The Dating Game - Southern Glass Co.

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During the last half of the 19th century, container glass production in California was concentrated in the San Francisco Bay Area, at that time the commercial center of the far west.

The rapid growth of population, agriculture and industry in Southern California in the late 19th and early 20th centuries, however, fueled an increasing demand for local glass factories to provide bottles and jars for products.

Several container glass factories were founded during the first two or three decades of the 20th century. Most were short-lived and served only Southern California markets. Probably the most successful factory of this era was the Southern Glass Co., which operated for more than a decade, marketing its bottles throughout California, the Pacific Northwest, and the Southwest, as well as shipping to customers on the west coast of Latin America and throughout the Pacific. Although not as large as its San Francisco rivals, it nonetheless preceded them in some aspects of technical development. It ultimately failed because credit problems brought on by the Great Depression coincided with patent disputes that affected many smaller companies as the glass industry entered the age of machine production.

History

Southern Glass Co., Vernon (Los Angeles), California (1919-1930)[1]

The Rising Star

The Southern Glass Co. was incorporated October 16, 1918 by three Los Angeles area businessmen, William J. Latchford, William McLaughlin and John McK. Marble, with an authorized capital stock of $10,000.[2] Of these men, Latchford was a citrus grower and entrepreneur with an interest in glass manufacture, while Marble was his stepson. McLaughlin was an experienced glassmaker who had spent many years in some of the country's larger factories, but was then operating a backyard factory producing jars for small-scale canning operations proliferating in Southern California (McGroarty 1933:413-414; Padgett 1996:34-35).

The company set about building a factory, which it located in the Vernon district of Los Angeles:

"We found an acre with a barn and an old three-room house on East Twenty-Fifth Street. We built a furnace and lehr in the barn, turned the house into an office and called it the Southern Glass Company. Because the property sat on an old dump site, the cement trucks that were delivering to us kept getting stuck. We finally got going. . .I wrote to several glass blowers I knew in San Francisco when we were ready to start up and they came to Los Angeles to work for us. The business was a success from the start" (McLaughlin, in Padgett 1996:35).

Production began in February, 1919, the factory employing 40-45 men. Initial products were soda bottles and packers' ware, and operations were by hand (Padgett 1996:35; *Pacific Dairy Review* 1921; *Los Angeles Times* 1920; 1927b; Clarke 1920:3).

Differences between McLaughlin and Latchford soon emerged regarding factory operations. In late 1919, the former withdrew by mutual consent and started his own factory, leaving Latchford in effective control of Southern (Padgett 1996:35; Swain 1935:335).[3]

The company quickly began expanding. At the end of 1919, it increased its capital stock authorization to $100,000.[4] In February 1920, the plant was visited by W. P. Clarke, president of the American Flint Glass Workers Union, who reported that

"I found one small continuous tank with one shop only, and the one shop was producing near-beer bottles on a machine which was manned by members of the G.B.B.A.[5] This company has another tank in the course of construction and four ring holes will be added. Our direct interest at this plant is confined to three mould makers" (Clarke 1920:3).

A press release the preceding month had reported that the company was producing 12,000 to 15,000 bottles per month, and had introduced "many of the latest type of machines." Judging from Clarke's report, the "many machines" were not yet in place. The expansion reported in both sources was completed in March 1920, and was intended to quintuple the plant's output (*Los Angeles Times* 1920).

Early reports exhibit some confusion about both the company's products and its market. A retrospective account of a few years later noted that Southern originally built up its business manufacturing "glass containers for the local makers of beverages and canners of fruits." In 1920, however, they were noted as specializing in "beer and soda water bottles," producing 12,000 to 15,000 per month, "distributed all along the Pacific Coast as well as South America, Mexico, Hawaii and Australia." They were advertising milk bottles by 1921 (*Los Angeles Times* 1920; 1924; *Pacific Dairy Review* 1921).

The nature of the original machines is unclear, as is whether hand production continued after they were introduced. In 1923, the factory had one 50-ton tank and was operating four Lynch and three Teeple machines (Gray 1923). These machines were presumably operated as semi-automatics (i.e., the molten glass gob for each bottle was fed manually). Production, noted as 72,000 bottles per day, was insufficient to meet the demand. Stock authorization was consequently increased to $500,000 to support a program of further expansion (*Los Angeles Times* 1923; 1925).[6]

In April 1924, the company announced the imminent construction of "a half-million-dollar glass factory, with the most modern automatic equipment." Although the new complex would not be completed until a year later, the work was to progress in stages. The first unit was to have "a battery of five

of the latest automatic bottle machines in connection with the improved glass furnaces." A second building was to have "another battery of five of the automatic machines . . . making a total of ten machines – the first automatic glass machines in Los Angeles." (*Los Angeles Times* 1924).

Since Southern was credited with eight Lynch machines in 1926 (see below), it is reasonable to assume that these were the machines installed during this upgrade. Southern, of course, had used machines since 1919 or 1920, as had other local bottle manufacturers. The reference surely indicates that the new machines were completely automatic, requiring no manual assistance to feed the glass, and possibly none to convey the completed bottles to the lehr. Lynch had been making semiautomatic machines since 1917 and, in 1923, introduced a fully automatic machine capable of making both narrow-neck and wide-mouth ware (Meigh 1960:41; *Glass Worker* 1923). These were probably the first fully automatic machines in the state of California.[7]

Another development initiated by Southern at this time was in dating its bottles. In mid-1924, the dairy and glass industries standardized the pulp caps (disks) used to seal milk bottles to a single size. This standardization allowed glass factories to use the same ring molds to produce finishes regardless of the style or size of the bottle. Southern was evidently the first company to realize that this allowed them to emboss month and date codes on the rim or lip of the cap-seat finish, a process they initiated by October, 1924. Other California factories followed suit the following year (Schulz et al. 2009).

