

THE POOLS OF EASTON, MASSACHUSETTS

A Family of Mathematical and Philosophical Instrument Makers

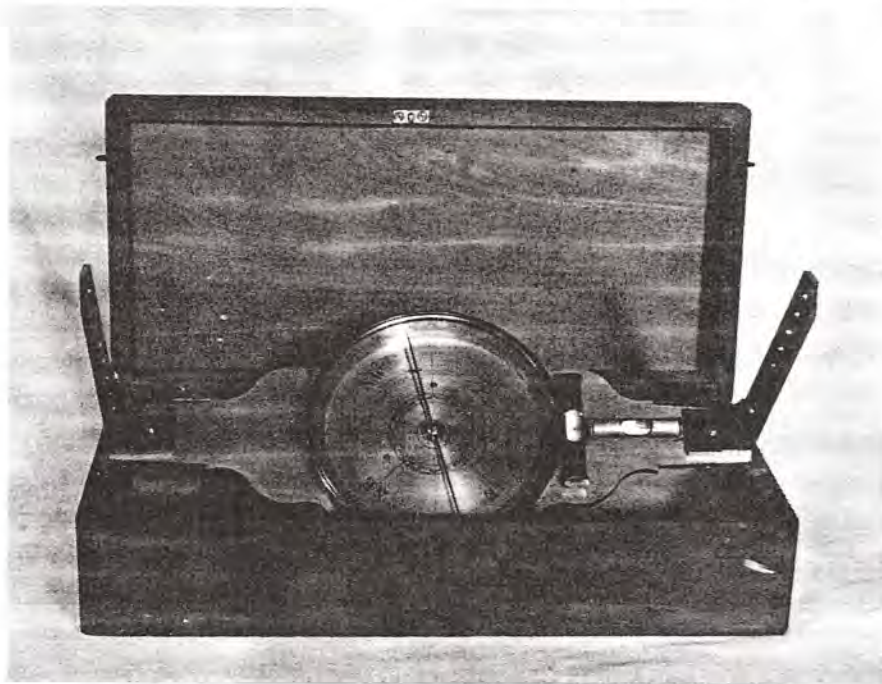


Figure 1. The Hayward Compass by J. & H. Pool—new in the box—this unused compass was purchased from the Hayward family. The Hayward's were next-door neighbors of the Pools and were surveyors. The successor firm, Hayward-Boynton-Williams, still exists. "In fact, they surveyed for, and designed, my septic system when I moved to Easton 15 years ago to build my house. At that time I had never heard of the Pool family." RV

by
Robert Vogel
and Edmund Hands

Easton's Ames Shovel Company is justly famous for supplying the tools that dug the canals and built the railroads during America's Industrial Revolution. While Ames' shovels provided the brawn, South Easton, Massachusetts' Pool family helped supply the "high tech" brains for that construction. Beginning about 1825, the Pools battled foreign

competition to produce some of the finest surveying equipment made in America during the 1800's.

John Pool, the second son of Samuel Pool of Abington, was born in 1770. When he married Mary Brown of Abington in December, 1794, John was already noted as being "of Easton."¹ He is first recorded as owning property in Easton in September, 1795, where the deed lists his occupation as "trader."² Like his



Figure 2. A protractor patented in 1830 by John Pool, Jr. All photographs by the authors.

father before him he lived past 90 and served as a church deacon. He lived west of the Hayward homestead on what is now Route 106 across from the Southeastern Regional School where his house and those of his sons still stand. The Poole genealogy confirms that he was a merchant who was prominent in local and county politics serving as Selectman, Town Clerk and Treasurer, Moderator and Justice of the Peace.³ Two of John's sons, John Jr. and Horace Minot Pool founded the company that produced surveying instruments and levels.

Where Did the Pools Learn to Make Instruments?

The first of several Pool mysteries is where John and Horace learned the complex and delicate trade of instrument making.

John, Jr., was born in 1796 at Easton and normally would have apprenticed from 1810 to 1817. Horace Minot was born in 1803 and would have apprenticed from 1817 to 1824.⁴ Located twenty-five miles southwest of Boston between the larger towns of Bridgewater and Taunton, Easton was an unlikely place to learn the instrument trade. Neither the Ames Shovel Company nor the various iron and shoe making businesses in Easton at the time could have provided the training needed for the instrument making trade. However, John Pool, Senior's, mercantile business and political and family connections made it possible for his sons to be trained outside Easton.

Gedney King (1770-1839) and Samuel Thaxter (1769-1842) of Boston have both been discussed as possible masters.⁵ The evidence to support an apprenticeship with Gedney King is an early Pool instrument with a Gedney King and Son label in the box,⁶ but analysis of a larger sample of boxes shows that the Pools may have had marketing arrangements with several Boston companies. The evidence for Samuel Thaxter as the Pool's master is that branches of the Thaxter family with close ties to Samuel were resident in Abington where the Pools also had family connections.⁷ At this point, both King and Thaxter remain likely contenders for the role of master for at least John Pool, Jr., but the evidence for either man is not compelling.

Another possible teacher is Thomas Kendall who was born in Foxborough, Massachusetts, in 1786. Kendall became a blacksmith and machinist before moving to Millbury, Massachusetts. He invented a machine that could mark the graduations on any cali-



Figure 3. A .H.M. Pool nine-inch wooden level with a brass face and the original paper label. Levels were the mainstay of the Pool business.



Figure 4. Twenty-seven inch carpenters level with an inclinometer feature by J. & H.M. Pool.

ber of thermometer tube and is generally credited with being the first person to mass produce thermometers in America. An 1817 newspaper advertisement shows that Kendall produced "thermometers, surveying compasses, protractors, spirit levels, and engraved mechanics stamps," all products that would later be produced by the Pool family. Kendall, however, moved to New Lebanon, New York, in June, 1820. Thus, while it is possible that John Pool, Jr., apprenticed with Kendall, it is unlikely that Horace Pool apprenticed there.⁸

A plausible suggestion is that John, Jr., apprenticed elsewhere and then returned home to open the workshop and train his

younger brother Horace. At this point in our research this seems to be a likely hypothesis. One fact that may support this view is that the two young men had already established a workshop on their father's property when John, Jr., bought title to that land in 1825.⁹

For two months in 1814 John, Jr., was a corporal in a militia unit serving in South Boston as a coast watch. This seems to indicate he was not an apprentice during this time or, at least, shows that he was resident in Easton during a time some have suggested he was apprenticing in Boston. The evidence is not conclusive because Corporal John could have been apprenticing in Boston with a brief leave to serve on this light duty.¹⁰ However, since the rank of corporal bore at least some duty above that of an ordinary soldier and was an elected or appointed position, it seems more likely John was at home when the unit was formed and remained with it during its time of service.

