The Classic Period of American Toolmaking
1827 - 1930
Hand Tools in History Series

- Volume 6: Steel- and Toolmaking Strategies and Techniques before 1870
- Volume 7: Art of the Edge Tool: The Ferrous Metallurgy of New England Shipsmiths and Toolmakers from the Construction of Maine’s First Ship, the Pinnace *Virginia* (1607), to 1882
- Volume 8: The Classic Period of American Toolmaking, 1827-1930
- Volume 9: An Archaeology of Tools: The Tool Collections of the Davistown Museum
- Volume 10: Registry of Maine Toolmakers
The Classic Period of American Toolmaking
1827 - 1930

Including an extensive bibliography and company files on America’s most important hand tool manufacturers

H. G. Brack

Davistown Museum Publication Series
Volume 8

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Cover illustration:

A view of Slater’s Mill on the Blackstone River in Pawtucket, RI, America’s first partially automated textile mill, built in 1793. The mill is the small wooden building on the right under the bridge. This oil on board painting was probably done between 1810 and 1820 as indicated by more recent masonry factory buildings in the background. Davistown Museum Antiquarian Art Collection, ID# 93004A1.

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Frontispiece illustration:

Two views of a plow plane made in 1844 by Elihu Dutcher, Pownal, VT, Rick Floyd collection, Newport, ME. Information on this plane and Elihu Dutcher is in PTAMPIA I & II. Images also provided by Rick Floyd.

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Preface

Davistown Museum *Hand Tools in History*

One of the primary missions of the Davistown Museum is the recovery, preservation, interpretation, and display of the hand tools of the maritime culture of Maine and New England (1607-1900). The *Hand Tools in History* series, sponsored by the museum’s Center for the Study of Early Tools, plays a vital role in achieving the museum mission by documenting and interpreting the history, science, and art of toolmaking. The Davistown Museum combines the *Hand Tools in History* publication series, its exhibition of hand tools, and bibliographic, library, and website resources to construct an historical overview of steel- and toolmaking strategies and techniques used by the edge toolmakers of New England’s wooden age. Included in this overview are the roots of these strategies and techniques in the early Iron Age, their relationship with modern steelmaking technologies, and their culmination in the florescence of American hand tool manufacturing in the last half of the 19th century.

Background

During over 40 years of searching for New England’s old woodworking tools for his Jonesport Wood Company stores, curator and series author H. G. Skip Brack collected a wide variety of different tool forms with numerous variations in metallurgical composition, many signed by their makers. The recurrent discovery of forge welded tools made in the 18th and 19th centuries provided the impetus for founding the museum and then researching and writing the *Hand Tools in History* publications. In studying the tools in the museum collection, Brack found that, in many cases, the tools seemed to contradict the popularly held belief that all shipwrights’ tools and other edge tools used before the Civil War originated from Sheffield and other English tool-producing centers. In many cases, the tools that he recovered from New England tool chests and collections dating from before 1860 appeared to be American-made rather than imported from English tool-producing centers. Brack’s observations and the questions that arose from them led him to research the topic and then to share his findings in the *Hand Tools in History* series.

*Hand Tools in History* Publications

- Volume 6: *Steel- and Toolmaking Strategies and Techniques before 1870* explores ancient and early modern steel- and toolmaking strategies and techniques, including those of early Iron Age, Roman, medieval, and Renaissance metallurgists and toolmakers. Also reviewed are the technological innovations of the Industrial Revolution, the contributions of the English industrial revolutionaries to the evolution of the factory system of mass production with interchangeable parts, and the
development of bulk steelmaking processes and alloy steel technologies in the latter half of the 19th century. Many of these technologies play a role in the florescence of American ironmongers and toolmakers in the 18th and 19th centuries. Author H. G. Skip Brack cites archaeometallurgists such as Barraclough, Tylecote, Tweedle, Smith, Wertime, Wayman, and many others as useful guides for a journey through the pyrotechnics of ancient and modern metallurgy. Volume 6 includes an extensive bibliography of resources pertaining to steel- and toolmaking techniques from the early Bronze Age to the beginning of bulk-processed steel production after 1870.

- **Volume 7: Art of the Edge Tool: The Ferrous Metallurgy of New England Shipsmiths and Toolmakers** explores the evolution of tool- and steelmaking techniques by New England’s shipsmiths and edge toolmakers from 1607-1882. This volume uses the construction of Maine’s first ship, the pinnace Virginia, at Fort St. George on the Kennebec River in Maine (1607-1608), as the iconic beginning of a critically important component of colonial and early American history. While there were hundreds of small shallops and pinnaces built in North and South America by French, English, Spanish, and other explorers before 1607, the construction of the Virginia symbolizes the very beginning of New England’s three centuries of wooden shipbuilding. This volume explores the links between the construction of the Virginia and the later flowering of the colonial iron industry; the relationship of 17th, 18th, and 19th century edge toolmaking techniques to the steelmaking strategies of the Renaissance; and the roots of America’s indigenous iron industry in the bog iron deposits of southeastern Massachusetts and the many forges and furnaces that were built there in the early colonial period. It explores and explains this milieu, which forms the context for the productivity of New England’s many shipsmiths and edge toolmakers, including the final flowering of shipbuilding in Maine in the 19th century. Also included is a bibliography of sources cited in the text.

- **Volume 8: The Classic Period of American Toolmaking 1827-1930** considers the wide variety of toolmaking industries that arose after the colonial period and its robust tradition of edge toolmaking. It discusses the origins of the florescence of American toolmaking not only in English and continental traditions, which produced gorgeous hand tools in the 18th and 19th centuries, but also in the poorly documented and often unacknowledged work of New England shipsmiths, blacksmiths, and toolmakers. This volume explicates the success of the innovative American factory system, illustrated by an ever-expanding repertoire of iron- and steelmaking strategies and the widening variety of tools produced by this factory system. It traces the vigorous growth of an American hand toolmaking industry that was based on a rapidly expanding economy, the rich natural resources of North America, and continuous westward expansion until the late 19th century. It also includes a company by company synopsis of America’s
most important edge toolmakers working before 1900, an extensive bibliography of sources that deal with the Industrial Revolution in America, special topic bibliographies on a variety of trades, and a timeline of the most important developments in this toolmaking florescence.

- **Volume 9: An Archaeology of Tools** contains the ever-expanding list of tools in the Davistown Museum collection, which includes important tools from many sources. The tools in the museum exhibition and school loan program that are listed in Volume 9 serve as a primary resource for information about the diversity of tool- and steelmaking strategies and techniques and the locations of manufacturers of the tools used by American artisans from the colonial period until the late 19th century.

- **Volume 10: Registry of Maine Toolmakers** fulfills an important part of the mission of the Center for the Study of Early Tools, i.e. the documentation of the Maine toolmakers and planemakers working in Maine. It includes an introductory essay on the history and social context of toolmaking in Maine; an annotated list of Maine toolmakers; a bibliography of sources of information on Maine toolmakers; and appendices on shipbuilding in Maine, the metallurgy of edge tools in the museum collection, woodworking tools of the 17th and 18th centuries, and a listing of important New England and Canadian edge toolmakers working outside of Maine. This registry is available on the Davistown Museum website and can be accessed by those wishing to research the history of Maine tools in their possession. The author greatly appreciates receiving information about as yet undocumented Maine toolmakers working before 1900.

- **Volume 11: Handbook for Ironmongers: A Glossary of Ferrous Metallurgy Terms** provides definitions pertinent to the survey of the history of ferrous metallurgy in the preceding five volumes of the *Hand Tools in History* series. The glossary defines terminology relevant to the origins and history of ferrous metallurgy, ranging from ancient metallurgical techniques to the later developments in iron and steel production in America. It also contains definitions of modern steelmaking techniques and recent research on topics such as powdered metallurgy, high resolution electron microscopy, and superplasticity. It also defines terms pertaining to the growth and uncontrolled emissions of a pyrotechnic society that manufactured the hand tools that built the machines that now produce biomass-derived consumer products and their toxic chemical byproducts. It is followed by relevant appendices, a bibliography listing sources used to compile this glossary, and a general bibliography on metallurgy. The author also acknowledges and discusses issues of language and the interpretation of terminology used by ironworkers over a period of centuries. A compilation of the many definitions related to iron and steel and their changing meanings is an important
component of our survey of the history of the steel- and toolmaking strategies and techniques and the relationship of these traditions to the accomplishments of New England ships smiths and their offspring, the edge toolmakers who made ship building tools.

- Volume 13 in the *Hand Tools in History* series explores the iconography (imagery) of early American hand tools as they evolve into the Industrial Revolution’s increased diversity of tool forms. The hand tools illustrated in this volume were selected from the Davistown Museum collection, most of which are cataloged in *An Archaeology of Tools* (Volume 9 in *Hand Tools in History*), and from those acquired and often sold by Liberty Tool Company and affiliated stores, collected during 40+ years of “tool picking.” Also included are important tools from the private collections of Liberty Tool Company customers and Davistown Museum supporters. Beginning with tools as simple machines, reviews are provided of the metallurgy and tools used by the multitasking blacksmith, shipsmith, and other early American artisans of the Wooden Age. The development of machine-made tools and the wide variety of tool forms that characterize the American factory system of tool production are also explored. The text includes over 800 photographs and illustrations and an appendix of the tool forms depicted in Diderot’s *Encyclopedia*. This survey provides a guide to the hand tools and trades that played a key role in America’s industrial renaissance. The iconography of American hand tools narrates the story of a cascading series of Industrial Revolutions that culminate in the Age of Information Technology.

The *Hand Tools in History* series is an ongoing project; new information, citations, and definitions are constantly being added as they are discovered or brought to the author’s attention. These updates are posted weekly on the museum website and will appear in future editions. All volumes in the *Hand Tools in History* series are available as bound soft cover editions for sale at the Davistown Museum, Liberty Tool Co., local bookstores and museums, or by order from www.davistownmuseum.org/publications.html, Amazon.com, Amazon.co.uk, CreateSpace.com, Abebooks.com, and Albris.com.
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Introduction

This third volume of essays on the role of hand tools in American history extends the review of toolmaking and tool forms in colonial New England and the early Republic to include a broader consideration of the American industrial florescence, whose roots lie in the shipbuilding industry of 17th and 18th century New England and its intimate relationship with English and continental steel- and toolmaking traditions and tool forms.

The historic role of armor and ordnance production and gunsmithing in European and American history is well documented. Less obvious and not well documented is the underlying significance of earlier metallurgical endeavors and innovative steelmaking strategies and toolmaking techniques, which seem but a footnote to the narration of the exploration and settlement of the New World. Little or no Renaissance era warfare, shipbuilding, world exploration, or industrial innovation would have been possible without a growing and expanding knowledge of how to make steel and steeled edge tools.

The birth and growth of a vigorous colonial ironworking and toolmaking industry and its evolution into the classic period of American toolmaking, 1827 to 1930, is rooted in the social and intellectual history of the Renaissance and the virtually unknown metallurgical magicians who facilitated its physical, industrial, and geographical expansion. Renaissance merchant adventurers, armed with wrought iron guns, cast iron cannons, and sailing ships built with steeled edge tools, explored and conquered a new continent and established new communities whose success depended on the ability to make and use hand tools. The 19th century florescence of American toolmaking grew out of a vigorous and tenacious colonial shipbuilding industry that was an essential component of the American political and industrial revolutions.

The traditions, craftsmanship, and steel- and toolmaking strategies and techniques of this remarkable period of industrial activity are now fading from our memory. Nonetheless, hundreds of thousands of high quality hand tools made by hundreds of American toolmakers and toolmaking factories survive as primary evidence of the vigor of what may be called the classic period of American toolmaking, 1827 - 1930. This publication series attempts to elucidate the transition between ancient steel- and toolmaking strategies and techniques and those available to New England shipsmiths and shipwrights during the early years of colonial and early American shipbuilding along the New England coast and their link to the florescence of American toolmaking, which is the subject of this volume.

The roots of this essentially metallurgical endeavor lie in the earlier prosperity of Elizabethan society and the politics and social values of a rapidly expanding and
changing world order. The essential role played by the evolution of direct process smelting furnaces into the more efficient high-shaft blast furnace (1350) in the iron and steel consuming trading economies of the Renaissance was manifested in innovative new strategies for making ordnance and edge tools. The strategies and techniques for making iron and steel tools that characterize the expanding empires of the 16th and 17th centuries were adapted by an indigenous colonial metallurgical industry that played an important, but often unacknowledged, role in the successful settlement of North America.

The forgotten shipsmiths and the ironware and edge tools they made were the lynchpins in the economic triad essential to the success of the New England colonies: forest, fish, and shipbuilding. Those hand tools made of iron and steel smelted in the Forest of Dean and the Weald of Sussex and used to build Maine’s first ship, the pinnace Virginia, at Fort St. George (1607 – 1608) were also used during the early years of the colonial shipbuilding industry. An examination of some of the hand tools made in the first century of the settlement of New England in the preceding volume of this series helps link English and continental toolmaking techniques with the later florescence of American toolmakers.

American toolmakers did not just suddenly start making tools in 1827, when Samuel Collins completed his first full year of manufacturing axes in his new plant in Collinsville, CT, the year chosen in this publication series to mark the beginning of the classic period of American toolmaking. Many individual artisans, inventors, and entrepreneurs, such as Simon North, Eli Whitney, Oliver Evans, Thomas Blanchard, and John Russell preceded Collins and helped lay the foundation for the birth of the American factory system of manufacturing. The great expansion in American toolmaking that occurred after 1827 was preceded by almost two centuries of forge welded hand tools made by blacksmiths, shipsmiths, and edge toolmakers serving the communities in which they lived. The westward moving population, French and Indian Wars, and the Revolutionary War prompted isolated toolmakers to make tools for use outside their local communities. The growth of the colonial shipbuilding industry and the success of the coasting, West Indies, and North Atlantic maritime trade were important components of the success of the American Revolution and the rapid expansion of the American toolmaking industries that followed. This third volume of the Hand Tools in History series traces and explains the creative inventiveness of a robust indigenous toolmaking community that was well established by 1827 and endured for the next century.

The roots of the florescence of American toolmaking during this century of technological innovations, inventive tool designs, and westward industrial expansion lie centuries in the past. A straightforward historical narration of events leading up to the success of the American factory system of hand tool production is an inadequate vehicle for explaining
the roots of this florescence. Rather, as noted in the next to last chapter of the previous volume, *Art of the Edge Tool* (Brack 2008a, 144), the phenomenology of history is a series of labyrinths perhaps best described using the dendritic patterns of the microstructure of ferrous metals as a metaphor. Much of this historic labyrinth is beyond retrieval, forgotten events waiting to be re-narrated in the context of the frenetic technological innovations and discoveries of the modern age. A recapitulation of the events leading up to the growth and success of the classic period of American hand tool production involves the often difficult exploration of these historic labyrinths, which, as with the crystalline patterns of ferrous metals, often change over time. The narrative of the many stories of the history of toolmaking derives from none other than the tools themselves.
History Recapitulated

When that shipwright from London constructed the pinnace *Virginia* at Fort St. George, Maine, in 1607-1608, his steel edge tools were “German steel,” made by the strategy of decarburizing cast iron. Yet the German Renaissance, which had endured for two centuries, had only a decade of peace remaining. The Thirty Years War (1618-1648,) would destroy its famed watch-making, ornamental iron, lock-smithing, and steelmaking industries. It was this cultural flowering that produced Albrecht Dürer (1471-1528) and ironwork of incredible beauty and complexity. This continental method of producing steel continued to be the principal strategy for steel production until the English technique of carburizing bars of Swedish wrought iron was developed after 1686.

French, and then German ironmongers had immigrated to England beginning in Tudor times, influencing the traditions of English smelters and shipsmiths, many of whom lived along the Thames River and worked at the Royal shipyards. The blast furnaces and ironworks of the Weald, located in Sussex to the south of London, were the principal source of bar iron and German steel in the years before the Forest of Dean, the Severn River, and its upstream Midlands watershed (i.e. Shropshire, which included the communities of Stourbridge and, later, Ironbridge) superseded it as England’s most important iron- and steel-producing region. In the late 17th century, the cementation furnace made its first documented appearance in England in the Derwent River Valley, spreading to the Midlands and replacing the continental method for steel production after 1700. Isolated use of the cementation furnace in continental Europe can be dated to the 16th century, suggesting its origins are in the Celtic metallurgical traditions that played such an important role in the German Renaissance. One of many 16th century continental steelmaking strategies, it never superseded German steel production in southern and eastern Europe. It dominated English steel production until the appearance of the Bessemer and Siemens’ processes after 1865.

The River Severn on the west coast of England, the location of the important port of Bristol, was the 17th and 18th century equivalent of the interstate highway system connecting the Stour Valley and Birmingham with other Midland ironworks. It also provided access to rapidly expanding European and colonial American economies, which were the most important markets for English iron and ironwares. While iron and steel from the Weald were brought to London by sea from the south coast of England through the British Channel, high quality phosphorus-free iron ore and bar iron were shipped from the Forest of Dean up the River Severn to Midland forges in the Stour Valley even before the English Civil War (1642-1651) resulted in the destruction of Sir Basil Brooke’s Forest of Dean blast furnaces. Also supplying the Midland forges, especially in
the centuries after the end of the English Civil War, were the ore deposits, blast furnaces, and ironworks of Merthyr Tydfil in south Wales, just northwest of Cardiff at the mouth of the Severn.

Even after the great fire of 1656, London remained England’s most important commercial center. The Thames River thus served as a commercial artery second in importance only to the Severn River. The raw materials that made the journey from the Sussex Weald and the Forest of Dean to the Midland forges of Shropshire and the distant steel-producing city of Newcastle were eventually transported to London, often as finely crafted tools to be distributed in a growing world empire.

One important reason for the sudden appearance of the cementation process in England to produce steel was the temporary demise of the German steel industry as a result of the Thirty Years War. England supported the Protestant German nobility in its initial conflict with the Catholic King Ferdinand and his allies within the Holy Roman Empire. The Thirty Years War, essentially an extension of the religious wars that ravaged France in the 16th century (Fisher 2008), raged across Europe from 1618 to 1648 with an erratic pattern of victory and loss on all sides. Eventually, France emerged as the victor (1648) and reigned as the most important European power until the fall of Quebec (1759). One clear fact emerges from the obscurities of this long forgotten conflict: all European nations urgently needed more steel to fight these wars. The Thirty Years War, combined with the later wars of the League of Augsburg and the War of the Spanish Succession, served to dramatically increase the need for iron and steel for ordnance (cannon and cannonballs), guns, swords, and edge tools. The cementation steel furnace, which could only effectively use high quality charcoal-fired Swedish iron bar stock, answered the English need for steel by the end of the 17th century. France, Germany, and Austria continued the production of German steel from fined cast iron. The English method of making steel in the cementation furnace appeared in America after the Treaty of Utrecht ended the War of the Spanish Succession in 1713, and quickly spread from coastal New England southward to Pennsylvania, New York, Maryland, and elsewhere (Bining 1933). No documentation exists that would allow us to evaluate how much steel was produced by the continental method of decarburizing cast iron or by clandestine colonial blister steel furnaces, but the extensive collection of malleable iron hand tools at the Mercer Museum suggests that this continental method was much more well established in the Pennsylvania area than the current literature (Gordon 1996) indicates. By 1750, sporadic domestic production of blister steel began replacing domestic production of German steel (decarburized cast iron) even in Pennsylvania.

The European wars that raged from 1618 to 1763 did more to facilitate colonial shipbuilding and toolmaking than any other factor because of the massive and rapid
depletion of timber resources in northwest Europe, a process that was already well under way in England in the 16th century when Elizabeth I began restricting the harvesting of timber in the Royal Forests. Yankee ingenuity, tenacity, and the rich timber resources, bog iron deposits, and shipbuilding skills of New England and other regions along the Atlantic coast were the key components of the flowering of colonial shipbuilding efforts. The massive late 16th and 17th century construction of well armored ships for Spanish, French, English, Dutch, and Portuguese exploration and their conquest of the new-foundlands had a domino effect. Timber resources near European shipbuilding centers (except in the Baltic) were depleted, resulting in rising shipbuilding costs and a lack of trained shipwrights to work in inefficient shipyards. The need to supplement timber supplies, first from Baltic and then North American timber ports, exacerbated the costs of building ships in England and northwestern Europe. As a result, shipbuilding activities exploded in New England after 1645. Warfare in Europe was the prime cause of English and European forest depletion, which then nurtured a robust indigenous shipbuilding industry in the American colonies (Hutchins 1941). This industry, in turn, gave work to New England’s shipsmiths and edge toolmakers as well as those in the colonies to the south. The secrets of their finesse at edge tool production and the significance of manganese as a microconstituent in colonial bog iron have yet to be explained. The migration of shipwrights to New England colonies that occurred between 1710-1724, when “half the shipwrights in Great Britain had left the country since 1710” (Goldenberg 1976, 53), pertained to this turmoil and consequent destruction of forest resources in Europe.

The Treaty of Utrecht also signaled a temporary respite in the French and Indian conflicts in North America. Some settlers returned to Maine, only to be harassed again during King William’s War, but the dark shadows cast by repeated attacks on frontier settlements, such as Deerfield, Haverhill, and the Piscataqua tidewater towns of New Hampshire, were lifted. The French and Indian wars moved westward to northern New York, western Pennsylvania, and Ohio. Sporadic attacks originating in the missionary communities of the lower St. Lawrence River Valley continued in interior and coastal sections of northern New England (Bourque 1995), as typified by Manwarren Beal’s evening shipboard encounter with a native Abenaki at Beal’s Harbor on Head Harbor Island in the late 1750s (see Vol. 7 of the *Hand Tools in History* series for a more detailed description of the context of this encounter). Nonetheless, areas suitable for settlement and no longer subject to attacks of the ferocity of the Deerfield massacre greatly expanded after the Treaty of Utrecht, denoting a point in time where English settlement of large areas of North America south of the St. Lawrence River basin was much more certain. The vigorous growth of colonial iron smelting and toolmaking industries followed, much of it esthetically interesting wrought iron hardware and malleable iron hand tools. Blast furnaces, at first located near the bog iron deposits of Saugus and southern Massachusetts, soon appeared in New Jersey, New York, Maryland,
and especially Pennsylvania. The hollowware made at the Carver, MA, blast furnaces for domestic products (1720f.), and probably before that by the Leonard clan (1653f.) at many southeastern Massachusetts furnaces, and by Despard on the North River (1700), soon became the cannon and cannonballs of the Revolutionary War and the War of 1812. The age of the crucible cast steel ax lay far in the future, but the florescence of American toolmaking was well underway in the early 18th century.

After the hiatus of the Revolutionary War, Jefferson’s Embargo Act (1807) was the first bump in the road to prosperity for New England’s merchants and ship owners. Imports of manufactured ironware to the early Republic were erratic. The War of 1812 continued to interrupt the trading patterns that had been established during the neutral trade. The vast wealth accumulated during the neutral trade as a result of the wars between France and England (1793f.) had already created rows of stately federal-style houses in towns from Wiscasset, ME, to Newburyport and Salem, MA, Newport, RI, and in the communities near the Connecticut shoreline. Philadelphia and then New York replaced Boston as America’s most important port. Construction of the steam-powered passenger packets that plied the American coast occurred in New York in the pre-Civil War era. In all locations, the roles of shipsmiths and edge toolmakers, the now invisible enablers of America’s maritime florescence, have been forgotten.

By 1856, the brief age of the clipper ship, the last great achievement of the Boston shipyards, had only a few years left. The spread of railroads in southern New England between 1835 and 1850 ended the total dependence of most communities on the coasting trade. Hand tools made in New England’s water-powered back country mill towns could now be brought to market by rail. Toolmakers were already moving west. D. A. Barton began his performance as a famous American edge toolmaker in Rochester, New York, in 1832. By 1856, the Buck Brothers were already rolling their famed cast steel edge tools, first at Worcester, MA, a decade before Pittsburg began producing significant quantities of cast steel and then in Millbury, Massachusetts, after 1863. Where did they get their steel? The American factory system was about to leave English toolmakers a distant second in the race to produce high quality hand tools. Were American edge toolmakers working before the Civil War, such as the Buck Brothers, able to produce crucible steel in small quantities by techniques they had learned in England? What untold stories remain to be narrated about English traditional tool forms and their adaptation and production by innovative American toolmakers?
English Traditions; American Resources

The Robert Merchant wantage rule in the collection of the Davistown Museum is among the most important artifacts surviving from the flowering of toolmaking in colonial New England. Meticulously fashioned in its own hardwood slipcase in North Berwick, ME, in 1720, this rule, an icon of American toolmaking, symbolizes the migration of skilled English toolmakers to colonial New England that had been ongoing for almost a century. The skills of American toolmakers are clearly rooted in English traditions and techniques brought in the great migration to Massachusetts Bay and best symbolized by Joseph Jencks, the Leonard clan, and other New England forge masters and toolmakers well versed in the steel- and toolmaking strategies and techniques of the Sussex Weald, the Forest of Dean, and the Midlands forges of the Severn River watershed. That finely made wantage rule by Robert Merchant is just one nonferrous example of the transfer of English and European toolmaking skills to colonial America. That these traditions and techniques are themselves rooted in German, continental, and especially, a Celtic metallurgical legacy is now nearly forgotten. The early 18th century migration of English shipwrights and edge toolmakers cited by Goldenberg (1976) is perhaps the most important component of the transfer of skills and metallurgical traditions to colonial America.

After the Treaty of Utrecht (1713) and the temporary halt of French-English hostilities in New England, colonial settlements and the many toolmakers and ironmongers who had arrived in the colonies in the great migrations of 1629-43 and 1710-24 moved further inland from...
southern coastal locations. New England shipsmiths and toolmakers had two new and reliable sources of steel, English-made blister steel and steel made in colonial furnaces. A growing domestic capability of producing steel for edge tool production in larger quantities and of a better quality than could usually be forged from a bloom of natural steel accompanied the often clandestine construction of colonial steel furnaces. Making anchors and wrought iron ship fittings from the iron muck bars produced from the bog iron bloom was a long established procedure in which hoists and manpower were the key. After 1713, hardware and anchors weren’t the only products of New England forges and furnaces; ironmongers’ new blister steel furnaces in New England, Pennsylvania, and elsewhere, in many cases much smaller than the 5 to 10 ton capacity English furnaces, provided shipsmiths, blacksmiths, and edge toolmakers access to small quantities of locally produced steel for forging broad axes, adzes, mast shaves, augers, and timber-framing chisels of quality nearly equal to the best imported English and German steel. While in the early and mid-18th century such production may have only been a trickle, the Revolutionary War unleashed a flood of domestic edge tool production.

Contrary to the conventional opinion on the incompetence of America’s often anonymous steelmakers working after the Revolutionary War, as expressed by Gordon (1996) in his chapter on steel in American Iron, and derived from and echoing 19th century sources (Swank 1891, and others,) the numerous domestically made edge tools of exceptional quality and durability that survive from this period tell an alternative tale of the many accomplished toolmakers adept at a variety of steelmaking techniques. Gordon (1996, 171-181) gives several examples of poorly made tools or improperly cast ingots to make the case for two centuries of incompetent steelmaking techniques. However, his index does not contain the word “tool” or “shipsmith,” nor does the text contain photographs of any of the thousands of steeled edge tools that are a most important component of the legacy of the American iron industry. American iron 1607 – 1900 indeed! This nation was built in part with tools made with American iron and steel. Sheffield steel is only part of the story. The tools themselves are our primary source of information about the metallurgical finesse of American toolmakers.

In contrast to depleted European resources, colonial America’s natural resources were also growing in the sense that westward expansion and exploitation first led to the iron ores of Salisbury, CT, followed by those of Pennsylvania and Maryland. Rock ores mined in these locations could be more easily smelted into high quality malleable iron, either in
the charcoal bloomery or by fining blast furnace cast iron, than the more siliceous bloomery bog iron. Nonetheless, natural steel production from bog iron blooms continued despite the introduction of the new technology of the cementation or blister steel furnace. Eric Sloane (1964), in *A Museum of Early American Tools*, has the following intriguing comment, which also applies to so many other tools that survive in old tool chests in workshops long after the ships and houses they built decayed or burned.

The 1775 gouge in the illustration has an interesting story. It was found in a stone fence. Bright and silverish, its edge is keen; it has no rust. How farm-bound bog iron, privately smelted, hammered together at a farm forge, could be better in any way than today’s steel is a mystery. I have compared the best chisels (the most expensive, that is) by leaving them in the rain alongside this ancient tool. The new tool’s edge was dulled, and rust appeared within a few days.

The legend is that early surface ore contained much manganese and was purer in iron content. It is also believed that the use of charcoal gave purer carbon content and made a superior iron. (Sloane 1964, 54)

The bog iron used to fashion the edge tool noted by Sloane as being found in a stone fence in Connecticut was probably made near where it was found and from locally smelted bog iron. Maps of major bog-iron-producing regions can be deceiving (see Figures 19 and 20 in *Art of the Edge Tool* (Brack 2008a)). The bog iron deposits used at Saugus or the bog iron swamps of Martha’s Vineyard are only several examples of the extent of small bog iron deposits as naturally occurring phenomena. Many local deposits shared the fate of those at Saugus; they were mined, smelted, and soon depleted. The much larger bog iron deposits in southeastern Massachusetts were the primary source of ore smelted in New England’s now forgotten network of forges and furnaces between 1653 and 1750.

We have lost the identity of many of the New England ships smiths who initially made edge tools from iron and steel produced at these domestic forges and furnaces, as well as from imported German and then blister steel. When domestically produced blister steel, often made from imported Swedish bar iron, became available in the first quarter of the 18th century, the colonial ability to make the high quality, heavy duty edge tools of the shipwright was already well established. Imported Sheffield-made light and medium duty crucible (cast) steel edge tools did not become available to American artisans until after 1765. These Sheffield-produced carving tools were soon used by the case furniture artists who created masterpieces out of the hard and soft woods of New England and the tropical forests along the Bay of Campeche, easily accessible as a destination in the West Indies trade. The legacy of New England’s ship carvers so well detailed by writers such as Baker (1973) and exhibited in museums, such as the Peabody Essex Museum and the
Maine Maritime Museum, was another art form facilitated by English-made rather than American-made cast steel carving tools. The widespread availability of English cast steel carving and other edge tools after 1765 for American artisans is an integral part of our material cultural history. Of equal significance is the simultaneous domestic production of the heavy duty ship and timber framing tools, the evidence of which is not some written notes in a diary or log, but the tools themselves.

The New England shipwright of the colonial era, as well as those to the south, therefore had access to iron hardware, steel, and steeled edge tools from a wide variety of sources: domestically produced bog iron anchors and ships hardware, manganese and phosphorus laced domestic bog iron, imported Swedish bar iron, imported and domestically made German and blister steel, domestically produced wrought and malleable iron, and, after 1750, Sheffield cast steel and cast steel tools, a most expensive commodity. New England’s early colonial bog iron industry was but a pittance in comparison to the vibrant iron ore mining and smelting industries that spread rapidly in all directions from the upper Chesapeake Bay (Principio) and Pennsylvania nucleus in the mid-18th century. By the time of the American Revolution, the American colonies were producing 1/7th of the world’s output of smelted iron (Bining 1933). But what percentage of their own shipbuilding tools were they producing and where was the steel used for these tools smelted and forged? A review of the history and context of colonial New England tool production will help answer the first question but not the second.
The Early Toolmakers

When the great migration to Massachusetts Bay brought by the Winthrop Fleet ended in the early 1640s, communities were quickly established along the New England coast at Gloucester, Salem, Ipswich, Portsmouth, and other locations to the north of Boston, and to the south, where settlements dotted the small rivers north of Plymouth. Cape Cod and the southern Massachusetts and Rhode Island coasts were also soon settled, and colonists began moving inland to Concord, Sudbury, Dedham, Natick, and the communities in the Taunton River watershed. While most colonists brought the tools they needed with them from England, the growing need for additional hand tools could not always be satisfied by offerings in colonial shops, such as that of George Corwin in Salem, the contents of which are described in the previous volume in this series (Brack 2008a, 45). Some common hand tools could easily be made by farmers in their backyard bloomery forges. The bog iron hammer (Figure 4) offers an excellent example of how an early colonist could make do by forge welding his own hammer from locally smelted bog iron. It simply wasn’t practical to journey to Boston to buy an English-made hammer in a merchant shop, nor could the farmer afford its cost and especially the loss of work time that such a journey entailed.

Special needs tools, such as the small bowl adz (Figure 5) and the cheese whip (Figure 7), would not have been available as imported tools even if an isolated colonist had the funds to buy such an object. The small bowl adz now in the collection of the Natick Historical Society is a particularly interesting example of a one-of-a-kind, forge welded, malleable iron steeled tool made for a specific use, i.e. wooden-bowl-making. It’s possible that this tool was made by an English blacksmith who had immigrated to the colonies, possibly for Native American use, as were many other tools made by early colonists and traded for furs. Or an isolated farmer might have forge welded this tool for his family or for production of wooden bowls, which could have been traded in a community like Natick for products made by other families. From the appearance of the welded cutting edge of this one-of-a-kind adz, it appears that, rather than using bar steel imported from England, the smith who made this forged his own natural steel cutting edge before welding it onto the bowl adz. The smith may have used the ancient technique of submerging a small piece of wrought iron in a charcoal fire for several days to increase its carbon content before welding it onto the body of the adz as its steel cutting edge. It is almost certain that this adz, as well as the bog iron hammer and the cheese whip, were made in Massachusetts in the early colonial period near where they were found. Though not of interest to contemporary tool
collectors, this primitive adz from southeastern Massachusetts would have been used in a workshop that surely included a mix of locally made tools, e.g. a shaving horse for making shingles and other woodenware (Figure 10), possibly a crudely fashioned pod auger, the ubiquitous forged malleable iron garden hoe (Figure 8), a French-made trade ax, and a few English tools brought in the great migration.

As with most trade axes, the crooked knife (Figure 6,) another common everyday artifact in the toolkits of both colonists and indigenous survivors, was probably forge welded in Europe or possibly Quebec from natural or German steel. It is usually assumed that all tools traded to First Nation communities, such as the ubiquitous trade ax, were made in Europe. Most are probably Spanish, rather than French or English in origin. As with many other edge tools brought from Europe and traded to Native Americans, trade axes appear to have been made out of German steel (decarburized cast iron) and often lack an obvious welded on steel cutting edge. This phenomenon suggests that many of these edge tools were made in one piece from German steel and then had their cutting edges subjected to additional forging (hammering) and heat treatment (quenching and tempering). However, a question arises about the prevailing view of the European origins of both trade axes and English hewing axes, such as the one in The Davistown Museum collection (Fig. 29 in Vol. 7 [Brack 2008a, 77]). Most were probably made in Europe, yet, especially in the case of the English hewing ax, which also might have been forged at the Saugus Ironworks, immigrating English smiths would have brought their knowledge of how to make edge tools with them when they came in the great migration. The same observation can be made about edge toolmakers who immigrated to Quebec, making some of the trade axes encountered in New England today. It’s highly unlikely that they would have suddenly changed the style of the hewing axes they traditionally made in England or the trade axes forged in Catalonia.
While immigrants participating in the great migration were obviously well prepared and brought many of the tools needed for their first years of timber framing and shipbuilding, the rapid expansion of the colonial shipbuilding industry in New England after 1650 must have resulted in a huge demand for edge and other hand tools. How many of these tools were imported from England and elsewhere and how many were produced in the colonies before the appearance of the first steel furnaces remains a mystery that may never be solved. With the establishment of integrated ironworks (blast furnace and finery, chafery, and blacksmith forges) at Braintree (now Furnace Brook, Quincy), Saugus, Taunton, and elsewhere in southeastern New England by the mid-1650s, widespread toolmaking activities by smiths who had already been trained in England were well underway.

In addition to these new larger facilities, by the end of the 17th century, hundreds of small bloomery forges had been built throughout New England. Every community had its blacksmith, and most would have worked at forges that were capable of smelting small quantities of roasted bog iron. That same forge would then have been used by the smith to fashion the wrought iron hardware and primitive tools, such as the Natick bowl adz, which have survived in surprisingly large numbers from the first century of colonial settlement in New England.

There were no secret English or German steel- and toolmaking strategies and techniques not known to these early iron mongers. The vast forest resources of New England and the bog iron swamps to the north and especially to the south of Boston were already known to the Massachusetts Bay colonists who legislated explicit regulations, as
noted in the Massachusetts Bay Colony records of 1645 and 1646 (Brack 2008a, 17), for the colonial iron industry within a few decades of their arrival in the new-found-lands. These early legislative regulations expressed the consensus of the Massachusetts Bay Colony that ironworks be established as soon as practical. The integrated ironworks at Braintree and Saugus were the first facilities constructed as a result of these regulations. They played an important role in establishing a flourishing indigenous colonial toolmaking industry that has yet to be recognized by many American historians and commentators.

Figure 9. Top: snowshoe hammer, forged iron, 9 ½” long, handle 4 ½” long, ½” round face, c. 1790, Davistown Museum MIII Collection ID# TCM1005. Bottom: hewing ax marked “I H HARRISON N:4”, c. 1750, forged iron and steel, 5” long blade, 19” long handle, Davistown Museum MII Collection ID# TBC1003.
Figure 10. Shaving horse, maple, 57” long, 17” tall, 4” wide clamp, Davistown Museum MI Collection ID# TAB1012.
The Prevailing Viewpoint

Bining (1933) is one of the few lonely voices who has made a case that there was a robust indigenous toolmaking industry in New England, especially after the end of Queen Anne’s War and the spread of steel furnaces in New England and elsewhere. In contrast, the conventional viewpoint is expressed by Bolles (1878).

For two hundred years after the first settlement of the country the inhabitants were really dependent upon Europe for their cutlery. Our forests were felled principally with English axes, the crops cut with English scythes and sickles, the building-arts carried on with chisels and tools from Sheffield, and even the loaf of bread upon the table sliced with an English knife. The quantity and variety of edge-tools made in the New World were extremely small. (Bolles 1878, 221)

Bolles is certainly correct in his observation about the dominance of English cutlery; Sheffield shipped its famed knives and razors by pack horse to other areas of England as early as the Tudor era. But the ubiquitous presence of domestically-made primitive edge tools recovered in New England that date before the rise of the American factory system (1850) tell a different story. Diverse strategies and techniques for making edge tools are reflected in an immense variety of forge welded and steeled tools that have survived in New England from the robust shipbuilding economy of New England’s colonial and early republic periods. Writing in 1878, Bolles also extends the hegemony of Sheffield as an edge-tool-producing region to the century preceding Huntsman’s adaptation of crucible steel production for his watch spring business (1742). Earlier centers of English edge tool production were Birmingham and Lancashire in the late 17th and early 18th centuries and London prior to the great fire of 1666. The fact remains that we are not sure where the tools used by Boston and other New England shipwrights before 1720 in the construction of vessels for the British merchant fleet, including the East India trade, were forged. We certainly know where they were used: in the shipyards of New England.

Hummel (1968), in With Hammer in Hand, has written a comprehensive survey of the tools in the workshop of the East Hampton, NY, Dominy family who were furniture and clockmakers working from 1760 – 1840. The Dominy family continued to work after 1840 but the Hummel study ends there because such shops as the Dominy’s “…disappeared in the second quarter of the nineteenth century with the transition from craft to factory production and its resultant need of new types of tools” (Hummel 1968, 31). Hummel then goes on to explain why most tools used before 1840 were imported from England (no mention is made of German tools.)
Craftsmen in both cities and villages whose shops were located near navigable water probably received the cheaper and well-made English imports directly from overseas or by transshipment from major ports. Although there were toolmakers at work in America during the eighteenth and early nineteenth centuries, their products never seemed to rival those of European manufacturers. Transportation costs for the overland movement of goods in the United States prior to 1840 were so high that they almost prohibited the distribution of American-made tools. The report of a United States Senate committee written in 1816 indicated that “a ton of goods could be brought 3,000 miles from Europe to America for about nine dollars, but... for the same sum it could be moved only 30 miles overland in this country.” In the same year A. J. Dallas, Secretary of the Treasury, reported to Congress, that hardware, ironmongery, and cutlery were in a class of “manufactures which were so slightly cultivated as to leave the demand of the country wholly, or almost wholly dependent upon foreign sources for a supply.” (Hummel 1968, 33)

Gordon (1996) in his classic *American Iron* also comments on the poor quality of American steelmaking efforts. Citing Tweedle (1987), Gordon asserts:

Making steel proved a particularly difficult problem for American ironmasters through the first two-thirds of the nineteenth century. When they converted bar iron to blister steel, manufacturers found it inferior to the Sheffield product. Manufacturers of edge tools and mechanisms such as gunlocks wanted crucible steel, and they used imported metal. English steelmakers retained their American market through vigorous sales efforts. …The Sheffield steelmakers succeeded through their control of the best Swedish iron, access to coal and the special clay needed to make crucibles, and their experienced, stable work force. Steelmaking remained an art where experience counted for much and formal metallurgical knowledge for little. Others found it difficult to duplicate this success because artisans could not transfer techniques that depended on experience and specific materials unavailable elsewhere. (Gordon 1996, 89)

Later Gordon cites the remains of poor quality axes found at a Canadian site as further evidence for inadequate American toolmaking abilities:

Legends depict colonial or early American smiths as skilled, independent craftsmen making quality products. Artifacts show us, however, that smiths often had to use low-grade steel and sometimes did their work poorly. John Light and Henry Unglik found the remains of twenty axes in their archaeological study of a blacksmith shop used between 1796 and 1812 at Fort St. Joseph, Ontario. Smiths there had folded and welded wrought iron plates to make axe bodies and had then welded-in steel bits. They had made the bits too small and placed them badly. The steel had a variable carbon content and abundant slag inclusions. In none of the blades had the smiths properly hardened the bits. They made poor quality tools that would not have satisfied a demanding user.
In the first years of the republic, the United States had a substantial iron industry and little manufacturing capability. After entrepreneurs like Simeon North (who later became famous as one of the first makers of firearms with interchangeable parts) equipped themselves with tilt hammers in the 1790s to manufacture edge tools, Americans gradually captured a large share of the world market for axes and scythes with factory-made tools. (Gordon 1996, 171-172)

A fourth important source of the prevailing viewpoint of the inadequacy of American toolmaking capabilities can be found in the important Colonial Williamsburg publication *Eighteenth Century Woodworking Tools* (Gaynor 1997), a summary of research papers presented at a 1994 tool symposium. In the second paper in the symposium, noted tool collector Paul B. Kebabian asserts most woodworking tools used in America were of British origin. But then he continues with this qualifying statement.

> I shall consider the reasons for that and describe how the tools used in America changed from imported to local production, a trend that was to lay the foundation for a flourishing American tool industry in the nineteenth century. (Kebabian 1997, 23)

Bolles (1878), Hummel (1968), Gordon (1996), and most papers from the tool symposium (Gaynor 1997), summarize the prevailing viewpoint that most hand tools used in American workshops and shipyards were of British origin. Citing a 1975 US Bureau of Census report, Gaynor notes “as late as 1790, the population of the colonies was still almost 79 percent English, Scottish, and Irish” (Gaynor 1997, 24). That the source of most imported tools would therefore be British is understandable, but the tools we find today in New England tool chests, workshops, and collections, some of which date from this era, tell a more complicated story. Kebabian (1997) immediately begins contradicting the prevailing thesis by citing and illustrating a John Nicholson molding plane (second half of the 18th century), a Yankee felling ax dating from before the Revolutionary War, and 18th century plow planes made by Francis Nicholson and John Lindenberger, both working in the Wrentham/Providence area, the center of early American plane making efforts. While the Williamsburg symposium text unfortunately lacks an index, none of the essays on 18th century woodworking tools include any commentary on that most essential category of woodworking trades, those of the shipwright, nor examples of any of the tools they would have used, or information about who made these tools, where, and why. The symposium is, in fact, filled with references to the robust woodworking milieu of the early republic, including the workshop of Samuel Wing in Sandwich, MA and Elbridge Gerry Reed, a chair maker from central Massachusetts (Gaynor 1997).

Another contributor to this symposium, David Hey (1997), professor of local and family history at the University of Sheffield, contends that:
The English toolmaking industry, centered on Sheffield and Birmingham... had already gained a national reputation for some of their products by the sixteenth century and that they had already captured the market for certain tools. During the seventeenth century, they began to export some of their tools to America. (Hey 1997, 9)

In Hey’s bibliography, which mostly cites his own publications, there is no mention of Barraclough (1984a, 1984b), which clearly describes the rise of Sheffield steel production capabilities as occurring after canal and road construction in the mid-18th century made Sheffield steel and steel tools more easily transported to other areas of England. Prior to 1725, Birmingham, supplied with iron and steel from the Midlands and earlier from the Forest of Dean, would have been England’s principle edge toolmaking center. Before this date, cutlery was Sheffield’s most important product. Before the great fire of 1666, London, supplied by the furnaces of the Sussex Weald, would have been England’s other principle toolmaking center.

Hey (1997) notes Birmingham and Sheffield as the national center of production of agricultural edge tools and “cheaper knives” by the mid 16th century.

By the 1670s, the Sheffield district had at least six hundred smithies for the manufacture of knives, scissors, sickles, scythes, files, awl blades, nails, and other metal goods. (Hey 1997, 11-12)

But where was the manufacture of edge tools for the shipwright occurring? The central puzzle of the construction of Maine’s first ship, the pinnace Virginia, is where the tools used for her construction were forged in England. The same question can be asked about the tools used during the first decades of colonial shipbuilding efforts in coastal New England. And when the shipsmiths in New England began making their own adzes, slicks, broad and hewing axes, and mast shaves, where did they obtain their steel? Immigrant blacksmiths from England, who came to New England in the great migration of 1629-1642, many probably from Sheffield as well as from London, brought their knowledge of ferrous metallurgy and their skills at steeling edge tools with them. If they had access to steel suitable for edge tool manufacture, why would they import English tools?

All sources, including the secrets hidden within the contents of those New England tool chests, indicate that England was the source of carving tools, plane blades (though some German blades occasionally appear), and smaller tools, such as gimlets and calipers. The mortising chisels illustrated on page 38 (Gaynor 1997) and the hand vise, screw plate dividers, and nippers illustrated on page 39 (Gaynor 1997) are ubiquitous in American
tool collections. The mark of Peter Stubbs, the famed Lancashire file and toolmaker, is among the most commonly encountered English signatures, though not all the tools bearing his name were made in his shops. The gentleman’s tool chest and tools, which survive from colonial Williamsburg, and are illustrated on page 43 (Gaynor 1997) also illustrate the frequent appearance in colonial America of gorgeous high quality England-made tools often made in Birmingham and Sheffield. But, with the possible exception of the mortising chisels used to mortise the holes for trunnels in ship construction, none of these would be used by American shipwrights. The question remains as to the origin of their hand tools.

The tools illustrated by Hummel (1968) from the Dominy collection, now housed at the Winterthur Museum, further illustrate this quandary. First, few of the tools in the Dominy workshop would have been used by a shipwright. The Dominys made furniture and clocks, trades which had something in common with most of the tools of the non-shipbuilding trades of Colonial Williamsburg. These carving tools, gimlets, plane blades, and small hand tools were almost always made in England and imported to locations throughout the colonies, including Long Island and Williamsburg. But a closer look at the tools illustrated in Hummel (1968) discloses a very interesting puzzle. Tools noted as “made in England,” “America and England,” or “probably in England” in the Dominy workshop are fewer in number than we would expect, given that clock and furniture makers in colonial America traditionally used imported English tools. In the Dominy collection, only a few of the clearly stamped touchmarks of the English toolmakers, who always marked their tools with their name and often with its place of manufacture, make an appearance. Hummel divides his text into two sections: first, the woodworking tools and second, the metal working tools used by the Dominy workshop during their early years of operation up until about 1840.

Of the 212 woodworking tools, many incorrectly labeled as of English or probable English origin, only 28 are clearly marked English specimens. One hundred and thirty seven are obviously or probably American-made and are usually the primitive unsigned tools that we often associate with our many early American industries. Another 37 tools seem ambiguous and difficult to identify as to country of origin. Another 10 tools seem distinctly continental in style and either French or German in origin.

Of the 154 metal working tools, 91 have uncertain origins and another 58 are labeled or appear to be American-made, including the primitive clock barrel cutter (fusee engine) which is a classic example of late 18th century American metallurgy. It is not at all as sophisticated as German or English examples, but it got the job done, sometimes more efficiently than if operated by the traditional hide-bound English watchmaker. Only 5 of the metalworking tools in the Dominy collection are clearly identifiable as English.
Another intriguing aspect of the Hummel (1968) text is its use of French illustrations from André-Jacob Roubo (1769-1775) *L’art due Menuisier*. The commonly encountered leg vise illustrated in the plate from Roubo (illustration 169) has a date of 1760-1800 and the attribution “probably England.” The form illustrated in plate 169 is ubiquitous even today in farm workshops throughout North America (Figure 11) and it is unlikely that all were imported from England. Most were, in fact, domestically produced. The illustration from Roubo suggests that the design of the leg vise, as with many other tools (such as the hand vises, nippers, and buckle tongs illustrated in the same plate) have continental origins and may, in fact, derive from tools commonly used during the German Renaissance before the Thirty Years War destroyed much of the industrial capacity of the Bavarian toolmakers (1634 and after). Peter Stubbs and the Sheffield toolmakers are famous for their copious production of exactly the same tools illustrated at the bottom of the Roubo plate. Since the illustrations in this plate date from an era prior to the heyday of Stubbs productivity (± 1800, see below), it is highly unlikely that the French derived their tool forms from English sources as Hummel implies. This assertion is further strengthened by the observation that throughout the early modern era of Tudor England, steelmaking innovations originating in Germany and transferred to France were then brought to southern England by French ironmongers trained in the tradition of the manufacture of German steel from decarburized cast iron. During this period, it is highly unlikely that tool forms originated in Sheffield, which was then only accessible by pack horse (Barraclough 1984a), and were then brought to France and Germany. Because these forms, such as the hand vise we still encounter so frequently in American tool chests, were produced in such great numbers by Stubbs and other Sheffield toolmakers, we naturally think of them as English forms when, in fact, they are continental in origin.

Hummel (1968) also asserted that the cost of overland transport was prohibitive. Most American forges, shipsmiths, and toolmakers in the
colonial period, especially in New England and in Pennsylvania, were located in close proximity to navigable waterways. It may have been costly to bring iron bar stock or tools to isolated inland locations, but the same ports that were so convenient for imported English tools or Swedish bar iron could easily exchange domestically made iron and tools for other products in colonial America via its robust coasting trade. The edge toolmakers of southern New Hampshire (Garvin 1985) who worked from the late 18th to the late 19th centuries are just one example of a vigorous domestic toolmaking community that shipped edge tools down the rivers of New England to shipbuilders and woodworkers living along the New England coast. The Dominy workshop easily could have been one of their customers, though no Underhill tools, for example, were found in their collection.

Missing from the Hummel index are such words as “shipwright,” “edge tools,” “iron forge,” and “blister steel.” This is understandable since the Dominys were furniture and clockmakers, but then can their workshop be used to make a generalized conclusion about our early dependence on English tools? Of the two adzes illustrated on page 44, one is clearly a Yankee pattern lipped adz typical of those used by a shipwright; the second is stamped T. Austin, listed in the Directory of American Toolmakers (Nelson 1999) as working circa 1810, location in America unknown. All the augers illustrated in With Hammer in Hand (Hummel 1968) are also noted as “probably American.” Unsigned and having a rather primitive appearance, these are the ubiquitous nose or pod augers of the late 18th century. The two hand-forged twisted augers were probably made in the early 19th century. Of the three “broad axes” illustrated, “America or England 1800 – 1850,” the dates are correct, but aren’t these hewing axes, smaller than the mammoth Pennsylvania-style shipwright’s broad ax and are not all American makers? “Specimen A” is clearly noted as a stamped Collins “cast steel” ax, probably circa 1840 – 1850 and well used. “B” is a common American form but also nearly exact copy of an English prototype (see comments on pattern books below) with no marks and thus unlikely of English origin. “C” is the I. Conklin ax listed in the Directory of American Toolmakers as circa 1825, location unknown. The unusual ax illustrated on page 57 is neither English nor for shipbuilding, but rather continental in origin and an uncommon form. Its suggested use as a wheelwright’s ax may be correct. This important collection of tools clearly illustrates the late colonial and early American tendency to manufacture many tools in upstream furnaces and forges with easy access to America’s huge fleet of coasting vessels.

Gordon (1996) is certainly correct in noting that Americans were unable to make crucible steel of the quality of the Sheffield manufacturers, but most tools used in America didn’t need to be made of this expensive high quality, special purpose cast steel. The Dominy workshop illustrates the wide variety of American-made tools and their uses, as well as the presence of the small but exquisite Sheffield-made carving tools, gimlets, and
countersinks that are still found in almost every old New England tool chest. But American political and economic independence was based on industries far more significant and of more consequence than clock- and furniture-making, however important these trades were to America’s growing middle class in the post Revolutionary War era. Neither the ubiquitous presence of English carving tools, plane blades, and gentlemen’s tool chests, nor a pile of poor quality axes left at an abandoned smithy are sufficient grounds for squelching the celebration of the American tradition of toolmaking. The construction of that first ship, Virginia, at Fort St. George in 1607 -1608, is the opening chapter in the rise of indigenous shipbuilding and toolmaking communities that had their roots in the workshops of the anonymous shipsmiths, blacksmiths, and edge toolmakers who followed the ill fated Popham settlement with the successful occupation of North America.
The Iconography of Tools

If we expand our survey of the tool forms, especially woodworking tools that preceded the classic period of American toolmaking, we encounter other narrations and chronicles that help us understand the history of toolmaking. Of particular importance is Mercer’s *Ancient Carpenters Tools* (1929). Although few of the tools he illustrates were used by the shipwright, his iconography of tool forms inform us as to what extent the hand tools made in America between 1640 and 1930 derive from English and continental tool forms. Less well known is the ferrous metallurgy of the tools that preceded our modern hand tools.

One of the definitive sources of the iconography of tools is Diderot’s *Encyclopedia* ([1751-75] 1959), a pictorial survey of the trades and industries in mid-18th century France. The Diderot encyclopedia is particularly detailed in its depiction of the blast furnace, anchor- and cannon-forging, statue casting, metal mining and smelting, and ornamental iron work manufacture, which was a specialty of the French. Its survey of toolmaking is limited to anvil-making and the threading of screws for machine work. While the pin factory and the making of needles are depicted in detail, there is little mention of woodworking trades or forging of edge tools. The single plate on shipbuilding illustrates the framing of a rather Medieval-looking and bulky hull. Axes, adzes, framing whip saws, and bow saws are illustrated in a shipyard the likes of which no colonist would likely have visited.

Plate XV from Diderot and illustrated in *Hammer in Hand* (Hummel 1968), is actually plate 465 in the Dover edition of Diderot. The axes shown are dissimilar to those found in the Dominy workshop and are tool forms not encountered in colonial New England. Surely a few survive in collections, but they could not have played an important role in New England’s shipbuilding industry in the century before the encyclopedia was published. Their continental forms were almost certainly made of German steel. The adz illustrated in figure 5 (Hummel 1968, 52), a block adz, is a much more familiar form and undoubtedly is similar to those used by colonial shipsmiths. Imported from Europe and also probably made from German steel rather than blister steel, such adzes were similar in their metallurgy to the ubiquitous French trading axes so frequently encountered in New England collections. Lacking a welded steel cutting edge, these tools were instead subject to additional forging and heat treatment, which further carburized and tempered their cutting edge.
Five frame saws are illustrated in Diderot’s four plates on the cabinetmaker, joiner, and chair-maker. In contrast, carriage-making for the French nobility takes up nine plates. The Diderot plates on shipbuilding and woodworking illustrate the tools of the sawyer, which were nearly universal in all shipbuilding communities of the 17th and 18th century, including those in New England. The most frequently illustrated tool other than European-style hewing axes, the frame saw, would probably be, along with the single whip saw lying on the ground in plate 290 (also see plate 284, construction) and the adz in plate 290, the most commonly encountered tools in the shipyards of colonial New England. The shipsmiths and toolmakers who made the iron fittings and edge tools illustrated in the one plate on shipbuilding remain invisible not only in Diderot but also in other texts.

First printed as etchings between 1631 and 1635, Jan van Vliet’s *Book of Crafts and Trades* (Bober 1981), is an even earlier source of information about the tools used in the Netherlands at this time. The trades illustrated in this series of 18 prints by a contemporary and probable student of Rembrandt include blacksmith, locksmith, cooper, sail maker, glazier, and others. The single plate pertaining to woodworking contains excellent illustrations of chisels, planes, augers, calipers, a hammer, a poll adz, and a saw with the old Dutch style bent handle. Any of these tools could have been used by shipwrights of the period in Europe, particularly the huge Medieval-style broad ax. The curved handle planes were already obsolete at this time, but the squares, calipers, brace, and chisel are still encountered in 18th century tool chests in the forms depicted in these plates. The toolmakers who made these tools, particularly the edge tools, remain invisible; the metallurgy of their tools is a lingering mystery. These plates were etched just after the heyday of Dutch exploration and settlement in the New World. The omission of the tools of the shipwright is puzzling.

Even earlier than the iconography of tools in van Vliet’s etchings are the surviving tools recovered from the wreck of Henry VIII’s *Mary Rose* (1548). The ship carpenter’s tools recovered from the *Mary Rose*, now on display at the Portsmouth England Historic Dockyard and reproduced in Goodman (1964), are essentially late medieval forms, none of which may still have been in use at the time of the construction of the pinnace *Virginia* in 1607-1608, the first documented ship construction to have occurred in New England by English settlers (*Art of the Edge Tool*, Brack 2008a). The tools recovered from the *Mary Rose* were those of a carpenter, not of a shipwright and, therefore, tell us little of the tool forms of shipwrights of this period. At this point in time, conflicts with the French were already well underway; the *Mary Rose* was built to defend the south coast of England from privateers and possible invasion. Tudor England and continental Europe were already in an arms race that had begun with the spread of the blast furnace after 1400 (Loewen 1995) and resulted in the rapid growth in cast iron ordnance production.
Cannons, made in all sizes, would have had little useful application until somebody built wooden ships to transport these potent new weapons. Again, the presence of shipsmiths and shipwrights is hidden, and the tools they used are poorly documented. The plates in Diderot (Hummel 1968) illustrating cannon-casting and published three centuries after the Mary Rose capsized, after being overloaded with the weight of too many soldiers and their firearms, are among the most interesting in the encyclopedia. The arms race that marks the beginning of the modern era has continued without interruption, always accompanied by the need for improvements in arms manufacturing from foundry casting to hand gun production. Hidden behind this more well documented story are the toolmakers, shipsmiths, and shipwrights who labored in anonymity to build the ships of the navies engaged in this warfare.

Moxon’s ([1703] 1989) illustrations of woodworking tools, reproduced in the first volume of the Hand Tools in History series, depicts the medieval form of the hand planes recovered from the Mary Rose. The modern forms of the jointer plane had already appeared by the time of Moxon’s publication, as illustrated by the edge tools in tool dealer William Emmett’s trade card 1731, also reproduced in Goodman (1964) (Figure 12). Moxon illustrates the ubiquitous frame saw, whip saw, and buck saw, the one tool still used for cutting coppice and kindling until the mid-20th century. Any of the tools in the Emmett trade card, including the chisels and axes, could have been used in the construction of the Virginia, but the ax and adz forms illustrated in Moxon ([1703] 1989) and the Emmett trade card are forms not encountered in the remnants of New England tool collections,
shop lots, or tool chests surviving from the colonial period. Perhaps the rendition of the adz in the Emmett trade card is not accurate, but no such forms (note enlarged collared socket) have survived from this (late) date, 1731.

Dramatic changes occurred in tool forms and steelmaking techniques between the time of the publication in 1703 of Moxon’s *Mechnick Exercises* and Emmett’s trade card (1731) and the appearance, almost 100 years later, of Joseph Smith’s ([1816] 1975) *Explanation or Key to the Various Manufactories of Sheffield* and the Timmins pattern book reprinted by Kenneth Roberts (1976) as *Tools for the Trades and Crafts*, discussed in the following chapter.

The well known publication *A Museum of Early American Tools* (Sloane 1964) provides graphic illustrations of how indigenous colonial tool forms, though often based on English prototypes, had evolved by 1800. Sloane only briefly references his lifelong passion for collecting and illustrating the hand tools of colonial Connecticut and nearby states, but his text provides compelling evidence of the degree to which colonists of English, Scotch, and German descent had developed their own unique tool forms. Very few of the hand tools illustrated in the Sloane text were imported from England, and the most common forms of English tools are so labeled. As a whole, the Sloane text, along with his other publications, are profound illustrations of America’s comprehensive indigenous production of hand tools for every trade pertaining to rural life and its woodworking based economy. Almost all the tools illustrated by Sloane are wrought, malleable, or steeled hand-forged iron tools. While the numerous tools illustrated in Sloane’s text match the forms discussed in the following chapter, few were made in England; most were colonial made. Sloane in particular notes regional forms of hand tools (Pennsylvania versus Connecticut, page 6). Sloane also illustrates European forms – trade, German, and British pattern felling axes, and German goosewing and English poll-less style broad axes. In New England, the American style broad ax (called the New England pattern by Kauffman (1972)), produced in the mid to late 18th century by edge toolmakers such as Faxon at Braintree, and by many later makers, is recovered much more frequently than English or German forms. These were the essential tools used in the woods of both New England and the southern colonies to harvest and shape the white oak so essential for New England’s shipwrights. The Sloane text clearly depicts a well established indigenous colonial and early republic toolmaking milieu utilizing domestically produced manganese laced bog ore (hydrated limonite) as well as locally mined rock ores as their principal ingredient. Neither Sloane nor others mention the role of colonial steel furnaces in supplementing imported steel bar stock in the forging of edge tools. The Sloane index does not list topics such as “iron,” “bog iron” (discussed in the text, however), “shipwright,” “shipsmith,” “ship building tools,” “steel,” “malleable iron,” or “wrought iron,” even though all played an important role in the creation of
colonial and early American woodworking toolkits. Nonetheless, Sloane provides a graphic glimpse of a robust indigenous toolmaking community that provided the basis for the rapid growth of a uniquely American toolmaking industry in the 19th century. One of the more intriguing components of this community was the presence of family clans of toolmakers working over a period of generations.

Figure 13. Gentleman’s buck saw, c. 1840, steel, rope, leather, wood, 46” wide, 35” long blade, Davistown Museum MIV Collection ID# 7309T6.
The Toolmaking Clans of New England 1652-1930

A wide diversity of tool forms and multiple steelmaking strategies are part of the narrative of the stories told by the thousands of hand tools that have been recovered from New England boat shops, smithies, workshops, and collections by collectors and vendors who were active even before Eric Sloane (1964) began documenting the tools he observed in his Connecticut environs. One of the mysteries of 18th century New England industrial history is the identity of the ironmongers and edge toolmakers who played a critical role in the success of the American Revolution. A major source of information on these and many other American toolmakers is the *Directory of American Toolmakers* (Nelson 1999), now also available on CD. Much of the information in this and other chapters throughout the *Hand Tools in History* series on the working dates of American toolmakers is derived from this source.

The first and possibly the most noteworthy clan of ironmongers working in New England were the Leonards, led by three brothers, Henry, James, and Thomas Leonard. Many other Leonards operated bog iron furnaces and forges throughout southern New England until well into the 19th century. Another well known clan of toolmakers was the Underhills of Chester, NH, Boston, and other nearby communities. The *Directory of American Toolmakers* (Nelson 1999) lists no less than 18 different Underhill family members or companies working for almost a century and a half. Even before the first documented Underhill (Josiah) was working in Chester, NH, the Faxon clan of edge toolmakers was working in Braintree, MA, as well as possibly in the mid-Merrimack River drainage areas of southern New Hampshire. Nelson (1999) reports a Faxon with an unknown first name as dying in 1824 at which time Jessie Underhill purchased his Boston shop. Richard Faxon (died 1821) is recorded as working in Braintree, MA, both before and after 1795. Faxon signed tools are not at all as common as tools made by the Underhill clan, but the broad axes recovered by the Liberty Tool Co. in Quincy, MA, 1973, as well as the two edge tools in Figure 14 and Figure 15 that are clearly marked FAXON, illustrate their productivity in the 18th century as well as early 19th century. The recovery of a vine (?)
ax, a very rare offset form of an ax (Figure 15), and the coopers’ adz (Figure 14) from the B. F. Cutter Estate in S. Pelham, NH (see Figure 17) by the Liberty Tool Co. in June of 2009 suggest Faxon clan ironmongers may have also been forging tools in one or more of the Merrimack River watershed communities where the Underhill clan operated after 1760. The history of the Faxon clan is one example of a lost chapter in colonial and early American history waiting to be discovered.

Many other clans of edge toolmakers can be documented as working in New England in the late 18th and early 19th centuries. In Maine, the Billings clan of edge toolmakers was active in a number of Kennebec River drainage area communities. Numerous examples of their finesse at edge tool forging are on display at the Davistown Museum’s Art of the Edge Tool exhibition; several are illustrated in volume 7 of the Hand Tools in History publication series. The Peavey clan of toolmakers, famous for converting the log rolling cant hook (Figure 16) to the spiked “peavey” still sought and used by woodsmen today, had numerous forging and toolmaking locations throughout central Maine.

In southern New England, one of the most notable families of toolmakers was the North family. Levi North was recorded as working as early as 1782 in Berlin, CT. One of his sons, Jedediah, is reported working from 1810 and a second son, Edmund, was working with him by 1824, manufacturing the tin knockers and sheet metal equipment still recovered today in New England workshops. Also part of the North clan was Simon, an edge toolmaker working before 1800 and famous for the role he played as a principal innovator of the factory system of manufacturing guns with interchangeable parts (see pg. 54).

When Samuel Collins established his ax factory in Collinsville, CT, in 1827, he was part of the Collins family of toolmakers, which included his father, Robert, working by 1805
and Robert’s brother (?) David, working by 1809. Johnson Collins Jr. and his son followed Samuel in the family tool business, which continued into the 20th century.

While Samuel was organizing his famous ax company, David Chapin was making planes in New Hartford and Pine Meadows, CT, followed shortly by Hermon in 1828 and Nathaniel by 1840. The Chapin Co. became the Chapin-Stevens Co. and operated until 1929. At the same time, Daniel Copeland was an established planemaker in Hartford, CT, working with his brothers, Melvin and Alfred, as well as the Chapin clan in Pine Meadows from before 1822 into the early 1840s.

Another Connecticut family of toolmakers was the planemakers John and Lester Dennison, working in Saybrook and Winthrop, CT, by 1832 with family members continuing production well into the 1890s. Also working in Enfield, CT, were the Eaton clan of edge toolmakers; Eben, Edward, and then, Edward Jr. are reported as working from the 1840s, with Ephraim Eaton making anvils after 1850. Working in nearby Chester, CT, several decades later (1853) were Charles E. Jennings and Russell Jennings, America’s foremost manufacturers of wood bits; the Russell Jennings business continued until 1944.

In Worcester, MA, Loring and Aury Gates Coes were organizing their famous wrench company by 1836. Their sons and grandsons continued operations in Worcester until 1928. In Scituate, MA, the Merritt clan of toolmakers made both planes (Charles H., 1850 and James, after 1860). The edge toolmaker, H. Merritt, was also a member of the Merritt clan; four of his edge tools in the collection of the Scituate Historical Society are illustrated in volume 7 of this publication series, *Art of the Edge Tool* (Brack 2008a, 151). Working outside of New England were many other toolmaking clans and families. The Heller Brothers and family working first in Newark, NJ, and then, Philadelphia, PA (1866f.), were America’s most famous and prolific manufacturer in the 19th century of farriers’ tools. Shortly after D. A. Barton began manufacturing edge tools in Rochester, NY (1832), the L. & I. J. White family began making coopers’ tools (1837). As America’s rapidly growing hand tool industry spread west, clan-dominated tool manufacturing that characterized some New England communities was replaced by individual companies that eventually grew into toolmaking factories with hundreds of employees.

The toolmakers of New England, as well as those in New York, Pennsylvania, Ohio, and other states, did not suddenly start making tools in America’s rapidly expanding landscape in the late 18th or first four decades of the 19th century. Their finesse and expertise at making tools was based on centuries of making edge tools and planes by rule of thumb techniques passed down from generation to generation of toolmakers who had
their origins in the Celtic metallurgical traditions of south central Europe (see volume 6, *Steel- and Toolmaking Strategies and Techniques before 1870* [Brack 2008b] for a review of the early history of toolmaking.) The origins of the iconography of tool forms used by these clans of New England ironmongers and toolmakers derived from these earlier toolmaking communities. American toolmakers went on to invent many distinctive new forms of tools, including new variations of long established edge tool forms. They also reproduced the many functional tool forms that were being produced by Birmingham and Sheffield, England, toolmakers in the first decades of the 19th century, often with minimal changes in their basic designs. The traditions of English and also continental European toolmakers played a key role in the amazing early 19th century florescence of New England toolmaking clans. That these clans were accompanied by thousands of individual edge toolmakers, shipsmiths, and blacksmiths making tools in every New England community (as well as in all other states) is reflected in the thousands of entries in the *Directory of American Toolmakers* (Nelson 1999). As noted, only a few of the most important and commonly encountered toolmakers are listed in the company files of this volume.

The classic period of American toolmaking is hopefully more accurately explicated by considering not only the iconography of tool forms that were their heritage but also the contemporary tool forms that were being produced and, in some cases, imported to the United States by the famed tool manufacturers of Birmingham and Sheffield in the same decades a massive tool manufacturing industry was blossoming in New England.
The Pattern Books: Smith and Timmins

The tool forms illustrated by Sloane (1964), often found in the Connecticut countryside where he lived, were relatively unchanged during the 18th century. His *Diary of an Early American Boy* (Sloane 1965) was about the typical tool kit of a multitasking, nearly self-sufficient Connecticut farm family in the early republic (±1810), well before the sudden appearance of factory-made hand tools in the 1840s. When New England’s anonymous edge toolmakers began making tools for colonial shipwrights, a century before the era of Sloane’s *Diary*, they copied existing forms, such as the Kent ax and the broad ax illustrated on the Emmett trade card (Figure 12). Other than those few illustrated in Diderot, Moxon, and Goodman, woodworking tools used in Europe between 1600 and 1750 are poorly documented. This lack of documentation suddenly ends with the appearance of two important information sources about tools in the era of crucible steel, steam engines, puddling furnaces, and rolling mills, Smith’s ([1816] 1975) *Explanation or Key to the Various Manufactories of Sheffield* and Robert’s (1976) reproduction of the pattern book of R. Timmins and Sons of Birmingham, *Tools for the Trades and Crafts*. In his introduction, Roberts reviews the known history of pattern books, the first of which was John Wyke’s catalog of tools for clock- and watchmakers. These key documents contain illustrations of tools produced in Birmingham and Sheffield, England’s most important late 18th century industrial centers other than London. The pattern books were issued as advertisements for both British and American hardware and tool vendors and retailers and provide an invaluable record of early modern hand tools. The tools found in American shop lots and collections, as well as those found in these pattern books fall into three categories:

1.) Tools imported to the American colonies in the early republic and frequently encountered in the remains of tool collections and tool chests found in New England in the last 39 years by the Liberty Tool Co. Many of these forms were soon copied, but the tools produced in England have two notable characteristics. They were usually signed by their English makers with company names or touchmarks and often with a place of manufacture, especially “Sheffield”. Secondly, these tools are more finely made in comparison to more primitive American copies. Eventually, especially after 1840, American makers achieved the capacity to produce forms as finished and sophisticated as any English product.