Latchford left the company in August 1925, following disagreements with the other officers over his involvement with the Monarch Glass Co., which one of his stepsons managed. (A few months later, Latchford founded his own glass company.) Southern's Secretary, Faye G. Bennison, became effectively the manager of the firm, assuming Latchford's responsibilities (Wanderer 1926; Toulouse 1971:456-457).

In 1926, the Southern California glass plants were the subject of a review published in an industry trade journal. Southern was credited with "two continuous tanks, one of 170 tons capacity and the other 290 tons, while equipment included eight Lynch machines. A full line of milks, beverages, in fact, containers ranging from two ounces to a gallon, are manufactured by this company and amber and green ware also is made. The plant is most up to date and modern in all respects" (Wanderer 1926).

As noted above, these Lynch machines were presumably the fully automatic machines introduced in 1924, although the difference between the number of machines reported in the two years is not explained. Since the plant is listed in the 1927 glass directory as having two tanks with a total of eight rings, the 1926 account must be correct, at least for that time (*American Glass Review* 1927:144). While all the machines were from the same company, it should be noted that Southern was making wide-mouth ware on press-and-blow, and narrow-mouth ware on blow-and-blow machines, so different models must have been in use simultaneously.

The company continued to expand, not only filling orders in the U.S., but in other countries as well. In September 1927, Southern was shipping "two orders, approximately three carloads each," to El Salvador and Guatemala. By that time, the firm was selling bottles in "Panama, Mexico, New Zealand, Canada, Alaska, Hawaiian Islands and points in the Orient" (*Los Angeles Times* 1927b). Total production for the year amounted to 35,000,000 bottles and, in December, the company announced that it was upgrading to "the latest equipment in bottle-making machinery" and adding another new building (Van Nostrand 1928; *Los Angeles Times* 1927c).

By early 1928, Southern was advertising its soda bottles as "Southern Star beverage bottles" – and had evidently begun embossing its products with a logo consisting of an S within a star. It also began touting the durability of its wares and noting that finishes (at least crown finishes) were fire-polished (*Pacific Bottler* 1928a; 1928c).[8] In pursuit of its durability claims, the company occasionally included endorsements from bottlers:

"Southern Star bottles are still 'bouncing like rubber balls.' The other day one of our drivers dropped two cases of full goods off the tailgate of his truck. They landed on the concrete pavement -- and they all 'bounced like rubber balls.' No doubt you are anxious to know how the expression 'bounced like rubber balls' originated. We were feeding our soaker and the operator, not being accustomed to handling the new style Whistle bottles, let some slip through his fingers and they landed on the concrete. We expected that they would break like any ordinary bottle, but they didn't – they merely bounced. That is one reason why we use Southern Star glass" (*Pacific Bottler* 1929a).

At this time, sales were rapidly climbing (*Los Angeles Times* 1928a; 1928b). At mid-year, production was reported to be 108,000 bottles daily, and the factory – still using Lynch machines – was working 24 hours per day, seven days a week. Sales over the previous three years – that is, since the introduction of automatic machinery – had increased 400%. The company employed chemists to inspect the raw materials and had its own plant for making crates and shipping containers (Van Nostrand 1928). Other technical developments included experiments with new formulas to produce stronger, lighter-weight glass. Additionally, the plant developed new colors, including opaque black glass jars to protect orange juice from sunlight (*American Glass Review* 1928c; *Ceramic Age* 1929a:102; 1929d:70 *Wall Street Journal* 1929).

Exports to foreign customers increased to an estimated seven million bottles in 1928. Included were 500,000 bottles shipped to Guatemala and El Salvador in a single week, as well as milk bottles to the Philippines and Panama, soda bottles to India, and beer and liquor bottles to Mexico. The following year, the plant exported soda bottles to Mexico, Columbia, Peru and

Chile (*Los Angeles Times* 1928c; 1928d; 1929; *American Glass Review* 1929d). The liquor and beer bottle exports are of particular note given the popular impression that production of such bottles ceased during Prohibition.

For the domestic market, Southern had established branches (warehouses or agencies) in San Francisco, Portland, Salt Lake City, Houston, New Orleans, Spokane, Seattle, Phoenix and Honolulu (*Pacific Bottler* 1928b).

At this time, Southern – like other California companies -- used nothing but "Belgian silver sand, imported by the shipload" – 10,000 tons per year – reputedly because of it was "high in mineral content and guarantees a tougher, more uniform glass" (Van Nostrand 1928; *Los Angeles Times* 1927a). Although Southern was busily touting the durability and appearance of its glass, the most important advantage of Belgian sand was its relative freedom from iron contamination, which meant that it could be used for colorless as well as colored glass. Furthermore, it was economical because it could be imported duty-free as ballast at about a dollar per ton (Hard 1929).

