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Fireworks for the Emperor. A new hand-colored impression of Sebald Beham's "Military Display in Honor of the Visit of Emperor Charles V to Munich"


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The Military Display in Honor of the
Visit of Emperor Charles V to Munich
Hand-colored woodcut by Sebald Beham, 1530,
state III with Latin inscriptions; 345 × 1310 mm
Trustees of the British Museum

Manöver anlässlich des Besuchs
Kaiser Karls V. in München
Handkolorierter Holzschnitt von
Sebald Beham, 1530 (3. Zustand mit
lateinischer Beschriftung)

ALISON G. STEWART WITH NICOLE ROBERTS

Fireworks for the Emperor.

A new hand-colored impression of Sebald Beham's "Military Display in Honor of the Visit of Emperor Charles V to Munich"

Zu den bedeutendsten Stücken in der Sammlung des Historischen Vereins von Oberbayern gehört das einzige bekannte altkolorierte Exemplar von Sebastian Behams Holzschnitt »Manöver zu Ehren Kaiser Karls V. anlässlich dessen München-Besuchs 1530«. Das von Niklas Meldemann gedruckte Blatt wurde 1860 im Rahmen der Gesamttagung der Geschichtsvereine an den Verein geschenkt und jahrzehntelang in den Vereinsräumen ausgestellt. Durch den vorliegenden Beitrag wird es aus seiner zwischenzeitlichen Versenkung wieder hervorgeholt und – im Vergleich mit eindrucksvollen Abbildungen verschiedener Siegesfeiern – als herausragende Dokumentation eines Huldigungsevents und einer militärischen Darbietung der Zeit vorgestellt. Neben der Darstellung militärischer Macht wurden auf Blättern dieser Art stets die technischen Errungenschaften der Zeit, darunter die verschiedenen Formen der Pyrotechnik, mit Freude am Detail illustriert. Auch die besiegten »Feinde« – insbesondere die einfache darzustellenden Türken – wurden gerne vorgeführt.

Unter vergleichbaren Siegesfeier-Darstellungen nimmt der Beham-Holzschnitt des Historischen Vereins aufgrund seiner außergewöhnlichen Größe, seines theatralischen Aufbaus und vor allem seiner Farbigkeit eine Sonderstellung ein. Jüngst auf Anregung der Autorin Alison Stewart durchgeführte Analysen der eingesetzten Farben bestätigten, dass die eindrucksvolle Kolorierung – mit der Ausnahme einer kleinen Retusche – aus der Zeit des Drucks stammt. Die reichhaltige Farbpalette beinhaltet Pigmente, die zu dieser Zeit in der Malerei weit verbreitet waren. Die Farben kamen aus den gleichen Quellen, die auch die Chemikalien für das abgebildete Schießpulver und die Pyrotechnik lieferten – den deutschen Apotheken des 16. Jahrhunderts.

Dieser Beitrag ist das Ergebnis einer Zusammenarbeit von Alison G. Stewart und Nicole Roberts. Letztere schrieb den Abschnitt »Farbanalyse« am Ende des Aufsatzes.

A little studied *Einblattdruck*, or single-sheet woodcut, from the sixteenth century shows early incendiary devices used to honor the entry of the Holy Roman Emperor in 1530. The large woodcut displays the military honors given to the emperor: cannons firing on a castle constructed for the occasion and fireworks. Harnessing the potential of powders for both pyrotechnics and color added by hand to prints was among the many cultural developments of the sixteenth century. This article makes known a recently rediscovered impression of the print, unique with hand coloring, which serves as the focus of discussion for several aspects of the print including the ephemeral and incendiary, the states, and

related prints with rocket Turks. A technical analysis discusses the color azurite and completes the article. “The Military Display in Honor of the Visit of Emperor Charles V to Munich” (Pauli 1115)¹ measures slightly over 1 foot × 4 feet (360 × 1340 mm, 14.17 × 52.76 in.). It was printed from five wood blocks onto five sheets of paper glued side-by-side, with each image and sheet measuring ca. 350/360 × 1330/1340 mm.² The banderole at the top indicates that the “The Princely City of Munich – Die Fürstlich Statt München” is the location depicted. The year 1530 is included at lower left, and although the print is not signed, the style is unmistakably Sebald Beham’s. It is initialed “NM” at center bottom indicating the printer was Niklas Meldemann, also from Nuremberg, for whom Beham designed other prints.³ Meldemann included his name and date in the placard at upper right as the person responsible for printing the woodcut (“ytzd im druck verfertigt vnd ausgangen [...] 1530. Des 10. Tags Junij”). The date of 10 June 1530 indicates the day Charles V victoriously entered Munich after his defeat of the Ottoman Turks at Vienna. The Bavarian and Austrian coat of arms, upper left and right, underscore the connection to the men identified in the placard as Bavarian dukes, the brothers Wilhelm and Ludwig. The print appears to have been made both to commemorate the event and to honor the two brothers (“Zu eren den Hochgebornen Fürsten vnd Herrn”) on the occasion of the entry of his Imperial Majesty. The inscription calls the woodcut a “true record – aigentlich verzeichnus”) of the event. The Emperor’s name, Charles V, appears to have been included only in the first state of the print, which is now lost, and his image is almost impossible to locate in the composition as are those of Wilhelm and Ludwig.

The print is known in a small number of impressions in three states, which Gustav Pauli listed in his catalogue of Beham’s prints from 1901; state I included at center top an eight-lined Latin inscription with Emperor Charles’ name; the unique hand-colored impression at Sigmaringen no longer exists.⁴ State II included German inscriptions; impressions are in London, Braunschweig, and – newly found and discussed here – the Stadtarchiv in Munich, in the Historischer Verein von Oberbayern.⁵ This impression is not recorded in the art historical literature and is the only colored impression known to me.

