EQUILIBRIUM

QUARTERLY MAGAZINE OF THE INTERNATIONAL SOCIETY OF ANTIQUE SCALE COLLECTORS

2022 ISSUE NO. 2 PAGES 4921-4956

EQUILIBRIUM

EQM Coordinator
Fred Rengel
Tel 651.332.1455
flmrengel@comcast.net

Associate Editor
Diana Crawforth-Hitchins
Tel 01865.763096
lehitchins@gmail.com

Graphic Designer
Ruth Nechas

EQUILIBRIUM is published quarterly

ISSN: 0893-2883

International Society of Antique Scale Collectors
Founded September 1976
Tel 651.332.1455
www.isasc.org

President
Fred Rengel

Vice Presidents
Michael Foster
Greg Hill
Greg Moss
Mary Anne Murphy
Allan Rodin
Ernie Segundo

Secretary
Carol Hayden

Treasurer
Judy Soslau

Member at Large
Kurt Beyreis

For membership information contact:
Allan Rodin
a_rodin@hotmail.com

IRS 501(c)(3) EIN 36-2976411

Follow us on
facebook and instagram

Table of Contents

Cover Picture:
These three beautiful penny scales are representative of the incredible variety of distinctly American coin operated public weighing machines. Their form and function followed art, societal trends and architectural styles for over 100 years. Shown are the Caille Moderne c. 1930-31, Peerless Aristocrat c.1916, and a Toledo Public Health Scale c. 1931.

From the Scale Collection of ISASC member
Christopher K. Steele, USA
Photography Jeff Tholt, Columbus, Ohio, USA

The American Weigh

by Ruth K. Meyer

This essay introduces the collection of coin-operated public weighing machines belonging to Christopher K. Steele, Columbus, Ohio, US. These are American "penny scales" that date from 1891 to 1991. This essay traces the evolution of these machines in Europe and America using selected examples from the Steele collection and is illustrated with items from his archives of ephemera. It is our thesis that the exterior design of scales closely follows trends in architecture from the Belle-Epoque through Art Déco. The mechanical advances include precision weighing, sound, operational efficiencies, ticket printing and distribution, fortune-telling and culminate in the digital read outs of the computer scales.

Figure 1: Christopher K. Steele, Collector.

Photography by Chas Ray Krider, USA, ©2016 Christopher K. Steele, USA

PENNY SCALES APPEAR IN THE LATE INDUSTRIAL AGE

Once they stood like sentinels on sidewalks and in stores reminding Americans that stepping up and weighing frequently was the best way to monitor and safeguard a slender and healthy figure. The penny scale was the foremost public advocate for healthy living in an increasingly affluent and indulgent society at the end of the 19th century.

Personal weighing machines appeared on the American scene in the Gilded Age of the mid-1880s, just when doctors and health reformers inaugurated their first crusades against obesity. These experts established that weight control would require a regimen of measurement and moderation at mealtime, and manufacturers responded with the helpful public scale that accepted a nickel in payment. Now, although their public service is over, the finest of the penny scales are museum objects and valued collectibles because they still stand for American innovation, precision craftsmanship and advanced standards in industrial design.

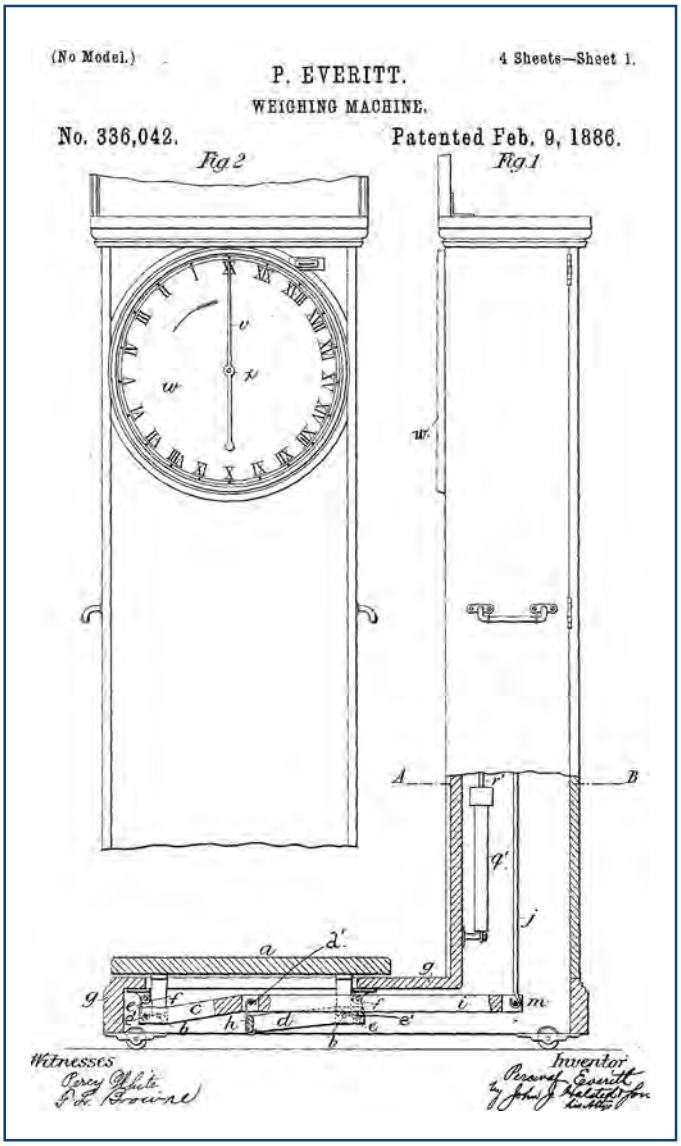

Figure 2: 1886, Everitt US Pat. 336,042

The coin-controlled weighing machine was an invention that arrived in America around 1885 and found immediate success with manufacturers, distributors and the public. It was the first device of significance to be introduced into the nascent American market for automatic vending machines. It offered a service, not a product, and was novel because the machine required a nickel in a slot. Inventors worldwide had long experimented with automata, the forerunners of today's robots. The concept of mechanical servants was inspirational in the late Industrial Age as a survey of late 19th-century US patents confirms. And journalists from the mid-1880s onward wrote enthusiastically about these coin-operated novelties.

The US patent No. 336,042 for a Weighing Machine awarded to Percival Everitt of London, England in 1886 is the first evidence available and the document also lists his European patents that date from 1884. Somewhat later journalists in the United States were reporting on the arrival of German coin-operated weighing machines.[1] In the mid-20th century an American pioneering vending journalist, G.R. Schreiber attempted to trace the ancient sources of automatic vending and concurred with other authors that the first automatic vending machine was built in 219 BC by the Greek inventor Hero.[2] Located in Greek temples, Hero's devices dispensed holy water to the worshipers upon deposit of a few drachmas.

Schreiber found only scattered references to automatic merchandising machines until the 18th century when tobacco vendors were introduced in London's public houses. These were "honor boxes" like today's newspaper vending machines. The coin inserted frees a lid so that one can reach in and extract the product. These dispensers are less mechanically sophisticated than

Hero's, which was not improved upon until 1884 when a patent was granted to W.H. Fruen for an "Automatic Liquid Drawing Device." Since it was not produced in quantity, Schreiber awards the prize for "the real beginning of automatic selling in the United States" to Thomas Adams.[3] On New York City's elevated train platforms in 1888, Adams introduced machines he had designed that dispensed Tutti-Frutti gum. From the mid to late 1880s onward weighing machines inspired by Everitt's invention were being patented in the United States. Their inventors refined the mechanics and developed the design of their wood and glass cases seeking public approval and sales. They were often highly entertaining machines that displayed a dazzling array of mechanical wizardry. The exuberance of this new technology prompted many inventors to overreach. Tickets showing weight, music, shockers, strength testers, and lung testers were all services added to weighing machines in the first round of the important service. Machines so encumbered proved difficult to maintain in trouble free operation.

Spurred on by the requirements of reliability and durability the next generation of scales, by the early 1900s, had ornate cast iron bodies and all the aesthetic hallmarks of the prevailing designs for machinery. They were husky creatures with flowery metalwork and applied design and ornamental lettering offering encouraging instructions and windows through which their mechanisms could be seen. As the novelty of dropping coins in slots subsided the cost was reduced from a nickel to a penny to increase the numbers of weighing patrons.

Their appearance doubtlessly derived from two sources: the so-called Grandfather's clock and the familiar municipal clock on the corner that kept passing pedestrians on time. The municipal clocks were familiar public regulators and the penny scales reminded people to regulate their weight. By the turn of the century, many other regional companies, such as the Caille Brothers in Detroit, would join National, Mills and Watling in a lively commerce that gained impetus from the growing national awareness of maintaining healthy weight.