These factors made it both cheaper and better than sand from most domestic sources. In late 1928, however, a $4/ton duty was imposed on foreign sand, effectively quintupling the cost. As a result of protests from Pacific Coast glass producers, the duty was lifted early the following year, but this was met with litigation from the sand industry. The temporary rise in costs, and uncertainty about the future situation, inspired local glass companies to investigate closer sources, and, in mid-1929, Southern changed to less expensive Nevada glass sand (*American Glass Review* 1928c; *Ceramic Age* 1929c; 1929d:70; 1930; *Glass Industry* 1929a; Hard 1929; *Wall Street Journal* 1929).

Meanwhile, Southern's success fueled plans for further expansion. By the spring of 1929, the company had acquired property in Oakland and was planning a second plant in that location (*Ceramic Age* 1929b; *American Glass Review* 1930:16). These plans were clearly intended to bring Southern into direct competition with the coast's two biggest producers, Illinois-Pacific Glass and Pacific Coast Glass, both located in San Francisco.

The Falling Star

The year 1930 opened with ill omens in abundance. In January, Pacific Coast Glass purchased the West Coast Glass Company, a Los Angeles plant that specialized in milk bottles – Southern's strongest local competitor in that arena. Pacific Coast's plans included new machinery and expanded facilities intended to make the plant more productive (*Los Angeles Times* 1930a; *Pacific Dairy Review* 1930). Two months later, Southern's factory was hit by a freak tornado that tore the roofs off two buildings, slightly injuring several workers and causing $10,000 in damage (*Glass Industry* 1930:97-98).

Still more damaging was the collapse of the Hollywood Dry Company, a prominent ginger ale producer and evidently one of Southern's larger customers. The company had begun in San Francisco in the mid-1920s, shipping its ginger ale to selected markets throughout the country and exporting as well to Latin America and the Orient. An advertising campaign throughout the western states touted a European lineage for the formula and featured endorsements from prominent Hollywood actors. In 1926, the company was acquired by a Fresno corporation capitalized at $1,000,000 (*Fresno Bee* 1926). The Fresno consortium established additional plants in Fresno and Los Angeles and expanded the advertising campaign for "the drink of the stars": "Try our favorite beverage, Hollywood Dry," say such famous screen celebrities as Norma Shearer, Claire Windor, Carmel Myers, John Gilbert, Lew Cody and Charles Ray, of Metro-Goldwyn-Mayer studios. And once you have tasted Hollywood Dry, we believe you will hardly be satisfied with any other ginger ale. The delicious tingle of purest Jamaica ginger will intrigue you . . . And being dry as old champagne, 'triple sec,' as the French put it, Hollywood Dry makes the perfect blend with other beverages" (*Galveston News* 1926).

The company's reticence about specifying the "other beverages" is understandable since the nation, like the ginger ale, was officially dry. Still, one suspects that the subtle appeal was hardly at odds with the public perception of the discerning palates of those arbiters of the good life, the "great screen personalities" whose pictures appeared on the label (*Reno Gazette* 1927).[9]

With the dawn of 1930, things seemed to be going well for Hollywood Dry, when the company elected Faye Bennison of Southern Glass to its board of directors in April. Within a month, however, the company was hit with an involuntary petition in bankruptcy from three of its creditors. As the company's stocks plummeted, allegations of illegal stock manipulations triggered two criminal investigations, and attempts to salvage the bankrupt corporation foundered on bitter conflicts between directors and stockholders (*Los Angeles Times* 1930b; 1930c; *Fresno Bee* 1930a). It is unclear where Bennison stood in these internecine battles – whether he was gulled into unwitting support for a failing corporation or placed on the board by wary stockholders who wanted keener eyes at the helm. In the end, it did not matter. Southern was left with a mostly unsalvageable claim for $83,000 against a bankrupt company and its bankrupt former president (*Fresno Bee* 1930b; 1931).

This was the situation at Southern when it was hit with a killing blow. This came in the form of a letter from the Hartford-Empire Company threatening litigation over Southern's use of machinery that Hartford alleged violated its patent rights (*Los Angeles Times* 1930d). While the specific machines were not identified in available sources, it is clear from other evidence that Hartford's attempt to control gob feeders in the container glass industry was really at issue. These were the devices that made Southern's Lynch machines fully automatic. Ironically, the pioneering investment largely responsible for

Southern's success now became the ultimate cause of its demise. To understand what was at issue, a brief digression is necessary.

The commercial introduction of the Owens automatic bottle machine in 1905 had a profound effect on the industry. Although it demonstrated the possibility of completely automatic production, significant difficulties prevented it from being used by many factories. First, it was adapted to very large runs of identical bottles, which meant that it was ill-suited to the needs of smaller bottlers with distinctive designs. Second, the Owens company's intent to provide exclusive licenses for particular types of ware meant that only a limited number of (large) glass companies could gain access to the machines (Miller and Sullivan 1984; Lockhart et al. 2009). The success of these licensees (and of Owens itself), however, inspired a demand for more flexible machines that could meet the needs of smaller factories and smaller bottlers.

The machines that met this demand were initially semiautomatics – machines that formed the bottle automatically, but which required manual feeding of the initial gob and manual removal of the finished bottle. Their success, however, led to experimentation with automatic feeding devices. Since the Owens machine obtained the hot glass for each bottle by suction, interest naturally focused on alternative means, and this led to the "patent wars" of the 1920s, of which Southern ultimately became a victim.