2.) Tools that appear in New England tool collections that are similar in appearance and design to those in the pattern books, but are neither signed by English toolmakers, nor have the finished look of fine Sheffield tools, and are obviously copies of the English originals, just as a signed Stubbs hand vise is a copy of very
similar continental, probably German, prototypes. In some cases, their tools have the signatures and place of manufacture of domestic toolmakers.

3.) Tool forms which were neither imported nor copied in sufficient quantities to appear frequently in New England tool collections.

Since the extensive tool collection of the Davistown Museum is being used as a database, it should be noted that the accumulations of tools from which the museum collections derive not only originated within 50 miles of the shipbuilding areas of coastal New England from eastern Maine to the Narragansett Bay, but also from the Blackstone River valley, Merrimack River valley of eastern New Hampshire, and western Massachusetts along the Route 2 corridor as far west as Greenfield, MA. These hand tools have been purchased in estate lots by the Jonesport Wood Co. (Liberty Tool Co.) at average rates of 2-4 tons per month since 1971. Though only a tiny percentage of the tools recovered date before 1840, this quantity of hand tools recovered over a period of decades provides a representative sampling of tools and artifacts that have survived for decades and tell us about the tool forms used long ago in the New England colonies and in the early republic. The majority of early tools thus recovered were not made in England or Germany. However, the woodworking and other tool forms frequently encountered that lack the touchmark and/or signatures of the English makers often have very similar forms to those made in Sheffield or Birmingham.

Tool forms that have appeared frequently in New England collections and workshops and appear to have been made in England or have English touchmarks in the Timmins pattern book include those in the following list. “L” means that in the Timmins pattern book these tools are noted as Lancashire in origin and, thus, probably made by Stubbs or his subcontractors in or near his factory in Warrington. The pattern book is also somewhat confusing since calipers and compasses made in Lancashire are clearly labeled as such, but, at the beginning of the text, the Birmingham compasses and calipers are unlabeled as to place of origin. Roberts also notes that Stubbs may have made the various shoemakers’ files at Warrington. The listing of commonly occurring tools in the Timmins pattern book is followed by a similar listing from Smith ([1816] 1975).

**Category 1: Timmins pattern book:** (Roberts 1976) commonly encountered imported tool forms:

- Plate 75, 76 and 161, pg. 219: clock and watchmaker hammers (L), “plyers” (L)
- Plate 95 and 160: hand vises (L)
- Plate 159: clock screw plates (L)
- Plate 158: calipers and compasses
- Plate 156: firmer and mortising chisels and gouges
- Plate 143: flat and center bits
Plate 29, 141, and 142: gentleman’s braces with a nut adjustment and associated bits
Plate 37 and 38: turnscrews
Plate 129: bed keys
Plate 98: common bench vise
Plate 85: timber scribe
Plate 81: Kent and boat builder’s axes
Plate 80: bung bore
Plate 78: bill hooks, cooper’s round shave, egg handled draw knives (B)
Plate 74: box head and long shelled gimlets
Plate 71 and 72: nippers
Plate 66: upholsterer’s hammers
Plate 64: saddler’s punch
Plate 60: pinking irons
Plate 52: gentleman’s bow (frame) saw
Plate 50 - 52: saw sets
Plate 29: saw pad, spoke shave
Plate 28: carpenter’s squares
Plate 27: marking gauge
Plate 32: carpenter’s pinchers (L)
Plate 25-26: shoemaker’s tools
Plate 23: files
Plate 22: carpenter’s mallets

Category 1: Smith’s *Key to Sheffield Manufactories* (Smith [1816] 1975)
The plates in the Early American Industry Association’s reproduction of Smith’s *Key* are not labeled, even though every pen knife, shovel, and file has its own number. Smith ([1816] 1975) recapitulates many of the tool forms illustrated in the Timmins pattern book. The following tools must have been imported to America in significant quantities because they often appear in American tool collections.

Sickles, files, parallel rules, hand planes, hand saws (dovetail, sash, and tenon), clamps, ship carpenter’s caulking mallets, caulking irons, large mast shave, cooper’s ax, cooper’s adz, draw knives, fluting gouges, socket chisels and gouges, tanged chisels, gouges, mortising chisels, and carving tools.

Smith’s *Key* also contains extensive illustrations of razors, scissors, pen knives, and snuffers, which are the most famous products of Sheffield; their production predates the rise of Sheffield as an edge toolmaking center and may, according to Hey (1997), date
from late medieval times. They also appear in America in large quantities but can’t be used as evidence that all shipwrights’ tools originated in Sheffield.

Category 2:
Numerous tools dating before 1840 found in New England tool collections closely resemble their English prototypes. Their lack of touchmarks and manufacturer’s signatures, their slightly varied and often simplified designs and styles, and their subtle lack of the look and quality of English-made tools suggest these tool forms are early copies dating from the late 18th century or early 19th century. Most notable are the following common tool forms, which appear in both Smith’s *Key* and the Timmins pattern book:

Tools associated with shipbuilding

*Calipers and compasses:* Some specimens in New England tool collections seem to be exact duplicates of the English patterns, but they have American marks and signatures. The earlier English designs obviously had a far reaching impact as prototypes for the later proliferation of American-made machinist’s measuring tools.

*Socket chisels and gouges and tanged chisels and gouges:* The same problem as discussed above applies to these tools. Along with numerous signed English examples, signed edged tools often look exactly like those produced in Sheffield, except for those with the mark of an American maker (Figure 18). The one exception is the mortising chisel, which does not seem to have been copied in America to any appreciable extent. Almost all mortising chisels recovered from New England tool collections have English marks. This tool
Augers: Augers appear everywhere in American workshops and have the same basic designs as most of those shown in the pattern books, but these often unsigned tools, absolutely essential not only for every shipyard but also for many other woodworking tasks, are more primitive looking than the English examples and are probably among the first tools domestically produced by New England ships smiths (Figure 19). The pod augers illustrated in the Dominy collection are typical of those domestically produced tools essential for every boatyard and workshop and predate the appearance of screw augers, which were produced during and after the first decade of the 19th century.

Caulking irons: The irons illustrated in Smith ([1816] 1975) are very similar to those frequently found in American tool collections, but they have subtle stylistic differences from the American-made irons, which are usually signed by their makers (Figure 20). In contrast to signed American C. Drew irons, English-style caulking irons appear infrequently. Caulking irons with forms obviously different from those illustrated in Smith ([1816] 1975) are also commonly found in New England tool collections and may be continental (German?) in origin, illustrating the diversity of the sources of 18th and early 19th century hand tools.

Hatchets and axes: The look of the hatchets illustrated in the English pattern books is different from most American hatchets (see, in particular, illustrations 232, 234, and 236 in Smith.) North America produced a wide variety of hatchets and axes. Only a few English prototypes are present in the pattern books. American toolmakers soon invented their own regional designs, as illustrated in the excellent surveys by Kauffman (1972), Klenman (1990), and Heavrin (1998). The same comment applies to most of the broad and hewing axes illustrated in both texts. The Kent pattern ax seems to have been closely copied by American makers; many other English patterns are infrequently encountered.

Drawknives: Signed specimens of English “drawing knives” are not uncommon. Many English specimens have distinctive bulbous handles. Much more common,
however, are the primitive American shaves, which appear in every tool chest and are precursors of the fine American cast steel knives made by Kimball, Crossman, Witherby, Wilkinson, and others (See Appendix C. 18th and 19th Century American Toolmaker Company Files). Forge welded and steeled examples dating from before the era of drop-forged tools are still commonplace in American workshops and flea markets.  

Adzes: The appearance of signed English adzes in New England tool collections is fairly rare, with the exception of those made by James Cam. A wide variety of American designs seems to have grown out of a small number of English prototypes, which often appear more elongated and curved than those used by New England shipwrights and woodworkers. The obviously steeled poll of the block adz illustrated in the pattern books is either rare on American-made tools or so well hidden by forge welding techniques that it is no longer visible. Steeled polls were soon obsolete after all cast steel adzes began appearing after 1850.

Ship scrapers: These tools appear frequently but seem to be mostly domestically produced, having a slightly different look than the scrapers illustrated in the pattern books. Such tools are generally unmarked, making it difficult to differentiate English from American specimens.

Saws: Only a few saws are illustrated in the pattern books, including the gentleman’s bow saw already noted and hand saws with the characteristic flat-bottomed handle, the latter of which makes an occasional appearance in New England tool collections and was also probably copied. On unsigned hand saws, it would be difficult to determine if these “early” looking handles were imported or copied by American handle-makers. All the saws noted as common English imports were also soon copied by American companies, such as Disston and Simmons. Hand saws with characteristic English stamps (e.g. Greaves and Groves), that are so different from American marks are still frequently
encountered. Pit saws and cross cut saws must have been widely imported; no known 18th century American makers have yet been documented. As with most wood plane blades, most saw (spring) steel used to manufacture America’s domestically produced saws was made in England until at least 1840. Handsaws and carving tools illustrate the continuing high regard for English steel, a phenomenon which makes it easy to overlook America’s growing production of domestically produced hand tools.

*Coopers’ tools*: The basic form of the coopers’ broad ax remains unchanged, but the specimens that turn up in New England collections, including those in the Davistown Museum collection usually have American marks. Many unsigned specimens of coopers’ adzes look just like the English examples, but there are signed American-made coopers’ adzes that are also similar to the English prototypes. The same comment could be made about crozes, shaves, and froes, i.e. English forms are obviously the prototype, but most surviving specimens appear to be American-made. In the case of the coopers’ Nantucket hoop driver, differentiating unmarked English and American made specimens is difficult.

**Other pattern book tools**

Bick irons, such as that illustrated in Timmins (Roberts 1976), make an occasional appearance, but the makers would be difficult to determine on unmarked tools. Hand tools, such as pliers, nippers, pinchers, tongs, hammers of all kinds, and many of the other tools in the pattern books, have been widely copied. Some forms may have originated in Germany, but others were made in America. These more commonplace tools don’t jump out of a tool chest as possibly being English in origin as do finely made English edge tools.
The English die stock illustrated in Smith ([1816] 1975) is certainly the prototype for American models, but few signed English specimens appear. English wire gauges and screw plates were the prototypes for the huge production of American-made tools. The saddler’s heading knife and other leather working tools were soon copied in America. The Osborne Company’s finely made leatherworking tools are easily the equal of any earlier Birmingham-made specimens.

English coach wrenches are a controversial tool. Signed English wrenches are not uncommon, but three unsigned, more primitive forge welded coach wrenches have been found in the Boston area and are now in The Davistown Museum collection, suggesting the possibility that these coach wrenches were already being copied in late 18th century Boston. They are the prototypes for production of the later American monkey wrench, which was first manufactured in MA, beginning in the late 1830s (Page 2004) and which gave birth to an American wrench industry that produced a remarkable variety of wrenches of every conceivable design.

Many of the shoemakers’ tools in the pattern books would be difficult to differentiate from American products if they are not signed. They look familiar and were soon produced in America in large quantities more or less simultaneously with the appearance of these pattern books. But New England shipwrights didn’t use cobbler’s hammers, except possibly to make their own shoes, and many of the tools they used don’t make an appearance in these English pattern books. These pattern books are a reflection of the rapid growth, both in England and America, of a middle class with a hunger for consumer goods. Upon close inspection, a large majority of the images in these pattern books are not of tools used by the “lower classes” of artisans. Instead, many are illustrations of gentlemen’s tools for the workshops of the English aristocracy and the middle class, typified by those “gentlemen’s tool chests” depicted at the beginning of the pattern books. If not made for the growing middle class, many
of the other tools in the pattern books were manufactured for the specialized trades of the coach-maker, shoemaker, mason, barber, and machinist.

Just before these pattern books were issued, England and France entered a period of warfare (1793) that ended in the Napoleonic Wars and was soon followed by the War of 1812. There was a huge demand for both new warships to fight these wars and for firearms and ordnance. The pattern books illustrate only a tiny slice of the hand tools needed in this larger social context. The tools of the shipwright, gunsmith, and cannon founder remain invisible in the context of these advertisements for a growing English consumer society, which was the prototype for the rapid growth of an American consumer society in the late 19th and 20th centuries, now recapitulated as the resource-devouring phenomenon of a global consumer society.

When considering the sources of tools imported to North America, the physical locations of toolmaking centers and their access to the transatlantic trade are of interest. The Timmins pattern book (Roberts 1976, 19) illustrates (Figure 28) the dominance of Sheffield over Birmingham as a center of edge tool production, as well as the rapid growth of Sheffield as an edge toolmaking center in the 19th century. Ironically, the Smith pattern book contains the letters from Joseph Smith to Peter Stubbs, the most important Lancashire toolmaker, while illustrating only a few of his tools (Figure 25).
The Timmins pattern book, in contrast, contains excellent illustrations of Lancashire-produced screw plates, calipers, compasses, hack saws, and vises. Birmingham is located in south central England but had easy Atlantic Ocean access via the River Severn. The Lancashire toolmakers, such as Stubbs, were centered at Warrington on the river Mersey, just upstream from Liverpool, a major English port also having easy access to the Atlantic Ocean. In contrast, Sheffield is in a more isolated location in central England.

Transport of bar iron from Sweden to the Sheffield edge toolmakers, which Barraclough (1984a) notes occurring as early as 1717, was initially via Birmingham and the Mersey River to Stockworth, then by river craft to Bawtry, and then overland to Sheffield. Canals were built on the river Don, providing access to the North Sea from Rotherham in 1734, and were extended to Tinsley in 1751. The Turnpike Act of 1756 also aided access to Sheffield. The real growth of the Sheffield steel industry had to await the coming of the railroad in 1838, at which time the Sheffield industries spread from the ancient city center, the location of its ancient cutlery trade, throughout the Don Valley (Barraclough 1984a, 103). It was unlikely that any significant quantity of colonial era woodworking tools were made in Sheffield and transported to North America, in contrast to Sheffield’s vast production of edge tools in the 19th century. The Timmins listing (Figure 28; Roberts 1976, 19) of Birmingham and Sheffield tool forms illustrates the relative growth and importance of both Birmingham and Sheffield as toolmaking centers after 1756 and the introduction of cast “crucible” steel.

The mystery remains of where New England’s shipsmiths and shipwrights obtained the steel for the larger edge tools they were already producing in domestic forges by the late 17th century. Were our domestic ironmongers of the first decades of the 18th century able to smelt kilogram quantities of steel in the now forgotten furnaces of bog iron New England in an era where the forge of the edge toolmaker or shipsmith was an everyday component of the viability of most shipbuilding communities?
A Lost Chapter in Ferrous Metallurgy

Though discussed in detail in the two previous volumes of the *Hand Tools in History* series, a review of steelmaking strategies provides information essential to understanding the evolution of the classic period of American toolmaking. When Benjamin Huntsman rediscovered the lost art of crucible steel production (cast steel, 1742,) he was able to produce the finest steel available in Europe, albeit in very small quantities (± 6 to 8 kg). It was surpassed in quality only by the Wootz steel of the Damascus sword, an earlier form of cast steel, and was adapted by Huntsman for his watch spring business. Cast steel was characterized by a totally homogenous carbon distribution, a lack of most slag contamination, and a steel surface free from the blisters characteristic of cementation steel. But crucible steel, made in clay ingots containing broken up pieces of cementation and charcoal dust, only supplied a tiny percentage of the growing market for steel between 1750 and 1870. The production of two other types of steel was well established and supplied most of European and colonial demand for steel. Cementation steel was made from wrought iron packed in layers of charcoal dust in airtight sandstone furnaces taking 5 to 12 days for carburization. By the early 19th century the cementation process could not produce enough to supply the growing need for steel. The continuing production of high quality German steel by the decarburization of cast iron in finery furnaces preceded both cementation and crucible steel production and was centered in areas in Germany and Austria, where cast iron high in manganese (spiegeleisen) facilitated sulfur removal and ease of production. In the 16th century, manganese-laced carbonate ores had been used for iron and some German steel production in the Weald of Sussex, but, after 1650, these deposits had been depleted. Steel-producing areas without access to iron ores containing manganese, such as England after 1650 and America, could not easily use this process. It remained entrenched in France and other areas in Europe, which, as a result, did not manufacture significant quantities of blister steel.

In this context, the production of large quantities of cast iron machinery and equipment characterized industrial development after 1785. Puddled wrought iron only supplied part of these needs. Construction of bridges, water systems, tunnels, cranes, and, later, locomotives and steamships required huge amounts of cast iron. But just as cast iron could not be used for railroad tracks (wrought iron was used until the era of bulk steel production), brittle cast iron was not the only constituent of the iron machinery designed and produced by the English industrial revolutionaries. Many of these early machines have a steely look to them, and they often feel more like steel than cast iron. The question lingers as to what the early forge masters did to produce special purpose cast iron and, particularly, malleable cast iron for the machine builders before the era of bulk processed steel. What were the alternative steelmaking strategies at the beginning of the 19th century?
Two other steel-producing processes, one ancient and one a modern innovation, may have played a major but undocumented role in providing some of the steel and cast iron with steely characteristics to build the machines designed by the innovative English engineers of the early 19th century. The Brescian method of carburizing wrought iron in molten cast iron may have originated in China at an undetermined time. The date of the first production of cast iron in China is unknown but may coincide with the construction of the first bloomery furnace that could produce heterogeneous blooms that included cast iron, steel nodules, and wrought iron in one firing. Research by Needham (1958) dates the use of cast iron in China at least as early as 700 BC. Tools made of cast iron were known in Egypt in the 6th century BC. During the Italian Renaissance, knowledge of the Brescian method of steel production was likely passed from generation to generation of ironmongers. This technology may have been known and utilized both in the Roman era and in the migration period on a small scale prior to the rise of modern steelmaking technologies following the development of the blast furnace after 1350. Any Roman shaft furnaces could have been operated at a hotter temperature with an altered fuel ore ratio, producing cast iron in sufficient quantities to be fined (decarburized) into steel. However, no written documentation exists to suggest that this alternative to making natural steel was used in Roman era forges, despite the fact that some variation of the Brescian process was used to make steel in China 600 years prior to the formation of the Roman Empire.

There is no reason why English and American foundries and forges could not have used variations of the Brescian method to produce small quantities of steel in the 18th and early 19th centuries, but no records survive of the use of this technique. A variation of the Brescian method consisted of layering wrought iron interspersed with fragments of broken up cast iron, and then heating, piling, folding, and hammering these constituents into steel bar stock. This is reminiscent of the ancient tradition of pattern welding layers of sheet iron and case hardened steel or layers of sheet iron and thin pieces of crucible steel to produce the wide variety of swords and edge tools made in the early Iron Age. With the rapid increase in demand for steel, including edge tools, in both America and Europe in the early and mid-19th century, these obscure early technologies may explain the survival of so many functional and high quality forge welded steel tools that are not made of crucible cast steel. The source of the steel in these hand and edge tools is a lingering mystery that may never be solved.

A second alternative to the use of crucible, cementation, shear, Brescian, and German steel arose when Henry Cort invented the reverberatory furnace. Barraclough (1984a) notes that Cort intended to produce not only high quality wrought iron from decarburized cast iron but also steel. Mass-production of puddled steel from decarburized cast iron in the refractory furnace was not achieved until 1835, after which time it played a major role in filling the gap in steel production needs before the bulk steel processes were perfected.
Before 1835, especially in London and Manchester, major centers of industrial and machine production, puddled steel, or at least a high quality steely cast iron, could have been produced locally and in small quantities at any forge or foundry equipped with the now common-place refractory puddling furnace. The same may be said for any forge or foundry in the vast network of industrial communities, which spread from New England across the continent beginning in the late 18th century. Again, written documentation is lacking. The evidence for the use of these two later steelmaking techniques lies in the survival of both machinery, such as that on exhibit at the Royal Victoria and Albert Museum in London, and hand tools not made from crucible steel (too expensive, not marked “cast steel”), cementation steel (too many blister imperfections in the heterogeneous austenized steel), or German steel (Spathic ores not available). The massive castings of the early machinery made before 1840 in England and in America raise the possibility of a lost chapter in metallurgy. It is not known to what extent these ancient and obscure steelmaking processes were used to produce not only edge tools and other hand tools but also the machinery of the Industrial Revolution between 1785 and 1835, when puddled steel became widely available. Puddled steel or malleable cast iron could have been made both in England and America in relatively small quantities by knowledgeable founders and smelters before it was widely produced after 1835. We don’t know to what extent variations of malleable cast iron, cast iron as semi-steel, and annealed white cast iron were utilized to make the machinery used in the early stages of the modern Industrial Revolution. Nor do we know what else pre-1840 English and American machine and hand toolmakers used other than puddled, Brescian, German, or other steels to produce their machinery and tools. Are most of the machines manufactured in this period only made from cast iron, or will archaeometallurgical analyses show, in fact, that both early machine- and toolmakers working in this period utilized a wide variety of steel- and iron-making technologies? It is possible that the early 19th century strategies used to make the machinery of the coming Industrial Revolution constitute another lost chapter in ferrous metallurgy, along with the mystery of Damascus steel and the early use of steel made from fined cast iron by Roman armormers.
England versus America: Resources, Markets, and Ideology

When the English industrial revolutionaries designed and built their lathes, planers, nut cutters, and proto-milling machines, they probably had little awareness of the widespread consequences of their inventions, especially in the distant land of America. London needed water supply systems, cranes, and heavy equipment for infrastructure expansion, and Manchester needed machinery and steam engines for its cotton-spinning textile factories. Hand tools were still made the old-fashioned way in England. Artisans followed long-established craft traditions to make files by hand or gouges and carving tools, which they carefully forged one at a time from hot rolled crucible steel. Even sawyers still used hand tools, such as frame and whip saws, as late as 1880, for pit sawing done by water-powered sawmills in America as early as the mid-18th century. To be fair to these hide-bound English toolmakers and tool users, even in water-powered America some stubborn American shipwrights also continued to utilize pit saws for framing out wooden ships until the late 19th century, but they were the exception to the rapid adoption of machines as prime movers in America’s glowing industrial landscape.

When Darby, Huntsman, Watt, Wilkinson, Cort, and many others created that interrelated synchronicity of steam engines, smelting and melting furnaces, whirling rolling mills, and textile machinery, they created a pyrotechnic smoke belching behemoth, i.e. industrial society. In a few decades, late 18th century England increased the efficient production of iron, steel, and factory-made textiles by an order of magnitude. The German Renaissance and its legacy of steel production was already a fading memory. English dependence on high quality Swedish charcoal iron to produce crucible steel would be repeated in a clandestine colonial blister steel industry that shared the English fondness for Swedish bar iron. When interior Pennsylvania, Maryland, and New York ironmongers began producing iron of quality equal to Swedish bar iron, only the coming of the railroad could provide market access for American wrought and malleable iron produced in remote hill country locations not previously accessible to America’s vigorous late colonial and early 19th century coasting trade. The remarkable tale of the evolution of the American iron industry is well told by Gordon (1996) in *American Iron, 1607 - 1900*. It began in early colonial New England in the 1640s, spread after 1720 to western Connecticut, the bog iron swamps of New Jersey, and then westward to the Mid-Atlantic States, helping to insure the success of the American Revolution. The success of early American ironmongers was based, in part, on their roots in the robust iron industry of England. The many blacksmiths who came to America in the great migration (1629-42) and manned the Saugus Ironworks (1646f.) represented the beginning of two centuries of the rapid
transfer of the latest technological innovations from England to America that culminated in the classic period of American Toolmaking.

In England, machines made machines (e.g. steam engines), which used heated water to do the work formerly performed by human hands. Mass production was what the spinner did with the newly invented textile machinery of Hargraves, Arkwright, and Crompton. The revolutionary block-making machinery Henry Maudslay designed for the British Navy was not made for a market economy but for empire-building, i.e. for the specific purpose of supplying sailing ships with the necessary equipment to insure the dominance of a British Empire that reached its pinnacle of economic influence and global trading during the last half of the 19th century. At the rate of 150,000 blocks per year, the British Navy (1802-1807) needed a little bit of help from the machinery built by Henry Maudslay. Those 45 machines were the essence of labor-saving devices and facilitated worldwide consolidation of a British imperial trading economy on a grand scale.

America had a different vision, not world empire-building but expansion into wilderness areas with nearly unlimited resources, which soon created a demand for practical, useful, cheaply-made tools, which England could not supply in the quantities needed for westward expansion. In fact, as it had done with textiles, England had provided the colonies and early Republic with an immense variety of tools, especially small hand tools. Copies of most were soon made in America, but England’s carving tools, plane blades, and a selection of other small steel tools dominated the American edge tool market until the Civil War. The expanding American frontier required large quantities of axes, brush hooks, picks, shovels, and horticultural tools, which were expensive and time-consuming to import from Great Britain. By the time of the American Revolution, or just after, America was making at least a small majority of its hand tools. Many lacked the finished look of Birmingham and Sheffield tools, but they executed work more efficiently than English tools used in tradition-bound English crafts-based industries. By the beginning of the 19th century, westward expansion became closely intertwined with an expanding American hand tool industry, which continued to grow throughout the century. Often living on the edge of the wilderness, American tool wielders worked their hand tools from dawn to dusk. England built the machinery of the Industrial Revolution but beginning in the 1830s, Americans used the basic design of English inventors to build machines that made hand tools...
tools. In turn, these tools harvested and processed the natural resources of a rapidly growing American economy. This is the techno-historical context for the later success of an indigenous American industrial florescence.

Key differences characterize the industrial milieu of England and America. England needed steam-power for its factories and cities because water power from its relatively small rivers was in short supply. Coal and coke were readily available as steam engine and reverberatory furnace fuel. America, and particularly New England, was characterized by a maze of streams and rivers that, with high rainfall and spring snow melt in hilly terrain with narrow valleys and many waterfalls, provided ideal sites for water-powered mills and trip hammers (Hunter 1979). Until George Corliss invented the automatic variable cutoff steam engine, the irregular stroke of the older model steam engines, the lack of coal in New England, and especially the availability of water power postponed the widespread use of the steam engine in the United States for sixty years, with two exceptions: the unique steam boats of America’s Midwestern river systems and railroads, which soon spread their networks across the American landscape. Steam-power came only slowly to New England’s sawmills, shipyards and toolmaking factories.

Steam engines were already driving the machinery of England’s textile factories by the last quarter of the 18th century. Steam power continued to be the prime mover of industrial England throughout the 19th century. In Collinsville, CT, Samuel Collins kicked off the classic period of American toolmaking with his water-powered plant on the Farmington River. His fellow toolmakers quickly occupied the many water-powered privileges on New England’s labyrinth of rivers. The many toolmakers who established their factories in CT, MA, VT, NH, and RI initially relied on water power to make their tools. Steam-powered toolmaking only supplemented water power after 1850 in these river valley towns. Hundreds of the most important of these toolmakers are listed in the appendix to this volume. All participated until the last decades of the 19th century in either supplying the toolkits of America’s westward migration or forging the edge tools that built the wooden ships of maritime New England.

Another key difference between England and America during the second period of the Industrial Revolution was the existence of wilderness. There was no westward expansion in England; Ireland was not a friendly land for English settlers. Particularly after the Maine, interior New England, New York, and Pennsylvania frontiers had been settled, the westward migration of settlers, which followed the American Revolution, created a huge market for portable, practical, cheaply-made consumer goods. Few settlers could afford expensive hand-forged, Bowie-type, belt-mounted, hunting knives or expensive hand-forged, English, silvered, gentlemen’s knives. John Russell solved that problem in Greenfield, MA; he expanded his chisel-making business by using the newly-designed water-powered trip hammer to make drop-forged, punched-out skinning, beaver, and
hunting knives for the booming market of westward expansion. The steel that he initially used for both his wood chisels and hunting knives was the best quality, imported, English cast steel. The design of his trip hammers derived from the creative accomplishments of both English and continental industrial revolutionaries. The markets, marketing strategies, and production techniques for his tools were uniquely American. Russell was one of the first to manufacture hand tools using the factory system and its die forging machinery, but he had many American predecessors, especially in the clock- and gun-manufacturing industries.

A third difference between England and America was resources. Equally as important as America’s water power resources were its vast forest resources for charcoal production and wooden shipbuilding that made the early 19th century the era of the direct process bloomery furnace, but only in America, not in Europe. The early 19th century also saw America’s blacksmiths mastering the art of edge tool manufacture, often, but not always, using imported high quality English crucible steel. America had vast iron deposits. The high quality iron ore deposits of Salisbury, CT, and the wide availability of bog iron in southeast New England and the New Jersey Pine Barrens were soon supplemented by low sulfur iron ore from the Juanita deposits in the Adirondacks and the rich iron deposits in Pennsylvania. The opening of the Erie Canal sent factory system consumer goods west and brought coal and wheat east to the factories and towns of New England, New York, and Pennsylvania. England had no such wealth of natural resources. Gordon (1994) summarizes the essential elements in the growth and success of the American factory system:

Components of industry necessary to utilize water-power resources for manufacturing included artisans who were willing and able to learn new methods of working, an agricultural surplus, producers of the primary materials used, a transportation system capable of delivering raw materials and distributing products at acceptable cost, sufficient capital to make the initial investments, and a minimum of restrictive trade and labor practices. A conjunction of all these factors in the late eighteenth century helped entrepreneurs start the new American manufacturing technology. (Gordon 1994, 88)

The most important difference between England and America in the Industrial Revolution was cultural. England was traditional, conformist, hide-bound, with afternoon tea and every worker in his niche. English workmen learned a trade, mastered it, and worked at it with regularity and consistency, symbolized not only by the tea break but also a rigid educational system, which may have fostered individual excellence in the educated upper classes but was, in essence, a closed, not open society. America was the land of the liberty men: scubbers who were veterans of the Revolutionary War and went north and east to Vermont, Maine, and west to the Appalachian frontier for a new life, nearly free land, and the opportunity to forge their own social compact. They had no
king, royalty, or proprietary landowners to obey (Henry Knox was an anomaly, but soon
died). The American industrial tycoons of the late 19th century had not yet made their
fortunes.

The podzol soils of New England soon proved inadequate for the agricultural needs of a
rapidly expanding regional economy. Westward expansion was the timely progeny of a
nontraditional society with an open educational system. Opportunity was there; anyone
could become an Oliver Evans or an Eli Whitney and adapt the machinery of the
inventive English engineers to new uses, or, in the case of Eli Whitney’s cotton gin,
invent entirely new devices. The mental attitudes of the educational system and the
admittedly primitive milieu of the one room schoolhouse were components of an open
society that fostered innovation, experimentation, and freedom of information about new
inventions, machine designs, and manufacturing technologies. New frontiers were located
not just to the west over the Appalachians or the Alleghenies but just on the other side of
the schoolhouse wall. Perhaps it was the claustrophobia of that one room schoolhouse
that fostered the realization in America that educational opportunities, including that of
adapting already existing machine designs to a new system of manufacturing, could be
successfully implemented by any enterprising artisan of any social class. In the newly
minted land of America, there were no more walls to be encountered, at least for
Caucasians of European descent, in the sense that America did not share the class-based
conservative social and manufacturing systems already in place in England since the
Enlightenment. Slavery, the American Achilles heel, was not a factor in the efficient
functioning and rapid growth of American’s northeastern quadrant of watermills, blast
furnaces, and bloom smelters.

The luminescent landscapes of 19th century American painting, so radically different
from the dark tones of continental painters of the Barbizon school or the wild
Impressionism of J. W. Turner, are symbolic of the more well-lit American educational
landscape. Less confining, more open, perhaps with a lower horizon line, America's
educational system was more conducive to traveling to distant unexplored landscapes,
both physical and intellectual. America’s physical landscape had been ethnically cleansed
of most indigenous communities, inadvertently complementing the impact of an open
educational system and a growing free market economy. The luminescent paintings of the
19th century eerily foretell of glowing landscapes to come. America used revolutionary
English machine designs for the invention of a factory system of mass production using
interchangeable parts that was only an unrealized dream of a few English
inventors. Slaves harvested cotton and tobacco in a southern economy that was much
more colonial than the early northern republic of shipwrights, shipsmiths, iron mongers,
inventors, toolmakers, machinists, and machine operators. No shoe factories ever
sprouted in Williamsburg, Virginia. In America, with an open educational system where
any male with white skin could advance, new innovative toolmaking technologies were
part of the landscape and horizon of opportunities later symbolized by the luminous painters.
The Reinvention of Malleable Cast Iron

In American folklore and in its early industrial history, many inventors inhabit the cultural landscape, including Samuel Slater, Eli Whitney, Oliver Evans, Elisha Root, and many others. Seth Boyden is one of these historical figures, alleged to have discovered the art of making malleable cast iron in 1826 and then to have implemented his discoveries by manufacturing a wide variety of malleable cast iron products after 1831. This rediscovery of malleable cast iron greatly broadened the market for the often brittle products previously made from gray cast iron. But prior to Boyden’s alleged discovery, other cultures and other communities knew the secret of malleable cast iron. Citing the famous English Chinese historian Joseph Needham, Barraclough (1984a), notes the widespread production of malleable cast iron tools in the 3rd and 4th century BC in China. R. A. F. de Réaumur, writing in France in 1722, also describes this process (Barraclough 1984a). It wasn’t a new idea, but in the early 19th century, Boyden was the American pioneer of the innovative industrial application of the ancient process for producing malleable cast iron by rapid cooling followed by lengthy annealing of cast iron. Numerous variations of this strategy for producing durable machinable cast iron were immediately (within a decade) adapted for the manufacture of a wide variety of tools, machinery, and consumer products for the demands of a growing market economy. No product better illustrates the practical application of this technology than the wide variety of patented malleable iron planes documented by Roger Smith in his two volume treatise on American planemakers (Smith 1981; Smith 1992).

The first step in the production of malleable cast iron is rapidly cooling cast iron in iron molds. Cooling cast iron slowly in sand molds produces the traditional gray cast iron, high in silicon, but also high in uncombined carbon, i.e. loose flakes of graphite, which weaken the iron, producing the traditional gray cast iron that is relatively soft and brittle, allowing some machining but limiting its usefulness. Cooling cast iron rapidly in iron molds rather than slowly in sand molds prevents the precipitation of carbon into its graphite form, retaining it in its combined form, which results in white cast iron, very hard and strong, not machinable, and not very useful for many purposes (Spring 1917). Some clever forge master or founder in ancient times discovered the secret of malleable cast iron, i.e. taking

![Figure 30. Evan’s circular plane, cast iron, 10 3/8" long, 2 3/16" wide, with a 1 5/8" wide blade, Davistown Museum IR Collection ID# TJE1001.](image)
very hard white cast iron and packing it in iron ore or mill scale. For reasons unknown, after heating for one or two weeks, much of the carbon is removed from the casting resulting in a white, steely fracture. This is known as the Réaumur process of annealing, named after the 18th century French philosopher and metallurgist who knew and wrote about this ancient process. The Réaumur process is also very different from the Boyden method of producing malleable cast iron, in which the heating time is shorter and more carbon remains in the center of the casting, which is therefore called “blackheart,” rather than “whiteheart,” due to its higher carbon content. Two forms of blackheart have been traditionally produced in America, one with and one without packing in iron oxide prior to annealing. Both the American and the French methods lend themselves to the production of tools and implements that are extremely durable. Hundreds of variations in heat treatment, production methodology, and alloy variations were used in the 19th century to produce cast iron articles of every description. The Griswold Company, which began operation in Chester, CT, in 1845, is famous for producing the ultimate in malleable cast iron. Their frying pans will literally bounce down the stairs and walk out the door themselves. The legacy of hundreds of American forge masters and founders who produced a wide variety of cast iron products in the age of iron is well-known and well-remembered. An obscure, lingering question remains: in England in 1800, was the secret of Réaumur’s malleable cast iron, with its long annealing time in iron oxide packing, used as another strategy for producing steel, i.e. a steely low-carbon malleable cast iron for the designers and machinists who constructed the equipment of the Industrial Revolution before the era of bulk steel production? This question especially applies to the machinery designed by the English industrial revolutionaries, some of which is on display at the Victoria and Albert Museum in London. This steely-looking cast iron machinery was adapted by American entrepreneurs for use in the American factory system.

Few examples of American machine tools made before the Civil War survive outside of specimens in the Smithsonian collection, Charles River Museum of Industry in Waltham, MA, and American Precision Museum in Windsor, VT; interest in the metallurgy of this early industrial equipment is minimal. Given the rapid decline in interest in American
history and the decline in the availability of public resources to support museums and historical societies, future archaeometallurgical analyses of surviving examples of machinery used in the early years of manufacturing are, unfortunately, unlikely.

Figure 32. Wagon wrench, marked “PAT. NOV. 2, 80”, steel, brass trim, and wood, 10 1/2” long, takes a 5/8” square nut, Davistown Museum IR Collection ID# 31908T31.
Roots of the American Factory System

French engineers made important contributions to the American factory system, although the invention of the machinery and equipment by the English industrial revolutionaries (1770-1840) discussed in Volume 6 (Brack 2008b) of the Hand Tools in History series obscures their contribution to the American factory system. The impact of the introduction of Watt’s steam engine in the 1770s and its expeditious improvement resulted in the rapid spread of the textile industry, first in England and then in America (see cover illustration of Samuel Slater’s first automated textile mill in Pawtucket, Rhode Island.) The rapid evolution of the technology necessary for the mechanization of textile production paved the way for the innovative adaptation of the block-making machinery of Henry Maudslay by numerous American industries and manufacturing companies. American entrepreneurs were quick to adapt the many machines made by Maudslay for the British Navy for the manufacture of machinery for the production of useful consumer goods, such as sewing machines and steam-powered woodworking tools. There is, however, an earlier chapter in the story of the roots of the American factory system.

Well before Eli Whitney made his contributions to the manufacture of guns with interchangeable parts at Harper’s Ferry, innovations had been made in English textile factories to transmit the power generated by watermills to spinning jennies and looms with flying shuttles (John Kay, 1738), spinning jennies for weft spinning (James Hargrave, 1764), and warp spinning frames (John Kay and Richard Arkwright, 1764). The first water-powered spinning mill, which combined weft and warp spinning, was established in Derbyshire by Richard Arkwright in 1771. Improvements in carding, roving, and spinning soon followed. After 1775 steam-powered textile mills began appearing, and by 1793, these innovations in textile manufacturing were transferred to America in the form of Samuel Slater’s textile mill on the Blackstone River in Pawtucket, RI.

We may think of the success of the American factory system, and the notable sale of famed Enfield rifles by the Robbins and Lawrence Armory of Windsor, VT to the British army in the 1850s, as signaling America’s first totally successful production of guns with interchangeable parts. In reality, American industrial success was not based upon the inventive design of machinery or guns with interchangeable parts but on the tedious step-by-step creation of a factory system based on the use of interchangeable parts that put to practical use the innovative designs of the English industrial revolutionaries and the unique contribution of one obscure French gunsmith, Honoré Blanc.

Honoré Blanc was appointed to the post of controller at the Saint Etienne Royal Arms Manufacture in 1785. Blanc supervised the manufacture of the rifle model known as the
Charleville, which equipped many American soldiers in the American Revolution and which Lafayette possessed while on board the frigate Hermaine in 1780 (Allen 1983). Blanc’s task was to make muskets at the St. Etienne Armory for the king’s regiments. In 1777, Blanc initiated the production of a new model rifle, the “1777”, characterized by the use of interchangeable parts. This innovation was executed three decades before Eli Terry began using interchangeable parts in his Connecticut clock manufactory.

Under the supervision of the French chief of ordnance J. B. Vaquette, Blanc built a specially designed workshop in 1783 in the dungeon of the Vincennes Castle and began work in 1786. On November 20th, 1790, Blanc assembled 1,000 gun locks at the Hotel des Invalides and demonstrated the interchangeability of their parts (Allen 1983). Eli Whitney was well aware of Blanc’s work. The French artillerist and aid to Lafayette, Louis de Tousard (1809), wrote about Blanc and the issue of interchangeability in his three volume American Artillerist Companion. George Washington ordered one or more copies of these volumes and also had de Tousard redesign part of the West Point garrison into a military academy.

In 1815, Eli Whitney (1765-1825) attended a meeting in New Haven called by Col. Decius Wadsworth to begin the manufacture of muskets with interchangeable parts at both the Harper’s Ferry, VA, and Springfield, MA armories. In fact, the American rifle model M1816 was based on the designs of the older French M1777 (Smith 1985, 511) and represented the first stage in the domestic manufacturing of guns with interchangeable parts.

In the context of the rise of the American factory system, water power (not steam power) did not supplant the still common use of pedal-driven lathes in the Connecticut clock-making industry until the early 19th century, occurring a few years before the 1815 New Haven conference of Whitney, Wadsworth, and others about the use of interchangeable parts for gun manufacture. The complex system of pulleys and belts that drove these water-powered lathes soon characterized most 19th century factories where the newly designed machines of the English industrial revolutionaries were making their appearance. Interchangeable wooden parts for mass produced clocks soon followed the innovations in transmuting water power into work. Between 1807 and 1814, Eli Terry perfected the mass production of pinions and wheels for his clocks using belt-driven machinery, not the hand work still the tradition in English industries. The American factory system was fast off the starting line.
The American Factory System

Among the first and most important applications of innovative English machinery design in America were those for constructing woodworking tools and machinery. The first sawmill was based on Dutch design and built in South Berwick, ME, in 1634 on John Mason’s plantation on the Great Works River (Carroll 1975). Noted by Charles Carroll as the invention of Samuel Miller in England in 1777, the circular saw was adopted in sawmills in America, particularly after 1814. The first American steam sawmill was operating by 1802 (Carroll 1975). The invention of the band saw in London in 1801 was quickly copied in America, cutting down on the waste from the larger kerf of circular saws. Between 1820 and 1850, planing machines, lathes, carding machines, reciprocating mortising machines, and a wide variety of other forms of wood and metalworking machinery were invented or improvised based on English designs. As early as 1795, James Parker, working in Newburyport, MA, patented, designed, and built a water power nail-cutting and nail-heading machine (Rosenberg 1975). By 1797, Amos Whittemore had revolutionized the production of wool cards by automatic machinery at his Boston factory (Winsor 1881, 80).

This was also the dawn of the use of the power loom in textile manufacturing. Samuel Slater had finally constructed successfully operating cotton-spinning machinery for Moses Brown at Pawtucket in 1793. (See cover illustration.) A totally mechanized factory for manufacturing cotton cloth out of raw cotton had never existed before Francis Cabot Lowell built the first such factory on the Charles River in Waltham, MA, in 1813. Spinning with water- and steam-powered mules was widespread in England after Crompton improved Arkwright’s spinning machines, but Crompton’s spinning mules still required hand weaving on looms to produce the final product. The Lowell mill at Waltham completed the mechanization of the textile industry and remains an icon of the Industrial Revolution. Lowell’s system was soon copied and became the basis for all subsequent textile manufacturing centers, including the mammoth complex built by Lowell’s (d. 1817) associates on the Merrimac River at the new town of Lowell (1824).

An important early stimulus for mechanization and factory mass production techniques, other than the textile industry, was the need for arms production. The recently improved lathes of the London engineers under Maudslay were the starting point for Thomas Blanchard’s creation of the irregular or copy lathe. First used for gun stock production at the Springfield and Harper’s Ferry armories in 1818 (Muir 2000), this lathe could turn curves and ovals for making gun stocks. Blanchard soon made further improvements in his lathe design, which could mass produce shoe lasts, ax handles, and other wooden artifacts with irregular turned surfaces. Meanwhile, Simon North, whose family is still remembered for their production of bench plates, tin knocker stakes, and shears, had built
a proto-milling machine at his gun factory in Middleton, CT. Improved and redesigned by the Maine gunsmith John Hall, this milling machine used rotary cutters and could cut iron and low carbon puddled steel in various sizes and shapes. Not yet qualifying as a precision milling machine, later developed by J. R. Brown at the Darling, Brown, and Sharpe plant in Providence, RI, and with high speed steel cutting tools still not perfected, the North-Hall milling machine was an essential first step in the process of producing guns with interchangeable parts. Then, after 1827, what had been a rising tide of industrial change turned into a tsunami of industrial innovation.

Among the most important and well documented American manufacturing companies was the Collins Axe Company of Collinsville, CT, whose first full year of operation was 1827, the date used in this publication to signify the beginning of the classic period of American toolmaking. When Elisha K. Root joined the Collins Company in 1832, shaping and forming machines using punches, dies, and patterns may already have begun replacing the tilt hammer for some steps in ax production. Rather than one dramatic change from hand-forged to machine-made axes, the Collins company innovations were a series of improvements in the efficiency and excellence of ax production that culminated in the adoption of shaping and forming machinery using dies and rollers in 1846, accompanied by the use of shaving machines that replaced the always hazardous and tedious task of shaping and finishing axes by grinding. Gordon (1994) provides the following synopsis of the significance and evolution of what was the quintessential American factory of the early years of the classic period of American tool manufacturing.

Some forging tasks could be done with one hammer blow by placing the metal between dies containing a cavity that was the shape of the desired part and striking the dies with a sledge to cause the metal to flow out the cavity. French mechanician Honoré Blanc used die forging in 1778, and, beginning with John Hall at the Harpers Ferry Armory in the early 1820s, many Americans experimented with the application of mechanical power to Blanc’s technique. In the drop hammer, power from overhead shafting turned rollers at the top of the machine to lift a wooden plank with an attached hammerhead; the operator could disengage the rollers at any time to drop the hammer on the dies with the desired force. Guides on the side of the frame held the dies in alignment. Because of the accurate alignment and the high force applied (which caused the metal to flow into the finest detail of the die cavities), artisans could make very precise forgings with a drop hammer. The forge operator had to heat the metal to the right temperature, place it accurately between the dies, and know the correct height from which to drop the hammer. The level of skill needed was comparable to that in hand-forging with a sledge. The operator retained control of the pace of work, but worked alone rather than with a striker; this procedure may have increased the risk of injury from inattention, particularly when a long run of forgings of a given part was to be made at a high production rate. The violence of the blows struck by a drop hammer was hard on the machinery and dies and made a noisy, dangerous work environment. As we have seen, tool designers at the Collins axe
works in the 1840s overcame these problems by substituting pressing and rolling technology for forging. (Gordon 1994, 358-9)

The roots of the growing factory system of mass production of hand tools, guns, and other equipment with interchangeable parts lie in the labyrinths of New England’s river systems. The Underhill Edge Tool Co. of Nashua, NH, was the largest of hundreds of tool manufacturers along the Merrimack River, which had many tributaries, each with multiple water-powered mill sites that often produced only a few horsepower to run trip hammers and bellows for blacksmiths who still made hand-forged hand tools. The Connecticut River was another major power source, and its eastern tributary, the Millers River, in northern Massachusetts was the site of major tool-producing centers in the mid-19th century. At the confluence of the Greenfield and Connecticut rivers, John Russell was the first New England manufacturer to use trip hammers to make cutlery (1834). Soon after, he was using a punching machine to make tang holes in knives for their handles. To the north, Windsor, VT, was the location of one of the most important and innovative tool and arms production factories, the Robbins and Lawrence Armory and Machine Shop, located on one of the many outfalls along the Vermont / New Hampshire section of the Connecticut River.

The Blackstone River running south from Worcester, MA, to Pawtucket and Providence, RI, gave rise to numerous tool and textile factories. Slater’s Mill was only the most famous and was a harbinger of what was to evolve in the coming decades. To the east of the Blackstone River lies the Taunton River, to the west the Quinebaug, Willimantic, Connecticut, Naugatuck, and Housatonic rivers. New England was the center of hand tool production, which supplied the needs of a rapidly expanding and westward moving population. Major tool-producing centers simultaneously arose to the west on the Hudson and Mohawk rivers. In 1832, D. R. Barton, located on the Genesee River, began his cooper and edge tool manufacturing business in Rochester, NY, becoming a major supplier for New England coopers to the east, as well as for the growing tool market to the west, since tools could be shipped easily on the great lakes. Ancient D. R. Barton cooper’s jiggers make surprisingly frequent late 20th century appearances in New England workshops and tool collections even though they haven't seen use for almost 125 years. See Figure 37 of L. & I. J White’s jigger.

Figure 33. Millers Falls hand drill, steel and wood, 14” long, Davistown Museum IR Collection ID# 112400T1.
Shortly after Barton opened his first blacksmith shop in Rochester, Henry Disston established his saw-making business in Philadelphia (1840). To what extent Barton used imported English cast steel is unknown. We do know that Henry Disston used Sheffield crucible saw steel until the Civil War. By 1840, Philadelphia was already the saw making center of the United States.

The saws produced in Philadelphia by Disston and other manufacturers were shipped throughout a rapidly expanding national landscape of growing cities and towns. Aside from supplying the needs of an expanding westward population, it was the saws produced by Disston and other American manufacturers that made Bangor, ME, the largest mid-19th century lumber-producing center in America. The forests of New England would soon be depleted, but there was another frontier for American toolmakers to supply.

New England, New York, and Pennsylvania toolmakers supplied the tools for the coopers, blacksmiths, and shipwrights of New England. They also supplied the hand tools and some of the machinery for the explosion of agricultural equipment production in the Midwest. Located midway between eastern tool factories and the midwestern agricultural equipment manufacturers was the most important of all components of the American factory system of toolmaking: the Pittsburgh iron and steel furnaces and forges.

Intelligent design must have once reigned in the geological evolution of the Midwest. To the east, the Allegheny and Monongahela rivers meet to form the Ohio River at Pittsburgh, PA, where some of America’s richest coal, oil, and gas deposits were located. Pittsburgh and the Adirondacks region supplied
high quality iron to the toolmakers of New England and, after the Civil War, became America’s preeminent center of crucible steel production. The Ohio River, originating at Pittsburgh, was a geological fluke that allowed the efficient production and transportation of huge quantities of iron, and later steel, to the implement hungry hordes of westward moving Americans in the decades after 1820. It is in this geographical context that the American Industrial Revolution began moving west. Without westward expansion and the nearly unlimited agricultural opportunities of the Midwest, the Collins Tool Company of Canton, CT, (est. 1826) or the Douglas Axe Company of East Douglas, MA, (est. 1836) would have had had a much more restricted market for the edge tools that they initially made out of imported English crucible steel. But was English cementation and crucible steel the only source of weld steel for the cutting edges of axes, adzes, and chisels as well as for shovels, plows, cultivators, mowing machines, and threshers? After 1850, it was not.

In 1828, Richard Hoe, working in Pennsylvania and using imported English cast steel and a steam-powered punching machine, began mass production of the first circular saw blades. John Lane, an Illinois blacksmith, began making plows with steel blades that were more efficient in cutting the Midwest sod than the cast iron blades of older English designed plows. Cyrus H. McCormick invented the first wheat reaper in 1831 and produced the first model in 1833. Also using imported Sheffield steel for the fabrication of his blades but not his machinery, John Deere constructed the first mowing machines in 1837. In the same year, John and Hiram Pitts designed the first mechanical thresher. Other American inventions created in response to the challenges of the
American frontier included corn cultivators, hay and grain rakes, grain drills, corn shellers, hay bailers, and cultivators. Specialized steel for the cutting edges of many of these tools was imported from Sheffield and Birmingham before the Civil War, but almost all other components of these machines were made in American factories, often owned by the inventors of the tools being produced. Many were made of cast iron, but, after 1837, the development of a wide variety of malleable cast irons greatly assisted tool and machinery makers by providing a more durable and machinable steely cast iron that was easy to cut and shape. At this time the first cast iron plane appeared in America, i.e. the Knowles pattern joiner’s plane, and it was soon followed by the much more durable malleable cast iron planes pioneered by Leonard Bailey and the many small patented planemakers described by Roger K. Smith (1981, 1992) in his comprehensive *Patented Transitional & Metallic Planes in America* volumes 1 and 2. By 1850, a vigorous, increasingly mechanized, American toolmaking industry was well established in New England and gradually spread to the Midwestern states during the last half of the 19th century.

**Figure 39.** Sun plane, blade signed “White 1837”, cast steel and wood, 14” long, 3” wide, 2” wide blade, Davistown Museum MIII Collection ID# 100400T6.
Steelmaking Reconsidered

The fourth decade of the 19th century was a revolutionary period of industrial activity in America. Worldwide demand for high quality iron and steel tools was rapidly expanding in a peacetime economy that stimulated growing demands for hand tools, agricultural equipment, and industrial machinery in Europe and the Americas. There was no location where Samuel Collins might not send his axes or the Underhill clan ship their edge tools. The unresolved question remains as to whether Sheffield crucible steel supplied the rapidly increasing demands for high quality special purpose steel. While Samuel Collins and Henry Disston continued to use imported Sheffield crucible steel for their axes and saws well into the mid-century (Tweedale 1987), numerous other New England toolmakers began making malleable cast iron tools after 1840. Could the English factories at Sheffield, the most important center of English steel production in the early 19th century, supply the burgeoning demand for high quality steel in America? And what about the sudden rise in demand for malleable cast iron for hand planes and other tools after Hazard Knowles made the first cast iron plane in 1827?

There soon followed a spectacular florescence of American malleable cast iron planemakers, the most famous of which was Leonard Bailey, who began working in Boston in 1855, making his split frame jack planes, which are now so sought after by collectors. He was preceded by such planemakers as Birdsell Holly (1852), Thomas Worrall (1854), and William Foster (1843) who were then followed by a multiplicity of other hand plane and toolmakers (Figure 40 and Figure 41). Smith (1981, 1992) provides an excellent survey of this uniquely American enterprise in his monumental two volume publication,
Patented Transitional & Metallic Planes in America. Volume 2 includes an extensive list of patents for planes, shaves, and inventions of every kind, beginning with Woodward’s 1812 patent for shaving leather and continuing with every important innovation in hand plane design into the early decades of the 20th century. The plane blades of many of these tools were made and imported from Sheffield, but the remaining components were designed and made in America’s burgeoning tool factories of the mid-19th century. A brief review of the roots and intricacies of crucible steel production helps set the context for the rapid evolution of America’s robust 19th century toolmaking industries.

By the second quarter of the 19th century, England’s steel industry was concentrated in one location, Sheffield. When Benjamin Huntsman rediscovered the ancient process of producing cast steel in 1742, he was actually manufacturing the highest quality steel by a chemical process. Cast steel had the most uniform microstructure of any form of steel, characterized by homogenous carbon distribution and an absolute minimum of contaminants. The purity and microstructural uniformity of crucible cast steel gave it a plasticity...

Table 1.2 Sheffield and Pittsburgh crucible steel prices 1863

<table>
<thead>
<tr>
<th></th>
<th>Sanderson Bros New York</th>
<th>Singer, Nimick Sheffield Works</th>
<th>Jones, Boyd Pittsburgh Works</th>
</tr>
</thead>
<tbody>
<tr>
<td>Best cast steel</td>
<td>22</td>
<td>21</td>
<td>20 – 21</td>
</tr>
<tr>
<td>Extra cast steel</td>
<td>23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Round Machinery</td>
<td>14</td>
<td>13 – 15</td>
<td>13 – 16</td>
</tr>
<tr>
<td>Swage cast steel</td>
<td>25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Best double shear steel</td>
<td>22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Best single shear steel</td>
<td>19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blister first quality</td>
<td>17½</td>
<td>8 – 11</td>
<td></td>
</tr>
<tr>
<td>Blister second quality</td>
<td>15½</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blister third quality</td>
<td>12½</td>
<td></td>
<td></td>
</tr>
<tr>
<td>German steel best</td>
<td>15½</td>
<td>9 – 11</td>
<td>9 – 11</td>
</tr>
<tr>
<td>German steel Eagle</td>
<td>14½</td>
<td></td>
<td></td>
</tr>
<tr>
<td>German steel third quality</td>
<td>11½</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sheet cast steel 1st quality</td>
<td>22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sheet cast steel 2nd quality</td>
<td>18</td>
<td>15 – 21</td>
<td>15 – 23</td>
</tr>
<tr>
<td>Sheet cast steel 3rd quality</td>
<td>16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shovel steel best</td>
<td>14½</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shovel steel common</td>
<td>13½</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sheet cast steel for hoes</td>
<td>14½</td>
<td>11½</td>
<td>11½</td>
</tr>
<tr>
<td>Mill saw steel</td>
<td>15½</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>Billet web steel</td>
<td>17½</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross-cut saw steel</td>
<td>17½</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>Best cast steel for circulars to 46 in.</td>
<td>25</td>
<td>23</td>
<td>23</td>
</tr>
<tr>
<td>Toe coring best</td>
<td>10</td>
<td>9½</td>
<td>9½</td>
</tr>
<tr>
<td>Spring steel best</td>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spring steel 2nd quality</td>
<td>10</td>
<td>9 – 10½</td>
<td>9 – 10½</td>
</tr>
<tr>
<td>Spring steel 3rd quality</td>
<td>8½</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: SCL Marsh Bros. 249/24, 28–9.
that resulted in ease of fabrication as hot rolled bars and sheets of steel in Henry Cort’s newly designed rolling mills (1784) or for domestic tool production by individual English smiths working in small tool factories using time tested forging, quenching, and tempering techniques. However, Americans beat the British at their own game, designing and implementing drop-forging machinery (1840f.) that would shape exquisite cast steel tools for the next ninety years. Before 1860, cast steel imported from England dominated the market. After 1860, the mammoth net of America’s crucible steel companies provided a domestic alternative to expensive imported cast steel. German steel imports continued, but they played no significant role in edge tool production after the Civil War.

Until the secret of its chemistry was unraveled in the mid-19th century, crucible steel was made from blister steel. The tedious production of blister steel in converting furnaces was labor- and energy-intensive and, after blister steel bar stock was broken up into pieces and put into small crucibles for cast steel production, the result was a very expensive product. The wide variety of steel types produced before the Civil War to meet the growing 19th century demand for steel of all types is illustrated by the Sanderson Brothers price list of 1863 (Figure 42). Sanderson Brothers was one of Sheffield’s largest steel producers and a pioneer in developing alloy steels. The Sanderson price list illustrates the diversity and variety of steel being utilized by American toolmakers and machinists just prior to the classic third period of the mature Industrial Revolution, signaled by the advent of the Bessemer pneumatic and Siemens-Martin, and then Siemens open hearth bulk process steel production. It also illustrates the infancy of the Pittsburg steel industry, which was just being constructed in the wilderness of western Pennsylvania. While the shipsmiths of coastal Massachusetts, New Hampshire, and Maine were still hand forging the iron fittings for wooden sailing ships, the world of ferrous metallurgy was changing as fast the industrial landscape was expanding.

One of the items listed on the Sanderson price list, German steel, had been produced in European fineries since late medieval times by decarburizing cast iron. Henry Cort's puddling furnace provided an even more convivial environment for producing steel from decarburized cast iron. Barraclough (1994a) provides a description of this process:

> It slowly became clear that by altering the conditions within the puddling furnace, particularly during the boil, it might well be possible to remove most of the impurities from cast iron and still retain sufficient carbon for the product to have some of the properties of steel, rather than those of wrought iron. It also became evident that considerable niceties of judgment were involved, and the development of a suitable and reproducible technique for the production of steel in this way took many years, with many valiant attempts ending in failure. (Barraclough 1984a, 93)
Baraclough does not note that it was easier to adapt the puddling furnace to steel production in southern Germany and Austria for two reasons: the long German and Celtic tradition of the direct-process manufacturing of natural steel, and then, the later production of steel from Spiegeleisen (manganese-laced cast iron) using siderite ore from the Styrian Erzberg in Austria (ore mountain), the manganese content of which facilitated the decarburization process.

The Sanderson Brothers price list thus illustrates the three major types of steel available to toolmakers in the United States in the years before the Civil War: crucible cast steel, shear and blister steel, and German steel. The highest quality and most expensive steel was crucible cast steel; shear steel was highly refined blister steel, piled, bundled, reheated, and reforged. So called because blister steel bar stock was “sheared” during the repiling and reforging process, shear steel was considered the best quality steel available before the evolution of the Sheffield cast steel industry, at least in England. Made from reforged blister steel, it still retained vestiges of alternating bands of high and low carbon iron and was the ideal material for Sheffield’s famed cutlery manufacturers.

The German steel on Sanderson’s list was produced by decarburizing cast iron in either puddling furnaces or in large high shaft fineries. Before the widespread production of English cementation, and then crucible steel, German steel had dominated the world’s steel markets since late medieval times. As with blister steel, it could be refined again into a variety of special purpose steels. By the time of the compilation of the Sanderson price list, English-made cast steel was supplanting both shear and German steel. A prime example of this is saw steel. Henry Disston used crucible steel and many of his best saws are labeled “London Spring Steel,” which was probably the highest grade of carefully refined, forged, and re-rolled shear steel but also may have been made from rolled sheet cast steel. Nonetheless, back saws and hand saws occasionally appear stamped with the term “German steel,” recalling the long tradition of German steel production, even though when they were stamped in
English it usually indicates that the saw was made from shear steel in England, not Germany.

John Russell may have imported both crucible steel and shear steel to make his famed skinning knives in Greenfield, MA, in the 1830s. He certainly had a wide variety of steel types to choose from. On the Sanderson price list, shear steel is among the most expensive. Not produced in crucibles but from reheated, forge welded bars of blister steel, the manufacturing of shear steel may have required more finesses than crucible steel production, but its unique microstructure could not be produced by any other methods. Barraclough (1984a) attributed a German origin for shear steel. Its production in Sheffield was perfected by a shipwrecked German steelmaker from Remscheid, Wilhelm Bertram. He produced five types of shear steel in 1693 from blister steel at Newcastle, an important English steelmaking center, which flourished between 1675 and 1750, prior to the rise of Sheffield. Shear steel production was later introduced into Sheffield in 1767 (Barraclough 1984a, 66). The key to its successful production was sorting blister steel bars by fracture prior to reforge. For almost a century, before English crucible steel became available in large quantities, shear steel was the top grade of English edge tool steel. Individual ironmongers in America would also have produced it, especially for the flourishing swordsmithing trade, which received a boost from the French and Indian War, and then from the American Revolution and the War of 1812.

The Sanderson price list (Figure 42) illustrates the continuing importance of shear steel in the era of cast steel. American toolmakers were utilizing not only

<table>
<thead>
<tr>
<th>Temper</th>
<th>Name</th>
<th>Approximate mean carbon content</th>
<th>Fracture appearance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Spring heat</td>
<td>0.60–0.70%</td>
<td>80% sap</td>
</tr>
<tr>
<td>2</td>
<td>Cutlery heat</td>
<td>0.75–0.85%</td>
<td>60% sap</td>
</tr>
<tr>
<td>3</td>
<td>Shear heat</td>
<td>0.90–1.00%</td>
<td>40% sap</td>
</tr>
<tr>
<td>4</td>
<td>Double shear heat</td>
<td>1.05–1.15%</td>
<td>20% sap</td>
</tr>
<tr>
<td>5</td>
<td>Steel-through heat</td>
<td>1.20–1.30%</td>
<td>Uniformly fine</td>
</tr>
<tr>
<td>6</td>
<td>Melting heat</td>
<td>1.40–1.60%</td>
<td>Uniformly coarse</td>
</tr>
<tr>
<td>7</td>
<td>Glazed heat</td>
<td>1.70–2.00%</td>
<td>Very coarse and faceted</td>
</tr>
</tbody>
</table>

crucible steel for their tools but also shear steel, blister steel, and German steel. The cheaper spring steel listed by the Sanderson Brothers was yet another variation of blister steel. Barraclough (1984b) provides a concise summary of the varieties of blister steel (Figure 47), which remained an important component of English and American steel production well into the late 19th century.

For the very best cast steel on the Sanderson list, crucible steel manufacturers would have selected only the very best blister steel. Other types of blister steel could be chosen to produce the wide variety of special purpose cast steels, such as saw steel, also listed on the Sanderson list. The list is detailed enough to separate shovel steel from sheet cast steel for hoes, illustrating the sophistication of tool production techniques before the modern era of bulk process steel. But American toolmakers were utilizing English steel to make high quality American tools in factories more efficient in their operation than those of hide-bound English toolmakers. The English retained a monopoly on cast steel production until the rise of the Pittsburgh steelmakers. Competition from Jones Boyd, the American manufacturer in Pittsburgh, is indicative of the birth of an American cast steel industry that would gradually, but not completely, supersede the Sheffield cast steel industry until the demise of both in the third decade of the 20th century.

Expensive English cast steel couldn’t possibly supply the need for steel in the rapidly growing market economy of America in the first four decades of the 19th century. American ironmongers didn’t produce high quality cast steel until the Civil War, due to the lack of temperature resistant clay crucibles, but in America, a land of immigrants, European iron- and steel-producing technologies were well known, and probably widespread but small in scale and also poorly documented. Hartley (1957) notes the state-of-the-art status of the Saugus Iron Works in the 1640s, illustrating how quickly any improvements in iron and steel production techniques originating in England or continental Europe would be implemented in the American colonies. Given the importance of cementation steel in the early 18th century and the availability of imported English crucible steel after 1750, important questions

Figure 48. Stanley model 113 circular plane, marked “STANLEY RULE & LEVEL CO. | PATENTED SEPT. 25, 1877”, cast iron, Japanned, nickel-plated trim, 10 ½” long, 1 ¼” wide blade, Davistown Museum IR Collection ID # 31808PC3.
nonetheless linger about the sources of steel used in the early Republic. Where did the Ames Shovel Company of Easton, MA, (est. ± 1790) obtain their shovel steel? This same question can be asked of the Underhill clan, D. R. Barton, the Buck Brothers, Timothy Witherby, Bailey and Chaney, Henry Disston, the Stanley Tool Company, and the many other American toolmaking enterprises that were established between 1827 and 1860. The Ames Company was one of the longer established American toolmakers and an investigation into the sources of its shovel steel in its early years provides a significant insight into steel production in the United States 1790 – 1840 (Figure 29). Before the spread of railroads between Massachusetts and Pennsylvania in the 1850s it is unlikely that the Ames Company imported significant quantities of steel from the Sanderson clan when it was so close to the robust bog iron industry of southern New England, which had the capacity to make puddled steel of suitable quality for Ames shovels, especially after the proliferation of small reverberatory furnaces and blister steel cementation furnaces in New England in the early 19th century.

At some future date, advances in the study of the isotopic components of archaeometallurgical samples of 18th and 19th century tools may reveal more information about the sources of their ferrous constituents and the technologies used in their smelting and forging. As the onset of the age of biocatastrophe begins, numerous chapters in the history of ferrous metallurgy that precede the classic period of American toolmaking remain lost in the ancient fog-bound labyrinths of the historic past in our era of growing ahistorical functional illiteracy.
The End of the Wooden Age

Henry Clifton Sorby wrote his treatise on the microstructure of metals in 1864 and presented it at the British Association Meeting in Bath, England, but he did not publish it until 1887 (Smith 1960, 74). In between these dates, working in the obscurity of the forests of Dean on the north side of the River Devon, Robert F. Mushet helped Henry Bessemer solve the problem of the efficient production of durable low carbon steel by the pneumatic process. A chemist and metallurgist, Mushet knew what Bessemer did not and added a manganese-laced cast iron called “spiegeleisen” to the molten cast iron to avoid over oxygenation. This was the first in a number of major innovations that allowed the bulk production of massive quantities of low carbon steel. R. F. Mushet was also responsible for another creative innovation in ferrous metallurgy, the development of the first important and widely used alloy steel, Self-Hard or R.M.S. (8% tungsten, 2% carbon, 1% manganese). William Siemens soon followed with a third innovation, his improved design of the Siemens-Martin open hearth furnace. After a bit of delay, Sidney Gilcrest Thomas, an obscure postal clerk, solved the puzzle of phosphoric iron smelting by improving furnace design to include refractory linings as well as lime additions to the Bessemer converting process (Brack 2008b, 98), now called the basic refractory furnace, which facilitated the smelting of the vast majority of the world’s deposits of phosphoric iron deposits. Henry Cort’s reveratory furnace and rolling mills and their efficient production of malleable iron, puddled steel, and rolled crucible cast steel had facilitated the wide application of that now old-fashioned prime mover, Watt’s steam engine. This steam engine ran both the larger blast furnaces and the iron puddling furnaces that produced malleable and wrought iron in such large quantities. Initially, the larger blast and puddling furnaces filled the demand for more iron and steel in the early years of the 19th century but could not satiate the growing need for steel from 1840 onward when ships made of iron, and then, steel, especially warships, began making their appearance on oceanic horizons.

It took a half a century for machine-made ships to put an industrial ending to the age of the wooden ship. Among the most important uses of both the Bessemer pneumatic furnace and the Siemens open hearth furnace was making the steel plates for the ships of the English and American navies. Wrought iron, then steel, rails finally transported the coffin of the wooden shipbuilding era to its gradual, obscure oblivion. Why do work with your hands when boiling water will do the work for you? So much for beating out beams with a broad ax, the dubbing of the adz, the slice of the mortising gouge and slick, the sawdust and inconvenience of the pitsaw. The narration of the history of the wooden age ends with the appearance of steam-powered prime movers, including the railroad engine that simultaneously facilitated westward expansion and the demise of the wooden sailing
vessel. Where is the statue memorializing the cast iron tilting band saw needed to remind us of the fate that befell the wooden shipwright?
Technological Overlap: Hand-forged or Drop-forged?

When Henry Bessemer was inventing his unique technique for quickly decarburizing liquid cast iron into malleable low-carbon iron bar stock, (not quite wrought iron, because his process burned out the silicon,) the end of the greatest period of American shipbuilding, marked by the panic of 1856, had just occurred. This year is symbolic in that it is a point in time midway from the beginning of the American factory system of mass production in the early 19th century and the final demise of the tradition of handmade tools and the wooden ships they built in the late 19th century. No one specific year can mark what was almost a century of technological overlap.