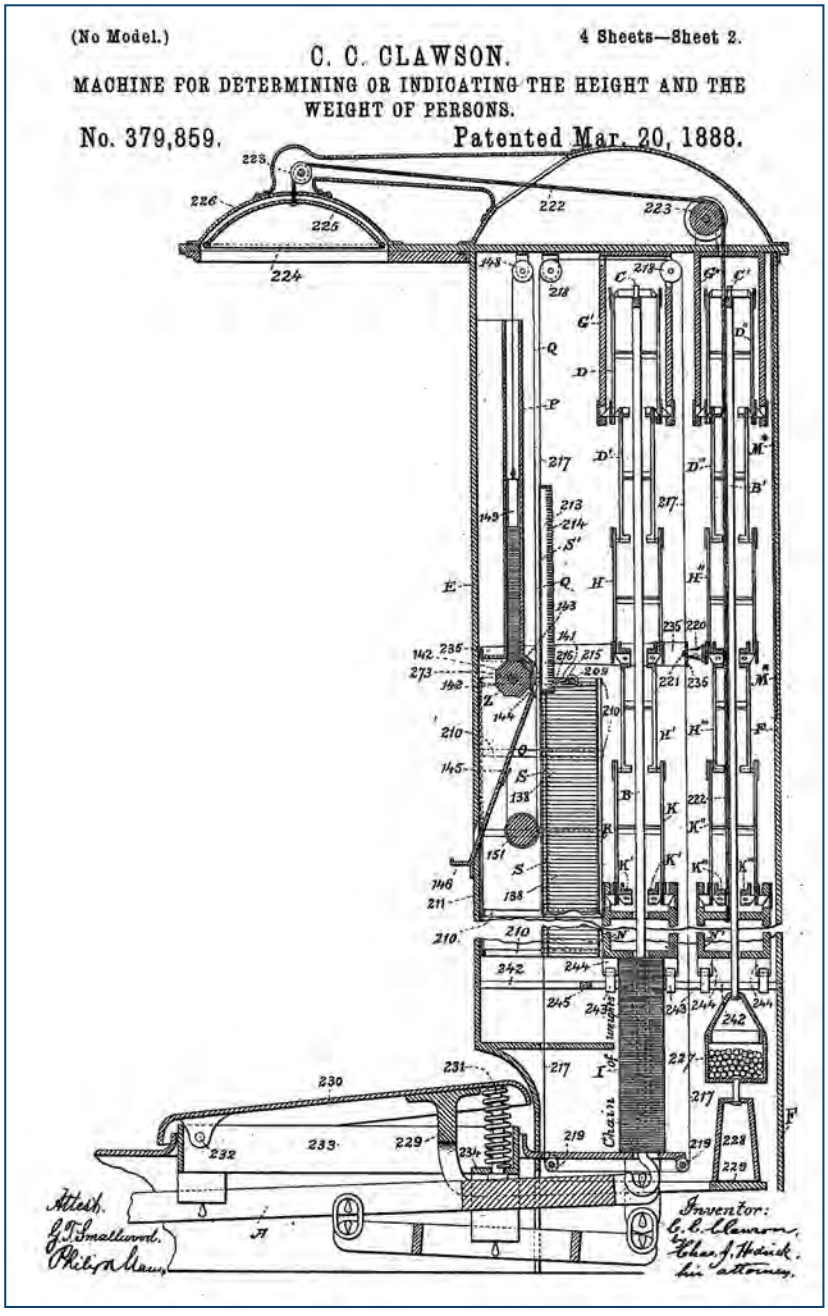

Figure 3: 1888, Clawson U.S. Pat. 379,859

Figure 4: National Scale, c.1891
American Penny Scale Collection of
Christopher K. Steele, USA
Photography: Jeff Tholt, Columbus, Ohio, USA
©2016 Steele·Tholt, USA

Figure 5: Peerless Aristocrat
c.1916
American Penny Scale Collection of
Christopher K. Steele, USA
Photography: Jeff Tholt, Columbus, Ohio, USA
©2016 Steele·Tholt, USA

Figure 6: Aristocrat De Luxe
c.1921
American Penny Scale Collection of
Christopher K. Steele, USA
Photography: Jeff Tholt, Columbus, Ohio, USA
©2016 Steele·Tholt, USA

The **National Scale**, c.1891, is a Renaissance Revival creation in three parts: a base emblazoned with an acanthus motif; a body embellished with scrollwork in a tapering panel, and a face with spiral corner ornaments supporting a circular frame for its dial. The dial is crowned with the legend "Correct Weight One Cent." It is the oldest scale in the collection.

The **Peerless Aristocrat,** c.1916, and **Aristocrat De Luxe,** c.1921, scales were among many models by this national firm with headquarters in Detroit and then New York and plants in Detroit (Caille Brothers) and Chicago (Rhodes Hochriem). Peerless and its affiliate manufacturer, Caille Brothers, introduced many models with the "lollipop" silhouette that would dominate the first quarter of the 20th century. The supporting posts were frequently channeled like classical columns – dignifying their presence in the Beaux-Arts milieu of late 19th- century architecture. Around 1916, scales were more uniformly coated in sparkling white porcelain enamel making clear that they had just escaped from the doctor's office to become publicly available. Later they were coated in vivid colors. Another

Figure 7: Announcing Scale, c.1903-1916
American Penny Scale Collection of Christopher K. Steele, USA
Photography: Jeff Tholt, Columbus, Ohio, USA, ©2016 Steele·Tholt, USA

Figure 8: Caille Washington Mirror Scale, c. 1910
American Penny Scale Collection of Christopher K. Steele, USA
Photography: Jeff Tholt, Columbus, Ohio, USA, ©2016 Steele·Tholt, USA

familiar penny scale shape was derived from the grandfather case clock. One of the earliest was a **Talking Scale,** c.1903-16, with a built-in phonograph that played a recording to announce your weight. This 1903-16 model charged a nickel, at a time when that coin bought you two loaves of bread, and gave you the chance to win your money back if you were lucky. An ambitious model, it was adorned with many encouraging instructions as well as decorative motifs more suggestive of the parlor than the corner store. This ornamentation is representative of the English Arts and Crafts Movement, a European importation, and reminds us that American designers were still utterly beholden to foreign models and immigrant craftsmen. The cabinet front has a landscape painting and its side panels feature birds on floral branches, a motif that could have been borrowed from Asian sources. Also known from its patents as the **Announcing Scale**, this model was more a novelty than a commercial success for the American Talking Scale Company of New York, and may have been intended for exhibition at one of the many industrial fairs that took place at this time worldwide.[4]

There were many case-clock models with visible works. These penny scales featured prominent dials where additional images could be displayed. The Caille Brothers **Washington Mirror Scale,** c.1910, had a portrait of President George Washington along with other patriotic motifs on its dial face

Figure 9: Peerless Mirror Deluxe
c. 1916
American Penny Scale Collection of
Christopher K. Steele, USA
Photography: Jeff Tholt, Columbus, Ohio, USA

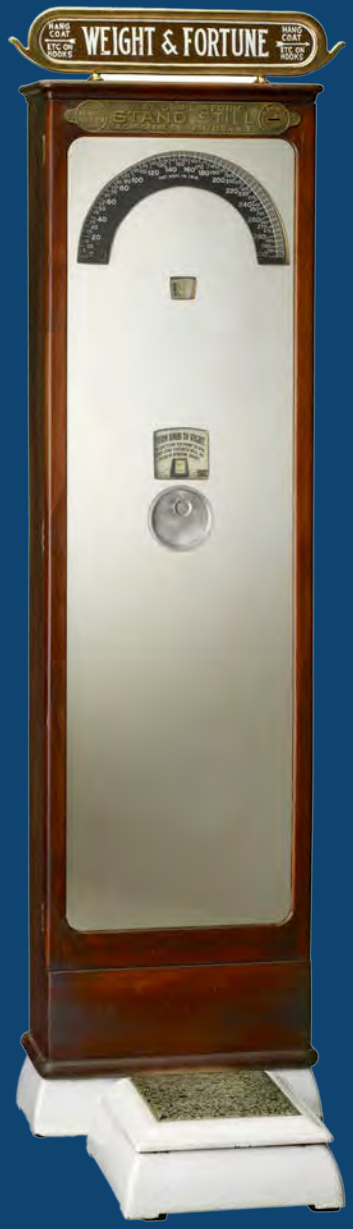

Figure 10: Watling Fortune Telling
Mirror Scale, c.1923-29
American Penny Scale Collection of
Christopher K. Steele, USA
Photography: Jeff Tholt, Columbus, Ohio, USA

and bore the legend "Correct Weight," a subtle reference to the fabled honesty of the Father of his Country. Fabricated with a wooden case, the Washington scale was updated with a full-length mirrored front. Another scale from the Caille Brothers was the **Peerless Mirror Deluxe,** c.1916, that was entirely mirrored and stands as an elegant forerunner to the sleek models of the 1920s.

Before World War, I the new industry of automatic vending had developed a business plan that engaged a legion of small operators or franchisers. A vendor might purchase a number of scales and locate them in areas of business and entertainment where frequent use would be encouraged. Stores, restaurants, transportation hubs and office buildings all offered opportunities for entrepreneurs to introduce machines that measured their own traffic by the volume of pennies collected. Manufacturers published catalogues of scales and touted their features and performance from sales records.[5] Many novelty devices were added to the penny scale as a way to attract patronage. The **Watling Fortune Telling Mirror Scale,** c.1923-9, offered advice by means of a large wheel behind a small window inside the cabinet. The customer could choose a question from a list of personal topics relating to finances, fame and romance or spin a wheel to ask a question at random. When the penny dropped, an answer appeared in a second window.

The ticket scales were another popular innovation of the early twentieth century. As the public weighing machine became more popular, women complained that the large displays on the circular dial faces announced their weight to bystanders. The manufacturers were quick to come up with a solution that offered secrecy and an opportunity

Figure 11: Peerless Model-Ticket Scale, c. 1926-27
American Penny Scale Collection of Christopher K. Steele, USA
Photography: Jeff Tholt, Columbus, Ohio, USA, ©2016 Steele·Tholt, USA

Figure 12: Hollywood motion picture stars for Peerless ticket issuing scales

to increase the vendor's business.[6]

Peerless's subsidiary Rhodes-Hochreim Manufacturing Company of Chicago developed scales that dispensed tickets stamped with the weight on one side and either a horoscope or celebrity picture on the reverse. Of course, patrons decided to collect the celebrities and scale usage increased. During the same era, cigarette vending machines began to appear and the packages also included celebrity pictures.

From the beginning all scale manufacturers promoted the honesty of their machines. Public scales used in industry and in the marketplace were notoriously vulnerable to all sorts of manipulation and campaigns to regulate weights and measures dominated early municipal governance.

Some of the penny scale manufacturers were the same companies that made utilitarian industrial scales, so the stylish looking penny scale offered an advertisement for companies serving a wide range of businesses. Proclaiming their company's honesty in gilt and chrome on these friendly devices that offered a public service was clearly an early 20th century branding and marketing strategy. Honesty and privacy were seemingly ensured if you could operate the scale yourself. This may have been the thinking behind the introduction of beam-scale models, more frequently found in doctors' offices.

Figure 13: Peerless Junior Beam, c.1916
American Penny Scale Collection of Christopher K. Steele, USA
Photography: Jeff Tholt, Columbus, Ohio, USA
©2016 Steele·Tholt, USA

Figure 14: Colonial Fair-Weigh Golf Scale
c.1915 case, c.1930 golf game
American Penny Scale Collection of Christopher K. Steele, USA
Photography: Jeff Tholt, Columbus, Ohio, USA
©2016 Steele·Tholt, USA

Drop a penny in a **Peerless Junior Beam,** c.1915-19, and the two connected beams are released. One beam is calibrated in increments of 10 pounds, while the other can be adjusted in quarter-pound advancements until both beams are in balance. Many models were offered by the Peerless Company, which was on its way to becoming the largest scale operator in America.

Penny scales were also prominent in amusement arcades that were familiar attractions in turn-of-the-century American cities and resorts. They found themselves lined up alongside machines to test strength and agility at various games that could be incorporated into their mechanisms. The **Golf Scale**, c.1930, must have been popular in arcades and perhaps theater lobbies that were developing during this period. Step on the scale and you get your weight, but you also get a chance to swing a tiny club and hit your penny which courses down a landscape setting on the front of the scale. The objective is to get your penny "over the lake," a hazard feature of the "country club course" that serves as the background.

When the European war began in 1914 industrial production in America shifted sharply to armaments and machines needed by the Allies, England and France. Despite this shift we have noted there was little interruption of production of scales. After World War I, scale makers gradually retooled their earlier models. New directions in American scale design did not become visible until the mid 1920s.