Inventors had been patenting feeding machines since the turn of the century, but early efforts focused on flow devices that attempted to cut off a natural stream of glass into segments of appropriate size for the molds. Difficulties with this approach eventually led to the realization that it was necessary to collect the molten glass into a more coherent gob prior to feeding it to the mold. The nearly simultaneous efforts directed to this end by many inventors in Britain and the United States produced "a perfect deluge" of patents for gob feeders beginning in 1914 (Dowse and Meigh 1921).

Commercial priority for the introduction of gob feeders lay with the Hartford-Fairmont Company (subsequently, Hartford-Empire), established in 1912 to invent and license glass machinery. It introduced its first feeder model in 1915, a second one in 1917, and it began licensing the use of these machines. Hartford's aspiration to control production and use of glass feeders was frustrated, however, by the flood of competing patent applications. By 1919, four other companies were marketing feeders developed independently (at least allegedly) of Hartford's, and individual glass companies were also developing feeders for their own use (Bishop 1950).

In this circumstance, Hartford determined on a tripartite approach to market control: purchase of competing rights, cross-licensing, and litigation. It began systematically purchasing the patent rights of inventors and other companies, and in 1922 acquired the Empire Machine Company for this purpose, reorganizing itself as the Hartford-Empire Company. More importantly, in 1924, it entered an agreement with the Owens Bottle Company. Owens built gob feeders for its own use, though it did not license them to others, and the previous year had begun a suit to defend its own patents against a Hartford licensee. Under the agreement, Owens and Hartford cross-licensed each other in such a manner that they could use each other's gob feeders, but only Hartford could license them to outsiders. In return, Owens was to receive half of Hartford's royalty income over $600,000, and the two companies were to share equally in the costs of patent acquisition and litigation and share equally as well in any damages awarded. Additionally, Owens was given the right to veto any Hartford license that it considered would be to its competitive disadvantage (Bishop 1950; Petro 1944).

Having thus allied itself with the nation's largest glass producer, Hartford began a series of suits (well-publicized in the glass industry) against glass companies using feeders that it argued infringed on its patents. In 1929 alone, Hartford was involved in litigation against the Lamb Glass Co., the Kearns-Gorsuch Bottle Co., the Nivison-Weiskopf Co., the Obear-Nester Co., and even Hazel-Atlas, after Owens perhaps the nation's second largest glass producer (*American Glass Review* 1929; *Glass Industry* 1929b; Parker 1931). It is hardly surprising that Hartford's 1930 letter to Southern was taken seriously.

A less obvious aspect of the situation, however, involves the history of Owens in the years following its 1924 agreement with Hartford. In 1929, Owens merged with the Illinois Glass Company to form Owens-Illinois, and Illinois-Pacific Glass was a subsidiary of Illinois Glass. In the fall of 1930, Illinois-Pacific and Pacific Coast Glass merged to become the Illinois-Pacific Coast Co. The new company, equipped with Hartford licenses, was by far the largest producer of glass containers in the west. And Southern was its most significant, and up to that time most aggressive, competitor. Meanwhile, Owens-Illinois, Hartford's partner in litigation, controlled Illinois Pacific Coast and held veto authority over any licensing agreement that Southern might contemplate with Hartford.[10]

In this circumstance, with its working capital decimated by the collapse of Hollywood Dry, credit generally constricted by the onset of the Great Depression, and faced with litigation from the country's most powerful glass interests, in November 1930, Southern agreed to close. On November 15, Illinois-Pacific Coast took over the plant "for the purpose of assisting in its liquidation," acquiring its machines, bottle stock and other assets. Southern received $110,000 and was released from damages by Hartford. The factory was dismantled the following month, and much of the machinery was transferred to Illinois-Pacific Coast factories as reserve equipment. Southern's branch offices were to remain open until all stocks on hand were disposed of (*Los Angeles Times* 1930d; *Oakland Tribune* 1930; *Pacific Bottler* 1930; *Wall Street Journal* 1930).

In spite of this, Southern continued to advertise milk bottles through October 1931 (*Natural Milk* 1931) – the ads undoubtedly intended to sell off the stock on hand at the time the factory closed. Soda bottles have been found with Southern marks and date codes of 1931, however, and these suggest that Southern's molds were subsequently used by Illinois-Pacific Coast, perhaps to fill orders outstanding when the plant was dismantled.

Containers and Marks

Although a full list of bottle types offered by Southern is currently unknown, the firm clearly manufactured a wide range of products. In 1921, its offerings were listed as "Packers, Mineral Water, Narrow Neck & Wide Mouth Bottles & Jars, 8 oz. to 1 Gal." Three years later Southern's products were summarized as "Bottles – beer, soda and ginger ale; packers' jars." The 1927 Glass Factory Yearbook listed "Fruit jars, beers, sodas, minerals, soft drink ware, milk bottles, packers and preservers. Flint, amber and green" – an entry that remained unchanged for the next several years (Thomas Publishing 1920; California Development Association 1924:401; *American Glass Review* 1927). Thus, with the apparent exception of pharmaceutical bottles, Southern seems to have offered most of the container varieties then on the market.

It is clear from the press accounts noted above, and from the company's ads, that it stressed production of soda bottles and milk bottles. Fruit jars made by Southern Glass fall into a somewhat controversial category and are dealt with separately at the end of this section.