The time between his militia service in September and October, 1814, at age 18, and his "engagement" with Zibeah Packard of Bridgewater some time in the second half of 1821 is a gap in the record that fits perfectly the time needed for a full apprenticeship. John and Zibeah were married in January, 1822, and he and his wife were certainly resident in Easton in April, 1822, when an eleven day old son was buried in Pine Grove Cemetery.¹¹ The timing of this hypothesis would allow John, Jr., to be the teacher of his brother Horace while estab-



Figure 5. A surveyors compass with a sighting tube, ball and socketed head and tangent fine-screw adjustment by H.H. Pool. There is a S. Thaxter & Son trade label in the lid.

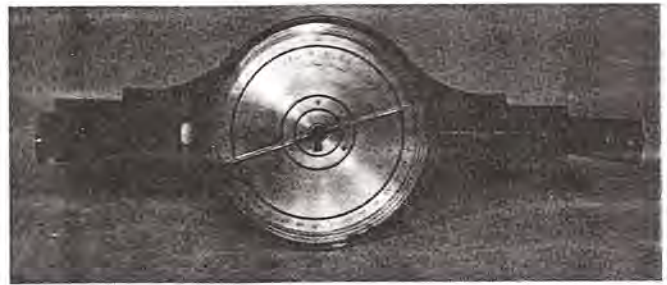


Figure 6. A J. & H.M. Pool surveyors compass with a plain face from ca. 1830.

lishing his workshop and its necessary equipment.

Further evidence to support the idea that John completed his apprenticeship in 1821 or 1822 and returned to teach his brother Horace is the 1825 deed mentioned above. There John Pool, Sr., deeded two pieces of land to John Pool, Jr., "mathematical instrument maker," not to both brothers as a partnership. The deed included a piece of land "on which the workshop of the sd. John and H. M. Pool stands." John was then 29 and Horace was 22. Deeding the property to John, Jr., and not to the two brothers as a partnership seems to indicate a subservient position for Horace who would be mid-way in an apprenticeship begun in 1821 or 1822. Chaffin's *History of Easton* notes, "in the year 1828, J. & H. M. Poole began the manufacture of mathematical instruments on a small scale," just when Horace would be finishing his formal apprenticeship.¹²

J. & H. M. Pool Company

Whether begun in 1825 or 1828, the J. & H. M. Pool Company offered a wide variety of surveying and mechanical drawing equipment. In 1830 John Pool, Jr., patented a geometrical protractor. While not truly innovative, the design did indicate the capacity for excellent work. Surveyors compasses, pocket compasses, chains, and a sighting level all survive with the stamp of J. & H. M. Pool. However, Chaffin noted that, "a strong prejudice for foreign-made instruments was only slowly overcome," by the Pools. Spirit levels, among the least expensive offerings of the company, seem to have been accepted immediately. Pool spirit levels were produced throughout the company's history, but a large percentage bear the J. & H. M. Pool mark despite the fact that it was used for less time than the later H. M. Pool mark. The demand for this simple building tool probably carried the company through slack early demand for its more expensive surveying equipment. In 1837 the company

exhibited six levels at the Massachusetts Charitable Mechanics Association Fair at Faneuil and Quincy Halls.¹³

At least two compasses are known in boxes with a J. & H. M. Pool paper label. This may represent early efforts to market their product directly and may have been a point of contention between the brothers. A compass with both a J. & H. M. Pool label and one from F. W. Lincoln & Co. may represent a marketing arrangement from the period 1839 to 1841, or it could be a later addition applied during a repair. F. W. Lincoln had been an apprentice with Gedney King and Son before establishing a separate business in 1839.

On April 1, 1837, the company employed 6 people with a value of instruments produced of \$4,500 and an invested capital of \$3,000.¹⁴ Research to be presented later shows it is likely that other Pool family members were working for the firm. These 1837 figures show a substantial business with a solid profit, but the company was on the brink of a dramatic and mysterious split.

In January, 1841 John Pool, Jr., sold his interest in the instrument business to his brother Horace. On February 8, 1841 John

Pool, Jr., bought land on what is now the west side of Route 138 at its junction with Route 106 about a half mile east of the old shop.¹⁵ Soon John, Jr., established his own instrument business on his new property.

One of the difficulties in studying the Pool split has been a lack of evidence, but recently new evidence has served to further complicate the issue. On Friday, April 20, 1888, Aaron Greenwood, a surveyor from Gardener, Massachusetts, noted in his diary that he "sold my old first compass to Caleb Merriam." The introduction to the transcribed version of his diary adds:

... in 1836 he [Greenwood] began to study surveying on his own. When he had learned all he could from the books available and practiced with the instruments he had contrived, he went to Boston and purchased his first set of professional surveying instruments. These were a compass, tripod, measuring chains and stakes.¹⁶

A compass with a penciled notation "Aaron Greenwood-1838" is still in existence. The label in the box is from Gedney King and Son, a firm that was only in existence from 1837 until Gedney King's death in 1839. The compass itself is inscribed J. Pool & Co. A second J. Pool & Co. compass in the collection of one of the authors bears a similar Gedney King and Son label. Thus, two of only three closely

dated Pool compasses shows that John Pool, Jr., was selling compasses under his own name two to four years before he sold his interest in J. & H. M. Pool to his brother Horace.¹⁷

The cause of the split is unknown. The Panic of 1837, America's first great depression,

son who would have to be provided for although he was only seven at the time. After the split we believe John Murray remained with his uncle while Charles joined in his father's business. When John died deeply in debt in 1865, family members formed the majority of his creditors with Horace owed the most of all. While the debts may have strained the family relationship, the fact that the loans were made shows that the relationship remained intact.¹⁸

John Pool and his Company

As mentioned previously, compasses bearing two variations of the John Pool name exist. This indicates that John continued to produce mathematical instruments just as he had done with his brother. In addition to the compasses a large brass diagonal rule stamped Pool and Company may also date from this period although it may belong to the original shop being run by Horace. John appears to have continued as a competitor to his brother for at least a decade. The record of his second marriage to Levarna (Packard) Smith of Foxborough in 1845 calls him a mathematical instrument maker. His shop is listed on an 1851 map as making mathematical instruments, and he is called a mathematical instrument maker in the 1850 census.¹⁹ Both of John's oldest sons are also listed as mathematical instrument makers in that census.