Only a few more clipper ships were to be built in East Boston and in Maine, yet the era of the Penobscot Bay bulk cargo carriers, the Downeasters, was two decades in the future. Bessemer had not even dreamed of “steel production.” The idea that low-carbon malleable iron with a ±0.3% carbon content would soon be called “mild steel” had not yet been imagined by one of the pioneers of the bulk steel era. But whatever you called it, “malleable iron” or “mild steel,” there was already a huge new market for this product. The all-consuming railroad, iron and steel ships, bridges, steam engines, and huge factories and their machinery were quickly altering landscapes with their mercury sulfide-emitting smoke stacks. If you had soft, mild steel, you could efficiently drop-forged useful hand tools of every kind in some of the many factories now dotting a growing industrial landscape. The exception to the mass production of drop-forged tools were edge tools needed for woodworking and the steel hand files so necessary to shape the machinery of the Industrial Revolution, including those drop-forged hand tools and interchangeable parts made before the era of the grinding machine (1875). Why forge weld a coach wrench when one could drop-forged a monkey wrench, made, for example, by the Loring Coes and Aury Gates wrench factory in Worcester, MA (1841), for the soon to proliferate railroad mechanics. For almost 40 years of technological overlap, hand-forged, and then, drop-forged files tediously finished the final forms of the products of the American factory system. Ironically, the last toolmakers to forge weld or cut and shape the tools they were making by hand were the file-makers of Sheffield, Birmingham, and Lancashire, England. Their files were still hand-wrought a quarter of a century after innovative American toolmakers had already figured out how to
use machines to make files. The essence of the florescence of American toolmaking was the innovative use of machinery designed by the English industrial revolutionaries to mass-produce tools, machinery, and especially, firearms with interchangeable parts.

The continued presence of isolated edge toolmakers in many New England communities is obscured by the rapid evolution of sophisticated factories like those founded by Thomas Witherby (1848) and the Buck Brothers (1854), where expert edge toolmakers began hand tool manufacturing on an industrial scale. The increased use of machinery obscures their reliance on the ancient skills of the ironmonger: quenching, tempering, hammering, and annealing. The shipsmiths and edge toolmakers of Maine and New England continued their stubborn production of the ferrous necessities of late 19th century shipbuilding for almost a half century after Thomas Witherby and the Buck Brothers began their historic contribution to the classic period of American toolmaking. Technological overlap was an essential ingredient in this florescence.

Figure 50. American wrench, marked “PAT SEPT 8.1885 AUGUSTA, ME”, steel. A typical drop forged hand tool. Photo courtesy of Liberty Tool co.
The Search for American Steelmakers

In England, use of any steel other than high quality crucible cast steel for late 18th century and early 19th century chisels, plane blades, and other edge tool production was inconceivable. In contrast, out of necessity, American edge toolmakers in the same period utilized blister and shear steel from a wide variety of sources to supplant imported English cast steel.

Samuel Collins clearly stated his reliance on imported English steel (Muir 2000, Gordon 1996). Henry Disston pretended he was using English cast steel for his saws long after he began producing and using American cast steel due to the continuing high reputation of English steel. The date he began producing his own cast steel is uncertain. Disston felt that nobody would believe that American cast steel was equal to the English cast steel, but, after 1860 it was. The Stanley Tool Company (est. 1857) allegedly utilized English cast steel in their plane blades well into the 1930s (Tweedale 1987). The majority of small carving tools found in New England tool chests bear the imprints of Sheffield manufacturers. (See Figure 52 showing five English tools in the tool kits of the Willard family of American clockmakers.) But the conventional paradigm doesn’t work for many other edge tools and steel implements. The larger timber harvesting and timber framing tools of New England lumbermen and shipwrights are seldom stamped with English touchmarks.

Pennsylvania was the most important source of iron ore in the 19th century; Pennsylvania iron and coal deposits were the key reason why the huge steel industry at Pittsburg evolved after 1840.

Table 33 in Figure 53 from Paskoff’s (1983) Industrial Revolution provides a snapshot of
the iron production facilities so essential to the growth of New England’s tool producing industries. In 1828, Nielson had invented the hot blast, which recycled heat from the furnace to create a heated air intake, which greatly increased furnace efficiency and productivity. Nonetheless, the ancient belief that cold blast, that is cold air, produced a higher quality iron than hot air, still lingered in iron producing regions of America and England. The types of production facilities listed in Paskoff, derived from an earlier 1859 publication, illustrate America’s iron and steel industry on the cusp of change. The American iron industry, especially influenced by a rapid rise in demand for iron for railroad locomotives, rails, and other equipment, had proliferated throughout Pennsylvania by the mid-19th century. Ancient cold blast charcoal furnaces now operated next to the newer hot blast charcoal furnaces. The newest form of blast furnace used anthracite fuel, which was mined primarily in the eastern regions of Pennsylvania. Use of bituminous coal from western Pennsylvania and West Virginia in blast furnaces had yet to make an appearance. Charcoal forges were the primary method of refining of pig iron from the blast furnaces; numerous rolling mills were in operation, some of which manufactured wrought iron rails for the growing network of railroads. The hegemony of Bessemer steel rails was still three decades in the future. The large quantities of iron provided by the Pennsylvania iron and steel industry supplied an increasingly large network of American toolmakers, which had now spread from New England to New York, Pennsylvania, and Ohio.

The classic period of American toolmaking is clearly documented by the extensive listings of the Early American Industry Association’s Directory of American Toolmakers
(Nelson 1999), and by the numerous high quality tools that can still be found in New England workshops, tool chests, and collections throughout the country.

Scattered among the surviving tools from these workshop tool hordes are forge welded timber framing tools of the highest quality that are neither marked “cast steel” nor have the typical stamps of English makers. The survival of so many of the larger-sized edge tools used by shipwrights and timber framers, such as slicks, mortising gouges, chisels, mast shaves, broad axes, and adzes, often stamped with the names and sometimes the locations of their American makers, is the primary evidence for the existence of a robust, indigenous edge toolmaking industry. It was this indigenous edge toolmaking industry that originated in New England and is documented in the previous volume of the *Hand Tools in History* series, *The Art of the Edge Tool*, which contains illustrations of numerous American-made edge tools, including some made in Maine.

Figure 54. Gouge marked “J.M. SHEFFIELD”, blister, cast, or German steel, wood, and iron, 14 7/8” long, Davistown Museum MIV Collection ID# 81101T9.

Figure 55. Corner chisel marked “J.Cray”, cast steel and wood, 5” long, 1 1/16” cutting edges, Davistown Museum MIII Collection ID# 111001T2.

Figure 56. Chisel marked “F. DICKINSON”, cast steel, 11 ½” long, Davistown Museum MIV Collection ID# 913108T42.

Figure 57. Chisel marked “G. H. TUCKER”, iron and steel blade, brass ferrule, wood handle, 15 ¾” long, Davistown Museum MIV Collection ID# 913108T46A.
The Significance of Alloy Tool Steels

While much of the focus of the Hand Tools in History publication series is on the evolution of the edge tool manufacturing capabilities of American toolmakers, edge tools are only one component of the classic period of American toolmaking. The evolution of the American factory system of mass production is based on the invention, development, and practical application of machinery to make tools, guns, and metal consumer goods and the machinery that would gradually replace hand tools in the manufacture of the second and third generations of the machinery of the Industrial Revolution. Edge tools made none of this machinery, but linger on in importance well into the 20th century as the patternmakers’ tools necessary for production of the wood patterns used for the sand molds of cast machinery and machinery components. Patternmakers’ edge tools made by the Buck Brothers and others in large quantities played a hidden but equally important role in complementing the increasing variety and sophistication of machinist measuring tools used to make the machinery of the American factory system. Drop-forged wrenches repaired these machines, including that most important component of the spread of the American factory system, the steam-powered cast iron locomotive.

The spread of the railroads across America’s landscape represented a second stage in the evolution of the American factory system, precursor to the evolution of an American consumer society, which was, in itself, the progenitor of biosphere-devouring global consumer society. The third stage in the evolution of the American factory system and the global consumer society to which it gave birth was the development of the internal combustion engine, the natural successor to the steam engine as consumer society prime mover. The evolution of the electric power grid, petrochemicals as prime mover, and a nuclear-powered global arms race follow these earlier stages in the globalization of industrial activities. All the developments in metallurgy that led to what is now a global consumer culture in crisis had roots in the evolution of sophisticated alloy steelmaking strategies. The critical ingredients in the growth of innovation and effective steelmaking strategies were the ever expanding knowledge of the use of heat, the hammer, and time to make a wide variety of variations in simple carbon-iron alloy mixtures. The periodic addition of other alloy elements to this brew is the story of a scientific revolution that unlocked the chemical and metallurgical secrets of steel- and toolmaking. There would be no classic period of American toolmaking without our Industrial Revolution, its factory system of mass production, and the evolving understanding of the use of alloys to alter and strengthen the microstructure of steel.

Machinists and mechanics tools were the dominant tool forms of the classic period of American toolmaking; they quickly replaced now irrelevant, and almost forgotten, edge tools and were the essential instruments of manual operation that gave birth to the factory
system of mass production (machinists tools) and the global spread of the internal combustion engine (mechanics tools) that followed. The essential ingredient in the toolmaking activities of these successive Industrial Revolutions – a phenomenology of tools soon to end in the phenomena of biocatastrophe – is the evolution of alloy steels. An underlying theme of the entire Hand Tools in History series is the important role alloys played in the evolution of ferrous metallurgy, its successive Industrial Revolutions, and the ultimate devolution of industrial society they engendered. As noted in Volume 6, *Steel- and Toolmaking Strategies before 1870*, the microconstituents manganese and silicon played a critical role in the empirical evolution of ferrous metallurgy technologies despite the total ignorance of both the chemical and microstructural components of this industry before the mid-19th century.

The rise of the American factory system and its growing use of machinists and mechanics tools correlate with the growing understanding of the role of alloys in hand tool and machinery production. Once toolmakers, with the help of R. F. Mushet, knew they could manipulate and improve the quality of their hand tools by the use of alloy steels, the classic period of American toolmaking was off and running. The rapid succession of the stages of industrialization and its transportation, energy production, and military systems and organizations was based on the growing awareness of the usefulness, in addition to manganese and silicon, of tungsten, cobalt, vanadium, chromium, and molybdenum. These alloys facilitated the drop-forged production of a rapidly increasing variety of hand tools, which were used to build the prototypes and components, as well as to repair, the increasingly complex manufacturing and transportation systems of global industrial society. The age of information technology and the fiber optic cables that are its prime mover are the penultimate development in the evolution of metallurgical technology.

The appearance of machines to manufacture other machines, motor vehicles for example, began rendering the now quaint but inventive designs of Victorian toolmakers obsolete. By 1930, with the help of industrialists such as Henry Ford, the classic period of American toolmaking was coming to an end. The appearance of computers, which provided the opportunity for the evolution of a global communications network, digital systems for fabricating machinery, and the technology necessary for the efficient waging of global warfare have now made hand tools of tertiary significance in the age of global consumer society. Nonetheless, a robust underground economy based on the use of hand tools in sustainable trades and horticultural activities show signs of stubborn persistence.

![Figure 58. Hub trimmer made by G. N. Stearns of Syracuse, NY, patent number 224,308, Feb. 10, 1880. Photo courtesy of Rick Floyd.](image)
as a world financial system that suddenly ran out of money in September of 2008 crashes around us.
The Classic Period of American Machinists’ Tools

The classic period of American machinists’ tool production began its first half century of growth (1850f) just as the classic period of American woodworking tools began its last half century of robust productivity. There is, in fact, an intricate relationship between these two facets of toolmaking in America. Some of the highest quality edge tools made by the Buck Brothers in Millbury, MA, were for the patternmakers building the machinery for the Darling, Brown, & Sharp Company in Providence, RI as well as for other machinery and tool manufacturers. Laroy Starrett would soon make his appearance in Athol, MA; the classic period of American machinists’ tools and the machines they built would quickly sink the wooden age. Exploration, conquest, and settlement of the new-found-lands would become the protohistory of an Industrial Revolution, which would impose itself on a biosphere-as-bank-account, culminating in the profit-driven consumer society of the 20th century.

Many of the prototypes for machinists’ and mechanics’ tools originated in European communities, especially during the German Renaissance. Gunsmithing, watch and clock making, the manufacture of optical, navigation, and surveying instruments, and the production of early machines, such as printing presses, were made possible by numerous prototypes of 19th century machinists’ tools not discussed or illustrated in these volumes. In Volume 7,
Art of the Edge Tool, brief notation is made of the beginnings of American machinists’ tool production in Bangor, Maine. As with the inventive designs of the English industrial revolutionaries, earlier European tool prototypes were quickly adapted and often cleverly redesigned by American toolmakers. When Samuel Darling moved from Bangor, Maine, a most inaccessible location, to more accessible Providence, RI, in the late 1850s, he played a key role in the rapid growth of machine tool and machinery production. The huge brick megalithic factories that soon dotted the mill towns of New England quickly spread across the industrial landscape of North America.

While the Darlings, Sharpes, and Browns are among the most well known of the mid-19th century machinist tool manufacturers, numerous other smaller individual firms were now making tools throughout New England’s river valleys, from Bangor, ME, on the Penobscot River, where the Crogan tape measure (Figure 63) was manufactured, to the many water privileges of southern New England. One of the most important and prolific manufacturers of machinist tools was the L. L. Davis Company (1867), soon to be called the Davis Level and Tool Co. (1875). Their finely made ornate cast iron levels and inclinometers are among the most sought after collectable tools produced during the second half of the 19th century. More well known is the remarkable career of Laroy Starrett who was already at work designing his famous meat
chopping machine, the hasher, patented May 23, 1865, which was produced by the Athol Machine Company, which he bought out in 1880, forming the L. S. S. Starrett Company.

The story of the evolution of the tool forms of the classic period of American toolmaking, unlike the earlier period of colonial and early American tool production, is easily retrievable as a result of the availability of a wide variety of written sources as well as a ubiquitous presence of tools from this era. Numerous 19th century tools have survived in New England workshops and reside in thousands of tool collections amassed in the 20th century by now aging, if not deceased, tool collectors. A vast literature on the design, production, and metallurgy of these machinists’ tools is easily accessible to the determined researcher. Only a few key references and texts are cited in our bibliographies on this subject.
The Final Years

The edge tools in the collection of the Davistown Museum and those in many private collections and other museums clearly document the longevity of the indigenous toolmaking industry that culminated the classic period of American toolmaking. By the time of the growth and florescence of the Pittsburgh steel industry, which included the simultaneous production of high quality crucible steel at or near Pittsburgh furnaces, Thomas Witherby (1849), the Buck Brothers (Worcester, then Millbury, MA, 1853), the long-established Underhill clan, and a half dozen other relatively large manufacturers (Douglas, Leighton, etc.) were producing the majority of larger edge tools being used by New England shipwrights. American-made crucible steel was then being produced from domestically smelted charcoal bar iron, blister steel, or refined pig iron. By 1850, due to innovations in the smelting process, English cast steel was being produced by mixing high quality Swedish charcoal-fired pig iron with scrap steel and/or traditional Swedish charcoal-smelted malleable iron. These advances in steelmaking strategies and technologies also signaled the coming decline of the age of wooden shipbuilding. Iron, then steel, coal-powered steamships were already replacing the larger transoceanic wooden ships.

The series of photographs in Figure 51 to Figure 57 illustrate the progression of American edge tool users from their dependence on imported English tools and their use of the natural and German welded steel creations of 18th century New England shipsmiths and edge toolmakers to the widespread use of New England edge toolmakers’ production of high quality tools made from either imported or domestically produced cast steel or reforged shear steel. This intermediate stage in American edge tool production was an important link between the earlier colonial edge toolmaking traditions and the later productivity of the still famed and highly sought after products of the Buck Brothers/Witherby/Underhill clan of edge toolmakers. As the classic period of American edge toolmaking drew to a close before World War II, the last
famed maker of cast steel edge tools was the James Swan Company of Seymour, CT (Figure 66 and Figure 67).

Companies, such as Greenlee and Stanley, continued production of still highly regarded edge tools after World War II, not for shipbuilding but for general woodworking. Among the most sought after edge tools of the mid-20th century are the Stanley “Everlasting” chisel sets. These tools symbolize the end of the classic period of American edge tool manufacturing, one last flourish by artisans working in the final years of three centuries of edge toolmaking by colonial and American toolmakers. A scattering of other toolmakers continued to make high quality hand tools for other trades, such as machinists (Brown & Sharpe, L.S.S. Starrett,), mechanics (Williams, Snap-On), plumbers (Rigid), sheet metal workers (Pexto), and other hand tools (Plumb, Vaughan, Simmons [Keen Kutter], Osborne), but, for our survey of edge toolmaking, the end of crucible steel production in the 1930s coincided with the end of the classic period of American toolmaking. Another half century of high quality toolmaking continued, but only a few of the modern toolmakers noted above were still in business at the end of the millennium. 1985 marked the beginning of the near total collapse of most American steel-, tool-, and machine-making industries, as well as much of the rest of America’s industrial capacity. At the time of this book’s publication, American automobile production was the latest industry to show decline. Until very recently, aircraft production was one of the industries that could be cited, along with computer and military weapon production, as a still viable American industry. The PEDE (brominated fire retardant-laced) products of Silicon Valley may be the last great creation of a post-industrial society whose only hope for survival is sustainable nondestructive information and medical care technologies. Will its bioengineers, medical magicians, and electronic elite save the world from pandemics; food and water stress; underemployment; the ongoing financial crisis, which is the legacy of a predatory shadow banking network; and the prospect of a collapse of global consumer society? Or will new nanotechnology and then picotechnology ecotoxins make the classic period of American toolmaking seem like a giant holiday before the age of chemical fallout became the age of biocatastrophe?

All major machinists’ tool manufacturers and most other tool manufacturing companies documented the tools they made, often with illustrations and photographs in the form of tool catalogs. A brief survey of the most important of these companies and a selection of their catalogs, many reproduced by the indefatigable members of the Early American
Industries Association, are contained in Appendix C. 18th and 19th Century American Toolmaker Company Files. It is hoped that some of the information in the Hand Tools in History publication series and in the individual company files in this volume will be of some interest to younger and future generations and artisans, who, by necessity, are faced with the daunting task of assuring the economic and physical survival of their families in the coming age of biocatastrophe. There is no other alternative than the creation of sustainable economies; knowledge of the history of hand tools and their use and manufacture will be a most important component of survival in the post apocalypse.

The listing of the toolmakers of what we call the classic period of tool manufacturing follows these introductory essays. The focus of these information files is two-fold. First, we have a natural inclination for documenting American toolmakers in view of the frequency of their appearance at the Liberty Tool Co. as a result of almost four decades of “tool picking” in New England workshops, cellars, and boat shops. Secondly, the special focus of the Davistown Museum collections is the edge tools utilized in America’s wooden age. Many of these edge toolmakers are, with the exception of their listing in the Early American Industry Association’s Directory of American Toolmakers (Nelson 1999), nearly forgotten. Our listings may not solve the mystery of where the steel for these essential implements of the wooden age was smelted, but at least a permanent public exhibition of their legacy can be maintained, even if in an obscure coastal New England hill country town (Liberty, Maine). This brief exploration of the industrial milieu and metallurgical history of their origins is intended to help students of American history understand the evolution of the wooden age and the brief hegemony of America’s toolmakers as a pinnacle of the achievement of a western industrial society now facing the crisis of the age of biocatastrophe.
Appendix A. Time Line

The following time line and definitions help clarify the transition from ancient steel- and toolmaking strategies and techniques to those used by New England ships smiths and shipwrights during the florescence of colonial and early American shipbuilding along the New England coast. It was the evolution of these strategies and techniques into the modern bulk steel manufacturing processes that characterizes modern industrial civilization.

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>1900 BC</td>
<td>First appearance of Chalybean steel smelted from self-fluxing iron sands of the Black Sea, until recently, often mistaken for meteorite-derived steel</td>
</tr>
<tr>
<td>1200 BC</td>
<td>Beginning of the Iron Age in the eastern Mediterranean; era of direct processed natural steel and malleable iron production</td>
</tr>
<tr>
<td>800 BC</td>
<td>First evidence of carburizing and quenching in the Near East (Barraclough 1984a)</td>
</tr>
<tr>
<td>750 BC</td>
<td>Halstadt: first Iron Age culture in Europe</td>
</tr>
<tr>
<td>700 BC</td>
<td>First appearance of malleableized cast iron in China</td>
</tr>
<tr>
<td>300 BC</td>
<td>Earliest documented crucible steel production (Wootz steel) in Muslim communities (Sherby 1995a)</td>
</tr>
<tr>
<td>200 BC</td>
<td>Iron and steel production by Celtic metallurgists in Noricum (Austria) begins supplying weapons to the Roman Republic</td>
</tr>
<tr>
<td>50 BC</td>
<td>Ancient Noricum is the main center of Roman Empire ironworks</td>
</tr>
<tr>
<td>125 AD</td>
<td>“Steel is made in China by co-fusion” (Barraclough 1984a)</td>
</tr>
<tr>
<td>150-250 AD</td>
<td>Roman armorers working in Britain possibly using steel derived from bloomery-produced cast iron to make armor (Brack 2008b)</td>
</tr>
<tr>
<td>700</td>
<td>Era of Merovingian swordsmiths utilizing currency bars transported from Austria to the Danube River by the Iron Road</td>
</tr>
<tr>
<td>1000</td>
<td>First documented Viking forge at L’Anse aux Meadows, Newfoundland</td>
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<tr>
<td>1350</td>
<td>First appearance of blast furnaces in central and northern Europe; probable beginning of bulk steel production by decarburizing cast iron</td>
</tr>
<tr>
<td>±1465</td>
<td>First appearance of blast furnaces in the Forest of Dean, England</td>
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<tr>
<td>1509</td>
<td>Natural steel made in Weald (Sussex, England) by fining cast iron (Barraclough 1984a)</td>
</tr>
<tr>
<td>1601</td>
<td>First record of the cementation process in Nuremberg, Germany (Barraclough 1984a)</td>
</tr>
<tr>
<td>Year</td>
<td>Event Description</td>
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<tr>
<td>1607</td>
<td>First shipsmith’s forge in the American colonies used at Fort St. George, Maine (Brain 2007)</td>
</tr>
<tr>
<td>1613-1617</td>
<td>Cementation process is patented in England (Barraclough 1984a); blister steel produced by carburizing wrought iron in cementation furnaces</td>
</tr>
<tr>
<td>1629-1642</td>
<td>The great migration of Puritans from England brings hundreds of trained ironworkers to New England</td>
</tr>
<tr>
<td>1646</td>
<td>First integrated ironworks established at Quincy and Saugus, Massachusetts</td>
</tr>
<tr>
<td>1652</td>
<td>James Leonard establishes the first of many southeastern Massachusetts bog iron forges on Two Mile River at Taunton, MA</td>
</tr>
<tr>
<td>1686</td>
<td>First documented use of the cementation process in England</td>
</tr>
<tr>
<td>1679</td>
<td>First of the Carver, MA, blast furnaces established at Pope’s Point</td>
</tr>
<tr>
<td>1742</td>
<td>René de Réaumur provides first European account of malleableizing cast iron</td>
</tr>
<tr>
<td>1742</td>
<td>Benjamin Huntsman adapts the ancient process of crucible steel production for his watch spring business in Sheffield, England</td>
</tr>
<tr>
<td>1763-1769</td>
<td>James Watt improves the Newcomb atmospheric engine to produce the first steam engine</td>
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<tr>
<td>1774</td>
<td>John Wilkinson invents a boring machine used to hollow out the cylindrical cavities of Watt’s steam engine pressure vessels</td>
</tr>
<tr>
<td>1775</td>
<td>Bolton and Watt begin mass production of steam engines</td>
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<tr>
<td>1784</td>
<td>Henry Cort introduces his redesigned reverbatory puddling furnace as well as groove rolling mills for producing bar iron stock from wrought and malleable iron</td>
</tr>
<tr>
<td>1798</td>
<td>Eli Whitney receives order for 10,000 guns and begins using interchangeable parts in his manufacturing process</td>
</tr>
<tr>
<td>1802-1807</td>
<td>Henry Maudslay invents and produces 45 different types of machines for mass production of ship’s blocks for the British Navy</td>
</tr>
<tr>
<td>1815-1835</td>
<td>The factory system of using interchangeable parts for clock and gun production begins making its appearance in the United States</td>
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<tr>
<td>1818</td>
<td>Thomas Blanchard designs a lathe for turning irregular gunstocks</td>
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<tr>
<td>1827</td>
<td>Collins Axe Co. established in Collinsville, CT</td>
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<tr>
<td>1828</td>
<td>Adoption of the hot air blast improves blast furnace efficiency</td>
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<tr>
<td>1831</td>
<td>First production of malleable cast iron in US by Seth Boyden (NJ)</td>
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<tr>
<td>1832</td>
<td>D. A. Barton begins making axes and edge tools in Rochester, NY</td>
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<td>Year</td>
<td>Event</td>
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<td>------------------------------------------------------------------------------------------------------</td>
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<tr>
<td>1835</td>
<td>Mass production of steel by the puddling process in Germany</td>
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<td>1835</td>
<td>First railroad is established between Boston and Worcester, MA</td>
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<td>1837</td>
<td>Collins Axe Co. begins the first production of drop-forged axes</td>
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<td>1837</td>
<td>Steam power rotary blowing engine introduced in England</td>
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<td>1839</td>
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<td>Thomas Witherby begins making edge tools in Millbury, MA</td>
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<td>1850</td>
<td>Joseph Dixon invents the graphite crucible used in steel production</td>
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<td>1851</td>
<td>J. R. Brown began the manufacture of a vernier caliper</td>
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<td>1853</td>
<td>The Buck Brothers organized the Buck Brothers Company in Rochester, NY, then moved to Worcester, MA</td>
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<td></td>
<td>(1856) and Millbury, MA (1864)</td>
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<td>1856</td>
<td>Gasoline is first distilled at Watertown, MA</td>
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<td>1856</td>
<td>Bessemer announces his invention of a new bulk process steel production technique at Cheltenham,</td>
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<td>R. F. Mushet invents “Self Hard”, the first commercial alloy steel</td>
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<td>1868</td>
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<td>1879</td>
<td>Sidney Gilchrist Thomas invents basic steelmaking</td>
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<td>1906</td>
<td>First electric arc furnace is installed in Sheffield, England</td>
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<td>1913</td>
<td>Harry Brearley invents stainless steel</td>
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<td>1920-1930</td>
<td>Gradual end to crucible steel production in England and America</td>
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<tr>
<td>1939</td>
<td>Bain’s (1939) first comprehensive elucidation of the microstructural complexities that result from the heat treatment of austenized steel</td>
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Appendix B. Definitions: Types of Iron and Steel

The definitions reprinted below are an excerpt from *Handbook for Ironmongers: A Glossary of Ferrous Metallurgy Terms* (Brack 2008c), Volume 11 in the *Hand Tools in History* series. The beginning of the classic period of American toolmaking is characterized by the overlap of 16th, 17th, and 18th century steel- and toolmaking strategies and techniques with those that characterized the advent of the factory system of manufacturing and the appearance of bulk steelmaking technologies after 1865.

**Carbon content of ferrous metals:** Sources vary widely in defining the *minimum* carbon content of steel, which ranges from 0.1 to 0.5% carbon. Please note the caveats that follow the definitions.*

**Wrought iron:** 0.01 – 0.08% carbon content (cc); soft, malleable, ductile, corrosion-resistant, and containing significant amounts of siliceous slag in bloomery produced wrought iron, with less slag in blast-furnace-derived, puddled wrought iron. Wrought iron is often noted as having ≤ 0.03% carbon content.

**Malleable iron 1):** 0.08 – 0.2% carbon content (cc); malleable and ductile, but harder and more durable than wrought iron; also containing significant amounts of siliceous slag in bloomery produced malleable iron, with less slag in blast furnace derived, puddled malleable iron.

**Malleable iron 2):** > 0.2 – 0.5% carbon content (cc). Prior to the advent of bulk-processed low carbon steel (1870), iron containing the same amount of carbon as today’s “low carbon steel” (see below) was called “malleable iron.” Its siliceous slag content gave it toughness and ductility, qualities not present in modern low carbon steel, hence its name. Before 1870, a wide variety of common hand and garden tools and hardware were made from malleable iron with a significantly higher carbon content than wrought iron.

**Natural steel:** 0.2% carbon content or greater. Natural steel containing less than 0.5% cc is synonymous with the term malleable iron. Natural steel is produced only by direct process bloomery smelting and was the primary form of steel produced in Europe from the early Iron Age to the appearance of the blast furnace (1350). Small quantities of natural steel continued to be produced by bloomsmiths, especially in the bog iron furnaces of colonial New England and Appalachia until the late 19th century.

**German steel:** 0.2% carbon content or greater. Steel made from the decarburizing of cast iron in finery furnaces, as, for example, at the Saugus Ironworks after 1646. The strategy of making German steel dominated European steel production between 1400 and the advent of bulk process steel technologies, hence the term “continental method” as an alternative name for this type of steel production.

**Wrought steel:** 0.2 – 0.5% carbon content (cc); another name for malleable iron. Wrought steel was made from iron bar stock and was deliberately carburized during
the fining process to make steel tools that are still commonplace today, such as the ubiquitous blacksmith’s leg vise.

**Low carbon steel:** 0.2 – 0.5% carbon content (cc). Less malleable and ductile than wrought and malleable iron due to its lack of ferrosilicate, low carbon steel is harder and more durable than either and can be only slightly hardened by quenching. Some recent authors (Sherby 1995a) define low carbon steel as having 0.1% cc. Produced after 1870 as bulk process steel (e.g. by the Bessemer process), low carbon steel has all its siliceous slag content removed by oxidation. Before the advent of bulk process steel production, there was no such term as “low carbon steel.” All iron that could not be hardened by quenching (< 0.5% cc) was known as “malleable” iron, more recently often referred to as “wrought” iron.

**Tool steel:** 0.5 – 2.0% carbon content (cc). Tool steel has the unique characteristic that it can be hardened by quenching, which then requires tempering to alleviate its brittleness. Increasing carbon content decreases the malleability of steel. If containing >1.5% carbon content, steel is not malleable, and, thus, not forgeable at any temperature. Such steel is now called ultra high carbon steel (UHCS). Palmer, in *Tool Steel Simplified*, provides this generic description of tool steel: “Any steel that is used for the working parts of tools” (Palmer 1937, 10).

**Ultra high carbon steel (UHCS):** 1.5 – 2.5% carbon content (cc); a modern form of hardened steel characterized by superplasticity at high temperatures and used in industrial applications, such as jet engine turbine manufacturing, where extreme strength, durability, and exact alloy content are necessary. Powdered metallurgy technology is frequently used to make UHCS.

**Cast iron:** 2.0 – 4.5% carbon content (cc); hard and brittle; not machinable unless annealed to produce malleable cast iron.

*Caveats to carbon content of ferrous metals*

- Both modern and antiquarian sources vary widely in their definitions of wrought iron, malleable iron, and steel. Modern sources variously define steel and/or low carbon steel as iron having a carbon content greater than 0.08%, 0.1%, 0.2%, and 0.3%.

- Before the advent of bulk process steel industries (1870), which produced huge quantities of low carbon steel that could have a carbon content in the range of 0.08 – 0.5%, iron having a carbon content of < 0.5% cc was called malleable iron. Other generic terms for iron that could not be hardened by quenching (> 0.5% cc) were bar iron, wrought iron, and merchant bar.

- The 1911 edition of the *Encyclopedia Britannica* defines wrought iron as containing less than 0.3% carbon, cast iron as having 2.2% or more carbon content and steel as having an intermediate carbon content > 0.3% and < 2.2%.

- Gordon (1996) defines steel as having a carbon content > 0.2%. This cutoff point is probably the most appropriate to use in defining steel, but also poses a problem since most sources define wrought iron as having < 0.08% cc; therefore, leading to
the confusion of iron with a carbon content $> 0.08\%$ but $< 0.2\%$ as being either wrought iron, low carbon steel or an orphan form of undefined iron.

In view of the long tradition of the use of the term malleable iron, this glossary resurrects the use of that term to cover this gray area of the carbon content of ferrous metals.
Appendix C. 18th and 19th Century American Toolmaker Company Files

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Introduction

A number of observations need to be made about the following toolmaker company files, the most important of which is the fact that our information files focus on the most important and productive 19th century and early 20th century toolmakers. Surviving examples of tools made by these companies have made, and continue to make, frequent appearances at the tool stores of the Jonesport Wood Co., Inc., including the Liberty Tool Company, and are highly sought after by the many customers still seeking these treasures from America’s industrial past. Some of the most commonly found marks in New England workshops are noted as frequently found by the Liberty Tool Company (FFLTC) of Liberty, Maine, and its affiliated stores in Jonesport (1970-83), Hulls Cove Tool Barn in Hulls Cove (1983f.), and Captain Tinkham’s Emporium in Searsport (1996f.)

The second note of importance is these files are not a representative selection of all American toolmakers but, rather, a manifestation of our physical location in the Norumbega backcountry of coastal Maine and our focus on the recovery of the edge tools made in New England for its vigorous shipbuilding industry. Numerous other information sources provide much more data on America’s numerous toolmakers than room allows in this brief appendix. In particular, the Directory of American Toolmakers (Nelson 1999) is
the most essential and comprehensive source of data. Many of our file descriptions are
direct quotations from this indispensible text. Our observations or those of others follow
this citation. A digital edition of the Directory of American Toolmakers was issued in
2007. The files in this appendix contain only a small percentage of the total citations in
that text. As noted, our emphasis is on New England toolmakers whose tools have been
used in New England shipyards and/or are frequently recycled by the Liberty Tool Co.
for the many trades people and artisans who are our customers. Emil Pollak’s (2001) A
Guide to the Makers of American Wooden Planes (fourth edition revised by Thomas L.
Elliott) is the definitive source of information on American wooden planemakers, only a
few of which have been listed in these files. The same observation may be made about
Roger Smith’s (1981, 1992) two volume Patented Transitional & Metallic Planes in
America 1827 – 1927 (PTAMPIAI and II). Our focus instead is on the most important
dge toolmakers working in New England, particularly those whose tools are in the
Davistown Museum collection or have been frequently recycled to New England
woodworkers during the last four decades. Also excluded from these information files are
most of the Maine and Canadian toolmakers listed in our Hand Tools in History
series, Volume 10, 5th edition of the Registry of Maine Toolmakers (Brack 2008d). Despite these
omissions we hope the reader will find these files a useful source of information about
toolmakers working in New England and elsewhere in the 19th and early 20th centuries.

Many of the catalogs republished in the 1970s by members of the Early American
Industry Association or donated by Davistown Museum benefactors, especially those in
the Elliott Sayward collection, are listed and, in some cases, illustrated in this Appendix
under the company file names that published them. It is important for the reader to note
that many other catalogs and all the important tool reference books used by the
Davistown Museum and the Liberty Tool Company are listed in the bibliographies which
follow. Most catalogs cited in these company files are present in the museum collection
and available for perusal by visiting collectors, scholars, students, or readers. The
museum’s Center for the Study of Early Tools libraries, which contain these catalogs, are
open to the public by appointment or chance. Please contact the museum
(curator@davistownmuseum.org) to make an appointment if you wish to peruse our
extensive collection of books on the history of metallurgy and the florescence of
American toolmakers.

It should also be noted much more information about the individual companies listed in
these files is available in the bibliographic citations, which follow this appendix, both as a
component of the discussion of the evolution of the American factory system, and also as
specific companies documented by such writers as Kenneth Roberts, Roger K. Smith, and
the many other scholars and collectors who collectively have made this publication a
viable endeavor. Our toolmaker company information files as well as our Hand Tools in
History publication series are always being updated and may be accessed online at www.davistownmuseum.org/TDMtoolInfo18_19century.html.

The company files appendix also contains occasional photographs of representative tools, most of which are in the Davistown Museum collection, and are identified by their name, historic context, and museum identification number, which allows interested readers to look up more information about the particular tool in the museum’s tool collection catalog (Volume 9: An Archaeology of Tools, http://www.davistownmuseum.org/publications/volume9.html). Interested readers should also note our peculiar delineation of the historic periods of the state of Maine, which we use to catalog incoming tools. The unique history of Maine was significantly influenced by the French and Indian Wars, which prevented settlement of large areas of Maine from the beginning of the King Philip’s War in 1676 until the Treaty of Paris in 1763 finally established Maine’s current borders. This note on the manner in which we organize our tool collections may help visiting readers from southern New England and other locations understand the abbreviations we use throughout the publication series, which are as follows.

Tools in the Davistown Museum collections are assigned to the following time periods, which are abbreviated as:

- MI: Historic Maritime I (1607-1676): The First Colonial Dominion
- MII: Historic Maritime II (1720-1800): The Second Colonial Dominion & the Early Republic
- MIV: Historic Maritime IV (1840-1865): The Early Industrial Revolution
- IR: The Industrial Revolution (1865f.)

The innovative creations of the classic period of American toolmaking are expressed by the tools themselves. Their iconography symbolizes the vigorous toolmaking, city building, forest depleting, smoke belching, carbon dioxide emitting, pyrotechnic society that designed some of the niftiest hand tools ever made. The following companies made hand tools in America; in so doing they helped build America. They made convivial tools, not the tools of warfare. These are not, in fact, the tools that created the age of chemical fallout. The age of polychlorinated biphenyls and other chemical fallout ecotoxins followed the classic period of America’s toolmaking; both are now in the past.
Adams, Ezekiel
W. Boscawen and Hopkinton, New Hampshire, 1849-1867
Tool Types: Axes and Edge Tools
Remarks: This is thought to be the Adams of ADAMS & ROWELL (1846-1847). His locations were determined by censuses and directories from the period (Nelson 1999).

Aiken, Herrick
Dracut and Brighton, Massachusetts and Franklin, New Hampshire, 1823 – 1864
Tool Types: Awls, Cutlery, Handles, Knives, Leather Tools, Other, Saw Tools, and Tool Boxes
Identifying Marks: H. AIKEN’S/PATENT
Remarks: His primary products were saw sets and awls but he also had patents on a number of other items including leatherworking tools, a handle and a toolbox. His business was taken over by his son, Francis Herrick Aiken (Nelson 1999).

Allen, A. B. & Co.
New York City, New York, 1848-1853?
Tool Types: Agricultural Implements
Identifying Marks: A.B.ALLEN & CO/ &c
Remarks: While the DATM lists A.B. Allen as existing only in 1848 (Nelson 1999), the catalog in the Davistown Museum library is from 1849.
http://www.davistownmuseum.org/bioAllenAB.html

Almond Mfg. Co.
Fitchburg and Ashburnham, Massachusetts, 1915-?
Tool Types: Bevels, Levels, Machinist Tools, Rules, and Screwdrivers
Identifying Marks: SAWYER TOOL MFG. CO./ASHBURNHAM MASS (sometimes without the city/state)
Remarks: Almond Mfg. Co. was Sawyer Tool Co. prior to 1915. The “Mfg.” in the title was not always used. See Sawyer Tool Co (Nelson 1999).

Almond & White
Newark, New Jersey, 1855-1856-?
Tool Types: Edge Tools
Identifying Marks: SAWYER TOOL MFG. CO./ASHBURNHAM MASS (sometimes without the city/state)
Remarks: The tools attributed to these makers could be either John White’s or his son William White’s (Nelson 1999).

Ames Shovel and Tool Co.
Ames, John
West Bridgewater, Massachusetts, -1777-1805
Ames, Oliver
Easton, Massachusetts, 1803-1844
Ames & Sons, Oliver
Easton, Massachusetts, 1844-1901
Tool Types: Shovels
Identifying Marks: O. Ames
Remarks: John Ames of W. Bridgewater, MA (d. 1805) made shovels from 1777 - 1805. Oliver Ames was John Ames youngest son and inherited his forge and land. Oliver was born in W. Bridgewater, April 13, 1779. He moved to Easton, MA in 1803. He ran two businesses after his father died. By 1807 he was in a hoe making partnership with Asa Waters (Ames, Waters & Co.). In 1807 he moved to Plymouth, MA and managed the shovel making plant of Plymouth Iron Works. In 1814 he moved back to Easton and expanded his operation there to South Braintree, MA. In 1844 he turned the management of the business over to his sons Oakes and Oliver and the name changed to Oliver Ames & Sons. Oliver Ames & Sons operated in Easton from 1844 - 1901. In 1901 they were reorganized as Ames Shovel and Tool Co. and merged with H. M. Myers Shovel Co., T. Rowland’s Sons, Wright Shovel Co. and Elwood Steel Plant. In 1952 the name was changed to O. Ames Co. Brands used before 1900 include T.M. Porter and James Adams. The Oliver Ames Plow Co. was an affiliated company after 1860.
Links: http://www.stonehill.edu/sihc/Pictures/shovels.htm
http://www.stonehill.edu/sihc/Tofias/
http://www.nps.gov/gosp/research/ames.html

Appleton, Thomas L.
Boston and Chelsea, Massachusetts, 1878-1892
Tool Types: Wood Planes
Identifying Marks: THoSL APPLETON/BOSTON (2) THoSL APPLETON/CHELSEA (name curved)
Remarks: Thomas Appleton was one of New England’s most prolific manufacturers of hand planes, especially tongue and groove planes (FFLTC).

Armstrong Mfg. Co., F.
Bridgeport, Connecticut, 1875-1922
Tool Types: Dies, Taps, Wrenches, and Others
Identifying Marks: F. Armstrong/Bridgeport, Ct.
Remarks: Patents include April 6, 1875 for taps and dies and November 19, 1885 for a pipe cutter. His name and the company name are used interchangeably in the catalogs (Nelson 1999).

Arrowmammett Works
Middletown, Connecticut, 1841-1860
Tool Types: Wood Planes
Identifying Marks: ARROWMAMMETT/WORKS/MIDDLETOWN (top line curved); ARROWMAMMETT WORKS/MIDDLETOWN (top line curved)
Remarks: This is the plant of the Baldwin Tool Co., which used the name as a trade name (Nelson 1999).
Atha Tool Co.
Newark, New Jersey, 1884-1913
**Tool Types:** Blacksmithing Tools, Hammers, Railroad Tools, Stone Working Tools, Farrier Tools, and Mining Tools
**Identifying Marks:** ATHA TOOL CO.; ATHA TOOL CO. (in a horseshoe figure with an A in the center), A.T.CO.
**Remarks:** There is some contradiction concerning the ontogeny of this particular company—contention exists concerning whether or not it was formerly Newark Steel Works. Benjamin Atha, who was part of the Newark Steel Works, incorporated the company in 1891. It may have been established as early as 1875. They bought out Emmett Hammer Co. in 1884, Hartford Hammer Co. in 1892, Eyeless Tool Co. in 1897, Clark Edge Tool Works in 1897, Buffalo Hammer Co. in 1898, and Yerkes Tool Co. in 1898. Finally, in 1913, Stanley Rule & Level Co. in 1913 bought them out (Nelson 1999). Stanley Rule & Level Co. retained the classic “horseshoe” logo after incorporating Atha Tool Co. on some of their products.

Athol Machine Co.
Athol Depot, Massachusetts, 1868-1920
**Tool Types:** Calipers, Dividers, Levels, Vises, Wrenches, and Other Household Tools
**Identifying Marks:** Variations of the name, city and state (variations in capitalization and abbreviation), sometimes with a patent date; A.M.CO.
**Remarks:** L.S. Starrett founded this company with a number of other partners in 1868, left in 1878, and bought it up in 1905. It produced a number of his patented items including food choppers, presses, washing machines and other items from 1865 to 1873. They also acquired (or possibly founded) the Standard Tool Co. (Nelson 1999). See Laroy S. Starrett Co.

Atkins & Co., Elias C.
Indianapolis, Indiana, and Hamilton, Ontario, 1857-1952
**Tool Types:** Axes, Files, Hammers, Knives, Saws and Saw Accessories, and Shaves
**Identifying Marks:** Variations of E.C. ATKINS & CO./INDIANAPOLIS, IND., sometimes with patent marks or different cities.
**Remarks:** Atkins learned to make saws from an uncle in Connecticut at 23. His business grew and branched out with sales divisions in a number of cities, including Chicago. Brands used included SILVER STEEL, PEERLESS, VARIETY, STERLING, EUREKA, PERFECTION, AAA (Atkins Always Ahead), REX, HEMLOCK KING, VICTOR, COMMON, TYEE, HOWATSON, REDWOOD KING, CEDAR KING, DEXTER, DIAMOND, TUTTLE, AMERICAN, THE KING, FLIPPEROR, CHIEF, T.R. ROBERTS, DAMASKENED, FOUR HUNDRED, SPEED KING, JUNIOR MECHANIC, STANDARD, SUPERIOR, RELIABLE, A1, CHIEF BUCKEYE, THE WINNER and LONE STAR. They also distributed tools from (and possibly bought out) Moore Bros., Ajax Mfg. Co., Cross & Speirs, and E.B. Rich & Son and owned numerous patents. The Indianapolis plant was called Sheffield Saw Works and the Hamilton plant was the Hamilton Saw Works. They were eventually bought out by Borg-Warner Corp in 1952, then by Nicholson File Co. in 1966, and by Cooper Industries in 1972 (Nelson 1999).
Auburn Tool Co.
Auburn, New York, 1864-1893

Tool Types: Clamps, Handles, Plane Irons, Rules, and Wood Planes

Identifying Marks: Variations of AUBURN TOOL CO./AUBURN N.Y., including one with two straight lines or the top line curved with a thistle or star under it, THISTLE

Remarks: This company succeeded Casey, Clark & Co. with Casey as its president, then became the Ohio Tool Co. in 1893. Other names under which they produced included New York Tool Co., Owasco Tool Co., Genesee Tool Co., Ensenore and Star. Some of their products were produced using Auburn state prison labor. Of particular interest is a “Phelps Combination Plane,” a plane with a level vial and rule built in, possibly patented to a Frank Phelps of Auburn on February 9, 1892. (Nelson 1999) Auburn Tool Co. was part of a collective effort between H. Chapin’s Son, Greenfield Tool Co. and Sandusky Tool Co. called the Plane Maker’s Association, organized circa 1858 to fix prices. Thus, the prices in the pictured catalog pages (from 1869) were agreed upon between the leading plane manufacturers at the time. In 1866, Auburn Tool Co. lost their prison labor contract, outbid by J.M. Easterly & Co. which later became A. Howland & Co. Upon the dissolution of A. Howland Co. in 1874, Auburn Tool Co. resumed the use of prison labor. On November 14, 1893, they merged with Ohio Tool Company of Columbus, OH. While plane production continued in Auburn, it was under the Ohio Tool Company’s name.

References:

Links: http://www.davistownmuseum.org/bioAuburn.html

Backus, Quimby S.
Winchedon, Millers Falls, and Holyoke, MA and New York, NY, 1868-1881

Tool Types: Bits, Braces, Drill Chucks, Wrenches, and Drills

Remarks: Backus was born in 1838 in Bridgewater, VT, and died Dec. 29, 1912. He lived several places in Massachusetts and had an office at 82 Chambers St, NY for marketing his boring tools. He had patents 132,790 and 132,791 (Nov. 5, 1872) and 204,416 (June 4, 1878). Millers Falls Co. claimed patent infringement and Backus had to stop producing the 1872 chuck design. (Schoenky Summer 2013). Patent 216,776 (June 24, 1879) was for a bit-stock wrench improvement, patent 233,464 (Oct. 19, 1880) for a brace, patent 234,517 (Nov. 16, 1880) and patent 250,047 (Nov. 29, 1880) for a bit-stock improvement. He had at least 30 patents. (Schoenky Fall 2013).

The Bailey Tool Co.
Selden A. Bailey (also the Bailey Wringing Machine Co.)
Woonsocket, Rhode Island, and New York City, 1872-1880

Tool Types: Metal Planes, Shaves, Washing Machines, and Other Household Tools

Remarks: Selden A. Bailey, born September 12, 1821, made a variety of hand tools under a number of patents from 1871 to 1875. Two of these patents were co-owned by a Joseph R. Bailey of Woonsocket but Joseph’s significance is unknown. The Woonsocket office also sold washing and wringing machines under the EXCELSIOR brand. Stanley Rule & Level Co. bought them out in
1880 and Selden died in 1903 (Nelson 1999). It’s important to note that Selden Bailey was not related to Leonard Bailey (see below) despite the fact that both had a relationship with the Stanley Rule & Level Co. Roger K. Smith provides detailed information about the history of all the makers of patented transitional and metallic planes in his definitive two volume survey of American steel planemakers cited below. The Smith texts are replete with detailed black and white and color photographs of the most important planes made during the classic period of American toolmaking.

References:

Bailey, Leonard

Hartford, Connecticut, 1855-1884

**Tool Types:** Bevels, Household Tools, Metal Planes, and Shaves

**Identifying Marks:** Tools marked *BAILEY* were made by Stanley (or one of his other companies) and the name indicates Bailey’s enduring fame as the designer and patentee of many of the basic frog and cap irons of the modern hand plane.

**Remarks:** Bailey, a prolific toolmaker, was born May 8th, 1825 and died February 5th, 1905. He was granted numerous patents, especially for metal plane components, and worked for Stanley Rule & Level Co. from 1869 to 1875, a time during which they bought out two other companies, resulting in his mark being on numerous tools (Nelson 1999). Until May of 1869, Bailey was the owner and proprietor of his own company and factory, Bailey, Chaney & Co., which he sold to Stanley Rule & Co. See: Bailey, Chaney & Co. and Stanley Co. Smith provides a detailed survey of Leonard Bailey’s tool designs as well as a detailed chronological listing of “events as related to Leonard Bailey’s manufacturing activities after he left Boston.” (Smith 1981, 52-4) and the Bailey Chaney Co. ceased operation.

References:

Links: http://www.supertool.com/StanleyBG/stan0a.html
http://web.mit.edu/invent/iow/bailey.html
http://www.pasttools.org/articles/Bailey_patent_model.htm
http://www.davistownmuseum.org/bioBaily.html

Bailey, Chaney & Co.

Boston, Massachusetts, 1867-1869
Tool Types: Metal Planes and Shaves

Remarks: Leonard Bailey produced planes, scrapers, and spoke shaves for a short time prior to being bought out by Stanley Rule & Level Co. in 1869 (Nelson 1999). Bailey’s split frame patented iron jack and fore planes are among the most sought after of all specimens of planes made during the classic period of American tool manufacturing. Excellent color and black and white photographs of Leonard Bailey’s first planes produced by Bailey, Chaney & Co. can be found in Smith (1981) on pages 40, 42, 44, 45, and 46.

References:

**Baldwin Tool Co.**
**Middleton, CT, 1841-1857**

Tool Types: Carpenters’ Tools, Knives, Plane Irons, Wood Planes, Joiners, Tool Boxes, and Other

Identifying Marks: BALDWIN/TOOL CO. (curved top line), BALDWIN TOOL CO./MADE FROM/BUTCHERS/CAST STEEL/WARRANTED (top and bottom lines curve outward), ARROWMAMMETT WORKS/MIDDLETON

Remarks: Austin Baldwin founded this company as the Arrowmammett Works, which was a prolific manufacturer of planes, including a circa 1845 crown molding plane recently recovered by the Liberty Tool Co. They were a prolific manufacturer of wooden molding planes (FFLTC). They were bought out in 1857 by The Globe Mfg. Co. and began to produce only plane irons (Nelson 1999).

**Baldwin, Samuel (& Co.)**
**Bennington, New Hampshire, 1826-1870**

Tool Types: Axes, Cutlery, Knives, Leather Tools, Screwdrivers, and Shaves

Identifying Marks: S BALDWIN

Remarks: Samuel Baldwin was a specialized blacksmith who, in addition to working under his own name, made tools for Baldwin & Whittmore from 1853 to 1855 and was the principal of this company from 1856 to 1857 (Nelson 1999).

**Bancroft & Co., W. F.**
**Worcester, MA, 1870-**

Tool Types: Spinning Machinery, Lathes, Planers, and Special Machinery

Remarks: Organized by Kent & Bancroft, later sold to John Wehinger and afterwards combined with N. A. Lombard & Co.


**Bangs, Rufus W.**
**North Bennington, Vermont, 1831-1852**

Tool Types: Squares

Identifying Marks: R.W. BAN___

Remarks: Rufus W. Bangs and Stebbins D. Walbridge patented a method of rolling steel which became a widely utilized method for producing squares. His shop was flooded in 1852 and his assets were taken over by Hawks, Loomis & Co. (Nelson 1999).
J. & E. R. Barbour
Portland, Maine, 1801-1891?
Tool Types: Wrenches, Mechanical Rubber Goods, Engineer’s Specialties, Steamboat, Railroad and Mill Supplies, Steam Machinery and Appliances, Boots and Shoes, and Others
Identifying Marks: Patent dates
Remarks: The DATM lists their data as confusing and notes the mention of a wrench for sale in an E.H. Barbour catalog (Nelson 1999). While the DATM lists the company as existing in 1891, a catalog in the Davistown Museum collection gives a date of establishment as 1801, noting they have “90 years in business. J. & E. R. Barbour, Engineering and Rubber Goods, Lubricating Oils, &c., Nos. 8 and 10 Exchange Street.”
References:
Links: http://www.davistownmuseum.org/bioBarbour.html

Bartlett & Young
Portsmouth, New Hampshire, circa 1812
Tool Types: Adzes, Axes, Chisels, Draw Knives, Hatchets, Plane Irons, and Stone-working Tools
Remarks: This was probably the collaborative name of blacksmiths James Bartlett and Asa Young (Nelson 1999).

Barton Tool Co., David R.
Rochester, New York, 1832-1874
Tool Types: Adzes, Axes, Carpenter Tools, Chisels, Cooper Tools, Draw Knives, Hammers, Hatchets, Picks, Tinsmith Tools, and Wood Planes
Identifying Marks: “D.R. BARTON”, sometimes with “& CO.” and “ROCHESTER”, sometimes with “N.Y.”, sometimes with “1832” and a star, sometimes with line, circle, or half-circle marks
Remarks: David Barton was a partner in many different toolmaking companies, all in Rochester, New York. He was born on July 4, 1805 and died April 26, 1875. The Barton Tool Company group was one of the most prolific manufacturers of hand tools outside of New England during the middle decades of the 19th century. Great quantities of Barton tools were used by settlers migrating to the western states; Barton tools make a frequent appearance in New England tool chests and collections. Barton tools are often easily identified by the ubiquitous mark “1832”, which was stamped on their tools throughout the 19th century. Below is a chronological list of D. R. Barton’s companies:

Barton & Guild: dates not known
Tool Types: Edge Tools
Remarks: This is probably one of the short lived partnerships that David R. Barton was in before forming D. R. Barton & Co. D. R. Barton supposedly took over Henry W. Stager and Charles Guild’s Stager & Guild in 1832. It’s possible that Charles Guild is the Guild of this partnership.

Barton & Babcock: 1832 - 1834
Tool Types: Axes and Edge Tools
Identifying Marks: D.R. BARTON // J.H. BABCOCK.
Remarks: D. R. Barton & Co. marks 1832 on some tools as if it was their starting date, which is based on Barton’s involvement in this partnership. John H. Babcock later worked as a blacksmith for the D. R. Barton & Co.

Barton & Smith: 1842
Tool Types: Bits, Edge Tools, and Wooden Planes
Identifying Marks: BARTON & / SMITH / ROCHESTER (with both S’s backwards)
BARTON & SMITH / ROCHESTER.
Remarks: This was probably a partnership with Albert H. Smith.

Barton & Belden: -1844-1848-
Tool Types: Axes, Cooper’s Tools, Drawknives, and Edge Tools
Identifying Marks: D.R. BARTON / I. BELDEN / ROCHESTER
Remarks: This company consisted of David R. Barton and Ira Belden. Belden was also a Rochester hardware dealer operating as Ira Belden & Co. It is not clear if that business succeeded this partnership or was concurrent with it. An English toolmaker, Ash, was so impressed with Barton & Belden tools that he copied them and marked the copies “Rochester Pattern.”

David R. Barton & Co.: 1849 - 1874.
Tool Types: Adzes, Axes, Carpenter Tools, Chisels, Cooper’s Tools, Drawknives, Hammers, Hatchets, Picks, Tinsmith Tools, and Wooden Planes
Identifying Marks: D. R. BARTON (with and without the CO.) and ROCHESTER (with and without the N.Y.). Marks include “1832” and on some a star figure. There was also a variety of shapes used with the lettering: straight line, oval, and half-circle.
Remarks: Two partners, William R. Mack and Royal L. Mack, took the company over in 1874 and renamed it Mack & Co. They continued to use the original name as a trademark until 1923. See the entry on Mack.

Barton & Milliner: 1863
Tool Types: Edge Tools
Remarks: This partnership was formed while Barton was with D. R. Barton & Co. The relationship between the two companies is not clear. Joel P. Milliner (or Millener) had earlier had his own edge tool business in Canada (Joel P. Millener & Co.).

David R. Barton Tool Co.: 1874 - 1880.
Tool Types: Augers, Axes, Bits, Cooper’s Tools, Edge Tools, and Wooden Planes
Identifying Marks: D.R. BARTON / 1832 / ROCHESTER N.Y. (in an oval shape with top and bottom lines curved); D. R. BARTON TOOL CO.
Remarks: David R. Barton and his sons, Charles and Edward, formed this company after D. R. Barton & Co. was taken over by the Macks. It was also bought out in 1880 by Mack & Co. who again continued to use the marks. So the mark D.R. BARTON / 1832 / ROCHESTER N.Y. was used by D. R. Barton & Co., D. R. Barton Tool Co. and Mack & Co. (Nelson 1999).


**Links:** [http://www.davistownmuseum.org/bioBarton.html](http://www.davistownmuseum.org/bioBarton.html) -- A short history submitted by James Stewart

### Barton & Whipple

**Vermont, 1830**

**Tool Types:** Squares

**Identifying Marks:** B & W

**Remarks:** Gardner Barton and Stephen Whipple made Hawes patent squares in the Bennington/Shaftsbury area of Vermont (Nelson 1999).

### Basset, John

**Norton and Taunton, Massachusetts, circa 1760**

**Tool Types:** Wood Planes

**Identifying Marks:** IOHN-BASSET/OF-NORTON, IOHN-BASSET

**Remarks:** Tools with these marks were possibly made by John Basset, a joiner from Taunton and Norton, father of Elijah Bassett (with two Ts), another possible planemaker (Nelson 1999).

### Bates Mfg. Co.

**Orange, Massachusetts, circa 1870**

**Tool Types:** Augers and Bits

**Remarks:** Unrelated to another Bates Mfg. Co. of Orange, New Jersey. One of the most prolific manufacturers of wood bits (Nelson 1999).

### Baxter Wrench Co.

**Newark, New Jersey, and New York City, 1868-1883-?**

**Tool Types:** Wrenches

**Remarks:** This company was one of a number making wrenches patented by William Baxter. Patent dates specific to this company include those issued on February 12, 1856, December 1, 1858, February 9, 1859, February 12, 1870, and July 17, 1883. The New York City address was solely a sales office. Baxter himself lived from November 22, 1822 to October 17, 1884 (Nelson 1999).


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**Beatty & Son Co., William M.**

**Chester, Pennsylvania, 1839-1882**

**Tool Types:** Axes, Chisels, Edge Tools, and Household Tools

**Identifying Marks:** Variations of “BEATTY & SON” with nothing, “W.,” or “WM.” before it and nothing, “CHESTER,” “CHESTER, PA” or “MEDIA” after/below it. Figures of a cow, eagle, or the date “1806” occasionally appear.

**Remarks:** The “sons” referred to in “W.M. Beatty & Sons” is contradictory to the singular “&
SON” of their maker’s mark. This could refer to John C. Beatty who later joined William P. Beatty. While “& Sons” was added to the name in 1839, John doesn’t appear to have joined until 1840. While directories show them in Philadelphia and Oakdale, PA in 1870, Media, PA has been found on tools from that period. Due to John C.’s frequent moves, it is difficult to pin down exactly when the company’s transition from Springfield, PA to Chester, PA took place. John C. left in 1850, placing William P. Beatty and Samuel Ogden in charge until 1860 when John returned and bought out Ogden. John left again in 1867 to be succeeded by Thomas W. Woodward who was succeeded by another William H. Beatty (possibly a son or brother to John C.). In 1875, John C. was the proprietor of Chester Edge Tool Works and referred to as “the surviving partner of Beatty & Sons,” regardless of whether this signifies that the two were the same (Nelson 1999). One of America’s most prolific edge toolmakers, including broad axes used by shipwrights.

http://www.davistownmuseum.org/bioBeatyson.html

Belcher & Bros.
Camptown, New Jersey, and New York City, circa 1843-1852
Tool Types: Rules, Bevels, and Squares
Identifying Marks: BELCHER/BROS.&CO/NEW YORK, T & W BELCHER MAKERS (star at beginning and end), BELCHER BROTHER MAKERS NEW YORK
Remarks: This name and variations thereof (including “Belcher Bros. & Co.” and “T.&W. Belcher”) were used by Thomas, William, and/or Charles Belcher, all brothers. Around 1843, this company moved its factory to Camptown but continued to sell their tools out of New York (Nelson 1999).

Belden Machine Co.
New Haven, Connecticut, circa 1885
Tool Types: Hammers, Other Stone-working Tools, and Wrenches
Identifying Marks: Belden Machine Co., “DEN”
Remarks: This company manufactured a nail puller, a slaters’ hammer, a slaters’ stake, and an adjustable wrench with an 1885 patent mark (Nelson 1999). Amongst slate roofers, Belden is famous for their slate hammers. The Davistown Museum has a Belden slate hammer in their collection.
http://www.davistownmuseum.org/bioBelden.html

Bemis & Call Co.
Springfield, Massachusetts, 1844-1930
Tool Types: Calipers, Dividers, Knives, Saw Tools, Scales, and Wrenches
Identifying Marks: Variations of the company name with the city, state and patent names and dates; B&W surrounded by a circle
Remarks: Stephen C. Bemis of S.C. Bemis & Co. and Amos Call formed this company and changed its name to
Bemis & Call Hardware & Tool Co. in 1855. They made wrenches with patents belonging to A.D. Briggs on April 8, 1853, William C. Bemis (Stephen’s son) on December 2, 1873, and calipers patented May 28, 1861 by James H. Call (Nelson 1999). One of New England’s most prolific toolmakers.

Links: http://www.alloy-artifacts.com/other-makers.html#b+c

Bennett, N.
Middleboro, Massachusetts, circa 1775-1777
Tool Types: Plane Irons or Scientific Instruments
Identifying Marks: N. BENNETT/MIDDLEBORO, MA.; N. BENNETT
Remarks: There are contradictory reports of an N. Bennett producing tools in Middleboro: The first was a smith making plane irons for E. Clark and gives Nebediah as the first name; the second reports a Nehemiah producing survey instruments (Nelson 1999).

Berger & Sons, C. L.
Boston, Massachusetts, 1898-1962-
Tool Types: Scientific Instruments
Remarks: “Christian L. Berger (born 26 Sept. 1842 in Germany; died 22 November 1922) worked for several companies in Germany and one in England before coming to the U.S. in 1866. He worked for Thomas Upham and E. S. Ritchie before becoming part of Buff & Berger in 1871. That partnership was dissolved 18 Oct. 1898 and he formed this company that same day with his sons William A. and Louis H.” (Nelson 1999, 81).

Billings & Spencer Co.
Hartford, Connecticut, 1873-1950
Tool Types: Chisels, Hammers, Machinist Tools, Pliers, Screwdrivers, Vises, and Wrenches
Identifying Marks: Various arrangements of the company name, city, state (sometimes as CT or CONN), sometimes with U.S.A. or a B in a triangle
Remarks: Founded as Roper Sporting Arms Co. in 1869 by Charles E. Billings and Christopher M. Spencer, this company’s name was changed in 1873 despite retaining its 1869 “est.” date. Spencer left shortly thereafter. They produced numerous tools patented under C.E. Billings with other holders including Hayden and Lowe. This company purchased the Coes Wrench Co. from Bemis & Call in 1939 (Nelson 1999).
Links: http://home.comcast.net/~alloy-artifacts/billings-spencer-company.html
http://www.davistownmuseum.org/bioBillingspencer.html

Billings, Charles Ethan
Hartford, Connecticut, 1865-1915
Tool Types: Machinist Tools
Identifying Marks: C.E. Billings
Remarks: Charles Ethan Billings lived from December 5, 1835 to June 5, 1920. His career path started with apprenticing at Robbins & Lawrence Co. in Windsor Vermont, moving on to Colt Patent Fire Arms Co. of Hartford, Connecticut, in 1856, then to E. Remington & Sons of Utica, New York from 1862 to 1865, moving up to superintendent of the Weed Sewing Machine Co. in Hartford from 1865 until 1869 when he formed his own company, Billings & Spencer Co. Despite holding
numerous patents, Billings has never worked alone, always producing under another company (Nelson 1999).

**Birmingham Plane Mfg. Co.**  
**Birmingham, Connecticut, 1855-1891**  
**Tool Types:** Metal and Wood Planes, Plane Irons, and Shaves  
**Remarks:** This company is also known as Birmingham Plane Co. and Birmingham Conn. Plane Co. prior to the name changing to Derby Plane Mfg. Co. in 1891. They made a variety of planes, including those patented to Solon R. Rust and G.D. Mosher (Nelson 1999). Several photographs of Birmingham planes in the Davistown Museum collection are in the *Hand Tools in History* series volumes 7 and 8.  
**Links:** [http://www.supertool.com/etcetera/deadends/hayworth.htm](http://www.supertool.com/etcetera/deadends/hayworth.htm)

**Bishop & Co., George H.**  
**Lawrenceburg, Indiana, and Cincinnati, Ohio, 1886-1919**  
**Tool Types:** Saws  
**Identifying Marks:** SPEED & EASE, OH, GREYHOUND, HIGH SPEED, BULLDOG, variations of “George” including GEO., cities and states, patent dates  
**Remarks:** This company made a variety of saws with patents as early as 1886 (Nelson 1999).

**Bliss & Co., John**  
**New York City, 1854-1870**  
**Tool Types:** Scientific Instruments  
**Remarks:** Products made by this company include watches, transits, and a combination parallel rule and protractor (Nelson 1999).

**Bliss & Co., Rufus**  
**Pawtucket, Rhode Island, 1845-1935**  
**Tool Types:** Awls, Clamps, Hammers, Handles, Tool Boxes, and Others  
**Identifying Marks:** R. BLISS MF’G. CO./PAWTUCKET.RI  
**Remarks:** Bliss worked independently prior to 1845 when he formed this company with A.N. Bullock, though he left around 1850 when E.R. Clark and A.C. Bullock joined. His name remained with the company for some time before being changed to R. Bliss Mfg. Co. (Nelson 1999).

**Blodgett Edge Tool Mfg. Co.**  
**Manchester, New Hampshire, 1853-1862**  
**Tool Types:** Adzes, Axes, Edge Tools, Hatchets, and Shaves  
**Identifying Marks:** BLODGETT/EDGE TOOL MFG. CO./CAST STEEL/WARRANTED/H.C. REYNOLDS AGENT  
**Remarks:** This company name sometimes appears without “MFG.” Its name was changed to Amoskeag Ax Co. in 1862 but the original name persisted. George Reynolds, patent holder on an axe pole making machine, was superintendent from 1856-1860; Henry C. Reynolds took over as agent in 1863 (Nelson 1999).  


**Boker, H. & Co.**

**Imports, Valley Forge, 1837-1969**

**Tool Types:** Bits, Braces, Dividers, Knives, Pliers, Saws, and Wood Planes

**Identifying Marks:** Variations of a tree logo; H. BOKER & CO./MADE IN U.S.A. (text forms an oval)

**Remarks:** Boker imported most of its tools from Germany through U.S. affiliates. Their name appears with variations of a first initial, “H.,” but it is unclear what this stood for (Nelson 1999).

**Links:**
- [http://www.boker.de/us/] -- Boker’s current website

**Bonney Vise & Tool Works**

**Philadelphia and Allentown, Pennsylvania, -1886-1910-**

**Tool Types:** Augers, Machinist Tools, Vises, and Wrenches

**Identifying Marks:** Variations on “BONNEY” including city, state, brand names, and patent dates; a “B” in a shield

**Remarks:** All dated marks on tools made by this company refer to Philadelphia. Brand names used include VIXEN, HERCULES, MASTERPIECE, and STILLSON on Stillson type wrenches (Nelson 1999). Bonney has continued to make high quality hand tools well into the 20th century (FFLTC).

**Links:** [http://www.alloy-artifacts.com/bonney-forge-tool.html]

**Boston Metallic Plane Co.**

**Boston, Massachusetts, 1872-1873**

**Tool Types:** Metal Planes

**Remarks:** Patents on planes made by this company included September 24, 1872 and September 23, 1873 by Cyrus H. Hardy; September 23, 1873 by Francis Smith; and November 25, 1873 by Joseph F. Baldwin, an officer in the company whose patent was also used by Meriden Malleable Iron Co. Baldwin and Hardy’s patents were assigned to a John Sully, apparently a company official (Nelson 1999). For additional information see Smith’s PTAMPIAI and II (1981, 1992).

**Bowles, Thomas Salter**

**Portsmouth, New Hampshire, -1806-1825-**

**Tool Types:** Calipers, Rules, Surveying Instruments, Sextants, Telescopes, Wantage Rods, and Board Rules

**Identifying Marks:** T.S.BOWLES/PORTSMOUTH, N.H.; Made by.Thomas S. Bowles.Porstmouth,NH

**Remarks:** Bowles moved to Portland, Maine, in 1825 and then to Bath. It is unknown whether he produced tools after the move (Nelson 1999).
**Boynton & Plummer**  
**Worcester, Massachusetts, 1878-**  
**Tool Types:** Blacksmith Drills, Bolt-cutting Machines, and Shaping Machines  
**Remarks:** James Kindred, H. S. Brown, and Henry Kindred ran this company until the death of Mr. Kindred.  

**Bradford Union Manufacturing Company**  
**Bradford, Pennsylvania, -1906-**  
**Tool Types:** Levels and Mechanics’ tools  
**Identifying Marks:** Bradford Union Mfg. Co., Bradford, Penna.  
**Remarks:** (Gehring 2011, 2, 16-8).

**Bradley, Gershom W.**  
**Weston and Westport, Connecticut, 1834-1911**  
**Tool Types:** Adzes, Axes, Chisels, Draw Knives, Hammers, Hatchets, Hoes, knives, Picks, and Shaves  
**Identifying Marks:** G.W. BRADLEY and variations, including patent dates, a B with an arrow through it, or “CAST STEEL” or “AXE CO.” added; possibly “MILES BRADLEY’S”  
**Remarks:** MILES BRADLEY’S might be a lower cost line of tools by Gershom. The W in his name may stand for Wakeman or Warren (Nelson 1999).

**Brady & Son, William**  
**Mt. Joy and Lancaster, Pennsylvania, 1868-1898-**  
**Tool Types:** Axes, Chisels, Draw Knives, Agricultural Tools, Hammers, Hatchets, Household Tools, Picks, and Stone-working Tools  
**Identifying Marks:** WM. BRADY & SON/MT.JOY PA.; BRADY/CAST STEEL  
**Remarks:** The Brady family was numerous and prolific, with three generations of toolmakers producing tools under this company and family name. David Brady had two sons David Jr. and William N., who worked with him in Mt. Joy. William had at least three sons: Henry Austen, W. Scott, and William N. David Jr., who also had an unknown number of sons, possibly including Louis P., Christian H., and Israel, all of whom were involved in the business in some way. In 1875, the company moved to Lancaster, where yet another son (probably William N. Jr.) joined up, and the name had “& Sons” possibly added (there are no tools with this mark). The original William Brady died in 1890, but his name was still used by the company under W. Scott Brady until 1898 (Nelson 1999).