A trait worth noting in "Southern Star Beverage Bottles" was that, at least for a short period, they were fire-polished. Ads (e.g. *Pacific Bottler* 1928a) proclaimed that "'Southern Star' is the perfect bottle – made to your specifications, and with a FIRE POLISH which makes the top simply 'slick.'" The technique consisted of reheating the rim of the bottle's finish to make a more perfect surface for sealing. In examining Southern soda bottles used in El Paso, the tops are indeed polished. In one example, the mold seams are only apparent with careful inspection.

S in a Circle (1919-ca. 1920) [Circle-S]

Miller (2008:259) noted the Circle-S as an early mark used by the Southern Glass Co. on mouth-blown soda bottles, and we believe it was the first one used by the company **(Figure 1)**. We have seen only two examples, both soda bottles used in Arizona. One was illustrated

Figure 1: Circle-S mark [Mike Miller]

in Miller (2008:120), a bottle he dated at 1919.[11] The other was a single soda bottle that we observed in the Tucson Urban Renewal collection. The "S" in the symbol is very similar to the "S" in the Diamond-S logo. Based on Arizona examples, the mark was probably used between 1919 and 1920. Both bottles with this mark were mouth blown.

Typical sources (e.g., Toulouse 1971:452) attribute the Circle-S mark to the Swindell Brothers of Baltimore, Maryland, beginning ca. 1920. Although Swindell made soda bottles, they were a side line; the primary products manufactured by the company were various forms of prescription and druggists' ware. Southern Glass Co. specialized in soda bottles. The similarity of the "S" in both the circle and diamond logos suggests the presence of the same mold engraver – an unlikely occurrence between a company in California and one in Maryland. Although the argument is complicated by the attribution of the Diamond-S logo also to the Swindells, there is no question that a Diamond-S mark was used by Southern Glass (see next section).

S in an elongated diamond (ca. 1920-1925) [Diamond-S]

The S-in-an-elongated-diamond mark was apparently the second mark used by Southern Glass Co., originally on mouth-blown bottles **(Figure 2)**. Because the mark is found on both mouth-blown and machine-made soda

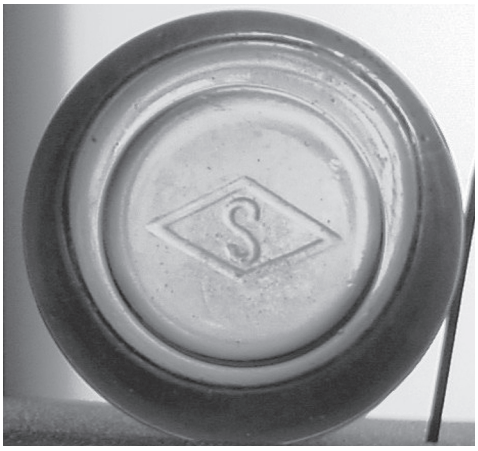

Figure 2: S-in-an-elongated-diamond mark [Mike Miller]

bottles used by the Purity Bottling Works, Tucson, Arizona, it spanned the period between pre-machine and machine use by Southern. Miller (1999:37, 42) illustrated the mark on two bottles that he dated 1916 and 1919. In his second edition, Miller (2008:128, 143) added other bottles with dates between 1918 and 1923.[12] Toulouse (1971:450) illustrated the mark on a Sierra Club bottle and dated it ca. 1930-1950.

The mark also occurs on bases of machine-made milk bottles produced for Southern California dairies.[13] Some of these bottles feature a date code consisting of numerals for the month and year embossed equidistantly on the top of the rim of the finish. Rim codes observed with this mark range from 2 // 5 to 12 // 5 (February to December, 1925). It may be noted that one example features only a single numeral ("4") and this is oriented – unlike the full codes – with the base parallel to the rim. It seems likely that this lone number is a code for 1924, used prior to the development of the full month-and-year code in the latter part of that year. (A second example of this unitary code features the TRAXTUF mark discussed below.)

In addition, milk bottles with Southern's S.G.Co. mark also contained

the diagnostic elements (mold line encircling the finish, side seams fading at neck, valve mark on base) created by machine manufacture. We have not found mouth-blown milk bottles with any Southern mark. This suggests that Southern did not begin milk bottle production until the company had acquired machines.

S [on Coca-Cola and milk bottle bases] (ca. 1924-ca. 1926)

Porter (1996:5) noted that the letter "S" was used on early, machine-made, hobble-skirt Coca-Cola bottles (with "PAT'D NOV. 16, 1915" embossed on the side) **(Figure 3)**. In a personal communication (1/18/2008), Porter noted that the "S" mark was embossed

Figure 3: S on a Coca-Cola bottle base [Carol Serr]

at the center of Coke bottle bases with heelcodes of 64-8, 64-10, 64-11, or 64-15, all with no city/state designations (the 64-15 heelmark was found at a dump on Maui, Hawaiian Islands). Similar bottles with "S" marks are also embossed on the bases with city codes from Bishop (64-12), Los Angeles (64-10), and Tracy (64-10), all in California. The heelcodes usually appear on the front or "Patent" side of the bottles.