PENNY SCALES AND THE MACHINE AGE AESTHETIC

The automobile is frequently cited as the exemplar of the Machine Age in America, which dates from 1918 to 1940.[7] The conclusion of World War II in 1945 gave us the Atomic Age that has persisted into our new millennium. The Machine Age has many aspects that are both technical and philosophical, but is best understood when the innovations of industry are analyzed in the context of material culture studies.[8]

The Machine Age, the successor to the Industrial Age, commenced in Europe during the early 19th-century when factory production began to grow steadily and machines increasingly replaced manpower. The Machine gained popular acceptance when efficient labor saving devices came to be widely recognized as socially beneficial. Automatic vending was a reasonable outcome of the Machine Age. When these machines were introduced, they were hailed as the first robots offering their convenient services to everyone.[9]

In Europe the Machine Age was also identified through the arts and design professions and through the rise of commercial advertising. The convenience of the Machine was lauded and the word modern or *moderne* appeared frequently to signify a break with the past.

The beginning of a new century in 1900 inspired international

competition in architecture and all the allied trades. New goods created for modern environments established new national pride. Styling of new products for the home and office was announced in the press as these products were introduced through public exhibitions. *Art Nouveau,* a French trend in fabrics, furniture, lighting and tableware, circa 1900, gave way to *L'Esprit Nouveau* or New Spirit, a design movement created by the French architect and theorist Le Corbusier, who published a little magazine of that title. Le Corbusier and his contributors elevated the significance of the Machine by identifying a number of products and structures with aesthetic qualities thought to result from their origins at a factory or for an industrial purpose.

The New Spirit in France could be seen in the Cubist paintings of Pablo Picasso, Fernand Léger, and Marcel Duchamp whose painting titled *Nude Descending a Staircase*, traveled to the New York City Armory Show in 1913 introducing the aesthetic of the Machine Age to America. In Paris, that same year, a fine arts exhibition featured The Cubist House, a project that combined talents of artists and architects who were advocates of the New Spirit.

These efforts, notably in France and Germany, were stalled by the War, but renewed in the 1920s so that by 1925 a major exhibition of art and design in Paris displayed suites of model rooms and another house, the *Pavilion de l'Espirt Nouveau* by LeCorbusier with contributions from Léger and others. At its site in Paris, the *Exposition International des l'Arts Dėcoratifs et Industriels Modernes* introduced new design techniques, theories and artists. The publicity surrounding the event launched Art Deco, an international style in art, architecture and design that prevailed until the 1940s and has enjoyed periodic revivals.

Artists from all over the world traveled to Paris for the Art Deco exhibition. One rising star who was most certainly aware of this exhibit was Joseph Sinel (1889-1975), a native of New Zealand who was working in the United States doing advertising, graphic and product design at this time. Living in New York City he was alert to the imported styles of consumer products and the lagging sophistication of American designers. His experience seeing the Art Deco shows if not in Paris then later in New York City resulted in two masterpieces of penny scale design dated 1928 and 1929. Sinel's scales set a new standard for the design of these weighing machines and secured them places as icons of the Machine Age. Sinel's later career achievements have merited the collection of his papers in the California College of the Arts Libraries, at the Simpson Library, San Francisco.

Sinel's scales were commissioned by International Ticket Scale doing business on East 45th Street in the heart of New York City. The company sought to establish a sophisticated style and promoted it aggressively in sales literature that Sinel also designed. Sinel designed the **Model A**, c.1927, scale, a one-piece sixteen-gauge steel cabinet that rose without interruption from its porcelain-finished base. At shoulder height a pair of vertical chrome handrails offered assistance to mount the scale and emphasized its sleek cabinet design. A beveled mirror on the front was engraved with the greeting "honest weight and your fortune printed on a ticket – one cent." Just below this greeting, where other manufacturers would have placed a window to see the works, Sinel positioned a graphic design based on a wheel. The visual message of the **Model A** to both the customer and to the owner-operator was one of simplicity and efficiency.

Sinel's updated version of the penny scale was appropriate to the urban settings where weighing machines were found. In 1929, the second scale, **Model S**, c.1929, was promoted as an example of the newly recognized Skyscraper Style.[10]

In 1916, New York City officials had passed laws regarding the construction of skyscrapers that

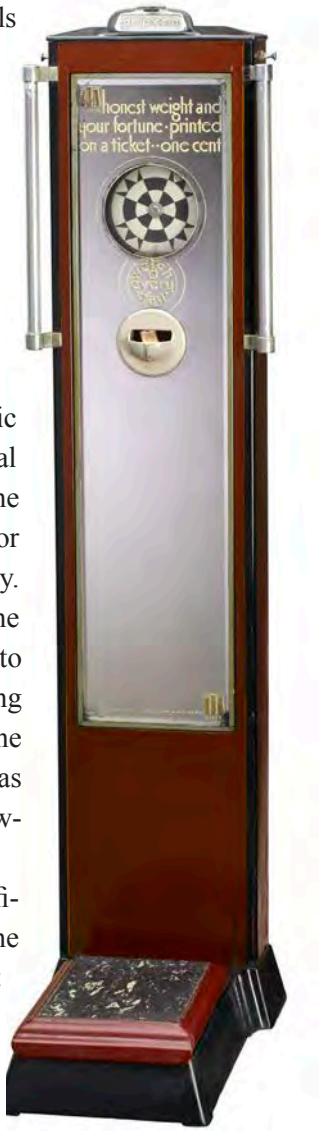

Figure 15: International Ticket Scale, Model A, c.1927
American Penny Scale Collection of Christopher K. Steele, USA
Photography: Jeff Tholt,Columbus,Ohio,USA

mandated setbacks on the uppermost floors of office towers to allow light to filter into the city's canyons. Earlier skyscrapers in Chicago and St. Louis were boxy looking in comparison to the soaring sculpted look of the New York City skyscrapers.

Sinel emphasized the verticality of the scale cabinet with multiple straight lines, setbacks near its top and geometric ornaments. Both scales appear to have been influenced by the architectural pylons at the entryway to the Paris Art Deco exhibition. But to pedestrians in New York City these scales were smaller cousins of the Empire State and the Chrysler Buildings, and they called them simply "modern".

The Skyscraper Style was also popular in furniture, mainly bookcases, manufactured in France and shown at the 1925 Paris show and the following year at the Metropolitan Museum of Art, New York. The Met's show recapitulated the aesthetic of the earlier show in Paris and launched Art Deco as the reigning design movement for the 1930s.

The 1929 International Ticket Scale models were named the **Standard Model A** and the **Deluxe Model S.** Details of ornament and color varied. The Model S has a ziggurat design, that is to say, supported tiers of rectangular volumes that retreated as the structure rose upward and both were crowned with smaller structures like the penthouse on top of Raymond Hood's McGraw-Hill building. The tower ornament was mirrored and engraved so the patron was able to "read" their height and correlate it with their weight in comparison with the "ideal weight to height" chart – while the patron also checked on her appearance. On the top of the tower the purpose of this small structure appeared in modern lettering "HEIGHT AND WEIGHT METER." The graphic font was one for which Sinel became famous. It was used for a corporate publication about his scales, and imitations of it appeared everywhere in the 1930s.

The Standard and the Deluxe Model S became available in pastel designer colors – yellows, greens, creams – suitable for the locations where they were placed. Restaurants and theater lounges were popular locations for Sinel's scale as can be seen in a vintage photograph of a Sinel Deluxe in Radio City Music Hall ladies lounge.

Some Deluxe scales were also emblazoned with provocative quotations from Shakespeare and the Bible addressed to the erudite New Yorkers: "O THAT THIS TOO TOO SOLID FLESH WOULD MELT," (*Hamlet*) and "THOU ART WEIGHED IN THE BALANCES AND THOU ART FOUND WANTING" (Old Testament, Daniel, 5:27). Both quotations evoke the psychological trepidations experienced by patrons approaching scales where, in this case, they will also be confronted with their fortunes on a printed ticket. Another contribution Sinel made to scale design was the lettering on the platform of the International Ticket Scales Model S. Sinel artfully used the words STEP ON IT, as both a reminder and a command, reinforcing another frequently found scale motto: WEIGH DAILY.

By the 1930s penny weighing machines were surrounded by many

Figure 16: International Ticket Scale, Deluxe Model S, c.1929
American Penny Scale Collection of Christopher K. Steele, USA
Photography: Jeff Tholt, Columbus, Ohio, USA

Figure 17: Watling
Horoscope Scale
c.1939-40
American Penny Scale Collection of
Christopher K. Steele, USA
Photography: Jeff Tholt, Columbus, Ohio, USA
©2016 Steele·Tholt, USA

Figure 18: Mills Trylon
c. 1938-39
American Penny Scale Collection of
Christopher K. Steele, USA
Photography: Jeff Tholt, Columbus, Ohio, USA
©2016 Steele·Tholt, USA

other examples of automatic vending. Cigarettes, groceries and snack foods led the way for a myriad of items, not to mention the popular photo booths. Initially, dispensers of prepared foods and drinks were resisted by company and factory managers until it was observed that their convenience encouraged workers to refresh themselves and get back to work quickly.

In response to the explosion of new machines, it appears that scale designers followed the lead of Sinel by creating ever more sophisticated and visually appealing models for their manufacturers

A conspicuous trend was toward a new shape that might have had its genesis in the revival of Egyptian art and design brought about by the discovery of King Tut's tomb in 1922. Egyptomania had last flared at the beginning of the 19th century when Napoleon invaded North Africa and brought along a team of archeologists to loot the country for the benefit of the Louvre Museum. In addition to the Rosetta Stone, these scholar-raiders brought back many examples of Egyptian funerary art, and, in the intervening century, Egypt never went entirely out of fashion. The publicity surrounding the finding of Tutankhamen's tomb and its contents revived images of mummies, mummy cases and small statues of the gods in rigid standing postures that tapered from head and shoulders to narrow feet or pedestals.

The "Egyptian" scales in the Steele collection are numerous, but some stand out for the clarity of their profiles and the application of Egyptian motifs such as the pictures of the Sphinx, the Great Pyramids and the attributes of astrology that decorate the **Watling Horoscope Scale**, c. 1939-40. The hieratic stance of the **Mills Trylon**, c.1938-9, scale would have suited it for installation in Tut's tomb had the king been watching his weight.

Three scales in the Steele collection demonstrate how manufacturers and designers competed to create unusual designs that appear to have been based on both architecture and sculpture of the 1930s. Sculptors who worked under the influence of Cubism introduced geometric abstractions that were either pure and nonobjective or vaguely anthropomorphic.