**Broad & Co., Elisha**  
**Milltown, New Brunswick, -1871-1883**  
**Broad & Sons, Elisha**  
**St. Stephen and Milltown, New Brunswick, 1883-1895**  
**Broad & Co., Hewlett**  
**St. John, New Brunswick, -1881-1901**  
**Tool Types:** Adzes, Axes, Draw Knives, Hatchets, and Other Edge Tools
**Identifying Marks:** Elisha Broad & Co: E.BROAD/MILLTOWN; Elisha Broad & Sons: E.BROAD & SONS/MILLTOWN; E.BROAD & SONS/ST. STEPHEN, sometimes with S or N.B. added; Hewlett Broad & Co.: H.BROAD/ST.JOHN

**Remarks:** Elisha worked with his brother Hewlett prior to using his own name for his company, renamed E. Broad & Son in 1883 when he took a son into the business. In 1885 the name changed again from “Son” to “Sons.” One of the sons was named Harry W.; the other son or sons, however, are unknown. The same year, Elisha moved to a Douglass Axe Mfg. Co. factory in St. Stephen, where the company remained until he died in 1895. The name was then changed to St. Stephen Edge Tool Co. (Nelson 1999).

**References:**

**Brombacher & Co., A.F.**
**New York City, New York, -1760-1922**

**Tool Types:** Cooper Tools, Gauging Tools, and Others

**Identifying Marks:** A.F.BROMBACHER&CO./29&31 FULTON ST.N.Y.

**Remarks:** This company dealt in tools made by D.R. Barton, L.&I.J. White, and others. Their est. date is 1760, when they may have succeeded an unknown 18th century toolmaker or vendor. An 1870 directory lists them as “Swan and Brombacker” at 33 Fulton in New York. One or more Jacob Brombachers were likely involved in this company around 1835 to 1900 (Nelson 1999).

**Brown & Sharpe Co.**
**Providence, RI, 1833-1853**

**Brown, J. R. & Sharpe**
1853-1860

**Darling, Brown & Sharpe**
1866-1892

**Brown & Sharpe Mfg. Co.**
1868-2004-

**Tool Types:** Micrometers, Machinist Tools, Levels, and Others

**Identifying Marks:** Brown & Sharp Mfg. Co./Providence, RI; J.R.BROWN & SHARP.PI/PROVIDENCE R.I.

**Remarks:** The dates of operation of the various Brown, Sharpe, and Darling businesses overlap and are somewhat confusing. The business now conducted by the Brown & Sharpe Mfg. Co. was founded in 1833 by David Brown and his son Joseph R. Brown. David Brown retired in 1841 and the business was continued by Joseph R. Brown until 1853, when Lucian Sharpe became his partner, and the firm of J. R. Brown & Sharpe was formed. The Brown & Sharpe Mfg. Co. was incorporated in 1868. Joseph R. Brown began manufacturing steel rules and other tools of precision in 1850. In 1852, a similar line of work was begun by Samuel Darling and, in 1866, the partnership of Darling,
Brown & Sharpe was formed. The business carried on under that name until the partnership was dissolved by the purchase of Mr. Darling’s interest in 1892 (Brown & Sharpe 1941, 4). The name J.R. Brown & Sharpe, the original company name, was still used as late as 1899 (Nelson 1999). Brown & Sharpe is now a brand of the Hexagon Metrology Group. Also see more biographical information about Samuel Darling in the Davistown Museum online essay on Precision Toolmaking.

References:
Cope, Kenneth L. *A Brown & Sharpe Catalogue Collection, 1868, 1887, 1899*.

Links: http://www.brownandsharpe.com/
http://www.netrog/RIToolmakers/BROWN-SHARP/BROWNSSHARPE.html
http://www.davistownmuseum.org/Inventoryofpictures/WebInfoBrownSharpe.html
http://www.roseantiquetools.com/id44.html
http://www.davistownmuseum.org/bioBrownSharpe.htm

**Buck Bros.**

**Millbury, Massachusetts, 1853-1972**

**Tool Types:** Awls, Axes, Chisels, Draw Knives, Shaves, Hammers, and Iron Planes

**Identifying Marks:** Variations of “Buck Bros.,” often with “CAST STEEL” or “WARRANTED.”

**Remarks:** Buck Brothers was formed in 1853 by John, Charles and Richard T. Buck in Rochester, NY, after emigrating from England and working for D. R. Barton. In 1856, they moved to Worcester, Massachusetts, then in 1864 to Millbury, MA. John stayed in Worcester as part of Buck & Reeves, later rejoining Buck Brothers as only an employee. Charles Buck had a fight with his brother and started his own edge tool company in 1873. Old timers say Charles’ edge tools were very slightly superior to those of his brother. There are several different stories of their later activities: one states they both used the Buck Brothers name until an early 1880s lawsuit forced Charles to stop; another says Charles regained an interest in Buck Brothers in 1877 while still maintaining his own business. Richard Buck was born in 1832, died in 1893. After his death, his
sons-in-law E. M. Ward and William L. Proctor ran the company. Proctor bought out Ward in 1913 and Charles Buck’s separate business in 1915. The business continued until 1972. The company made edge tools (awl, axes, chisels, draw knives), hammers and plane blades. Marks consisted of several arrangements of their name and such touchmarks as a deer head, CAST STEEL and WARRANTED. A facility name RIVERLIN WORKS was also used. Charles Buck started his own business called the Charles Buck Edge Tool Co. and/or the Millbury Edge Tool Works in 1873. He used the mark CHARLES BUCK CAST STEEL. DATM states he made chisels, but the Museum also has an example of a gouge with this mark (Nelson 1999). Nooduck Chisel Co., also known as Nuduck Chisel Co., of North Grafton, MA, made chisels for Buck Brothers under a subcontract around 1890.

References:
Links: http://www.geocities.com/sawnutz/buck/index.htm -- Buck Brothers history
http://www.craftsmanstudio.com/html_p/BuckBrosChisels.htm -- Information on the modern Buck Brothers
http://www.davistownmuseum.org/bioBuckBrothers.html

Buff & Berger
Boston, Massachusetts, 1871 – 1898
Tool Types: Scientific Instruments

Buff & Buff Manufacturing Company
Boston, Massachusetts and Green St., Jamaica Plain, Massachusetts, 1898-1982
Tool Types: Transits, Scientific Instruments, and Telescopes
Remarks: (Buff and Berger) (C L Berger & Sons Manufacturing Co.) “George L. Buff (born 24 March 1837 in Germany; died 2 July 1923) formed this company after the breakup of Buff & Berger. Three sons worked in the company: Louis F. (born 1876; died 1941), Carl W. (born 1879; died 1941), and Henry A. (born 1884). The ‘Mfg. Co.’ may not have been used in their early years. It is not clear when they moved to Jamaica Plain, but it was apparently well after 1900.” (Nelson 1999, 129). The Buff & Buff Manufacturing Co. in Boston was an important member of a group of New England manufacturers of surveying transits and equipment that had its roots in the classic period of American machinist tools. The sophisticated products of America’s newly discovered ability to build complex machines such as surveyors’ transits using the machinery invented and constructed in the Industrial Revolution (rather than hand work and hand tools) resulted in products such as the Buff & Buff transit on display in The Davistown Museum IR collection. No modern computerized circa 2000 surveyors’ transit equals the Buff & Buff specimen in beauty and quality of construction and materials, advances in efficiency and measuring capabilities notwithstanding. Also
in the collection of The Davistown Museum is a six color lithograph of the museum’s transit. This lithograph, one of perhaps thirty, was recovered from the Green St. factory by Liberty Tool Co. (c. 1984) after the Buff & Buff facility had closed and disposed of most of its equipment. The transit in the museum collection was purchased from a Marblehead, Massachusetts, estate in 1999. At the time of the Liberty Tool Co. salvage operation, all that remained in the Green St. factory were hundreds of transit and telescope level bubbles and parts, grinding stones, and miscellaneous equipment. The lithographs were hidden away on a high shelf in one of the dusty abandoned offices.

References:

Call, A.
Springfield, Massachusetts
Tool Types: Machinist Tools, Including Scaled Beam Points
Remarks: Possibly Amos Call of Bemis & Call (Nelson 1999).

Callender & Co., Benjamin
Boston, Massachusetts, 1862-1887
Tool Types: Screwdrivers and Wood Planes
Identifying Marks: B.CALLENDER & CO/CAST STEEL; B.CALLENDER & CO/BOSTON
Remarks: Callender was a Boston agent for the American File Co. of Rhode Island and a probable vendor who remarked tools made by others (Nelson 1999).

Calley, Ela D.
Franklin, New Hampshire, -1868-1881-
Tool Types: Shaves
Identifying Marks: E.CALLEY/FRANKLIN, N.H.
Remarks: Calley was a patternmaker and machinist who worked at "Aiken’s Mill." His mark has been found on spoke shaves recovered by the Liberty Tool Co. (Nelson 1999).

Canney, Wesley J.
Tuftonboro, New Hampshire, -1870-1872-
Tool Types: Axes, Knives, and Other Edge Tools
Remarks: Canney worked in Melvin Village within Tuftonboro (Nelson 1999).

Cantelo, J. S.
Boston, Massachusetts, 1891-
Tool Types: Draw Knives
Identifying Marks: J.S.CANTELO/BOSTON (sometimes with PAT.1891 or “WARRANTED”
Remarks: (Nelson 1999). Cantelo’s mark appears on a number of folding draw knife designs, including some with spring hinges (FFLTC).
Card Mfg. Co., S. W.
Mansfield, Massachusetts, 1874-1908-
Tool Types: Dies and Taps
Remarks: One of the most prolific makers of diestocks, often in wooden box sets.
References:

Carey, George
Sunderland, Vermont, -1885-1890
Tool Types: Chisels and Shaves
Identifying Marks: GEO. CAREY Mass./USA (Nelson 1999)

Carpenter Tap & Die Co., J. M.
Providence and Pawtucket, Rhode Island, 1870-1902-
Tool Types: Dies and Taps
Identifying Marks: J M CARPENTER/TAP & DIE CO/PAWTUCKET, R.I. USA; Small C inside a large V
Remarks: This company was acquired by Union Twist Drill Co. at an unknown date after 1900 (Nelson 1999).

Carr, James
Goffstown, New Hampshire, -1768-1771-
Tool Types: Axes and Bits

Carr & Co., WM. H.
Philadelphia, Pennsylvania, 1838-
Tool Types: Augers, Bits, and Forks
Links: http://www.davistownmuseum.org/bioCarr.html

Casey & Co., George
Auburn, New York, 1857
Tool Types: Plane Irons and Wood Planes
Identifying Marks: CASEY & Co./AUBURN/N.Y. (top two lines curved); CASEY & Co/AUBURN N-Y/EXTRA STEEL
Remarks: Casey was a part of Casey, Kitchel & Co. (1847-1856); Casey, Clark & Co. (1858-1864); and the Auburn Tool Co. (1864 – 1880), all of which used Auburn prison labor (Nelson 1999).

Chandler & Farquhar
Boston, Massachusetts, 1882-present
Tool Types: Machinist Tools and Others
Remarks: Frank Chandler and Charles S. Farquhar dealt in tools for machinists, blacksmiths,
factories, mills, and other various metalworkers. They added “Co.” to their name in 1904. The company was operating as recently as 2009 out of Randolph, Massachusetts (Nelson 1999).

**References:**

**Links:**

**Chandler, C. E.**
*Boston, Massachusetts, 1883-1895*
**Tool Types:** Machinist Tools
**Identifying Marks:** MF’D BY/C.E.CHANDLER/BOSTON,MASS,USA/PATENTED/JULY 31, 1883
**Remarks:** This company made a Charles H. Fowler patent speed indicator and a micrometer stand as well as numerous other hand tools (Nelson 1999).

**Chandler, William**
*Henniker, New Hampshire, -1878-1886-
**Tool Types:** Axes and Edge Tools (Nelson 1999)

**Chapin & Co., Nathaniel**
*New Hartford, Connecticut, and Westfield, Massachusetts, -1840-1870-
**Tool Types:** Wood Planes
**Identifying Marks:** N CHAPIN & Co.; EAGLE FACTORY/WARRANTED/N CHAPIN & Co. (top two lines curved)
**Remarks:** Nathaniel was Hermon’s older brother and worked with him prior to forming this company. His factory moved from New Hartford to Westfield in 1847 (Nelson 1999). The Chapin clan was among southern New England’s most prolific planemakers (FFLTC).

**Chapin, David B.**
*Newport, New Hampshire, 1827-1870-
**Tool Types:** Edge Tools
**Remarks:** Chapin added “& CO.” to his name in 1830 but did not keep it. It is possible David B. was the Chapin of Chapin & Kelsey (Nelson 1999).

**Chapin, E. M.**
*Pine Meadow, Connecticut, 1868-1876-
**Tool Types:** Levels and Planes
**Identifying Marks:** E.M.CHAPIN/PINE MEADOW, CONN, sometimes with PATd JUNE 6, 1876
**Remarks:** This Chapin received a plane patent with Solon Rust on March 31, 1868. It is possible this was Edward M. Chapin, Hermon Chapin’s son (Nelson 1999).
Chapin, Hermon
New Hartford and Pine Meadow, Connecticut, 1828-1860
Tool Types: Wood Planes
Identifying Marks: H.CHAPIN, UNION FACTORY/WARRANTED/H.CHAPIN (top two lines curved)
Remarks: Hermon Chapin was associated with a number of other Chapins in the toolmaking industry of his time. He began as a part of Copeland-Chapin from 1826-1828, was the brother of Nathaniel Chapin and father to Edward M., George W., and Philip E. Chapman who succeeded him as H Chapin & Sons in 1860. Out of this line sprung H. Chapin’s Sons, H. Chapin’s Son, and H. Chapin’s Son & Co. Planes marked “Baltimore” were sold to his brother Philip (in Baltimore) but were probably not manufactured there. Pine Meadow and New Hartford were likely the same town with different, interchangeable names, not two separate locations (Nelson 1999; FFLTC).
References:
Links: http://www.davistownmuseum.org/bioHermonChapin.html

Chapin-Stephens Co. Union Factory
Riverton and Pine Meadow, Connecticut, 1901-1929
Tool Types: Planes, Rules, Calipers, and Combination Tools
Identifying Marks: THE CHAPIN - STEPHENS CO PINE MEADOW CONN. U.S.A. (sometimes split between lines with or without the top line curved upward), THE C-S CO.
Remarks: H. Chapin’s Son Co. (est. 1897) and D.H. Stephens & Co. (est. 1861) merged to form this company in 1901. A number of mergers and buyouts including the Chapin name began with Hermon Chapin, a maker of wood planes. He was the father of Edward M. Chapin, George W. Chapin and Philip E. Chapin, who succeeded him as H Chapin & Sons in 1860, then H. Chapin’s Sons, H. Chapin’s Son, and H. Chapin’s Son & Co. See Hermon Chapin.
References:
Links: http://www.davistownmuseum.org/bioChapin.html

Chase, Amos
-1850-1864-
Chase, David G.
1856-1887
Chase, John Winslow
1846-1877
N. Weare, New Hampshire
**Tool Types:** Augers, Edge Tools, Handles, and Leather Tools
**Identifying Marks:** A.CHASE,WEARE,NH; J.W.CHASE/WEARE.N.H.
**Remarks:** These brothers all worked out of New Hampshire at roughly the same time. Amos worked as a machinist starting in 1836 and made a variety of tanner and currier tools. He holds an invalid patent on a currier’s arm board from April 6, 1864. David G. (middle initial sometimes recorded as J. or S.) specialized in knives and tool handles. John Winslow made currier and cobbler tools as well as hollow augers and punches. He holds patents on a skiving machine in 1859 with J.A. Safford and 1864 with his brother Charles F. Amos. Charles was not known to produce tools in New Hampshire, but a Charles F. Amos in Dixfield, Maine, who produced agricultural implements, could be the same man (Nelson 1999).

Chase, James

**Gilmanton (changed to Gilford in 1812), New Hampshire, ~1797-1812**
**Tool Types:** Coopers’ Tools, Hammers, Handles, Rules, Squares, and Wood Planes
**Identifying Marks:** J.CHASE
**Remarks:** James was a carpenter who specialized in cabinets and joining. He made his own mallets and yardsticks (Nelson 1999).

Chase, Parker & Co.

**Boston, Massachusetts, 1873-1939-**
**Tool Types:** Hammers, Farrier Tools, and Others
**Remarks:** This company bought out Dodge, Haley & Co. circa 1928 (Nelson 1999).

Chatillon & Sons, John

**New York City, New York, ~1867-1894-**
**Tool Types:** Scales
**Identifying Marks:** JOHN CHATILLON & SONS NEW YORK Y.S.A.; CHATILLON’S/IMPROVED CIRCULAR/SPRING BALANCE//WARRANTED/NEW YORK
**Remarks:** John began producing scales under his name in 1835 and continued at least until 1858. The “& SONS” may not have been added until after his death. Patent dates include May 10, 1867, December 10, 1867, October 1872, January 4, 1876, May 1878, January 6, 1891, and January 26, 1892 (Nelson 1999).

Chelor, Cesar

**Wrentham, Massachusetts, 1753-1764-**
**Tool Types:** Wood Planes
**Identifying Marks:** CE.CHELOR/LIVING*IN*/WRENTHAM (sometimes without “Living In”); CESARCHELOR/LINING*IN*/WRENTHAM
**Remarks:** Cesar began as a slave producing planes under Francis Nicholson so he probably produced some planes bearing Nicholson’s mark. He continued producing when Nicholson’s will freed him in 1753 and worked with Jethro Jones from around 1765 to 1769 and Sambo Freeman from around 1758 to 1761 (Nelson 1999).

References:
Cheney Hammer Co., Henry
Little Falls, NY, 1856-1878 (possibly until 1949)
Tool Types: Hammers and Axes
Identifying Marks: CHENEY, H. CHENEY/Ha___
Remarks: Henry Cheney was born in Ostego, NY on January 12th, 1821, where he possibly made hammers before moving to Little Falls in 1856. He holds a 4 July 1871 patent on a hammer with a nail holding and starting feature. In 1874, he bought the S. H. Farnam factory and also made axes (though a 1904 catalog in our collection shows hammers for sale). A Cheney Hammer Co. or Henry Cheney Hammer Corp. was in business in 1949 with a founding date of 1836 (Nelson 1999).

References:
Links: http://www.rootsweb.com/~nyherkim/littlefalls/waterpower2.html -- A website concerning a dispute over use of the river in Little Falls involving Henry Cheney Hammer Co.
http://www.threerivershms.com/lf2.htm -- History of Little Falls
http://www.davistownmuseum.org/bioCheney.html

Child, John Edwin
Providence, Rhode Island, 1852-1875
Tool Types: Edge Tools and Wood Planes
Identifying Marks: J.E. CHILD; J.EDWIN CHILD
Remarks: Child produced plane bodies and contracted for Greenfield Tool Co. and probably worked with or under Isaac Battey in 1850 (Nelson 1999).

Clark
Chatam, New Jersey, -1860-
Tool Types: Axes and Edge Tools (Nelson 1999)

Clark & Co., Alex
Quincy, Massachusetts, 1890-1908
Tool Types: Bevels, Blacksmiths’ Tools, Chisels, Drills, Hammers, Handles, Jacks, Pliers, Rules, Squares, and Stone-working Tools
Remarks: Clark, a blacksmith from Scotland, started by making tools for local granite quarries. By 1900, he was also making blacksmithing tools. In 1908, the name was changed to Vulcan Tool Mfg. Co. and it has been run by Clark descendants ever since (Nelson 1999). The current name is Vulcan.
Links:
http://www.vulcantools.com/html/about.html

Clark Edge Tool Works
-1897
Tool Types: Edge Tools
Remarks: They have also been reported as Clark Edge Tool Co. Atha Tool Co. bought out Clark Edge Tool Works in 1897 (Nelson 1999).

Clark, William A.
Connecticut, 1858-1920-
Tool Types: Augers and Bits
Identifying Marks: CLARK/EXPANSIVE BIT
Remarks: It is unclear whether the patents issued to variations of William Clark in Connecticut were all the same person or multiple individuals. These patents include an expansive bit from May 11, 1858; hollow bit augers from July 12, 1859 and June 12, 1860 out of Bethany; countersinks on February 2, 1869 and December 12, 1871 out of Woodbridge; and an ice auger from June 10, 1873 out of New Haven (Nelson 1999). The 1858 patent was the first of the modern expansion bits still used today.

Cobb, William
-1816-1819
Rochester and Rome, New York
Cobb & Thayer
1820-1821-
Rochester, New York
Tool Types: Adzes, Axes, Chisels, Draw Knives, Plows, Scythes, and Other Edge Tools
Identifying Marks: COBB & THAYER/CAST STEEL
Remarks: Cobb sometimes used “& Co.” The move from Rome to Rochester occurred in 1816; in 1820, the company name changed to Cobb & Thayer. William Cobb and Lawson Thayer were succeeded by Cobb & White (Nelson 1999).

Coburn (& Son), Franklin Watson
New Durham, New Hampshire, 1856-1910
Tool Types: Axes, Cutlery, Hammers, Knives, and Shaves
Identifying Marks: F.W.C.
Remarks: Franklin Watson Coburn used “& Son” on the end of his company title from 1887 to 1890. This may refer to Franklin Watson Jr. or his other son, Alonzo G., is unclear. In 1911, it became F.W. Coburn & Co. under Franklin Watson Coburn Jr. (1856-1918) (Nelson 1999).

Coes, L. & A. G.
1841-1869
Coes & Co., Loring
1869-1881
Coes & Co., A. G.
1869-1881
Coes Wrench Co.
1885-1901
Worcester, Massachusetts
L. & A. G. Coes: In 1836, Loring and Aury Gates Coes bought the wool machine business of Kimball & Fuller and continued making these machines until 1839 (apparently using some other name.) In 1841 they formed the L. & A.G Coes partnership and started making wrenches under a 16 April 1841 patent. The mark used was L. & A.G. COES | WORCESTER, MASS. In 1853, they bought the shear-blade and knife business of Moses Clement. In the early 1860s they bought the Taft & Gleason wrench business. In 1869 they separated forming the two businesses described below. Herb Page adds: “During the period of 1848 to 1852 the firm of L & A.G. Coes contracted with the firm of Ruggles, Nourse & Mason on a 5 year term to market the entire production of wrenches produced by this fledgling firm. R.N.& M. had branches in both Worcester and Boston and the wrenches produced during this time period were stamped with 1) ‘L. Coes Patent’, 2) ‘Ruggles, Nourse & Mason’ if space permitted, depending on size of wrench and 3) ‘Boston & Worcester’ indicating the sales outlets of the marketing firm. These wrenches were manufactured in Worcester at the firm of L & A. G. Coes.”

Loring Coes & Co.: Loring Coes was born in 1812 and died in 1907. His company’s working dates are from 1869 to 1900 in Worcester, Massachusetts. He was formerly part of L. & A. G. Coes. L. Coes & Co. began with the shear blade and knife part of L. & A. G. Coes, but later resumed making wrenches. Coes Wrench Co. merged back into L. Coes & Co. in 1888 and the company continued using both names. The company mark is L. COES & CO. | WORCESTER, MASS. Loring Coes had wrench patents dated: 10 Nov. 1863, 23 Feb. 1864, 23 March 1869, 1 June 1869, 10 Aug. 1869, 26 Oct. 1869, 9 Jan. 1877, 6 July 1880, 8 July 1884, 12 July 1887, 15 Dec. 1891, 29 Dec. 1891 and 14 Aug. 1894. The Davistown Museum has received communications from an owner of a wrench with the L. Coes mark and a pat’d date of Apr. 30, 1895. A second owner has a bar wrench (crescent wrench) with this patent date.

Aury Gates Coes & Co.: Aury Gates Coes was born in 1817 and died in 1875. His company made wrenches from 1869 to 1881 in Worcester, Massachusetts. He was formerly part of L. & A. G. Coes. His sons continued the business after his death until changing the name to Coes Wrench Co. in 1881 or 1885 (sources differ). The company mark is A.G.COES & Co. | WORCESTER | MASS with the name line curved. His wrenches were also commonly marked with just his name and the patent date 6 March 1866 or 26 Dec. 1871.

Coes Wrench Co.: This company’s working dates are from 1885 or 1881 to 1928 in Worcester, Massachusetts. It was originally A.G. Coes & Co. and made both knives and wrenches. The company merged back into the L. Coes & Co. in 1888, but both names continued to be used as marks. At some time, the company was acquired by Billings & Spencer or Bemis & Call (sources differ.) The mark was different configurations of the maker name, city and state (Nelson 1999). Coes Reservoir is a 100-acre property at the Worcester headwaters in the Tatnuck Brook Watershed. The historic Coes Knife Company formerly occupied the site. For more information on Coes wrenches see the discussion in the Davistown Museum online essay on Boston wrenches (http://www.davistownmuseum.org/bioBostonWrench.htm).

References:


Herb Page has produced numerous other articles and research on Coes and many other wrench makers.

**Links:**
- http://www.chicago-scots.org/clubs/History/Names-McD-Mu.htm - The Chicago Scotts club adds “he was granted patent #38316 for improvements in screw wrenches. He was offered $500 for his patent.”
- http://www.davistownmuseum.org/bioCoes.htm

**Coffin, John T.**
**Center Harbor, New Hampshire, ~1881-1892-**
**Tool Types:** Knives, Shaves, and Other Edge Tools
**Remarks:** Child produced plane bodies and contracted for Greenfield Tool Co. and probably worked with or under Isaac Battey in 1850. Coffin worked under “John T. Coffin & Son” from 1884 to 1886 (Nelson 1999).

**Collins & Co.**
**Collinsville and Canton, Connecticut, 1826-1957**
**Tool Types:** Adzes, Axes, Hammers, Wrenches, Machetes, and Swords
**Identifying Marks:** The maker’s name in various incarnations, city, state and “Made in U.S.A.”; Sometimes a crown figure with an arm and hammer nestled in it and the word “Legitimus” curving upward under it.
**Remarks:** According to their 1921 catalog, the mark “Collins & Co., Hartford” is used on their most premium products whereas “R. King,” “Bx Swift,” “Bv Wise” and “Charter Oak” are used on their budget lines of products. At this time, they manufactured over 1,100 products. It also purports that shoddy imitations of their products have been manufactured in Germany with their exact mark and the marks “B. Collins,” “D. Collins” or “H. Collins” were made by other American manufacturers. The “Legitimus” crown and arm logo arose in response to these imitators.

**References:**

**Links:**
- http://www.cantonmuseum.org/

**Collins, David**
**Hartford, Connecticut, 1809-1825**
**Tool Types:** Joiner Tools and Carpenter Tools
**Remarks:** David Collins was somehow related to Robert J. Collins Jr. In 1825, he began working with a Samuel Collins, possibly another relative, and together they founded Collins & Co. (Nelson 1999).

**Collins, Robert Johnson, Jr.**
**Collinsville and Canton, Connecticut, 1805-1835**
**Tool Types:** Wood Planes
**Identifying Marks:** COLLINS/HARTFORD; COLLINS/UTICA; R.J.COLLINS/ROCHESTER
**Remarks:** Robert Johnson Collins Jr. worked closely with his son, Robert Johnson Collins III, and their work is often indistinguishable. Robert Jr. worked with Leonard Kennedy as Kennedy & Collins from 1803 to 1805 prior to working in Hartford. It is unclear how long he lived and worked in Utica and Rochester and, while he died in Ravenna, it’s unknown whether he worked there (Nelson 1999).

**Colt Co., Samuel**
**Hartford, Connecticut**
**Tool Types:** Axes
**Remarks:** Presumptively an earlier incarnation of Colts Patent Fire-Arms Mfg. Co., though it is unknown whether they manufactured guns (Nelson 1999). The dates of operation of Samuel Colt’s ax factory are currently unknown.

**Colvin & Bro., E.**
**Pawlet, Vermont, -1870-1874-**
**Tool Types:** Axes (Nelson 1999)

**Cook, Martin**
**Kingston, Massachusetts, -1849-**
**Tool Types:** Knives, Leather Tools, and Shaves
**Remarks:** The knives he produced were specifically for cobbling but the type of shave is unclear (Nelson 1999).

**Cooley, William**
**Boston, Massachusetts, -1832-1849-**
**Tool Types:** Wood Planes and Other Edge Tools
**Identifying Marks:** W.COOLEY/LINCOLN ST./BOSTON; W.COOLEY BLACKSTONE ST.BOSTON
**Remarks:** Cooley worked as Cooley & Montgomery in 1844. The edge tools may not have been produced after 1834 when he began making planes (Nelson 1999).

**Copeland & Chamberlain**
**Worcester, Massachusetts, 1872-1901**
**Tool Types:** Calipers, Dividers, and Machinist Tools
**Identifying Marks:** S COPELAND/PAT MAY 24 1887
Remarks: This company, formed by Samuel Copeland (1815-1891) and Charles W. Chamberlain, produced an Albert A. Cook’s extension divider/caliper, patented December 12, 1871, and an Copeland’s extension divider, patented May 24, 1887. The name changed to Copeland Hardware Mfg. Co. in 1901 (Nelson 1999).

Copeland & Chapin
Pine Meadow, Connecticut (now Hartford), 1826-1828
Tool Types: Wood Planes
Identifying Marks: S COPELAND/PAT MAY 24 1887
Remarks: This company consisted of Daniel Copeland and Hermon Chapin (Nelson 1999).

Copeland, Daniel
Hartford, Connecticut and Huntington, Massachusetts, -1827-1842-
Identifying Marks: D.COPELAND/HARTFORD (sometimes without HARTFORD)
Tool Types: Carpentry Tools and Wood Planes, Possibly Other Joiner Tools
Remarks: Copeland worked with D. & M. Copeland with his brother Melvin from 1822 to 1825 and again sometime after 1842 out of Huntington, MA, as well as with Copeland & Chapin (with Herman Chapin) from 1826 to 1828; he also produced tools under his own name (Nelson 1999). Numerous Copeland planes have been recovered by the Liberty Tool Co.

Couch, John
Salisbury, New Hampshire, -1862
Tool Types: Chisels and Other Edge Tools
Remarks: John Couch was a blacksmith known for his edge tools who possibly worked with his brother Samuel, as evidenced by a gouge marked J. & S. Couch (Nelson 1999).

Craddock, Thomas
Lockport, New York, -1826-
Tool Types: Edge Tools (Nelson 1999)

Crescent Tool Co.
Bridgeport, Connecticut, -1883-1902
Tool Types: Machinist and Carpentry Tools, Screwdrivers, Nail Pullers, and Others
Identifying Marks: Crescent/Bridgeport
Remarks: This company also used the names GIANT, Kennelly & Cain, and Crescent Tool Works. They made a Patrick Kennelly protractor, patented October 2, 1883 (Nelson 1999). This important tool company stayed in business until well into the 20th century and are famous for their high quality adjustable wrenches (FFLTC).

Crossman (& Son), Amory W.
W. Warren, Massachusetts, 1850-1883-
Tool Types: Chisels, Draw Knives, Metal Planes, Scythes, and Others
Identifying Marks: A.W.CROSSMAN/CAST STEEL, sometimes with WARRANTED
Remarks: Amory W. Crossman and his son Amory Jr. made a draw knife attachment patented by Amory W. Crossman, October 16, 1883, and a plane patented by Benjamin A. Blandin of
Charlestown, Massachusetts, May 7, 1867. Amory Sr. produced under his own name 1850 to 1866 (Nelson 1999). A prolific maker of fine draw knives.

**Cumings (Cummings), Allen**  
**Boston, Massachusetts, -1848-1854-**  
**Tool Types:** Wood Planes  
**Identifying Marks:** A.CUMINGS/BOSTON (top line curved)  
**Remarks:** Cumings sold plane stocks to Greenfield Tool Co., was part of M. Read & Co. from 1844 to 1845, and part of Read & Cumings from 1846 to 1847. He was born in New York and may have worked there prior to moving to Massachusetts (Nelson 1999).

**Currier, Moses F.**  
**N. Weare, New Hampshire, -1850-1870-**  
**Tool Types:** Augers, Bits, Dies, and Other Edge Tools  
**Remarks:** Currier worked with his brother, Daniel G. Moses, around 1853 and may have been part of Glover & Currier (Nelson 1999).

**Currier & Snyder**  
**Worcester, Massachusetts, 1883-**  
**Tool Types:** Upright Drills  
**Remarks:** The company name was later changed to J. E. Snyder & Son.  

**Dalrymple, James**  
**Newark, New Jersey, -1861-1880-**  
**Tool Types:** Edge Tools  
**Remarks:** Dalrymple worked as a blacksmith from 1849 to 1860, probably working as a part of Dalrymple & White. His son James W. was a part of Forgie & Dalrymple in 1879 (Nelson 1999).

**Danforth, Jacob**  
**Jaffrey, New Hampshire, -1792-1811**  
**Tool Types:** Axes  
**Remarks:** Danforth lived in Amherst, New Hampshire prior to living in Jaffrey but whether he made axes there is unknown (Nelson 1999).

**Daniels, George Washington**  
**Boston, Massachusetts, 1850-1886**  
**Tool Types:** Calipers, Dividers, Vises, Watchmaking Tools, Small Bench Vises, and Eyelet Tools  
**Identifying Marks:** G.W.DANIELS/WALTHAM,MASS.  
**Remarks:** Daniels was born December 22, 1830 and died May 9th, 1886 (Nelson 1999).

**Darling, Brown & Sharpe**  
**Providence, Rhode Island, 1866-1892-**  
**Tool Types:** Bevels, Calipers, Machinist Tools, Rules, and Squares  
**Identifying Marks:** D.B.&S.; DARLING,BROWN&SHARPE PROVIDENCE, R.I.
Remarks: This company consisted of Samuel Darling, Joseph R. Brown, and Lucian Sharpe and was a merger of J.R. Brown & Sharpe and Darling & Schwartz. The Brown & Sharpe Mfg. Co. formed without Darling in 1868 and the two operated together until 1892 when Darling’s share (and the original company) were bought out. The name persisted until at least 1879. Aside from patents owned by the founders, they were known to produce tools with a July 6th, 1852 patent by Nathan Ames, an August 2, 1887 patent by Alton J. Shaw, and a September 24 patent by C. E. W. Dow (Nelson 1999). See Brown & Sharpe.

Davis & Co., George W.
Nashua, New Hampshire, 1863-1897
Tool Types: Machinist Tools
Remarks: This company succeeded George A. Rollins & Co. Rollins remained a partner until 1879 (Nelson 1999).

Davis & Cook
Watertown, NY, 1886-1910
Tool Types: Levels
Identifying Marks: DAVIS & COOK / WATERTOWN NY USA.; COOK’S LEVEL PAT’D DEC.
7 ‘86; COOK’S LEVEL; PATENDED OCT. 20 1903
Remarks: Cook received the first patent in 1886 and Davis the second one in 1903. Davis's son, Lewis ran the company until 1910 when it was sold to S. Robert Jackson, who continued to use the Davis & Cook mark.

Davis & Furber Machine Co.
North Andover, Massachusetts, 1832-1974
Tool Types: Textile Machines, Wrenches, and Other Tools
Remarks: The wrenches and other tools made by this company were for servicing their textile machines. This company may have been founded under another name (Nelson 1999).

Davis, Leonard L.
Springfield, Massachusetts, 1867-1875
Tool Types: Levels, Metal Planes, and Tools
Davis Level & Tool Co.
Springfield, Massachusetts, 1875-1892
Tool Types: Levels, Awls, Bits, Braces, Calipers, Dividers, Machinist Tools, Metal Planes, Saw, Screwdrivers, Squares, and Vises
Remarks: The ornate levels and measuring tools of L. L. Davis and the Davis Level & Tool Company of Springfield, MA, are among the most sought after examples of the American toolmaker in the second half of the 19th century. There is no direct connection between the Davis family of the Davistown Plantation and Leonard Davis. The Leonard L. Davis Co., started in 1867, “...became the Davis Level & Tool Co. in 1875. Leonard L. Davis was born 21 Feb. 1838 and died 13 Aug. 1907. He had 17 March 1868 and 17 Sept. 1867 patents for inclinometer levels made by this
company (but marked with his name only) and the successor. He also had a 31 Aug. 1875 metal plane patent, and a 21 Nov. 1871 level patent; the planes were made, but it is not certain if the level was. (Note: Different Davis levels are marked with 17 March 1867 and 17 March 1868 patent dates; documentary sources indicate that only the 1868 date is valid.)"


References:
Clark W. Bryan & Co. 1874. Springfield City Directory and Business Advertiser for 1874 - 75. For the Year Commencing July 1, 1874. Clark W. Bryan & Co.
Springfield City Directory and Business Advertiser for 1874 - 75. For the Year Commencing July 1, 1874. 1874. Published by Clark W. Bryan & Co. pg. 412.
Links: http://www.antiquetools.com/levels/davislevel.html
http://www.sydnassloot.com/Brace/Davhtm#LDavis
http://www.melmillerantiquetools.com/davis_level_toolpage.htm
http://www.davistownmuseum.org/bioDavis.htm

Dean, Henry N.
New Bedford, Massachusetts, -1870-1871-
Tool Types: Coopers’ Borers
Identifying Marks: H.N.DEAN (Nelson 1999)

Dean, S.
Dedham, Massachusetts, 1775-1820
Tool Types: Wood Planes
Identifying Marks: S*DEAN/DEDHAM; S.DEAN
Remarks: The planes marked S*DEAN/DEDHAM are significantly earlier than those marked S.DEAN; the former are attributed to Samuel Dean (1700-1775), a joiner in Dedham circa 1740, while the latter belong to his descendent and fellow Dedham resident, Samuel H. Dean (1767-1825) (Nelson 1999).

Dearborn, Warren
Sandwich, New Hampshire, 1831-1862
Tool Types: Churns, Washboards, Other Household Tools, Handles, Rules, Saw Frames (but not complete saws), Squares, and Wood Planes
Remarks: Dearborn, a carpenter, worked with Dearborn & Skinner from 1828 to this company’s founding (Nelson 1999).

Demeritt, John
Montpelier, Vermont, 1859-1896
Tool Types: Cutlery and Other Edge Tools (Nelson 1999)

Denison, John & Lester
Saybrook, Connecticut, 1832-1840-
Identifying Marks: J.&L.DENISON/SAYBROOK
Denison, John
Saybrook, Connecticut, 1845-1860-
Identifying Marks: JOHN DENISON/SAYBROOK; JOHN DENISON; J. DENISON
Denison & Co., Gilbert Wright
Winthrop, Connecticut, 1868-1890
Tool Types: Augers, Bits, Carpenter Tools, and Wood Planes
Identifying Marks: G.W.DENISON&Co./WINTHROP/CONN. (all lines curve upward); G.W.DENISON&Co/WINTHROP.CONN.; G.W.DENISON/WINTHROP.CONN
Remarks: It should be noted that Deep River and Winthrop are villages in the East and West ends of Saybrook. John & Lester Denison worked with Jeremiah Gladding from 1836 onward. When the company dissolved, Lester became a turner and John continued his career, working under his own name. Gilbert Wright’s relationship to the other Denisons is unclear as he married into the family through Sarah Denison in 1865 and it is unknown how she was related to them (possibly a niece or daughter of John or Lester) (Nelson 1999). Denison planes are frequently found by the Liberty Tool Co.

Derby Plane Co.
Derby, Connecticut, 1891-1900
Tool Types: Metal Planes and Shaves
Remarks: Formerly the Birmingham Plane Mfg. Co., this company was owned by George D. Mosher. Patents produced by and assigned to the company included a spoke shave patented by Mosher on September 19, 1876, a “B. Plane” he patented on October 22, 1889, a plane patented by Oliver R. Hayworth of Tarkio, Missouri, on November 7, 1893, and two July 14, 1891 plane patents by Charles F. Young of Birmingham, Connecticut (Nelson 1999).

Dewey, A. G.
Woodstock, Vermont, 1855-1873-
Tool Types: Axes, Straw Knives, Scythes, and Other Farm and Edge Tools
Remarks: Dewey succeeded D. Taft & Sons and was listed in Taftsville, a subdivision of Woodstock (Nelson 1999).

Dickinson, Porter
Amherst, Massachusetts, -1838-1849-
**Tool Types:** Axes, Chisels, Hammers, Hatchets, and Knives  
**Remarks:** Dickinson’s tools were sold by Kennedy & Way (Nelson 1999).

**Dimond, Ephraim**  
**Goffstown and Antrim, New Hampshire, -1825-1857**  
**Tool Types:** Scythes and Other Edge Tools  
**Remarks:** Ephraim Dimond (sometimes spelled “Diamond”) was probably a nephew of Israel Dimond and possibly worked with him in Goffstown (Nelson 1999).

**Disston & Sons, Inc., Henry**  
**Philadelphia, Pennsylvania, 1840-1955**  
**Tool Types:** Hammers, Knives, Levels, Marking Gauges, Pliers, Saw Tools, Saws, and Squares  
**Identifying Marks:** Variations of the company name with city, state, patent dates, brands, and figures including scales, keystones, and “KEYSTONE TOOL (or saw) WORKS”  
**Remarks:** The Disston company was established in 1840 by Henry Disston as the Disston Saw Works and initially only made saws. In 1855 he cast the first crucible saw steel ever made in America. He started also making files in 1865. See DATM pg. 227 - 229 for a complete listing of the Disstons and their tool manufacturing operations. The following companies were acquired by Disston over the years:  
Johnson & Conaway 1857  
P. Fraley & Co. 1859  
John H. Gunniss 1861  
William Cresson 1862  
Bringhurst & Verree 1866  
James Turner 1867  
Aaron Nichols Unknown  
Hill & Davenport 1868  
Wm. & Harvey Rowland 1870  
Waterhouse Saw Co. 1874  
Richardson Bros. 1890  
Harvey W. Peace Co. 1890  
Pennsylvania Saw Co. 1892  
Wheeler, Madden & Clemson 1893  
Woodrough & McParlin 1893  
Woodrough & Clemson 1893  
Baldrige & Hogan Saw Co. 1901  
American Saw Co. 1901  
(Kuc 2011, 119)  
**References:**  
Disston Saw Co.
Links: http://www.disstonprecision.com/ - Official website
http://www.roseantiquetools.com/index.html - Rose Antique biography on Disston
http://sawshq.com/disstonsaws/ - Everything Saws, from Air Saws to Zero Clearance contains many links to sites both about Disston or selling their saws.
http://www.davistownmuseum.org/bioDisston.htm

**Dixon Crucible Co., Joseph**
Jersey City, New Jersey, 1827-1931-
**Tool Types:** Pencils and Crucibles
**Remarks:** This company’s name was changed to Dixon Industrial Markers sometime in the mid-1900’s (Nelson 1999). The role of Joseph Dixon in the evolution of American production of cast steel is noted in the *Hand Tools in History* series volumes 7 and 8. Dixon’s manufacture of heat-resistant clay crucibles was the key factor in the evolution of America’s ability to smelt cast steel of equal quality to the crucible cast steel being manufactured in Sheffield, England.

**Doggett, Simon**
Middleboro, Massachusetts, -1762-1775-
**Tool Types:** Wood Planes and Other Tools
**Remarks:** Doggett Simon (January 4, 1738 – May 6, 1823) was a joiner whose Tory leanings during the American Revolution negatively impacted his business, forcing him into farming after 1775 (Nelson 1999).

**Douglas Axe Manufacturing Co.**
E. Douglas, Massachusetts, 1836-1897
**Tool Types:** Adzes, Axes, Hoes, Knives, and Picks
**Identifying Marks:** Variations of the maker’s name, “W.HUNT” or “WHUNT&CO.,” one of the cities and/or “CAST STEEL WARRANTED”

**Remarks:** Information surrounding this company is cloudy and contested at best owing to the “Hunt” references on the tool markings. Theories include that Warren Hunt was a founder and major stockholder or that Hunt was an axe maker who was bought out by Douglas Co. A Canadian subsidiary running from 1866 to 1885 had the same name until sold to E. Broad & Sons. Their business address was in Boston by 1870, but had other factories stamping HOWE, NEWSHOPS, LOVET WORKS, UPPER WORKS, GILBOA and EAST PLANT on tools. Other brand names used include E. MOORE, L. STONE, D. SHARP and L. QUIN, all company employees (Nelson 1999).

**Links:** [http://findarticles.com/p/articles/mi_qa3983/is_200009/ai_n8925288/](http://findarticles.com/p/articles/mi_qa3983/is_200009/ai_n8925288/)  
[http://www.davistownmuseum.org/biodouglas.html](http://www.davistownmuseum.org/biodouglas.html)

**Doughlass Mfg. Co.**  
**Seymour, Connecticut, and Arlington, Vermont, 1856-1894-**  
**Tool Types:** Augers, Bits, Boring Machines, Chisels, Draw Knives, Handles, Screwdrivers, and Taps  
**Identifying Marks:** DOUGLAS MFG. Co.; D.M.CO.  
**Remarks:** This company was owned by F.L. Ames (1856-1873), Thomas Douglass and Richard Bruff (1873), Russell & Erwin (1874-1877), and finally James Swan. It is possible this company had a branch in Bridgeport due to a knife-like tool with the maker’s mark, “D.M.CO./BPT,CONN.” (Nelson 1999). A number of Douglass tools were restamped and sold by James Swan to at least one retailer in Boston, Massachusetts.

**References:**  

**Links:** [http://www.flickr.com/photos/22280677@N07/3310139375/](http://www.flickr.com/photos/22280677@N07/3310139375/)

**Dover Stamping Co.**  
**Boston, Massachusetts, 1833-1891-**  
**Tool Types:** Hammers, Household Tools, Ice Tools, Knives, Picks, Saws, Shovels, and Tinsmith Tools  
**Remarks:** This company lists an 1833 date of establishment but it may have had an earlier name. Products produced include waffle irons, coffee mills, fly traps, a sausage stuffer patented by A.W. Hale on March 15, 1859 which was later made by Peck, Stow & Wilcox, and egg beaters patented under MAMMOTH, FAMILY, and TUMBLER on May 31, 1870; May 6, 1873; August 26, 1876 (invalid); April 3, 1888; and November 24, 1891 (Nelson 1999).

**Drew & Co., C.**  
**Kingston, Massachusetts, 1837-1937-**  
**Tool Types:** Augers, Bits, Chisels, Hammers, and Others  
**Identifying Marks:** Variations of the maker’s name, city, state, MADE IN USA, and CAST STEEL  
**Remarks:** Christopher Prince Drew was a famous maker of caulking tools, caulking mallets, shingle rips, and cat’s paws in Kingston, MA. Christopher Drew is also known for the high quality of his caulking mallets,
the best of which were made from live oak. He also used black mesquite, but caulkers noted that it was particularly slippery to handle and preferred the live oak. Drew caulking mallets were either made with malleable iron or cast steel ferrules; the more durable cast steel caulking irons were marked with a triple O after the company mark, hence the name “triple ought” for the best quality caulking irons (Ed Shaw, personal communication). His company used the mark “C DREW & CO” and “C DREW & CO KINGSTON MASS”. In 1970, the company was sold to the Kingston Tool Company owned by Robert W. MacWilliams of Ashburnham. The factory burned to the ground shortly after the sale.

References:

Links: http://www.numismalink.com/drew1.html
http://www.davistownmuseum.org/bioDrew.htm

Dunlap, Samuel
Henniker, Bedford, and Salisbury, New Hampshire, -1779-1830
**Tool Types:** Braces, Cheese Presses, Rakes, Rolling Pins, Saws, Textile Tools, Washboards, Wood Planes, and Others
**Remarks:** Samuel worked for his brother, John, before working on his own. He worked in Bedford from 1773 to 1779, Hennicker from 1779 to 1797, and in Salisbury from 1797 to 1780, but is only known to have made tools on his own in the latter two (Nelson 1999).

Dutcher, Elihu
Pownal, Vermont, -1844-
**Tool Types:** Metal Planes
**Identifying Marks:** ELIHU DUTCHER/POWNAL VT//PATENT
**Remarks:** DATM (Nelson 1999) lists his birth date as 1802 and death date as 1854. Two views of his plow plane are on the frontispiece.

Dwight & Co., Timothy
Seymour, Connecticut, -1836-
**Identifying Marks:** T.DWIGHT&CO., sometimes with a Jb or Jr at the end.
Dwights & Foster
Seymour, Connecticut
**Identifying Marks:** DWIGHTS & FOSTER/SEYMOUR, CONN., sometimes with “CAST STEEL” instead of SEYMOUR, CONN. or no second line

Dwights, French & Co.
Seymour and Humphreysville, Connecticut, -1849-1900-
**Identifying Marks:** DWIGHTS & FRENCH; DWIGHTS FRENCH & CO
**Tool Types:** Augers, Bits, and Plane Irons
**Remarks:** Timothy Dwight was somehow associated with Upson Mfg. Co. Either he or John Dwight were involved in Dwights, French & Co. and possibly Dwights & Foster. The “Dwights” in Dwights, French & Co. probably refer to Timothy and John Dwight (Nelson 1999).

Eagle Ratchet Co.
Holliston, Massachusetts, 1858-1868-
**Tool Types:** Drills and Wrenches
**Remarks:** This company made a ratchet patented on June 29, 1858 by H.H. Packer, the company’s agent and supervisor (Nelson 1999).

Eagle Square Manufacturing Co./ Millington and George
Shaftsbury, VT, 1859-1874, 1874-1881-
**Tool Types:** Boring Machines and Squares
**Remarks:** The Directory of American Toolmakers has two listings for the Eagle Square Co. The first is Eagle Square Co., South Shaftsbury, VT, 1859 - 1874. “This is a consolidation of the former steel square making activities of Dennis George, Jeremiah Essex, Heman Whipple, Lewis Beach, and the Hawks, Loomis & Co. Other square makers Stephen A. Whipple, Milo Pierce, and Norman A. Douglass were also incorporators of the company, but were not listed as contributors to its initial inventory. It also used equipment and machinery formerly used by R.W. Bangs. In 1874 its name was changed to Eagle Square Mfg. Co.” The second listing, Eagle Square Mfg. Co. continued in business at least until 1881.

Eagle Squares can be traced back to the 1817 patent of Silas Hawes who was the first of many square makers working in the Shaftsbury and South Shaftsbury area; DATM indicates Silas Hawes made squares in Shaftsbury, VT, 1814 - 1828, but that several other local makers also marked their squares “HAWES PAT.” These were predecessors to the famous Eagle Square Co. organized in 1859. Along with the square makers noted above, DATM also notes May and Blackmer as a square maker working before the formation of Eagle Square. Jeremiah Essex also made squares in Bennington, Vermont, 1830 – 1859, before merging with the Eagle Square Co. in 1859. Of particular note is that the square makers who followed Silas Hawes often only marked their squares with either “HAWES PAT” or “S. HAWS PATENT WARRANTED STEEL” (Nelson 1999). An example of the latter is in the Davistown Museum Collection ID# 121906T1. Also in the Davistown Museum Collection is a second framing square ID# 040103T9 marked “HAWES patent 1825” and ID# 63001T3, a “J. Essex CAST STEEL WARRANTED No. 1.” A curious aspect of the square manufacturing activities of makers preceding the organization of the Eagle Square Co. is the relatively common appearance of S. HAWS as the makers mark, rather than the also common HAWES PATENT. Why many of the early Vermont makers changed their mark is unknown.
Also of interest is the change in the metallurgical composition of the squares; both examples of the museum’s early Hawes squares are made of malleable iron; the later Essex square is clearly stamped CAST STEEL. An ongoing project for the Davistown Museum will be to examine incoming examples marked Eagle Square (many have been sold by Liberty Tool Co. in the last 30 years) to see if they also are marked cast steel. More information about any Eagle Squares with the mark cast steel would be appreciated.

The Shaftsbury, VT, square-making community is also important for the foundations laid for future measuring tool manufacturing activities. Major changes were occurring in the way tools were manufactured during the 1830s, 1840s, and 1850s. This Millington & George, 1853, patent model for a dividing machine is currently owned by Rick Floyd. Its dimensions are roughly 8 ½” X 5” X 6 ½” tall. This patent model represents a landmark in the evolution of the Industrial Revolution as its use in the marking of framing squares meant that all the marks on a square previously hand stamped could be done by this machine in one step. This patent model dates from the same period of time -- the 1850s -- as the invention of the micrometer, the milling machine, the Robbins and Lawrence Armory’s first production of interchangeable rifle components, and signals the advent of factory production of framing squares. For a more detailed and very interesting description of Silas Hawes tedious hand stamping of squares in the earlier years of the 19th century, use the University of Vermont link below and peruse their historical notes. The wooden model illustrated here was reproduced in a much larger size, presumably in cast iron, to become one of the earliest dividing machines to facilitate rapid, accurate production of measuring tools. Information on other dividing machines utilized by other toolmakers during the 19th century would be greatly welcomed by the Davistown Museum.

http://cdi.uvm.edu/findingaids/collection/eaglesquare.ead.xml -- 1847-1962, Special Collections, University of Vermont Library.
http://www.shaftsbury.net/images/eagle_square.htm -- Photo of the plant
http://www.davistownmuseum.org/bioEagleSq.htm

Eaton, E. &. E.
Enfield, New Hampshire, 1849
Tool Types: Edge Tools
Eaton, Eben
Tool Types: Coopers’ Adzes, Axes, and Knives
Eaton, Edward
-1850-1860-
Tool Types: Axes, Chisels, and Edge Tools
Eaton, Edward Jr.
-1850-
Remarks: E. & E. Eaton was possibly Edward Eaton Sr. and Jr. (Nelson 1999).
Eaton, Ephraim  
Fisherville (later called Penacook) and Concord, New Hampshire, -1852-1853-  
**Tool Types:** Anvils  
**Remarks:** Fisherville was a village in Concord. Ephraim Eaton only steel plated, finished and hardened anvils in his Concord shop, having them cast elsewhere. He may be the leather crafting toolmaker from Concord named E. Eaton and/or the E. Eaton making anvils in Troy, New Hampshire (Nelson 1999).

Eddy, William H.  
**Worcester, MA, 1873-1894**  
**Tool Types:** Planers, Twist Drills, Grinding Machines, Stone, Bolt, and Gear Cutters  
**Remarks:** Mr. Eddy was a contractor for L. W. Pond for 21 years.


Elliot, Henry  
**Taunton, Massachusetts, -1870-1871-**  
**Tool Types:** Edge Tools (Nelson 1999)

Ellsworth, G. F.  
**(South) Gardner, Massachusetts, -1868-1871-**  
**Tool Types:** Edge Tools (Nelson 1999)

Emerson Edge Tool Co.  
**Woodstock, Vermont, and East Lebanon, New Hampshire, -1874-1900-**  
**Tool Types:** Axes, Agricultural Tools, Hoes, Scythes, Shovels, Sickles, and Hay, Corn, and Straw Knives  
**Identifying Marks:** EMERSON EDGE TOOL CO./TAFTSVILLE, VERMONT  
**Remarks:** The Vermont plant, formerly used by D. Taft & Sons, closed in 1883. The “Taftsville” mark comes from the name of the part of Woodstock it occupied. It may or may not be related to Emerson & Cummings, Emerson & Kimball, or A.V.&M.W (Nelson 1999).

Essex, Jeremiah  
**Bennington, Vermont, -1830-1859**  
**Tool Types:** Squares  
**Remarks:** He merged with Eagle Square Co. in 1859. In 1860 he was making cotton belting (Nelson 1999).

Eyeless Tool Co.  
**-1897**  
**Tool Types:** Picks and Railroad Tools  
**Remarks:** This company became part of Atha Tool Co. in 1897 (Nelson 1999).

Fairbanks & Co., E. & T.  
**St. Johnsbury, Vermont, and New York City, New York, 1828-1916**
Tool Types: Hoes, Plows, and Scales
Remarks: Erastus and Thaddeus Fairbanks are chiefly known as scale makers, starting with their 1828 patent, but the company actually consisted of a hardware store and produced hoes and plows. The “& Co.” may have been removed at some point. In 1916 they became the Fairbanks, Morse Co. (Nelson 1999).

Farrington, I. B.
Brooklyn, New York, 1870-1879
Tool Types: Braces, Carpenter Tools, and Saws
Remarks: Farrington sold food-powered scroll saws and other tools. It’s unclear whether he manufactured anything or just dealt in tools (Nelson 1999).

Faxon, Richard
Braintree, Massachusetts, -1795-
Tool Types: Adzes, Axes, and Other Edge Tools
Identifying Marks: FAXON
Remarks: Tools marked FAXON may have been made by a different Faxon who died in Boston in 1824 and was succeeded by Jesse J. Underhill (Nelson 1999). The Jonesport Co. recovered two Faxon broad axes from a Braintree, MA, shop lot, c. 1975, and has recently recovered two other Faxon signed tools from the B. F. Cutter farm in South Pelham, NH. Both of these two latter tools, a clearly marked coopers’ adz and an offset hewing (vine?) ax are illustrated along with commentary about the possible significance of the Faxon family as one of the many clans of New England toolmaking families working in the period from 1650-1900.

Fay & Co., J. A.
Keene, New Hampshire, Norwich, Connecticut, and Cincinnati, Ohio, 1830-1899-
Tool Types: Carpentry Tools, Grinders, Saw Tools, and Saws
Remarks: George Page began producing in 1830 and founded this company with Jerub Amber Fay and Edward Joslin in 1834, adopting this name officially later, using Page’s 1830 est. date. Their product line included powered, hand/foot powered and non-powered items. They were joined by C.B. Rogers circa 1848 until 1861 when his plant in Norwich became C.B. Rogers & Co. and the Keene plant moved to Cincinnati (Nelson 1999).

Fay, Charles P.
Springfield, Massachusetts, 1884-1887
Tool Types: Calipers and Dividers
Identifying Marks: Mf’d. by C.P.Fay/Sp’d.Mass.USA
Remarks: This company sometimes used “& Co.” or the brand YANKEE. L.S. Starrett bought him out in 1887 and kept using names associated with his patents as late as 1898 despite his leaving Starrett to become a VP of J. Stevens Arms & Tool Co. in 1896. Patents include calipers on June 2, 1885 and January 1886, and a number of patents he assigned to Starrett and J. Stevens Arms & Tool
Co. He also made calipers patented by Samuel B. Dover on November 7, 1882 and James H. Bullard on February 9, 1886 (Nelson 1999).

**Fisher, John**  
**Lowell, Massachusetts, -1832-1836-**  
**Tool Types:** Railroad and Other Adzes and Other Edge Tools  
**Identifying Marks:** J.FISHER/CAST STEEL/LOWELL  
**Remarks:** Railroad adzes with this mark may be from a later maker with the same name (Nelson 1999).

**Fisher, Mark**  
**Levant, Maine, and Trenton, New Jersey, 1843-1847**  
**Tool Types:** Anvils  
**Identifying Marks:** FISHER MAKER/PATENT APRIL 24 1877  
**Remarks:** Fisher is possibly the first commercial American anvil maker. He moved to New Jersey from Maine in 1847, became a part of Fisher & Norris under the name Eagle Anvil Works, and fathered Clark Fisher who later ran Eagle Anvil, Vise & Joint Works (Nelson 1999).

**Flagg & Co., Samuel**  
**Worcester, Massachusetts, 1847-1861**  
**Tool Types:** Machinist Tools  

**Folding Sawing Machine Co.**  
**Chicago, IL and Essex Center, Ontario, 1883-1942**  
**Tool Types:** Saws  
**Identifying Marks:** F.S.M. CO., patent dates  
**Remarks:** Marvin O. Smith was the founder of this company, holding patents on a one-man sawing machine from October 31, 1882; July 22, 1884; February 17, 1885; January 28, 1890 and a Canadian patent on November 25, 1885. Marvin’s widow Mary was president of the company until 1904. The company underwent some sort of change that year and, despite remaining in business until 1942, did not appear in Chicago directories (Nelson 1999). The Chicago factory manufactured all orders except those from Canada; this allowed the sale of equipment duty-free within Canada. The tool catalog in the collection includes many written testimonials to the quality of these saws from both America and abroad.  
**References:**  
**Links:** http://www.davistownmuseum.org/bioFolding.html

**Fowler Co., Ltd., Josiah**  
**Saint John, New Brunswick, Canada, 1860-1922**  
**Tool Types:** Axes  
**Identifying Marks:** JOSIAH FOWLER CO. EXTRA AXE STEEL  
**Remarks:** To quote an article in *The Chronicle*, “Just over the Maine border is the Canadian area of
New Brunswick. In the nineteenth century it was supported by the huge ship building trade. Upwards of five hundred wooden ships, including some world renown sailing ships were made there. Among the workmen in the area were a number of top quality blacksmith families. These master iron workers and edge toolmakers came to Canada as United Empire Loyalists, American colonists who remained loyal to the British crown after the united States War of Independence. Josiah Fowler was a third generation U.E.L. He opened his first shop in 1860 and in a number of partnerships, was active in St. John as late as 1922. Good specimens of his axes are still located by sharp-eyed collectors. There was a large trade of edge tools between the United States and Canada over eight decades at least, up until World War I.” (Klenman 1998, 25).

One of Josiah’s descendents, Betty Dunfield, came across some of his records in her reconstruction of the family tree, including some letters he wrote while serving in the American Civil War as a bugler.

When John Gardiner of the Mystic Seaport Museum visited the Jonesport Wood Co. store (now leveled) in W. Jonesport, Maine, in the late 1970s, he provided similar information about Josiah Fowler. He also indicated that J. Fowler was an important New England area ship’s carpenter toolmaker whose adzes were, by oral tradition among Maine shipwrights, considered to be the finest ever made.

The DATM lists Josiah Fowler as working in St. John 1881 - 1920.

The text *St. John the Metropolis of NB* published in 1908 lists on pg. 56-7 that Fowler made tools as early as 1864.

**References:**


**Links:**


http://www.davistownmuseum.org/bioFowler.html

**Fray, John S.**

**Bridgeport, Connecticut, -1859-**

**Tool Types:** Braces and Combination Tools

**Identifying Marks:** JOHN S. FRAY/SPOFFORDS PAT; J.S.FRAY & CO. BRIDGEPORT CT. USA; J.S.& J. FRAY’S PAT. BRIDGEPORT.Ct.U.S.A.

**Remarks:** Fray also used “Co.” and “& Co.” He may have been a part of Fray & Pigg. Patents include the Spofford patent brace on November 1, 1859, a brace attachment from May 11, 1869, a bit brace from August 20, 1872, and a brace on January 8, 1889 (Nelson 1999). The Fray Co. and his patents were bought out by the Stanley Rule and Level Co. in the late 19th century.

**Links:** http://www.findagrave.com/cgi-bin/fg.cgi?page=gr&GRid=16891438 – Fray’s Grave

http://www.sydnassloot.com/Brace/Fray.htm

**French & Co., Raymond**

**Kinneytown (later Seymour and/or Derby), Connecticut, 1844-**

**Tool Types:** Augers, Bits, Chisels, and Plane Irons

**Remarks:** This company consisted of Raymond French and John and Timothy Dwight. The name was soon changed to Dwights, French & Co. (Nelson 1999).
French, Swift & Co.
Derby, Humphreysville, and Seymour, Connecticut, 1847-1866
Tool Types: Augers
Remarks: This company consisted of Warren French, Charles Swift, Henry B. Beecher, and three other partners. In 1866, Beecher and/or his son F.H. Beecher took it over (Nelson 1999).

French, Walter
Mansfield and Seymour, Connecticut, 1812-1838-
Tool Types: Augers and Bits
Identifying Marks: WALTER FRENCH
Remarks: Walter, a pioneer manufacturer of screw augers and bits, was born January 5, 1781. He moved from Mansfield to Seymour around 1810 but whether he made tools prior to the move is unknown. He managed the Clark Wooster business in Humphreysville, Connecticut before becoming a part of French & Robbins in Westville, Connecticut (Nelson 1999).

Gage, John H.
Nashua, New Hampshire, 1838-1850
Tool Types: Edge Tools and Machinist Tools
Remarks: Gage used Nashua Machine Co.’s machine shop. He was part of Gage, Warner & Whitney from 1851 to 1862 and the first president of Underhill Edge Tool Col from 1852 to at least 1858 (Nelson 1999).

Fuller, J. A.
Worcester, Massachusetts
Tool Types: Machinists’ Tools, Lathes, Planers, Speed Lathes, Bench Gears, and Small Dynamos

Gage Tool Co.
Vineland, New Jersey, 1883-1919
Tool Types: Planes
Remarks: John Porcius Gage formed this company and owned it until 1917. In 1919 it was sold to Stanley Rule & Level Co. who continued to use its name. J.P. Gage had plane patents on 4 August 1885, 13 April 1886 and 8 November 1892. The 30 January 1883 patent of David A. Ridges was also used. This company was known for its transitional planes with metal tops and wood bottoms (Nelson 1999). The transitional planes manufactured by this company began the incorporation of varying amounts of metal into the design of the planes themselves. See Carl Bopp’s lecture on tracing down this movement.

References:
Aber, R. James. 1978. Some notes on Gage planes. CRAFTS of NJ meeting.
United Brotherhood of Carpenters and Joiners of America. (1915). Carpenter. United Brotherhood of Carpenters and Joiners of America, Indianapolis, IN.
Germantown Tool Works
Philadelphia, Pennsylvania, 1884-1894
**Tool Types:** Axes, Hammers, Hatchets, Pliers, and Other Edge Tools
**Identifying Marks:** GERMANTOWN/TOOLWORKS/SOLID CAST STEEL (top and bottom lines form an oval); GERMANTOWN TOOL WORKS//PHILADELPHIA, PA; GERMANTOWN/MASTER BUILDER (in a keystone); G T W (in a keystone)
**Remarks:** This company’s name was later changed to Griffith Tool Works. This company is possibly a brand name used by Yerkes & Plumb, who succeeded Jonathan Yerkes in 1857, Griffith’s cited date of establishment (Nelson 1999).

Gilmore, Hiram & Leonard
Claremont, New Hampshire, 1826-1841-
**Tool Types:** Axes, Edge Tools, and Scythes
**Remarks:** These brothers were cited by an 1895 source as the Gilmore Edge Tool Works but they are not known to have used that name (Nelson 1999).

Gladwin & Appleton
Chelsea, Massachusetts, 1873-1877
**Tool Types:** Wood Planes
**Identifying Marks:** GLADWIN&APPLETON/BOSTON (first line curved)
**Remarks:** This company consisted of Porter A. Gladwin and Thomas L. Appleton who worked alone and with other partners (Nelson 1999) and was a prolific maker of molding planes, which are frequently encountered in new tool collections (FFLTC).

Goldblatt Tool Co.
Kansas City, Kansas
**Tool Types:** Axes, Hatchets, and Remodeling Tools
**Identifying Marks:** GOLDBLATT TOOL CO/KANSAS CITY KAN
**Remarks:** America’s most prolific 20th century manufacturer of high quality masonry tools, the Goldblatt Co. may have started in Kansas City, date unknown, in the late 19th century as a maker of axes and hatchets (Nelson 1999).
http://www.davistownmuseum.org/biogoldblatt.html

Goodell Co.
Antrim and Bennington, New Hampshire, 1875-1911
**Tool Types:** Agricultural Tools, Cutlery, Handles, Household Tools, Leather Tools and Knives,
Wrenches, Apple Parers, Peach Parers, Cherry Pitters, Corers, Slicers, Can Openers, Seed Sowers, Pencil Sharpeners, and Others

**Identifying Marks:** Goodell/ANTRIM.N.H. (Goodell in cursive); GOODELL CO./ANTRIM.NH (sometimes on one line, sometimes with patent dates)

**Remarks:** This company consisted of David Harvey Goodell and the Woods Cutlery Co. The Bennington plant opened in 1879 but continued to mark tools ANTRIM. They used a number of brand names, including ACME, BONANZA, DANDY, EUREKA, FAMILY BAY STATE, FAMILY CHERRY STONER, NEW LIGHTNING, TURNTABLE, VICTOR, WHITE MOUNTAIN, and WINESAP. Patent dates include E.L. Pratt, Boston, October 6, 1863; E.L. Pratt, August 23, 1864, May 10, 1870; August 4, 1874; April 6, 1880, May 3, 1881, January 5, 1885 (invalid), April 27, 1886; November 6, 1886; November 16, 1886; March 13, 1888; May 24, 1898; and other unspecified patents in 1886 and 1893. They also made tools based on D.H. Whittemore patents on August 10, 1869 and January 11, 1871 (invalid) (Nelson 1999).

**Links:** [http://www.industrialhistory.org/museumwebsite_002.htm](http://www.industrialhistory.org/museumwebsite_002.htm) -- Goodell Company Listing

**Goodell Mfg. Co.**
Greenfield, Massachusetts, 1899-1923-

**Goodell Bros.**
Shelburne Falls and Greenfield, Massachusetts, 1888-1899

**Tool Types:** Clamps, Drill Chucks, Drills, and Screwdrivers

**Identifying Marks:** Variations of the maker name, sometimes with Co., a city/cities, and/or patent dates

**Goodell Tool Co.**
Worcester, Shelburne Falls, and Greenfield, Massachusetts, 1888-1925

**Tool Types:** Braces, Glass Cutters, Wrenches, and Others

**Identifying Marks:** GOODELL TOOL CO//SLEBURNE/FALLS MASS.

**Remarks:** Goodell Bros. company was formed by Albert D. and Henry E. Goodell. Albert sold his interest to Dexter W. Goodell after the company moved from Shelburne Falls to Greenfield in 1892. In 1899, William Pratt bought them out and changed the name to Goodell Pratt Co. Other patents by Goodell Bros. included spiral screwdrivers patented July 22, 1890 and November 17, 1891. Sometime after being bought out in 1899, possibly as late as 1903 when it was incorporated, Henry E. Goodell formed Goodell Mfg. Co. Pratt eventually bought this company out as well in 1923 and merged it with the existing Goodell Pratt. Albert formed the Goodell Tool Co. with his son Frederick after his departure and moved from Worcester to Shelburne Falls in 1893. Albert had patents from July 14, 1868; June 10, 1873; July 29, 1873; and February 1884, some of which were assigned to Millers Falls Co. This company also made braces with 1892 and 1894 patents and a butt gauge with a December 18, 1894 patent. The company was slowly bought out by the Goodell Pratt Co., which owned 50% in 1907 and took it over entirely by 1925 (Nelson 1999).

**Goodell Pratt Co.**
Greenfield, Massachusetts, 1899-1931
**Tool Types:** Calipers, Drill Chucks, Drills, Saws, and Wrenches

**Identifying Marks:** Various arrangements and combinations of the maker name, city, state, and “TOOLSMITHS.” Alternately, “G P/Co” in a shield outline.