Figure 7. Compass transit on a display stand by H.M. Pool.

may have strained the partnership or there may have been family or personal problems. However, there are signs that the split may have been amicable. John's sons John Murray and Charles were 16 and 14 in 1841, just the age when their apprenticeships could begin. Horace also had a

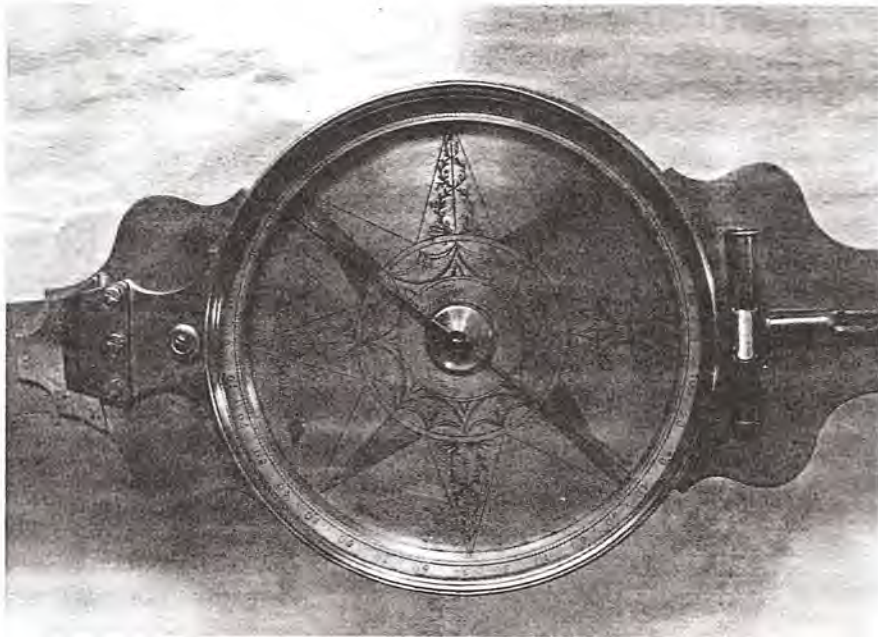


Figure 8. Closeup of a surveyor's compass illustrated in Figure 9 showing the engraving.

By 1853 the business had been renamed Pool and Son, and it had apparently diversified its production into philosophical instruments such as thermometers and barometers. When Charles B. Pool was married in 1854, he was listed in town records as a thermometer manufacturer.²⁰ If John Pool, Jr., had apprenticed with Thomas Kendall of Millbury, then the older Pool may have taught his son the art of thermometer making. However, Charles may have learned about thermometers and barometers from Frederick Pool of Boston who flourished from 1829 to 1845. Frederick Pool's family connection to the Easton Pools, if any, has not been established. Interestingly however, Charles' first child was named Frederick.²¹

Town tax records for 1853 show that the company owned one building worth \$350 with a stock in trade valued at \$100.²²

The 1860 Federal Census of Industry shows that the company employed 4 men, produced 10 barometers worth \$1,000 and 12,000 thermometers worth \$3,000 in that year on a capital of \$2,000.²³ A year later, local tax records show that the company owned a building worth \$300 with stock-in-trade valued at \$500.²⁴ Stock-in-trade probably represents finished products on hand when the assessment was made while capital means tools, machinery and money available for investment.

Besides John and Charles Pool, three non-family members listed as philosophical instrument makers in the 1860 census are Peter Fountain, age 30; Henry W. Ames, age 23; and Edward Alger, age 22.²⁵ While more research needs to be done on these men, it is known that they were neighborhood men who lived close to the thermometer factory. Peter Fountain appears in later



Figure 9. Surveyor's compass with a lid and toggle joint by J. Pool & Co.

records as a shoemaker.²⁶ They probably provided unskilled or semi-skilled labor for John Jr., and Charles B. Pool.

John Pool, Junior's, financial position began to deteriorate, certainly by the early 1860s and perhaps before. However, despite these difficulties the Pool and Son business remained intact. This may indicate that at some point, John, Jr., put the business in Charles B. Pool's name. The change may have occurred as early as 1852. In August of that year John, Jr., granted land to Charles which may have included the factory site.²⁷ In 1853 the company received a separate listing in the town tax list distinguishing it from both John, Junior's, and Charles' personal real estate. At the time of his death of "dropsy of the heart" in 1865, town records call him a farmer not an instrument maker.²⁸ Dropsy of the heart, probably congestive heart failure, may have been a factor in the decline of John's fortunes and role in his company.

By 1862 John, Junior's, financial position seemed to be weakening. In that year his father made his will stipulating that John, Jr., could not receive his share of his father's property un-

til he paid a note signed by both father and son because it was solely John, Junior's, debt.²⁹ In June, 1865 John, Jr., was threatened with jail if he didn't pay his debts. A month later a creditor was awarded four parcels of John's land. The strain of increasing debt may have contributed to John's death on September 12, 1865.³⁰ Charles B. Pool was named executor for his father's insolvent estate which had a total debt of \$4,788.47 and total assets of only \$2,775.25. The equipment and unsold products of Pool and Son were not included in the estate.³¹

More than half the debts of John, Jr., were held by family members. He owed \$1,961.31 to his former partner and brother Horace, \$300.89 to his brother Harrison and \$88.57 to his sister Mary. John also owed his son Anthony \$645.07, his son John \$112.23 and his son-in-law Edwin Gilmore \$129. Another \$277 was owed to Oliver Ames and Son, the largest business in Easton.³² Horace, Harrison, and John Murray Pool were all involved in making levels and surveying equipment at the original factory. What these loans tell us about the split between John, Jr., and Horace remains a mystery.

