse 1 has a medium-sized date with an upright 5, unlike the preceding two years.

Reverse A is the **same as Reverse A of 1854**. But if the presence or absence of a "rust lump" on the I distinguishes die states, why would we see both states on both the 1854 *and* 1856 dates?

Estimated survivors: 1,600, or just about 4% of the reported mintage. Most are in EF or better, and UNCs are plentiful, as few circulated very long. The author once owned a piece that had been worn down to VG. It is hard to imagine how that might have happened. It is quite possible that many were melted in 1857.

1857

1857 was the dénoument of the half cent. The writing was on the wall that there would be no more after that year. The last business strikes, 35,180, were issued on February 14, 1857. Perhaps 10,000 went into circulation; the rest were melted. Many of those released must have been saved as the last of their kind. Walter Breen reported seeing 40 pieces in spotty red UNC in 1956[1]. It is surprising that any 1857 half cents were issued at all, as ten days after they were issued, the denomination was abolished.

1-A; C-1, B-1.

Obverse 1 has a large date with an upright 5, fairly weakly impressed.

Reverse A has a small dot on the right side of the first A in AMERICA.

Estimated survivors: 1,600, or about 4.5% of the reported mintage. As might be expected, few exist in grades below EF. About 900 have been certified as UNC or AU by PCGS and NGC.

1 Breen, Walter. 1983.

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