1 Pauli, Gustav: Hans Sebald Beham. Ein kritisches Verzeichnis seiner Kupferstiche, Radierungen und Holzschnitte, Strasbourg 1911 (Studien zur deutschen Kunstgeschichte XXIII).

2 StadtA Munich: HV-BS D 8604. Measurements of the sheet from the Stadtarchiv Munich were taken by Dr. Brigitte Huber; overall measurements from Huber, B.: “Eine hochansehnliche Versammlung ausgezeichneten Kenner, Pfleger und Freunde der vaterländischen Geschichte” – 175 Jahre Historischer Verein von Oberbayern, in: Oberbayerisches Archiv, 136, 2012, p. 30 with illustration.

3 On Meldemann, see Dackerman, S.: Prints and the Pursuit of Knowledge in Early Modern Europe, New Haven, 2011, pp. 334, and Landau, D./Parshall, P.: The Renaissance Print, 1470–1550, New Haven 1994, p. 227–28.

4 Pauli (see note 1) 1115 lists for state I, a unique, hand-colored impression at Sigmaringen; prints in that

collection have been dispersed. The Latin inscription given by Pauli includes eight lines at center top where Emperor Charles’ name is included; at upper right the dedication in fourteen lines to Dukes Wilhelm V and Ludwig. The impression is dated “1530” lower left and signed “NM”.

5 According to a condition report (“Zustandsprotokoll”) dated 7 Jan. 2009 for the Stadtarchiv impression, the print was laid down on Japanese paper during an earlier restoration (probably from the 1960s or 70s) when color losses were retouched along with the black border lines. The paper had yellowed with a layer of gray dust on the surface. Some retouching of paint loss was made. In addition, the print hung on a wall, framed, in the Stadtarchiv for decades. British Museum’s impression of state II, with German text, measures per sheet ca. 352 × 270 mm (ca. 14 × 10.66 in.), with a total width of 1332 mm. (52.5 in.), according to the British Museum’s website.

State III bears a Latin inscription with the date 1530 at top center replacing the earlier placards with German text. This state has losses in the border lines and the “5” of the date. At least five impressions are known, including ones in London, Munich, and New York.⁶

The inclusion of specific historic buildings identifies the setting of the print as Munich. From left: Alte Peter or St. Peter’s, the Heilig Geist church and the Frauenkirche, Munich’s double-towered hallmark. “Die alt Fest” to the right was the residence that Wilhelm replaced with the Neuveste or “Die new Fest”, identified under the right side of the banderole. The first sheet establishes the setting as the countryside outside Munich. With fields in the background, a couple points toward the sky where clouds from cannon fire are visible. On the second sheet, a young man removes his hat in deference to the gentleman on horseback, and above them both shed and shed roof cover pitchers and barrels of what appear to be beer or wine. The third sheet depicts several tents before the horizon, numerous men on horseback and many cannons, at least one of which releases flames and smoke clouds into the sky. On horseback before the tents ride various men, musicians included, one of their instruments identifiable as the sackbut, the trombone’s precursor. Some of those men hold flagpoles and the imperial flag with double eagle. The lineup below of some twenty-five cannons offers an impressive display of might. Above left stand gun carriages for transporting cannons, while at right explosions from two cannons and three barrels produce red flames and gray smoke, with arcs of cannon balls shot through the air.

On the fourth and fifth sheets, the cannon balls land close to a castle erected specifically for the occasion of the emperor’s entry into Munich. Over a dozen men storm the castle on foot and climb the walls, while others attempt to defend it. The castle includes four structures: a larger, rectangular building, and three shorter, rectangular ones, possibly towers, before it. Below and seen from behind, two large groups comprising dozens of foot soldiers hold pikes erect. A large block of men on horseback with feathered helmets, in profile, complete the print. The blue-and-white checked flag, next to the right border, identifies the troops of both infantry and cavalry as those of the Bavarian dukes.

Beham’s “Military Display” places the storming of a castle and cannon fire, at upper right, with both belonging to the stock amusements at imperial festivities. Gunpowder constituted the unifying element for the pyrotechnics or incendiary arts included in the print and mentioned in the placard at upper center. The gunpowder in both cannon fire and fireworks relied on energy released by a chemical reaction, rather than the muscle strength of medieval warfare. The black powder of Beham’s time arose from the alchemist’s art and was produced more from an empirical than a scientifically understood process. Discovered by Chinese alchemists in the ninth century, gunpowder made its way to Europe via the Mongols and the Arab Muslim world probably in the thirteenth century. By the sixteenth century, large-grained powder was preferred for cannons and finer

6 Impressions of state III can be found in Berlin (damaged), London (2 impressions), Munich, New York, all confirmed; Dresden, Vienna, and Wolfegg, as given in Pauli 1115, unconfirmed. The impressions in the Staatliche Graphi-

sche Sammlung, Munich, I viewed with the kind assistance of Dr. Achim Riether. With the aid of a “Leuchtfolie,” a light pad, the watermark, a coat of arms with double eagle and crown on top, 68 mm × 55 mm, was visible.