Little is known of the company under Charles B. Pool's ownership. In the year of John's death the company produced 9,000 thermometers worth about \$2250 (based on 1860 prices).³³ In 1870 the firm employed three men and four boys producing goods worth \$4,000, but by 1875 the company produced thermometers (and perhaps barometers) valued at only \$2,800 on a

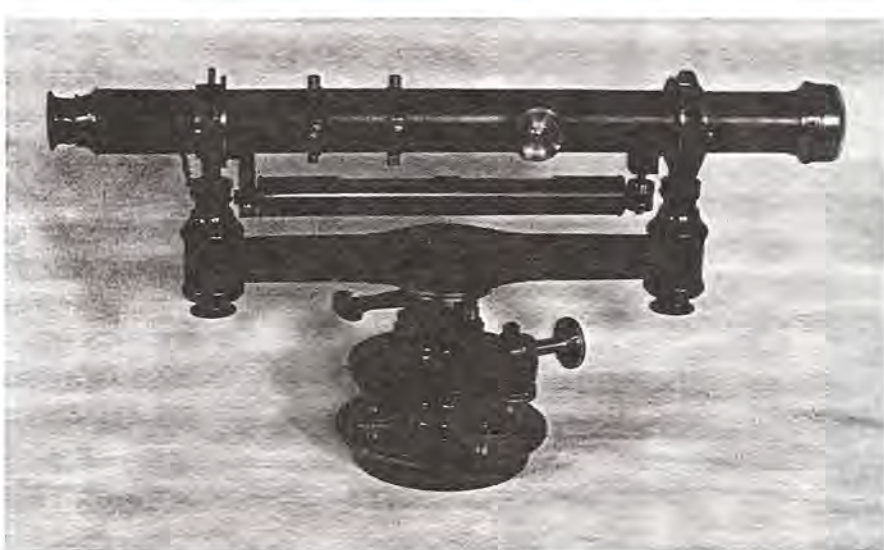


Figure 10. A. H.M. Pool surveyors wye level. Tools are not only functional but can be works of art.

capital of \$900.³⁴ The value of the company's capital had declined since 1860, but the production remained relatively steady.

Between 1876 and 1882 the records of the Ames Shovel Company show a correspondence between company president Oakes Angier Ames and Charles B. Pool. Ames' letters are initially addressed to Cochesett, the area of West Bridgewater adjacent to the Pool thermometer factory. The letters concern repeated orders for hammer stamps and machine stamps placed with Pool and complaints about his workmanship. Only once, on January 4, 1882 are thermometers mentioned. At that time Ames orders "three of your 10 inch thermometers in metal cases with black face and white figures." The last letter in the series is from March 1, 1882 in which Ames mentions a square level which had been sent to Pool to put in a new glass.³⁵ It seems clear that sometime after the

death of Horace M. Pool in 1878, the two brothers, Charles and John Murray, combined their operations. Two former residents near H. M. Pool's shop remember being warned about the large quantity of broken glass around the abandoned shop. One recalls being specifically warned about broken thermometers while the other recalls being told of racks of glass tubing by older family members.³⁶ A surface inspection of the site found fragments of thermometer tubing with mercury still inside. This conclusively proves that, whether the two brothers ever reunited or not, when Charles left the thermometer business, he gave or sold his glass stock to his brother. Sometime between May, 1882, and 1886 when his shop fails to appear on a new map, Charles B. Pool left Easton. About age 50, he moved to New York.³⁷ He died in 1906 and is buried in Easton's Pine Grove Cemetery.

Horace M. Pool and his Company

The history of the original Pool instrument company after the departure of John Pool, Jr., also has its questions. The large diagonal rule marked Pool and Company, mentioned earlier, may have been produced by either firm during the transitional period. A plain compass marked H. M. Pool and Brothers almost certainly was made between 1841 and 1853.

The 1850 census lists eight Pools including 80 year old John Pool, Sr., as mathematical instrument makers. The arguments for assigning Charles B. Pool to John, Junior's, shop have already been stated. What of the others? Clearly the elderly John Pool, Senior, could have been an investor in either or both firms. The original shop was in his front yard so perhaps he spent his time there. In an 1845 town birth record Horace's 29 year old brother Harrison is called an instrument maker.³⁸ This is the first explicit reference to any Pool except John, Jr., or Horace in the instrument trade. Since a map of 1854 shows Harrison in a new house next to brother Horace near the original shop, it seems safe to assign Harrison to Horace's shop.³⁹ The 1850 census adds Nahum Pool to the roster of mathematical instrument makers. Horace Minot Pool with brothers Harrison and Nahum probably were the firm of H. M. Pool and Brothers. Nahum, as we shall see, may have been the shop

foreman; his death in 1853 probably marked another shift in the company.

The 1850 census lists two other Pools as mathematical instrument makers. Horace Minot Pool's sixteen year old son Horace Franklin clearly belongs in his father's shop where he probably remained until his death in the Civil War. The last entry in the census of 1850 is John Murray Pool, the son of John, Jr. According to Chaffin's *History of*



Figure 11. Cast iron adjustable level, marked "patent Pending," by Pool & Son.

Easton, John Murray Pool became shop foreman for his Uncle Horace in 1853, the year of Nahum Pool's death from consumption.⁴⁰ Of course, John Murray Pool may have gone with his father in the original split and returned to his Uncle Horace when Nahum's health began to deteriorate or when Charles moved John, Jr.'s business into weather instruments around 1852. The 1860 census clearly puts him in the category of mathematical instrument maker as opposed to his father's trade of philosophical instrument maker.

Printed Easton tax records as far back as 1853 show no separate listing for the firm of H. M. Pool indicating it was by then a

single proprietorship. In 1853 Horace was listed with six buildings. A map of 1854 indicates a store house and blacksmith shop adjacent to a building marked compass manufactory which, in turn, was next to Horace's home. Horace also was listed with \$500 stock-in-trade, but this entry could also be for shares in corporations. Horace's total valuation in 1853 was \$4315 including sixteen shares of bank stock worth about \$1600. Interestingly, Horace owned only 17 1/2 acres of land as opposed to his brother John, Jr., who had 59 1/4 acres.⁴¹ Clearly, Horace was much more dependent on the success of his business for his livelihood than his brother.

In 1850 H. M. Pool exhibited two surveyor's compasses with tripods and two graduated scales at the Massachusetts Charitable Mechanics Association Fair where they drew the official comment "very well made." Twenty four years later H. M. Pool surveying instruments won a silver medal at the same fair. In 1860 Horace Pool's firm produced 55 compasses worth \$1650, 18 transits worth \$1800, 2 theodolites worth \$550 and other items worth \$500. The total value of products was \$4500 and the number of employees was three.⁴² The recorded output and exhibits may reflect a greater emphasis on the more valuable surveying equipment by Horace Pool. Still, Pool did not abandon the making of spirit levels, for the most common Pool levels today

bear the mark of Horace's company.