Figure 19: Navco Scale, c.1931
American Penny Scale Collection of Christopher K. Steele, USA
Photography: Jeff Tholt, Columbus, Ohio, USA

Figure 20: Rock-ola Featuristic, c.1931
American Penny Scale Collection of Christopher K. Steele, USA
Photography: Jeff Tholt, Columbus, Ohio, USA

Figure 21: Caille Moderne, c. 1930-31
American Penny Scale Collection of Christopher K. Steele, USA
Photography: Jeff Tholt, Columbus, Ohio, USA

Consider the **Navco**, c.1931, **Rock-Ola Featuristic,** c.1931, and **Caille Moderne**, c.1930-31**.** These scales are petite in comparison to earlier models and resemble mechanical mannequins in fancy evening gowns. Seemingly designed to appeal to the female clientele, the merchants may also have noted they were lighter in weight and therefore easier to move into position. Produced in white and vivid enamel colors, they dressed up the locations where they stood in wait.

Pharmacies were ideal locations for scales and several manufacturers catered to their needs by supplying models that called to mind the doctor's office. Other emblems and slogans of the medical profession were used to remind customers of the health benefits of weight control. These machines proposed such vigilance as a safer option than the weight-reduction drugs that appeared in pharmacies in the 1930s and were later withdrawn because they were toxic.

NO SPRINGS HONEST WEIGHT

Toledo Scale experimented with the coin operation of scales as early as 1914 but seemed to focus more intently on coin free weighing machines. Unlike some of its competitors who invested in penny scales through success in the mechanical amusements industry, Toledo primarily developed scales for merchants. Toledo Scale introduced its motto, "No Springs Honest Weight," when it launched its campaign to corner the expanding market for grocery scales and drive its competitors out of the business. During the Progressive era, politicians earned reputations as public defenders by calling for legislation

to regulate the system of commercial weights and measures so as to protect consumers from the legendary "butcher's thumb," an added weight covertly applied to the scale that increased their price and his profit.

Henry Theobald, the new president of the company he had purchased and reorganized, had a background in sales and advertising. To compensate for the higher price of the pendulum scales, he advertised their greater accuracy to both grocer and customer, creating the impression that scales with springs were "dishonest." Although the ad campaign brought him lawsuits and libel actions, the company flourished and by 1914 Toledo Scale dominated the commercial market as state by state, governments enforced the power of local officials to regulate measuring instruments on behalf of customers.

Two years later Toledo Scale introduced its "coin free" "person weigher" that closely resembles **Model 8300,** c.1925-30, patented in April 1916.[11] There were two versions of this "lollipop" scale: Model 8305 did not charge for a weigh, but Model 8300 was coin operated. The circular dial face was similar to other scales, but Toledo's bore the company's motto "Toledo No Springs Honest Weight" and provided a large window into the mechanism. The person weigher worked its way into grocery stores where it stood like a sentinel reinforcing the message echoed by Toledo grocery scales. A subsequent Model 8300 T was christened the Official Athletic Scale and appeared at gymnasiums and other sporting venues where competitors had to weigh in. In 1958, the popular artist, Norman Rockwell illustrated a horseracing jockey in his silks standing on a Model 8300 T for the cover of the *Saturday Evening Post* magazine.[12]

By purchasing a controlling interest in January 1926, Hubert Bennett, a new leader with a modern vision, took over Toledo Scale Company and became President the following month. He had a reputation as an innovator and he soon championed design as a means to develop new products and build markets.[13]

The company needed a new design for a lightweight cylinder scale that would be easy for the salesman to position at the grocers and would occupy less counter space while also giving the clearest readings expected by customers. Searching for this new design brought Bennett into contact with the men who would be among the first generation of American industrial designers.

Figure 22: Toledo Athletic Scale, 8300 T, c. 1925-30
Scale Collection of Christopher K. Steele, USA
Photography: Jeff Tholt, Columbus, Ohio, USA, ©2016 Steele·Tholt, USA

Bennett was now hooked on design and initiated the development of a new synthetic resin material, Plaskon, with a view to creating other product lines. For this venture he recruited Harold Van Doren, who came as a color consultant. Earlier plastic materials were dark in color, but Plaskon could be produced in pastels as well as white. Initially conceived for use in the "hygienic" scale market, Plaskon was suitable for a number of plastic items including the one-piece case

Figure 23: Toledo Public Health Scale, Model 8400, c. 1931
Scale Collection of Christopher K. Steele, USA
Photography: Jeff Tholt,Columbus,Ohio,USA
©2016 Steele·Tholt, USA

Figure 24: Hamilton Model PW, c.1948
(Ads for plain version appear in 1939)
Scale Collection of Christopher K. Steele, USA
Photography: Jeff Tholt,Columbus,Ohio,USA
©2016 Steele·Tholt, USA

Figure 25: Royal Crown Scale, c.1948
Scale Collection of Christopher K. Steele, USA
Photography: Jeff Tholt,Columbus,Ohio,USA
©2016 Steele·Tholt, USA

of the Air King radio, produced in 1933.

It fell to Harold Van Doren and his partner, John Gorden Rideout, to fulfill the commission for a new person weigher. The **Toledo Public Health Scale Model 8400**, patented in 1931, had the full force of the company's marketing division behind it. Promotions celebrated its utility and exploited its value as a corporate icon. Six years after the Art Deco exhibition in Paris had established modern design as an aesthetic norm and the Skyscraper Style as a positive value in an urban setting, the Toledo scale, at half its size, nudged aside the Sinel International scale that towered over it.

Far less imposing, but significantly more elegant, Van Doren and Rideout's scale avoided architectural ornament in favor of a more sculptural profile enhanced by graphic design elements associated with the newer Streamline moderne style. There were two standard models: one with the corporate nameplate centered between the "shoulders" of the case and the other with the company motto "No Springs Honest Weight' emblazoned vertically on the front. The sets of three narrow lines flanking the motto were the Streamline signifiers found on almost everything touched by a designer in 1932. The compact Toledo Model 8400 scale was half the size of Sinel's scales, and the hooded weight display was discreetly positioned directly beneath customer's line of sight as she leaned forward. The vanity mirror found on other scales had vanished. And recognizing the broader corporate value associated with the brand, some models of this scale were free.

The **Toledo Public Health Scale** was designed while Plaskon was in development and it benefited from the color research that was Van Doren's specialty. The scale was first manufactured in a bright yellow porcelain enamel with the streamline graphic, but softer pastel shades of green and tan, blue and ivory as well as light brown and black were available as well as custom colors for an additional price. The company increased its sales by 900 percent according to an article in *Fortune* magazine. And the National Alliance of Art and Industry awarded the scale its "first prize for fitness of purpose and beauty of design."

American industry and its clients and customers anticipated with relief the end of the 1930s, a decade that was scarred by the Great Depression and increasing political anxieties in Europe. But, New Yorkers were looking forward to a World's Fair, scheduled for 1939 that would lift spirits and bring together all the forward leaning energies under the banner of the World of Tomorrow. Futurists and other visionaries involved in the project were fully engaged in the spirit of The Machine Age and manufacturers vied for the right to display their products. The Mills Novelty Company of Chicago won the opportunity to proclaim their Trylon weighing machine to be the Official Scale of the World's Fair and so this design eventually came to symbolize the end of the greatest decade of innovation in scale design.

When war was declared in Europe and America was engaged to support her allies, France and Great Britain, industrial production shifted to war materials. When WWII ended, an entirely new consumer mentality was defined and manufacturers determined that the personal bathroom would be more marketable. But one Ohio company continued to produce these sidewalk icons for several more decades.

Hamilton Scale, located in Toledo went into business in 1921 and at first produced simply designed person weighers that could be customized to corporate specifications such as the Vitamins for Health scale in the Steele collection. Designed in 1938 this is the first scale in the Steele Collection that clearly shows the influence of the new approaches to branding and marketing to the consumer. Steele has dated this scale a decade later, in 1948.

Under the direction of Howard T. Ailor, Hamilton manufactured a series of novelty advertising scales beginning with the 1948 **Royal Crown Cola scale**. The familiar bottle shape was enlarged in a hard plastic with a weather resistant coating. This model led to scale designs for other popular beverages that were published in company sales brochures. Hamilton went on to promote scales in the form of simple cylinders and boxes that could be wrapped for display as soup cans and milk cartons.

Hamilton's most famous scale was **Mr. Peanut**, that first appeared in 1951. Two years earlier Hamilton received a commission for this scale from Planters Peanuts of Wilkes-Barre, Pennsylvania who had branded him its mascot. According to a company source, only about 65

Figure 26: Mr. Peanut Scale, c.1951
Scale Collection of Christopher K. Steele, USA
Photography: Jeff Tholt, Columbus, Ohio, USA

Mr. Peanut scales were made so today he is indeed a significant collector's item.

The **Pepsi Scale,** c.1991, is another rarity produced by another Ohio company. It was the idea of Ray Farr, a scale operator in Hummelston, Pennsylvania, who suggested to stack two blown up replicas of regular and diet cola cans like a column. The design patent was awarded Farr and Deluciano in 1991. Because of his expertise in the automatic vending industry Ray Farr advised Chris Steele in the early years of his collecting activity. The Pepsi scale was manufactured and engineered by the Sunmark Scale Company. Established in 1989 in Lorraine, Sunmark's first scale was the **Sunmark Phanto 1000,** c.1989, patented by Mark Deluciano**.** Steele considers this the first successful computer scale. This scale was self-calibrating to a limit of 999 pounds, an increase made necessary by America's losing battle with obesity. Both the Pepsi scale and the Sunmark scale used the same components.

Sunmark appeared just as scales were becoming a sideline for Hamilton Scale. Hamilton was more successful at marketing machines that combined several functions such as the sale of postage stamps and coin changing along with providing your weight. They also had a few models where candy machines were attached to the penny scales conveying a really mixed message. By the time that Steele began to collect penny scales in 1972, design and development of scales was almost at an end. Watling, long an industry leader, was sold to a Californian, who experimented with computerized scales in the 1970s. But nearly two more decades of technological advances were needed, before computerized scales would be deemed reliable.

The last generation of scales accepted quarters in payment for their services and some could be easily changed to accept 4 quarters to facilitate the transaction. They have attained new popularity in shopping malls and nutrition stores. More recently scales have appeared in Europe, which in addition to weight offer readings of height, blood pressure, and a body mass index for two Euros. The public weighing machines shows no sign of disappearing from established and emerging markets that are driven by the worldwide interest of the population in fitness, health and appearance.