The Military Display in Honor of the Visit of Emperor Charles V to Munich
Hand-colored woodcut by Sebald Beham, 1530, state II with German inscriptions;
 360 × 1340 mm
 StadtAM: HV-BS D 8604

Manöver anlässlich des Besuchs
 Kaiser Karls V. in München
Handkolorierter Holzschnitt von Sebald Beham, 1530 (2. Zustand mit deutscher Beschriftung)

grained ones increasingly for shoulder arms and pistols. Such powders produced less pressure allowing more time to move safely away from the explosion.⁷

The cannons Beham shows appear to have been made of bronze although cast iron was also a possibility. In Beham's time, cannons were known as "bombards", "lombards" and "basilisks" drawing on the mythical dragon-like beast known for its flaming breath and gaze that withered those it met. The basilisk referred to large and powerful cannons, like those in Beham's print, capable of throwing cast-iron projectiles. In the sixteenth century, cannons could batter down fortress walls as well as throw balls and stones. Balls were generally made of cast iron and could be filled with gunpowder and a fuse that needed to be lit before firing. Cannon balls were deemed extremely dangerous because they could explode prematurely or jam in the cannon barrel.⁸

A variety of additional pyrotechnic objects fall into the category of firework of the time, including fire balls for catapult delivery, fire pots, fire arrows and fire bolts, petards,

7 <http://www.britannica.com/Ebchecked/topic/382397/military-technology/57613/Early-gunpowder>; accessed March 23, 2012. See also La Rocca, D. J.: Firearms, in: Encyclopedia of the Renaissance, ed. by P. F. Grendler, vol. II, New York 1999, pp. 368 – 71.

8 <http://www.britannica.com/Ebchecked/topic/382397/military-technology/57613/Early-gunpowder>; accessed March 23, 2012.



and throwing machines.⁹ These works along with the class of gunpowder weapons known as small arms made vulnerable the curtain wall of the medieval castle and assisted with both the Ottoman defeat of the Byzantine empire in 1453 and the advance of the Turks through the Balkans to Vienna in 1529. Emperor Charles V then turned the Turks back, an event commemorated through a Beham design printed by Meldemann.¹⁰

Gunpowder and fireworks were intertwined in the thinking and cultural practice of the sixteenth century, explaining the inclusion in Beham's print of both cannons and fireworks, the "fewr werck" mentioned in the placard.¹¹ Before chemistry existed as a science, Paracelsus (1493–1541) discussed gunpowder and fireworks in his alchemical work while the chemistry of metals was eagerly explored by the Sienese Vannoccio Biringuccio (1480–ca. 1539) who wrote extensively on the topic in "On pyrotechnics (De la pirotech-

9 Geibig, Alfred: Die Macht des Feuers. Ernstes Feuerwerk des 15. – 17. Jahrhunderts im Spiegel seiner sächlichen Überlieferung. / Might and Fire. An Object-Based Survey of Serious Fireworks of the 15th to the 17th Centuries, Coburg, 2012, ch. 4 and 9. This book is helpfully written in both German and English, in left-right columns on each page.

10 For Beham's woodcut commemorating the defeat of the Turks at Vienna in 1529, see: <http://www.habsburger.net/en/media/hans-sebald-beham-aerial-panorama-city-vienna-time-first-turkish-siege-1529-co>.

11 On fireworks, see Werrett, S.: Fireworks. Pyrotechnic Arts and Sciences in European History, Chicago-London 2010; – Boorsch, S.: Four Centuries of Pyrotechnics in Prints & Drawings, in: The Metropolitan Museum of Art Bulletin, N.S. LVIII, 2000, pp. 3–52, especially pp. 8–9, stable URL

at: www.jstor.org/stable/3259002; – Salatino, K.: Incendiary Art. The Representation of Fireworks in Early Modern Europe, Los Angeles 1997, and Hill Brock, A. St.: A History of Fireworks, London 1949. See also Hills, P.: Titian's Fire. Pyrotechnics and Representation in Sixteenth-Century Venice, in: Oxford Art Journal XXX, 2007, pp. 185–204; – Berns, Jörg Jochen: Feuerwehr und Feuerwerk. Techniken der Domestikation und Inszenierung von Großbränden in der Frühen Neuzeit, in: Urbis incensa. Ästhetische Transformation der brennenden Stadt in der Frühen Neuzeit, ed. by Vera Fionie Koppenlechner a.o., Berlin-München 2011, pp. 211–234. See also Wiebel, Christiane: Lust-Feuerwerk, in: Weltkunst LXXIII, 2003, p. 1300, and Möseneder, K.: Feuerwerk, in: Reallexikon zur Deutschen Kunstgeschichte, vol. VIII, München 1987, col. 530–607.

nia)” published posthumously in 1540. Biringuccio addressed metallic ores, the preparation for smelting them using “semiminerals” such as mercury, sulfur, alum, vitriol, gems, and glass. Biringuccio experimented with making gunpowder, saltpeter, furnaces, and fireworks.¹² In 1560 Johann Schmidlap of Nuremberg published the first printed book devoted exclusively to fireworks for peaceful purposes and included recipes for military rockets, fire trunks, and wheels.¹³

Writings of the time exhibit a similar overlap between gunpowder, gems and minerals, fireworks, and the military seen in Beham’s “Military Display”. The writings praise gunners and pyrotechnics alongside the liberal arts, with gunners often, but not always, authoring the pyrotechnic treatises. For example, Leon Fronsperger, the director of Emperor Charles V’s “Zeughaus” – arsenal, served both in the emperor’s artillery train and published books in the 1560s on shooting and fireworks, wine, and architecture, in a more eclectic manner than is customary today.¹⁴

Simon Werrett’s recent “Fireworks. Pyrotechnic Arts and Sciences in European History” offers rich information on fireworks and pyrotechnics that contextualizes Beham’s print within sixteenth-century practices.¹⁵ Both artificial and real castles became a focus of display in the German lands by 1506, when Emperor Maximilian sponsored 350 rockets fired from three barrels on a barge at Lake Constance, the first recorded German fireworks.¹⁶ Werrett mentions fireworks celebrating both Emperor Charles V’s Entry into Munich in 1530, the subject of Beham’s print, and his victory over the Ottoman Turks with the conquest of Tunis in 1535, which Erhard Schön recorded in a woodcut from Nuremberg, discussed below.¹⁷