Although the current sample of H. M. Pool surveying instruments is small, he seems to have marketed many of his surveying equipment directly under his own name. However, no paper label with his name has so far been seen on any box. Three H. M. Pool compasses are in boxes with C. G. King labels, but whether this represents a marketing arrangement or a label applied after a repair is unknown. Another form of marketing arrangement seems to be a compass with a Loring and Churchill inscription on its face but done in the style of H. M. Pool.

In 1861 town tax records show that Horace owned two houses and a barn and three other buildings, probably the same six buildings he owned eight years before. The total value of the other building was \$500. Horace's stock-in-trade was rated at \$500.⁴³ In 1865 the production figures of the two Pool firms is mixed, but since most of the named equipment is known to have been produced by H. M. Pool, it may be safe to assume that the value of H. M. Pool production in that year was about \$3000. That included three theodolites, six engineer's transits, 15 surveyor's compasses, 12 portable compasses, 30 engineer's leveling rods, six ektoponuters (sic), 100 long chains, 125 levels, and 100 chain pins. Twelve protractors, 9 pendulum gun sights, and 15 gun calipers mentioned in the census could have been produced by either firm.⁴⁴ Again the production figures reflects a de-

emphasis on spirit levels in favor of more valuable products.

In 1875, the firm produced goods valued at \$3,700 on a capital of \$1,000.⁴⁵ By that time Horace M. Pool was over 70, and John Murray Poole was probably in charge of daily operations. When Horace M. Pool died in 1878, the equipment used in the



Figure 12. Pocket surveyors compass by J. & H.M. Pool.

manufacture of instruments and the unfinished instruments were valued at over \$2,000 (See *Appendix B*). While most of Horace Pool's estate was divided among his daughter and two grandsons, the children of H. Franklin Pool, the instrument shop remained in John Murray's hands until his death on March 11, 1904.⁴⁶ Some sources indicate that one of John's sons may have kept the business up for a few more years, but it is certain that the passing of John Murray Poole marked the real end of the Pool instrument business.⁴⁷

We know very little of the operations of the business under John Murray Poole. He advertised at least once as J. M. Pool successor to H. M. Pool; but no

instrument has ever been found with his name or the spelling Poole.⁴⁸ Town records are also of little help. The 1880 tax record book does not include information about the firm, probably because it was still in probate. In the 1890 tax records John Murray Poole is listed with 1.4 acres of land, 12 acres of swamp, a house and barn. His business property includes a stock-in-trade of \$800 and machinery valued at \$300. The 1900 tax records include identical figures for machinery and stock-in-trade while adding a shop valued at \$300.⁴⁹ Again, these valuations for tax purposes probably underestimated the value of the business so it seems that the productive capacity of the company remained steady after Horace's death. Total production would be dependent on the efforts of the aging John Murray Poole. We have seen earlier that evidence points towards John Murray buying the stock-in-trade of his brother Charles when Charles moved to New York sometime in the 1880's, but it is not known if he continued to produce thermometers and barometers.

The demise of the Pool family business apparently came about because no one in the next generation was interested in continuing it. Perhaps the final Pool mystery is not why the company ultimately ended, but why the Pools continued to produce high quality handmade brass instruments in an era of increasing competition from large companies like W. and L. E. Gurley.

APPENDIX A

A Note on the Spelling of Pool

All products of which we are aware were marked with the spelling Pool. John Pool, Jr. and his brother Horace Minot Pool spelled their names Pool. John Pool, Junior's, sons John Murray Poole and Charles Poole added the final e to their name. References to the Pool's use either spelling. Generally, the Pool family in Easton used the Pool spelling until the mid to late 1800's when some members began adding the e. We have attempted to use the spelling preferred by the individual except in the cases where a primary source uses another.

APPENDIX B

Listing of Property Employed in Business (1878) by Horace M. Pool (From the Bristol County Registry of Probate)

\$10.00 Harness
2.00 Old Harness
2.00 Shovels and hoes
5.40 Hay in Stables
1.00 Chairs
.50 1.Row(?)
35.00 Express Wagon
75.00 Buggys
Robes
20.00 Farm Wagon
1.50 Hay Stack
15.00 Covered Wagon
52.00 3 1/4 tons of Hay
2.00 Plow
2.00 Cultivator
3.00 50 Feet of Black Walnut
6.60 Stainwood
15.30 102 Cedar Posts
166.65 1111 feet of Mahogany
51.68 429 feet of Mahogany

3.63 18 feet of Pine Board
75.00 Lathe #1
62.00 Lathe #2
40.00 Lathe #3
20.00 Lathe #4
20.00 Lathe #5
20.00 Lathe #6
10.00 Lathe #7
8.00 Lathe #8
50.00 Planer
15.00 Punching (?) Tools
10.00 Forge
5.00 Dividing Screw
3.00 Twist Drill and Chuck
2.00 Magnet
1.50 3 Straight edges
2.50 Dividers
2.00 11 pair Calipers
2.00 8 Hand Vices
1.75 Pliers
1/50 5 Cut Nippers
3.00 12 Hammers
5.76 Other Hand Tools
3.00 Screw Plate
1.50 5 Saws
25.00 8 Vises
.50 Box of Dogs
.25 Wrench
6.00 Files and Taps
2.50 Universal Chuck
10.00 Small Tools
7.50 Grindstone
2.00 Shears
8.00 5 Anvils
4.00 Mandrills and Old Iron
18.55 190 pounds of Scrap Brass
3.00 pounds Trimmings
7.80 52 pounds Sheet Brass
12.00 34 Jewels
.25 Beam Dividers
.25 Brass Square
1.50 Tripod
18.00 24 Clamps
35.00 14 Compasses
20.00 Parts of Compass