Figure 27:
Sunmark Phantom 1000
Scale Collection of
Christopher K. Steele, USA
Photography: Jeff Tholt, Columbus, Ohio, USA

Figure 28:
Pepsi Scale, 1991
Scale Collection of Christopher K. Steele, USA
Photography: Jeff Tholt, Columbus, Ohio, USA

Endnotes

1. "Drop-a-Nickel Machines in Germany," Chicago Daily Tribune reprinted in the New York Sun, August 11, 1889.
2. George Richard Schreiber, "A Concise History of Vending in the USA," Vend, The Magazine of the Vending Industry, Chicago, 1961 p.10-12. Schreiber was the leading authority on vending machines in mid-20th century USA with many publications. He was the founder of Vend magazine and president of the National Automatic Merchandising Association.
3. Schreiber, p. 21.
4. Inventor G. A. Moore applied for at least six US patents for this scale and it appears in a number of commercial advertisements from the period 1903 - 1906. In previous publications Christopher Steele has referred to his scale as the Talking Scale based on a standard appellation for the scale in the collectibles market. Recent patent research has confirmed that Moore called his scale the Announcing Scale. Confusion arises from the fact that the scale was advertised in Billboard and elsewhere as both the Talking Scale and the Announcing Scale.
5. Walter B. Chandler, Catalogue of Golden Opportunities, Providence, The Bradford Scale Company, 1913. Available in facsimilie.
6. Arch M. Andrews, "Profits from Pennies," Saturday Evening Post, November 1, 1930, p. 88. Andrews details the growth of the US penny scale business from its early days providing the insights of an investor in the Peerless Manufacturing Company and the International Ticket Scale Company.
7. Renie Burdett and Anne Regar, "Nineteen Million Ways to Grab the Festive Nickel: A Woman's Viewpoint of the Cleveland Show," Automatic Age, April 1931, p.26. Note the use of the term "Machine Age" now coming into common usage in the 20th century. The penny scale industry mounted large trade shows to introduce new models in the 1930s.
8. Richard Guy Wilson et al, The Machine Age in America, 1918 -1948, The Brooklyn Museum and Harry N. Abrams, New York, 1986, an exhibition and catalogue that best summarizes the period.
9. "Edison plans an automatic clerkless shop," New York Times, May 15 1910. Thomas A. Edison thought that "clerkless stores" would be advantageous because merchants would save money when selling goods and pass the savings on to the poor through lower prices. After the Great Depression there was a reaction against the promotion of vending machines as labor savers in the US because they would deprive workers of employment. "Vending grievous mistake in 1920s, there will be no need for clerks," Billboard, January 30 1943.
10. Wilson et al, The Machine Age, 8.20, p. 287. The Sinel scale illustrated is from the Wolfson Collection, Miami. Similar models are found at the Dallas Museum of Art and the Minneapolis Institute of Art.
11. Jeffrey l. Meikle, "Weighing the Difference: Industrial Design at the Toledo Scale Company, 1925 – 1950," The Alliance of Art and Industry: Toledo Designs for a Modern America, Toledo Museum of Art, 2002, p. 129–151. The Official Athletic Scale, plate two, page 131, was lent by to the Anniversary Exhibition from the Collection of Christopher K. Steele.
12. Stanley Frank, "A Visit with Eddie Arcaro" Saturday Evening Post, June 28,1958, p. 26. Rockwell's cover is titled "Weighing In."
13. Meikle, Toledo, p. 129-151.

This essay was originally published in Maß & Gewicht in December of 2016 and served as an introduction to a publication of a detailed history of American penny scales and catalog of the Christopher K. Steele collection in which is included more detailed information about the scales selected for publication and resources for connoisseurship in this field of fine industrial antiques.

A Strange Patent

By Stephen Barnett

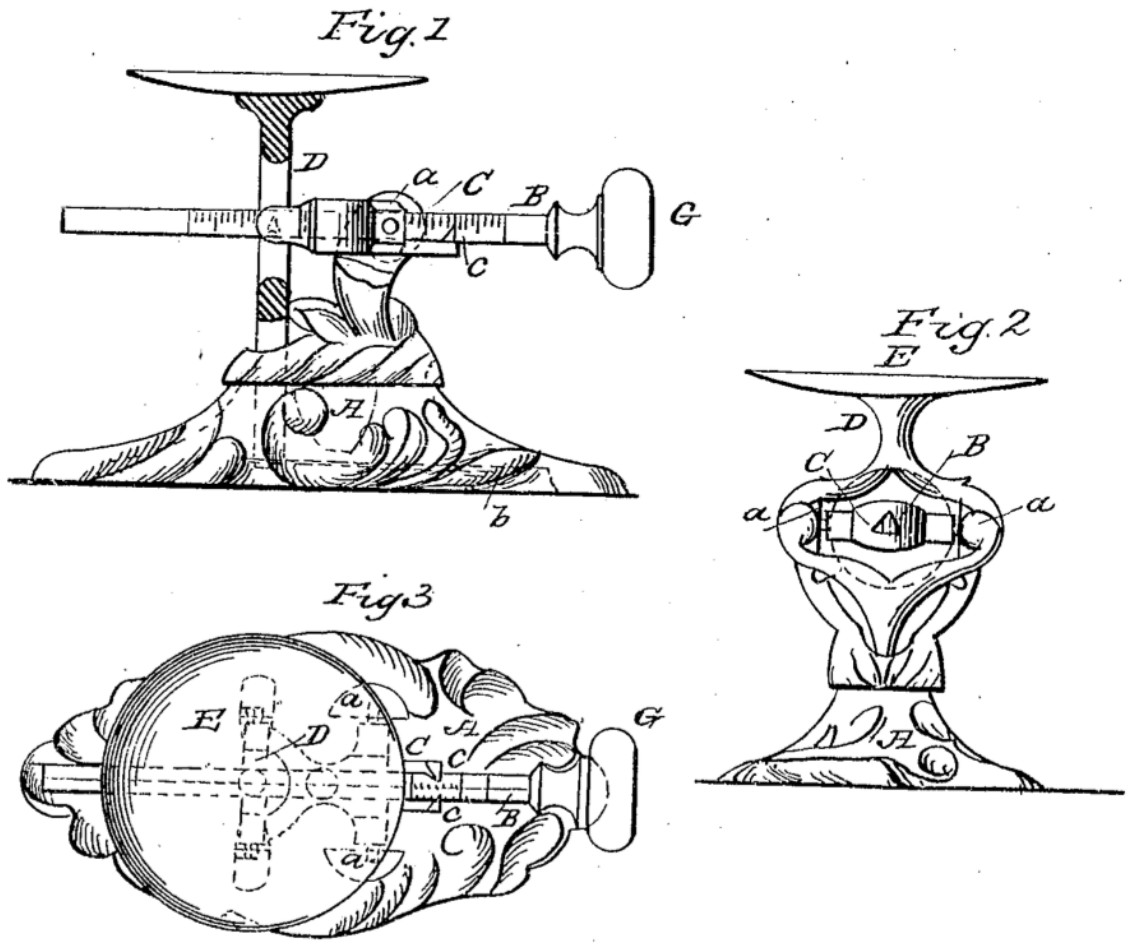

Figure 1: Joseph Strange patent drawings. Patent no. 24,669. July 5, 1859

Joseph W. Strange (c1812-1895) was a machinist and inventor. He lived in Bangor, Maine. On July 5, 1859, he was granted a patent, number 24,669, for a "scale for weighing". The patent goes on to describe the scale. The patent does "explain" how the position of the beam determines the weight of the load: the further the weight on end of the beam is from the fulcrum, the larger the load required to balance it. His principal claim about the novelty of the invention is that the cross section of the beam could be triangular, square, or other "polygonal" shape so that the beam could have several graduations marked on it, and could be rotated so that the graduation that the user wants to use is visible. The patent includes drawings of the scale from different perspectives. (Figure 1), and a description of the scale, how it operates, and what about it is novel and worthy of a patent (Figure 2). The patent does not say anything about potential uses for the scale.

I recently acquired one of these scales. (Figures 3, 4, 5, 6). The beam does not rotate. This particular one is graduated from zero to ten ounces in half ounce increments. The graduations are equally spaced on the beam. The underside of the beam has positioning notches across it to lock it in place precisely for each of the graduations.

UNITED STATES PATENT OFFICE.

JOSEPH W. STRANGE, OF BANGOR, MAINE.

SCALE FOR WEIGHING.

Specification of Letters Patent No. 24,669, dated July 5, 1859.

To all whom it may concern:

Be it known that I, J. W. STRANGE, of Bangor, in the county of Penobscot and State of Maine, have invented certain new and useful Improvements in Weighing-Scales; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 represents a sectional side view of my invention. Fig. 2 is a front elevation of ditto. Fig. 3 is a plan or top view of the same.

Similar letters of reference in the three views indicate corresponding parts.

This invention consists in arranging a loaded scale beam, which may be triangular, round, or polygonal, in such a manner that the weight of the substance placed on the scales can be ascertained by sliding the beam in a socket, the end of which forms the pointer or index and which is so arranged that the beam can be turned in the same so that when the several sides of the beam are marked with different indications, either one of those may be brought before the eyes of the operator.

To enable those skilled in the art to fully understand, make and use my invention I will proceed to describe its construction and operation.

A represents a standard made of cast iron or any other suitable material, on which the scales are mounted in the usual manner. The scale beam, B, is fitted into a socket, C, which vibrates on scale points, *a*, in the sides of the standard, A, and supported by the front end of this socket is the pin, D, which bears the platform or scale, E. The lower end of the pin, D, is guided by a hinged arm, F, which is secured to the under side of the standard, A, by means of a pivot, *b*.

The beam, B, is triangular but it may be made of any other regular form, that is to say, round or polygonal, and it is fitted into the socket, C, in such a manner that it can be turned over in the same, so that either one of its sides can be brought in front, and these sides are marked with different indications or scales one of which may represent the troy weight, another one the avoirdupois, and still another the medicinal weight so that the weight of a substance placed on the platform can be read off in either one or the other of the above named indications.

The end of the socket forms the indexes or pointers, *c*, and a permanent weight, G, is firmly secured to the end of the beam, B, which serves to counterbalance the weight of the articles placed on the platform. It will be easily understood that larger weights can thus be ascertained by drawing the beam out so as to bring the center of gravity of the same, together with the weight, G, farther from the fulcrum of the socket, C, or smaller weights by pushing the beam in so as to bring its center of gravity nearer to the fulcrum of the socket, C, which latter is fulcrated in the scale points, *a*, as before stated.

By turning the beam in the socket either one of the indications marked on the same can be brought before the eye of the operator so that there is no need of changing the position of the scales in order to see plainly the different indications from the same standpoint, and the same index or pointer, *c*, serves for all the indications.

What I claim as new and desire to secure by Letters Patent is:—

1. Arranging the beam in such a manner that the several indications or scales marked on the same can be brought before the eye of the operator by turning the beam substantially as described.

2. The arrangement of the socket, C, so that its end forms the common index or pointer, *c*, for the several indications marked on the sides of the beam substantially as and for the purpose specified.

JOSEPH W. STRANGE.

Witnesses:

ISAAC S. WHITMAN,

WILLIAM S. WHITMAN.

Figure 2: Text of the Joseph Strange Scale Patent

Figure 3: Scale pan marked J.W. Strange Manufacturer Bangor, ME.