The "64" was almost certainly the Southern code for hobble-skirt Coke bottles. Miller (2008:91) and Lockhart and Miller (2008:41, 43) illustrated Coke bottles embossed with "64-10" and "64-8" heelcodes and the Star-S mark (see below) on the base. Another lacked the Star-S mark but had a heelcode of "64-18." This evidence almost certainly ties the heelcode to Southern Glass and therefore attaches the "S" on the base to the firm. The "S" basemark is also found on milk bottles and seems to consistently accompany the TRAXTUF logo(see TRAXTUF section below).

/S/G/Co/ (ca. 1923-1926)

SGCo in a segmented parallelogram (represented by /S/G/Co/) is found on the bases of Tucson bottles from Purity Soda Works, Purity Bottling Works and Orange Crush **(Figure 4)**. Miller has observed this mark on bottles from other

Figure 4: S in a segmented parallelogram [Mike Miller]

Western states as well. The continuity between the Diamond S and /S/G/Co/ is established because both marks are found on the same style of bottles from Purity Bottling Works, Tucson (Miller 2008:120). All examples we have found were machine made.

Jones (1966:28) illustrated a soda bottle marked with /S/G/Co/ at the base along with 69-2 on the heel. Also on the heel was embossed BOTTLED BY HENRY BROWN along with an embossed H-B in a crest at the shoulder. The bottle was of the specialty or proprietary style. /S/G/Co/ was also embossed on early hobble-skirt Coca-Cola bottles (Bill Porter, personal communication). Miller (2008:120, 128) illustrated examples of the mark that he dated between 1924 and 1926.

S.G.CO. [on heel] (by 1924-1925)

The SGCO initials are occasionally found on the bases of machine-made, rectangular medicine bottles, strap-sided flasks, older, grooved-ring, wax-sealer fruit jars, and occasional other

Figure 5: SGCo Heelmark [California State Parks]

containers **(Figure 5)**. These base marks are attributable to other glass companies, but the initials are also found on the heels of Southern California milk bottles. In this instance, the mark clearly indicates production by Southern. Giarde (1980:109) attributed this mark on milk bottles to Southern Glass, but he dated the mark to the full tenure of the company.[14]

The continuity between the Diamond S and S.G.CO. heelmarks on milk bottles is established by the presence of both the Diamond-S and S.G.CO. logos on virtually identical bottles from the P.M. Dairy Co. of San Diego. Bottles with both marks bear the identical date code (2 // 5) on the rim of the finish. This code indicates that both containers were made in February 1925. An earlier bottle with the S.G.CO. heelmark indicates that the mark was used by at least October 1924. All examples we have observed featured a capital "O" in "CO" and included full punctuation.

Since the S.G.CO. heelmark is present on the earliest dated milk bottles from Southern, and since the mark is present on milk bottles lacking any date code, it is possible that it was in use from the time the company began marketing such containers in 1921. It is impossible to be certain of this, however, since date-coding was evidently optional, and the company's later marks also occur on undated bottles.

TRAXTUF (ca. 1924-ca. 1926)

Bases on some Southern Glass milk bottles were embossed "TRAXTUF" (extra tough). The mark is always accompanied by an "S" either immediately above or below it **(Figure 6)**. Most examples we have seen were embossed with the S.G.CO. heelmark, although "TRAXTUF" sometimes

Figure 6: Extra Tough "TRAXTUF" (note "S" below) [California State Parks]

occurs with no heelmark (or one too faint to detect).

California seems to have led the pack in the development of stronger glass formulae. Although we have currently found no historical evidence, the Extra Tough process from Southern was apparently developed during the late 1920s. In early 1926, Illinois-Pacific developed an electric annealing process that the company called Electroneal. According to ads and articles, the process created a much stronger, spall-resistant bottle (Cole 1926:40). Owens-Illinois did not develop its competitive Duraglas process until 1940 (Toulouse 1971:403).

S in Star [no obvious date code] (1926-1928) [Star-S]

Jones (1965:[16]; 1966:18) first noted this mark as being from the Southern Glass Co. and dated it 1919-1929 **(Figure 7)**. This is also the only mark identified by Toulouse (1971:457) as belonging to Southern Glass Co. He attributed the mark to his dates for the entire tenure of the company – 1917-1931. Giarde (1980:109) also placed the mark into the same date range. Our research disagrees with the previous studies and greatly abbreviates the time period for the mark to 1926-1931 (with two-digit date codes added during 1928). The mark is found on bottles from 12 bottling works in Arizona, all with operational time frames consistent with these dates as well as a similar time frame for a national sample. By this time, Southern's production capacity (through machine manufacture) had increased sufficiently to allow a much wider range of marketing than in the company's earlier years.

Figure 7: The Southern Star Mark [Bill Lockhart]

In a May 1928 ad (*Pacific Bottler* 1928b), Southern called its bottle a "Southern Star" (although the star they showed was much more ornate than the one actually appearing on Southern bottles. It is pretty certain, however, that the ad referred to the S-in-a-Star logo.

Although returnable soda and milk bottles were the main items produced by Southern, the plant made other bottle types. We have seen what appears to be a horseradish or sauce bottle with the Star S mark on its base. The mark is accompanied by a "7" that is sideways to the mark. This may be a date code for 1927 (see below). We also have observed catsup bottles with the Star S mark but no accompanying numbers. The lack of beer bottles from Southern is explained by the time period. Southern was in business from 1919 to 1930 – a period mostly within the boundaries of Prohibition (and many Western states entered Prohibition by 1918, two years before the national law began). While Southern was certainly making beer bottles for export, it is not surprising that few would make their way to the domestic market.