**Remarks:** A successor to the Goodell Bros., this company acquired Stratton Bros., Coffin & Leighton Co. and Lavigne Micrometer Co. prior to being acquired themselves by Millers Falls in 1931. Stockpiles of marked tools continued to be retailed a few years after their acquisition. The owner, William Pratt (1867-1946), worked for H.H. Mayhew Co. and Wells Bros. Co. prior to founding Goodell Pratt Co. and was possibly related to Henry L. Pratt, a founder of Millers Falls Co. (Nelson 1999). Albert Goodell was involved in the patenting and manufacture of several drill braces while in collaboration with Goodell Pratt. He formed Goodell Bros. in 1888, one of the original companies that formed Goodell Pratt Co.

**Links:**
- [http://oldtoolheaven.com/related/goodell-pratt-history.htm](http://oldtoolheaven.com/related/goodell-pratt-history.htm) -- Old Tool Heaven entry
- [http://www.wkfinetools.com/hUS/boringTools/goodPratt/tools/handDrills/gpHD-5.5Series/gpHD-5.5B/gPrattHD_No5.5B.asp](http://www.wkfinetools.com/hUS/boringTools/goodPratt/tools/handDrills/gpHD-5.5Series/gpHD-5.5B/gPrattHD_No5.5B.asp) -- An article on some circa 1905 Goodell Pratt drills
- [http://preservationgreenfieldma.org/placesindustrial.html](http://preservationgreenfieldma.org/placesindustrial.html) -- Greenfield Company listings

**Goodnow & Wightman**

**Centerbrook, Connecticut, 1874-1983**

**Tool Types:** Others

**Identifying Marks:** Various arrangements and combinations of the maker name, city, state, and “TOOLSMITHS.” Alternately, “G P/Co” in a shield outline.

**Remarks:** While they advertise as ‘manufacturers,’ they may have, in fact, only been dealers. The only known patent to Goodnow is a washer cutter. By 1898, the Goodnow patent washer cutter was being sold by Luther H. Wightman & Co., their successor. The 1882 catalog lists them as “importers, manufacturers and dealers in tools of all kinds for machinists, pattern-makers, carvers, model makers, amateurs, cabinet-makers, jewelers, etc. and materials of all kinds” (Nelson 1999; Goodnow & Wightman [1882]). The catalog does, in fact, contain planes for sale, including Bailey’s patent planes. A note in the beginning notes that they make “models and small experimental Machines of all kinds, to order.”

**References:**

**Links:** [http://www.davistownmuseum.org/bioGoodnowWightman.html](http://www.davistownmuseum.org/bioGoodnowWightman.html)
Goodspeed & Wyman
Winchendon, Massachusetts, 1826-1876-
**Tool Types:** Carpentry Tools, household Tools, Lathes, Sewing Machines, Butter Churns, Spool/Bobbin Machines, and Saws
**Remarks:** G. N. Goodspeed and Harvey Wyman started this company, sometimes adding “Machine Co.” The barrel stave cylinder saw they produced was their own invention. At some point after 1876 the name changed to G.N. Goodspeed Co. and later the Goodspeed Machine Co., which persists today (Nelson 1999).

Gray, John
Kingston, Massachusetts, -1849-
**Tool Types:** Axes, Chisels, and Other Edge Tools
**Identifying Marks:** J.GRAY/CAST STEEL/KINGSTON (Nelson 1999)

Greenfield Tool Co.
Greenfield, Massachusetts, 1851-1883-
**Tool Types:** Clamps, Marking Gauges, Wood Planes, and Other Hand Tools
**Identifying Marks:** GREENFIELD TOOL Co/GREENFIELD MASS (versions with both straight and curved lines)
**Remarks:** While best known for its planes, this company, which succeeded the Conway Tool Co. with Alonzo Parker as its agent, manufactured a variety of marking, cutting and slitting gauges and clamps and was reported as working until 1883 making an “iron plane gauge,” patented 26 July 1887 by Edward B. Shapardson. This product was still being sold in 1905 (Nelson 1999). This was an extremely prolific company, producing a wide variety of hand tools that can be found in circulation today.

**References:**

Greenlee Bros./Greenlee Tool Co.
Chicago and Rockford, Illinois, 1876-1927-
**Tool Types:** Carpentry Tools
**Identifying Marks:** ROCKFORD/GREENLEE/ILL. U.S.A.; ROCKFORD ILL/GREENLEE/G (in a diamond)
**Remarks:** This company was founded by the Greenlee twins, Robert Lemuel and Ralph Stebbins, who were born in PA and moved to Chicago in 1859 to work for the Machine Roller Co. In 1876 they perfected a “hollow chisel” and in 1881 a power ripsaw. “& Co.” was added to their name in 1890; in 1904 they moved to Rockford. They dealt primarily in power tools, not offering hand tools until 1910. They acquired the Reliance Edge Tool Works of Youngston, OH, in 1910, the Rockford Bit Co. of Kokomo, IN, in 1916, and the Jackson Mfg. Co. of Jackson, OH, in 1918 (Nelson 1999). Products of note include the Greenlee Hollow Chisel Mortiser, a combination four-sided chisel and rotating bit that allowed square holes to be made in wood; a Greenlee Tie Machining Car, a mobile
railroad tie milling machine which gained import in the post-civil war western expansion; and a Self-feed Power Ripsaw, a wildly popular power saw that proved both safer and more effective than existing equivalents. After 1910 they became one of America’s most prolific manufacturer of edge and other small hand tools.


Links: http://www.greenlee.com/Company Info/history.shtml -- The modern day Greenlee’s site (now Greenlee & Textron), including company history.  
http://www.davistownmuseum.org/bioGreenlee.html

**Gregg, Mahlon**  
**Rochester, New York, 1854-1870-**  
**Tool Types:** Cooper Tools, Draw Knives, Edge Tools, Agricultural Tools, and Leather Tools  
**Identifying Marks:** M.GREGG/ROCHESTER N.Y.  
**Remarks:** Gregg was part of Gregg & Hamilton from 1866 to 1867 (Nelson 1999).

**Griffin, Edmond**  
**E. Bridgewater, Massachusetts, -1849-**  
**Tool Types:** Edge Tools (Nelson 1999)

**Griffith & Co.**  
**W. Cambridge, Massachusetts, -1849-**  
**Tool Types:** Saws  
**Remarks:** This company is unconnected to Charles Griffiths & Co. of Boston as evidenced by directory listings (Nelson 1999).

**Griswold & Co., George G.**  
**Chester and Clinton, Connecticut, 1857-1858-**  
**Tool Types:** Augers and Bits  
**Identifying Marks:** GEO.G.GRISWOLD & Co.  
**Remarks:** There are some disparities in directory listings regarding whether they were in Clinton or Chester and how early or late they worked. Patents included an auger making process from April 1, 1856 and a November 29, 1864 patent for a grindstone, both listing his home as Chester, though one 1857-1858 directory lists this company in Clinton (Nelson 1999).

**Griswold, Charles L.**  
**Chester, Connecticut, 1855-1884**  
**Tool Types:** Augers, Awls, Bits, and Other Edge Tools  
**Remarks:** Charles is sometimes confused with George G. Griswold but it is unknown whether they were in any way related. His patents included an auger from May 30, 1865; a gimlet from November 26, 1872; and a gimlet handle patent from September 23, 1873 (Nelson 1999).
Hammacher, Schlemmer & Co.
New York City, New York, 1885-1900-
**Tool Types:** Adzes, Axes, Pliers, Rules, Wood Planes, and Wrenches
**Identifying Marks:** H.S.&Co NY; Various configurations of the maker’s name, city name or initials, and sometimes a street address.
**Remarks:** Albert Hammacher and William Schlemmer ran a hardware store, marking a variety of tools. It is unclear whether Schlemmer worked for Hammacher & Co. before becoming a partner in 1885. An existing William Schlemmer & Co. hardware business in 1871 seems to make it likely that he was independent. Some tools they sold with unknown makers include nipper pliers patented 25 September 1893 (invalid date) and called “Mediden” and a piano tuning wrench patented by “Mueller,” 3 October 1899 (Nelson 1999). Hammacher, Schlemmer & Co. was a very successful hardware store. By 1912 it had the largest catalog of any hardware dealer on the east coast, totaling 1,112 pages. Their product line eventually included the first pop-up toaster, electric razor, answering machine and microwave oven. They are in business today, carrying lines of giftware.
**References:**
**Links:**
http://www.davistownmuseum.org/bioHammacher.html

Hammond, Charles
Philadelphia, Pennsylvania, 1869-1908-
**Tool Types:** Adzes, Axes, Hammers, Hatchets, and Other Edge Tools
**Identifying Marks:** C.HAMMOND/PHILADA (sometimes curved, sometimes on the same line)
**Remarks:** Hammond added “& Son” to his name, possibly not until after 1900. Brand names include MECHANICS PRIDE on hammers. The mark is sometimes misread “O. HAMMOND” (Nelson 1999).

Hannum, Caleb W.
Chester Village (later renamed Huntington), Massachusetts, -1849-1855-
**Tool Types:** Axes and Chisels
**Identifying Marks:** C.W.HANNAM/CHESTER VILLAGE; C.W.&J.HANNUM/HUNTINGTON,MA.
**Remarks:** Caleb W. (May 16, 1810-November 24, 1868) was the song of Caleb Hannum. The “J.” in the mark probably refers to his brother John or Joseph (Nelson 1999).

Hardy, David P.
Hebron, New Hampshire, 1872
**Tool Types:** Edge Tools (Nelson 1999)

Hardy, Ephraim L.
Brookline and Hollis, New Hampshire, 1821-1870
**Tool Types:** Axes, Coopers’ Tools, Draw Knives, and Shaves

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Identifying Marks: HARDY
Remarks: Ephraim L. Hardy (October 14, 1801-November 28, 1870) moved from Hollis to Brookline circa 1840. One source says he marked tools E. HARDY but no such tools have been found (Nelson 1999).

Harlow, C. C.
Bridgewater, Massachusetts, -1869-1875-
Tool Types: Augers and Metal Planes
Identifying Marks: C.C. HARLOW MAKER BRIDGEATER, MASS.
Remarks: Products included Russell Phillip’s patent plow planes and hollow augers, some of which were marked by Babson & Repplier, possible marketers (Nelson 1999).

Harmon & Co., Bronson
N. Bennington, Vermont, -1848-1854
Tool Types: Rules and Squares
Remarks: Harmon may have worked under his own name prior to 1848 (Nelson 1999).

Harmon, John W.
Boston, Massachusetts, 1860-1907
Tool Types: Levels, Yardsticks, Spirit Levels, Telescopic Sighting Levels, and Rules
Identifying Marks: J.W.HARMON/BOSTON, MASS
Remarks: The telescopic sighting level was made under patents from November 23, 1880 (Harmon’s) and January 23, 1883. The former was also used by Grade Level Co. (Nelson 1999).

Hart, L.
Farmington, Connecticut, -1823-
Tool Types: Tinsmiths’ Shears (Nelson 1999)

Hart, William
Portsmouth, New Hampshire, 1757-1809
Tool Types: Rules, Scales, Survey and Navigational Instruments, Scales, Gauging Rods, Telescopes, and Other Scientific Instruments
Identifying Marks: WM:HART/FECIT

Hartford Tool Co.
Hartford, Connecticut, 1883-1890
Tool Types: Augers, Dies, Reamers, Threading Tools, Lathe Tools, Machinist Tools, and Others
Remarks: This company was formed by former Pratt & Whitney employees E.G. Parkhurts, M.D. Pratt, J.E. Woodbridge, and Frederick N. Gardner and may have been a Pratt and Whitney subsidiary. They may have marked tools the H.T. Co. patents include a drafting compass from September 28, 1886 by Gardner, later assigned to Pratt & Whitney. They went out of business in 1890 but continued to sell inventory until 1892 (Nelson 1999).
Harvey, H. H. & Co.
Augusta, Maine, and Boston, Massachusetts, 1872-1914

**Tool Types:** Blacksmithing Tools, Ice Tools, and Stone-working Tools  
**Identifying Marks:** H.HARVEY/AUGUSTA.ME./MANUF’R  
**Remarks:** The “& Co.” is inconsistently used. The factory was in Augusta while headquarters and distribution was in Boston (Nelson 1999).

**References:**

**Links:** [http://www.davistownmuseum.org/bioHarvey.html](http://www.davistownmuseum.org/bioHarvey.html)

Harwood & Quincy Machine Company
Worcester, Massachusetts, 1881-  
**Tool Types:** Bramwell Feeder  
**Remarks:** They held the patent for the Bramwell feeder, invented by W. C. Bramwell of Terre Haute, Indiana.


Haselton, Rufus B.
Groton and Contoocock, New Hamsphire, 1847-1875-  
**Tool Types:** Calipers, Rules, and Squares  
**Identifying Marks:** R.B.HASELTON/GORTON,N.H. (sometimes with an eagle)

Haselton & Son, Rufus B.
Groton, New Hamsphire, -1877-1879  
**Tool Types:** Calipers, Rules, and Squares

Haselton, Hermon R.
Contoocock, New Hamsphire, 1880-1939  
**Tool Types:** Calipers and Rules  
**Remarks:** Rufus B. Haselton, sometimes recorded as Heselton or Hazelton, worked with his son, Hermon, from 1877-1879 but it is unknown how deeply his son was involved. Rufus moved to Contoocock in 1871. Hermon used his father’s mark throughout his career—rules marked Contoocock are generally attributed to Hermon while the ones marked Groton are more likely Rufus’s (Nelson 1999).

Hathaway, Braddock D.
New Bedford, Massachusetts, -1836-1873-  
**Tool Types:** Axes, Carpenter Tools, Coopers’ Tools, and Other Edge Tools  
**Remarks:** Hathaway and his two sons were blacksmiths who may or may not have made wooden planes (or if another unrelated B.D. Hathaway did) (Nelson 1999). The Hathaway family was one of New Bedford’s most prolific shipsmiths and edge toolmakers. See *Hand Tools in History* volume 7 for an illustration of a Hathaway tool (Brack 2008a, 37).

Hawes, Silas  
Shaftsbury, Vermont, 1814-1828
Tool Types: Squares
Remarks: Markers other than Silas Hawes (most notably Eagle Square Co.) marked their squares with variations of “HAWES PAT.” or similar markings. Hawes held a patent on a steel square from 1819 and a May 11, 1814 file patent though it is unknown whether he ever produced the latter (Nelson 1999). Hawes is generally credited with the invention of the framing square. He was the first of a prolific community of Vermont framing square makers.

Hawkins, William S.
New York City, New York, 1852-1871-
Tool Types: Axes, Coopers’ Tools, Draw Knives, Shipsmiths’ Tools, and Other Edge Tools
Identifying Marks: HAWKINS/N.Y.

Hawks, Loomis & Co.
Bennington, Vermont, -1854-1859
Tool Types: Squares
Remarks: This company succeeded Rufus W. Bangs after an 1852 flood destroyed his shop and were absorbed by Eagle Square Co. in 1859 along with several other local steel square makers (Nelson 1999).

Hay-Budden Mfg. Co.
Brooklyn, New York, 1890-1931-
Tool Types: Anvils (Nelson 1999)
Remarks: This company consisted of James Hay and Frederick C. Budden. By 1905, the company claimed to have 100,000 anvils in circulation and they remain prized among blacksmiths.
Links: http://www.fholder.com/Blacksmithing/anvil.htm
http://www.anvilmag.com/farrier/intbp.htm

Heald, Addison
Hudson and Milford, New Hampshire, 1868-1873
Identifying Marks: ADDISON HEALD/MILFORD.N.H. (name line curved, star between lines)
Heald & Son, Addison
Milford, New Hampshire, 1873-1906
Identifying Marks: A.HEALD&SON/MILFORD NH and variations, sometimes curved, sometimes without the city and state
Tool Types: Coopers’ Tools, Shaves, and Wood Planes
Remarks: Addison Heald (February 25, 1817-January 18, 1895) worked in Nashua as A. Heald & Co. circa 1856, as Warren & Heald circa 1860, alone from 1868 to 1873, and then with his son Daniel Milton Heald (born in Ohio January 9, 1852, died October 30, 1929), who continued using the name after Addison’s death in 1905. Daniel had patents on a plane iron holding and adjusting device from November 19, 1878 (Nelson 1999).

Heald, Paul
Atkinson, New Hampshire, -1856-1860-
Tool Types: Edge Tools
Remarks: Heald moved from working as a machinist to specializing in edge tools in 1856 (Nelson 1999).

Hedge, Lemuel
Windsor, Vermont, -1830
Tool Types: Rules
Remarks: Hedge was part of Hedge & Ayers in 1813, Pomeroy & Hedge circa 1815 (possibly cabinet makers, possibly tool and rule makers), then moved to Brattleboro, Vermont, where he patented a rule joint on April 22, 1835 used by Morton Clark & Co., and later worked for E.A. Stearns & Co., Morton Clark’s successor (Nelson 1999).

Heebner & Sons
Worcester and Lansdale, Pennsylvania, 1840-1926
Identifying Marks: HEEBNER’S; HEEBNER & SONS LANSDALE , PA.
Tool Types: Agricultural Implements and Machinery
Remarks: David S. Heebner (1810-1900), a farmer by trade, took out a loan against his farm in 1840 to begin production of agricultural equipment. His sons, Isaac D., Josiah D., and Jacob D. were all active in the firm, William being the sole owner from 1887. His early threshing machines were well-received by the relatively primitive farming communities in Worcester. They were made to order and took roughly six weeks apiece to construct. In 1862, Isaac and Josiah Heebner joined on and began manufacturing two-wheeled mower/reapers under a Ball patent. By 1877, the firm was shipping horse powers and threshers as far away as Nova Scotia and Prince Edward Island, with inquiries from South America, Bulgaria and Turkey. By 1882, Heebner & Sons sold fifty percent more machinery than the entire business done by all their local competitors put together. The “Little Giant” thresher was especially popular in Maine.
References:
Links: http://www.davistownmuseum.org/bioHeebner.html

Heller & Bros.
Heller Bros.
Heller Brothers
Heller Tool Co.
Newark, New Jersey, 1866-1955-
Identifying Marks: A standing horse, sometimes shown by a farrier with a rasp; MASTERENCH; MASTERWRENCH; H & B; variations of the horse and farrier mark with the Heller name (sometimes Heller Wagon Co.)
Tool Types: Blacksmith Tools, Files, Hammers, Wrenches, and Others
Remarks: This company used “Heller & Bros.” and “Heller Bros.” interchangeably from 1866 to 1899, Heller Brothers Company from 1899 to 1955, and Heller Tool Company from 1955 on. It was originally founded by three Heller brothers, Peter J., Lewis B., and Elias G. Jr. as a successor to their father, Elias Heller Sr. This company specialized in farriers’ tools (Nelson 1999). America’s most
prolific manufacturers of farriers’ rasps and blacksmiths’ hammers.

Links: http://www.davistownmuseum.org/bioHellerBros.html

**Henry, William**  
**Lancaster, PA, 1759-1786**  
**Tool Types:** Screw Augers  
**Remarks:** William Henry was America’s first producer of the screw auger in 1771. Many were made by Henry Ranch of Lititz, Lancaster County, PA, who perfected the production of William Henry’s screw auger in 1772. Henry’s screw augers were also soon produced Job T. Pugh and his father-in-law Benjamin Brooks in West Philadelphia by 1774 (Hutchins 2011, 95). Hutchins also notes Phinneas Cook working in England as an earlier producer of screw augers, but with a more primitive design, illustrated in *The Chronicle* article (Hutchins 2011, 98).

**Hjorth, William**  
**Jamestown, New York, 1896-1903-**  
**Tool Types:** Drills, Pliers, and Wrenches  
**Identifying Marks:** Wm HJORTH JAMESTOWN N.Y; HJORTH DRILL//PAT JUNE 11, 96  
**Remarks:** Hjorth patented and produced a wrench from December 15, 1896, a Drill from June 11, 1896 (invalid date), and a pair of “wrench-like” pliers from September 8, 1903. In 1903, he added “& Co.” to his name (Nelson 1999).  
**Links:** http://www.alloy-artifacts.com/other-makers-p2.html -- Photo of Hjorth pliers

**Hobart, George W. L.**  
**Brookline, New Hampshire, 1855-1881**  
**Tool Types:** Edge Tools  
**Remarks:** Hobart was an edge tool blacksmith (Nelson 1999).

**Hobbs, C. E.**  
**Barre, Vermont, -1887-1890-**  
**Tool Types:** Bushing Hammers and Stone-working Tools  
**Remarks:** Hobbs had a partner named McDonald. An S. E. Hobbs also made bushing hammers—this may have been the same person, a successor, or completely unrelated (Nelson 1999).

**Hoe & Co., R.**  
**New York City, New York and Boston, Massachusetts, 1828-1969-**  
**Tool Types:** Planes, Saw Tools, Saws, and Others  
**Identifying Marks:** R.HOE & CO./NEW YORK; MANUFACTURED BY/~/R.HOE & CO/NEW YORK.N.Y. (first line curved upward)  
**Remarks:** Robert Hoe was born in England in 1784 and died in 1833. He was succeeded by his son Richard, who ran the company from 1838 to 1909. In 1843, its name was also recorded as “The Hoe Printing Press & Saw Mfg. Co.” Hoe & Co. was America’s largest producer of circular saw blades. Harvey Peace’s father managed the Hoe saw business for a period and Harvey worked there from 1849 to 1861 (Nelson 1999).
References:
http://findarticles.com/p/articles/mi_qa3983/is_200009/ai_n8917187
Links: http://www.davistownmuseum.org/bioHoe.html

Holway, Seth W.
*N. Sandwich, Massachusetts, -1860-1871-
Tool Types: Edge Tools
Remarks: Holway lived with Harriet N. Howes, Lewis Howes’s widow, and may have taken over the Howes business (Nelson 1999).

Hoole Machine & Engraving Works
*New York City and Brooklyn, New York, 1832-1911*
Tool Types: Engraving Patterns
Identifying Marks: HOOLE/MACH.&ENG.WK’S./BROOKLYN, N.Y.
Remarks: While the “Est” date is 1832, this name and the Brooklyn address may be post-1900. The Hooles were America’s most prolific bookbinding toolmakers, including John R. Hoole and his son, William E. Hoole (Nelson 1999). Prints owing to Hoole design can be found in innumerable books from the 19th and 20th centuries.
References:
Links: http://www.davistownmuseum.org/bioHoole.html

Hope & Co.
*Providence, Rhode Island, 1868*
Tool Types: Engraving Machines
Identifying Marks: “HOPE & Co. PROV. R.I.” on one side and “SPRING STEEL” on the other.
Links: http://www.davistownmuseum.org/bioHope.html

Hopkins, Richard Henry
*Chesterfield and Hinsdale, New Hampshire, 1855-1873*
Tool Types: Augers, Bits, Chisels, Draw Knives, Hatchets, Spinning Wheels, and Other Household Tools
Remarks: Hopkins worked for Hopkins & Pierce from 1868 to 1870, as a part of Wilder & Hopkins from 1870 to 1873, and as a part of Howe & Hopkins, possibly only working alone circa 1855 in Chesterfield. He had a patent on an auger from June 21, 1870 (Nelson 1999).
Hough, Isaac J.
Middletown, Connecticut, -1856-1858-
Tool Types: Tinsmith Tools
Identifying Marks: I.I.HOUGH/MIDDLETOWN.C
Remarks: Hough also may have worked as Hough & Co. (Nelson 1999).

Hovey, William
Boston, Massachusetts, 1830-1833-
Tool Types: Plane Irons
Identifying Marks: CAST STEEL/*W.HOVEY*/WARRANTED (top and bottom lines curved)
Remarks: Hovey had a patent on the plane iron making process used from March 10, 1830, and owned the Mill Dam Foundry, sometimes using its name in lieu of his own (Nelson 1999).

Howard & Co., E.
North Bridgewater and Boston, Massachusetts, -1849-
Tool Types: Cobblers’ Tools, Coopers’ Tools, Draw Knives, Hammers, Leather Tools, and Other Edge Tools
Identifying Marks: E.HOWARD & CO./N.BRIDGEWATER; E.HOWARD/N.BRIDGEWATER
Remarks: Howard & Fisher and this company are both listed as edge and shoe tools and are probably related. Manter & Blackmer are the successors of both E. Howard and E.S. Morton but whether Howard and Morton worked together at any point is unknown. It is possible another E. Howard & Co. made cooper’s crozes (and possibly other tools) in Boston; there may have been multiple E. Howards working in North Bridgewater (Nelson 1999).

Howard, Leonard D.
St. Jonsbury, Vermont, -1867-
Tool Types: Bevels
Remarks: Howard patented a bevel on November 5, 1867, that Star Tool Co. made and reportedly marked with his name, a box opening tool on November 7, 1869 (invalid), and another bevel from February, 1871 (though it’s unknown whether the latter two were ever made) (Nelson 1999).

Howe, Joel
Medford, Massachusetts, -1864-1868-
Tool Types: Hammers and Hatchets
Identifying Marks: JOEL HOWE-PATENT-CAST STEEL
Remarks: Howe had a July 8, 1834 patent on a shingling hatchet/hammer that he may or may not have also produced (Nelson 1999).

Howe, Levi
Worcester, Massachusetts, 1821
Tool Types: Blacksmith
Howes, Lewis  
North Sandwich, Massachusetts, 1849-1859  
**Tool Types:** Axes, Chisels, and Other Edge Tools  
**Identifying Marks:** L.HOWES/SANDWICH  
**Remarks:** Howes (September 16, 1812-January 7, 1860), was succeeded by Seth W. Holway (Nelson 1999).

Hubbard & Curtiss Mfg. Co.  
Middletown Connecticut, 1871-1874-  
**Tool Types:** Chisels, Rules, Machinist Tools, and Other Edge Tools  
**Remarks:** This company succeeded Warwick Tool Co. and may not have used “Mfg. Co.” in ads and marks. A dollar sign was sometimes used in the trademark (Nelson 1999).

Hubbard Hdw. Co.  
Middletown, Connecticut, -1868-1874-  
**Tool Types:** Chisels, Rules, Shaves, and Others  
**Identifying Marks:** HUBBARD HARDWARE CO./MIDDLETOWN, CT.; HUBBARD H.W. Co./MIDDLETOWN.CONN (sometimes without second line) (Nelson 1999)

Humphrey Machine Co.  
Keene, New Hampshire, -1874-1920  
**Tool Types:** Lathes, Rules, Saws, Log Calipers, Axe Handles, Band Saws, and Machinist Tools  
**Identifying Marks:** J.HUMPHREY/KEENE.N.H.; John Humphrey & Co. (paper label)  
**Remarks:** This company succeeded John Humphrey & Co. Humphrey’s name sometimes appeared alone on this company’s markings (Nelson 1999).

Humphreysville Mfg. Co.  
Seymour, Connecticut, 1852-1904-  
**Tool Types:** Augers and Bits  
**Identifying Marks:** HUMPHREYSVILLE MFG. CO. (sometimes curved)  
**Remarks:** This company was owned by N. Sperry, whose name was sometimes used on their augers and bits (Nelson 1999).

Hunt, Warren  
Douglas, Massachusetts, and St. Stephen, New Brunswick 1836-1892  
**Tool Types:** Axes  
**Identifying Marks:** W.HUNT  DOUGLAS; W.HUNT/MFD BY/DOUGLAS AXE MFG. CO.  
**Remarks:** Warren worked with his father as Oliver Hunt & Co. from 1815 to 1830, as Warren Hunt & Co. from 1830 to 1836, and his name continued to be used for marking Douglas Axe Mfg. Co. axes from 1836 to 1892. He held a patent on an axe testing machine from September 2, 1856 (Nelson 1999).

Hyde & Co., Isaac Perkins  
Southbridge, Massachusetts, 1875-1985  
**Tool Types:** Cutlery, Hammers, Leather Tools, Shaves, and Others
Identifying Marks: I.P.HYDE/SOUTHBRIDGE,MASS
Remarks: Hyde worked as Superintendent of the Theodore Harrington Knife factory from 1872 to 1874 before making this company to specialize in mill knives for cobbling the upper part of shoes. The brand name DIAMOND appeared sometime after 1900, followed by Dexter and Russell-Harrington in the later 1900s. They produced a shoe shave patented by Albert E. Johnson on July 30, 1867 (Nelson 1999). Many specimens of Hyde & Co. shoe knives have been recovered and sold by or are available at the Liberty Tool Co.
References:

Hynson Tools & Supply Co.
St. Louis, Missouri, 1851-1920
Tool Types: Coopers’ Tools and Wood Planes
Identifying Marks: HYNSON/EST./TOOLS & SUPPLY Co/1851/ST. LOUIS (top and bottom line curved, third line widening from the center); I. HYNSON TOOL & SUPPLY CO. ST. LOUIS
Remarks: Augustus R. Hynson first worked for Hall & Hynson in 1851, which is assumed to provide the “EST. 1851” mark (Nelson 1999). Hynson marketed largely to coopers and was the first to produce a barrel heater.
References:

Irwin Auger Bit Co.
Wilmington, Ohio, 1885-1991-
Tool Types: Augers and Bits
Identifying Marks: IRWIN; THE IRWIN BIT; STRAIT LINE (with arrow through it), and variations including the name, city, and/or state
Remarks: Charles Irwin ran this company and owned a half interest in William Dimitt’s October 21, 884 auger bit that Irwin later improved and patented on April 19, 1887. They began to produce tools other than augers and bits after 1900 (Nelson 1999). Along with the C. E. Jennings Co., Irwin was America’s most prolific manufacturer of wood auger bits.

Ives, William A.
Tool Types: Augers, Bits, Braces, and Handles
Remarks: Hamden produced tools and used techniques based on 12 or more patents he received between 1868 and 1887. He sold under the names Ives, W.A. Ives, W.A. Ives & Co., and, after 1900, W.A. Ives Mfg. Co. (Nelson 1999).

Jackson, S. Robert
Watertown, New York, 1910-?
Tool Types: Levels
Identifying Marks: DAVIS & COOK/WATERTOWN N.Y.; DAVIS & COOK; MANUFAC’D BY DAVIS & COOK * WATERTOWN N.Y. (sometimes in a circle)
Remarks: Hynson appears to have primarily supplied Davis & Cook with levels and supplies and he notes in the catalog in our collection that he has succeeded them (Nelson 1999; S. Robert Jackson n.d.).
References:
Links: http://www.davistownmuseum.org/bioJackson.html

Jackson & Tyler
Baltimore, Maryland, circa 1880
Tool Types: Machinists’ Tools, Planing and Saw Mills, Blacksmiths, Pattern Makers, Model Makers, Cabinet Makers, Piano-Forte Makers, Carvers, Molders, and Carpenters’ Tools, and Amateurs’ supplies
Remarks: This company’s catalog appears to indicate that they were retailers with no product line of their own. The catalog nonetheless remains a valuable resource for placing dates on certain patented items (Nelson 1999).
Links: http://www.davistownmuseum.org/bioJacksonTyler.html

Jennings & Co., Charles E.
New York City, New York; Factories in Yalesville, Chester, and New Haven, Connecticut, and Port Jervis, New York, 1878-1923
Tool Types: Augers, Bits, Chisels, Draw Knives, Levels, Metal Planes, Saws, and Wood Planes
Identifying Marks: C.E.JENNINGS & CO/N.YORK; CHAS.E.CHANNINGS & Co; J (on an arrowhead); C.E.JENNINGS & CO./NEW YORK.U.S.A. (name line curved)
Remarks: While it is possible Charles E. Jennings worked under his name a few years before adding the “& Co.,” it is obvious that the company grew out of acquiring other companies as evidenced by its factories’ locations and numerous brand names. In 1901, the company took credit for the following marks: C.E. JENNINGS & CO.; C.E. JENNINGS; JENNINGS & GRIFFIN MFG. CO.; L’HOMMEDIEU; MERRILL & WILDER; WATROUS & CO.; NOBLE’S MFG. CO.; CLARK TOOL CO.; BRATTLEBORO TOOL CO.; PASSAIC MFG. CO.; E.H. TRACY; GEO. S. WILDER; PLINY MERRILL; HINSDALE MFG. CO.; and EXCELSIOR MFG. CO., all
manufactured at the L’Hommedieu Tool Works in Chester, CT. They took credit for the following saw brands: WM. B. ASTEN; JOSEPH HARRIS; THE ORIENT; EXCELSIOR SAW CO.; IMPERIAL; GENEVA SAW WORKS; THE TRANSVAAL; CLARK & CO.; MERRILL’S FAULTLESS; CLARK’S COMBINATIN; J. DOUBLEDAY; HORTON’S; NEW YORK SAW CO.; A.G. MORTON; S. MORRELL; KING; HOWARD & CO.; CLARK’S FARMERS; J.I. SEE; BRIGHTON; J.&G. MFG. CO.; THE MAGNETIC; NEW CENTURY and GRIFFIN’S. ARROWHEAD and LONDON SPRING were also marks they used (Arrowhead appears twice on the cover of the catalog in the Davistown Museum collection) (Nelson 1999). While part of Jennings & Griffin (1885-1900 and on), Jennings also stamped his tools “MERRILL & WILDER”.

References:

Links: http://www.mwtca.org/OTC/ar000021.htm -- Article in The Gristmill including notes on C.E. Jennings
http://www.davistownmuseum.org/bioJennings.html

Jennings & Griffin Mfg. Co.
Hinsdale, New Hampshire, and Yalesville, Connecticut, 1883-1900
Tool Types: Augers, Bits, Cutlery, and Other Edge Tools
Identifying Marks: JENNINGS & GRIFFIN/MFG.CO.; J.&G. MFG. CO.
Remarks: This company formed when George S. Wilder was succeeded by Charles E. Jenning and Francis B. Griffin. Wilder continued to run the Hinsdale plant. The initial relationship was between this company and C.E. Jennings & Co., but by 1901 this was only a brand name that persisted at least until 1932. Other brands used included the National Tool & Mfg. Co. and the Sherman Saw Works (Nelson 1999).


Jennings Mfg. Co., Russell
Deep River and Chester, Connecticut, 1853-1944
Tool Types: Augers, Bits, and Chisels
Identifying Marks: Variations of the name and initial, sometimes with Mfg. Co., sometimes in a circular pattern, sometimes with patent dates and/or model numbers
Remarks: Russell’s death was reported both 1885 and March 8, 1888. He was a partner in Stephen Jennings & Co, succeeding Stephen closely associated with the C. E. Jennings Co. Unlike C. E. Jennings, which made all types of hand tools, including drawknives, Russell Jennings specialized in the auger bits still frequently found today in Jennings three drawer wooden bit boxes. He held the January 30, 1855 patent on the famed “Jennings Pattern” bit made by a number of companies, as well as auger-related patents from July 3, 1866 and July 31, 1866. The Chester plant was built in 1865 and both the Chester and Deep River plants ran until 1890 with an office remaining in Deep

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River until 1902. Stanley bought them out in 1944 and continued to use the name until 1960 (Nelson 1999).

References:
Links: http://www.sydnassloot.com/Brace/RJennings.htm

**Jones & Co., Solomon A.**
Hartford, Connecticut, 1838-1841
Tool Types: Bevels, Marking Gauges, Rules, and Squares
Identifying Marks: S.A.JONES&CO./HARTFORD-CON.
Links: http://www.davistownmuseum.org/bioSAJones.html

**Keen Kutter**
St. Louis, Missouri, 1870-1940
Tool Types: Axes, Bits, Chisels, Forks, Levels, Planes, Saw Tools, Squares, and Wrenches
Identifying Marks: Variations of KK, the company name, E.C.SIMMONS, patent dates, and/or a shield
Remarks: This was a brand of the E.C. Simmons Hardware Co. (Nelson 1999) and one of the more collectable of 20th century tool marks.
References:
Simmons Hardware Company. (1930). *E.C. Simmons Keen Kutter cutlery and tools*. Simmons Steel and Saw Co., Fitchburg, MA.
Links: http://www.thckk.org/ -- Keen Kutter Kollector’s Klub

**Kellogg, James**
Amherst, Massachusetts, 1835-1867
Tool Types: Wood Planes
Identifying Marks: J.KELLOGG/AMHERST.MS
Remarks: James was part of Kellogg, Fox & Washburn until 1839, Kellogg & Fox from 1839-1840 and J. Kellogg & Son from 1865-1867. William Kellogg, his son, continued to use his mark after his retirement in 1867 (Nelson 1999). Kellogg’s first company was purchased from Eli Dickinson and
became a successful manufacturer of planes. At one point, a portion of Amherst was called “Kelloggville” and was occupied by two of his factories; producing 150 to 200 planes a day; they were often unable to fill all the orders they received. In 1886, the dam supplying power for the factories was washed away and production remained idle for several years.

References: Carpenter, Edward Wilton and Morehouse, Charles Frederick. The History of the Town of Amherst, Massachusetts. Excerpt on James Kellogg

Kelly Axe Co., William C.
Louisville, Kentucky, and Alexandria, Indiana, 1874-1909
Tool Types: Axes
Remarks: This company operated in Kentucky until circa 1890 when they moved to Indiana, changing their name to Kelly Axe Mfg. Co. They were sometimes recorded as W.C. Kelly & Co. and used the brands FULTON CLIPPER, FULTON SPECIAL, KELLY HAMMER, KELLY CROSSCUT, KELLY PERFECT AXE, THE WORLD KELLY, KELLY STANDARD, and W.C. KELLY FLINT EDGE. This company becomes hard to track after 1900, having been bought out by the American Fork & Hoe Co. whose name was changed to True Temper and was bought out by Barco Industries in 1987 (Nelson 1999).

Kendall & Vose
Windsor, Vermont, 1885-1886
Tool Types: Shaves
Remarks: This company consisted of Elton P. Kendall and Ambrose S. Vose, who had a patent on a “Windsor Beader” from September 15, 1885 and a try/bevel square from July 6, 1886. The former was produced by this and other companies, the latter may never have been made (Nelson 1999).

Keuffel & Esser Co.
New York City, New York, and Hoboken, New Jersey, 1867-1962
Tool Types: Levels, Rules, Survey and Drafting Equipment, Transits, and Other Scientific Instruments
Identifying Marks: K+E; K-E; KEUFFEL & ESSER CO.,N.Y.; EXCELSIOR (all sometimes with patent dates, brand names, and others)
Remarks: Wilhelm J.D. Keuffel (July 21, 1838 to October 1, 1908) and Herman Esser (December 30, 1845-April 16, 1908) incorporated this company in 1889 in Hoboken, New Jersey, as a New York City company. They produced under numerous patents, including a slide rule by Edwin Thacher from November 1, 1881, and many issued to Willie L.E. Keuffel (May 10, 1861-May 5, 1952), a nephew of Wilhelm who joined as head of manufacturing in 1884 (Nelson 1999).

Links: http://www.mccoys-kecatalogs.com/ -- Keuffel & Esser Catalogs
http://www.sphere.bc.ca/test/ke-sliderule.html -- On K&E Slide Rules
http://www.surveyhistory.org/keuffel__esser1.htm -- On K&E Transits
Kimball, Caleb Jewett
Milford, Wilton, and Bennington, New Hampshire, 1841-1914-
**Tool Types:** Axes, Cutlery, Draw Knives, Hoes, Knives, Leather Tools, and Shaves
**Remarks:** Caleb Jewett Kimball (1817-1896) made draw knives, hoes and shaves using the mark C. J. KIMBALL. His solo working dates are from 1841 to 1872. He started in Milford, NH then moved to Wilton, NH from 1849 to 1851 and finally to Bennington, NH. In 1873, he started working with his son, George Edward Kimball (1842-1913) as C. J. KIMBALL & SON. Their tool line expanded to include axes, cutlery, knives and leather tools. In 1894, Caleb retired and the company became the Caleb Jewett Kimball Co. in which two of his younger sons were partners (Fred Hastings Kimball b. 1857, d. 1917 and Charles Herbert Kimball b. 1848, d. 1912) along with William H. Odell. In 1894, Wilbur Webster of E. Jaffrey, NH sold his cutlery, knives and leather tools business to the C. J. Kimball Co. (Nelson 1999).

“In the late 1880s the Kimball’s started manufactured drawknives for E. C. Simmons, the large hardware firm of St. Louis, MO, which used the brand name KEEN KUTTER.” (Smith 1997, 6).

“In August of 1914 Fred Hastings Kimball, at that time president of the firm and only surviving son, announced that the machinery and tools would be moved to the Walden Knife Co. in Walden, N.Y., a company also largely owned by the E. C. Simmons Co. The Kimball firm continued to manufacture drawknives until 1915 when they completed their move to New York.” (Smith 1997, 6)

**References:**
**Links:** http://www.kimballfamily.com/Bios/cjk.htm
http://www.mainememory.net/bin/Detail?ln=16813
http://www.davistownmuseum.org/bioKimball.html

Kinsley Iron & Machine Co., Lyman
Canton, Massachusetts, 1854-1891-
**Tool Types:** Axes, Crowbars, Tire Benders, Coachmaking Tools, Shovels, and Others
**Remarks:** Lyman Kinsley succeeded his father Adam and his partner, Johnathan Leonard, who worked in Canton from 1788 to 1854 (but not as toolmakers). This company made a number of non-tool iron items. Ames shovel company had controlling interest by 1863 (Nelson 1999).

Klein & Sons, Mathias
Chicago, Illinois, 1885-1969
**Tool Types:** Knives, Pliers, and Wrenches
**Remarks:** The name was changed to “& Sons” in 1885, then changed to Klein Tools Inc. circa 1970 and was still being managed by Mathias’s descendents in 1994. Prior to 1900, most of their tools were for servicing telegraphs (Nelson 1999). After 1900, they became one of America’s prolific makers of pliers, wire cutters, and other hand tools.

**References:**

**Links:** http://www.highbeam.com/doc/1G1-18608691.html

**Kraeuter & Co.**

**Newark, New Jersey, 1879-1931**

**Tool Types:** Calipers, Chisels, Hammers, Leather Tools, Machinist Tools, Pliers, Wrenches, Plumbing Tools, and Others

**Identifying Marks:** KRAEUTER; KRAEUTER & CO./NEWARK NJ USA

**Remarks:** August Kraeuter formed this company after working with Heuschkel, Kraeuter & Co. from 1866 to 1871 and Foerster & Kraeuter from 1871 to 1879, though Kraeuter & Co. cites 1860 as its establishment date (Nelson 1999).

**Lathe & Morse Tool Co.**

**Worcester, Massachusetts, 1889**

**Tool Types:** Lathes, Planers

**Remarks:** Martin Lathe was one of the owners. The company was succeeded by Draper Machine Tool Co.

**References:** Washburn, Charles. (2012). *Industrial Worcester.* Ulan Press. pg. 120.

**Lang & Jacobs**

**Boston, Massachusetts, 1884-1890**

**Tool Types:** Coopers’ Tools

**Identifying Marks:** LANG & JACOB/BOSTON, MASS

**Remarks:** The found marked tools are both coopers’ hoop drivers. The “Jaco” in the mark is inconsistent with that depicted in the catalog (Nelson 1999).

**References:**


**Links:** http://www.davistownmuseum.org/bioLangJacobs.html

**L’Hommedieu**

**Chester, Connecticut, 1809-1849**

**Wallingford, CT, 1881-1901**

**Tool Types:** Augers and Bits

**Identifying Marks:** L’HOMMEDIEU

**Remarks:** Ezra L’Hommedieu obtained a patent for making augers on 31 July, 1809 and later patented a machine for making augers on July 24, 1838 with R. N. Watrous. The *Directory of American Toolmakers* reports an A. L’Hommedieu Hardware Company was operating in Wallingford, CT, 1881-84. “By 1901, C. E. Jennings & Company advertised that they were the sole maker of L’Hommedieu auger/bits and were working in a L’Hommedieu facility established in 1818.” (Nelson 1999). L’Hommedieu may also have influenced the Kingston, MA, group of auger makers, including John Washburn, in the design of the screw augers they were producing by the first decade of the 19th century. For a detailed history of the American screw auger, first produced by

**Lambert, George H.**  
Cambridge, Massachusetts, 1849-1851

**Lambert, Mulliken & Stackpole**  
Boston, Massachusetts, 1852-1855

**Identifying Marks:** LAMBERT,MULLIKEN/&/STACKPOLE/BOSTON, MASS. (with eagle)  
**Tool Types:** Levels and Others  
**Remarks:** Lambert worked for Lambert, Mulliken & Stackpole in Boston from 1852 to 1855. They made spirit levels and plumbs and were succeeded by Mulliken & Stackpole (Nelson 1999).

**Lamson & Co., Ebenezer G.**  
Windsor, Vermont, 1850-1877

**Tool Types:** Cutlery, Guns, Gun Making Machines, Needles, Handles, Household Tools, Machinist Tools, Scythe Snaths, and Others  
**Remarks:** Lamson began making scythe snaths and cutlery, acquired a Robbins & Lawrence Co. gun factory in 1861 while he was part of the Lamson & Goodnow Mfg. Co., but kept the two companies separate. Guns are sometimes marked “L.&G.” or “L.G.&Y.” (supposedly Lamson, Goodnow and Yale—Yale’s association is unknown). Lamson had a patent on a May 10, 1870 machinist’s square by David M. Moore but it is unknown whether it was produced (Nelson 1999).

**Lamson & Goodnow Mfg. Co.**  
Shelburne Falls, Massachusetts, Windsor, Vermont, 1851-1982

**Tool Types:** Augers, Bits, and Cutlery  
**Remarks:** See Ebenezer G. Lamson & Co.

**Landers, Frary & Clark**  
New Britain and Meriden, Connecticut, and New York City, New York (sales office), 1865-1955

**Tool Types:** Apple Parers, Cleavers, Edge Tools, Household Tools, Ice Tools, Knives, Food Mills, Juicers, Meat Presses, Vegetable Slicers, Scales, Coffee Mills, Glue Pots, and Others  
**Identifying Marks:** L.F.&C.  
**Remarks:** Brand names used by this company include UNIVERSAL, DOMESTIC, SAMUEL LEE, and COLUMBIA. They made items patented June 10, 1873 by A. Turnbull & R.L. Webb; May 1886; October 12, 1897, and April 18, 1899. A “Handy Family Glue Pot” had an 1872 patent and an invalid April 16, 1873 patent. They bought out Meriden Cutlery Co. in 1866 and Humason & Beckley Mfg. Co. in 1912 (Nelson 1999).

**Langdon Mitre Box Co.**  
Millers Falls, Massachusetts, 1876-1882

**Tool Types:** Metal Planes and Saw Tools  
**Identifying Marks:** LANGDON MITRE BOX CO./MILLERS FALLS,MASS. (also with “LANGDON” separated)  
**Remarks:** This company and Millers Falls Co. made a shoot board and plane marked with a
September 19, 1882 patent date. The company made miter boxes that came with saws (but not the saws themselves). In 1876 they merged with the Millers Falls Co., though the name continued to be used, including on a box branded ACME, patented August 6, 1895 (Nelson 1999).

Leighton, William, W.
Auburn and Manchester, New Hampshire, -1849-1885
Tool Types: Axes, Chisels and Edge Tools
Identifying Marks: LEIGHTON AUBURN N.H.; LEIGHTON / MANCHESTER

Leighton & Co., William W.
Manchester, New Hampshire, 1854
Tool Types: Edge Tools

Leighton & Lufkin
Auburn, New Hampshire, 1856-1860
Tool Types: Edge Tools

Leighton & Son
Manchester, New Hampshire, 1885
Leighton, Charles O.
Manchester, New Hampshire, -1880-1882-
Remarks: Andrew P. Leighton (1793-1882) fathered William P. Leighton (1815-1885) and they worked together in William W. Leighton & Co. Leighton & Son consisted of William P. and his son Charles O. Leighton, who also worked alone. Leighton & Lufkin consisted of William W. Leighton and Jacob Lufkin (1825-1872), who probably worked as part of Underhill, Leighton & Lufkin. William W. Leighton was a prolific and widespread edge toolmaker, working with Underhill, Brown & Leighton circa 1849, Underhill & Leighton circa 1852, W.W. Leighton & Co. circa 1854, Leighton & Lufkin 1856 to 1860, Amoskeag Axe Co. from 1866 to 1879, Underhill Edge Tool Co. circa 1881, for the Manchester Locomotive Works from 1881 to 1883, for S.C. Forsaith & Co. in 1884, probably as part of Leighton & Son circa 1885, and probably as part of Underhill, Leighton & Lufkin (Nelson 1999). According to the Leighton family genealogy, William Leighton is a descendant of Captain William Leighton, originally of Kittery, Maine, born December 26, 1815, and married Susan Hall of Auburn, NH in 1844. He worked as foreman in the Amoskeag Axe Works for eight years and of Underhill Edge Tool Manufactury in Nashua for five. (Jordan 1885, 56).

References:

Little, Charles S.
New York City, New York, -1846-1872-
Identifying Marks: C.S. LITTLE/59 FULTON St NY; C.S.LITTLE&CO/NEW YORK

Little, Charles E.
New York City, New York, -1874-1891-
Tool Types: Carpentry Tools, Copper’s Tools, Cutlery, Edge Tools, and Stoneworking Tools

Lockport Edge Tool Co.
Lockport, New York, 1860-1870
**Tool Types:** Axes, Wood Planes, and Other Edge Tools  
**Identifying Marks:** LOCKPORT/EDGE TOOL CO./LOCKPORT N.Y  
**Remarks:** This company was run by Daniel and Jonas Simmons. Their planes may have been made by someone else (Nelson 1999).

**Lovejoy & Webster**  
**Bristol, New Hampshire, -1824-1849-**  
**Tool Types:** Axes, Draw Knives, and Edge Tools  
**Identifying Marks:** A.LOVEJOY  
**Remarks:** Lovejoy lived in Alexandria prior to 1823 and may or may not have made tools there. He was a part of Lovejoy & Webster from 1829 on, working as a blacksmith until 1865 but ceasing to specialize in tools after 1849 (Nelson 1999).

**Lowell Wrench Co.**  
**Worcester, Massachusetts, 1869-1967**  
**Tool Types:** Vises and Wrenches  
**Identifying Marks:** LOWELL WRENCH/Co/PAT.AUG 10/1875/WORCESTER,MASS (curved into an oval)  
**Remarks:** This company was formed by John E. Sinclair and Milton P. Higgins to make D.M. Moore’s patented ratchet wrenches, though it didn’t have its own shop until circa 1895. Moore’s origin in Lowell is the origin of the company name. Sinclair worked at the Worcester Polytechnic Institute until circa 1877 when the institute ceased commercial activities. Higgins went on to found the Norton Co. and Sinclair received a number of patents for Jeweler’s vises, bench vises, strap wrenches, and improved ratchet wrenches which were eventually made on a subcontract basis by a Mr. Ballard and a Mr. Pollard. The name changed to the Lowell Corp. in 1967, which persists today (Nelson 1999).

**Lowentraut, Peter**  
**Newark, New Jersey, -1869-1894-**  
**Tool Types:** Calipers, Dividers, Hammers, Leather Tools, Shaves, Wrenches, Plumbers’ Tools, Box Scrapers, Punches, and Others  
**Identifying Marks:** P. LOWENTRAUT/NEWARK N.J.; P.L./MFG.CO. (in a diamond)  
**Remarks:** Lowentraut was using “Mfg. Co.” at the end of his name by 1905. His best known product is a wrench brace, patented December 4, 1895 by S.J. Johnston of Leesburg, Virginia (Nelson 1999).

**Lufkin Rule Co.**  
**Cleveland, Ohio, and Saginaw, Michigan, 1885-1967**  
**Tool Types:** Rules  
**Identifying Marks:** Variations of the maker name and city/state, the maker name only or "Lufkin" with various brand names, model numbers, etc.  
**Remarks:** Originally E.T. Lufkin in the Lufkin Board & Log Rule Mfg. Co. in Cleveland, this company’s name was changed when bought out by four members of the Morley Bros. Co. in Saginaw (Nelson 1999). Edward Lufkin owned the patent on a “Board Measure,” April 7, 1874, which appeared in the 1890-1891 catalog. America’s largest manufacturer of measuring tools for
logging and timber harvesting, Lufkin measuring tools are also commonly encountered in modern workshops and collections.

References:
The Lufkin Rule Co. (1888) *Lufkin Measuring Instruments, Exerpts from Trade catalogues, 1888 to 1940, Documentary and Arrangement by Kenneth D. Roberts*. Cleveland, OH: Clark-Briton Printing Co.
Links: http://www.skowheganwoodenrule.com/history.htm
http://www.davistownmuseum.org/bioLufkin.html

**Machinist Tool Co.**
Worcester, MA, 1856
Tool Types: Lathes, Machines for Mortising Iron
Remarks: Organized by Samuel Flagg and only in business for a short time.

**Machinists Tool Co.**
Providence, Rhode Island, circa 1868
Tool Types: Lathe Tool Holders
Identifying Marks: MACHINISTS TOOL CO. PROV RI PATENTED MAY 26, 1868
Remarks: This company is one of the many tool manufacturers of the area at the time. Currently, the Davistown Museum collection includes a lathe tool holder, patented May 26, 1868. It appears to be drop-forged iron.
Links: http://www.davistownmuseum.org/bioMachinistool.html

**Mack & Co.**
Rochester, New York, 1875-1940
Tool Types: Coopers’ Tools, Wood Planes, and Other Edge Tools
Remarks: W.R. and R.L. Mack were partners with David R. Barton & Co. until they took it over and changed the name, later acquiring the D.R. Barton Tool Co., continuing to use its “D.R. BARTON -1832” trademark (Nelson 1999).

**Mann Co., David M.**
Lincoln, Massachusetts
Tool Types: Engine Rules
Remarks: An engine rule made by the David W. Mann Co. was probably used by the L. S. Starrett Co. for checking their calibrations on precision tools such as Vernier calipers up until the mid-1950s. During the late 1950s and early 1960s these manually operated engine rules became obsolete due to the advent of new photoengraving techniques.
The following description came with the tools pictured: “manually operated grid ruling engine, used for checking scales.” “This instrument consists of a base with supports for an overhead bridge slide. Beneath the bridge a precision case and stage motion is bolted to the base casting. The bridge runs
perpendicular to the precision stage thus a tool mounted on the bridge motion can scribe lines
substrates born by the stage. Movement of the bridge (ruling stroke) is 150 mm. This is controlled by
turning a hand wheel attached to a 10 lead screw - 1 mm piten giving 10 mm motion per turn.
Precision stage 200 mm travel metered by a metric lead screw. Intervals are hand set using a dial
graduated in 1000ths of a millimeter.” “This is a prototype instrument, rough finished and the bridge
is fabricated from several pieces. This instrument was not intended for sale so was very rudiment in
construction. The automatic feature consists of a fabricated cross head motion for the bridge and a
pawl arm to turn a rotature plate attached to the precision stage was 8 inches travel metered by a 20
thread per inch lead screw.” “Base, 500 mm travel ‘scale checker’. This instrument provides a stage
approx. 500 mm long on supporting glass scales for inter comparator micro-processing.”
The Davistown Museum owns one David W. Mann Co. engine rule. It is located in the Banks
Garage next door to the museum. Its description is in the IR Collection listing. Two other engine
rules are for sale at the Liberty Tool Co.

References:
Semiconductor Magazine. Great Moments in Our Industry Become Defining Moments in
Information Technology. Semiconductor Magazine 1(7).
Economy (BRIE), University of California, Berkeley.
Diffraction Grating Handbook.
http://brie.berkeley.edu/publications/WP%2027.pdf
http://www.davistownmuseum.org/bioMann.html

Mann, Harvey
Bellefonte, Pennsylvania, 1834-1870-
Tool Types: Axes
Remarks: William Mann Sr. fathered Harvey Mann (July 2, 1804 – June 4, 1870) and William Jr.,
who worked together from 1825 to 1833 as William & Harvey Mann, later moving to Bellefonte and
working alone. Harvey had axe patents from June 3, 1862 and August 17, 1869. His nephew, J.
Fearon Mann, apparently operated the Harvey Mann axe factory, later joining American Axe & Tool
Co, possibly using his father’s name (Nelson 1999).

Marble Safety Axe Co.
Gladstone, Michigan, -1898-1911
Tool Types: Axes, Hatchets, Guns, and Knives
Identifying Marks: MARBLES/GLADSTONE, MICH. USA
Remarks: W.L. Marble, the holder of an 1898 hatchet patent, is assumed to be the Marble of this
company. In 1911 they changed their name to Marble Arms & Mfg. Co., which made a hatchet
based on an 1883 patent, indicating a possible earlier starting date (Nelson 1999). This company
began making guns in 1908, including interchangeable barrel and stock break-action designs.
Marble’s axes and edge tools are among the most sought after of all 20th century American
toolmakers.
Maydole, David
Norwich and Lebanon, New York, 1828-1877
Tool Types: Hammers and Edge Tools
Identifying Marks: MAYDOLE; D.MAYDOLE
Remarks: David Maydole (January 27, 1807 – October 14, 1892) was a prolific and difficult to track individual whose hammers were not always marked by the company under which he was working. From 1828-1830, he probably worked with his brother David as a blacksmith. In 1830 he worked for Gardner & Abbott in Lebanon, NY, then working with a David Abbott (possibly the same Abbott) from circa 1831 to 1833. In 1834 he went back to Eaton and it is unclear what he did until 1840 when he formed Maydole and Ray in Norwich, New York until 1847, when he invented (but did not patent) the adze-eye hammer, a lasting industry standard. In 1845, he had created his own company, Maydole Co., which inducted N.B. Hale as a partner from 1851 to 1854. In 1861, David changed the name of his company to David Maydole & Co. and worked with his son-in-law, Charles H. Merritt. The business was sold in 1931 and the name was changed to Maydole Tool Co. (Nelson 1999).

References:

McKnight, G. L.
Worcester, Massachusetts, 1867
Tool Types: Calipers and Dividers
Remarks: McKnight made a combination divider and caliper he patented April 30, 1867 and May 28, 1867 (Nelson 1999).

Mead, Charles L.
Brattleboro, Vermont, 1861-1863
Tool Types: Levels and Rules
Remarks: Charles L. Mead (January 31, 1833-August 19, 1899) invested in E.A. Stearns & Co. in 1857 and advertised as the successor in January 1861, then sold the business to Stanley in 1863, worked for them after the Civil War, and was President from circa 1884 to 1899. He had three patents assigned to Stanley from January 20, 1885, April 10, 188, and (with Justus A. Traut) February 28, 1888 (Nelson 1999).

Meriden Cutlery Co.
Meriden, Connecticut, 1855-1870
Tool Types: Cutlery and Knives
Remarks: At least two Clark brothers, later involved in the Higganum Mfg. Co., were involved in this company. One source says they worked up to 1870 while another says they were bought out by
Landers, Frary & Clark in 1866 (Nelson 1999). One of America’s most prolific manufactures of household cutlery.

**Merrick, J.**
**Springfield, Massachusetts 1845-46**
**Tool Types:** Adjustable Wrenches
**Remarks:** Recent research by Herb Page and others suggests the J. Merrick pattern monkey wrench is the prototype of the Coes Adjustable wrench. Its production may be earlier than 1845 and run possibly from the 1820s.

**Merrick, Solyman**
**Springfield, Massachusetts, 1834-1835**
**Tool Types:** Hole Punches and Wrenches
**Identifying Marks:** MERRICK’S/PATENT/SPRINGFIELD
**Remarks:** Solyman Merrick had wrench patents from April 18, 1834 and August 1835, at least one of which was made by Stephen C. Bemis & Co. It is unknown whether he ever produced them himself (Nelson 1999). Solyman is generally credited with the invention of the first adjustable wrench, as well as the hole punch.
**Links:** http://ourpluralhistory.stcc.edu/industrial/innovators.html

**Merrill & Wilder**
**Hinsdale, New Hampshire, 1860-1901**
**Tool Types:** Chisels, Draw Knives, and Plane Irons
**Identifying Marks:** Merrill & Wilder (sometimes with a Buck’s head)
**Remarks:** This company consisted of Pliny Merrill and his nephew George S. Wilder. Wilder later worked alone and was absorbed by the Jennings & Griffin Mfg. Co. in 1883, who began using the Merrill & Wilder mark again, producing many more tools than the original partners. 1860 is an approximate date as they were never listed in a directory together (Nelson 1999).

**Merrill, Pliny**
**Hinsdale, New Hampshire, -1844-1868-**
**Tool Types:** Chisels and Draw Knives
**Remarks:** Pliny Merrill (sometimes recorded “Pliney”) was Pardon-Haynes Merrill’s brother and George S. Wilder’s uncle. He was a founder and blacksmith who specialized in making tools, working as P. Merrill & Co. circa 1856, in Merrill & Wilder circa 1860, and having C. E. Jennings produce his tools by 1901 under his name. Wilder was still calling his chisels “Merrill chisels” but it is likely he made them on his own (Nelson 1999).

**Merritt, Charles H.**
**S. Scituate, Massachusetts, 1850-1893**
**Tool Types:** Wood Planes
**Remarks:** Charles H. Merritt was a part of Tolman & Merritt from 1864 to 1880 (Nelson 1999).
Merritt, James  
South Scituate and Hanover, Massachusetts, -1870-1878- 
**Tool Types:** Wood Planes  
**Identifying Marks:** J.MERRITT/HANOVER/MASS.  
**Remarks:** Merritt’s move from S. Scituate to Hanover was sometime between 1871 and 1877 (Nelson 1999).

**Millers Falls Company**  
Millers Falls, Massachusetts, -1870-1931  
**Tool Types:** Anvils, Bits, Boring Machines, Braces, Drills, Handles, Levels, Metal Planes, Saws, Shaves, Vices, and Others  
**Identifying Marks:** Variations and combinations of “M.F. CO.,” “MILLERS FALLS TOOLS,” the company name, city or state, patent dates, model numbers, etc.  
**Remarks:** This company was formerly the Levi J. Gunn and Charles H. Amidon Co. In 1872 they dropped the Mfg. to become Miller’s Falls Co., which lasted from 1872 to 1931 (Nelson 1999). One of the most prolific of New England’s late 19th and 20th century toolmakers, their bit braces and hand drills are commonly encountered in workshops and collections (FFLTC).  
**References:**  
**Links:** [http://oldtoolheaven.com/](http://oldtoolheaven.com/) -- Information and photographs by Randy Roeder.  
[http://rosetools.bizland.com/id82.html](http://rosetools.bizland.com/id82.html)  
[http://www.davistownmuseum.org/bioMillersFalls.htm](http://www.davistownmuseum.org/bioMillersFalls.htm)

Mix & Co.  
Cheshire, Connecticut, 1820  
**Tool Types:** Chisels and Draw Knives  
**Remarks:** This could be one or more makers as marks on chisels include C.I. Mix & Co., T.I. Mix with no city and a draw knife marked Cheshire (Nelson 1999). Mix edge tools, especially timber framing tools, are occasionally encountered by the Liberty Tool Co. (FFLTC).

Monhagen Saw Works  
Middletown, New York, -1860-  
**Tool Types:** Saws  
**Remarks:** A catalog from this company is dated 1860 and lists a number of
patented cast steel ground saws, including circular and handsaws.

References:

Morris, Ezekiel
Little Falls and Baldwinsville, New York, 1835-1869
Tool Types: Axes, Chisels, Draw Knives, and Other Edge Tools
Identifying Marks: Merrill & Wilder (sometimes with a Buck’s head)

Morris, Henry D.
Baldwinsville, New York, 1869-1879
Tool Types: Axes and Edge Tools

Morris, John Roseberry
Jewel City, Kansas, 1898-1905-
Tool Types: Fencing Tools and Pliers
Remarks: Ezekiel (February 29, 1804-October 17, 1869) moved from Little Falls to Baldwinsville in 1850 after being a part of Windsor & Morr. Henry D. Morris, his son, succeeded him, after working on his own. Henry had an axe head shaping machine patent from January 11, 1870 and, possibly, a similar 1869 patent. In 1879 he moved to California but it is unknown whether he worked there. John R. Morris (May 17, 1863-September 22, 1914) was born in Pennsylvania. His patents included a combination fencing tool patented July 19, 1898, March 7, 1899, and March 14, 1905. The 1905 patent was produced by Marshalltown Drop Forge after he joined them in 1907 but it is unknown whether he made it prior to 1907. He was president of Waterloo Drop Forge Co. by 1911 (Nelson 1999).

Morse Twist Drill & Machine Co.
New Bedford, Massachusetts, 1865-1990
Tool Types: Bits, Dies, Drill Chucks, and Drills
Identifying Marks: MORSE; M.T.D.&M.Co.
Remarks: The Morse Twist Drill & Machine Company was founded by Stephen A. Morse and located in New Bedford, MA from 1864 to 1990. They made bits, dies, drill chucks and drills. They used the marks MORSE and M.T.D.&M.Co. Their name was also recorded as Morse Twist Drill & Mfg. Co. (Nelson 1999).
The following information is from a New Bedford Sunday Standard-Times 1964 article: “Stephen Morse developed the idea of creating a twisted drill consisting of two parallel spiral grooves with a straight cutting edge. Prior to this, drills were made from a flat piece that was pointed and sharp. He began manufacturing drills in October of 1861 with a small shop. His original patent, No. 38119, is dated April 7, 1863.” You can see this patent on the DATAMP website (http://www.datamp.org/displayPatent.php?number=38119&type=UT).
Listing of companies purchased by Morse:

<table>
<thead>
<tr>
<th>Year</th>
<th>Company</th>
<th>Location</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1871</td>
<td>American Standard Tool</td>
<td>Danbury, CT</td>
<td>Listed also on Morse Cutting Tools website</td>
</tr>
<tr>
<td></td>
<td>Company</td>
<td></td>
<td>history page</td>
</tr>
<tr>
<td>1871</td>
<td>Standard Tool Company</td>
<td>Newark, NJ</td>
<td>Sayer lists this company (looks like it may be an error as it seems to combine the one above and below).</td>
</tr>
</tbody>
</table>
In 1923 the Van Norman Machine Company of Springfield, MA, purchased the Morse company. In 1964, Universal American Corp. was the parent company.

The following information is from Sayer’s New Bedford, pg. 253-6: “Stephen Morse’s original shop of 1861 was in East Bridgewater. He moved to New Bedford in June of 1864 because he was able to acquire enough interested capital to set up a new shop there.” According to the Morse Cutting Tools website: “The current owners, a group of American investors, purchased the company from a Scottish manufacturing concern, and are committed to upholding the Morse reputation for high-quality, American-made cutting tools.” America’s most prolific manufacturer of machinists’ twist drills.

References:
Links: http://www.flickr.com/photos/nbwm/sets/72157612474032637/ -- New Bedford Museum’s flickr gallery of Morse factory photographs
http://www.davistownmuseum.org/bioMorseTwist.html

Morss, Joab
Philadelphia, Pennsylvania, -1867-1879
Tool Types: Levels, Saws, and Squares
Remarks: Joab Morss (January 8, 1840-February 13, 1879), son of Thomas L. Morss, belonged to Disston & Morss, having married a niece of Disston’s. He held four tool-related patents but is not known to have produced on his own (Nelson 1999).
Newman, Andrew W.
Roxbury, Massachusetts, -1847-1852
Tool Types: Adzes and Axes
Identifying Marks: UNDERHILL/CAST STEEL/ROXBURY/NEWMAN
Remarks: Newman was a blacksmith making cooper tools whose relation to the Underhill name is unknown (Nelson 1999).

Nicholson File Company
Providence I, Rhode Island, 1864-1972
Tool Types: Files and Rasps
Identifying Marks: Variations of full name and city/state, “Nicholson,” brand names, patent dates, etc.
Remarks: William T. Nicholson founded this company after inventing a file cutting machine, but in actuality was its agent Vice President. A series of buyouts followed, including the New American File Co. in 1890, the Great Western File Co. circa 1893 and the McClellan File Co. circa 1898. After 1900, numerous other companies were acquired, including M. Buckley & Co.; Eagle File Co.; Kearny & Foot; Arcade File Co.; J. Barton Smith Co.; Globe File Mfg. Co.; Mechanic’s Star File Mfg. Co.; Toronto File Works; and G&H Barnett Co. Some of the company brand names persisted after the buyouts. Nicholson acquired file patents on 22 September 1864, 10 January 1865, 11 September 1866, 12 June 1877, 12 February 1878 and 4 June 1878. 18 February 1876 was patent-marked by the company (later declared invalid) and 1 January 1878. In 1972, the company was bought out by Cooper Industries, though the brand name persists (Nelson 1999). Nicholson File Company published a treatise on files and rasps, included in the bibliographical listing below. America’s largest producer of hand files.

References:
Nicholson File Company. 1878. A treatise on files and rasps: Descriptive and illustrated: For the use of master mechanics, dealers, &c. in which the kinds of files in most common use, and the newest and most approved special tools connected therewith, are described -- giving some of their principal uses. With a description of the process of manufacture, and a few hints on the use and care of the file. Reprinted by the Early American Industries Association, 1983.
Nicolson File Company. 1956. File philosophy and how to get the most out of files (-being a brief account of the history, manufacture, variety and uses of files in general.) Twentieth Edition. Providence, RI: Nicolson File Company.
http://www.rihs.org/mssinv/Mss587.htm
http://www.davistownmuseum.org/bionicholson.html

Tool Types: Combination Tools, Drills, Household Tools, and Screwdrivers
Identifying Marks: CROWN; YANKEE; Configurations of the company name including city/state, patent dates, brand names, etc.
Remarks: From 1880-1887, S.G. and R.H. North ran an iron foundry under the name “North Bros.” In 1887, they incorporated, adding Mfg. Co. to their name. They bought out the American Machine Co. in 1892 and the Shepard Hdw. Co. of Buffalo, NY in 1893, adding ice cream freezers, ice shaves, egg beaters, flooting machines and other household tools to their offered inventory, including a fluting machine patented 2 November 1875 by Herman Albrecht and a similar tool with a 3 July 1887 patent. Their screwdrivers were based on an 1895 patent of Zachary Furbish as well as a 2 November 1897 patent and several post-1900 patents. They continued to use the American Machine Co. “CROWN” brand. A combination tool marked NORTH MFG. CO./PHILAD. is attributed to this company (Nelson 1999). The “YANKEE” brand was apparently used by Stanley Rule & Level Co. after they bought out North Bros. Mfg. Co. America’s most prolific manufacturer of push drills. See Stanley Level & Rule Co.

References:

Links: http://www.sydnassloot.com/Brace/Northb.htm
http://www.davistownmuseum.org/bioNorth.html
http://www.davistownmuseum.org/bioFurbish.htm -- to find more information on “Yankee” screwdrivers

North, Edmund
1855-1856-

North, Jedediah
-1810-1824
Identifying Marks: J.NORTH

North, Jedediah & Edmund
-1824-1854
Identifying Marks: J. & E. NORTH/ BERLIN/ CONN

North, Levi
-1782-

Berlin, Connecticut

Tool Types: Tinsmith Tools and Others

Remarks: Levi made tools and nails and may have been related to Jedediah and Edmund North. Edmund (1797-1874) is likely the reported E. North and E. North Mfg. Co. from this era and worked as part of J.&E. North from 1824 to 1854; his brother Jedediah (1789-1855) died the next year. This cooperative effort was also reported as J.&E. North Mfg. Co. There also was an E. North reported working 1816 to 1823 (Nelson 1999).