Figure 4: Side view of the scale with its colorful iron base and brass beam with one half ounce graduations and fixed iron poise attached to it. The beam is in the zero position.

Figure 5: There are no graduations on the other side of the beam of this model, the positioning notches on the underside of the beam are just visible.

Figure 6: Triangular cross section of beam and the linkage between the legs.

It has two "legs". One supports the pan and moves up and down. It is wider at its lower end to prevent it from moving too low into the base, and to limit how far the beam can swing up and down. (Figure 7) It has half Roberval linkages under the base to keep the pan level. The other leg is fixed and serves as the fulcrum for the beam. Between the two legs is an "H" shaped linkage. The linkage rotates the beam on its fulcrum as the pan leg moves up and down in response to the load. The beam slides through a triangular opening in the cross piece of the linkage. (Figure 8)

Is it a steelyard or is it a bismar? It is a variant of a steelyard. Equilibrium is achieved by moving the poise (and the beam) relative to the load bearing and fulcrum. The same principle can be found in so called "saddle steelyards" which were widely used in Eastern Europe and the Middle East. (Figure 9) In contrast, a bismar scale achieves equilibrium by moving the fulcrum in relation to the load bearing and poise which are in fixed positions at the ends of the beam.

Figure 7: Linkage joining the two legs, and the triangular cross section of the beam.

Figure 8: Linkage joining the two legs of beam showing the triangular opening in which the beam slides.

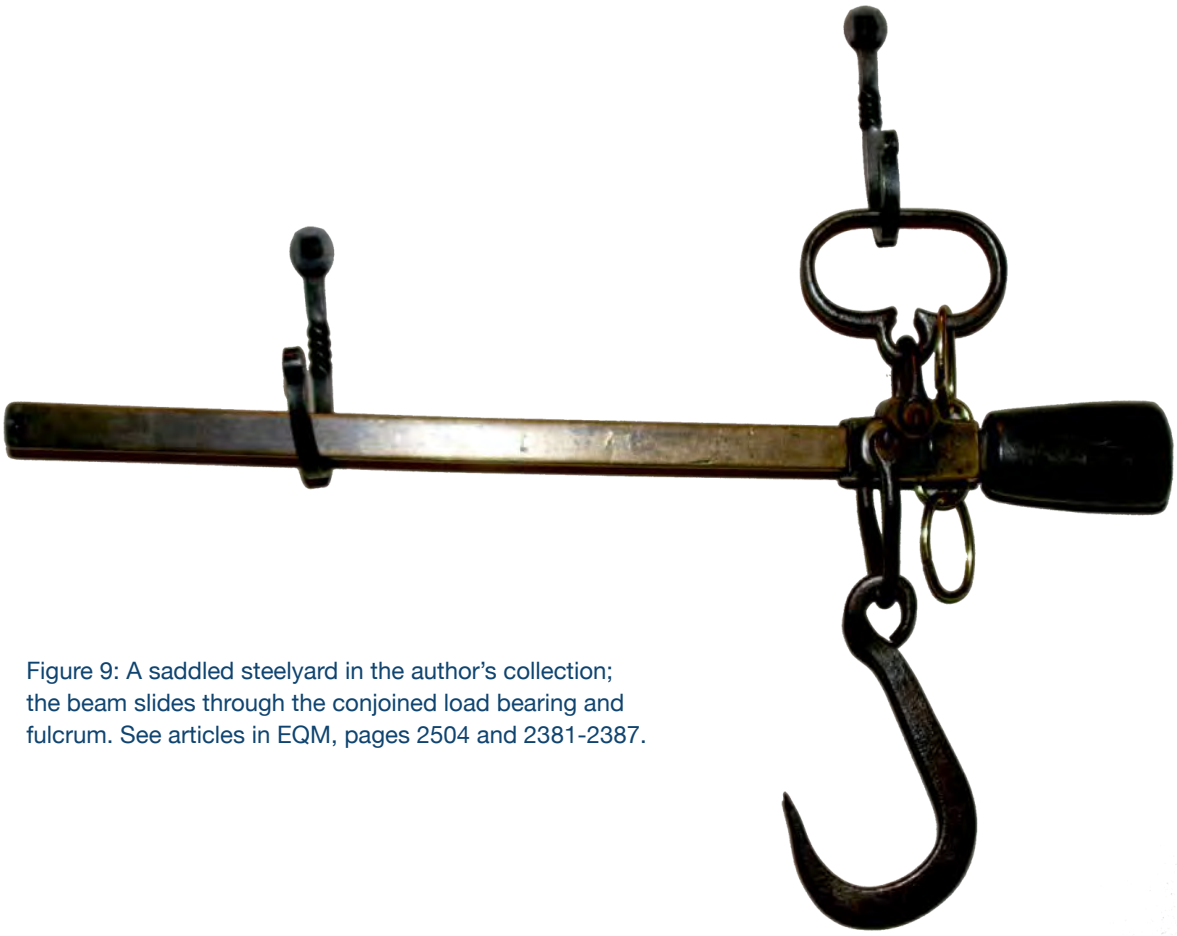

Figure 9: A saddled steelyard in the author's collection; the beam slides through the conjoined load bearing and fulcrum. See articles in EQM, pages 2504 and 2381-2387.

The Williams Family

How trade cards help us to learn about a family

By Jenny Hutchinson

Thomas Williams was born about 1755 in Chirk, a small town in Denbighshire, Wales. He was the first of the Williams family to start making scales in London, in premises at 71 Cannon Street, and the adjoining 4 Abchurch Yard. In 1859, they were described as *a dwelling house, counting house, excellent workshop, foundry and yard.*

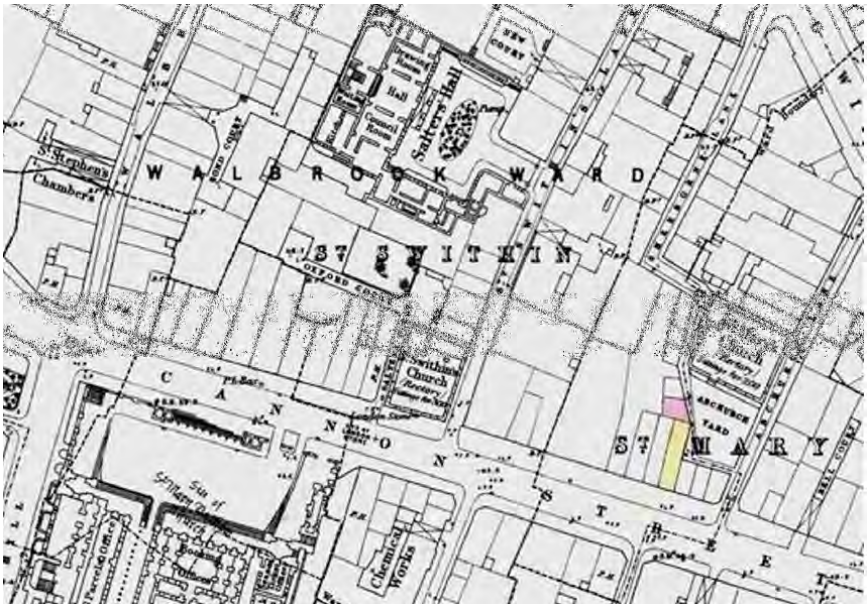

Figure 1: The map shows the position of these buildings. The yellow block is 71 Cannon Street, the pink one represents the adjoining premises at 4 Abchurch Yard.

Thomas' father was John Williams, described as a collier on Thomas' apprenticeship indenture. It seems clear that John Williams was not a collier in the present sense of being a coalminer below ground; at the time we are dealing with, collier could also refer to a man working in the charcoal industry or a dealer selling coal. John Williams' address is given as Chirk Forge, which is now a Grade II listed building, and given his prosperity, it is quite possible that he held a responsible position in one of the charcoal iron companies in that area.

On 5 October 1769, for the sum of one farthing, Thomas was apprenticed in London to his uncle Thomas Harrison, a scale-maker and member of the Blacksmiths' Company, and was freed from his apprenticeship in 1776. Thomas Harrison's wife Sarah was the sister of the mother of Thomas and William Williams. In 1774, Thomas' younger brother William, born c.1760, was also apprenticed to Thomas Harrison. Very little is known about William, though the date he was apprenticed suggests he was younger than Thomas by approximately five years. He was turned over to his older brother in 1781, presumably after Thomas had taken over Harrison's business, and was freed in 1782. He probably died before Thomas, as there in no mention of him in his brother's Will or as his brother's successor. The parish records of St. John the Evangelist include the death in 1790 of a William Williams of Millbank Street, London, aged 32.

On 1 January 1781, Thomas Williams took sole control of Thomas Harrison's former business after having run the business in co-partnership with Harrison's widow since her husband's death in 1779. It is clear that Thomas Harrison had a very good reputation as a scale-maker, since Thomas Williams' early scale labels proclaimed that he was the successor and late apprentice of Thomas

Figure 2: Intricate design of early Williams label including Harrison's name.

Harrison; a clear attempt to reassure future clients that the business remained in good hands. See Figure 2.

Thomas Williams became a member of the Court of Common Council for Walbrook Ward in 1799. This Court, the lower house of the City of London government, was a remarkably influential body, and during Thomas Williams' service it consisted of 240 members who were elected by freemen of the City (householders who paid at least £10 a year in rent (equivalent to £65,500 today) and 30 shillings a year in taxes, (equivalent to £1,500). Most freemen acquired this status through their membership in a Guild. The varied livery gowns worn by Council members were replaced in 1761 by a Mazarine (dark blue) silk gown, with fur trimmed sleeves. A Council meeting with members attired in their gowns must indeed have been an impressive sight.

The Court could pass by-laws regulating City life, including the organisation of the night watch, and it only met when summoned to do so by the Lord Mayor. Attendance at Court meetings could be regarded as a chore, as there were heavy penalties imposed on those who did not attend. The agendas of this Court could be vetted and their resolutions vetoed by the Court of Aldermen who also sat on the Common Council. At this time, Aldermen were required to possess property to the value of at least £15,000, (£655,000 today) and held office for life, subject only to resignation or removal for reasonable cause.

In 1812, a year after he had been elected Master of the Blacksmiths' Company, Thomas Williams was appointed deputy Alderman to John Atkins, for Walbrook Ward. Each Alderman appointed a deputy from among the Common Councilmen to assist him in the government of his Ward. Atkins was at that time a solicitor working in Walbrook, though his earlier occupation had been that of a Tide Waiter.[1] Some members of the Court of Common Council considered this occupation a lowly one, and Atkins was often subjected to uncomplimentary remarks about his origins, manners and language - and was also unkindly lampooned for his remarkably thin legs!