Werrett characterizes imperial fireworks in the sixteenth century as “playful combat”, the kind of performance seen in two woodcuts celebrating Charles V’s military victories, Beham’s and Schön’s.¹⁸ Such displays can be linked to jousting, a paramilitary sport, although gunpowder and mercenary armies were making jousting skills increasingly irrelevant on the battlefield. Beham shows a castle attacked from the left in two arcs of cannon fire as lansquenets storm it from the front. The barrel before the castle resembles ones used for wine and beer, but the barrels in the midst of the cannon fire, straight sided and more like oil drums, contained either explosives, which set off the charge propelling the cannon balls toward the castle, or fireworks themselves. The Bavarian dukes also provided other forms of entertainment for the emperor outlined in the central placard: infantry, fighting, field maneuvers and practicing battle movements and drills, cannons and fire works, and other amusements (“mit raisings vnd fusz volcks kriegszordnung vnd vbung/ auch geschütz vnd fewr werck/vnd andere kürzweyle”). Beham illustrates most of the entertainment mentioned in the placard, but not the fireworks.

However, a printed pamphlet entitled “Imperial Majesty’s Entrance into Munich, 10 June 1530 – Kayserlicher maiestat Einreyttung zu München, den x. tag. Junij. Im M.

12 Wallace, W. A.: “Chemistry” and “Metallurgy”, in: *Encyclopedia of the Renaissance*, ed. by P. F. Grendler, vol. I, New York 1999, p. 415.

13 Werrett (see note 11), p. 37.

14 Werrett (see note 11), pp. 36 – 38

15 See note 13 for Werrett.

16 Werrett (see note 11), p. 19.

17 Werrett (see note 11), p. 19.

18 Werrett (see note 11), p. 19.

CCCCC.vnd. xxx. Jar etc.” briefly describes the storming of the castle. The pamphlet states that on Friday 10 June 1530 a great display sponsored by Dukes Wilhelm and Ludwig greeted the Emperor and Kings of Bohemia and Hungary who were received around 5 o’clock one-half mile from Munich, with 500 horses bedecked in light harnesses, caparisons, and feather tufts (“leybröcken” und “federpüschchen”). The princes provided 100 large and small guns on wheels, and many mortars and guns. A castle of wood and cloth (“ein schloss mit holtzwerck vnnd tüchern”) was erected, stormed, and later burned upon the emperor’s arrival, and several mortars were lit, all of which pleased the emperor. The pamphlet includes additional fleeting details, including representations of Tomyris and another of Cambyases. Between the histories a second castle provided another location for fireworks, which resulted in a large crowd of people running (“gelauff”). According to the pamphlet’s author, the magnificent reception in honor of the emperor, princes, and cardinals, spared no cost and was unsurpassed in the entire Holy Roman Empire.¹⁹

Fireworks and castles were included within other written contexts during the sixteenth century. Martin Luther informs that many bulwarks and fences around a castle serve fireworks very well.²⁰ The text accompanying Erhard Schön’s woodcut that commemorates another victory of the Emperor solidifies the castle location for German fireworks. Schön’s “Fireworks at Nuremberg on the Occasion of the Victory of Charles V at Tunis” (G. 1266, H.47.20), a woodcut published in Nuremberg a few years after Beham’s, was printed by Stefan Hamer on a single sheet of paper and dated 1535 (p. 30). The print bears a nine-lined text below and the title above reads “Celebratory fire at Nuremberg – Das freuden ffeuer zu nurnberg”.²¹ Small cloud-like configurations with tails indicate fireworks in the sky over Nuremberg’s castle. Werrett calls this firework celebration a “mock battle before Nuremberg’s castle”. The print includes the fireworks in the sky and figures he identifies as Turks attached to cords and thrown from the castle walls.²² The Turk at right appears to have been shot high up into the air and another figure of a Turk hangs upside down in the air. In addition, the giant in the castle at top sports a long beard and holds a flag with a crescent moon that identifies him as a Turk. The print of the same year recreates Emperor Charles V’s defeat of the Ottoman Turks at Tunis and his capture of that strategic location in its attack on Nuremberg’s castle and expulsion of these representative Turks. The text below the print states that the emperor personally went to the mighty kingdom of Tunis in Africa, conquered it, and brought it down, as well as other places. At the same time he converted some twenty thousand to Christianity. This God given victory, and that it becomes widely known, was the reason why in Nuremberg a great fireworks was displayed