Northfield Knife Co.

Northfield, Connecticut, 1858-1929

Tool Types: Cutlery, Shears, Razors, and Knives

Remarks: This company also used the brand name UN-X-LD and served for agents of Frary Cutlery
Co. They bought out American Knife Co. of Thomaston, Connecticut in 1865, and Excelsior Knife Co. of Torrington, Connecticut in 1885, and were subsequently bought out themselves by Clark Bros. Cutlery in St. Louis, Missouri in 1929 (Nelson 1999).

North Wayne Tool Co.
Hallowell and Oakland, Maine, 1879-1969

Tool Types: Axes, Farm Tools, Scythes, and Others

Identifying Marks: LITTLE GIANT (possibly only after 1900); NO. WAYNE TOOL CO./OAKLAND.ME.U.S.A.; NORTH WAYNE TOOL CO./OAKLAND, MAINE

Remarks: Charles W. Tilden, Joseph E. Bodwell and Williston Jennings founded this company and moved to Oakland circa 1900--their original location has been reported as Hallowell, West Waterville, and Wayne. (Nelson 1999) Special thanks to John P. Miller, President of the Wayne Historical Society for furnishing us with a copy of Kallop’s history of the North Wayne Tool Co. This text gives a comprehensive history of this company and the many names it used and people who were involved with it. It states, “In the Maine Register the tool company’s presence in North Wayne is first noted in 1881, when it is identified at Bodwell & Harvey, edge-tools. Not until the year following and thereafter is the published listing identified by company name. Whatever was the reason for the initial listing with personal rather than company name, it nevertheless leads to speculation on the complex role of William Harvey in these various transactions, and his emergence as an apparently equal partner with Joseph R. Bodwell.” (Kallop 2003, 77). “At the opening of the new century the numerous firms manufacturing edge tools during much of the 19th century were reduced to three; the Dunn Edge Tool Company, Emerson & Stevens, and the American Axe and Tool Company. The last was to be out of business soon after the century began, leaving only two, but in 1907 they were joined by the King Axe Company. With an earlier existence as King & Messer, the company continued under its new name until 1922 when it was sold to others, then some twenty years later was resurrected and survived for a brief time as King Axe and Tool Company. With a far shorter lifetime is identified in 1906 still another newcomer to the list -- William Harvey & Sons.” (Kallop 2003, 109). “In 1904, sharing a page with four others whose business addresses are in either Hallowell or Gardiner, is the North Wayne Tool Company. Identified as Manufacturers of Agricultural Edge Tools, the company’s products are named under the heading Specialties: C. C. Brooks’ Bread Knives, Corn Hooks, Hay Knives and Hoes. C. C. Brooks’ little Giant Scythes. C. C. Brooks’ Be Ve Be Scythes. H. S. Earle’s Little Giant Grass Hooks. H. S. Earle’s Corn Knives. Hand Made Axes of all Patterns. Lefavoure’s Favorite Weeders.” (Kallop 2003, 110). The most prolific of all Maine agricultural edge toolmakers, this company is one of the few Maine toolmakers reported in this section. For a comprehensive listing of Maine toolmakers before 1900, see volume 10, Registry of Maine Toolmakers (Brack 2008d).

References:

Links: http://www.davistownmuseum.org/bioNorthWayne.html

Norton Emery Wheel Co.
Worcester, Massachusetts, 1885-1990

Tool Types: Grinders, Grindstones, Emery Wheels, Machinists’ Tools, and Whetstones

Identifying Marks: NORTON COMPANY WORCESTER MASS.U.S.A.
Remarks: This company used to be F.B. Norton & Co. and used patents from February 6, 1877; February 7, 1881 (invalid), July 11, 1882, and a “Walker’s Patent.” They bought out Pike Mfg. Co. in 1932 and were later bought out by Saint Gobain circa 1990 (Nelson 1999). America’s most prolific manufacturer of grinding and emery wheels and stones. 

Links: http://www.ind.nortonabrasives.com/data/aboutus/About_Us.asp?SEQ=90

Nourse, J & J
Nourse & Co., J
Shrewsbury, Worcester, Massachusetts, -1829-1838
Tool Types: Cast Iron Plows, Cultivators
Remarks: Their plows were known as the Hartford Cast-Iron Plows. Joel Nourse moved to Worcester in 1833. In 1838 he joined Ruggles, Nourse, and Mason.

Nourse, Mason & Company
Worcester and Groton Junction, Massachusetts, 1856-1860
Tool Types: Agricultural Equipment
Remarks: Joel Nourse, Peter Harvey, and Samuel Davis owned this company. Then it was turned over to Joel Nourse, Peter Harvey and Sampson & Tappan of Boston. In 1860 they were purchased by Oliver Ames and Sons, who eventually changed the name to Ames Plow Co.

Ohio Tool Co.
Auburn, New York and Columbus, Ohio, 1823-1920
Tool Types: Augers, Axes, Bits, Chisels, Clamps, Draw Knives, Metal Planes, Plane Irons, Shaves, Vises, and Wood Planes
Identifying Marks: Various configurations of the name; COLUMBUS; NEW YORK; SCIOTO
Remarks: This company was formed in 1823 though the name was not used until incorporation in 1851. The Columbus branch used prison labor from the Ohio State Penitentiary from 1841 to 1880. In 1893, they merged with Auburn Tool Co. until all operations moved to Charleston, West Virginia in 1914. Peter Hayden and George Gere were involved both with tool production and as officials of the company after its incorporation (Nelson 1999). Along with the Auburn Tool. Co’s “Star,” Ohio Tool Co. also owned and used New York Tool Co.’s “Thistle” brand (FFLTC).
References:
Links: http://pages.friendlycity.net/~krucker/OhioTool/history.htm -- Contains some historical information on Ohio Tool Co.
http://www.davistownmuseum.org/bioOhio.html
Oldham, Joshua
New York City, New York, 1867-1887
Tool Types: Chisels, Files, Knives, Rules, and Saws
Identifying Marks: His name, W. BRINDSWORTH; J. THOMAS; J. ARMITAGE
Remarks: Oldham is believed to have manufactured his own saws but may have simply dealt in other products. He had a 5 October 1880 patent on a saw (Nelson 1999). The catalog in the Davistown Museum collection includes an essay on saws, their history and use back to Talus’s invention in ancient Greece.
Links: http://www.davistownmuseum.org/bioOldham.html

Orr, Hugh
Bridgewater, Massachusetts, 1738-1760-
Orr, Robert
Sutton and Bridgewater, Massachusetts, -1776-
Tool Types: Axes, Edge Tools, Hammers, Scythes, and Shovels
Remarks: Hugh Orr (January 2, 1715-December 6, 1798). Robert was Hugh’s son and worked at the Springfield Arsenal by 1804 (Nelson 1999). The Orr’s were also well known gunsmiths.

Osborne & Co., Charles Samuel
Newark, New Jersey, 1826-1992-
Tool Types: Augers, Dividers, Hammers, Leather Tools, Levels, and Others
Identifying Marks: C.S. OSBORNE &CO./NEWARK, N.J. (sometimes without city line, sometimes with “EST. 1826” or a patent date); C.S.O. & CO.
Remarks: Osborne succeeded William Dodd after marrying his daughter. the “Est. 1826” date refers to the maker prior to Dodd. In 1906, the company moved from Newark to Harrison, NJ, where it is still operated by the Osborne family. Charles had a brother, Henry Frank Osborne, who worked with the company prior to setting up his own in 1876. Patents include a washer cutter attributed to Kirkland October 11, 1875 (invalid date) and a leather cutting gauge, patented August 1, 1876, repatented July 17, 1877. In 1960, they acquired Mound Tool Co. (Nelson 1999). This company is one of many mass-producers of the area at the time and America’s most prolific manufacturer of leather-working and leather-cutting hand tools.
References:

**Links:** http://www.davistownmuseum.org/bioOsborne.html

**Osborne, Henry Frank**  
**Newark, New Jersey, 1876-1905**  
**Tool Types:** Dividers and Leather Tools  
**Identifying Marks:** H.F. OSBORNE/NEWARK-NJ; H.F. OSBORNE/TRADE OPT MARK/NEWARK N.J.  
**Remarks:** Henry was Charles S. Osborne’s brother and worked for his company prior to starting his own company, then sold it out to them in 1905. The OPT in his maker’s mark stands for “Osborne Patent Tools.” He produced a leather draw gauge patented by E.G. Latta of Friendship, New York, on February 8, 1881 (Nelson 1999).

**Page, George**  
**Keene, New Hampshire, 1825-1838**  
**Tool Types:** Awls, Bits, Carpenter Tools, Chisels, Drills, and Others  
**Remarks:** Page was a machinist with patents on a pump from 1833, a mortise machine from 1836, chisels from August 14, 1833 and July 7, 1835, a countersink from November 17, 1836, and a geared drill from May 8, 1838. It is unknown whether he made anything other than the mortise machine or pump. He also made screw gimlets with Everett Newcomb (Nelson 1999).

**Parker Co., Charles**  
**Meriden, Connecticut, 1854-1926-**  
**Tool Types:** Vises  
**Identifying Marks:** C. PARKER/MERIDEN, CT/PAT’D DEC 17, 1867  
**Remarks:** Parker was listed in Meriden as Parker, C., C. Parker, Chas. Parker, Charles Parker, Parker & Co., C. Parker Co., and others, and used the brand names VULCAN and ECLIPSE. Vice patent dates included November 26, 1867 and June 20, 1854 (Nelson 1999). One of the most prolific of bench vice manufacturers (FFLTC).

**Parsons, Eli & Calvin Whiting**  
**Dedham, MA, -1803-1816-**  
**Tool Types:** Tinters’ machines  
**Remarks:** (http://www.tintinkers.org/files/tool_list.pdf)

**Peace, Harvey W.**  
**New York City and Brooklyn, New York, 1861-1890**  
**Tool Types:** Saws  
**Identifying Marks:** HARVEY W. PEACE/BROOKLYN N.Y./PATD DEC 21, 1869  
**Remarks:** Harvey Peace (August 10, 1831-September 21, 1907) was born in England and moved from New York City to Brooklyn in 1863. His shop was called the Vulcan Saw Works and used the brand VULCAN. He also may have used the brands or marks J.D. DARLINGTON, C.H. GOBLE DIAMOND BRAND, B.P. BALDWIN, NEW YORK SAW CO., WILKINS, and H.P. WARREN.
The company name had “Co.” or “& Co.” added but was omitted in marks. He used a number of patents, including W.H. Hankin & C. Tinney’s from July 3, 1883; F.A. Buell’s from July 17, 1883; A. Sloan’s from October 16, 1883; A. Boynton’s from November 22, 1887; and others from May 12, 1874; January 19, 1875; August 29, 1876; November 18, 1879; and March 15, 1881. He was acquired by Disston in 1890 and sold out to National Saw Company in 1891 (Nelson 1999).

References:

Pearce, Jonathan W.
Fall River, Massachusetts, and Providence, Rhode Island, -1840-1879
Tool Types: Edge Tools and Wood Planes
Identifying Marks: J.W.PEARCE/FALL-RIVER (with starburst figure); J.W.PEARCE/PROV.R.I. (name line curved)
Remarks: Jonathan’s last name was also recorded “Pirce” and “Pierce.” His move from Fall River to Providence occurred in 1852 (Nelson 1999).

Peavey Mfg. Co.
Brewer, Oakland, Bangor, and Eddington, Maine, 1857-todate
Tool Types: Edge Tools and Wood Planes
Remarks: This is one of numerous Peavey Co. names utilized by the famous Peavey clan of logging tool manufacturers. So many Peaveys made tools that a complete compilation of their numerous 19th century activities is, as yet, unavailable. Peavey Mfg. Co. is listed among Yeaton’s ax-makers in his directory Axe Makers of Maine. From 1900 to 1918, the company was in Bangor, then in Brewer from 1918 to 1923, then in Oakland from 1927 to 1965. The Peavey Manufacturing Company is now located in Eddington, Maine. The company claims to have been in operation since 1857.
References:
Links: http://peaveymfg.com/history.html
http://www.davistownmuseum.org/bioPeavey.htm

Peck & Co., A. G.
Cohoes, New York, 1876-1904
Tool Types: Adzes, Axes, Edge Tools, Hatchets, and Picks
Remarks: This company succeeded M.H. Jones & Co. with Jones as a partner. Brand names include Empire Tool Works, SUPERB, SUPERIOR, CHAMPION BLADE, ROYAL, BOSTONIAN, and MANHATTAN CLIPPER. Peck’s Edge Tool is thought to be a variation of the name (Nelson 1999).

Peck Stow & Wilcox Co.
Southington, Connecticut, 1870-1950
Tool Types: Bits, Braces, Chisels, Dividers, Draw Knives, Hammers, Household Tools, Machinists’ Tools, Screwdrivers, Tinsmith Tools and Wrenches, and Others
**Identifying Marks:** Various combinations of the name, “P.S.&W. CO.,” “PEXTO,” City/state, patent dates, often Plantsville, CT or Cleveland, OH

**Remarks:** This company was formed from a merger of Peck, Smith & Co; the S Stow Mfg. Co.; and the Roys & Wilcox Co. Other minor incorporated companies included AW. Whitney & Sons; J.E. Hull & Co; Woodruff & Wilcox; Hart, Vliven & Mead Mfg. Co.; Cheshire Edge Tool Co.; and Johns & Co. Finally, they were bought out by Billings & Spencer in 1950, though the name persisted. Household tools included a variety of meat cutters, choppers and grinders, sausage stuffers and coffee mills, some of which were branded “LITTLE GIANT.” Patent dates include March 15, 1859; January 10, 1860; March 9, 1869; April 19, 1892; and September 3, 1895. Also under the company, Amos Shepard had a December 30, 1884 patent on a brace, James H. Culver had an October 11, 1887 patent on calipers, Henry Smith had a July 1, 1873 wire gauge patent. A set of Ellrich saws was also patented. Other reported patent dates include March 20, 1888, November 20, 1888, July 15, 1890, and August 26, 1890 (Nelson 1999). Among the most prolific (top 10) producers of hand tools in the early 20th century.

**References:**

**Links:**
http://www.alloy-artifacts.com/peck-stow-wilcox.html
http://www.davidrumsey.com/detail?id=1-1-26594-1110095&name=Peck,+Stow+&+Wilcox+factories
http://www.sydnassloot.com/Brace/PSW.htm
http://www.roseantiquetools.com/id192.html
http://www.davistownmuseum.org/bioPeck.html

**Peck & Co., Seth**
**Southington, Connecticut, Circa 1835**
**Tool Types:** Tinsmith Tools

**Identifying Marks:** SETH PECK & CO

**Remarks:** Reports on this maker are confusing due to conflicting information concerning tinsmith toolmakers named Peck in this town. His birth has been reported as late as 1816, but he has been reported working as early as 1819 and as late as 1867. His partner or partners, if he had any, may have been Edward Converse, Romeo Lowrey, Orrin Peck, Noble Peck, and/or Wyllys Smith. It is generally agreed that Peck, Smith & Co. succeeded him (Nelson 1999).

**Peck, Smith & Co.**
**Southington, Connecticut, -1860-1870**
**Tool Types:** Drills, Tinsmith Tools, and Wrenches

**Identifying Marks:** PECK SMITH & CO/SOUTHINGTON, CT (sometimes without &); MADE BY PECK SMITH MFG CO/SOUTHINGTON CT

**Remarks:** Orrin Peck, Wyllys Smith, and Benjamin Seward were principals in this company, which succeeded Seth Peck (possibly with him still in the company) and later merged into Peck, Stow & Wilcox Co. in 1870 (Nelson 1999).

**Pierce, Benjamin**
**Chesterfield and Spofford, New Hampshire, 1851-1882**
Tool Types: Augers, Bits, Braces, Spinning Wheel Heads, and Household Tools
Identifying Marks: B. PIERCE; Benj.Pierce & Co.
Remarks: Benjamin Pierce worked for Richardson & Huggins as a salesman prior to succeeding them and also served as the superintendent of a chisel factory, probably Pliny Merrill’s, in Hinsdale, NH, from 1852 to 1865. The Currier Brothers succeeded him. “Benj.Pierce & Co.” was used on paper labels marked “Chesterfield Factory, N.H.” or “Spofford, N.H.” (Nelson 1999).
Links:

Pillsbury, M. M.
Napanoch and New York City, New York, Circa 1878
Tool Types: Adzes, Axes, Edge Tools, Hatchets, and Picks
Remarks: This company succeeded Napanoch Axe & Iron Co. It is possible he moved to New York City, but that location could have merely been a sales office (Nelson 1999).

Plumb, Fayette R.
Philadelphia, Pennsylvania, 1888-1964
Tool Types: Axes, Blacksmithing Tools, Chisels, Hammers, Hatchets, Picks, Railroad Tools, Stone-working Tools, and Bolo Knives
Identifying Marks: FAYETTE R PLUMB, PLUMB, Plumb (scripted on an anchor), ARTISAN’S CHOICE, BLUE GRASS, O-V-B (Our Very Best), DIAMOND EDGE, KNOCKER, SERVALL, PHILA. TOOL CO, QUAKER CITY, HOME THRIFT, POWER STROE, CHAMPION, BOY SCOUT and AU-TO-GRAF.
Remarks: Plumb started off as part of Yerkes & Plumb but began working alone at some point between 1856 and 1897; 1887-1888 seems most likely. The anchor brand became prominent around 1890. (Nelson 1999) During the First World War, they became prominent manufacturers of trench tools (including bolo knives, picks, and hand axes) for the Allied forces. Among the top ten most prolific 20th century toolmakers.
References:
http://www.time.com/time/magazine/article/0,9171,853600,00.html?id=chix-sphere -- Article on a lawsuit against “Plomb” tools, a rival manufacturer.
http://www.workshopoftheworld.com/richmond_bridesburg/plumb.html
http://www.yesteryearstools.com/Yesteryears%20Tools/Plumb%20Co..html
http://www.davistownmuseum.org/bioPlumb.html

Pomeroy, A. H.
Hartford, Connecticut, -1886-
Tool Types: Cutlery, Lathes, Saws, and Others
Identifying Marks: A.H. POMEROY
Remarks: It is unclear whether Pomeroy made any of his products or simply distributed them (Nelson 1999). Testimonials in Pomeroy’s catalog indicate that he did business as far away as St. John, NB, Canada and Eagle Pass, Texas.

References:
Links: http://www.davistownmuseum.org/bioPomeroy.html

Poole, Williams & Co.
Windsor, Vermont, and New Britain, Connecticut, 1884-1886-
Tool Types: Shaves
Identifying Marks: Poole, Williams & Co./Windsor, Vt.
Remarks: This company, consisting of Lawrence V. Poole and Orlando E. Williams, was one of several companies making a scraper called a “Windsor beader.” They used a September 15, 1885 patent by Elton P. Kendall and Ambrose S. Vose of Windsor. They also used November 28, 1884, March 10, 1885, June 2, 1885, and March 10, 1885 patents (Nelson 1999).

Porter Co., H. K.
Boston, Massachusetts, 1888-1900
Tool Types: Bolt Cutters and Others
Remarks: The successor of Porter & Wooster, they moved from Boston to Everett in 1900 and changed their name to H. K. Porter Inc., remaining in business through 1990 under that name. Brand names included HKP, HYPOWA (both probably used after 1900), EASY and NEW EASY on bolt cutters patented April 6, 1880; January 18, 1881; August 9, 1881; and October 18, 1892. They bought out the Disston Saw Works in 1955 and sold it to Sandvik of Sweden in 1975 (Nelson 1999).

Porter, H. S.
Fairlee and Thetford, Vermont, -1846-1886-
Tool Types: Axes, Edge Tools, and Scythes
Remarks: This could be one or more people: a Herman Porter was listed in Thetford from 1846 to 1855, a Hammond S. Porter was listed in Thetford in 1849, an H.S. Porter was listed in Fairlee in 1872, and an H. Porter was listed in Fairlee from 1885 to 1886 (Nelson 1999).

Powell Planer Company
Worcester, Massachusetts, 1887-1899
Tool Types: Machinists’ Tools, Iron Planers, and Shapers
Remarks: In 1899 it was reorganized and named Woodward & Powell Planer Company.

Pratt & Whitney Co.
West Hartford, Connecticut, 1860-1966
Tool Types: Bevels, Dies, Drill Chucks, Drills, Lathes, Machinists’ Tools, Taps, and Others
Identifying Marks: P.&.W. Co.

Remarks: Francis A. Pratt (1827 -1902) and Amos Whitney (1832-1920) made gunmaker’s tools, drop hammers, screw machines, bolt cutters, gang drills, gear cutters, knurling tools and so on, including a protractor patented to Ambrose Swazey on 13 July 1875, possibly a wrench patented by John J. Grant on 1 February 1876, a compass patented by Frederick Gardner on 28 September 1886, and a caliper attachment patented by Bengt M. Hanson on 19 December, 1899. Other patent dates include 31 August 1875 and 10 August 1897--another patent-holder’s name was apparently Woodbridge (Nelson 1999). One of America’s most important and prolific 19th century machine tool manufacturers.

References:

Links: http://www.davistownmuseum.org/bioPrattWhitney.html

Prentice, James
New York City, New York, -1846-1883
Tool Types: Bevels, Rules, Scales, Measuring Tapes, Protractors, and Other Scientific Instruments
Remarks: James Prentice (January 2, 1812-August 25, 1888) immigrated in 1842 and was succeeded by James Prentice & Son in 1883. The latter company was only known to have been a manufacturer of optical equipment (Nelson 1999).

Prentice & Co., A. F.
Worcester, Massachusetts, 1872-1877
Tool Types: Lathes and Drills
Remarks: Brothers Vernon F. Prentice and Albert F. Prentice ran this company until 1873, when Vernon left. In 1875, F. E. Reed purchased half the company and in 1877 he purchased the rest and renamed it F. E. Reed & Company.


Prentice Brothers
Prentice Brothers Company
Worcester, Massachusetts, 1877-1912
Tool Types: Drills, Geared Head Lathe
Remarks: Albert F. and Vernon F. Prentice began the company after selling A. F. Prentice & Co. to F. E. Reed. They incorporated as Prentice Brothers Company in 1898. The geared head lathe was brought out in 1905. They consolidated with F. E. Reed Company in 1912 to become the Reed-Prentice Company.

Prentiss Vise Co.
Watertown and New York City, New York, 1872-1948
**Tool Types:** Anvils, Clamps, Dies, Taps, Vices, Drill and Wrench Attachments, and Others
**Identifying Marks:** PRENTISS VISE CO./NEW YORK (sometimes with brand names); P.V. CO. NY.
**Remarks:** This company used the brands MAGIC, BULL DOG, RAPID TRANSIT, MONARCH, REX, GIPSY, STAR, HANDY, YANKEE, and ECLIPSE. They also used patent holder names as brands, including SHEPARD, BINGHAM, BLAKE, and LEW. Watertown was the factory, New York City was their sales office (Nelson 1999) (FFLTC).

Providence Tool Co.
Providence, Rhode Island, 1845-1883
**Tool Types:** Augers, Bits, Edge Tools, Plane Irons, Gunsmith Tools, and Others
**Identifying Marks:** Providence Tool Co.; PROV TOOL CO
**Remarks:** Wing H. Taber and Thomas H. Abbott were the owners of this company at some point and were succeeded by the Rhode Island Tool Co. (Nelson 1999).

Pugh, Job T.
West Philadelphia, PA, 1774-1916-
**Tool Types:** Screw augers
**Remarks:** This family included Job T., and continued manufacturing into the early decades of the 20\textsuperscript{th} century. Were they the manufacturers of the ubiquitous Jennings pattern bits that are so frequently found in New England tool chests? Others were reported later in 1891 (Nelson 1999; Hutchins 2011).

Putnam Machine Co.
Fitchburg, Massachusetts, 1854-1891
**Tool Types:** Levels and Machinists’ Tools
**Identifying Marks:** Putnam Machine Co./FITCHBURG MASS
**Remarks:** Their products included a gear tooth layout scale patented by John Putnam on May 8, 1877, and possibly an iron level patented by Edward E. Webb on December 7, 1886. Levels marked “Fitchburg Level Co.” are probably from this company (Nelson 1999).

Putnam, John & Salmon W.
Fitchburg, Massachusetts, 1836-1854
**Tool Types:** Rules, Steam Engines, and Steam-Powered Machine Tools
**Remarks:** John Putnam (1810-1888) and Salmon W. Putnam (1815-1872) were possibly the first commercial steel machinists’ rule producers and became Putnam Machine Co. in 1854 (Nelson 1999).

Quinnipiac Malleable Iron Co.
New Haven, Connecticut, -1857-
**Tool Types:** Braces, Wrenches, Drill/Bit Stocks, Wagon/Carriage Hardware, and Gun Parts (Nelson 1999)
**Reading Hardware Company**  
Reading, Pennsylvania, 1868-1910-  
**Tool Types:** Household Tools, Apple Parers, Food Choppers, and Tobacco Knives  
**Identifying Marks:** MADE ONLY BY THE READING HARDWARE CO./READING. PA. U.S.A. (in a circle with “78” in a shield at center); R.H. CO./READING PA US/PATENTED NOV 14 1876 (from nail-grabbing tongs)  
**Remarks:** Patent dates used by this company included July 22, 1873 and December 10, 1872, by W.A.C. Oakes of Reading, Pennsylvania, under the name CENTENNIAL. They also used patents from May 5, 1868; May 3, 1875; October 19, 1875; November 14, 1876, May 22, 1877, and in 1878. Their food chopper was similar to one patented by Athol in 1865. Their tobacco cutter was called a “Standard Tobacco Knife” but whether “Standard” was a brand name or just part of the product name is unclear (Nelson 1999).  

**Reed & Company, F. E.**  
Worcester, Massachusetts, 1877-1912  
**Tool Types:** Lathes  
**Remarks:** F. E. Reed bought A. F. Prentice & Co. and renamed it in 1877. They made only lathes and the Reed lathe became known all over the world as the Standard lathe. In April 1912 they consolidated with the Prentice Brothers Company, Reed Foundry, and Reed & Curtis Machine Screw Company to become the Reed-Prentice Company.  

**Reynolds, Henry C.**  
Manchester, New Hampshire, 1855-1877  
**Tool Types:** Axes, Edge Tools, and Handles  
**Remarks:** Henry C. Reynolds (1829-1877) is not known to have worked alone, but worked for the Blodgett Edge Tool Mfg. Co. and Amoskeag Ax Co. circa 1855 to 1877 and was part of Benjamin H. Piper & Co. 1867 to 1877. His patents included axes from August 1, 1865 and August 6, 1867 and Amoskeag’s combination hatchet design may have been his (Nelson 1999).  

**Richardson, Charles Fred**  
Athol, Massachusetts, 1883-1904  
**Tool Types:** Calipers, Levels, and Scientific Instruments  
**Identifying Marks:** C.F. RICHARDSON ATHOL MASS  
**Remarks:** Charles Richardson’s father, Nathaniel, owned a machine shop from around 1835 to 1883 but was never known to make tools. This was the shop in which L.S. Starrett began making combination squares in 1878. Charles and his brother George H. worked under their father until his death when Charles bought out George. His products included a spring caliper patented by Frederick Thomas March 22, 1881, the rights to which he later sold to J. Stevens Arms & Tool Co. and a sighting/grade level patented in 1887, obtaining a patent for such a tool himself on October 27, 1896. Circa 1895, he added “& Son” to the company name and sold out to Goodell-Pratt and L.S. Starrett in 1904 and 1905, respectively (Nelson 1999).  
**References:**  
Ring & Co., E. & T.
Worthington, Massachusetts, 1840-1849
Tool Types: Wood Planes
Identifying Marks: E&T RING&CO/WORTHINGTON.MS

Rixford, O. S.
East Highgate, Vermont, 1812-1889
Tool Types: Axes, Handles, Scythes, and Whetstones
Identifying Marks: RIXFORD; EBONY
Remarks: O. S. Rixford was the youngest son of one Luther Rixford and evidently succeeded him around 1838. He built a foundry to make stoves around 1865 and employed roughly 30 people at the time.

References:
Links: http://www.rootweb.com/~vermont/FranklinHighgate.html -- Highgate township history including notes on O.S. Rixford
http://www.davistownmuseum.org/bioRixford.html

Robbins & Lawrence Co.
Windsor, Vermont, -1855-1861
Tool Types: Machine Tools and Gun- and Pistol-Making Machinery
Remarks: This company was succeeded by E. G. Lamson & Co. (Nelson 1999). The Robbins & Lawrence factory is the current location of the American Precision Museum, of which the editor is a long time member. Robbins & Lawrence is America’s most important manufacturer of gun-making machinery and a key player in the evolution of the American system of mass production. Numerous references to Robbins & Lawrence are contained in the historic surveys and manuscripts cited in our bibliographies.

Links: http://www.americanprecision.org/

Robinson & Co., I. J.
St. Johnsbury, Vermont, -1872-1877-
Tool Types: Bevels and Squares
Remarks: Robinson and H. Fairbanks had bevel patents from April 9, 1872 and March 11, 1873 (Nelson 1999).

Rowland Saw Works Anchor Brand
Rowland & Co., William
-1802-1856-
William & Harvey Rowland  
1849-1870  
Philadelphia, Pennsylvania  
Tool Types: Saws  
Remarks: The DATM indicates that there are some conflicting reports. This family made saws in Philadelphia, Pennsylvania between 1802 and 1870.  
William Rowland Sr. (b. 1780 d. 1857) is reported as working between 1802 and his death in 1857. He is reported as running William Rowland & Co. in 1856. This company apparently was also known as the Rowland Saw Works. He used the brand name ANCHOR BRAND at some time in his career. It is not known when the “& Co.” was added to the name of the company. One source reports it as being used only until 1851, but it is found on an 1856 catalog.  
William Rowland Jr. is the son of William Rowland Sr. He has “solo” working dates from 1835 to 1849. Apparently, prior to 1835 he worked in his father’s business. In 1849, he became part of William & Harvey Rowland. The sources for these dates conflict with one showing this partnership starting in 1835 and another listing only William Jr. in 1837. Yet another source shows William Jr. working alone beyond 1851.  
William & Harvey Rowland: This partnership existed from 1849 to 1870, when the company was acquired by Disston. It is not clear if Harvey Rowland was William Jr.’s brother, son, or other relative.  
DATM (Nelson 1999) lists the following other Rowlands who worked in the Philadelphia area:  
The Davistown Museum has now received the following information about Rowlands in Philadelphia: “My father (William Rowland) was from Philadelphia and he spoke of the factory that his family owned. The factory manufactured leaf springs. My father told me that they used to manufacture farm implements before they went into leaf springs.”  
The receipt indicates that Wm. & Harvey Rowland were selling coach springs, various types of steel, iron, and nail rods in 1884. Possibly only the saw business was sold to Disston? Or Disston was still using the Rowland company name.  
Links: http://www.davistownmuseum.org/bioRowland.htm  
Roys & Co., Franklin  
Berlin, Connecticut, 1840-1849-
Tool Types: Tinsmith Tools, Silversmith Tools, and Others
Identifying Marks: F. ROYS & CO./BERLIN
Remarks: This company, which overlapped the start of the Roys & Wilcox Co., consisted of Franklin Roys, Noah C. Smith, Benjamin Wilcox, and Benjamin F. Savage (Nelson 1999).

Roys & Wilcox Co.
East Berlin, Connecticut, -1845-1870
Tool Types: Calipers and Tinsmith Tools
Identifying Marks: ROYS & WILCOX/EAST BERLIN.CT; ROYS & WILCOX Co/EAST BERLIN Ct; ROYS & WILCOX/BERLIN CT (with eagle)
Remarks: This company, which merged into Peck Stow & Wilcox in 1870, initially consisted of Franklin Roys, Edward Wilcox, Elisha Norton, and Samuel Wilcox. Roys also worked with Josiah Wilcox in Wilcox & Roys of North Greenwich, Connecticut, and with Benjamin Wilcox in another “F. Roys & Co.” The relationship(s) between all of these Wilcoxes is unknown. This company made calipers patented by Noah C. Smith on September 14, 1869 (Nelson 1999).

References:
Links: www.tintinkers.org/files/tool_list.pdf
http://dunhamwilcox.net/bios/wilcox.htm

Ruggles, Nourse & Mason
Worcester, Massachusetts, 1838-1856
Tool Types: Plows, Cultivators, Hay Rakes, Wrenches
Remarks: Draper Ruggles, Joel Nourse, and J. C. Mason formed this company. They manufactured Joel Wood’s plow patent and Coat’s and Wilkes patents for revolving hay rakes. See Coes for information on the wrenches they made for them. They were succeeded by Nourse, Mason & Company.

Russell & Erwin Mfg. Co.
New Britain, Connecticut, 1846-1919-
Tool Types: Axes, Hammers, Hatchets, Household Tools, Levels, Saws, and Wrenches
Identifying Marks: R.&E.MFG.CO.
Remarks: This company consisted of Henry E. Russell and Cornelius B. Erwin, who added “Mfg. Co.” in 1851. They succeeded a number of other lock and hardware makers who had been in operation since 1835, continuing to make a number of household tools and remark other manufacturers’ tools, often using the brand RUSSWIN after 1886. This name was used specifically on a wrench also showing patents from October 30, 1900, January 12, 1901, and February 7, 1901. Tools they made themselves included pressing irons and stands, a sausage stuffer patented by O.W. Stowe of Plantsville, Connecticut, on July 6 1858; a “Hale” meat cutter, and a number of Nathaniel Waterman’s patented kitchenware. Tools they sold but did not necessarily make included a level patented March 12, 1878, a Baxter patent wrench, hammers, axes, and hatchets with the name G.B.
Germond, and saws. Their company catalog also lists shovels made by Ames and others who were independent manufacturers or brand names (Nelson 1999). From their 1877 price catalog, “The Russell & Erwin Manufacturing Company originated in 1839 when H.E. Russell, Cornelius B. Erwin, and Frederick T. Stanley formed a partnership to produce locks and builders' hardware, under the name of Stanley, Russell & Company. When Mr. Stanley withdrew from the partnership in 1840, Smith Matteson and John H. Bowen were added, changing the name of the company to Matteson, Russell & Company. In 1846, with the death of Mr. Matteson and the expiration of the partnership terms, the company’s name changed to Russell & Erwin. In 1851 the partnership was reorganized as a joint stock company and was from that time known as Russell & Erwin Manufacturing Company, until its merger with P. & F. Corbin in 1902. Cornelius Erwin served as president of the company from 1851 until his death in 1885. The company is best known as the pioneer of the wrought steel lock industry.”

References:
Links: http://www.brooklynmuseum.org/opencollection/objects/2227/Doorknob

Russell & Co., John
Greenfield and Deerfield, Massachusetts, 1832-1865
Tool Types: Axes, Knives, Hammers, Hatchets, Household Tools, Levels, Saws, and Wrenches
Identifying Marks: J.RUSSELL & CO./GREEN RIVER WORKS
Remarks: It is difficult to track Russell’s movements since he worked under several names at several MA locations. Francis Russell was an early partner of his, though for how long is unclear. Though he started in Deerfield in 1832, his most famous factory was at Greenfield, where he produced edge tools and knives using the mark “GREEN RIVER” as well as John Russell Mfg. Co. One source shows he also remained in Deerfield until 1864 with John Russell Mfg. Co. operating from 1870-1872. John Russell Mfg. Co. later became John Russell Cutlery Co. sometime around 1884 and ran at least until 1936. BARLOW jack knives were made from 1875 to 1920 under various names. Wiley & Russell Mfg. Co also produced tools under the “GREEN RIVER” brand name, suggesting an unexplored connection (Nelson 1999). Green River knives, particularly bowie knives, were prominent in the “Old West” scene and were known for their rugged durability. Green River Works continues to manufacture Bowies today, which are widely available in cutlery and hunting stores. John Russell is well known as one of the most important innovators of the American system of manufacturing and is frequently mentioned in many of the bibliographic citations in this volume. See Brack (2008a) for additional comments on Russell.

References:
Links: http://home.att.net/~mman/JRussellCo.htm
http://preservationgreenfieldma.org/places.html
http://www.jstor.org/pss/1496598
http://www.davistownmuseum.org/bioRussel.html
Sanborn, David Page
Littleton, New Hampshire, and Worcester, Massachusetts, -1841-1865
Identifying Marks: Variations of “D.P. SANBORN” and “LITTLETON” or “WORCESTER/MASS.”

Sanborn, Francis Davidson
1873-1875-
Tool Types: Carpenter Tools, Household Tools, Wood Planes, Hammers, Handles, Rules, Saw Tools, Moulding Tools, Churns, and Vises
Remarks: David Page Sandborn (1810-1871) was James Dow’s son-in-law, who was a brother-in-law of Franklin J. Gouch, who was Francis David Sanborn’s father and Minot Weeks’s father-in-law. David Page may have been working in New Hampshire or Massachusetts in the early 1840s, but by 1845 he was in Worcester, probably working alone, as part of Sanborn & Gouch, and probably as Sanborn & Co. Circa 1850, he moved back to Littleton, taking his son as a partner in 1866 and possibly working in Sanborn & Weeks. Francis (1834-1880) worked with his father circa 1866 and as part of Sanborn & Weeks until the death of his brother-in-law Minot in 1873. He produced planes and other tools like rules, wooden mallets, handles, saw horses, bench screws, cheese presses, washing machines, rolling pins, potato mashers, and butter pats while working with others but made solely woodenware alone (Nelson 1999).

Sandusky Tool Co.
Sandusky, Ohio, 1869-1926
Tool Types: Axes, Clamps, Hammers, Hoes, Metal Planes, Picks, Plane Irons, Screwdrivers, Shaves, Wood Planes, and Others
Identifying Marks: SANDUSKY TOOL CO/OHIO (in straight lines or scrolled double curve); SANDUSKY TOOL CO/SANDUSKY OHIO (name curved); OGONTZ TOOL CO.
Remarks: Aside from planes, this company may have solely been a distributor for some items. Patented planes include one by Cyrus Kinney in 1855, two by Ellis H. Morris on 8 November 1870 and 21 March 1871, and one by Harmon Vandbuskirk on 30 November 1869. They were bought by American Fork & Hoe Co. in 1926. (Nelson 1999) Sandusky produced a line of semi-steel planes incorporating an alloy of 85% gray iron, 10% steel, and 5% Mayari iron (probably from Cuban ore). A prolific late 19th century maker of wood planes, including some fancy plow planes, which are now collector’s items.
References:
Sandusky Tool Co. [1877] n.d. Illustrated List of Planes, Plane Irons, etc. The Sandusky Tool Co.
Fitzwilliam, NH: Register Team Printing Establishment & Ken Roberts Publishing Co.
Links: http://www.davistownmuseum.org/bioSandusky.html

Sargent & Co.
Hartford and New Haven, Connecticut, 1869-1926
Tool Types: Axes, Clamps, Hammers, Hoes, Metal Planes, Picks, Plane Irons, Screwdrivers,
Shaves, Wood Planes, and Others

**Identifying Marks:** SARGENT and variations

**Remarks:** Sargent & Company was formed in 1858 when three companies, located in different states and involving three different Sargent brothers (Joseph B., George & Edward) were combined. The companies were J. B. Sargent & Co., Sargent & Brother, and Peck & Walter. In 1863 a new, larger location was purchased in New Haven, Connecticut. Prior to that the company had been located in Hartford with sales offices in New York City. Sargent & Co. was incorporated in October of 1864 and in 1866 a fourth brother, Harry, joined the company. His involvement was short-lived though. By the end of the 1960s Sargent hand tools had been completely eclipsed by their production of locks and builders hardware. In 1967 Sargent & Co. became a division of Walter Kidde & Co., Inc. and the name was changed to Sargent Manufacturing Company (Lamond 1997, 10). The Sargent & Co. copied many of the Stanley tool designs and, after the Stanley Company, was the second most prolific manufacturer of malleable iron hand planes and other tools.

**References:**
Sargent & Co. *Duralumin and Steel Carpenter Squares*. New Haven, CT.

**Links:**
http://www.rostratool.com/default.htm -- Sargent Quality Tools is also still in business today.
http://www.davistownmuseum.org/bioSargent.htm

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**Sawyer Tool Co.**

**Athol, Fitchburg and Ashburnham, Massachusetts, 1894-1915**

**Tool Types:** Bevels, Levels, Machinists’ Tools, Rules, and Screwdrivers

**Identifying Marks:** SAWYER TOOL MFG. CO./ASHBURNHAM MASS (sometimes without the city/state)

**Remarks:** The “Mfg.” in the title was not always used. The company was formed by Burnside E. Sawyer. The move from Athol to Fitchburg occurred in 1898 and to Ashburnham in 1912. In 1915, the name changed to Almond Mfg. Co. They produced screwdrivers and screwdriver bits for use in SAMSON brand braces, likely based on a 9 May 1899 patent belonging to Sawyer and William Arnott. Further productions include a screwthread gauge (patented to Sawyer, September 21, 1897), a surface gauge (patented to Sawyer, May 9, 1899), a bevel (patented to Carl G. Osteman, July 25, 1893) which was also manufactured by L.S. Starrett and, possibly, the S.A. Woods Machine Co., and a tap wrench (patented to Henry B. Keiper, December 14, 1897). See also Almond Mfg. Co. (Nelson 1999).

**Links:**
http://www.davistownmuseum.org/bioSawyer.html
Sawyer Watch Tool Co.
Fitchburg, Massachusetts, 1867-1881-
**Tool Types:** Calipers, Dividers, and Watchmaker Tools
**Remarks:** An S. Sawyer, probably Sylvanus Sawyer, the president of this company in 1881, held divider and caliper patents from April 9, 1867 and July 7, 1868. This company is apparently unconnected and unrelated to Sawyer Tool Co. (Nelson 1999).

Sayre, L. A.
Newark, New Jersey, 1884-1916-
**Tool Types:** Dividers, Hatchets, Hoes, Household Tools, Leather Tools, Pliers, and Saw Tools
**Identifying Marks:** L.A.SAYRE & SON/NEWARK,N.J.; L.A.SAYRE & CO/NEWARK,NJ (first line curved)
**Remarks:** Sayre’s name is also reported as Sayer and sometimes appears with “Co.,” “& Co.,” and “& Son.” He held a patent on an apple parer from January 29, 1884 under the brand WAVERLY and may have marked and sold tools made by others (Nelson 1999).

Schollhorn Co., William S.
New Haven, Connecticut, 1873-1913-
**Tool Types:** Dividers, Pliers, Punches, Eyelet Setters, and Others
**Identifying Marks:** Variations of the full name or W.S.S.CO., sometimes with city, state, patent dates, patent holder’s name, etc.
**Remarks:** William Schollhorn (1834-1890) had patents on a pair of dividers with a pencil attachment from June 17, 1873 and a divider shared with F. P. Pfleghar from January 9, 1886. The latter were made under the brand EXCELSIOR. This company also made many pliers and dividers patented by William A. Bernard on May 6, 1890; July 19, 1892; October 24, 1899; August 7, 1900; January 1, 1901; April 2, 1907; and November 6, 1907 (Nelson 1999).

Sears, Roebuck & Co.
Chicago, Illinois, -1893-todate
**Tool Types:** Numerous
**Identifying Marks:** CRAFTSMAN
**Remarks:** This company marks a variety of tools with their name and began to use the brand CRAFTSMAN after 1900. Richard Sears, a watch company owner in Minneapolis, Minnesota, was operating as early as 1886. He hired Alvah C. Roebuck, a watchmaker, and opened a branch in Chicago in 1887. By 1893, they were using their corporate name and had moved to Chicago, publishing their first catalog covering more than watches in 1896 (Nelson 1999).

Seymour & Co., William N.
New York City, New York, -1828-1861-
**Tool Types:** Marking Gauges, Metal Planes, Squares, and Wood Planes
**Identifying Marks:** W.N.SEYMON & CO./NEW-YORK (first line curved, sometimes without state)
**Remarks:** This company is listed as early as 1828 but a trade is not specified until after 1842 when they are listed as a hardware dealer. While they are reported as makers of machinist’s try squares, they may have only marked and resold them, as with most of their tools including wooden planes,
some of which seem to be from the Greenfield Tool Co. The metal planes found could be from prior to 1842 and appear to be piano maker’s iron miter planes (Nelson 1999).

**Shepardson & Co., H. S.**
*Shelburne Falls, Massachusetts, 1855-1876*
**Tool Types:** Augers, Awls, Bits, Braces, Chisels, and Farm Tools
**Remarks:** H. S. Shepardson held patents on a brace from March 1, 1870, a countersink from March 8, 1864, and a gimlet handle from August 12, 1873 (Nelson 1999).

**Siegley Tool Co., Jacob**
*New York City, New York, and Wilkes Barre, Pennsylvania, 1878-1905*
**Tool Types:** Metal Planes, Plane Irons, Wood Planes, and Other Planes
**Identifying Marks:** SIEGLEY; J. SIEGLEY; JACOB SIEGLEY; SSS; STS; SBS (on plane irons)
**Remarks:** Jacob Siegley (1846-January 19, 1937) had plane patents from December 6, 1878; July 1, 1879; August 16, 1881; January 2, 1883; March 11, 1884, February 10, 1891; and December 5, 1893. His company moved from New York to Pennsylvania in 1883 and sold it to Stanley Rule & Level in 1905, who continued to use his name into the 1920s, using different letters in the markings to signify iron type and thickness (Nelson 1999).

**Silver & Deming**
*Salem, Ohio, 1851-1900-
**Tool Types:** Bits, Boring Machines, and Drills
**Remarks:** E. W. Silver and J. Deming are assumed to be the principals of this company. Their date of establishment is listed at 1854, probably when the partnership began, and apparently began to use the name “Silver Mfg. Co.” starting with an appearance in a catalog from 1900. They were credited with inventing the first bits with reduced shanks, allowing larger bits to fit into smaller chucks. E.W. Silver and J. Deming had a patent with E. W. Fawcett on September 23, 1873 for a hollow auger. They produced wheelwright’s hub borers patented July 25, 1851, and blacksmith style drill presses from 1854, 1864, and 1868 (Nelson 1999). Their drill bits are still frequently encountered, suggesting additional production well into the 20th century. Silver & Deming bits are highly regarded by many customers of the Liberty Tool Co. (FFLTC).

**Simmons & Co., Daniel**
*Cohoes, Albany, and New York City, New York, 1834-1860*
**Tool Types:** Adzes, Axes, Hammers, and Hatchets
**Identifying Marks:** SIMMONS/MOSS; D.SIMMONS; D.SIMMONS & CO. COHOES-N.Y.
**Remarks:** The Albany and New York City branches were likely just sales offices for the Cohoes factory. This company was reportedly succeeded in 1860 by Weed, Becker & Co. One source says Daniel Simmons and Jonas Simmons (possibly his brother) formed the Lockport Edge Tool Co., also in 1860. MOSS may be a brand name or partner’s name. The D.SIMMONS mark could be prior to the addition of “& Co.” to the company name (Nelson 1999).

**Simmons Hdw. Co., Edward Campbell**
*St. Louis, Missouri, 1869-1940*
**Tool Types:** Numerous

Remarks: This company is also known as E.C. Simmons & Co. and was a hardware wholesaler that marked and marketed countless tools. While not a tool maker itself, this company did acquire controlling interest in Walden Knife Co. in the 1890s. They were bought out by A.F. Shapleigh Hdw. Co. in 1940. KEEN KUTTER was their best brand, but other brands included ARKANSAS on splitting wedges, AXTEL on horse rasps, BAY STATE on hatchets, BLACK JACK on assorted tools including a wrench patented January 14, 1896, BLACKSNAKE on saws, BLUE BRAND or B.B. on squares, BULL DOG on braces and tool sets, CHIPAWAY on axes, planes, hammers and others, CLAY BANK on shovels, COLUMBIA on saws, CUMBERLAND on axes, DEFIANCE on saws, DELMAR on coffee mills, DRIVEWELL on punches, DUCK BILL on wrenches, ESSE on wrenches, EUREKA on rakes, FARMER BOY on scythe stones, FAST MAIL and W.M.FINCH on saws, HERCULES on wheelbarrows, HOWARD on axes, KEYSTONE on forks, KLINCHER, KLINCHER on pliers, KORN KRUSHER on corn mills, KIGHTNIN, LONE STAR on hoes, H.M. MEIER on saws, MESQUITE on axes, MOGUL on shovels, MONARCH on saws, NEVER SLIP on wrenches, OAK LEAF, OHIO BOY on rakes, OHIO FALLS on axes, OZARK on splitting wedges, POLAR on ice saws, RED JACKET on hatchets, RED LINE on rules, RED TOP on scythes, ROYAL on axes, RUN EASY on plows and lawnmowers, SMILEY’S on saws, SURE GRIP on vices, braces and wrenches, SWIFT on saws and saw tools, TRUE BLUE on axes, UTILITY on saws and wrenches, VANGUARD on saws, WINNER on lawn mowers, WOOD PECKER and ZULU on axes, and WM. ENDERS (Nelson 1999).


Simonds Saw Mfg. Co.
Fitchburg, Massachusetts, and Chicago, Illinois, -1890-1904

Tool Types: Files, Knives, Saws, and Saw Tools

Identifying Marks: THE SIMONDS SAW (in a banner);
THE/SIMONDS/MFG./CO./PAT.DEC.27.1887 (on a saw handle rivet)

Remarks: This company uses an 1832 establishment date but was the successor to A. Simonds & Son, not using this name until the 1880s. A number of other names like Simonds Saw Works, Simonds Mfg. Co., Simonds Saw Co, and others, confuses the dating of this company as it is unclear whether or not they were related. They used a number of brand names including BAY STATE IROQUOIS, KING PHILIP, MOHAWK, OSCEOLA, PONTIAC, and SIOUX. By 1904 they were working out of Lockport, NY; Seattle, WA; Philadelphia and Pittsburg, PA; Vancouver, BC; Montreal, QU; Toronto, ON; St. John, NB; New Orleans, LA; Portland, OR; San Francisco, CA; Los Angeles, CA; and several locations in England. Patents include a saw swage dated February 22, 1881, a dove tail saw dated December 27, 1887, and a band saw guide dated August 7, 1894 (Nelson 1999).

References: Simonds Saw and Steel Company. (1937). *Woodworking saws and planer knives: Their care and use*. Simonds Steel and Saw Co., Fitchburg, MA. IS.
Simonds Saw and Steel Company. (1937). *How to file a cross-cut saw*. Simonds Steel and Saw Co., Fitchburg, MA. IS.
Smith Machine Co., H. B.
Smithville, New Jersey -1892-
Tool Types: Carpenter Tools and Grinders
Remarks: “H. B. Smith, founder of the H. B. Smith Machine Co. (1847) of Smithville, New Jersey, pioneered the use of cast iron in woodworking machinery. Unlike his competitors, he used all iron construction in his major machines from the very beginning. Even so, some minor Smith machines were built with wooden frames to meet the needs of smaller shops. ...William C. Bolger pointed out its importance in Smithville: The Result of Enterprise (1980): ‘The statement that ‘It is all iron’ is significant, both in terms of the man and his future career as a manufacturer of woodworking machines. His reputation in the machine business was due as much to his use of iron as to the designs he patented.’” (Batory 2004, 11).

References:
http://www.davistownmuseum.org/bioSmith.html

Smith, Otis A.
Rockfall, Connecticut, 1884-1917
Tool Types: Bits, Combination Tools, Levels, Marking Gauges, Metal Planes, Saw Tools, Wrenches, and Others
Identifying Marks: OTIS A. SMITH/ROCKFALL, CONN (sometimes with patent dates or other marks)
Remarks: Otis Smith (1836-1923) made planes patented by Amos Fales on March 7, 1882, April 1, 1884, and August 31, 1886, and a gasket cutter from October 24, 1865. He also made an adjustable countersink bit, a wire splicer, and guns. A Savage & Smith that made a gasket cutter patented 1865 in Vermont is not known to be related (Nelson 1999).

Snell Mfg. Co.
Fiskdale and Sturbridge, Massachusetts, -1850-1905-
Tool Types: Augers, Awls, Bits, Boring Machines, and Plane Irons
Identifying Marks: Variations of the maker’s name, sometimes with Mfg., the city and state, “MANUF’D BY,” or patent dates
Remarks: This company probably succeeded Snell & Bros., though it is unknown when (Nelson 1999). A prolific maker of augers and bits.

Standard Tool Co.
Athol, Massachusetts, Circa 1880-1905
Tool Types: Household Tools, Levels, Machinist Tools, Rules, Squares, and Wrenches
Identifying Marks: STANDARD TOOL CO/ATHOL, MASS (first line curved); CHAPLIN’S
Remarks: This company was a subsidiary of Athol Machine Co. and had the same factory and officers that specialized in machinist tools. The mark with Chaplin’s May 4, 1880 patent was on a rule in a combination machinists’ square; the patent was originally issued on May 8, 1866 to Orril R. Chaplin. Other patents used by Standard Tool Co. include patents belonging to Stephen H. Bellows from September 16, 1873, June 8, 1880; November 12, 1881 (invalid); March 11, 1884; April 15, 1884; June 3, 1884; May 21, 1889; May 13, 1890; May 11, 1897; and October 18, 1898. They also used David E. Woolsen’s patent from October 7, 1879, Thomas Frederick’s invalid patent from March 22, 1880, William A. White’s from April 1, 1884, and John P.B. Wells’s patents from November 22, 1887; July 22, 1890, and January 9, 1900. Their brand names included BOSS, BAY STATE, and sold AMERICAN choppers that were probably manufactured by Athol Machine Co. Laroy S. Starrett bought both Athol Machine Co. and Standard Tool Co. in 1905, continuing to use Athol Machine Co. but abandoning this component of the company due to his legal disputes with it over patent rights (Nelson 1999).

Stanley tool companies: an overview

One company, the Stanley Tool Company, having two major components with ever changing names, best illustrates the birth and growth of the American factory system and its classic period of American toolmaking.

Augustus Stanley began making rules in New Britain, CT, possibly as early as 1850. Another Stanley family company, The Stanley Works, maker of hand tools of all description other than rules and levels, was organized in 1856 (Jacob 2011, 6). In 1858, the A. Stanley Rule Co. merged with Hall & Knapp, makers of try squares, levels, and plumbs, and became the Stanley Rule & Level Company. Both Stanley companies operated simultaneously until they merged in 1920. The history of their hand tool manufacturing output, as illustrated by the myriad variety of hand tools they produced, can be considered a thumbnail sketch of the evolution of America’s factory system of hand tool production.

The 1850s were a period of rapid change in the American industrial landscape. The availability of machinery for the mass production of drop-forged tools with replaceable parts was rapidly growing. A wide variety of malleable iron stock and tool steel from German, puddled, and blister steel furnaces quickly expanded the options for tool production. The manufacture of tool- and equipment-making machinery greatly expanded the need for a variety of measuring tools to make the machinery that made tools and other machines. The classic period of American toolmaking was off and running.

Members of the Stanley clan had been making hinges and hardware in New Britain since the 1831. The ease of production of high quality wrought iron in refractory furnaces for the last half century or longer made machine-made, rather than hand forge-welded, hardware production a routine affair. When the Stanley Works was organized in 1856, malleable grey cast iron was available for tool production as was high carbon malleable iron (< 0.5 % carbon content) and tool steel (> 0.5% carbon content). Soon to make an appearance for hardware and tool production was cold rolled Swedish
iron (1870), first used in the United States by the Stanley Works (Jacob 2011, 9). Puddled steel had been available for drop-forging tools for several decades; the appearance of tempered alloy steel with various degrees of hardness evolved in the late 1860s. The availability of higher carbon grey cast iron and malleable cast iron with a slightly lower carbon content expanded tool production options. Malleable iron was soon to be called mild steel and used in many toolmaking operations. Numerous variations in hot or cold rolling, tempering, and annealing, many of them secret, were adopted by the Stanley Works and soon by Darling, Brown, & Sharp, the L.S. Starrett Company, and other American toolmakers working during the classic period of American toolmaking. Other than its excellent Sheffield cast steel edge tools and numerous high quality planemakers, English toolmakers were falling behind in their production capabilities compared to the innovative entrepreneurs of the American factory system. The hand tools that built the machinery that mass produced other hand tools and manufactured other machinery constitute one chapter in the exploration of the iconography of American hand tools.

**Stanley & Co., Augustus**
**New Britain, Connecticut, 1854-1857**
**Tool Types:** Rules
**Identifying Marks:** *A.STANLEY*NEW BRITAIN,CONN.*
**Remarks:** The brief history of Augustus Stanley & Co., a rule-making company is complicated by the fact that the Stanley family had been producing hardware in New Britain since 1831, using a series of other names before becoming the Stanley Works in 1852. The Augustus Stanley & Co. was formed by brothers Augustus and Timothy Stanley with Thomas Conklin, an earlier rule maker from Bristol, Connecticut, at the same time they acquired Seth Savage’s rule business in Middletown, Connecticut. In 1857, they merged with Hall & Knapp to form the Stanley Rule & Level Co. (Nelson 1999). Numerous citations in the bibliographies that follow this appendix discuss the pivotal event in the history of the Stanley company; i.e. the evolution of Augustus Stanley’s rule manufacturing company to the Stanley Rule and Level Co. in 1857.
**Links:** http://www.nbim.org/

**Stanley Works**
**New Britain, Connecticut, 1852-1920**
**Tool Types:** Hardware
**Identifying Marks:** STANLEY
**Remarks:** At the same time that Augustus Stanley’s rule company became the Stanley Rule and Level Company in 1857, the Stanley Works was continuing to manufacturing a wide variety of hardware in an associated group of buildings in New Britain. The Stanley Works was finally incorporated into the Stanley Rule & Level Co. in 1920. The Stanley Works was probably America’s largest producer of hinges, hasps, and other commonplace hardware, which can still be found in New England workshops and collections.

**Stanley Rule & Level Co.**
**New Britain, Connecticut, 1857-**
**Tool Types:** Rules, Levels, Planes, etc.
Identifying Marks: *A.STANLEY*NEW BRITAIN,CONN.*
Remarks: “The Stanley family had been making hardware in New Britain from 1831 on; they used a series of other names before they became the Stanley Works in 1852. In 1854, brothers August and Timothy Stanley and Thomas Conklin (an earlier rule maker in Bristol, CT) formed [the August Stanley & Co.] ...concurrently, they acquired the rule business of Seth Savage, Middletown, CT. In 1857, this company merged with Hall & Knapp as the Stanley Rule and Level Co.”

Henry Stanley was the first president of Stanley Rule & Level Co. Henry was concurrently the president of the Stanley Works, a maker of hardware, which maintained a separate corporate identity from Stanley Rule & Level Co. until 1920 when they merged. “The S. R. & L. Co. continued to expand its product line by acquiring other companies making tools they wanted to add and to expand their market volume by acquiring competitive companies. Their major pre-1900 acquisitions were: Hill & Crum, Unionville, CT; Charles L. Mead (successor to E.A. Stearns & Co.), 1863; Bailey, Cheney & Co., 1869; Leonard Bailey & Co., 1878; Bailey Wringing Machine Co., 1880; R.H. Mitchell & Co., 1871; Upson Nut Co., 1893.”

Patent rights acquired by S. R. & L. Co: Many of the approximately 44 issued to Leonard Bailey from 1855 to 1903 (Frank M. Bailey was a Stanley plane room foreman and had three patents assigned to Stanley); Nathan S. Clement, 19 March 1867 tool handle; A. Williams, combination gauge; W.T. Nicholson, levels; C.G. Miller, planes; G.A. Warren, planes; Dorn, planes; Justice Traut, multiple plane patents.

Atha Tool Co. may have been producing tools as early as 1875 in Newark, NJ. Buying out many competing tool and hammer makers, they were themselves purchased by the Stanley Rule & Level Co. in 1913, which retained its touch mark (Nelson 1999, 748-9).

The following history is excerpted from a 1937 Tool Talks publication by Stanley Tool: “The manufacture of “Bailey” Planes by Stanley marked a turning point in the Company’s history. Other hand tools were soon added to the Stanley line—Mitre Boxes, Screw Drivers, Wood and Iron Levels, Bit Braces, Hand Drills, Hammers, Try Squares. With these new tools, The Stanley Rule & Level Co. produced the most complete line of woodworking tools in the world. Stanley’s dominant position was recognized by carpenters and mechanics everywhere who turned over their problems and suggestions to the Company. This created a demand for specialized tools to perform certain jobs better than they could be done with regular size or style tools. Stanley responded by increasing its line to still greater proportions to include many more hand tools that helped craftsmen do better work. A search of the U. S. Patent Office would undoubtedly disclose that The Stanley Rule & Level Co. took out more patents during this period than any other industrial organization in the country.

NEW COMPANIES ANNEXED: In the early years of this century the march of progress continued. In 1904 the George E. Wood Company, of Plantsville, Conn., manufacturers of “Hurwood” Screw Drivers was bought. The business was enlarged under Stanley leadership and Stanley “Hurwood” Screw Drivers became the biggest selling quality drivers in the world. Two other companies were purchased in 1913 and 1916. The products of these companies, Atha Tool Co., of Newark, N. J., and The Eagle Square Manufacturing Co., South Shaftsbury, Vt., brought handled hammers, sledge, wedges, anvil tools and carpenters’ steel squares to the Stanley line. Today both these plants are busy producing hand tools as branch plants of the Stanley organization. To maintain leadership in the Canadian market, a tool plant was opened by Stanley at Roxton Pond, Quebec in 1906. Known in
Canada as the Stanley Tool Company, Ltd., the Roxton Pond factory now makes 80 per cent of all the Stanley Tools sold in Canada. In 1920 The Stanley Rule & Level Co., for many years a full-grown organization merged with another New Britain firm, The Stanley Works.”

**References:**


Stanley Rule & Level Co. n.d. *Stanley improved labor saving carpenters’ tools including “Bailey”*. 204
adjustable plane. New Britain, CT: Stanley Rule & Level Co.
Stanley Rule & Level Co. 188?. Bailey's patent adjustable bench planes and other improved carpenters' tools manufactured by the Stanley Rule and Level Company, New Britain, Conn. New Britain, CT: Stanley Rule & Level Co.
Stanley Rule & Level Co. [1898] 1975. Price list of U. S. standard boxwood and ivory rules, plumbs and levels, try squares, bevels, gauges, mallets, iron and wood adjustable planes, spoke shaves, screw drivers, awl hafts, handles, etc. manufactured by the Stanley Rule and Level Co. New Britain, Conn., U.S.A. Fitzwilliam, NH: Ken Roberts Publishing Company,
The Stanley Rule and Level Plant. 1921. “55” plane and how to use it. New Britain, CT: The Stanley Rule and Level Plant.
Stanley Tools. n.d. Read this before you use Stanley planes: A plane is no better than its cutter. New Britain, CT: Stanley Tools.
The Stanley Works. 1955. 45 plane: Seven planes in one. New Britain, CT: Stanley Tools.
Stanley. [n.d.] 2002. Insert: Read this before you use: Combination plane no. 46. The Midwest Tool
Collector's Association.

**Links:**
- [http://www.stanleyworks.com](http://www.stanleyworks.com) -- This company is still in business.
- [http://www.supertool.com/StanleyBG/stan0a.html](http://www.supertool.com/StanleyBG/stan0a.html) -- An important information source containing tons of information on Stanley Planes is on the web as: The Superior Works: Patrick’s Blood and Gore.
- [http://www.roseantiquetools.com/id16.html](http://www.roseantiquetools.com/id16.html) -- A history of the Stanley Co. and descriptions of their tools has been created by Rose Antique Tools.

**Star Tool Co.**
Middleton, Connecticut, 1867-1883

**Tool Types:** Bevels, Levels, Marking Gauges, and Squares

**Identifying Marks:** TOOL CO. (in a star), STAR BEVELS (in a star)

**Remarks:** Three companies with this name were simultaneously operating in Connecticut, Rhode Island and Vermont, confusing many historians and tool collectors. To further the ambiguity, this company made a bevel patented by Leonard D. Howard on 5 November 1867, who was living in St. Johnsbury, VT at the time. Rights to a marking gauge patented 21 April, 1868 by W. Brodhead of Meadville, PA and a caliper/divider patented 22 February, 1876 by Thomas McDonough were assigned, though it’s unclear whether they ever made the latter. A Starr company produced squares during the same time and is possibly a typo or variation of this company (Nelson 1999).

**Links:** [http://www.davistownmuseum.org/bioStar.html](http://www.davistownmuseum.org/bioStar.html)

**Stark Tool Co.**
Waltham, Massachusetts, 1862-1902-

**Tool Types:** Lathes and Other Tools

**Remarks:** This company, formed by John Stark, produced “fine tools” such as a spring chuck jeweler’s lathe he patented in 1859 (possibly produced under his own name prior to the company’s formation). His son, John Jr., succeeded him by 1902 (Nelson 1999).

**Links:** [http://www.wade8a.com/history.htm](http://www.wade8a.com/history.htm)
[http://www.awco.org/Seminar2002/Machinery/damaskeeningmachines.htm#Engine](http://www.awco.org/Seminar2002/Machinery/damaskeeningmachines.htm#Engine)

**St. Johnsbury Tool Co.**
St. Johnsbury, Vermont, 1870-1886-

**Tool Types:** Bevels and Squares

**Identifying Marks:** ST.JOHNSBURY TOOL CO.

**Remarks:** This company was founded by Isiah J. Robinson along with I. J. Robinson & Co. to make
a double bevel and square combination tool patented in June, 1870. The distinction between the two companies is unknown (Nelson 1999).

**Starrett Co., Laroy S.**

**Athol and Newburyport Massachusetts, 1880-1994**

**Tool Types:** Calipers, Dividers, Household Tools, Levels, Machinist Tools, Rules, and Squares

**Identifying Marks:** L.S. STARRETT CO./ATHOL,MASS (sometimes on one line and/or without “CO”); The L.S.S.Co/Athol,Mass.

**Remarks:** Laroy (often incorrectly recorded “Leroy”) S. Starrett (April 25, 1836-1922) invented and produced the HASHER, a meat chopping machine patented May 23, 1865. A few years later, he went to work for the Athol Machine Co., which produced it in 1868. Circa 1875 he was prompted to quit due to mounting legal disagreements over patents including a particular combination machinists’ square he produced through the Richardson Machine Shop in 1877. In 1880, he won the lawsuit against Athol and formed his own company, buying out Charles P. Fay of Springfield, Massachusetts’s caliper and divider stock, machinery, and patents in 1887. His wild success allowed him to buy out his old employer and legal foil, Athol Machine Co., in 1905. Starrett held over 100 patents, including a particularly significant micrometer patented July 29, 1890. He also produced tools with pre-1900 patents of Frederick A. Adams, Frank G. Lilja, Morris F. Smith, Burnside E. Sawyer, John D. Sloan, Edward C. Clapp, Carl G. Osteman, J.H. Cook, Patrick Kennelly, and George Thompson (Nelson 1999).

**References:**


**Links:**

http://www.starrett.com/ -- The L. S. Starrett Company’s website

http://www.memorialhall.mass.edu/collection/itempage.jsp?itemid=4575 -- 1898 photograph

http://www.roseantiquetools.com/index.html -- A history of the L. S. Starrett Co. has been created by Rose Antique Tools

http://www.davistownmuseum.org/inventoryofpictures/WebInfoStarrett.html -- Tools of the L. S. Starrett Co. in the Museum collection

**Stearns & Co., Edward A.**

**Brattleboro, Vermont, and Springfield, Massachusetts, -1838-1863**

**Tool Types:** Rules
Identifying Marks: E.A.STEARNS & CO
Remarks: Edward Stearns started as an employee of S. Morton Clark & Co. prior to buying them out and starting his own business circa 1838. He was succeeded by Charles L. Mead sometime between 1857 and 1861, who continued to use his name until 1863 when he sold out to Stanley Rule & Level Co. One source shows the company in Massachusetts in 1859 instead of Vermont, but this is as of yet unexplained (Nelson 1999).

Stearns & Co., Edward C.
Syracuse, New York, 1877-1941-
Tool Types: Augers, Clamps, Drills, Saw Tools, Shaves, and Wrenches
Identifying Marks: E.C.STEARNS & CO./SYRACUSE,N.Y. (sometimes on one line)
Remarks: Edward C. Stearns (?-1929) succeeded G. N. Stearns & Co. and is assumed to have been related to George N. Stearns. Avis Stearns Mead, most likely a daughter of George Stearns, was the Vice President and a principal of the company. They made the same saw vise as Seneca Falls Mfg. Co. patented by Wentworth on April 8, 1879 and a spoke shave patented March 27, 1900 by Herbert M. Coe. Their brand name MERIT TOOLS was used on scrapers, possibly only after 1900. They remained in business until circa 1956, but were not manufacturing tools by 1941 (Nelson 1999).

Stearns & Co., George N.
Syracuse, New York, 1864-1877
Tool Types: Augers, Box Scrapers, Farm Tools, and Shaves
Identifying Marks: G.N.STEARNS/PAT’D MAY 7, 78
Remarks: George Stearns used an Est. 1864 date for this company despite not having used “& Co.” until circa 1870. The patent date above was used on augers and has not been found on record, though he did have patents on hollow augers from September 8, 1863 and August 27, 1872, as well as a spoke shave from December 13, 1870. Prior to 1864 when he became a machinist, he worked as a carriage maker. 1864 was the only year he was listed as working on mowers and reapers (Nelson 1999).

Stephens & Co., L. C.
Riverton, Connecticut, 1828-1901
Identifying Marks: STEPHENS & CO, RIVERTON CT (sometimes without city/state)
Tool Types: Bevels and Rules
Remarks: Lorenzo Case Stephens (1809-1871) began this company, possibly without “& Co.,” and was succeeded by his son Deloss H. Stephens (1837-1919), who was bought out by Chapin-Stephens in 1901. It seems “L.C.” was dropped from the company name after Lorenzo’s death. They made a
“No. 36” combination rule, level, and bevel tool patented by Lorenzo on January 12, 1858, which was later produced by Chapin-Stephens and Stanley (Nelson 1999).