An apparent date code was embossed on six-panel bottles used by the Southwestern Coca-Cola Bottling Co. The bottle had a Star S mark on the base and 6-1 embossed on the heel. A similar 6-1 heelmark was also found on a six-panel bottle, probably from the same bottling firm, with no Star S or any manufacturer's mark. The same style of heelmarked date/mold code was used by the Illinois Pacific Glass Corp. around the same time. This may well have been an attempt to adapt the year-month codes used on milk bottles to soft drink bottles (see discussion of milk bottles above). In this case, the "6" would have equaled 1926, with the "1" indicating the month of January. If this was indeed the case, Southern quickly abandoned the system.

S in Star [in conjunction with a two-digit date code] (1928-1930)

There is no consistent pattern for the location of the two-digit date code in relation to the Star-S mark mark, although the star is frequently located on the base **(Figure 8)**. The date code can be located to the left, right, above, below or at a separate location (heel or base) from the star. During this time period, a single-digit mold code often accompanied the Star-S mark in conjunction with the two-digit date code. These generally appear in two patterns: date code - Star-S mark - mold code or mold code - Star-S mark - date code.

Figure 8: Star-S with a tewo-digit date code

Sometimes, a second Star-S mark plus the date code was embossed on the heel. An El Paso example was marked with a Star-S mark on the base and a second Star logo plus 29 on the heel. We can verify date codes from 1928 to 1930. This mark is found on bottles from 14 different Arizona soft drink bottlers and numerous companies throughout the west and at least as far east as Texas.

S in Star [with numbers before and after and a date code embossed on the crown finish] (1931)

This configuration is uncommon and reflects bottles actually made after the

Illinois-Pacific Coast Co. took charge of Southern's liquidation on November 15, 1930. The embossing of a date code on the crown was a configuration used by Illinois-Pacific on its own bottles. It is highly likely that these bottles were actually made at the Illinois-Pacific plant, possibly to fill existing orders from Southern Glass or just to use the molds until they wore out.

Miller (2008:139) illustrated an example that consisted of three identical bottles used by the Standard Bottling Co., Winslow, Arizona. Each bottle was the same shape and configuration, only differing in the manufacturer's marks and numerical codes:

201 {Star-S} 30-1 (heel); 201 {Star-S} 11 (heel); 31 (crown) 201 {IPC in a triangle} 31-1 (heel); 31 (crown)

This progression probably indicates that Southern originally made the bottle in 1930. Illinois-Pacific then made the same bottle in early 1931, using Southern molds and possibly filling an existing order. Finally, Illinois-Pacific used its own mold and logo later during the year.

Fruit Jars

Grooved-Ring Wax-Sealers

According to Creswick (1987a:187), a grooved-ring wax-sealer fruit jar was embossed "S (within star, on base).[15] She noted that the finish had a "ground lip" – a term that almost certainly indicates a mouth-blown jar. Creswick tentatively identified the maker as the Southern Glass Co., even though her book mostly dealt with much earlier jars. Identical jars were embossed with a simple "S" on the front or on the base **(Figure 9)**. Another similar jar was embossed "SG" (arch) / Co (inverted arch)" in a large circle on the base (Creswick 1987a:191) **(Figure 10)**, although this jar has been attributed to the Southern Glass Co., Louisville, Kentucky (Whitten 2005:71).

At this point, we can find no evidence to link these mouth-blown wax-sealer fruit jars to Southern Glass. These jars were completely antiquated long before Southern Glass opened, so there was no reason for the plant to produce outmoded products. This is especially true of the variation with a Star-S mark. The initial use of the star logo by Southern Glass began in 1926. If the wax-sealer jar with the Star-S mark actually exists, it

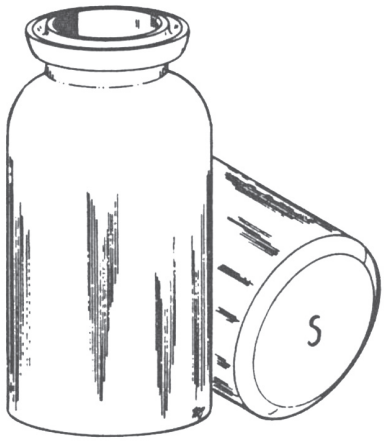

Figure 9: Wax-sealer fruit jar with "S" on the base [Creswick (1987a: 187)]

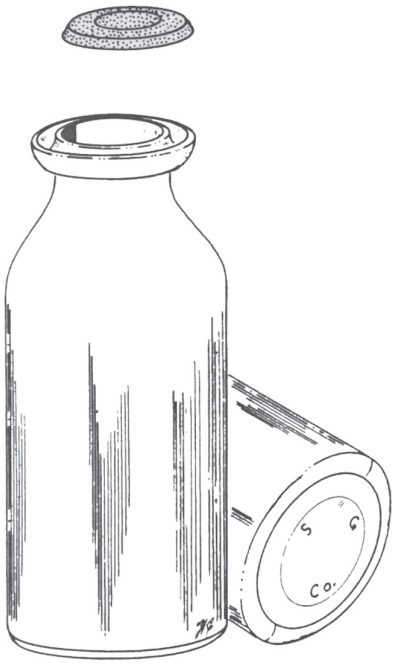

Figure 10: Wax-sealer fruit jar with "SGCo" on base [Creswick (1987a: 191)]

indicates that the mark was used by a currently-unknown glass house prior to the opening of the Southern Glass Co.