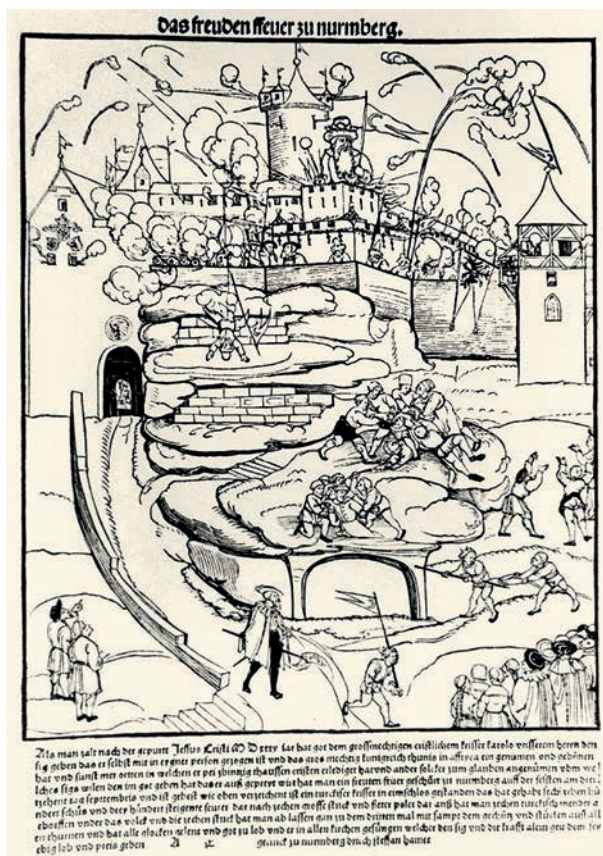
19 “Kayserlicher meistat Einreyttung zu München, den X. tag Junij. Im M.CCCCC. vnd XXX Jar [...]”, [Nuremberg 1530]; BSB: VD16 K37, for which see: <http://www.digitale-sammlungen.de>. The text for the entry of Charles V is five pages long, followed by the entry into Augsburg on the following day (four pages).

20 Grimm, Jakob and Wilhelm: *Deutsches Wörterbuch*, vol. III, Leipzig 1862, col. 1608.

21 For Schön’s woodcut, see Mielke, U.: *Hollstein’s German Engravings, Etchings and Woodcuts 1400 – 1700*, XLVII,

ed. by R. Schoch, Rotterdam 2000, no. 20. The print exists in a unique hand-colored impression with text at Gotha and without the text (Dresden and Munich). The Munich impression is a late impression: paper is brown, ink dark and flat and appears to sit on the surface of the paper. See *The Illustrated Bartsch*, Bd. XIII, and *Artstor* image with translated text. The term “celebratory fire” is from Werrett (see note 11), p. 19.

22 Werrett (see note 11), p. 19.



Fireworks at Nuremberg Castle
on the Occasion of the Victory of
Charles V at Tunis

Woodcut by Erhard Schön,

printed by Stefan Hamer, 1535;

342 × 240 mm, image: 291 × 240 mm

Staatliche Graphische Sammlung, München

Feuerwerk auf der Nürnberger
Burg anlässlich des Siegs von
Karl V. in Tunis

Holzchnitt von Erhard Schön,

gedruckt von Stefan Hamer, 1535

at Nuremberg castle on September 13 as a sign of joy. As shown above, an effigy of the Turkish emperor was placed on the castle, while 1600 salvos were fired and three hundred rockets were fired into the sky.²³

Schön's woodcut includes a cannon ball to the left of the giant indicated by a circle similar to those that nearly hit the castle in Beham's print. The giant Turk stands in a temporary castle-like structure constructed for the occasion that is similar to the castle in Beham's print. Thus Schön shows another ephemeral building made specifically for the equally ephemeral "freuden ffeur zu nurnberg" in the print's title.

A broadsheet with long poem with 161 verses, penned by Hans Sachs and dated 30 September 1535, printed by Hans Guldenmundt, may have accompanied Schön's woodcut albeit separately.²⁴ The text begins with a topos that Hans Sachs often employed: "One day I went walking and came upon the following sight." Sachs then describes church bells

23 For the English translation of Schön's text, see The Illustrated Bartsch, vol. XIII, p. 462, no. 251. For the German excerpt see Bernstein, Eckhard: Hans Sachs mit Selbstzeugnissen und Bilddokumenten, Reinbek bei Hamburg 1993, p. 58; for the full text Hans Sachs (1870), ed. by Adalbert von

Keller, vol. II, Hildesheim 1964, pp. 395 – 99, as "Historia von dem kayserlichen sieg in Africa im königreich Thunis anno 15 35".

24 Mielke (see note xxi), vol. XLVII, p. 61.



Fireworks over the Castle
at Nuremberg in Honor of
Emperor Maximilian II
Etching by Jost Amman, 1570;
226 × 342 mm (trimmed)
Trustees of the British Museum

Feuerwerk über der Nürnberger
Burg zu Ehren von Kaiser
Maximilian II.
Kupferstich von Jost Amman, 1570



The Girandola. Fireworks at
the Castel Sant'Angelo on
Easter Monday, 1784, during
the visit to Rome of King
Charles Gustave III of Sweden
Design by Louis Jean Desprez,
etched by Francesco Piranesi,
hand coloring, 1784;
1016 × 762 mm
Metropolitan Museum of Art, New York



Landscape with Cannon
Etching by Albrecht Dürer, 1518;
220 × 325 mm
Trustees of the British Museum

Landschaft mit Geschütz
Kupferstich von Albrecht Dürer, 1518

La Girandola. Feuerwerk an
der Engelsburg am Oster-
montag 1784 während des
Rom-Besuch des schwedischen
Königs Karl Gustav III.
Handkolorierter Kupferstich von
Francesco Piranesi nach einem
Motiv von Louis Jean Desprez,
1784

ringing, organ playing, and crowds everywhere walking to the castle, houses full of people, the castle itself fitted with firearms and a tall tower made of cloth and metal on which could be seen a [Turkish] commander with a red beard and a Turkish flag, ten small Turkish men, and a large imperial flag on one of the towers.²⁵ The narrator describes a loud noise that sounded like thunder, felt like an earthquake, came from shooting at the castle, and encircled the town.²⁶ Small painted representations of Turks were shot far and high into the air and were accompanied by black smoke that looked like clouds. The Turk [dolls] rained down on the people who fell on them and tore them apart.²⁷ More shooting took place outside the city and fireworks were lit--1600 fireworks small and large, first two at a time, then three, then eight, some rising much higher than the castle tower into the distant air. In the middle of the castle stood the Turk with red beard.²⁸

Sachs continues his text. After the fireworks ended the manufactured castle was burned quickly as if made of straw. Young folks were happy, yelling, as the large Turkish commander burned and his beard flew into the sky.²⁹ Sachs gives the commander's name as Barbarossa or Redbeard,³⁰ whose original name was Khidr, a contemporary Barbary pirate and admiral of the Ottoman fleet who captured Tunisia for the Turks and made Tunis his base of operations.