**Stevens & Co., Joshua**  
Chicopee Falls, Massachusetts, 1864-1903  
**Identifying Marks:** STEVENS & CO.; J.STEVENS & CO/CHICOPEE FALLS MASS; J.STEVENS A & T CO./CHICOPEE FALLS MASS  
**Tool Types:** Bits, Calipers, Dividers, Levels, Guns, and Machinists’ Tools  
**Remarks:** This company changed its name to Stevens Arms & Tool Co. in 1886 (having always primarily produced guns), but still used “Joshua Stevens & Co.” as late as 1898 in their catalogs. They were bought out by L. S. Starrett in 1903. They manufactured a number of calipers and dividers patented by Charles A. Fairfield on July 21, 1863; T.C. Page and George W. Hadley on February 8, 1870; Oliver D. Warfield on November 7, 1882, November 20, 1883, May 31, 1887, and April 10, 1888; Oscar Stoddard on August 27, 1872 and March 31, 1885; George M. Pratt on February 23, 1886; Joshua Stevens on October 30, 1883 and September 30, 1890; and Charles P. Fay on September 23, 1884, October 5, 1897, and January 10, 1899 (Nelson 1999).  
**Links:** [http://ugca.org/03mar/savage.htm](http://ugca.org/03mar/savage.htm) -- The guns of Joshua Stevens & Arthur Savage

**Stoddard, Oscar**  
Detroit, Michigan, 1872-1885-  
**Identifying Marks:** PAT'D.AUG.27.1872/O.STODDARD (curved in an oval outline, arrowhead between the lines); PAT/APLD FOR//O.STODDARD  
**Tool Types:** Calipers and Dividers  
**Remarks:** Oscar Stoddard’s patented dividers and calipers were made with extendable and replaceable tips by J. Stevens & Co. and possibly others, though it is unknown if Oscar ever produced them by such a design himself. He also had a March 31, 1885 patent date (Nelson 1999).

**Stoney Brook Iron Works**  
Kingston, Massachusetts, 1805-1836  
**Tool Types:** Augers and Others  
**Remarks:** Seth Drew Jr., his brother-in-law Thomas Cushman, and Seth Washburn set up a works to do general blacksmithing and make ship’s tools and supplies. C. Drew & Co. succeeded them (Nelson 1999).

**Storz, John**  
Philadelphia, Pennsylvania, 1853-1972  
**Identifying Marks:** J.STORTZ & SON/PHILA (sometimes with full first name or without initial); J STORTZ/TOOLS/PHILA PA  
**Tool Types:** Chisels, Coopers’ tools, Drills, Knives, Stone-working Tools, and Others  
**Remarks:** Stortz added “& Son” to his name at some point, at least by 1911 but possibly not before 1900. He specialized in Slater, paver, brick layer, and cement worker tools, but also produced coopers’ tools, race knives, oyster knives, oyster knife, caulking irons, and others (Nelson 1999).

**Stow, Solomon**  
-1820-1847
Stow Mfg. Co., Solomon
-1853-1870
Southington and Plantsville (part of Southington), Connecticut
Identifying Marks: S.STOW MFG. CO./PLANTSVILLE CT (and variations)
Tool Types: Tinsmith Tools
Remarks: Solomon started out as a cabinet and clock maker who also produced brass gears and machine parts prior to concentrating on tinsmithing supplies and machines. He bought up Plant, Neal & Co. circa 1845, then his two sons joined him to form S. Stow & Sons circa 1847, Solomon Stow Mfg. Co. succeeded S. Stow & Co. and merged into Peck, Stow & Wilcox Co in 1870. Orson, Solomon’s son, may have been involved and one of them had a November 12, 1867 patent on some sort of tinsmith machine (Nelson 1999).

Stratton Bros.
Greenfield, Massachusetts, 1869-1902
Identifying Marks: STRATTON BROTHERS/GREENFIELD/MASS
(sometimes curved, with combined city and state line, or with an eagle)
Tool Types: Levels
Remarks: Edwin A and Charles M. Stratton began making rifles for Springfield Armory before founding a level business in 1869. Edwin sold the business to his son-in-law, Raymond O. Stetson, in 1902, who may have continued to use the name up to 1908 (Nelson 1999). This company was later acquired by Goodell-Pratt. This company used Millers Falls for their sales agent initially.
Links: http://oldtoolheaven.com/history/history1.htm

Streeter, A. W.
Shelburne Falls, Massachusetts, 1855-1871-
Identifying Marks: A.W.STREETER/SHELBURNE FALLS MASS;
A.W.STREETER/SHELBURNE MASS
Tool Types: Braces
Remarks: A. W. Streeter put a January 23 1855 patent on his braces but the connection is unclear. He also marked them with the dates March 31, 1857, November 17, 1863, and January 8, 1867 (Nelson 1999).

Swan Tool Co., James
Seymour, Connecticut, 1877-1951
Identifying Marks: Configurations of Swan’s name with or without “& Co.,” city/state, patent dates, a swan figure
Tool Types: Augers, Awls, Bits, Boring Machines, Chisels, Draw Knives, Handles, and Screwdrivers
Remarks: Swan, who was born in Dumfries, Scotland, December 18, 1833, immigrated from Scotland in 1854 and worked at the Bassett Iron Works in Birmingham, CT, the Farrel Foundry & Machine Co in Ansonia, CT, and for Oliver Annes before buying Annes’s business in 1877. The
“Est. 1856” date is probably Annes’s. He acquired Douglass Mfg. Co. and changed its name, but apparently still used its name in 1894. Swan had patents on 20 August 1867 for a machine to make augers, 21 April 1868 for an augur handle, 9 June 1868 for auger bits, 14 July 1868 for an auger, 16 November 1869 for a bit/auger die, 14 December 1869 for an auger handle, 15 February 1870 for a machine to grind and polish bits, 15 March 1870 for an auger, 30 May 1870 for an auger, 27 June 1871 for an auger, 19 September 1871 for a hollow auger, 20 May 1873 for a machine to form lips on augers, 29 July 1873 for an auger, 27 June 1882 for a screwdriver, 12 June 1883 for an expansive bit, 25 December 1883 for an auger, 31 July 1885 for a draw knife, 11 May 1886 for a boring machine and 28 May 1894 for a hollow auger. Many of these patents were issued prior to the formation of his own company and may have been used by one or more of his previous employers. Upon Swan’s death, the company passed to his son William, followed by his brother John, followed by James, Son of John. Upon its closing in 1951, it was owned by one R. S. Robie (Nelson 1999). The Davistown Museum has recently acquired a number of James Swan tools from a Boston hardware store which warehoused its inventory circa 1950. Many of these tools were in their original wrapping paper. Some were stamped “Douglass Co.” or similarly with the James Swan stamp over it. Also of great interest were some ship auger bits stamped “Germany” and restamped with the James Swan logo, indicating that he was not only a manufacturer but an importer. In general, Swan-marked tools are frequently found by the Liberty Tool Co. The Swan company, along with the Stanley Rule & Level Co., are considered to be the last manufacturers of fine edge tools working at the end of the classic period of American toolmaking.

References:
Links: http://www.davistownmuseum.org/bioSwan.html

**Ten Eyck Mfg. Co.**

**Cohoes and New York City, New York, 1866-1880-**

**Tool Types:** Adzes, Axes, Edge Tools, Hammers, Hatchets, Hoes, Picks, and Vises

**Remarks:** This company succeeded W. J. Ten Eyck & Co. and was sometimes recorded as Ten Eyck Axe Mfg. Co. The headquarters was in New York City but they had a factory in Cohoes and produced a Stevens Patent hand vise. It is possible they were succeeded either by Williams, Ryan & Jones in 1872 or Cohoes Axe Mfg. Co. The aforementioned Stevens vise was listed in an 1880 catalog under their name and found in an 1882 catalog with no reference to a maker. A. RIDER may have been one of its brands (Nelson 1999).

**Thayer, John A.**

**Boston, Massachusetts, 1862-**

**Tool Types:** Hammers and Others

**Identifying Marks:** THAYER’S PAT./JUNE 24 1862//C (“C” inside a diamond)

**Remarks:** The patent date on the mark was for a combination hammer, tack puller, screwdriver, rule, and more! The C in a diamond does not appear on all Thayer patent tools and is probably a maker’s mark, though it is unknown whose (Nelson 1999).
Thompson, Francis M.
Greenfield, Massachusetts, 1868-1871
Tool Types: Brace and Marking Gauges
Remarks: F. M. Thompson is listed separately from Thompson Mfg. Co. in 1870 and a “Thompson” brace may have been produced by either. Francis M. also made a marking gauge. Together, he and J. W. Thompson patented braces on September 15, 1868 and February 23, 1869 (Nelson 1999).

Thompson, H.
Concord, New Hampshire, -1874-
Tool Types: Cutlery, Edge Tools, Knives, and Saws
Remarks: H. Thompson was listed as an edge toolmaker and was possibly the Thompson reported making saws in Concord. An H. Thompson from Concord who may or may not have been the same person had patents dated 1869 and 1871 for beef steak cutters and crushers that may never have been produced (Nelson 1999).

Thrall, Willis
Hartford, Connecticut, 1842-1860
Tool Types: Rules
Identifying Marks: Possibly “S A JONES & CO HARTFORD CON”
Links: http://www.davistownmuseum.org/bioWillisthrall.html

Tinkham, Levi
Middleboro, Massachusetts, -1800-
Tool Types: Draw Knives, Planes, Slicks, and possibly Other Tools
Identifying Marks: L: TINKHAM
Remarks: Levi Tinkham (1766 - 1857) was a plane and edge toolmaker living in Middleboro, Massachusetts. A probable descendent of Ephraim Tinkham who immigrated to Plymouth, MA, as an indentured servant in 1629, the Davistown Museum has one Levi Tinkham slick and numerous Tinkham documents in its collection. Levi Tinkham was one of numerous toolmakers working in the Taunton River watershed area in the late 18th and early 19th centuries. A possible source of some of his iron was the Nemasket River forge at Middleboro (1692 to ±1800). His toolmaking operations were also in close proximity to the long established Leonard forge at Two Mile River in Taunton (1652 to 1777).
W. Sullivan has kindly given us a photograph of a Tinkham plane and states, “The nose of the plane is clearly marked ‘L TINKHAM’ (top line) and ‘MIDDLEBORO’ (bottom line). It’s 13” long and 6” from the bottom of the body to the top of the tote. The body is 2 1/8” high and 2 5/8” across the profile. It has an off-set tote and a full original cutting iron. The iron is stamped ‘E. BENNET’ who I’m told was a local blacksmith.”
Links: http://www.davistownmuseum.org/bioTinkham.htm
Toby, F. G.
Gr. Barrington and Mattapoisett, Massachusetts, -1849-
Tool Types: Edge Tools
Remarks: An 1849 directory listed a P. G. Toby in both cities but it is unclear whether they were the same person (Nelson 1999).

Tolman, Joseph Robinson
Hanover and Boston, Massachusetts, -1825-1849-
Tool Types: Wood Planes
Identifying Marks: J.R.TOLMAN/HANOVER/MASS. (sometimes without state and/or city)
Remarks: Tolman was probably making planes in South Scituate, Massachusetts, in the 1820s and 1830s and was in Boston by 1841, settling in Hanover by 1849. He fathered Thomas J. Tolman (Nelson 1999). Tolman was the foremost craftsman of spar planes for the shipwrights of the North River. His distinctive concave planes were widely circulated in the New England shipyards as evidenced by the numerous specimens received by the Liberty Tool Co. His touchmark sometimes accompanies that of Cumings of Boston on some spar and other planes.

Tomlinson, D.
Brookfield, Connecticut
Tool Types: Leather Tools
Identifying Marks: JD.TOMLINSON/PATENT
Remarks: Tomlinson’s curriers’ fleshing knife was patented July 6, 1820.

Tower & Lyon
New York City, New York, and Glen Ridge, New Jersey, 1862-1902-
Tool Types: Chisels, Levels, Metal Planes, Planes, Screwdrivers, Wrenches, and Others
Identifying Marks: Variations of this name alone, with “MFR. BY” (and variations), cities, patent holders names and dates, “T&L,” and others
Remarks: John J. Tower and Polhemus Lyon dealt both in tools they and others made, adding “& Co.” to their name in 1902 and continuing at least until 1927 under that name. They began in New York and expanded to New Jersey at some point between 1898 and 1901, retaining the New York City location as a headquarters. Orril R. Chaplin of Boston’s May 7, 1872 patent appears on their iron and wood planes (often as “CHAPLIN’S PATENT”). Their Arthur T. Goldsborough of Washington, DC planes patented September 11, 1883 and February 19, 1884 were marked with the brand name CHALLENGE. Their “Chaplin’s Improved” planes (actually covered by Maschil D. Converse’s February 14, 1899 patent) were branded CHAMPION. This brand was also used on screwdrivers covered by Morris’s May 15, 1877 patent and on Iver Johnson Arms Co. guns. They also produced planes patented by Iver Johnson and Reinhard T. Torkelson on April 17, 1888. Some of the planes and other tools Tower & Lyon dealt in were made by Iver Johnson Arms Co. One of their combination levels had a wrench and was covered by Wood’s June 14, 1887 patent and Byron Boardman’s July 10, 1866 patent. They also made Clark’s expansive bit, probably after 1902, and used the brands SAFETY and GEM on wrenches (Nelson 1999).
Towne, Snell & Co.
Snellville (part of Sturbridge), Massachusetts, 1841-1844
Tool Types: Augers and Bits
Remarks: This name was sometimes reported differently ("Towne Snell" and "Towne & Snell").
He apparently became part of Towne, Chaffee & Co. and Smith, Snell & Co. (Nelson 1999).

Trafton Bros.
1860-1874
Trafton & Son, Alfred S.
-1879-1882
Trafton George A.
1883-1900-
Portsmouth, New Hampshire
Tool Types: Edge Tools
Remarks: Trafton Bros. consisted of Alfred S. and Timothy J. Trafton working as edge tool
blacksmiths. Alfred worked with his son, George A. Trafton, as a blacksmiths and shipsmiths who
made edge tools, under “Alfred S. Trafton & Son.” George went on to work alone (Nelson 1999).

New Britain, Connecticut, -1862-1895-
Tool Types: Cutlery, Can Openers, Razors, and Household Tools
Remarks: Justus A. Traut was the first president of this company and other Trauts, assumed to be
relatives, held office during and after his presidency. Henry C. Hine served as secretary from 1888 to

Traut, Justus A.
New Britain, Connecticut
Tool Types: Metal Planes and Others
Remarks: Justus A. Traut worked for Stanley Rule & Level Co. and had a number of patents
assigned to them, even after becoming a part of Traut & Hine Mfg. in 1888. His patent dates
included November 18, 1862; May 9, 1872; October 22, 1872; March 4, 1873; August 5, 1873;
February 7, 1875 (invalid); October 5, 1875; February 16, 1876 (invalid); April 4, 1876; April 18,
1876, January 16, 1877; July 30, 1878; September 2, 1879; January 8, 1884; March 11, 1884;
October 4, 1884 (invalid); October 21, 1884; November 18, 1884; April 21, 1885; June 2, 1885;
December 15, 1885; February 9, 1886, February 23, 1886; March 23, 1886, May 18, 1886, January
17, 1888; July 24, 1888; March 13, 1895; November 6, 1894; January 22, 1895; January 29, 1895;
April 2, 1895; January 21, 1896; February 25, 1896; March 10, 1896; and October 12, 1897 (Nelson
1999). For an encyclopedia of additional information on this important plane designer, consult the
numerous texts in the bibliographies that contain descriptions of the planes manufactured by the
Stanley Rule and Level Co. after 1862.

Trenton Vise & Tool Co.
Trenton, New Jersey, -1870-1900-
Tool Types: Axes, Blacksmith Tools, Farrier Tools, Picks, Vises, and Others
Remarks: Some of their tools were marked “TRENTON” in a diamond (Nelson 1999).
Trimont Mfg. Co.
Roxbury (now part of Boston), Massachusetts, 1889-1920
Tool Types: Wrenches
Identifying Marks: PERFECT HANDLE/TRIMONT MFG. Co. ROXBURY, MASS.
Remarks: This company used the brand TRIMO (Nelson 1999). (FFLTC).
Links:
http://www.museumofamericanspeed.com/Collections/Culture/MonkeyWrenches/DSCN4699S-133.shtml

Tuck Mfg. Co.
Brockton, Massachusetts, 1852-1915-
Tool Types: Bits, Chisels, Knives, Screwdrivers, Nail Sets, Punches, and Others
Identifying Marks: TUCK; TUCK MFG. CO.
Remarks: They used an 1852 establishment date in 1915, but the name may have been changed earlier at some point (Nelson 1999). Several Tuck screwdrivers and other hand tools make frequent appearances in New England tool kits and workshops (FFLTC).

Underhill Edge Tool Co.
Boston, Massachusetts and Nashua, New Hampshire, 1852-1890
Tool Types: Axes, Adzes, Chisels, Edge Tools, Hammers, Hatchets, Picks, and Shaves
Identifying Marks: UNDERHILL/EDGE TOOL CO. (sometimes on same line)
Remarks: George W. Underhill (July 19th, 1815-October 13th, 1882), John H. Gage and a few others formed this company initially as “Nashua Edge Tool Co.” In 1879 they acquired the Amokeag Ax Co. and were bought out by the American Axe & Tool Co. in 1890. Though the plant closed, the brand was still used. The Nashua location was their center of manufacture while the Boston office operated strictly in sales and distribution. George W. Underhill acted as Superintendent until 1875 and a Director until his death (Nelson 1999). An Underhill Edge Co. ax was the murder weapon in the trial of Lizzie Borden. The Underhill clan of edge toolmakers can be documented as working as early as the seventh decade of the 18th century (Josiah, Chester, NH) in both southern NH and the Boston area. Underhill edge tools, ranging from steeled wrought iron to the finest cast steel timber framing tools, are frequently recovered from New England’s boatyards and collections. Numerous references to their significance as one of a small group of the most important New England edge toolmakers, along with the Buck Bros., Timothy Witherby, and the Swan Co., are contained in this publication series. Nelson (1999) lists no less than 19 Underhill edge toolmakers working in the Merrimack River watershed area of New Hampshire and in Boston.
Underhill Edge Tool Co. (1859). Wholesale Prices of Chopping Axes, Carpenter’s, Cooper’s, Butcher’s, and Many Other Kinds of Mechanics’ Tools, Manufactured by the Underhill Edge Tool Company. Underhill Edge Tool Co., Nashua, NH.
http://www.yesteryeartools.com/Yesteryears%20Tools/American%20Axe%20&%20Tool%20Co..html
http://www.davistownmuseum.org/bioUnderhill.html
Union Mfg. Co.
New Britain, Connecticut, 1880-1919-
Tool Types: Chisels, Drills, and Saws
Identifying Marks: Union Mfg Co./New Britain Ct/USA
Remarks: A major and prolific competitor of the Stanley Rule & Level Co., Union’s wood and iron planes are frequently found in New England workshops.
References:
Links: http://www.davistownmuseum.org/bioUnionMfg.html

Upson Nut Co.
Unionville, CT, 1854 - 1893
Cleveland, OH, -1911-
Tool Types: Metal Planes, Planes, and Rules
Remarks: There also was an Ohio location, but it is not know if both were running concurrently. Their planes were based on an Oct. 30, 1883 patent by S. R. and A. E. Rust (also made by the Standard Rule Co., which they absorbed in 1888) and a September 10, 1889 patent by George Karrmann. Andrew S. Upson was president in CT and in 1911 he was probably the A. S. Upson president of the Ohio company. Stanley Rule and Level Co. reportedly acquired Upson Nut Co. in 1893. This might be when they moved to Ohio. A 1911 source describes the Ohio company as making bolts, nuts, and carriage hardware (Nelson 1999, 808).

Walter’s Sons, William P.
Philadelphia, Pennsylvania, 1831-1899?
Tool Types: Miscellaneous Tools
Identifying Marks: W.P.WALTERS SONS PHILA; W.P.W. SONS 1233 MARKET ST. PHILA.
Remarks: This company was primarily a dealer but did make and mark some of its own tools. Their “Est. 1831” date cannot be confirmed, the earliest instance dating them at 1888. Both marked tools found were cast iron holding racks (Nelson 1999).
References:
Walter’s, Wm. P. Sons. 1888. Illustrated catalogue of wood workers’ tools and foot power machinery. Facsimile of the original. Lancaster, MA. The North Village Publishing Co.

Walworth Mfg. Co.
Boston, Massachusetts, 1892-1911
Tool Types: Dies, Misc. Tools, and Wrenches
Identifying Marks: WALFWORTH MFG. CO./BOSTON, USA (plus patent holder names/dates, brand names, etc.); WALCO
Remarks: The original makers of the Stillson patent wrench, Walworth made a range of plumbing tools. While Stillson apparently patented this particular type of pipe wrench, it appears that the name was used generically by Bonney Vise & Tool Works, the Erie Tool Works, the Moore Drop Forging
Co., the J.P. Danielson Co., and probably others. On dies, they used the brand names RUFF & TUFF and MILLER’S PATENT, though the latter was possibly not until after 1900. It appears they made a 1907 Parmelee patent wrench and may have been succeeded by Parmelee Co. (Nelson 1999). America’s most prolific turn of the century (1900) adjustable non-monkey wrench manufacturer. A Walworth wrench is one component of a woven triptych by Alan Magee on display at the Davistown Museum (http://www.davistownmuseum.org/MAG%20Photos/Magee%20Photos/tih.jpg).

Links: http://www.davistownmuseum.org/bioWalworth.html

Washburn, John
Kingston, MA -1805-
Tool Types: Augers
Remarks: One of several early auger makers working in Kingston, MA (Hutchins 2011, 104).

Watts, Joseph
Boston, Massachusetts, 1834-1849
Tool Types: Marking Gauges, Rules, and Squares
Identifying Marks: J.WATTS/BOSTON
Remarks: Though he worked in Charleston, Watts marked his tools Boston. One report of A. J. Watts, Boston, is thought to be a misrecording of the name (Nelson 1999). Phil Platt states “Joseph Watts’ working dates were 1834 - 1849 (D.A.T.) He apparently worked at rule making, making gauges and squares in Charlestown, MA.; but, marked at least the rules ‘BOSTON’. There are many ‘Watts’ family members in and around the city of Boston. Don and Anne Wing, Marion, MA (EAIA) are currently doing research on J. Watts and trying to connect him back to English rule makers. See: Milt Bacheller, “American Marking Gages” for an extensive write up on the Watts family.”
References:
Links: http://www.davistownmuseum.org/bioWatts.html

Wetherbee, Oliver
Worcester, Massachusetts, 1821-1824
Tool Types: Cast Iron Plows
Remarks: He worked both for himself and in the blacksmith shop of Levi Howe.

Wheeler, William A.
Wheeler & Co., William A.
Worcester and Brookfield Iron Foundry
Wheeler Foundry Company
Hardwick, Brookfield, Worcester, Massachusetts, 1812-1914
Tool Types: Blacksmith, Iron Plows
Remarks: He started as an iron founder and then established his blacksmith shop in Worcester in 1823 at the site of a foundry. In 1825 he joined with George T. Rice, H. W. Miller, and A. D. Foster to become William A. Wheeler & Co. In 1826 the business became the Worcester and Brookfield Iron Foundry. Around 1832 William Wheeler reorganized the foundry in Worcester and ran it until his death in 1873. It then was owned by William F. Wheeler and later became the Wheeler Foundry Company.


Wheeler, Madden & Bakewell
New York and Middletown, New York, 1853-1860
Tool Types: Saws, Trowels, and Other
Remarks: This company’s facility was called the Monhagen Saw Works. In 1860, Elisha P. Wheeler, Edward M. Madden and Josiah Bakewell became “Wheeler, Madden & Clemson,” using the brand names SEARS & CO., H. MILLSON & CO., and VERNON & CO. (possibly through acquisition) There is a questionable possibility they succeeded Cane, Weel & Co. (Nelson 1999).

References:


White Company, L. & I. J.
Buffalo, New York, and Monroe, Michigan, 1837-1928
Tool Types: Adzes, Chisels, Coopers’ Tools, Draw Knives, Plane Irons, Saws, and Wood Planes
Identifying Marks: L.&I.J.WHITE/BUFFALO; L.&I.J.WHITE/1837/BUFFALO N.Y. (top and bottom lines curved into an oval)
Remarks: Leonard White (1810-1893) and Ichabod Jewett White (?-1880) moved from Monroe to Buffalo in 1844 (Nelson 1999). L. & I. J. White was one of America’s most prolific manufacturers of a wide variety of coopers’ tools, some of which frequently appear in New England tool collections (FFLTC).

References:

Whitman & Barnes, Mfg. Co.
Akron, Ohio, and Philadelphia, Pennsylvania, 1848-1915
Tool Types: Bits, Chisels, Drills, Farm Tools, Files, Hammers, Hatchets, Knives, Screwdrivers, Taps, Wrenches, and Others
Identifying Marks: Various combinations of “W.&B.” or “W.&B.Co.” in a diamond outline; full name; WHITMAN BARNES; DIAMOND; HERCULES; ACME; ALWAYS READY; BULLDOG
Remarks: This company’s widespread factories included locations in Syracuse, NY, West Pullman, IL and St. Catharines, OH. At some point their headquarters moved from Akron to Philadelphia, though the factory in Akron continued to produce tools. Patents include 27 February 1883, 1 July 1890, 19 May 1891, and 19 April 1898 (Nelson 1999). Whitman & Barnes got their start making...
some of the first quality blades and sickles for McCormick mowers.

References:

Links: http://www.akronhistory.org/kendig_agricultural.htm -- article on the agricultural boom of Akron, OH, including Whitman & Barnes’ part in it.
http://www.davistownmuseum.org/bioWilkinsonbarnes.html

Whittemore & Co., Amos
Bennington, New Hampshire, 1855-1860-
Tool Types: Cutlery, Edge Tools, Knives, and Leather Tools
Remarks: Amos Whittemore (1802-1881) worked with his brother Alfred as part of Baldwin & Whittemore from 1853 to 1855 and in this company, which was also known as A. & G. A. Whittemore, circa 1860. He may or may not have worked alone before George joined him in this company (Nelson 1999).

Wilcox & Roys
Sawpit, NY (the name of Port Chester), -1839
Tool Types: Tinsmith’s
Identifying Marks: WILCOX & ROYS | SAWPIT, NY
Remarks: (http://www.tintinkers.org/files/tool_list.pdf)

Wilkinson & Co., A. J.
Boston, Massachusetts, 1842-1993
Identifying Marks: Various straight and curved configurations of the full maker name, with or without “& Co.,” city, state, “MAKERS,” “2 WASH ST,” or “A.J.W. & CO.”
Remarks: This company marked and sold tools it did not manufacture in addition to its own lines. The “Est. 1842” date probably refers to Wilkinson’s own start, though it’s unclear when “& Co.” was added. Patents they made include a draw knife with an 1895 patent, several micrometers patented between 1883 and 1886 by Merrick M. Barnes, the rights to which were later bought around 1890 by Brown & Sharpe (Nelson 1999). Considered one of the best manufacturers of adjustable draw knives in the early 20th century, examples of their craftsmanship are common occurrences in New England tool collections.
References:
http://www.davistownmuseum.org/bioWilkinson.html
Williams & Co., J. H.
New York and Buffalo, New York, 1882-1909-
Tool Types: Wrenches and Clamps
Identifying Marks: W in a diamond, J.H. WILLIAMS & CO./BROOKLYN N.Y., VULCAN, SUPERWRENCH, SUPERECTOR, AGRIPPA, SUPERSOCKET, SUPERJUSTABLE
Remarks: This company used the brands in the marks above. The Williams Co. was one of the most prolific early and mid-20th century manufacturers of box wrenches for auto mechanics (FFLTC).
References:

Winchester Arms Co.
New Haven, Connecticut, 1866-Present
Tool Types: Firearms, Knives, Sporting Gear, Planes, Chisels, and Other Tools
Identifying Marks: WINCHESTER and variations
Remarks: In 1848, Walter Hunt devised a self-propelling bullet, essentially a tiny rocket, the predecessor of modern cartridge propelled rounds. His business venture focused on this invention led to the formation of Volcanic Repeating Arms Co., incorporated in 1855 by forty different backers. The first rifle produced by the company was the 1866, a firearm very well received by the market. This company gave rise to several other arms companies, including Smith & Wesson and the eventual withdrawal of Horace Smith and Daniel Wesson that the company floundered, failed, and was eventually bought out by Oliver Fisher Winchester in 1866. Enjoying success with both military and private contracts, Winchester’s company shrewdly planned for post-war production in the 1920’s and expanded from firearms to cutlery, all manner of sporting goods and a variety of household tools such as hammers and screwdrivers (Williamson, 1952). Along with the Marbles Co., it is among the most collectable of all American 20th century toolmakers. Their tools are occasionally recovered by the Liberty Tool Co. and then quickly slip out the door of the tool store.
References:
Wiss, Jacob
Newark, NJ, 1848-1880
Wiss & Sons, Jacob
Newark, NJ, 1880-1898
Tool Types: Cutlery and Knives
Identifying Marks: J.WISS & SONS/NEWARK NJ/USA (name line curved)
Remarks: Wiss was born December 1, 1817 in Switzerland, came to the US in 1847, and died June 25, 1880. He worked for Rochus Heinisch before opening his own business. His oldest son, Frederick C. J. Wiss worked with him and a younger son joined the business after Jacob’s death. They were best known as makers of scissors/shears. The business was sold to National Shear Co. in 1898 and then bought back in 1900 when National Shear went bankrupt. The J. Wiss and Sons Co. name was then used until 1976.

Witherby, Thomas H.
Millbury, Massachusetts and Winsted, Connecticut
Tool Types: Chisels and Draw Shaves
Identifying Marks: WITHERBY, sometimes with WARRANTED
Remarks: “Thomas H. Witherby made chisels and drawknives in Millbury, MA from 1849 to 1850. He used the mark T.H. WITHERBY, sometimes in a diamond shaped outline. It is assumed that he was succeeded by the Witherby Tool Co. of Millbury. The only recorded working date for this company is 1868. It is possible that the T. H. WITHERBY mark may actually belong to the company. Witherby is also known to have worked in Winsted, CT and the Witherby Tool Co. was also reported as located in Winsted, CT.” (Nelson 1999, 871-3).
The Winsted Edge Tool Works of 1890 used the mark WINSTED EDGE TOOLWORKS / - WINSTED, CONN. U.S.A. - / / T.H. WITHERBY. It is not clear whether Witherby adopted this name or if this company bought him out. They used the brand name RAZOR TEMPER. Thomas Witherby, often called Timothy, is, along with the Buck Bros., America’s most famous edge toolmaker. Witherby edge tools are frequently recovered by the Liberty Tool Co. Numerous examples are in the Davistown Museum “Art of the Edge Tool” exhibition and illustrated in this publication series.
Links: http://www.geocities.com/sawnutz/witherby/index.htm
http://www.davistownmuseum.org/bioWitherby.html

Wood & Co., William T.
Arlington, Massachusetts, 1895-1905
Tool Types: Ice Tools
Identifying Marks: WM.T.WOOD & CO.
(curved over a double fleur-de-lis)
Remarks: A surviving undated price list seems consistent with 1895 printing techniques, but is apparently a condensed version of a larger catalog. It deals mainly in ice-related tools, elevators, picks, shavers, saws, tongs, and more. DATM (Nelson 1999) lists William T. Wood & Co. in Arlington, MA, from 1845 - 1905. The book *Town of Arlington, Past and Present* by Charles Symme Parker (1907) notes that William T. Wood came there about 1841 and started working with Abner Wyman making and repairing ice tools. He purchased the business in 1845 and ran it by himself until partnering with his brother Cyrus in 1858. He died in 1871. His son, William E. Wood, took over, retaining the name of William T. Wood & Co. In 1905 the company was consolidated with Gifford Brothers of Hudson, NY, as Gifford-Wood Co. Dozens of Wood ice axes, which were widely used in the New England ice harvesting industry, have been recovered by the Liberty Tool Co. (FFLTC).

References:

Links: http://www.davistownmuseum.org/bioWood.html

Yerkes & Plumb

*Frankfort and Bridesburg, Pennsylvania, 1870-1887*

Tool Types: Axes, Blacksmiths’ Tools, Hammers, Hatchets, and Railroad Tools
Identifying Marks: YERKS & PLUMB; Y & P; brand names ARTISANS CHOICE, MECHANICS PRIDE, and ANCHOR.
Remarks: Fayette R. Plumb bought a half interest in an existing business of Jonathan Yerkes in 1870. They moved from Frankfort to Bridesburg in the early 1880s. Plumb bought Yerkes out in 1887 and changed the name to Fayette R. Plumb but continued to use the joint name as a brand name and Y. & P. tools were still being sold in 1900. The company was later absorbed into Philadelphia Tool Co. (Nelson 1999).

Yerkes Tool Co.

-1898

Tool Types: Tools
Remarks: Atha Tool Co. bought this company in 1898 (Nelson 1999).

Young, W. C.

*Worcester, Massachusetts, 1879-

Tool Types: Shoe Tools, Edge Planes, Engine Lathes, Wood-turning and Amateur Lathes


*Duluth, Minnesota, 1884-1960*
Tool Types: Adzes, Axes, Bevels, Braces, Edge Tools, Farm Tools, Knives, Planes, and Rules

Identifying Marks: M.W. CO.; M.W.H. CO.; MARSHALL WELLS HARDWARE CO.; ZENITH; MARSWELLS; HARTFORD; SUPERIOR; NORTHERN KING; DEFIANCE; VICTOR; FOUR-SQUARE; TWO-TONE; HANDYMAN (Nelson 1999)

Remarks: This company began as a hardware store and progressed to making and marking its own tools. Most marked tools are from after 1900. The catalog notes that their tools use Swedish pig iron and blister steel. They state their alloys include the use of vanadium, tungsten, chromium, and nickel.

References:

Links: http://www.davistownmuseum.org/bioMarshallwells.html
Appendix D. Unidentified Toolmakers in the Davistown Museum Collection

The following is a list of tools in the Davistown Museum collection with maker’s marks and signatures we have not yet been able to identify. None are listed in the Directory of American Toolmakers (Nelson 1999). Numerous additional unidentified makers’ signatures from current un-cataloged tools will be added in the future. Any information on these marks would be appreciated. Email: curator@davistownmuseum.org.

MI: Historic Maritime I (1607-1676): The First Colonial Dominion

<table>
<thead>
<tr>
<th>Tool Number</th>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>83102T1</td>
<td>Moulding plane</td>
<td>&quot;JB&quot; twice upside down in 17th or 18th century script</td>
</tr>
</tbody>
</table>

MI: Historic Maritime II (1720-1800): The Second Colonial Dominion & the Early Republic

<table>
<thead>
<tr>
<th>Tool Number</th>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>43006T2</td>
<td>Hacksaw</td>
<td>&quot;AOES Co&quot; on the iron ferrule</td>
</tr>
<tr>
<td>12801T3</td>
<td>Fillister plane</td>
<td>&quot;Ar. Ritchie&quot; also marked &quot;Stewart&quot; in a smaller font, probably an owner's mark</td>
</tr>
<tr>
<td>121805T6</td>
<td>Socket chisel</td>
<td>&quot;C KALER&quot; with an obscured mark</td>
</tr>
<tr>
<td>TBE1001A</td>
<td>Framing square</td>
<td>&quot;CUTTER&quot;</td>
</tr>
<tr>
<td>42801T12</td>
<td>Beading plane</td>
<td>&quot;H Goss&quot;</td>
</tr>
<tr>
<td>101900T1</td>
<td>Plough plane</td>
<td>&quot;H. R. WEBB&quot; on the side of the plane</td>
</tr>
<tr>
<td>TBC1003</td>
<td>Hewing ax</td>
<td>&quot;I H&quot;, &quot;HARRISON&quot;, and &quot;N-.4&quot;</td>
</tr>
<tr>
<td>50402T2</td>
<td>Skew plane</td>
<td>&quot;J. C. Larrabee&quot; with owner's initials &quot;C.J.S.&quot; over stamped on the mark, partially obscuring it</td>
</tr>
<tr>
<td>81602T14</td>
<td>Framing square</td>
<td>&quot;JBH&quot;</td>
</tr>
<tr>
<td>080907T1</td>
<td>Mortising chisel</td>
<td>&quot;KIMPTON&quot; with a backwards N and a scalloped edge around the imprint, there is a first initial that might be &quot;I&quot; or &quot;J&quot;</td>
</tr>
<tr>
<td>TBH1002</td>
<td>Dado plane</td>
<td>&quot;Marsh &amp; Winn&quot; and &quot;J. Ho---&quot;</td>
</tr>
<tr>
<td>81101T10</td>
<td>Screw auger</td>
<td>&quot;Perkins 5&quot; in 18th century script</td>
</tr>
<tr>
<td>TBF1003</td>
<td>Whetstone</td>
<td>&quot;R S DAVIS&quot;</td>
</tr>
<tr>
<td>TBD1003</td>
<td>Claw hammer</td>
<td>&quot;TACONY 2&quot;</td>
</tr>
<tr>
<td>913108T50</td>
<td>Drawshave</td>
<td>&quot;VESEY&quot; in a square in two places and &quot;ES&quot; in dots on the middle of the blade</td>
</tr>
<tr>
<td>Item</td>
<td>Description</td>
<td>Details</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
<td>--------</td>
</tr>
<tr>
<td>913108T41</td>
<td>Drawshave</td>
<td>&quot;Wm FISS&quot; on the blade and &quot;_E. LAUBER&quot; on a band on the handle</td>
</tr>
<tr>
<td>040103T4</td>
<td>Bill hook</td>
<td>with a cartouche of a crown and the capital letter M</td>
</tr>
<tr>
<td>TBC1001</td>
<td>Socket chisel</td>
<td>with an 18 c. style touch mark &quot;J.W.&quot; in a circle with triangles around the edge and dots in between the triangles</td>
</tr>
<tr>
<td>121805T18</td>
<td>Tin snips</td>
<td>&quot;,<em>USESTAHL&quot; and &quot;</em>__ STEEL&quot; and &quot;F W BRANT&quot; with a sun stamp.</td>
</tr>
<tr>
<td>72801T8</td>
<td>Square file</td>
<td>&quot;A Prior&quot;</td>
</tr>
<tr>
<td>TCC3010</td>
<td>Wood chisel</td>
<td>&quot;A. ARTHUR CAST STEEL&quot;</td>
</tr>
<tr>
<td>914108T16</td>
<td>Back saw</td>
<td>&quot;ABRIE&quot;</td>
</tr>
<tr>
<td>913108T44</td>
<td>Gouge</td>
<td>&quot;ASKHAM &amp; MOSFORTH&quot;</td>
</tr>
<tr>
<td>100605T1</td>
<td>Backsaw</td>
<td>&quot;BARBER &amp; GENN GERMAN STEEL&quot;</td>
</tr>
<tr>
<td>TCH1003</td>
<td>Slitting cutter</td>
<td>&quot;BARNEII&quot; and marked &quot;37&quot;</td>
</tr>
<tr>
<td>TCH1003A</td>
<td>Cobbler's slitting cutter(?)</td>
<td>&quot;BARNETT 37&quot;</td>
</tr>
<tr>
<td>TCR3000</td>
<td>Saw set</td>
<td>&quot;BORUEAU PARIS&quot;</td>
</tr>
<tr>
<td>TCC2001</td>
<td>Drawknife</td>
<td>&quot;BROWN &amp; WALKER WARRANTED CAST STEEL&quot;</td>
</tr>
<tr>
<td>33002T15</td>
<td>Snips</td>
<td>&quot;Brown Germany Cast Steel&quot;</td>
</tr>
<tr>
<td>032203T5</td>
<td>Adjustable bevel</td>
<td>&quot;C G PINKHAM&quot; possibly an owner's mark</td>
</tr>
<tr>
<td>31808PC2</td>
<td>Saw</td>
<td>&quot;C. H. TUPPER&quot; on handle and &quot;SUPERIOR TEM__ WARRANTEE&quot; on brass</td>
</tr>
<tr>
<td>913108T51</td>
<td>Drawshave</td>
<td>&quot;CAST&quot; and &quot;STEEL&quot; in a box and &quot;I.POPE&quot; in a box.</td>
</tr>
<tr>
<td>TCM1001</td>
<td>Cobblestone hammer</td>
<td>&quot;COCHRHYMES &amp; CO&quot; on one side and &quot;J.T. &amp; CO&quot; on the reverse side</td>
</tr>
<tr>
<td>51100T1</td>
<td>Block</td>
<td>&quot;D ADAMS MAKER BOSTON&quot;</td>
</tr>
<tr>
<td>111001T26</td>
<td>Double calipers</td>
<td>&quot;E. A. Belcher&quot;</td>
</tr>
<tr>
<td>TCX1001</td>
<td>Early ship's caulking tools (set)</td>
<td>&quot;E. A. DEXTER&quot;</td>
</tr>
<tr>
<td>914108T8</td>
<td>Hatchet</td>
<td>&quot;E. COB&quot;</td>
</tr>
<tr>
<td>72801T16</td>
<td>Block plane</td>
<td>&quot;E. French&quot;, blade unmarked</td>
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<tr>
<td>TCR1020</td>
<td>Pliers</td>
<td>&quot;Fletcher&quot;</td>
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<td>Claw hammer</td>
<td>&quot;G LINDLEY&quot;</td>
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<td>914108T5</td>
<td>Dividers</td>
<td>&quot;G. BUCK&quot;</td>
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<td>TCR1302</td>
<td>Hand vise</td>
<td>&quot;G. KIPP&quot;</td>
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<td>&quot;G. Platte&quot;</td>
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<td>Awl</td>
<td>&quot;GEO. LAUTE BOSTON.&quot;</td>
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<td>TCC3005</td>
<td>Hatchet</td>
<td>&quot;Gray's&quot;, with &quot;0&quot; above the touch mark</td>
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<tr>
<td>TCM1005A</td>
<td>Hammer</td>
<td>&quot;H M CHRISTENSEN BROCKTON MASS&quot;</td>
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<tr>
<td>TCR1005</td>
<td>Scraper</td>
<td>&quot;H. M. INMAN&quot;</td>
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<tr>
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<td>Stone hammer</td>
<td>&quot;H.C. Briggs&quot;</td>
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<tr>
<td>TCE1002</td>
<td>Pod auger</td>
<td>&quot;HARRESON&quot;</td>
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<td>102904T7</td>
<td>Auger</td>
<td>&quot;HAYER T HAYER&quot; and &quot;8&quot;</td>
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<tr>
<td>TCC2002</td>
<td>Gouge</td>
<td>&quot;Holland &amp; Turner, cast steel&quot;</td>
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<td>100400T16</td>
<td>Peen adz</td>
<td>&quot;HOLLAND CAST STEEL&quot; with 4 small suns and an</td>
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<tr>
<td></td>
<td></td>
<td>oval with a keyhole inside it</td>
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<td>TCR1003</td>
<td>Pliers</td>
<td>&quot;HUBER TOOL WORKS 5 PHILADA&quot; and on the</td>
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<td>reverse side of the handle marked &quot;C. STEEL&quot;</td>
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<td>111002T2</td>
<td>Hewing ax</td>
<td>&quot;I H. Harrison No 4&quot;</td>
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<tr>
<td>12801T6</td>
<td>Hewing ax</td>
<td>&quot;J HATCH CAST STEEL&quot;</td>
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<td>81200T14</td>
<td>Knife</td>
<td>&quot;J Ward Riverside Mass&quot;</td>
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<td>TCC2004</td>
<td>Socket chisel</td>
<td>&quot;J. BRIGGS&quot; &quot;CAST-STEEL&quot; and &quot;#&quot; on the</td>
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<td></td>
<td></td>
<td>opposite side</td>
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<tr>
<td>TCL1001</td>
<td>Rasp</td>
<td>&quot;J. DAY &amp; CO.&quot;</td>
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<td>&quot;J. Emory, cast steel&quot;</td>
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<td>TCQ1001</td>
<td>Framing square</td>
<td>&quot;J. F. Brown&quot;</td>
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<td>Toothed stone chisel</td>
<td>&quot;J. GERM&quot; with a second illegible signature</td>
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<tr>
<td>51606T6</td>
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<td>&quot;J. MATLACK&quot;</td>
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<td>51100T3</td>
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<td>&quot;J. W. Ferren&quot;</td>
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<td>&quot;J. Windly&quot;</td>
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<td>Corner chisel</td>
<td>&quot;J.CRAY&quot; and &quot;CAST.STEEL&quot;</td>
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<td>Scissors</td>
<td>&quot;Jonathan Crookes&quot;</td>
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<td>70701T10</td>
<td>Tweezers</td>
<td>&quot;Joseph Lisaro Sheffield England&quot; and &quot;Jos. F. McCoy Co.&quot;</td>
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<td>31602T10</td>
<td>Coopers' shave</td>
<td>&quot;L Hardy CAST STEEL&quot;</td>
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<td>&quot;L. OLSEN&quot;</td>
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<td>&quot;L.O. Tappan&quot; (probably the owner’s signature)</td>
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<td>&quot;LAVERY CAST STEEL&quot;</td>
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<td>Auger bit</td>
<td>&quot;LG HALL 16&quot;</td>
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<td>Cold chisel</td>
<td>&quot;M Fognaty&quot;</td>
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<td>TCF1002A</td>
<td>Nail header</td>
<td>&quot;P.S. CRONIN&quot;</td>
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<td>4105T3</td>
<td>Socket chisel</td>
<td>&quot;R&amp;HPORTER&quot;</td>
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<td>Hammer</td>
<td>&quot;R.A. FISH&quot;</td>
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<td>Try square</td>
<td>&quot;Ridgewell Middletown CONN&quot;</td>
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<td>Coopers' broad ax</td>
<td>&quot;Roxbury ______ EVRETT CAST STEEL&quot;</td>
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<td>&quot;S. W. DROWN CAST STEEL&quot;</td>
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<td>Sheep shears</td>
<td>&quot;Shear Steel W. Wilkinson&quot;</td>
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<td>Brick chisel</td>
<td>&quot;SHEARER&quot; in two different places, also marked &quot;SCF&quot;</td>
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<td>Hay cutter</td>
<td>&quot;STINSON&quot;</td>
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<td>Auger bit</td>
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<td>&quot;T. ROGERS&quot;</td>
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<td>&quot;TILTON &amp; WHEELRIGHT MANUFG. CO. WANTED CAST STEEL&quot;</td>
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<td>Auger bit</td>
<td>&quot;TOWNE SNELL 5&quot;</td>
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<td>10700-T5</td>
<td>Gouge</td>
<td>&quot;Tremont Co&quot;</td>
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<td>102100T17</td>
<td>Eyelet punch</td>
<td>&quot;W F BINGHAM&quot;</td>
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<td>83102T8</td>
<td>Dividers</td>
<td>&quot;W H Hale&quot;</td>
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<td>62202T1</td>
<td>Rabbet plane</td>
<td>&quot;W. J. Foote&quot;, probably an owner</td>
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<td>43006T7</td>
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<td>&quot;W. R. Stone&quot;</td>
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<td>Shipwright's slick</td>
<td>&quot;WARRANTED CAST STEEL&quot; and &quot;_. TINKHAM&quot;</td>
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<td>Drawshave</td>
<td>&quot;Wilson Lewiston&quot; with an 8 point asterisk touchmark</td>
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<td>TCJ3500</td>
<td>Howell (chiv)</td>
<td>&quot;MORTON ARNOLD&quot;</td>
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<td>TCR1021A</td>
<td>Pliers?</td>
<td>&quot;?. NISSEL&quot;</td>
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<td>Hoop driver</td>
<td>&quot;A. G. MORSE&amp;CO&quot; &quot;BOSTON&quot;</td>
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<td>&quot;A.G.WOOD&quot; and &quot;CAST-STEEL&quot;</td>
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<td>&quot;AHEW&quot;? (in a triangle)</td>
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<td>Coopers' broad ax</td>
<td>&quot;Beardsley &amp; Tyler&quot;</td>
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<td>914108T6</td>
<td>Spoon</td>
<td>&quot;BERTOCCHI&quot;</td>
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<td>72801T4</td>
<td>Peen adz</td>
<td>&quot;Boston Arnold&quot;</td>
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<tr>
<td>102100T9</td>
<td>Pin vise</td>
<td>&quot;C HAMACHER&quot;</td>
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<td>33002T16</td>
<td>Claw hammer</td>
<td>&quot;C. BARNARD&quot;</td>
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<td>Punch</td>
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<td>Ax</td>
<td>&quot;C. MAMM&quot; &quot;PHILAD&quot; and &quot;CAST STEEL&quot;</td>
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<td>Ship's caulking iron</td>
<td>&quot;C.B. Timpson &amp; Tucker&quot;</td>
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<td>Slick</td>
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<td>83102T4</td>
<td>Wire gauge</td>
<td>&quot;CARANTIE&quot; and marked 1 to 60</td>
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<td>Wood chisel</td>
<td>&quot;Chas Mellor&quot;</td>
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<td>Block</td>
<td>&quot;Clayville Iron Works NY&quot;</td>
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<td>Marking gauge</td>
<td>&quot;D. Cummings&quot;</td>
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<td>51100T6</td>
<td>Adjustable calipers</td>
<td>&quot;E. F. Sibley&quot;</td>
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<td>51100T7</td>
<td>Vernier calipers</td>
<td>&quot;E. F. Sibley&quot;</td>
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<td>914108T12</td>
<td>Cold chisel</td>
<td>&quot;E. MILLER MS&quot; and on the other side &quot;S.W.T&quot;</td>
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<td>110404T1</td>
<td>Smooth plane</td>
<td>&quot;E.R.KING&quot; &quot;MAKER&quot; &quot;E. BOSTON&quot; on nose, (&quot;CHARLES BUCK&quot; &quot;CAST STEEL&quot; &quot;WARRANTED&quot; on blade, &quot;MOULSON BROTHERS&quot; &quot;M B&quot; &quot;WARRANTED&quot; &quot;STEEL&quot; on curling iron)</td>
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<td>72801T15</td>
<td>Hand saw</td>
<td>&quot;F Dowst Boston Warrented Cast Steel&quot;</td>
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<td>TCQ3500</td>
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<td>&quot;H A WEST PATENTED WARRANTED <em><strong>?</strong></em> STEEL&quot; AND &quot;B HARMON&quot;</td>
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<td>Coopers’ broad ax</td>
<td>&quot;H. A. W. KING&quot; &quot;LEWIS STNY&quot; (?)</td>
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<td>121805T5</td>
<td>Calipers</td>
<td>&quot;H. O. Perry&quot; and &quot;H.O.P.&quot;</td>
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<td>Dividers</td>
<td>&quot;H.A. PAGE CAST STEEL&quot;</td>
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<td>3405T6</td>
<td>Hand vise</td>
<td>&quot;Heile and Quack&quot;</td>
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<td>913108T4</td>
<td>Float</td>
<td>&quot;HWINSUGGLES&quot;</td>
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<td>6405T4</td>
<td>Rounding plane</td>
<td>&quot;I. Spear&quot;</td>
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<td>14302T15</td>
<td>Gouge</td>
<td>&quot;IH&quot; and &quot;J. Harrison Warranted&quot;</td>
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<td>Chisel</td>
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<td>Caulking iron</td>
<td>&quot;J.STOR&quot;</td>
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<td>32802T14</td>
<td>Gristmill stone hammer?</td>
<td>&quot;JOHN HARTMAN Boston Mass&quot;</td>
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<td>adz</td>
<td>&quot;KING New York&quot;</td>
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<td>TCR1012</td>
<td>Clamp</td>
<td>&quot;KNOTT BOSTON&quot;</td>
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<td>71401T9</td>
<td>Scraper</td>
<td>&quot;L M Hildreth New Haven CONN PAT Applied For&quot;</td>
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<td>Wire gauge</td>
<td>&quot;LACENE Mfg. Co Manchester NH&quot; also numerated 2 -12</td>
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<td>070705T1</td>
<td>Tongue and groove plane</td>
<td>&quot;LSHOREY&quot; (&quot;WILLIAM ASH &amp; Co&quot; &quot;WARRANTED&quot; and &quot;CAST STEEL&quot; on blade)</td>
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<td>42405T6</td>
<td>Drawshave</td>
<td>&quot;M &amp; AM DARLING CAST STEEL WARRANTED&quot;</td>
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<td>72801T18</td>
<td>Saw set</td>
<td>&quot;P ? Hopkins&quot;</td>
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<td>Shears</td>
<td>&quot;P H Hahn NY&quot;</td>
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<td>Double calipers</td>
<td>&quot;PAT APL'D FOR&quot; &quot;J.P. BARNES&quot;</td>
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<td>42607T4</td>
<td>Gouge</td>
<td>&quot;PEUGEOT FRERES&quot; with a man in the moon hallmark</td>
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<td>121401T1</td>
<td>Rule</td>
<td>&quot;Revere&quot;, marked with hand stamped numerals</td>
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<td>Dividers</td>
<td>&quot;S H F Bingham Cast Steel&quot;</td>
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<tr>
<td>71401T21</td>
<td>Gouge</td>
<td>&quot;Schroder &amp; Arete&quot;</td>
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<td>42405T5</td>
<td>Wood chisel</td>
<td>&quot;Thamesville Co. Cast Steel&quot;</td>
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<td>Chisel</td>
<td>&quot;THAMESVILLECo&quot; &quot;CAST STEEL&quot;</td>
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<td>Catalog No.</td>
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<td>052107T1</td>
<td>Square</td>
<td>&quot;TURNER &amp; ___________&quot; and &quot;GERMAN STEEL&quot;</td>
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<td>TCZ1006A</td>
<td>Open ended wrenches</td>
<td>&quot;W. C. HASLAM&quot; on two of them</td>
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<td>100605T4</td>
<td>Drawknife</td>
<td>&quot;W. FARNHAM&quot;</td>
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<tr>
<td>TCP1004A</td>
<td>Dividers</td>
<td>&quot;W.D.EVANS&quot;</td>
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<td>31701T1</td>
<td>Candlewick cutter</td>
<td>&quot;W_BANNA_ PATD _ 25th __&quot;</td>
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<td>913108T13A</td>
<td>Peavey or cant dog spike</td>
<td>&quot;WILLARD&quot;, the first initial is obscured</td>
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<td>TCZ1008</td>
<td>Open ended wrench</td>
<td>&quot;YORK M. Co&quot;</td>
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<td>72801T3</td>
<td>Double bitted Ax</td>
<td>only &quot;Oakland&quot; is visible along with &quot;S.S.&quot; who might be the owner.</td>
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IR: The Industrial Revolution (1865f.): Classic Period of American Machinist's Tools

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Tool Type</th>
<th>Maker/Manufacturer</th>
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<tr>
<td>30202T6</td>
<td>Bevel square</td>
<td>&quot;Alworth Bevel Square Rule_ _ _ as made by Stark W_ _ _ ss USA PATENTED Aug 7, 1888&quot;</td>
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<td>T square</td>
<td>&quot;C. EGGE&quot;</td>
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<td>102503T2</td>
<td>Inside calipers</td>
<td>&quot;D. E. LYMAN&quot;</td>
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<tr>
<td>121805T26</td>
<td>Calipers</td>
<td>&quot;E R Wharton&quot;</td>
</tr>
<tr>
<td>914108T2</td>
<td>Thickness gauge</td>
<td>&quot;EINAR HANSON&quot; &quot;:-TOOLS:-&quot; &quot;WORCESTER. MASS&quot; and owner's mark &quot;F. W. PAGE&quot;</td>
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<td>041505T38</td>
<td>Die</td>
<td>&quot;G. S. PAGET&quot; &quot;CO.&quot; &quot;:-BOSTON:-&quot; and &quot;WOOD.&quot;</td>
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<td>Outside calipers</td>
<td>&quot;H. A. ELLIS&quot; and &quot;J. P.&quot;</td>
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<td>Square</td>
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<td>Double calipers</td>
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<td>Wire gauge</td>
<td>&quot;Lacene Mfg Co. Manchester NH&quot;</td>
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<td>TJG1001</td>
<td>Lathe tool holder</td>
<td>&quot;MACHINISTS TOOL CO PROV. R.I. PATENTED MAY 26, 1868&quot;</td>
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<td>101701T7</td>
<td>Tap drill gauge</td>
<td>&quot;Made by STERLING ELLIOTT NEWTON, MASS, USA&quot;</td>
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<td>62202T8</td>
<td>Inside calipers</td>
<td>&quot;Murphy&quot;</td>
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<td>32405T1</td>
<td>Countersink</td>
<td>&quot;PATENDED&quot; &quot;:JAN 23, 1877.&quot; &quot;D.J. ADAMS&quot; &quot;KITTERY, ME.&quot; and &quot;R.L. MARKS&quot;</td>
</tr>
<tr>
<td>31908T35</td>
<td>Framing square</td>
<td>&quot;S. HAYES&quot; &quot;PATENT&quot; &quot;WARRANTED&quot; and &quot;STEEL&quot;</td>
</tr>
<tr>
<td>ID</td>
<td>Description</td>
<td>Details</td>
</tr>
<tr>
<td>-----------</td>
<td>--------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>TJS2201</td>
<td>Measuring device</td>
<td>&quot;STALL &amp; ATHERTON BROCKTON, MASS&quot;</td>
</tr>
<tr>
<td>32802T10</td>
<td>Outside calipers</td>
<td>&quot;W. E. TRUFANT Whitman Mass PAT Apr 18 03&quot;</td>
</tr>
<tr>
<td>102800T7</td>
<td>Pencil compass</td>
<td>&quot;WT. ATHERHEAD PATENT. REISSUED FEB 18 187?&quot;</td>
</tr>
<tr>
<td>31501T4</td>
<td>Peen adz</td>
<td>&quot;A DRAUDAY&quot; or &quot;A DRAUBAY&quot; &quot;PAT JUNE 8, 1875&quot; (?)</td>
</tr>
<tr>
<td>TTCl3000</td>
<td>Screw jack</td>
<td>&quot;C E HOBBS CO BOSTON&quot; and &quot;3/4 X 2&quot;</td>
</tr>
<tr>
<td>040103T6</td>
<td>Back saw</td>
<td>&quot;C. H. BILL &amp; SON WALTHAM MASS&quot; &quot;SPRING STEEL WARRANTED&quot; and an eagle medallion</td>
</tr>
<tr>
<td>31602T13</td>
<td>Rasp</td>
<td>&quot;Carver File Co USA&quot;</td>
</tr>
<tr>
<td>11301T8</td>
<td>Tool holder</td>
<td>&quot;Cooper &amp; Phillips Patented July 3, 1866 4&quot;</td>
</tr>
<tr>
<td>102800T6</td>
<td>Pruning shears</td>
<td>&quot;D. Bowers&quot;</td>
</tr>
<tr>
<td>040103T14</td>
<td>Expansive bit</td>
<td>&quot;DAVIS THE HARDWARE MAN&quot;</td>
</tr>
<tr>
<td>121805T19</td>
<td>Tang chisel</td>
<td>&quot;J. N. Cutler&quot; and &quot;Electric cast steel&quot; and a pioneer on the reverse with &quot;TM&quot;</td>
</tr>
<tr>
<td>41302T2</td>
<td>Drawknife</td>
<td>&quot;L. Palmer&quot;</td>
</tr>
<tr>
<td>32502T48</td>
<td>Pliers-type tools (4)</td>
<td>&quot;Lindstrom Sweden&quot;, &quot;Halle IT Co&quot;, &quot;T H Brown&quot; and &quot;P S Studeay&quot;</td>
</tr>
<tr>
<td>10407T7</td>
<td>Tin snips</td>
<td>&quot;MATEA&quot;</td>
</tr>
<tr>
<td>83102T9A</td>
<td>Pliers</td>
<td>&quot;PAZZANO PAT No. 19027 MADE IN USA&quot;</td>
</tr>
<tr>
<td>914108T3</td>
<td>Auger bit</td>
<td>&quot;PETEROR&quot; is the best guess, it is badly obscured</td>
</tr>
<tr>
<td>TJG1001A</td>
<td>Carriage upholsterer's hammer</td>
<td>&quot;R C CLAY 1874&quot;</td>
</tr>
<tr>
<td>TCZ1004</td>
<td>Stillson wrench</td>
<td>&quot;RED-HEAD&quot; and &quot;MADE IN U.S.A.&quot;</td>
</tr>
<tr>
<td>30202T12</td>
<td>Combination wrench</td>
<td>&quot;Ryder's Combination Pat'D Nov 10 1896&quot;</td>
</tr>
<tr>
<td>TTDA3000</td>
<td>Drawknife</td>
<td>&quot;TINKHAM &amp; CUMMINGS WARRANTED CAST STEEL&quot; with a very unusual eagle and flag touchmark</td>
</tr>
<tr>
<td>040103T15</td>
<td>Drill gauge</td>
<td>&quot;W &amp; M Mfg Co. Worcester Mass&quot;</td>
</tr>
<tr>
<td>914108T1</td>
<td>Tap wrench</td>
<td>&quot;W. F. PAGE&quot; and &quot;NO. 1.&quot;</td>
</tr>
<tr>
<td>102904T18</td>
<td>Wrench</td>
<td>&quot;W.--W. MFG. CO. INC.&quot; &quot; WORCESTER, MASS.&quot; &quot;PAT 7-9-20&quot;</td>
</tr>
<tr>
<td>111001T28</td>
<td>Nail holder</td>
<td>&quot;Williams Nail Holder &amp; Guide Patent 1688446&quot;</td>
</tr>
<tr>
<td>Item Number</td>
<td>Tool Type</td>
<td>Description</td>
</tr>
<tr>
<td>-------------</td>
<td>-------------------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>14302T17</td>
<td>Screwdriver</td>
<td>&quot;Mullen Mfg. Co. Boston Mass Patented&quot;</td>
</tr>
<tr>
<td>81602T18</td>
<td>Box scraper</td>
<td>on nut &quot;Holmes PATENT May 6 1868&quot;</td>
</tr>
<tr>
<td>101400T4</td>
<td>Smooth plane</td>
<td>&quot;Jacob Reisser New York&quot;</td>
</tr>
<tr>
<td>7602T1</td>
<td>Razee Plane</td>
<td>&quot;Made by P Marshall&quot; on the toe and &quot;Buck Brothers Warranted Cast Steel&quot; on the blade</td>
</tr>
<tr>
<td>SCOM1001</td>
<td>Hand saw (8 point cross cut)</td>
<td>&quot;Seth Wood 1XL Taunton Mass&quot; in oval with &quot;EXTRA&quot; above the oval, &quot;Spring Steel4 Warranted&quot; below oval</td>
</tr>
</tbody>
</table>
Annotated Bibliographies

Introduction
Readers of this volume of the Davistown Museum *Hand Tools in History* Series please take note of our peculiar bibliographic format. Because of the huge number of citations within this series, we have made some attempt to organize them both by timeframe and by subject matter.

The Volume 6, *Steel- and Toolmaking Strategies and Techniques before 1870* bibliography *European Precedents and the Early Industrial Revolution*, covers subjects pertaining to ferrous metallurgy beginning in the Bronze Age, continuing through the Iron Age (Halstadt, La Tène), the florescence of Roman metallurgy at Noricum, followed by a general survey of citations pertaining to the development of early modern steelmaking techniques in continental Europe and in England. The reader may note this bibliography is limited to English language sources; the extensive foreign language citations pertaining to the study of Iron Age metallurgy in Europe are referenced (Wertime, etc.) but not included.


Volume 8, *The Classic Period of American Toolmaking 1827-1930*, has the following bibliographic format:

I. The Industrial Revolution in America
II. U. S. and New England Toolmakers
III. Tools of the Trades
IV. Collector’s Guides, Handbooks, and Dictionaries
V. Tool Catalogs
VI. Tool Journals and Auctions

In addition to these bibliographic citations, each company listing contains additional citations, catalogs, and links.

Volume 9, *Davistown Museum Exhibition: An Archaeology of Tools*, our catalog of tools in the museum collection does not contain any bibliography.
Volume 10, *Registry of Maine Toolmakers*, has a bibliography that is restricted to publications pertaining to registry information sources and Maine and Canadian maritime toolmakers and manufacturers.

Volume 11, *Handbook for Ironmongers*, has an extensive bibliography of sources cited in the handbook and a second special bibliography on metallurgy.

A few citations may appear in more than one bibliography, especially frequently cited texts often referenced in the publication series. If you are seeking a specific citation you may have to peruse the bibliographies in several of the volumes. Most citations pertaining to American toolmakers are in the more extensive bibliographies in this volume.
The Industrial Revolution in America

Also check the bibliographies on specific trades and metalworking and metallurgy.


Backert, Adolphus O., Ed. (1915). *The ABC of iron and steel.* Cleveland, OH.


**Bealer, Alex W.** (1976). *The tools that built America*. Barre.


- “The best analysis of early American instrument manufacture; much on surveying instruments.” (Tesgeract Catalog, Fall 1989, pg. 26).


Bell, Isaac Lowthian. (1884). *Principles of the manufacture of iron and steel: With some notes on the economic conditions of their production*. G. Routledge, NY, NY.


The most important of all tracts on the colonial iron industry. Bining’s bibliography contains a particularly comprehensive and useful listing of colonial era manuscripts and official printed sources as well as an excellent general bibliography pertaining to 17th and 18th century publications on trade, travel, and American history. Bining’s bibliography also includes newspaper and periodical citations and publications of historical societies. A reprint of this bibliography is available for perusal at the Davistown Museum library.

See Volume 7: Art of the Edge Tool: The Ferrous Metallurgy of New England Shipsmiths and Toolmakers: From the Construction of Maine’s First Ship, the Pinnace Virginia (1607), to 1882 for a reprint of Bining’s Appendix A, “a list of forges and furnaces within the Province of Massachusetts Bay”, 1758.


The definitive Victorian survey of American manufacturers.


Casterlin, W.S. (1895). *Forty years at cast steel and tool making*. Scranton, PA.


- Another important listing of American manufacturers.


- A history of the first ironworks at Saugus, Massachusetts (Hammersmith).
- A good read and an excellent reference for a secondary school library or history course.
- See Hartley (1957) for the most important publication on the Saugus Ironworks.


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- A number of excellent articles from this publication are also cited separately in this and other sections of this bibliography.

Daddow, Samuel H., and Bannan, Benjamin. (1866). *Coal, iron, and oil: or, The practical American miner: a plain and popular work on our mines and mineral resources, and text-book or guide to their economical development*. Benjamin Bannon, Pottsville, PA and, J.B. Lippincott, Philadelphia, PA.


- An influential early read (1975) for the buyer at the Liberty Tool Co.


- This important reference was published in many editions.

Evans, Oliver. (1805). *The abortion of the young steam engineer’s guide: Containing an investigation of the principles, construction and powers of steam engines. A description of a steam engine on new principles … A description of a machine, and its principles, for making ice and cooling water in large quantities … by the power of steam … A description of four other patented inventions.* Printed for the author by Fry and Kammerer., Philadelphia, PA.


- One of the first modern writings on iron and steel production in the Europe and US. Now superseded by Gordon’s *American Iron*, this text remains an old favorite of the Davistown Museum.
The museum has reproduced an excerpt from this book on precursors of the blast furnace in the Volume 6 essay section of its website.


French, Benjamin F. (1858). *History of the rise and progress of the iron trade of the United States from 1620 to 1857: With numerous statistical tables, relating to the manufacture, importation, exportation, and prices of iron for more than a century*. Wiley & Halsted, NY, NY.


- The most comprehensive survey of the history of the iron industry in America up to the beginning of the 20th century.
- It contains an excellent bibliography pertaining to iron and steel production in America.


Green, Constance McLaughlin. (1939). *Holyoke, Massachusetts; a case history of the Industrial Revolution in America.* Yale University Press, New Haven, CT.


- “Within twenty years of the settlement of Boston in 1630, enterprising men had erected large integrated ironworks in the midst of a virgin wilderness... to convert bog iron into cast and wrought iron.” (pg. 3).
These ironworks, however, were different in that they were large-scale factory enterprises involving joint financing, a complicated technology, specially imported workmen, and heavy capital risk. They were big business and heavy industry. In the Bible Commonwealth they stood out as atypical, anachronistic and wonderful.” (pg. 3).

“At Braintree, scene of faltering beginnings, was a blast furnace of good size, a forge consisting of finery, chafery, and giant water-power-driven hammer, a charcoal house, and workmen’s cottages. At Lynn, there was a complete ironworks, whose design and engineering were as bold as sophisticated. Here was a huge furnace, a forge comprising two fineries, a chafery, and a big hammer, an extensive water-power system, good storage facilities, workmen’s accommodations, and a pier for the use of the small boats which plied the Saugus River laden with the ironworks products. Here was a rolling and slitting mill, the first in the New World, and set up when there were only about a dozen of which we have record in the British Isles and on the continent.” (pg. 4-5).

“Braintree Furnace achieved the first recorded and successful production of cast iron within the limits of what is now the United States.” (pg. 10).

“The indirect process of iron manufacture is more complicated than the direct. The latter calls only for the use of the bloomery, a hearth in which, in a single if discontinuous operation, wrought iron is made directly from the ore. In the indirect process, the blast furnace smelts the ore and turns out cast iron in the form of sows and pigs. By the Walloon method, these are then converted into wrought iron in a series of heating and hammering operations in the forge with its two types of hearth, the finery and the chafery, and its big water-power-driven hammer.” (pg. 11-12).

“It was the competition of iron from the Mother Country which was another of the factors responsible for the relatively early eclipse of New England’s first ironworks.” (pg. 16).


“The classical Industrial Revolution did not involve all production. Many crafts did not change at all, and those that were mechanized and industrialized changed at very different rates. The four most dramatic changes occurred in (1) iron production, (2) the rise of the steam engine, (3) the mechanization of textile production, and (4) precision machine work.” (pg. 15).

- Particularly good on the development of railroad transportation and its relationship with the steam engine.


- The very best summary of the role of water mills in the industrialization of America.
- Our annotations from this important text are so extensive we have placed them in a Davistown Museum online essay.


- An excellent summary of the early role of the steam engine in water and rail transportation and the long delay in its use for most forms of industrial manufacturing.
- For additional annotations see the Davistown Museum online essay.

A clear explanation of why steam turbines, replacing the earlier forms of reciprocating steam engines, played a key role in the development of electrical transmission of power.

For additional annotations see the Davistown Museum online essay.


Jeans, J.S. (1880). *Steel, its history, manufacture, properties and uses*.


King, Clarence David, (1948). *Seventy-five years of progress in iron and steel; manufacture of coke, pig iron, and steel ingots.* Published for the Seeley W. Mudd Fund, by the American Institute of Mining and Metallurgical Engineers, NY, NY.


Kohn, Ferdinand. (March 27, 1869). *Iron and steel manufacture: A series of papers on the manufacture and properties of iron and steel: With reports on iron and steel in the Paris exhibition ... works in Great Britain and on the continent.* Published by William McKenzie, London, Edinburgh & Glasgow. UK.


- A most important and essential reference.
- See the Davistown Museum online essays for some photographs of axes from this text.