Thomas Williams was the only member of the family to hold office in the Court of Common Council, and it seems there were some discrepancies in the Ward accounts during his tenure as a deputy Alderman - to the extent that at one Ward meeting, during the discussion of a spate of vandalism to the windows of

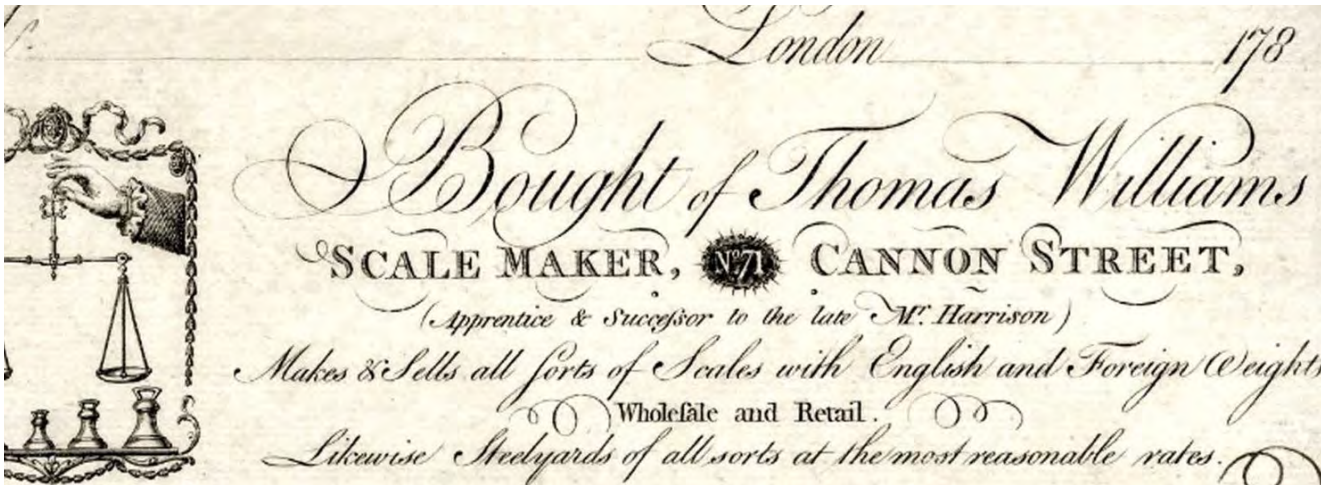

Figure 2b: Bill head from the 1780s.

Figure 3. Thomas Williams made a wide variety of beautifully crafted scales such as this little steelyard, only six inches long, in its original wooden box; its weight limit is six pounds. A delightful and unusual example of the work of a highly skilled scale-maker.

St. Mary Abchurch, it was suggested that perhaps the Ward officers should consider replacing the glass in the church with the Ward accounts, as no one had been known to get through them!

Thomas Williams was a keen supporter of various charities for underprivileged and disabled children - for example, in 1816 he was an annual subscriber to the *Society of Ancient Britons, supporting the Charity School at the North End of Gray's Inn Lane*, and in 1817, he was one of the governors of the *Asylum for the support and education of the deaf and dumb children of the poor*.

Thomas and his wife Elizabeth had three daughters, and one son, Thomas Wynn, was born in 1787, apprentice to his father in 1801, and freed in January 1809. Thomas Williams and his son became partners in the business, but this partnership was short lived, and was dissolved in 1811.[2] Thomas Wynn left London for Birmingham to work as a book keeper for another successful scale maker, Edward Whitfield & Sons. There is no obvious reason for this move, though bearing in mind his early death in 1823, it is possible he was not robust, and perhaps it was felt a sedentary occupation would be beneficial to his health. It is conceivable that Whitfields were anxious to have a connection with a top London scale-maker, and no doubt Thomas Williams was not averse to a Birmingham connection, as Birmingham was the centre for the manufacture of brassware. It is clear from Thomas Wynn's Will, made in 1820, and naming his father as sole executor, that there was no estrangement between father and son.

In line with other scale-makers, the Williams family supplied sets of Standard weights and measures to local authorities, at times having considerable trouble in obtaining payment for their work. Local authorities in the early 19th century were just as reluctant to part with their money as they are today! This transcript of a letter to Humphrey Williams, solicitor, from Thomas Williams, gives an example of this.[3]

71 Cannon St
London 17th July 1826
Mr Hy Willliams
Sir
I shall feel particularly obliged by your immediate remittance of the amount of my Bill (for the Supply of new Standard Weights & Measures for the County of Merioneth) or ordering the same to be paid forthwith, £111.9.0. Nett.
I am yours obediently
Thos. Williams

The Act of Parliament which came into force in 1826 compelled Local Authorities to purchase the full set of new standards so that the weights used for trade within their areas could be legally checked. The

Figure 4: An early-style coin scale made by Thomas Williams, of his lower quality, having swan-neck ends, not box ends. Having pennyweights, it was used to weigh bullion (more than one coin to make up the value required) or to check unusual coins using pennyweights & grains.

Figure 4b: Williams' pennyweights

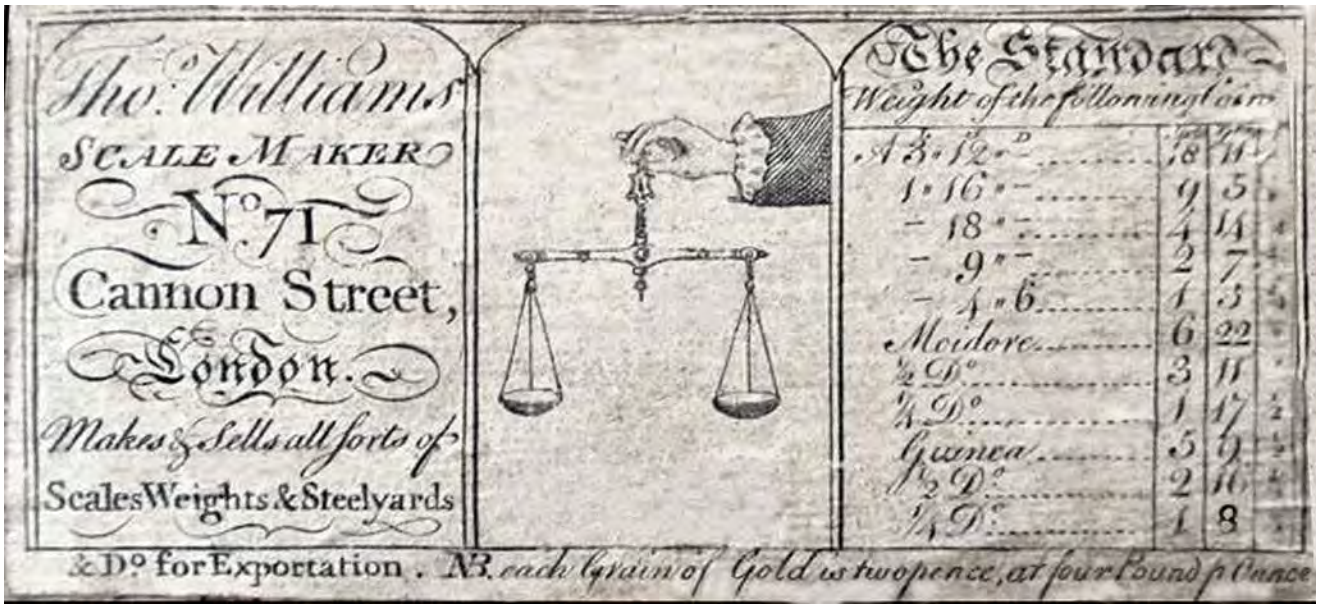

Figure 5. The label from the previous scale - note the variety of scripts employed and the highly skilled and detailed engraving. The coins listed were current between 1762 and about 1775.

Figure 6. Guinea balance made by Wilkinson, retailed by Williams.

Figure 7: T. Williams' name & address, with instructions for using the folding gold balance just showing on the left. The narrow label was specially printed to fit only into such balances.

sets varied in how many items were included, so it is impossible to know whether Thomas Williams' charges were moderate or exorbitant.

The balance shown in Figure 4 is obviously an early example of one of his scales as not only does the label display the use of the long *s* which went out of use when the modern face types were introduced into Britain in the decade from 1795-1805, but its centre section bears the Hand and Scales design, reminiscent of the once ubiquitous hanging signboard, which reached its zenith during the early years of the 18th century. Over time, the boards had become larger, heavier and more elaborate, blocking out air and light from the streets, and whilst they must have made an amazingly colourful spectacle, they were becoming a danger to the public.

In 1718, an enormous sign in Bride Lane caused the entire front of a house to collapse, killing four people. Unsurprisingly, since one of those killed was the King's jeweller, a Commission was set up to investigate, but as usual with such Commissions, much was said, but no action was taken. It was only when public opinion began to turn against the signboards and view them as dangerous, that they were gradually phased out.

As more people were becoming literate, or at least able to decipher a name or a number, the City of London issued a proclamation in 1762 that hanging signs were to be removed, and replaced by house numbers. Naturally, many shopkeepers and tradesmen were reluctant to give up the expression of individuality which they considered their signboards gave them, and many trade cards and bill heads reproduced to some extent the design of the signboard. The Hand and Scales was a very popular design for scale-makers, and early trade directories have Thomas Williams, scale maker, listed as *at the Hand and Scales, 71, Cannon Street.*

The folding guinea balance which bears the label of Thomas Williams has no distinctive features to point to its being one of his own creations, and it was in fact made by Anthony Wilkinson in Lancashire 200 miles north of London, and retailed by Thomas Williams.

Another example of the variety of coin scales made by T. Williams is one (Figure 8) in a wooden, shagreen-covered case, which still has its original weights for the guinea and half guinea. It is interesting to note the abbreviation for Thomas on the label - abbreviations of names were very popular at this time.

Thomas Williams died in September 1834, leaving his business to his nephew and former apprentice,

Figure 8: Shagreen was originally used in 13th century Japan for the handles and scabbards of Samurai swords - this velvet lined case shows a considerably safer use of the material! Note the top-quality pennyweights on the left, and the superb box ends of the very highest quality made by Thomas. Dirty glue marks show where originally the edges were decorated with silver ribbons.

Figure 9: Note the increased variety of scripts in this label! After about 1800 printers were keen to show off all their type-faces.

William, stating in his Will that his nephew had shown very great care and attention in his conducting of his uncle's business.

Thomas' nephew William was apprenticed to him in 1808 and freed in April 1818, a longer apprenticeship than was essential. When he took over the business, like his uncle before him, he used his predecessor's name on his early labels, as the one in figure 9, from a set of apothecary scales, shows.

Just after he assumed control of the business, in 1834, William also made clear his position as successor to Thomas in his early labels. (See Figure 9)

Like his uncle and predecessor, William Williams made a variety of scales. Glass pans for apothecary scales came into use around 1812 when scientists realised the effects of various chemicals and other substances on metal pans.