The pairing of castle and fireworks, seen in both Beham's "Military Display for the Emperor Charles V" of 1530 and Schön's "Fireworks at Nuremberg on the Occasion of the Victory of Charles V at Tunis" of 1535, offers a close-up view of "playful combat" with an emphatically Turkish twist. Although the striking light effects of fireworks remain absent from these early images, and may well have been beyond the pictorial vocabulary of woodcuts of the time, the intaglio prints taken up later in the century illustrate such effects with clear details and bravado. Jost Amman's engraving of 1570 focuses on two burning castle made for the occasion, at far right, where the pyrotechnic effects have increased considerably. Spectators remain in the foreground where they observe the fireworks on horseback and foot, and from a carriage, thus it is the fireworks that form the subject of the print over the visit of Emperor Maximilian II to Nuremberg. Over time images of fireworks were increasingly divorced from the military associations found in Beham's early rendering to become a more single-mindedly spectator sport that emphasized the dramatic, explosive, and electrifying effects of such displays. Notable are the fireworks over the Castel Sant'Angelo in Rome in a book illustration, "The Girandola. Fireworks at the Castel Sant'Angelo on Easter Monday, 1784, during the visit to Rome of King Charles Gustave III of Sweden." Etched by Francesco Piranesi, the son of Giovanni Battista Piranesi, the print was hand colored by Louis-Jean Desprez and dates ca. 1783.³¹ The fireworks

25 Hans Sachs, ed. by von Keller (see note 23), p. 396, line 9 – 16. The castle had many "schiesslöchern" and was made of "tuch und blechern" and "Artlich gemacht" (p. 396, line 10). "Blechern" is defined as "steife, blecherne gewänder" according to Grimm Jakob and Wilhelm: *Deutsches Wörterbuch*, Leipzig, 1854 – 1961; on-line version at: <http://woerterbuch-netz.de/DWB/?sigle=DWB&mode=Vernetzung&lem-id=GBo8o85>

26 Keller: Hans Sachs (see note 23), p. 396, lines 21 – 32.

27 Keller: Hans Sachs (see note 23), p. 396, lines 32 – 38.

28 Keller: Hans Sachs (see note 23), p. 397, lines 11 – 13

29 Keller: Hans Sachs (see note 23), p. 397, lines 21 – 27.

30 Keller: Hans Sachs (see note 23), p. 397, line 39.

31 For prints with the Castel Sant'Angelo, see Artstor under "fireworks"; for a short film with firework sound and those images, see: <http://www.youtube.com/watch?v=Iq7os6qjuvY>.

shoot from the top of the Castel Sant'Angelo with no temporary structure visible for the occasion (both p. 31, top).

Beham's visual record of the pyrotechnics honoring the entry of Emperor Charles V was revolutionary in its time because it was brand new. In earlier artistic renderings, cannon fire and the Turkish threat were linked, in works such as those by Albrecht Dürer in his etching of 1518, but the print emphasizes one cannon and one "Oriental", probably legible as a Turk in Dürer's day, before a landscape, and includes no pyrotechnics (p. 31, bottom). By contrast, Beham's large-scale theatrical production features dozens of cannons, soldiers, and cannon fire on a castle constructed for the occasion. Claude Lorrain's print dating ca. 1637 (p. 34) indicates what may have happened to the castle in Beham's print: exploding to reveal other structures within. Claude's print depicts a rectangular castle containing one or two tall, round structures that explode leaving only horse and crowned rider, perhaps the person for whom the fireworks had been ignited. The castle in Beham's print may well have been made of cloth and a more solid but still combustible material, such as wood, even though those materials cannot be firmly established. But what can be well imagined is that the castle, along with its firework display, was short lived but spectacular, making such ephemeral art something to look forward to in years to come.

The recently discovered impression of Beham's woodcut in the Stadtarchiv Munich is richly painted with expensive pigments, hand coloring that appears to be original from the time of the print. The castle and sky remain uncolored, but the remainder of the print features a wide palette using green for landscape, brown for ground, blue for sky, gray for clouds, red for fire, and red, blue, and black for details.³² A color analysis performed at the Bayerische Verwaltung der staatlichen Schlösser, Gärten und Seen in Munich shows the following pigments were used for the added color: malachite/copper green (Malachit/Kupfergrün) for green; azurite/mountain blue (Azurit/Bergblau) for blue; madder lake and vermilion (Krapplack, Zinnober) sometimes with madder lake for red; vine black (Rebschwarz) made from plants, bone black (Beinschwarz) from animal bones, and bister (Bister) for black.³³

The colors point to a historic coloring of the print and to a date in the sixteenth century. It is possible therefore that hand coloring was added to Beham's printed design by Meldemann who was both a Briefmaler, a colorer of prints, and a printer. However, there is one exception: some retouching on the foreground tent in blue with synthetic ultramarine (synthetisches Ultramarin), a modern pigment introduced in the nineteenth century.³⁴ The report confirms the importance of the impression in the Stadtarchiv as the only known, extant, hand-colored impression, with apparently original color.