- “The Industrial Revolution began in New England because there were more young men than there was arable land, forcing some of these surplus men to invent new kinds of machinery.” (pg. 250).
- Muir defines the Industrial Revolution as a “transition from the use of this year’s sunlight to the use of the products of fossil sunlight (coal and petroleum.)” (pg. 248).
- “By the 1780s, there was scarcely a village in New England that could not boast a gristmill, a sawmill, a cooper’s shop, a tannery, a fulling mill to finish homespun woolen cloth with mechanical beaters, and a smithy capable of fashioning hardware for kitchen and farm. Where there was clay, there was likely to be a pottery; where the fuller was enterprising, there might be a dyehouse beside his mill.” (pg. 74 - 75).
- “In 1810, the year of the shoe peg, every town in southern New England was extensively engaged in manufacturing for distant markets. Across the region, artisans plaited straw bonnets, felted fur and wool for hats, poured brass into molds to make buttons, filed cow horn into combs, and tempered wrought iron to shape augers. With so many hands performing repetitive tasks for so many hours, it seems obvious that someone would think of a way to do a job more quickly, more cheaply, or more easily.” (pg. 92).
- “Elisha Root reconceptualized the making of axes [at Samuel Collins’s ax factory]. He eliminated the labor of flattening wrought iron, folding it around a steel pin, and forging the two sides together under a trip-hammer, by arranging a series of dies and rollers that could ‘die forge’ -- or apply pressure to a mold, forming a solid piece of yellow-hot wrought iron into the shape of an ax, with a eye already punched to receive the handle. Root also automated the process of tempering axes with a machine that regulated oven heat and moved axheads through the oven on a rotating wheel. Another machine reduced the amount of hand labor required to give axes a sharp edge by ‘shaving’ the hardened steel until it need only receive its final finish by hand on a grindstone.” (pg. 131).


- This is a folded pamphlet that may also be used as a poster. It has an excellent diagram of a blast furnace, is suitable for classroom use, and may be seen on display at the Davistown Museum. Available online from eParks (http://www.eparks.com/eparks/).


North, S.N.D. and North, Ralph H. (1913). *Simeon North; First official pistol makers of the United States; A memoir*. Rumford Press, Concord, NH.


Pearse, John Barnard. (1876). *A concise history of the iron manufacture of the American colonies up to the revolution, and of Pennsylvania until the present time*. Allen, Lane & Scott, Philadelphia, PA.


Perry, E.G. (1903). *A trip around Buzzards Bay Shores and Vineyard Sound*. C. S. Binner Corp, Boston, MA.

- On page 197 is a reference to the Pocasset Iron Works in Pocasset.


- The definitive reference on American planemakers.


Pring, J. N. (1921). *The electric furnace*.


- This includes the locations of blast furnaces in all the New England states.


Roper, Stephen. (1874). *A catechism of the high pressure or non-condensing steam engines*. Publisher unknown, Philadelphia, PA.


Rowe, F.H. (1938). *History of the iron and steel industry in Scioto County, Ohio.* Columbus, OH.


Sayward, Elliot M. (1972). *The cooper and his work: Definitions, operations, materials, tools.*


- Elliot Sayward edited *The Chronicle* for several years and also authored articles in the following issues.
  - Chips and sawdust. 43(4). pg. 100; 44(2). pg. 53.
  - Dutch treat: The van Vliet Etchings of crafts and trades, part I. 46(1). pg. 7–11.
  - The pith of the matter: A response from your editor. 41(1). pg. 9–10.
  - Letter. 45(3). pg. 94.
  - Two letters. (July/August 2004; September 2004).
  - Elliot Sayward also published *Plane Talk*, a quarterly journal, for ten years up until 1991.


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- The most important primary source of information on blacksmithing including a concise explanation of forging and tempering steel for use in hand tools. See especially pages 156-163 for an explanation of how axes were made and the differences between the American ax and the European trade ax.
- This book also contains one of the best explanations of how the production of steel evolved from the first blacksmith shops in colonial America including descriptions of the first steel poured by the Bessemer process in 1864, the development of the open hearth steel process in 1868, the electric arc furnace in 1911, the low frequency and high frequency electrical furnaces of 1913 and 1930, and the basic oxygen process introduced in 1955.
- “...wrought iron has qualities which make it superbly fitted for hand forging, which are not equaled by mild steel. Its ductility and softness, and the way it flows under the hammer make it prized by smiths who must forge it with hand hammers.” (pg. 46).
- “The smith used a metal pattern ... to form the eye of an axe ...by splitting the metal lengthwise and wrapped it around the swage. A steel bit was then welded into the open end and the entire axe drawn to the proper shape. The bit and poll (opposite end to the bit) is made of steel. The poll is weighted with hardened steel to give balance and to protect the iron body when the axe is used to drive wedges into wood.” (pg. 156).
- “Today there is not a trip hammer to be found in the entire plant. They went out in 1930 when the axe was completely forged of high carbon steel.” (pg. 160).
- “Welding is the fusion of two pieces of metal by heating and hammering. ...Fluxes, such as borax and ammonium-chloride, and clean sand, are put sparingly on the metal just before the welding heat is reached. The flux lowers the melting point of the scale [oxide of iron], allowing the scale to run off, and at the same time it serves as a prophylactic, sealing out the air which would cause more oxide of iron to form. After the flux is applied, the metal is brought to a welding heat and welded on the anvil with the hammer.” (pg. 47).
- Clear, well organized, concise, enjoyable reading and an indispensable reference for anyone interested in the history of tools.
- This is one of the references used to construct the chronology of tool manufacturing in the Davistown Museum’s *Hand Tools in History* publication series.
- An early influence on the missions and tool picking strategies of the Liberty Tool Co.


- The most comprehensive listing of women inventors and their inventions.


- With respect to the vigorous iron industries of the Massachusetts Bay Colony, and Massachusetts during the early Republic, this publication is totally useless. It has no individual listings of foundries, forges, edge toolmakers, shipsmiths, blast furnaces, and makes no mention of such famous iron foundries as that at Bridgewater, where the iron sheathing for the Monitor was made, nor of the many blast furnaces of Taunton, Carver, and elsewhere, which supplied shot and cannon in both the Revolutionary War and the War of 1812.


Swank, James M. (1884). History of the manufacture of iron in all ages, and particularly in the United States for three hundred years, from 1585 to 1885. Published by the author, Philadelphia, PA.

Swank, James M. (1892). History of the manufacture of iron in all ages and particularly in the United States from colonial times to 1891. The American Iron and Steel Association, Philadelphia, PA.


Thompson, Elroy S. (1928). The history of Plymouth, Norfolk and Barnstable counties. NY.

Thompson, Michael D. (1976). The iron industry of western Maryland. Morgantown, W.VA.


- The contents are excellent for classroom preparation.


United States Treasury Dept. (1892). *Alexander Hamilton’s famous report on manufactures, made to Congress, December 5, 1791, in his capacity as Secretary of the Treasury*. Home Market Club, Boston, MA.


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Walton, Perry. (1912). *The story of textiles: A bird’s-eye view of the history of the beginning and the growth of the industry by which mankind is clothed.* John S. Lawrence, Boston, MA.


- The subject of this publication is restricted to Pacific coastal Native American use of iron and steel knives by indigenous coastal traders. These steel and iron tools originating in Siberia and were brought across the Bering Sea as trade items. Athapascans among other Native American groups utilized these knives prior to contact with European settlers.


Westcott, Thompson. (1857). *The life of John Fitch, the inventor of the steamboat.* Publisher unknown, Philadelphia, PA.

White, George Savage. (1836). *Memoir of Samuel Slater: The father of American manufactures; connected with a history of the rise and progress of the cotton manufacture in England and America; with remarks on the moral influence of manufactories in the United States.* Printed at no. 46, Carpenter Street, Philadelphia, PA.


U. S. and New England Toolmakers

Including Toolmakers of the Maritime Provinces and Important Continental Toolmakers

Also check the Maine toolmakers in the Registry of Maine Toolmakers, the tool catalogs bibliography, and citations for the tool manufacturers. A selection of European makers may be found in the trades bibliography.


- See this article online at: http://cdl.library.cornell.edu/cgi-bin/moa/moa-cgi?notisid=ABS1821-0004-150.

No author. (December 1893). The Morse Twist Drill Co. and its products. The Manufacturer and Builder. 25(12). pg. 269.

- See this article online at: http://cdl.library.cornell.edu/cgi-bin/moa/moa-cgi?notisid=ABS1821-0025-712. It includes a nice illustration of the drills.


- The Morse Twist Drill & Machine Co.’s 100th anniversary in 1964.


- A Xerox of a short bibliography of John Porcius Gage is attached to the back of one of the copies of these notes in our library.


- Chelor was a freed slave and prominent planemaker.


- Oliver, Defiance, Fay & Egan and Yates-America.


Blaisdell, Katharine. (1982). *Over the river and through the years: Book four: Mills and mines.* Courier Printing Company, NH.


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- An extraordinary and possibly unique early mark of Francis Nicholson has been found on a plow plane recently acquired by Robert Wheeler of Pepperell, Massachusetts, an 18th-century plow plane collector and tool historian.


Boynton’s Saw Works, E. M. (1876). *Manufacturer of all kinds of first-class saws, frames, tools, files, etc., Boynton’s pat. saw sets and pat. cross-cut handles, and sole proprietor of the genuine patent lightning saw*. D. H. Gildersleve & Co., Printers, NY. Reprinted by Crafts of NJ.


- William Butcher, Sheffield maker of plane blades.


- Available as a loan from the E.A.I.A. Library.


- Published in the 102nd year of the company (1840 - 1942). Rose Antique Tools has some excerpts from the 1941 version of this manual on its website.


- The Museum has set up an online information file on C. Drew & Company. Excerpts from this speech have been included in this file.
- A most important information source on a key New England Toolmaker.


Fitz Water Wheel Co. (1928). *Fitz Steel Overshoot Water Wheel*. Bulletin No. 70. Fitz Water Wheel Co., Hanover, PA.

Freeman Supply Company. (no date). *Freeman Supply Company conversion tables for making patterns for shell molding of aluminum and cast iron*. Freeman Supply Company, Toledo, OH.


- A survey of the many bicycle wrenches made by Speirs for other bike-makers.


- Available for perusal at the Davistown Museum and the Concord, NH, library of the State Historical Society.
- An important reference on New Hampshire toolmakers.


- The partnership of George L. Davis and Gustavus Cook of Watertown, NY.


- A classic reference on an important New York family of craftsmen.
- See our commentary on this text in our publication *The Florescence of American Toolmakers 1713 - 1930*.


- The in stock Xerox of this article is attached to the back of one copy of Aber’s *Some Notes on Gage Planes*.


- Cesar Chelor, John Nicholson, Deacon Francis Nicholson, known as the “Wrentham Trio”.


- See annotations in the online Davistown Museum information file on Stanley Tool.


- See annotations in the online Davistown Museum information file on Stanley Tool.


- This article contains important information on Laroy S. Starrett.


Jones, Robert S. (May 6, 2002). *Wooden plane iron makers marks*. Self published. 3042 Cochise Cir. SE, Rio Rancho, NM.


- Captain Joseph Allen, Gloucester, Massachusetts.


- See a copy of this article and its illustrations in the online Davistown Museum information file on Josiah Fowler.


- See the annotations for this article in the online Davistown Museum information file on axes.


- Other than Barton, Rochester marks are rather uncommon in coastal New England. Perhaps their market was to the west and south and ship’s carpenter’s tools were not a specialty.


- “After the Bailey Wringing Machine Co. sold their plane division to the Stanley Rule & Level Co. (January 26, 1880) it is believed that the remainder of the Defiance plane inventory was sold off and no additional planes completely matching the Defiance design were subsequently manufactured. Curiously, none of the Bailey Tool Company spokeshaves were included in the supplement, or updated edition, of the 1879 *Stanley Rule & Level Catalog* but Stanley did offer a variety of the Defiance planes in that updated catalog.” (pg. 11).
- “There were eleven different shave models offered by the Bailey Tool Company by the late 1870s.” (pg. 11).


- Located in Birmingham, Connecticut.
- Two exquisite Birmingham planes are on exhibition at the Davistown Museum.


See the annotations of this citation in the online Davistown Museum C. Drew & Co. information file.


- One of the most comprehensive websites on Stanley planes (http://www.supertool.com/StanleyBG/stan0.htm).


- The single most important reference on New Bedford whalecraft.
- Excerpts from this text are reproduced in an Appendix of the *Registry of Maine Toolmakers*.


Morison, Samuel E. (1950). *The rope makers of Plymouth*. Publisher unknown, Boston, MA.


- Herb has many other informative articles on wrench makers that are not included below.


- A photo from this article is reprinted in the online Davistown Museum Loring and Aury Gates Coes information file.


Parks, Michelle. (Thursday, September 21, 2006). Plane dealing: Arkansan elevates woodworking to an art form and is named a Living Treasure. *Arkansas Democrat-Gazette*. Style section.

- Larry Williams of Eureka Springs, AK.
- One of the only active American wood planemakers circa 2006.


- Letter from planemaker Cecil Pierce about a smooth plane he made.


Rathbone, P. T. (1999). *The history of old time farm implement companies and the wrenches they issued*. P.T. Rathbone, Marsing, ID.

- “This 520 page book pictures over 3000 wrenches from over 750 companies. It has the history of over 500 companies and includes old advertising pictures from them. Included is a 176 page soft cover supplement that lists over 3300 part numbers matched to the company that issued the wrench as well as a price guide.” (Amazon.com).


- Granford is one of London’s first documented planemakers.


- See annotations in the online Davistown Museum collector’s guides bibliography.


Robinson, Charles. (date unknown). *Vermont cabinetmakers and chairmakers before 1855*. Publisher unknown.
Rodengen, J. L. (date unknown). *The legend of Stanley: 150 years of the Stanley Works*. Publisher unknown.


Sayer, William L. Ed. (1889). *New Bedford: Massachusetts: Its history, industries, institutions, and attractions*. Published by order of the Board of Trade.

- The Morse Twist Drill & Machine Company of New Bedford is described on pg. 253 - 256. An illustration from this text can be seen in the online Davistown Museum information file on Morse.


**Sellins, Alvin.** (1975). *The Stanley plane: A history and descriptive inventory*. The Early American Industries Association, South Burlington, VT.

- Prior to Walter, this was the only guide to Stanley tools.
- A most important reference on the Stanley Company.


Simonds Manufacturing Co. (1907). *75 years of business progress and industrial advance, 1832-1907.* Cambridge, MA.


- Available as a loan from the E.A.I.A. Library.


- See annotations in the online Davistown Museum Buff & Buff information file.


- See annotations in the online Davistown Museum collector’s guides bibliography.


- The article lists the following toolmakers:
  - Pliny Merrill 1840-1858
  - Merrill & Wilder 1858-1866
  - Wilder & Thompson 1866-1868
  - Wilder & Hopkins 1870-1873(?)
  - G.S. Wilder 1873-1883
  - C.E. Jennings 1883-1885
  - Jennings & Griffin 1885-1900+(?)

- This article is online at [http://www.mwtca.org/OTC/ar000021.htm](http://www.mwtca.org/OTC/ar000021.htm).


- A photograph of Kimball’s shop from this article is in the online Davistown Museum information file on C. J. Kimball.


- This article is reproduced with copies of the illustrations in the online Davistown Museum tool information file on grey iron castings.


- This short article has been reprinted in the online Davistown Museum tool information file on Stanley Tool.


Waltham Watch Company. (1940). *Waltham: Watch and clock material catalog*. Waltham Watch Company, Waltham, MA.

Waltham Watch Company. (1948). *Waltham: Watch and clock material catalog*. Waltham Watch Company, Waltham, MA.


- For more information on the C. Drew & Co. mentioned in this article, see the online Davistown Museum C. Drew information file page.


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- See our annotations plus excerpts and illustrations from this article in older editions of the *Registry of Maine Toolmakers*.


- “The acceptance of Robert Wooding as the first professional English planemaker rests on the number of surviving planes that bear his name. The smaller number of Thomas Granford planes found to date are enough to qualify him as England’s first, under the broader definition. And recently, several other English candidates have arisen based on a few planes and some historical data.” (pg. 86).


White, Marcus and Humason, H.B. (1953). *New Britain, the center of hardware manufacture ... containing a brief review of its miraculous industrial development*.

- P & F Corbin, Russell & Erwin Mfg. Co. and the Stanley Works, etc.


- So many of their tools appear in New England tool chests that they are included in this section.
- Josiah Fowler commenced toolmaking shortly after he was discharged as a Civil War soldier.
- Woodworking tool manufacturers (pg. 49-51):

**New Brunswick**

J. R. Googin Hardware -1889- hardware dealer
Andrews, John S. -1889- small dealer
Broad, E. & H. -1862-64-
Burpee, I. F. rolling mills
Spiller Brothers 1867-75-
Wood James -1817-
Mann Axe & Tool Co. Ltd -1915-30- adzes and axes
Maritime Edge Tool Co. -1908- axes
Veazy, John -1889-
Biggs, Robert B. -1908- axes
Moir, Robert
**Nova Scotia**

- **Blenkhorn, James** 1842-46
- **Blenkhorn and Sons** 1846-1962 edge tools
- **Conolly** -1877- axes
- **Cameron, William J.** -1908- axes
- **Campbell & Fowler** -1865-77- carriage springs
- **Campbell, William** -1881-91- edge tools
- **Campbell Brothers** -1891-1920- axes
- **Campbell, G. Wilfred & Son** 1920-21 axes and edge tools
- **Campbell & Fowler Ltd.** 1921-22 axes and edge tools
- **Campbell & Campbell** 1922-23 axes and edge tools
- **Edwards, John C.** 1863-64-
- **Josiah Fowler Co. Ltd.** -1881-1920 axes and edge tools
- **Ridgeway, Joseph** -1862-64- files and rasps
- **The Somerset Axe and Tool Co. Ltd.** -1943- adzes, axes, cold chisels
- **Spiller, Hanford B.** -1862-
- **Spiller, Samuel** 1820-67 axes


Wing, Anne and Wing, Donald. (Autumn/Winter 1984). *Chronology of 18th century planemakers in southeastern New England*. The Mechanick’s Workbench, P.O. Box 420, Marion, MA.


- This article contains important information about all the early New England and New York City rulemakers including William Belcher, Lemuel Hedge, William Rook and Lawrence Watts.
- “By the early 1820s... William and Thomas Belcher, who had emigrated from Sheffield, were establishing in New York what was to become one of the larger American rulemaking firms of the period.” (pg. 46).
- “Undoubtedly the single most important influence on rulemaking in this country was American inventor Lemuel Hedge of Windsor, Vermont. ...Hedge patented his rule-
graduating machine in 1827, beginning the machine stamping of wood rules in this country; the British did not use machines for marking rules until decades later.” (pg. 46).

- “By the late 1840s the Boston rule trade was beginning to diminish, and Gifford must have been aware of the growing success of the Connecticut firms of Stephens, Chapin, and the Middletown shops, as well as E.A. Stearns in Brattleboro, Vermont, and Belcher in New York. How could he hope to compete with them from the little coastal town of Westport? And yet, the Gifford factory appears to have been reasonably successful for a number of years.” (pg. 48).

- “The very fact that Mortimer Hedge had joined the army is an indication that the Westport rule business was extinct by 1862. The small Boston rule factories were mostly finished as well, while Stanley, Chapin, and Stephens in Connecticut were burgeoning. The era of the small rule shop had ended.” (pg. 51).

Wing, Donald and Wing, Anne. (September 1995). Simeon Doggett: Loyalist planemaker. The Chronicle. 48(3). pg. 35-44.

- This article also contains information on Levi Tinkham and other Middleboro, MA, planemakers.


- Information about New Brunswick, Canada, edge tool and ax makers.
Tools of the Trades

Agriculture


Architects, Architecture, and Design


**Armorers**


Lynch, Kenneth. *The armourer and his tools*.

- The Davistown Museum has Lynch’s preliminary guide to this book, which was never published, as well as a number of tools from his collection.
- The Davistown Museum has recently republished Lynch’s catalog of armourer’s tools. A copy is available for visitor perusal in the main hall of the museum. Copies may be ordered from the museum; please allow three weeks ($12.00 post paid.)
- See the blacksmith section below for Lynch’s 1975 tool catalog.


**Artisans and Craftsmen (arts and crafts)**


- This book is a reprint of Jacob Johnson’s *The book of trades, or library of the useful arts*. Part II. London. 1807.

• This book is a reprint of Jacob Johnson's *The book of trades, or library of the useful arts.* Part III. London. 1807.


**Axes**


• This text has no mention of the famous axe factories of Oakland, Maine.


• “The introduction of cast-steel coincided with the factory production of axes in America. The earlier three-piece axe of the village blacksmith was discarded for a one-piece axe of cast-steel produced by the incipient machine age. Quickly the eye of the axe was punched from the stock and the edge was thinned on a water motivated trip hammer which worked long and tirelessly. The cutting edge could be heat treated and made hard, while the balance of the axe remained sufficiently soft to absorb the shock of impact.” (pg. 20).


**Bicycles**


**Blacksmiths**

(also see farriers and the metallurgy bibliography in Volume 11, Handbook for Ironmongers)


• The classic text on this subject.


Clay, W. (1858). On the manufacture of puddled or wrought steel with an account of some of the uses to which it has been applied. *Journal of the Society of Arts.* VI. pg. 140-148.


International Correspondence Schools. (1906). *Machine molding: Foundry appliances; Malleable casting; Brass founding; Blacksmith-shop equipment; Iron forging; Tool dressing; Hardening & tempering; Treatment of low-carbon steel; Hammer work; Machine forging; Special forging operations*. International Textbook Co., Scranton, PA. Reprinted in 1983 by Lindsay Publications, Bradley, IL.


- This article covers early 19th century blacksmith production of nuts and bolts utilizing iron screw dies, screw plates and threading dies.
- The article contains an illustration of a Stubs screw plate. “Peter Stubs manufactured tools in Warrington, Lancashire, England, from about 1826 until the late-nineteenth century. Like modern threading dies, solid screw plates were not adjustable and therefore made identical threads by cutting away metal from the bolt blank.” (pg. 113).


- See annotations in the Davistown Museum online Children’s bibliography.


- See the annotations of this citation in the Davistown Museum online C. Drew & Co. information file.


- This is one of the most comprehensive pictoral surveys of blacksmiths, silversmiths and armourers hammers and tools in the literature.
- The introduction to this catalog is excerpted in the Davistown Museum online Lynch biography.
- This catalog is not available from any source, but there is one copy in the Museum’s library.


- A classic but somewhat redundant reference.
- This is a reprint of an important late 19th century guide to blacksmithing.


Simmons, Marc and Turley, Frank. (1980). *Southwestern colonial ironwork: The Spanish blacksmithing tradition from Texas to California*. Museum of New Mexico Press, Santa Fe, NM.


- See the annotations in the Industrial Revolution bibliography.


**Bookbinding**


**Candlemaking**


**Carriagemaking**


**Clockmakers and Watchmakers**


- “The John Wyke tool catalogue, the earliest known English printed source illustrating the extensive range of tools available to watch and clock makers, first appeared during the third quarter of the eighteenth century. French publications such as Antoine Thiout’s *Traite de l’horlogerie, mechanique, et pratique* (1741) and *Horlogerie* from Diderot and D’Alembert’s *Encyclopedie ou Dictionnaire raisonne des sciences des arts, et des metiers*
(1765) illustrated many similar tools, but these books were horological textbooks and not for trading purposes. The Wyke catalogue was a pictorial listing of tools for order or sale at the manufactory and warehouses in Wyke’s Court, Dale Street, Liverpool. The firm of John Wyke and Thomas Green supplied a wide range of tools needed by ‘Clock and Watchmakers, Jewellers, Braziers, and other Mechanics.’ The catalogue was issued under Wyke’s name, and several of the plates had been engraved some five to fifteen years before he formed his partnership with Green in or soon after 1770.” (pg. 1).

- “Sometime after the appearance of the Wyke publication, other suppliers of tools to the clock and watch trade issued illustrated catalogues, the important ones being those from Ford, Whitmore and Brunton of Birmingham, which appeared about 1785, and from Peter Stubs of Warrington, which came out soon after 1800 and was reprinted with few alterations at various dates in the nineteenth century. In both cases the tools illustrated closely resembled those in John Wyke’s catalogue, and certain plates are virtually identical. This similarity is not surprising, for all three firms sold to the growing number of British watch and clock makers the very wide range of files and other tools produced by specialist outworkers in the cottage industry of southwest Lancashire.” (pg. 1).

- “The origins of watch and watch tool making in southwest Lancashire are obscure, but from documentary evidence it is clear that the trade was well established in that corner of northwest England long before the end of the seventeenth century.” (pg. 1).

- Some of the illustrations and descriptions of tools from this text are posted in the Davistown Museum online Peter S. Stubs information file.

Zea, Philip and Cheney, Robert. (date unknown). *Clockmaking in New England*. Old Sturbridge Village, Sturbridge, MA.

**Cobblers**


**Coopers**


- “The three main branches were wet, dry and white. The wet cooper made casks with a bulge to hold liquids. The dry cooper made casks with a bulge to hold a wide variety of dry commodities. The white cooper made straight-sided, splayed vessels. But within these branches one could differentiate between the type and the quality of the work done. The beer, wine and spirit side of wet coopering demanded much greater precision than the oil, tar and pitch side where casks of a poorer quality were used. Internal pressure resulting from fermentation was a factor to be considered by the former, as well as the greater value of their contents, but amongst these the brewers’ coopers might well have claimed that their casks needed to be stronger in order to undertake repeated journeys, and to be smooth inside for easy sterilization as opposed to the wine and spirit casks which were deliberately blistered and left rough. Dry coopering differed with regard to every commodity for which the casks were used. Herring coopers, and others who in earlier years made casks for preserving fish, were called dry-tight coopers, since although their work came under the category dry, it still had to be capable of holding brine. Butter and soap cask-making was also regarded as dry-tight work. At the other end of the scale there were the apple and tobacco barrel coopers whose frail, dry-slack casks were made from the cheapest timber just sufficiently bound to last one journey. Most hardware was shipped in strong dry casks.” (pg. 42-43).


- The description of the contents of this shop provides an idea of what the cooper’s shops in Davistown Plantation were like.

**Crooked knives**


**Cutlers**

(also see blacksmiths, metallurgy, and European Precedents and the Early Industrial Revolution)


Unwin, Joan and Hawley, Ken. (2003). *A cut above the rest - the heritage of Sheffield’s blade manufacture*. Exhibition Catalog, The Hawley Collection, University of Sheffield, Sheffield, UK.


**Electro-plating**


**Engineers and Engineering**


Aubuisson de Voisins, Jean François d’. (1852).*A treatise on hydraulics: For the use of engineers.* Little, Brown, and Co., Boston, MA.


Keuffel & Esser Company. (1976). *Calendar:* *Early American engineers: The early craftsman, his tools, his creations and his design.* K&E Co., Long Island City, NY.


**Engraving**


**Farriers**

Also see blacksmiths.


**Files**


**Nicholson File Company.** (1878). *A treatise on files and rasps: Descriptive and illustrated: For the use of master mechanics, dealers, &c. in which the kinds of files in most common use, and the newest and most approved special tools connected therewith, are described -- giving some of their principal uses. With a description of the process of manufacture, and a few hints on the use and care of the file*. Reprinted in 1983 by the Early American Industries Association.


Nicolson File Company. (1956). *File filosophy and how to get the most out of files (~being a brief account of the history, manufacture, variety and uses of files in general.)* Twentieth Edition. Nicolson File Company, Providence, R.I.

- The definitive guide to files and their use.
- Also see the US & New England Toolmakers bibliography for many more Nicolson publications.


**Flax Dressing**
(also see Milliners and Textiles)


**Foundry Operation**
(also see metallurgy, blacksmiths and Vol. 11, *Handbook for Ironmongers*)


- “Carbon is the most important element in cast iron. Its greatest influence is its effect on the melting point. Pure iron melts at 2735 degrees, a temperature very difficult to reach. The presence of just 3.55 carbon in pig iron reduces the melting point to 2075 degrees. Therefore, cast iron is easily and cheaply melted and can be produced more economically than any other form of iron.” (pg. 8).
- “H. B. Smith, founder of the H. B. Smith Machine Co. (1847) of Smithville, New Jersey, pioneered the use of cast iron in woodworking machinery. Unlike his competitors, he used all iron construction in his major machines from the very beginning. Even so, some minor Smith machines were built with wooden frames to meet the needs of smaller shops.” (pg. 11).
- “William C. Bolger pointed out its importance in *Smithville: The Result of Enterprise* (1980): ‘The statement that ‘It is all iron’ is significant, both in terms of the man and his future career as a manufacturer of woodworking machines. His reputation in the machine business was due as much to his use of iron as to the designs he patented.”’ (pg. 11).


- “A how-to-do manual that shows you how to make the equipment you will need as well as how to use it to make patterns, molds and castings for jewelry and small metal parts.” (pg. 1).


Woodworth, Joseph V. (1903). *Dies, their construction and use for the modern working of sheet metals: A treatise on the design, construction and use of dies, punches, tools, fixtures and devices, together with the manner in which they should be used in the power press*. N.W. Henley & Co., New York, NY.

Woodworth, Joseph V. (1907). *Punches, dies and tools for manufacturing in presses ... / by Joseph V. Woodworth ... a companion and reference volume to the author’s elementary work entitled “Dies, their construction and use for the modern working of sheet metals”*. N.W. Henley & Co., New York, NY.

**Glassblowing**


**Grinding**


Tone, Frank J. (no date). *Abrasives in the service of industry*. The Carborundum Company, Niagara Falls, NY.


**Graining**


**Gunsmiths**


- This classic on gunsmithing was first published in 1881; the ninth edition published in 1910 has been reprinted by Bonanza Books.
- A particularly comprehensive overview about the history of firearms and the many German, Italian, French and English arms smiths.
- Contains interesting documentation of what was called in the 19th century “Whitworth steel.” Joseph Whitworth adapted Huntsman’s cast steel to gunsmithing, manufacturing in the mid-19th century a brand of steel known as “wheat sheaf”; Greener notes this steel was the best high carbon “fluid compressed steel” available to gunsmiths at the beginning of the age of the steel. Guns prior to 1850 had been made of either wrought iron or the pattern welded twisted iron and steel barrels popular with English sportsmen and known as Damascus steel. Weldless cast steel guns were much more reliable than the pattern welded sporting guns of the English upper classes, which often developed gray mars from the flecks of iron oxide accidentally left by the pattern welding of the damascened gun barrel.


Williamson, H.F. (1952). *Winchester the gun that won the west*. Washington, DC.

Hatters

Ogden, Oliver J. (March 1990). Hatters and hat making at the Harmony Society, Economy, Pennsylvania 1826-1875. 43(1). pg. 3-5.

**Homemakers**

(Also see the Women and Technology bibliography)


- Bread rasp, whisks and beaters, pans and bowls.


- Mincing knives.

- Lamp chimney accessories, stove pipe shelf, sad-iron heater or long pan.


- Wire kitchen utensils.


- Box mangles ( wringer).


- Hair curling and crimping irons.


- An excellent survey of the wide variety of scissor-type implements.


- Pastry jagger, graters, and apple parers.


**Ice Harvesting**


**Inventors and Inventions**


**Knives and Swords**

Also see cutlers, crooked knives, and Vol. 11: *Handbook for Ironmongers*.


**Lighting Devices**


**Loggers and Timber Harvesting (Lumbering)**

Also see sawyers and the Davistown Museum online special topics bibliography on the Mast Trade.


Andrews, Ralph Warren. (date unknown). *This was logging*. Astragal Press, Mendham, NJ.


- We have excerpted so many quotes from this book that we have placed them into the Davistown Museum online information files: lumbering in Maine and potash.

**Machinists and Machinery**
(Also see Measuring and Drafting, Metallurgy, and Engineering)


- The classic period of American machinists’ tools.
- A most useful and essential reference.


- These two volumes constitute a comprehensive survey of machinist toolmakers.


- See annotations in the European Precedents and the Early Industrial Revolution bibliography.


**Measuring and Drafting Tools**


Eugene Dietzgen Co. (no date). *Use and care of drawing instruments with instructive exercises*. Eugene Dietzgen Co., Chicago, IL.


- “Reliable scales or rules were not available to American artificers before 1850, when J. R. Brown made a linear dividing engine suitable for graduating steel rules for shop use. In 1851 Brown began manufacture of a vernier caliper that made it possible for mechanical artificers to measure to 0.001 inch. But manufacture of the micrometer caliper, the instrument most useful in precision shop work, began in America only in 1868.” (pg. 157).


- Available as a loan from the E.A.I.A. Library.

Hopp, Peter M. (date unknown). *Slide rules: Their history, models, and makers*. Astragal Press, Mendham, NJ.

Hoppus, E. (1820). *Hoppus’s tables for measuring or practical measuring made easy, by a new set of tables: Which shew at sight the solid content of any piece of timber, stone, &c. either square, round, or unequal-sided, and the value at any price per foot cube; also, the superficial content of*
boards, glass, painting, plastering, &c. with copious explanations of the uses and applications of the tables. Contrived to answer all the occasions of gentlemen and artificers, the contents being given in feet, inches, and twelfth parts of an inch. With some very curious observations concerning measuring of timber by several dimensions. 17th Edition. London.

International Correspondence Schools. (1921). How to use the steel square. David McKay Company, Philadelphia, PA.


Mechanics


Overman, Frederick. (1851). *Mechanics for the millwright, machinist, engineer, civil engineer, architect and student, containing a clear elementary exposition of the principles and practice of building machines*. Lippincott, Grambo, Philadelphia, PA.


**Milliners**
(also see Flax dressing, and Textiles)


**Mills and Milling (food)**


Storck, John and Teague, Walter D. (1952). *Flour for man’s bread: A history of milling*. Publisher unknown, Minneapolis, MN.

**Nails and Nailmaking**


**Papermaking**


**Patternmaking**
Also see foundry operations.


Barrows, Frank Wilson. (1906). *Practical pattern making: Fully illustrated by engravings made from special drawings for this work by the author*. The N.W. Henley Publishing Company, NY, NY.


**Pewter**


**Planemaking**


- See annotations in the collector’s guides bibliography.


- “Sargent manufactured planes for Sears under the brand names Fulton (low price), Dunlap (middle price), and Craftsman (high price). Sargent manufactured planes have the Sears code letters BL either on the cutter or the body of the plane.” (pg. 24).


- An important article on the use of the counter or backing out plane to make complex molding planes.


- An important English planemaker.


- See annotations in the collector’s guides bibliography.


- See annotations in the collector’s guides bibliography.


- See annotations in the collector’s guides bibliography.


- See annotations in the collector’s guides bibliography.


- See annotations in the collector’s guides bibliography.


- See annotations in the collector’s guides bibliography.


**Wing, Anne and Wing, Donald.** (date unknown). *The case for Francis Purdew or granfurdeus disputatus*. Self-published?

- See annotations in the European precedents bibliography.

**Wing, Anne and Wing, Donald.** (2005). *Early planemakers of London: Recent discoveries in the Tallow Chandlers and the Joiners Companies*. The Mechanik’s Workbench, Marion, MA.

- Top ten among the Davistown Museum favorites.

**Plastics**


**Pliers**


**Plumbing and Heating**


**Potters**

- The only guide to Maine potters of the 19th and 20th centuries.


**Quarrying**

Armstrong, Army. (2002). Film: *Granite by the sea: The history of granite quarrying on Vinalhaven Island*. Vinalhaven Historical Society, Vinalhaven, ME.


- See annotations in the Maine tool manufacturers bibliography.


**Railroads**


**Raw Material Preparation**


**Rope Making and Sail Making**


**Sawyers (Saws)**


Baker, Phil. (Fall 2005). Oh!! If a saw could talk. *The Fine Tool Journal*. pg. 15.


Batory, Dana Martin. (Fall 2009). In search of the modern tilting jigsaw. The Fine Tool Journal. 59(2). pg. 16-9.


- See annotations in the toolmakers and manufacturers bibliography.


Grimshaw, Robert. (1881). Saws; The history, and development etc. Philadelphia, PA.

Grimshaw, Robert. (1901). Saw-filing and management of saws: A practical treatise on filing, gumming, swaging, hammering, and the brazing of band saws, the speed, work, and power to run circular saws, etc., etc. H.W. Henley & Co., NY, NY.

- The Astragal Press has published a reprint of the 1880 original titled Grimshaw on Saws. It includes saw advertisements from the period.


(October 25, 1871). Ironmonger. 13. pg. 912.

James Leffel & Co. (1874, 1881). Leffel’s construction of mill dams and Bookwalter’s millwright and mechanic. Reprinted in 2001 by the Early American Industry Association, Murphy, NC.

- Mill dams, equipment for grist mills and saw mills.


- “---being a brief account of the History, Manufacture, Variety and Uses of saws for the cutting of ferrous and non-ferrous metals, hard plastics and rubber, wood, and other dense materials . . . A useful handbook and guide for the shop superintendent, production foreman, mechanic, or home craftsman.” (table of contents page).


Simonds Saw and Steel Company. (1929). *The cross-cut saw*. Simonds Saw and Steel Company, Fitchburg, MA.


Simonds Saw and Steel Company. (1937). *How to file a cross-cut saw*. Simonds Saw and Steel Company, Fitchburg, MA.

Simonds Saw and Steel Company. (1937). *Woodworking saws and planer knives: Their care and use*. Simonds Saw and Steel Company, Fitchburg, MA.


- A very important article on the history of the Disston Saw Company with excellent photographs; and an essential reference for any collector.
- The medallions on the earliest Disston saws (1840 - 1865 -- four variants noted) have an eagle on it. The earliest variant has the most detailed and esthetically pleasant drawing. After 1865, the medallion has the more well known scales. Taran illustrates 12 variations of the medallion with scales, which include numerous ways of spelling Philadelphia and the company name. After 1942, the word Philadelphia is dropped from the medallion and H. Disston and Sons becomes Disston.


**Scientific Instruments**


**Screwdrivers**


- See annotations in the Maine toolmakers bibliography.


**Sheet Metal Working**  
(also see Machinists)


**Ships, Shipbuilding, and Shipwrights**  
Also see Vol. 7, *Art of the Edge Tool*.


Dodds, James. (2001). *Rudyard Kipling’s the shipwrights’ trade*. Mystic Seaport Museum, Mystic, CT.


**Goldenberg, Joseph.** (1976). *Shipbuilding in colonial America*. University of Virginia Press for the Mariner’s Museum, Charlottesville, VA.

- In the top ten on our most important list.


- An invaluable and irreplaceable record of the ships built in Addison, Columbia Falls, Cherryfield, Harrington and Milbridge, Maine.


This is an original accounting book for the sloop Betsy, owned by Edward Robinson.
It is accompanied by three of his Journals of the individual accounts of customers? These
also contain miscellaneous newspaper clippings.

hundred years: 1816-1916*. The East Boothbay Series, #1, Winnegance House and Boothbay Region
Historical Society, Boothbay, ME.


New York, NY.

Steel, David. (1794). *The Elements and practice of rigging and seamanship*. Vol. 1. David Steel,
London, UK.

**Story, Dana.** (1964). *Frame-up! The story of Essex, its shipyards and its people*. Barre Publishers,
Barre, MA.

Story, Dana. (1971). *The building of a wooden ship “sawn frames and trunnel fastened”*. Barre
Publishers, Barre, MA.

Book Company, Gloucester, MA.

4-7, 9.

**Shoemakers**
(see cobblers)

**Silversmiths and Jewelers**

Self published, 68-36 108th St., Forest Hills, NY.

Coyne, John, ed. (1975). *The Penland School of Crafts book of jewelry making*. Bobbs-Merrill,
Indianapolis, IA.

De Matteo, William. (MCMLXVI). *The silversmith in eighteenth-century Williamsburg: An account
of his life & times, & of his craft*. Williamsburg Craft Series, Colonial Williamsburg, VA.


- Two hundred and ninety six biographies, essays on tools and styles of silversmithing, and a glossary.


**Steam Engines**


**Surgery**


**Surveying**


- Surveying instruments, compasses, octants, and scales.


- A nice Buff & Buff is on display in the Davistown Museum permanent collection in the main hall.


**Tanning**


**Textiles**


**Timber Framing and Housebuilding**

Benjamin, Asher. (1827). *The American builder’s companion; or, a system of architecture, particularly adapted to the present style of building*. R. P. & C. Williams, Boston, MA. Reprinted in 1969 by Dover Publications, NY.

Beaudry, Michael. (2009). *Crafting frames of timber*. Mud Pond Hewing and Framing, Montville, ME.


Berg, Donald J. (1986). *How to build in the country: Good advice from the past on how to choose a site, plan, design, build, landscape & furnish your home in the country*. Ten Speed Press, Berkeley, CA.


Condit, Carl W. (1968). *American building: Materials and techniques from the first colonial settlements to the present.* Chicago, IL.


**Tinsmithing**


- Available as a loan from the E.A.I.A. Library.


Available as a loan from the E.A.I.A. Library.


### Toolmaking

Also see the extensive citations in volumes 6 and 11 of the *Hand Tools in History* publication series.


- There is also an accompanying video: *The art of flint knapping: Video companion*.


**Whaling**


- The word whalecraft in Lytle’s title refers to tools used in the hunting and killing of whales rather than sailing craft utilized to capture the whales.
- Appendix A is currently considered the definitive listing of New Bedford area whaling tool (whalecraft) manufacturers. A number of these whalecraft manufacturers were practicing blacksmiths who also made edge tools for ship building. This appendix is summarized in a *Registry of Maine Toolmakers* appendix.
- For an interesting listing of the construction location of the New Bedford whaling ships, see “Ship Registers of New Bedford, Massachusetts.” A copy is located in the Davistown Museum files as is a copy of Lytle’s Appendix A: “Whalecraft Manufacturers of New Bedford and Fairhaven, Massachusetts.”


**Wheelwrights**
Woodworking
Also see planemaking, timber framing, coopers, and shipbuilding

Aber, R. James. (April 13, 1980). *A glossary of woodworking joints*. Written for a meeting of Crafts of NJ.


Bassett, James. (2009). *Chisels, chisels, chizzels by the old chisseler hisself*. The Shed and Shop, Derby, VT.


- Includes: The tool handle or stock maker’s clamp by Frank Bawden, The manufacture of a wooden bucket, by Richard A. Martin, The vanishing auto tool kit by Gene Kosche, The shrink rule by Herman Friedman, Stair builder’s slip stick by William B. Hilton, Cooper’s croze by Miner J. Cooper and others.

Eason, Julie Anne. (Summer 1998). The hand tools you use with your feet. The Fine Tool Journal. 48(1). pg. 8-10.

- The history, design and function of the shaving horse.


The Forest Products Laboratory. (1955). Wood handbook: Basic information on wood as a material of construction with data for its use in design and specification. Forest Service, U. S. Department of Agriculture, Washington, DC.


- This volume is among the most important information sources about early toolmaking in America.
- The following papers in this text are particularly relevant for an understanding of the evolution of toolmaking in New England and Maine.
  - Walker, Philip. Woodworking tools before 1700.
  - Hey, David. The development of the English toolmaking industry during the seventeenth and eighteenth centuries.
Kebabian, Paul B. *Eighteenth-century American toolmaking*.

Hagedorn, Nancy L. *Tools for sale: The marketing and distribution of English woodworking tools in England and America*.

Wing, Donald and Anne. *Planemaking in eighteenth-century America*.


Hummel, Charles F. *Using tools to earn a living and the Dominy family of East Hampton, Long Island*.

Underhill, Roy. "*The debate of the carpenter's tools*.

- Check the index of Vol. 8 to find additional comments on this text.


- See annotations in the European Precedents and Early Industrial Revolution bibliography.


- Known as Audels, this is the classic and most sought after carpenter’s reference. It is still very useful and is a perennial best seller at the Liberty Tool Co. There are never enough copies to satisfy the demand.
- Numerous editions exist, the earlier ones are the most interesting.


**Green-Plumb, Jonathon.** (2012). *Early European decorated tools from the woodworking and allied trades*. Stobart Davies Ltd., Ammanford, UK.


- Hamburg, Germany is important because many of their tools were copied in the United States by German immigrants.


Hodgson, Fred T. (1883). *The carpenters’ steel square, and its uses. Being a description of the square, and its uses in obtaining the lengths and bevels of all kinds of rafters, hips, groins, braces, brackets, purlins, collar-beams, and jack-rafter; also, its application in obtaining the bevels and cuts for hoppers, spring mouldings, octagons, stairs, diminished stiles, etc., etc., etc.*. Palliser, Palliser & Co., Bridgeport, CT.


- A reproduction of a listing of used carpenter’s tools done by Joseph Fuller upon the death of Henry Whipple and includes their value.


- This series replicates ancient carpenter’s tools in installments.
- Axe hatchet, adze, cooper’s adze, Korean adze, draw knife, round shave or scorper, peg cutter, witchet or rounding plane, spoke shave, plane, jack plane or fore plane, trying plane, floor plane, cooper’s long jointer and smoothing plane.


- Chisel, forming chisel or firmer, skew forming chisel, Dutch paring chisel, paring chisel, gouge, mortise chisel, axe mortise chisel, carpenter’s mallet, commander, mortising axe or post axe, post boring machine and twibil.


- Wheelwright’s reamer, centre bit, button bit, plug centre bit, Japanese annular auger, spiral auger, Cooke’s auger, gimlet or wimble, carpenter’s brace and bit, Dutch brace and bit, wheelwright’s burning iron and Chinese wood punch or reamer.


- See annotations in the Industrial Revolution bibliography.


- Sumptuous photos.
Neary, John. (December 1980?). Book reviews: Books on tools that evoke nostalgia and explain how to check the set of an adze. *Americana*. pg. 81-84.


  - Froe: “A cleaving tool for splitting cask staves and shingles from the block. Etymology: perhaps alteration of obsolete froward turned away, from Middle English; from the position of the handle.” (Merriam-Webster Dictionary online.)


Wyatt, E. M. (1936). *Common woodworking tools: Their history*. Milwaukee, WI.


**Wrenches**


Also see an extensive listing of Herb Page’s wrench articles in the US and New England Toolmakers bibliography.


This article is reprinted in the Davistown Museum online essay on the Boston wrenches.


Collector’s Guides, Handbooks, and Dictionaries


- This catalog of Astragal publications allows quick access to most of the important contemporary publications on tools and technology. Many of them are also listed within these bibliographies.


- One of the more frequently utilized references for checking values and identifications.


- One of the more important of the many types and editions of machinist's handbooks.


- See annotations in the Toolmaking Trades bibliography under machinists.

- See annotations in the Toolmaking Trades bibliography under machinists.


- See annotations in the Toolmaking Trades bibliography under machinists.


- Another of Cope's indispensable references.
- Note the enlarged edition listed below.


- See annotations in the Toolmaking Trades bibliography under coopers.


- A catalog of the collection of ironwork (wrought iron, steel, and cast iron objects, hardware, and tools) in the Musee Le Secq des Tournelles in Rouen, France.


- This wonderful text has drawings of the tools used for writing and drawing, printing, making books, painting, pictures without paint, clay and pottery, modeled and cast sculpture, carved sculpture, cabinetmaking, wood decoration, working with glass, fine metalwork, lapidary and beadmaking, thread preparation, weaving, knitting and knotting, needlework and leatherwork.


- Martin Donnelly's catalogs, florid language notwithstanding, provide a wealth of information about tools and toolmakers to his subscribers.
- The Davistown Museum's Center for the Study of Early Tools library contains a nearly complete collection of the many auction catalogs he has issued.


- Among the most important of all antiquarian references.


- The most important reference on English planemakers.


- See annotations in the Toolmaking Trades bibliography under woodworkers.


- The only guide to Keen Kutter tools.


Hume, Ivor Noel. (2001). *If these pots could talk: Collecting 2,000 years of British household pottery*. Chipstone Foundation, Milwaukee, WI.


- These have been issued as modern reprints by Peter Stockham.


- This essential reference is utilized throughout our inventory of tools on exhibit using the abbreviation DATM.
- A new version is now published, see Nelson below.


- A Xerox of parts of this text is in stock.

Knight, Charles. (1851). *Cyclopaedia of the industry of all nations*. George P. Putnam, NY, NY.


- The definitive reference on the technological history and the tools and inventions of the 19th century, with over 5,000 engravings. This is the counterpart to the Encyclopedia Britannica when it comes to tools. If you want to know what a cliseometer is, look here.


- Another edition of the above reference.


Moore, R. (1888). *The universal assistant, and complete mechanic, containing over one million industrial facts, calculations, receipts, processes, trade secrets, rules, business forms, legal items, etc., in every occupation, from the household to the manufactory.* J. S. Ogilvie, NY, NY.


- This essential reference is referred to as DATM (1999) when we have used it in our tool inventory listings and the Registry of Maine Toolmakers.
- The most important and useful reference in this bibliography.


- The best guide to Revolutionary era artifacts.


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- This text is useful for identifying Native American lithics and other tools, including those in our museum collections.


- The single most important reference on American planemakers. The first edition was published in 1983; the fourth edition in 2001.


- This, the latest edition is the most up-to-date.


- Maison de l'Outil et de la Pensee Ouvriere, Troyes, France.
- Vol. 6 of the *Hand Tools in History* publication series contains some photos taken at this museum.


- Interesting background information about the evolution of the Astragal Press, the most important source of information on American planemakers and their maker's stamps as well as publisher of many important books on tools.


- The first of the guides to American planemakers.


- The first comprehensive guide to woodworking tools. A copy of this reference is available for visitors to browse in the main hall of the Davistown Museum.
- Note that there is now a revised edition published in 1997.


- The most comprehensive reference on the subject.

Schulz, Alfred and Schulz, Lucille. (1989). *Antique and unusual wrenches*. Published by Alfred & Lucille Schulz, R.1 Box 151, Malcolm, NE 68402.

- The classic guide to wrench makers and long a standard reference for collectors. A copy of this reference is available for visitors to browse in the main hall of The Davistown Museum.


- The best general dictionary of American hand tools. A copy of this reference is available for visitors to browse in the main hall of The Davistown Museum.


- See annotations in the Davistown Museum online Children's bibliography.

Smith, Joseph. (1816). *Explanation or key, to the various manufactories of Sheffield, with engravings of each article*. J. Smith, Sheffield, England. Reprinted in 1975 by the Early American Industries Association, South Burlington, VT.

- See annotations in our European Precedents and the Early Industrial Revolution bibliography.


- These two volumes are the definitive reference for tracing the development of the steel hand plane in the United States and includes detailed descriptions, background histories, and excellent photographs. These volumes represent a lifetime of work by the most knowledgeable scholar on transitional and metallic planes in America and are the most essential of all references for the collector of planes.
- Smith begins the first volume with a discussion of the history of cast iron planes and includes a picture of the earliest known Roman plane found at Pompeii, dating to 79 A.D., a smooth plane from the 14th or 15th century and a picture of the first American cast iron plane made in 1827 by Hazard Knowles. Excellent photographs throughout both volumes.
- Smith has a brief introduction which provides the context for placing the development of the metal plane in America as occurring after craftsmen had relied on traditional wooden planes.
for many generations: “The ‘American System’ of manufacture had its beginning in 1813 when Simeon North received the first government contract to specify interchangeable parts in the manufacture of guns at Middletown, Connecticut.” (pg. 8).


  - The only comprehensive reference on Stanley rules.


  - The three volumes are titled: *Properties and Selection of Metals, Heat Treating, Cleaning and Finishing, and Machinery.*
  - A definitive reference for the foundryman and patternmaker. This set was formerly owned by the Mineloa Pattern Works, Inc., Garden City Park, Long Island, NY and bought from the head patternmaker, Eric R. Swedberg, who had retired to Dover, NH.


- The most comprehensive guide to Stanley tools. This text represents a lifetime of study of Stanley tools and is a major contribution to the literature on Stanley tools. The Walters publications are the tool references most frequently used by the Liberty Tool Co.


- A second edition was published in 1997 without the wedge profiles but with more biographical information on 95 makers/dealers and notes on how to determine which stamps on a plane are for makers and dealers.


- This text contains the most extensive descriptions and illustrations of plane profiles in the literature. It is indispensable for identifying plane types. A copy of this reference is available for visitors to browse in the main hall of the Davistown Museum.

Tool Catalogs
Some English company catalogs are included below and the individual company listings may contain citations for the companies catalogs.


Bartholomew, H. S. (ca. 1889). Price-list of breast drills, braces, ferrules, etc., etc. 190. H. S. Bartholomew, Bristol, CT. Reprinted in September 1991 by ATTIC.


The Chapin-Stephens Co. (no date). *Catalog: A plane statement. Read it. 86 years experience.* Pine Meadow, CT.


Colwell Cooperage Company. (no date). *This trade mark Colco N.Y. stands for efficient tools, stock and supplies for shipping containers: Barrels, boxes, pails, tubs, crates, baskets. General catalogue no. 26.* Colwell Cooperage Company, Foot Jersey Avenue, Jersey City, NJ.

Colwell, E. D. (no date). *Everything the cooper needs: Catalogue of bungs.* E. D. Colwell, 412-418 Greewich St., NY, NY.


Davis Level & Tool Co. (ca. 1880). *Price list of the Davis Level & Tool Co. Springfield, Mass. manufacturers of hardware tools, adjustable spirit plumbs, levels, and inclinometers, iron pocket levels, builders’ levels and level glasses, saw clamps, improved iron bench planes, calipers and dividers, surface gauges, machinists’ screw drivers, etc. hack saws and breast drills, thread gauges, &c., &c.* Reprinted in May 1975, by Roger K. Smith, Lancaster, MA.

- Reproductions of some of the pages in this price list can be seen in the Davistown Museum online information file on Davis Level & Tool Co.


- Reproductions of a couple of the catalog pages can be seen in the Davistown Museum online information file on C. Drew & Co.

Eagle Square Manufacturing Co. (no date). *Complete line of steel squares made by the Eagle Square Manufacturing Co., South Shaftsbury, Vermont. What the scales and tables are and how to use them.*

- This appears to be a reprint, but has no information other than a stamp stating “ACTIVE Antique Crafts and Tools in Vermont” on the back.


Farm Tools, Inc. (no date). *Special Fordson implement catalog no. 20.* Farm Tools, Inc., Mansfield, OH.


**Hammacher, Schlemmer & Co.** (no date). *Piano, organ and violin tools, catalog no. 142.* Reprinted by Martin J. Donnelly Antique Tools, Bath, NY.


- Coopers’ tools.

The Irwin Auger Bit Company. *How to select, use, and care for wood bits.* O.T. Printing, Cols., OH.


**Jackson & Tyler.** (no date). *Price list, Jackson & Tyler tools and supplies of all kinds.* Reprinted in September 1993 by The Special Publications Committee, Mid-West Tool Collectors Association.


- The most renown manufacturer of augers and auger bits.


**The Lufkin Rule Co.** (1888). *Lufkin measuring instruments, exerpts from trade catalogues, 1888 to 1940, documentary and arrangement by Kenneth D. Roberts.* Reprinted in April 1983 by Clark-Briton Printing Co., Cleveland, OH.


Martin, Glenn L. (1953). *Catalog of exhibit of antique tools at the University of Maryland, from the collection of Herbert T. Shannon.* University of Maryland, MD.

Mathieson, Alex & Sons, Ltd. (1899). *Saracen Tool Works, East Campbell Street, Glasgow. Established, 1792. Warehouses, Edinburgh, 23 Cockburn Street. Liverpool, 41 Byrom Street. Selections from the illustrated price list of wood working tools manufactured by Alex. Mathieson &


Niagara Machine & Tool Works. (no date available). Catalog no. 50: Tools and machines for tinsmiths and sheet metal workers, presses, shearing machines, punches, forming rolls, tinsmiths’ tool, etc. Reprinted by Lindsay Publications, Bradley, IL.


- Yankee Tool is now part of the Stanley Tool Company.
- To find more information on “Yankee” screwdrivers, see the Davistown Museum online Zachary T. Furbish information file.


Ohio Tool Company. (1900). Ohio adjustable planes. Ohio Tool Company, Charleston, VA.


Oldham, Joshua. (1887). Catalogue and price list: Joshua Oldham, manufacturer of saws, machine


Richmond Cedar Works. (Feb. 1, 1926). Richmond Cedar Works: Richmond, VA.U.S.A. Manufacturers of Virginia white cedar wooden ware, ice cream freezers, washing machines etc. Price list. Richmond Cedar Works, Richmond, VA.


Sargent & Co. Wood bottom and iron planes. Reprinted in May 1975 by Roger K. Smith, Lancaster, MA.


Sargent & Co. Duralumin and steel carpenter squares. New Haven, CT.


Sears, Roebuck and Co. *How to select and maintain Craftsman circular saw blades, special purpose blades, dado sets, and saw blade stabilizers.*


Simmons Hardware Company. (1930). *E.C. Simmons Keen Kutter cutlery and tools.* Simonds Steel and Saw Co., Fitchburg, MA.


Simonds Saw and Steel Company. (1937). *Woodworking saws and planer knives: Their care and use.* Simonds Steel and Saw Co., Fitchburg, MA.


Simonds Saw and Steel Company. (1937). *How to file a cross-cut saw.* Simonds Steel and Saw Co., Fitchburg, MA.

Simonds Saw and Steel Company. (1937). *The cross-cut saw.* Simonds Steel and Saw Co., Fitchburg, MA.


• Established 1850, incorporated 1892, trademarks: PERFECT HANDLE, SharpenEzy, Gittatit, ENCHASED, ULTIMATE.

Snow & Neely Co. *“Our Best” lumbering tools.* Snow & Neely Co., Bangor, ME.

South Bend Lathe Works. (1944). *How to run a lathe.* South Bend Lathe Works, South Bend, IN.


Stanley Rule & Level Co. (January 1879). Price list of U. S. standard boxwood and ivory rules, plumbs and levels, try squares, bevels, gauges, mallets, iron and wood adjustable planes, spoke shaves, screw drivers, awl hafts, handles, etc. manufactured by the Stanley Rule and Level Company, New Britain, Conn., U.S.A. Reprinted in May 1975 by Ken Roberts Publishing Company, Fitzwilliam, NH.

Stanley Rule & Level Co. (Jan. 1, 188?). Bailey’s patent adjustable bench planes and other improved carpenters’ tools manufactured by the Stanley Rule and Level Company, New Britain, CT. Reprinted in April 1975 by Ken Roberts Publishing Company, Fitzwilliam, NH.


Stanley Rule & Level Co. (January 1898). Price list of U. S. standard boxwood and ivory rules, plumbs and levels, try squares, bevels, gauges, mallets, iron and wood adjustable planes, spoke shaves, screw drivers, awl hafts, handles, etc. manufactured by the Stanley Rule and Level Co. New Britain, Conn., U.S.A. Reprinted in May 1975 by Ken Roberts Publishing Company, Fitzwilliam, NH.


The Stanley Rule and Level Plant. (1921). “55” plane and how to use it. The Stanley Rule and Level Plant, New Britain, CT.

Stanley Tools. (no date). *Read this before you use Stanley planes: A plane is no better than its cutter*. Stanley Tools, New Britain, CT.


Stanley. *Stanley rafter and framing squares*. Stanley, New Britain, CT.


Stanley. Insert: *Read this before you use: Combination plane no. 46*. The Stanley Rule & Level Plant, New Britain, CT. Reprinted in September 2002 by the Midwest Tool Collector’s Association.


Steel Shot & Grit Co. (no date). Catalog: *Certified steel abrasives . . . Samson steel shot . . . for sawing and polishing*. Steel Shot & Grit Co., Pittsburgh, PA.

Stevens Arms & Tool Co., J. (1898). *Shop-pointers & all steel tools*. J. Stevens Arms & Tool Co., Chicopee Falls, MA.


Underhill Edge Tool Co. (1859). *Wholesale Prices of Chopping Axes, Carpenter’s, Cooper’s, Butcher’s, and Many Other Kinds of Mechanics’ Tools, Manufactured by the Underhill Edge Tool Company*. Underhill Edge Tool Co., Nashua, NH.


Union Twist Drill Co. (1912). *Catalog No. 100. milling and high power cutters: High speed steel*.


Universal-Cyclops Steel Corporation. *Tool steel catalog.*


Walter’s, Wm. P. Sons. (no date). *Tool chest, scroll saws, model engines, carving tools, etc.* Reprinted in 1983 by Mid-West Tool Collectors Association.


The Western Tool and Manufacturing Co. *Fourteenth edition catalog and price list.* Winters Company, Springfield, OH.


Weston Electrical Instrument Co. (1911). *Construction: Weston switchboard wattmeters synchroscopes and power-factor meters: manufacture, construction and design of Weston A. C. switchboard indicating instruments: Sections 1 and 2 of Catalog 16.* Weston Electrical Instrument Co., Newark, NJ.

Weston Electrical Instrument Co. (1911). *Weston switchboard indicating wattmeters: Direct-current, single-phase and polyphase wattmeters. Section 3 of Catalog 16.* Weston Electrical Instrument Co., Newark, NJ.

Weston Electrical Instrument Co. (1911). *Weston switchboard synchroscopes: Section 4 of Catalog 16.* Weston Electrical Instrument Co., Newark, NJ.
Weston Electrical Instrument Co. (1911). *Weston switchboard power-factor and frequency meters: Sections 5 and 6 of Catalog 16.* Weston Electrical Instrument Co., Newark, NJ.

Weston Electrical Instrument Co. (1911). *Weston switchboard alternating-current ammeters and voltmeters: Section 7 of Catalog 16.* Weston Electrical Instrument Co., Newark, NJ.


Wilkinson, John Co. (no date). *Catalogue No. 88: Price list of tools and machines for metal and wood workers.* The John Wilkinson Co., 77 State St., Chicago, IL.


Witherby, T.H. *Price list of Winsted Edge Tool Works, chisels, drawing-knives, gouges, etc.* The Case, Lockwood, & Brainard Co. Print, Hartford, CT.


Woodcraft Supply Corp., 313 Montvale Ave., Woburn, MA.

- The Davistown Museum has in the library the following Woodcraft catalogs:
  - 1974, cover missing with format very similar to 1977
  - Spring-Summer 1977
  - Fall-Winter 1978
  - Winter 1981
  - 1982
  - 1983 Spring Supplement
  - 1987-88 Supplement
  - March 1997


Tool Journals, Newsletters, and Auction Listings


American Woodworker.
www.rd.com/americanwoodworker/action.do?categoryId=7000&siteId=2222


- The Davistown Museum has in the library the following copies of: Bulletin: The Association for Preservation of Technology.

The Anvil’s Ring. ABANA, PO Box 816, Farmington, GA 30638-0816. www.abana.org

Carpenter. United Brotherhood of Carpenters and Joiners of America.
www.carpenters.org/carpentermag/

- The Davistown Museum has in the library the following copies.
- June, 1928, XLVII(6).


- The EAIA’s Chronicle is one of the most important contemporary sources of information about the tools and trades of pre-industrial North America.
- The Chronicle began publication in 1933 and is still issued monthly. The Davistown Museum has two volumes of bound issues at the Hulls Cove office and more recent single issues in the library stacks at the Museum.
- Please help the museum by donating back copies of this journal that we do not have in stock.
- The Davistown Museum has in the library the following copies:
  - Volumes 1 through 11, November, 1933 to December 1958.
  - Vol. 31, Nos. 2 and 3, June and September 1978.

- A monthly journal devoted to agriculture, horticulture, floriculture, and to domestic and rural economy. Illustrated with engravings of farm houses and farm buildings, improved breeds of cattle, horses, sheep, swine and poultry, farm implements, domestic utensils, &c. An index is included.

Blacksmith’s Journal. PO Box 1699, Washington, MO 63090. www.blacksmithsjournal.com

Diecutting Diemaking Intelligence Newsletter. DDIN International.

- A quarterly 72 page publication devoted to all elements of the diecutting process.


- An excellent source of information on antiquarian tools, with specific articles on tool related topics in every issue. For example, vol. 49, no. 2, fall 1999, has an important article on Henry Mercer, his life and his museum in Pennsylvania.
The Davistown Museum is seeking back issues of this important information resource. Numerous articles from the *Fine Tool Journal* are being added to these bibliographies. Thank you to Clarence Blanchard for his donation of many back issues to the Museum.

Most back issues of the journal are in stock at the Museum’s Davistown Library in Liberty.

The Davistown Museum has in the library the following copies:

- Vol. 45, Nos. 2 and 4, Fall 1995 and Spring 1996.
- Vol. 46, Nos. 1, 2 and 4, Summer, Fall 1996 and Spring 1997.
- Vol. 47, Nos. 1, 2 and 4, Summer, Fall 1997 and Spring 1998.
- Vol. 56, Nos. 1, 2 and 4, Summer and Fall 2006, Spring 2007.


- The Davistown Museum has in the library the following copies:
  - Vol. 1, No. 3, Summer 1976
  - No. 29, July/August 1981
  - No. 32, Jan/Feb 1982 (2 copies)
  - No. 37, Nov/Dec 1982


- Another excellent source of information about tools and trades. The Davistown Museum is seeking back copies of this publication.
- The Davistown Museum has in the library the following copies:
  - No. 119, June 2005


*MVWC Newsletter*. Missouri Valley Wrench Club, Newsletter Editor, 659 E. 9th, York, NE 68467-3109.
Muzzle Blasts. Maxine Moss Drive, Friendship, IN 47021.
nmlra.org/merchandise.htm#Muzzle%20Blasts%20Back%20Issues

- This journal is published monthly by the National Muzzle Loading Rifle Association. It focuses on black powder firearms and often contains articles on gunmaking, reproductions of early American tools and the history of the muzzleloading era.

Muzzleloading and Traditional Living Magazine. 82 Little Houston Brook Rd., Concord Twp., Maine 04920. www.muzzleloadingandtraditionalliving.com

Nautical Research Journal. Published Quarterly by the Nautical Research Guild, 19 Pleasant Street, Everett, MA 02149.

- The Davistown Museum has in the library the following copies:
  - Vol. 10, Nos. 1, 3 and 4, 1959.
  - Vol. 12, Nos. 2 and 3. (Partial copies only).
  - Vol. 15, Nos. 2 and 4, Summer and Winter 1968.
  - Vol. 16, Nos. 1, 2 and 4, Spring, Summer and Winter 1969.
  - Vol. 17, Nos. 1, 3 and 4, Spring, Fall and Winter 1970.
  - Vol. 18, Nos. 1, 2 and 4, Spring, Summer and Winter 1971.
  - Vol. 19, Nos. 2 and 4, Summer and Winter 1972.
  - Vol. 20, Nos. 1, 2 and 4, October 1973, January and October 1974.
  - Vol. 24, Nos. 1 and 4, March and December 1978.
  - Vol. 27, Nos. 1, 2 and 4, March, June and December 1981.
  - Vol. 28, Nos. 1, 3 and 4, March, September and December 1982.
  - Vol. 29, Nos. 1 and 2, March and June 1983.
  - Vol. 31, Nos. 1, 2 and 4, March, June and December 1985.
  - Vol. 34, Nos. 2 – 4, June, September and December 1989.
  - Vol. 35, Nos. 1 and 2, March and June 1990.

The Pine Tree Shilling: Opening a Window on Life in the American Colonies - 1650-1780. 507 Meany Rd., PO Box 1005, Charlestown, NH 03603-1005. ljmillert@turbont.net.
- Published 4 times a year by living history re-enactors. This newsletter includes articles on how to make and use historically accurate tools. It focuses on the every day life in the American colonies.

*Plane Talk: The Quarterly Journal of Plane Collecting and Research.* PO Box 338, Morristown, NJ 07963-0338. Published by the Astragal Press.

- This journal is no longer in publication. The Astragal Press offers a text containing several of the most recent volumes.

*Popular Woodworking.* www.popularwoodworking.com


- “A bimonthly journal in print since 1976, online since 1997, in support of small farmers and loggers who use draft horse, mule and ox power.”


- Published six times a year.


- This newsletter began in the summer of 1999 and is published four times a year. The Davistown Museum library has a complete collection through __________.

*The Spinning Wheel Sleuth.* PO Box 422, Andover, MA 01810, 978 475-8790. www.spwhsl.com

- Began publication in 1993; currently published four times a year.

*Stanley Tool Collector News.* Published 3 times a year by The Tool Merchant, 208 Front St., Marietta, OH 45750.

- The first issue was printed in the fall of 1990 and has now been discontinued.


- The Davistown Museum received a donation of 25 issues from the Columbia University Libraries.
  - January, April, July 1993. 34(1-3).

Tool Chest. Hand Tool Preservation Association of Australia, PO Box 1163, Carlton, Victoria, Australia 3053. home.vicnet.net.au/~toolclub/pub.htm

- Published four times a year along with The Sharp Edge newsletter.

Tool Collectors’ Picture Book. Early Trades & Crafts Society, Long Island, NY.

- The Davistown Museum has in the library the following copies:

Tool Talk. PAST (Preserving Arts and Skills of the Trades), 1445 Fourth St., Berkeley, CA 94710-1335. pasttools.org/

- Published four times a year.

Tool Talks. Stanley Tools, New Britain, CT.


- Published quarterly.
- Copies of this reference are available for visitors to browse in the Museum Library.

Tools and Trades. The Journal of the Tool and Trades History Society, The Membership Secretary, Woodbine Cottage, Budleigh Hill, East Budleigh, Devon EX9 7DT, United Kingdom. www.taths.org.uk

- TATHS is the quarterly illustrated newsletter for the society.

The Tool Shed. Journal of the Collectors of Rare And Familiar Tools Society (CRAFTS), 38 Colony Court, Murray Hill, NJ 07974. www.craftsofnj.org/toolshed/tool_shed.html

Woodworker: The Magazine for the Craftsman in Wood.

- The Davistown Museum has in the library the following copies:
  - August 1976, 80(993).
The Davistown Museum has in the library the following copies:
  o  Summer 1982, 4(1).

The Davistown Museum has in the library the following copies:
  o  March 1988, 5(2).

**Auction Listing Catalogs**

Auction catalogs are a particularly useful source of information on antiquarian tools and their value, especially if illustrated. The following listing is under construction and includes only a few of the catalogs in the Davistown Museum collection. One of the best sources of tools on the web are auctions.

**Baxter Auction Gallery, Indianapolis, IN:**


**David Stanley Auctions**, Stordon Grange, Osgathorpe, Loughborough, UK. *Special collective sale by auction of quality antique woodworking & allied trades tools.*

  o  October 4, 1983.


**Horst Auction Center, Ephrata, PA:**


**Johnny King Auctioneers, Ware Shoals, SC:**

  o  Sept. 7, 9, 16, 20.

- The Davistown Museum has a nearly complete collection of the many auction catalogs he has issued.
- See annotations in the collector’s guides bibliography.

Richard A. Bourne, Co., Inc., Corporation Street, Hyannis, MA:

- Tuesday, September 16, 1980.

Tony Murland: International Tool Auction catalog of items: England:


Toolshop International Auction Catalogues.78 High Street, Needham Market, Suffolk, IP6 8AW, England. www.antiquetools.co.uk/auction.html

- “Our catalogues are the finest tool catalogues in the world and have become a benchmark reference publication for all those individuals who have an interest in antique tools.”

Your Country Auctioneer:

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