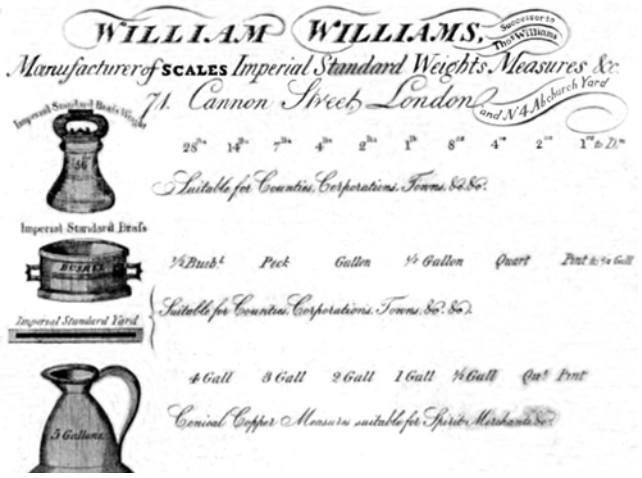

Figure 10: Selling sets of Standards put them in competition with other top makers, such as DeGrave and Vandome.

Figures 11 & 12: Two coin/ apothecary scales made by William Williams, one kept dry and the other neglected.

Figure 13: After 1866 William Williams took advantage of burgeoning overseas trade by adding the information that his scales could be supplied with foreign weights.

Figure 14: The small label from a tea-taster's scale as discussed in EQM, pages 4749-4763.

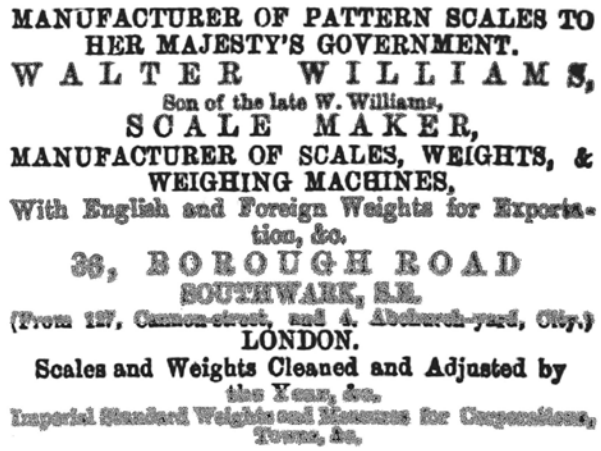

Figure 15: Walter made a valiant effort to be independent in 1873, moving south of the River Thames, and thus appealing to a different lot of people from his family's clients. He advertised that he supplied Imperial Standard weights & measures for corporations & towns, but he also ran cleaning and repairing contracts that suggest he was not too prosperous.

Confusion can easily arise from scale labels appearing to show a change of address for the Williams business, i.e. from 71 Cannon Street to 127 Cannon Street. However, all is not as it appears! Originally, Cannon Street only ran west as far as Walbrook, but in the 1850s, it was extended through to St Paul's Cathedral. For a time, this new stretch was called Cannon Street West, with its own set of street numbers, but in 1866 the whole length of the street became known as Cannon Street and the properties were renumbered (see Figure 13). Presumably rather than going to the expense of a new engraved plate, William Williams had the existing one neatly adjusted to show the new number, as this example in the ISASC museum shows.

It is also possible that the owners of businesses in that area were concerned that the numbers might change again, and were reluctant to commit themselves to the considerable expense of having new plates engraved until they were sure that the new numbers were to be permanent. Perhaps like many residents everywhere today, they were troubled by a lack of confidence in the efficiency and trustworthiness of their local councilors.

In 1855, the first listings of William Williams and Sons at 71 Cannon Street and 4 Abchurch Yard appeared in trade directories, though it seems the company's name had been changed a few years before. (Figure 14)

The later labels which, from the addition of London postal districts probably date from the later 1850s, claim that the business has been operating for 150 years; presumably William considered his company's starting date to be about 1695, when Timothy Roberts began his scale making business in Bartholomew Lane. His son and successor, Richard, was the master to whom Thomas Harrison was apprenticed, and since Thomas Harrison was the master of Thomas Williams, this may be the chain of knowledge upon which William Williams made the claim of the longevity of his business.

There is a popular notion that the Williams business was started on the original site of the Bank of England. This has probably arisen because the original site of the Bank was in Walbrook Ward before its relocation in Threadneedle Street around 1734, having rented both the Mercers' and Grocers' Halls before its own premises were completed. However, it is rather more likely, though this suggestion is purely conjecture, that the story actually relates to the early scale-makers' premises in Bartholomew Lane, as it is quite possible that the Bank made use of some of those when it took possession of its permanent situation; indeed, the Bank of England's archive states that there was an approach for vehicles through a passage from Bartholomew Lane into a court within the Bank's premises. There is another interesting, albeit slight, connection between the Williams business and banking. The Great Exhibition of 1851 contained an exhibit by Mr. T. H. Saunders of Queenhithe and Dartford, Kent of, amongst other *"superior examples of writing and book paper, a sheet of Stone's Patent Bankers Safety or Parchment Paper."*

Figure 16: Bank scale with a cord lift.

Figure 16b: Williams stamped their name on the pedal that was depressed to raise the beam off the table, while in use, a simple form of arrestment that saved the bearings from wear.

Figure 17: Travellers' scales could be dismantled and packed into the drawer, with the weights wrapped to prevent rattling and damage to the scale.

The review in the Bankers Magazine considered that although the paper was indeed light and very strong, it was too expensive for ordinary use, as it cost £7.10s for a ream of 500 sheets. The exhibit displayed the following certificate: *We hereby certify that a sheet of paper, of the same substance as the one exhibited, weighing less than 1 oz., sustained, without fracture, 5cwt. and 24lbs., being the utmost weight we could attach to the apparatus! (Signed) Wm. Williams and Sons, Scale Makers, Cannon Street, City. 19th April 1851.*[4] It must have been truly remarkable paper!

A set of attractively shaped bank scales made by Williams is difficult to date accurately, (Figure 16 & 17) though it is likely they were made for weighing sovereigns which became part of the British coinage in 1817, when a sovereign coin of 20 shillings was introduced to replace the guinea coin valued at 21 shillings. The company also produced several designs of sovereign weights. See Figures 18, 19, 20.

Many scale makers took advantage of this new and lucrative business opportunity and produced numerous and often ingeniously contrived scales for weighing letters, packets and parcels. Some designs were created for the Post Office, others for businesses and private in-

Figures 18-20: Some of the various designs of sovereign weights made by the Williams family.

Figure 21: The weight could have been made any time between 1817 and 1849, when Richard Vandome was still alive.

Figure 22. Over-stamped weight - possibly these were old weights which were considered outdated, and so "experimented" on!

dividuals, and unsurprisingly, Williams were amongst the makers attempting to satisfy the increasing demand for postal scales.

Many of the Williams' scales, like the bank scale (Figure 16), are merely stamped with the words *Williams, London*, which does not help at all in dating them. Another example is this large iron beam with its brass pans. (See Figure 27).

It seems clear from the number that have survived, that during their many years as scalemakers, Williams made a large number of tea taster's scales, and it is possible they had a contact at one of the great London tea importers or blenders of the time. The variety of fashionable paper colours for the labels supports the view that this particular type of scale formed a large part of the Williams' business, especially in the later 19th century, about the time that William Winn apparently took over from his father. Indeed, it is on sets of tea taster's scales that evidence of the final chapters in the tale of Williams, scale-makers of Cannon Street, can be found.

William Winn Williams, who died aged 82 in 1929, merged his business with that of Vandome, Titford and Co. in about 1885. The labels from scales of this time show the merging of the two businesses, with Vandomes clearly being the major partner. Williams no longer had their own independent premises. Staff and salesmen only moved round the corner from Leadenhall Street, into St. Mary Axe, while workmen continued to work in the Docks area just east of the Tower

Figure 23: An example of a Williams postal scale; note the similarity to those produced by DeGrave.

Figure 24: The address on the letter plate dates from after the company's name was changed and the Cannon Street premises were renumbered.

Figure 25: Thomas made his scales in the traditional way, with each arm having octagonal section near the fulcrum and changing to oval section near the ends. The pendant was blued steel.

Figure 26: The silk cords were plaited so that they never twisted into a knot.

Figure 27: A nice large beam-scale 15 inches long, with seven inch diameter shallow brass pans suspended on overwound cords ⅛ inch thick, not brass chains.[5]

Figure 28: Labels after the merger of the two companies.

Figure 29: Label after the move to St. Mary Axe, when the company name changed after the retirement of one of the Titfords. They got a telephone in 1906.

of London and St. Katharine's Docks, moving a couple of blocks south from Nightingale Lane to Great Hermitage St., an area subsequently bombed during WWII. (Figures 28 & 29)

There is an interesting postscript to the saga in the form of a Williams tea scale, which was previously owned by a military establishment. Someone, perhaps in the catering department, and bearing in mind future orders for tea, has firmly pasted a Vandome, Titfords' & Pawson trade card over the original Williams label. The subordinate position could scarcely be made any clearer!

The 1901 census recorded William Wyne (sic) Williams aged 56, working as a scalemaker, employer not specified, but Walter Williams, aged 54, who had worked

Figure 30: Tea scales once owned by a military establishment, made shortly before Williams combined with Vandomes in about 1885.

as a gilder & japanner, then as a scalemaker, then as a panel sign-writer, was working independently in Hackney, a suburb rapidly growing to the east of London.

The 1911 census showed William Wynn Williams, aged 64 (had he forgotten his age?) still working as a scalemaker, but he died in 1929 of pulmonary congestion and senility aged 82. Walter Williams had returned to scale making, probably still independently, but owing to the sixteen hundred Walter Williams who died around the 1930s, it is impossible to identify his death. Shall we just memorialise Walter as the last member of a grand scale-making family that enjoyed designing trade cards, of which only three quarters are shown here?

Endnotes

1. A Tide Waiter was a Customs Officer who checked each incoming ship's cargo in order to secure payment of customs duty. This often involved boarding the vessel and inspecting the cargo to ensure there were no smuggled goods on board and the correct taxes were paid.
2. Morning Post Issue 12763 December 23 1811
3. Gwynedd Archives ZQS/T1826/30
4. "*The prize essay of the application of recent inventions colleted at the Great Exhibition of 1851, to the purposes of practical banking*." Granville Sharp. Reprinted from the Bankers Magazine of January and February 1852 by Waterlow & Sons, London Wall 1852
5. These beams may have been intended for inspectors, as the cords would not have been suitable for all goods, and could have become contaminated by sticky or greasy items. Beams like thisw were supplied in baize-lined, fitted boxes.

Acknowledgement
With many thanks to Diana Crawforth-Hitchins for all her invaluable help and assistance.