32 This section was written by Nicole Roberts.

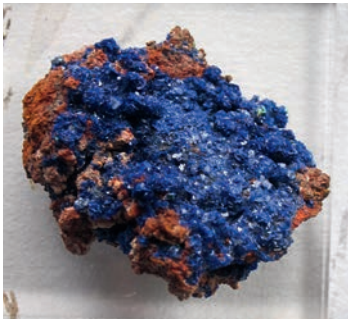
33 Dr. Heinrich Piening, Heinrich: Untersuchungsbericht. *Kolorierte Druckgrafik, Beham Stadtarchiv München HVBS E 01–10*, Bayerische Verwaltung der staatlichen Schlösser, Gärten und Seen, Schloss Nymphenburg, 3.12.2012. For the colors, see for example Winter, J./West Fitzhugh E.: *Pigments Based on Carbon, Artists' Pigments*, ed. By B. H. Berrie/R. L. Feller/ E. West Fitzhugh, IV, National Gallery of

Art, Washington, D. C., London 2007, pp. 1–39, and West Fitzhugh, E. (ed.): *Artists' Pigments. A Handbook of their History and Characteristics*, III, Oxford 1997.

34 Synthetic ultramarine was discovered in 1826 in France by Jean-Baptiste Guimet and sold commercially in 1828. See: http://cameo.mfa.org/wiki/Forbes_Pigment_Database_and_Blue_Pigments.

The Round Tower
Ruptured to Reveal
the Statue of the King
of the Romans
Etching of Claude Lorraine, 1637; 194 × 137 mm
Metropolitan Museum of Art,
New York

Sprengung des Rundes
Turmes in Rom zur
Freilegung der Statue
des römischen Königs
Radierung von Claude
Lorraine, 1637



Azurite, purchased 2013 in Munich,
Germany, in a gem shop

Azurit, erworben 2013 in
einem Münchner Edelsteinladen

Photo: author

To authenticate the colors, Fiber Optics Reflectance Spectroscopy (FORS) was used in conjunction with ultraviolet-visual spectroscopy that tests the near infrared spectra or colors invisible to the naked eye.³⁵ FORS is a non-invasive technique and provides data for the identification of pigments used to analyze color in painting. Fiber optics performs measurements on non-moveable objects or objects too large for conventional spectroscopy, as is the case with Beham's large print. FORS thus facilitates the analysis of such items. During FORS optical fibers act to guide electromagnetic waves in the optical spectrum. Light is transmitted that captures the reflectance or spectra required to analyze the painted material.

During analysis comparisons were made of all pigments using the near ultraviolet, visual, and near infrared spectra including wavelengths of 250 – 1100 nanometers. Data was collected on spectroscopy graphs for the absorbency per nanometer squared over wavelength. The use of such a derivative graph offers both greater precision for the material studied and detailed information about it. Paint materials from Beham's print were tested against reference collections from various museum laboratories. The results indicate that all pigments on the print date from the historical period of the impression with the exception of the synthetic ultramarine. The ultramarine indicated a later alteration, possibly a retouching of an unspecified date probably in the twentieth century.

The colors added to Beham's print were used in painting across Northern Europe and Italy during the Renaissance although their inclusion varied by availability and geographical region. The blues included, ultramarine in particular, are notable because they are beautiful and sometimes very expensive. In contrast to Italy, Northern European artists often used azurite. In Germany azurite, "lazur" and "lazurum", in documents of the time,³⁶ was more common than ultramarine, the most expensive blue. Ultramarine was so expensive that it appears to have been rarely used.³⁷

If Meldemann, someone in his shop, or another colorer added the azurite to Beham's print, he could have purchased it locally in pharmacies ("apotekken"), grocers ("kram"), or spice traders ("wurzkrämer"), as Andreas Burmester and Christoph Krekel have shown for pigments and binding media using artists' treatises. Theirs is the first study of pharmacists' price lists ("taxa"), required by local governments and including pigment names and

35 When visible or white light shines through a prism, the spectrum of visual colors produced (red, orange, yellow, etc.) can be seen by the human eye. But when ultraviolet light shines through a prism it reflects a wider range of colors, which are not detectable to the eye. This near infrared spectrum is more precise in detecting different pigments that appear similar to the naked eye. For example, two colors that look emerald green may have been formed from two different compositions of materials that can be detected by the infrared spectra.

36 Burmester, Andreas/Krekel, Christoph: The relationship between Albrecht Dürer's Palette and Fifteenth/Sixteenth-Century Pharmacy Price Lists: The Use of Azurite and Ultramarine," Contributions to the Dublin Congress. Painting Techniques. History, Materials and Studio Practice, ed.

by A. Roy and P. Smith, Dublin, 7 – 11 September 1998, London, 1998, p. 103. The above essay was published with additions in Krekel/Burmester: *Handel mit und Verwendung von blauen Pigmenten in der Dürerzeit*, in: *Fischsbacher Hefte zur Geschichte des Berg- und Hüttenwesens VI*, 2000, p. 17 – 20.

37 For azurite I benefited from the expertise of Jay Rich's hands-on workshop in Omaha, Nebraska, March 2014, where I worked with azurite purchased the previous summer at a Munich gem store (fig. 8). I ground two small pieces of azurite from that sample with mortar and pestle and added a few drops of gum arabic mixed with water. The result: the blue azurite particles separated from those of the brown substrate. I could neither easily separate the blue and brown particles nor mix them together.

prices. Preliminary results of their study indicate that all pigments used by Dürer and his contemporaries could be purchased from one of the ten pharmacies in Nuremberg. Ultramarine was used only in rare exceptions and unlike azurite does not appear to have been available in local German markets.³⁸ Azurite was the blue early sixteenth-century German painters used; ultramarine was the exception.