1.00 Spyglass
32.50 setts of Glasses for Telescopes
7.00 6 Object Glasses
5.00 Odd Lot
2.00 Metric Rule
.75 Locks and Hooks
.75 Strosagague(?) and wire puller
15.00 31 setts Chain Pins
1.00 Diamond
.50 Ivory Rules
.75 1 Lock (?)
.25 2 Brushes
1.50 Feather Duster
.50 2 Brass Levels
2.50 Microscope
5.00 1 set Drawing Instruments
1.50 2 Pens
.75 3 Brass Rules
.25 Magnet and Wheel
.50 Compass Cristals
4.00 Protractor?
1.50 Bitts
1.88 Brass Wire
2.00 Clock
18.00 Unfinished Rods
6.00 Unfinished Levels
15.00 Carpenter's Tools
20.00 5 Tripods
6.00 Boxes
50.50 45 Chains
150.00 18 Leveling rods
2.00 Spyglass Rest
6.50 Lot of Level Stock
1.50 Tripod Legs
2.50 Wrapping Paper
.25 Chain Wire
7.50 wood Levels
5.00 Bending Vise
5.00 Hand Stamps
8.00 1 dozen Machinist Stamps
.50 2 Steelyards
1.44 18 pounds Brass
.50 Pewter

1.56	26(?) Malleable Tapes (Types)
4.00	27 gross Screws
5.00	Silvering (?)
300.00	4 Leveling Instruments
75.00	Telescope Compass
150.00	Transit Compass
125.00	Transit with Level
110.00	Plain Transit
60.00	German Level
60.00	Builder's Level;
66.00	2 Vernier Compasses
30.00	6 inch Compass Plain
25.00	5 inch Compass Plain
20.00	English Dumpy Level
15.00	1 dozen Plumb Bobs
2.00	2 Cases of Drawers
5.00	D. Machine
40.00	Lot of Silver
5.00	4 Stoves
3.00	3 Iron Pans
1.28	Brass Tubing
.50	lead
3.00	3. Barrels (Bushels) Apples
2.00	2 Barrels Cider
12.00	Lot of Potatoes
2511.52	Total of Inventory

The Pool Family of Easton, Mass. and Their Levels.

By: Bob Vogel, NETCA & Ed Hands, Easton Historical Society

The Pools and their businesses

John Pool, Jr. was born 1796. The first reference to him working as an instrument maker comes in 1825, when his father, John Pool, Esq., deeded two parcels of land to "John Pool, Jr. mathematical instrument maker," including a piece "on which the workshop of sd. John and H. M. Pool stands." John was then 29 and his brother Horace 22. It is not known where John and Horace learned instrument making, however their father was prominent in local and county politics; serving as Selectman, Town Clerk and Treasurer, Moderator and Justice of the Peace (trial judge). He certainly had the resources to provide training for his sons.

In 1830 John was granted a patent for a geometrical protractor. While not truly innovative, the design did indicate the capacity for excellent work. They also began manufacturing surveying equipment, however during this period, spirit levels were their most numerous product.

In 1841 John, Jr. sold the shop and his interest in it to Horace and moved down the street. John continued to be listed as a mathematical instrument maker through the 1850 census, and several instruments are known with the marking "J. Pool and Co." so it appears that John continued making instruments during this period.

By 1853 John Jr.'s son Charles Babbit Pool had joined him in

this new business, now named "Pool and Son," and it had diversified its production to barometers and thermometers. They also produced a cast iron adjustable level. After John, Jr. died in 1865 Charles continued to produce thermometers. (Some are known to have been marked "C. B. Pool, Easton, Mass.")

Throughout this time the business of H. M. Pool, under the direction of Horace, continued to produce surveying instruments and levels.

In 1878 Horace died, and another of John Jr.'s sons, John Murray Pool, who had been foreman, succeeded to the business. He continued the business until his death in 1904. The business was closed out shortly thereafter by John Murray's son Henry. There is evidence that in the later stages Charles and John Murray merged the two businesses back together. Thermometer parts have been unearthed at the "H. M. Pool" site and later town records list only John Murray Pool, (Charles having left Easton by 1893) but list the only business as "Pool and Son."

Their Levels

There are several types of Pool levels known. The first is the small wooden levels (about 1 3/8" x 1 5/8") usually 12, 16 or 20 inches in length. The second type is the carpenter's levels, usually 24, 27 or 30" long, which are by far the most common. The third is sighting levels. There are also cast iron adjustable levels marked "Pool and Son" Lastly there are the brass surveyor's leveling instruments.

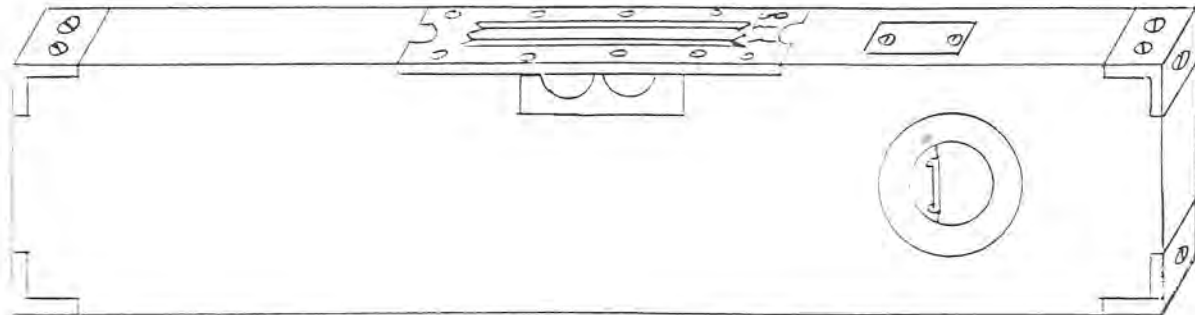


Figure 1 - Typical Pool Carpenter's Level

Pool Carpenter's Levels

The Pools built carpenter's levels, first as "J. & H. M. POOL," from c.1825 until c.1841. After that "H. M. POOL" produced levels until possibly as late as c.1900. During this period they made few major changes to their design, however they did make a series of minor changes. These changes allow us to determine the sequence in which the levels were made, even though we have no firm dates for the individual changes.

What most Pool carpenter's levels have in common: See Fig 1. Unless otherwise noted Pool carpenter's levels are 24, 27 or 30" long, although some as short as 12" exist. They are approx. 1 1/4 to 1 3/8" by 3 1/4" to 3 1/2" and are made from a dark, dense mahogany. The grain of the mahogany was not filled and there was no finish applied to the levels. They feature a single level vial set below a brass top plate with a cutout as shown in Fig. 2. Brass corners were offered as an option.