Prices of pigments varied in the sixteenth century. Cheaper pigments included lead white, verdigris and lead-tin yellow. More expensive ones included azurite, cinnabar, bone black and those of scale insects (*"Grana tinctorum"*).³⁹ Other pigments studied on Beham's *"Entry of Charles V into Munich"* in the Stadtarchiv Munich – rose madder, vermilion coated with rose madder, malachite, mountain green, azurite, mountain blue, and blacks – were not unusual for the early sixteenth century, but they were in the more expensive price range. To place these colors in perspective Dürer restricted his palette, which did not change over the course of his lifetime, to azurite, occasionally ultramarine, verdigris, lead-tin yellow, brown, and occasionally yellow ochres, cinnabar, red lead, red lakes, basic lead white, and plant and bone black. Dürer's palette was typical for German painting of the time, except for the use of ultramarine that was almost never used by south German painters, even if it were used south of the Alps.⁴⁰

The raw materials or pigments Dürer used would either have been produced by local craftsman or they might have been imported. The account books of European-wide trading companies indicate that pigment-producing mines were owned by the Fugger in Schwaz, Tyrol, and by the Paumgartners in Idrija, Slovenia.⁴¹ However azurite, *"lazur"* or *"lazurum"*, was produced mainly in German mines such as the one at Wallerfangen, Saarland, on the border to France in southwest Germany. Azurite production in Wallerfangen increased significantly, over ten fold between 1493 and 1530, from 260 pounds to 3,400 pounds.⁴² The azurite used in Beham's print and by Dürer would have been available locally, produced throughout Germany, and was more reasonably priced than the very expensive ultramarine Dürer mentions in his correspondence to Jakob Heller for his altarpiece, 1507–9.⁴³

38 Burmester and Krekel (see note 36), p. 101, 102. Although Albrecht Altdorfer was earlier believed to have owned a pharmacy, recent research by Benno J. Walde has shown that Altdorfer must have had a close relationship with pharmacy shop owner, Niklas Vischpacher. Altdorfer was the *"Vormund"* or guardian of Vischpacher's children and ceramic pots with color (red, yellow, blue) were found in the vaults of Altdorfer's cellar in Regensburg. See Walde, Benno J.: *Albrecht Altdorfer und die Reichsstadt Regensburg. Quellen und Forschungen zum Bürgerleben eines Malers und Baumeisters in der ersten Hälfte des 16. Jahrhunderts* (working title), Ph.D. dissertation, University of Trier 2014, in progress. Walde's dissertation includes all the existing written sources on Altdorfer. See *"Albrecht Altdorfer in Regensburg – Testament und Nachlassinventar als Quellen zu Besitz und Hausrat des Künstlers,"* in: *Der Künstler in der Gesellschaft. Einführungen zur Künstlersozialgeschichte des Mittelalters und der Frühen Neuzeit*, ed. by Andreas Tacke, Darmstadt

2011, p. 262–87. On pharmacies, see Henn, V.: *Apothekerdienstbriefe, Apothekenordnungen und Arneitaxen. Quellen städtischer Gesundheitspolitik des späten Mittelalters*, in: *Städtische Wirtschaft im Mittelalter*, ed. R. Holbach/M. Pauly, Köln 2011, p. 149–78.

39 Burmester and Krekel (see note 36), p. 102.

40 Krekel and Burmester (see note 36), p. 18.

41 Burmester and Krekel (see note 36), p. 101.

42 Burmester and Krekel (see note 36), p. 104. Van Asperen de Boer has investigated the size of mineral particles for establishing artist attribution via ultramarine (*lapis lazuli*) and azurite; see J. R. J. van Asperen de Boer: *An Examination of Particle Size Distribution of Azurite and Natural Ultramarine in: Some Early Netherlandish Paintings*, *Studies in Conservation* XIX, 1974, pp. 233–43, stable URL: <http://www.jstor.org/stable/1505730>.

43 Dürer's correspondence with Heller is well published, although I know of no mention that the blue used was ultra-

Beham's print began a centuries-long tradition of rendering fireworks in printed form, but its textual reference to fireworks is silent alongside the cannon fire and dozens of cannons and infantrymen, who stand at the ready, against the bombast and color of later intaglio versions. Beham's print brings together the powders of pigments and of the incendiary, both of which appear to have been available at pharmacies in the sixteenth century. Although pharmacies and drug stores today differ significantly from those in Early Modern Germany, I hope here to have shown how closely related these seemingly disparate areas of society were during the time of Beham, Dürer, and Altdorfer.

Numerous individuals made this article possible and I am grateful for their assistance as I moved into the new territory of the analysis of color. Jens Stenger, Strauss Center for Conservation and Technical Studies, Harvard Art Museums, provided much needed help with the color report's German terminology and with color resources. Dr. Brigitte Huber, Stadtarchiv München, showed me the hand-colored print, requested the color analysis, and expressed interest in the project. Print curators Susan M. Dackerman, Harvard Art Museums, and Dr. Achim Riether, Staatliche Graphische Sammlung, Munich, provided essential contacts and showed me another state of Beham's print. Funding was generously provided by the University of Nebraska-Lincoln's Hixson-Lied College of Fine and Performing Arts and the Woods Travel Fund in the School of Art, History and Design to present this material in an earlier form at the Frühe Neuzeitliche Interdisziplinär (FNI) conference 2012 at Duke University, in a session on ephemeral art.

marine. See Rupprich H. (ed.): Dürer. Schriftlicher Nachlass, Bd. I, Berlin 1956, for example, p. 66, line 15: "wie auch desz

besten vltermarin daran mahlen, das ich zu wegen kan bringen" (24 August 1508). See also Rupprich, p. 67, no. 15, line 27.