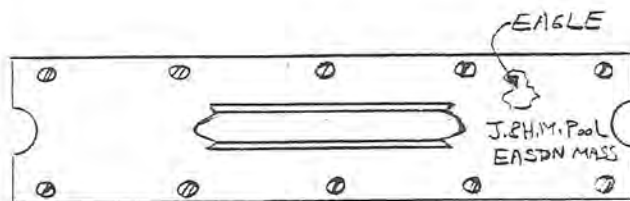


Fig. 2 Pool Level Top Plate and Cut-out

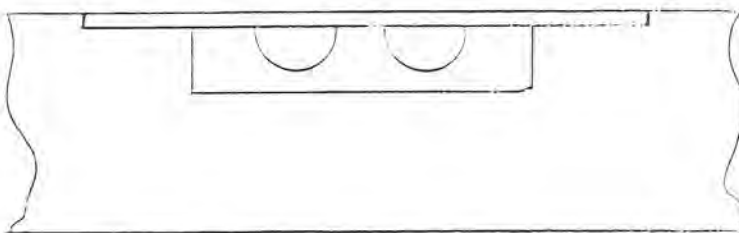
Type 1

- There is reported a J & H. M. Pool level without any plumb vial, which unfortunately we have not seen. Based on the following "improved plumb and level" it would seem that the level without a plumb vial *may* have been the original design. (*If anyone has, or knows of one, please contact the authors.*)

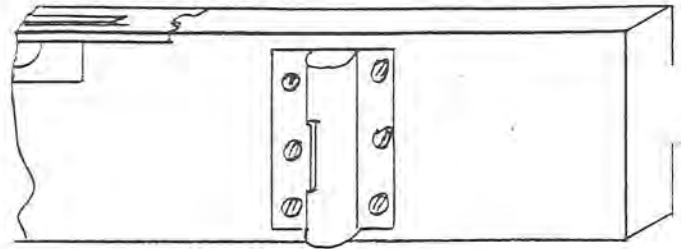
Type 2

- The next levels are those with the plumb vial mounted outboard of the level body in a brass casting. Some retain the paper label reading "Improved plumb and level made and warranted by J. & H. M. POOL EASTON, MASS." On the ones we have observed there is no makers stamp in the wood or brass. This would seem to be the first Pool level featuring both a level and a plumb vial. The details of these levels include:

A style side sights:



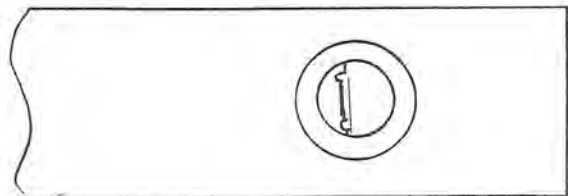
A style plumb sight:



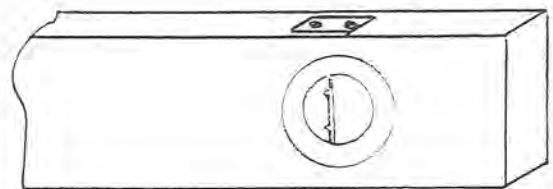
Type 3

- The earliest Pool carpenter's levels with internally mounted plumb vials may be some of those with only a paper label, as these levels may predate the acquisition of the name and eagle stamps used later.

B style plumb sight:



A style plumb sight covers:



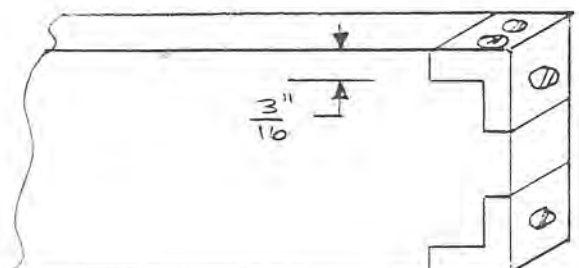
Type 4

- The next levels would appear to be those as Type 3 except with the addition of "J. & H. M. POOL EASTON, MASS." and the eagle stamp, all in the end grain of the level.

Type 5

- Next would be those stamped "J. & H. M. POOL EASTON, MASS." and with the Eagle in the brass top plate. These levels are at least 1 3/8" thick.

A Style (Thick) Brass corners:



These levels were offered with no, one or two side sights for some time. (Good, better and best, depending on how much you were willing to spend.) All of these "J. & H. M. POOL" levels would have been made before 1841, when John and Horace separated.

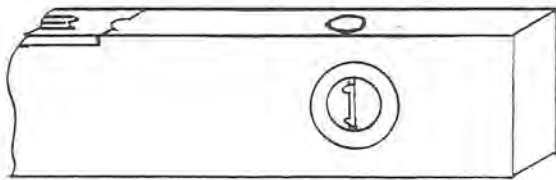
Type 6

- The next levels would be those marked "H. M. POOL EASTON, MASS.," having the same description as above. These would have been made immediately after the separation, and before "H. M. POOL" made any design changes. *(There exist levels with the "J. & H. M. Pool" stamp, but with an "H. M. Pool" paper label! Possibly these are 'Work In Process' when they separated, or perhaps the name stamp was not reworked at first.)*

Type 7

- The first change to the "H. M. POOL" levels was the introduction of B style plumb vial covers. These round covers are press fit into a counterbore in the body, and require no screws to retain them.

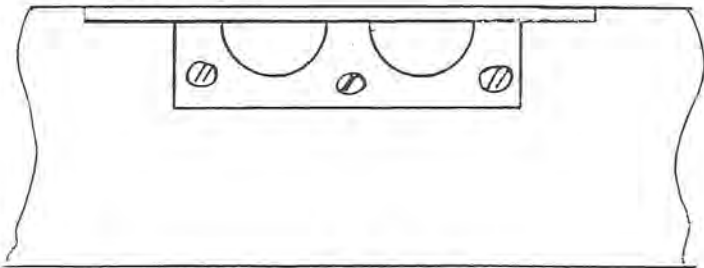
B Style plumb vial covers:



Type 8

- The next change incorporates the B Style side sights. These sights are larger than the A style, and are held in place by three screws. Being a flat plate retained by the screws they do not have to fit as accurately as the dovetailed, cast, style A side sights.

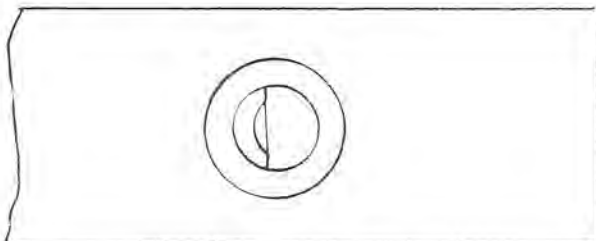
B Style side sights:



Type 9

- The next change was the C Style Plumb Sight. This sight allows easier viewing of the bubble.

C Style Plumb Sight:



Type 10

- Next the eagle stamp, which had previously adorned the levels, located near the name stamp, is dropped.

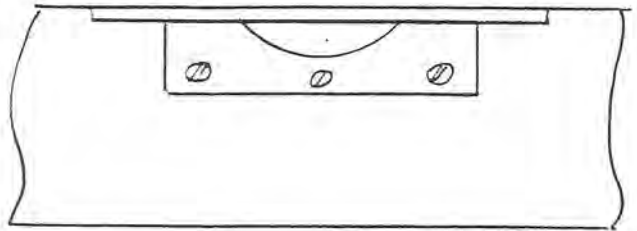
Type 11

(There is no Type 11. Type 11 described in a draft version of this study has been shown to be a variation which existed as an option for an extended period.)

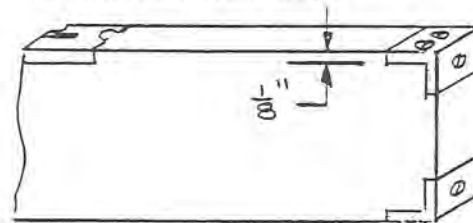
Type 12

- The last carpenter's levels are those featuring C style side sights, a break from all of the previous levels. Those observed are also of a lighter weight and color mahogany than the earlier levels. These levels have been observed with B Style (Thin) brass corners.

C Style side sights:



B Style (Thin) brass corners:



Exceptions and additions.

The Pool companies were small family companies, and there are many exceptions to the above general rules. There are many known examples which vary from the above. Among them:

The diamond shaped plumb vial cover/Alternate woods:

There exists one H. M. POOL level with diamond shaped plumb vial covers approx. 7/8" on each edge, retained by two screws in the far corners. It is possible that these are replacements installed when the round covers of a level were removed to replace a vial, however the wood of this level is a blond colored wood, unlike the normal Pool material. The level also has the thick B style brass corners. Other examples in unusual woods are also known.

Unusual top plate:

There is at least one level with an unusually shaped brass top plate. Instead of having semi-circular cutouts at each end it has quarter circles cut out from each corner. It has the "J. & H. M. Pool" paper label, and originally had the external cast plumb vial.

Unmarked levels:

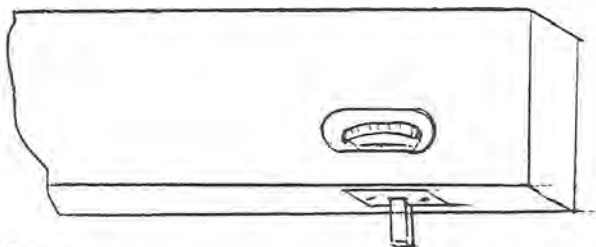
There exist many levels that are not stamped with the Pool name, some have the eagle. These levels may have had paper labels, but no indication remains. They also could have been sold by a hardware store, etc. (Don and Anne Wing report that Benjamin Pike, Jr. sold levels 'that look remarkably like those made by the Pooles, and may in fact have been made by them.')(As paper labels were not very sturdy many levels that originally had a paper label show little or no trace of the label. Paper labels are known on most styles of Pool levels, so a paper label itself is not an indicator of early manufacture.)

Unusually marked level:

There exists one level, with no maker's stamp in the top plate. However it does have an eagle stamp and is stamped, in the end of the level, "N. ? Poole". (There is a nick directly on the second initial but it appears to be an A.) A search of the Poole genealogy turned up only one N. A. Poole, Nathaniel A., b. 1823 and who appears to have lived in or near Abington, Mass. At this time no link is known between Nathaniel A. and the Easton branch of the family.

Inclination feature:

H. M. Pool also produced at least one carpenter's level with a built-in inclination feature. It consists of a knurled knob with a threaded hole, set into the stock of the level. When rotated this knob causes a square brass pin, which is threaded on its corners, to extend from the bottom of the level. The pin is kept from rotating by a brass plate fastened to the base of the level.



12" levels

Although most of these carpenter's levels are 24, 27, or 30" long there are also some 12" long, and it would not be surprising to find other lengths as well.

Other Level Styles

There are not enough examples of the other styles of levels to determine their sequences.

The small wooden levels (usually about 1 3/8" x 1 5/8" and 12, 16 or 20" long)

Normally these have a rectangular top plate that is set in from the edges of the level. Other examples exist where the entire top of the level is brass. As mentioned earlier, the Pool businesses were small family businesses, and they could vary the details of their products at will.

Cast Iron Adjustable Level

Pool and Son manufactured a cast iron, adjustable level which is different from all other Pool levels, and not like any other levels with which we are familiar. It consists of a cast iron base with an adjustable cast iron top holding the level vial.

These two pieces are fastened by two brass knobs, one acting as a pivot and the second as a clamp screw. There is no scale to measure the angle. The vial is held in by a brass top plate. On the known examples this plate is marked "Pool.&.Son" "Easton, Mass." and "Patent Pending"



Sighting Levels

The Pools also made wooden levels to be used for surveying. These are too varied to be described in detail, but several different examples exist.

One is a two piece, hollow, box with the level vial in the top and a peep hole in one end and the other apparently to accept a glass plate with horizontal line (now missing.)

Another is a carpenter's style level with sights mounted to the upper corners.

Another consists of a carpenter's style level mounted above another wooden base, with hinges at one end and a vertical adjustment at the other end. The level is fitted with peep sights mounted on the upper corners.

Surveyor's Levels

H. M. Pool, at least, produced brass surveyor's Wye, and possibly Dumpy, leveling instruments.

Summary

The Pools are an interesting family. They made a wide variety of products. Although their businesses were small they were in business for an extended time, so their products are quite readily available. As they are local researching and studying them and their products has been especially interesting. The Great-great-great granddaughter of Horace Pool still lives in one of the Pool homes. There are six generations of Pool (including most of those involved in the factories) buried in the Pine Grove cemetery, just down the street from where all this activity took place.

Enough reading for today - Get out there and study *your* local toolmakers!

If anyone has further information about the Pool family, or information that confirms or conflicts with anything presented here, the authors would appreciate it if you would please contact us:

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