Southern [upwardly slanted script] DOUBLE SEAL MASON

Toulouse (1969:289) noted the following embossing on the side of a fruit jar: 'Southern' in slanting script, above 'DOUBLE SEAL' and 'MASON' **(Figure 11)**. He stated that the jar was probably made by "the Southern Glass Co., Los Angeles, Cal., 1918-30."

Figure 11: Southern double seal Mason [Creswick 1987b: 124)]

Roller (1983:333) agreed that the jars were "probably made" by Southern. Creswick (1987b:124) noted that the jar had a "smooth lip" – almost certainly an indication that the container was machine made – and also attributed it to Southern.

Caniff (1998:947-948) questioned whether these jars were made by Southern Glass. He particularly noted that the name "Southern" was used by more than one glass house. At that time, he requested Western collectors to reply to him if they had found any of the jars. He received no replies. We add that the name was also used by a large number of other companies and could have referred to that vast area known as the American South, rather than a specific glass manufacturer or jobber.

Other Jars

Creswick (1987b:126) also showed two other jars that she attributed to Southern. One was embossed SUNBURST across the shoulder and had an MCCo monogram on the base **(Figure 12)**. The Sunburst jar was machine-made and was embossed on the heel with a Star-S mark. However, Creswick illustrated the logo as an "S" in a broken star (i.e., five tiny triangles surrounded the "S" to make the appearance of a star). Caniff (personal communication 12/29/2008) noted that these jars are "quite scarce;"

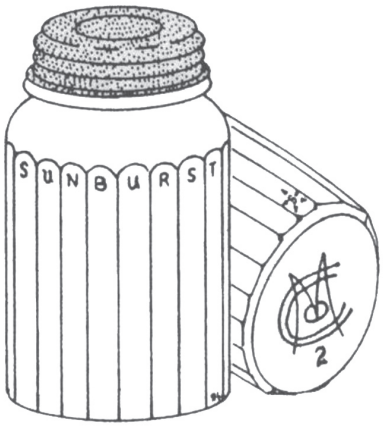

Figure 12: Sunburst Jar [Creswick (1987b: 126)]

therefore, they were probably made in a single order for whomever used the MCCo monogram. The "S" in the broken star, of course, could also be a logo for Sunburst.

The other jar had a continuous-thread finish but was unmarked except for the Star logo on the base **(Figure 13)**. Creswick noted that this jar had a "smooth lip" (i.e., machine-made).

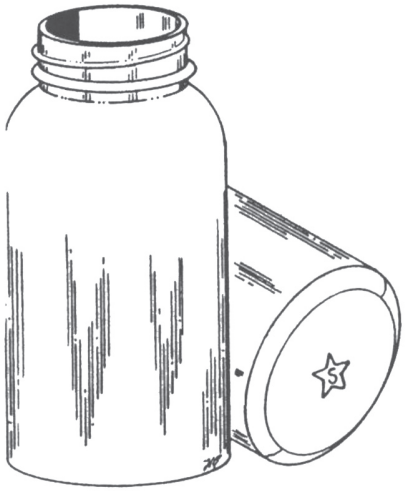

Figure 13: Southern star on continuous-thread jar [Creswick (1987b: 126)]

The Star logo, coupled with machine manufacture, pretty solidly identifies this jar as made by Southern Glass. Assuming that the jar with the "broken star" logo was made by Southern Glass, both of these jars were probably made during the machine production stage.

Toulouse (1971:474) stated that the SGCo "initials were found on an Everlasting" fruit jar. Since the jar was the invention (in 1904, improved 1905) of the president of the Illinois-Pacific Glass Co., of San Francisco, Calif., it is doubtful that these are the initials of a glass company. However, in his earlier book, Toulouse (1969:113-114), only noted the jars as being made by the Illinois-Pacific Glass Co. and made no mention of the SGCo mark. Neither Roller (1984:118-119; 165) nor Creswick (1987b:52) mentioned the SGCo mark on either the Everlasting Jar or the updated Improved Everlasting Jar. Both researchers noted that the jars were made by Illinois-Pacific. This was almost certainly a misunderstanding on the part of Toulouse, and it seems unlikely that such a mark ever existed on an Everlasting Jar.

Discussion and Conclusions

The Star logo is clearly defined and identified. Although poorly embossed marks could be confused with other "star" logos, in general, the identification is easy, and date codes are well defined. Some of the earlier marks, however, are not so clearly established.

Since both Southern Glass and other companies used some of the same marks, there is great potential for confusion. The Chicago Glass Mfg. Co. (1883-ca. 1891) used a similar Diamond-S mark. The Swindell Brothers (Baltimore, 1879-1959) are credited with using the Circle-S mark from ca. 1920 to 1959. The S.G.Co. mark was used by at least the Southern Glass Co., Louisville, Kentucky (1877-ca. 1879), the Seattle Glass Co., Renton, Washington (1905-1907), the Severn Glass Co., Annapolis, Maryland (1898-1902), and the Sydenham Glass Company, Wallaceburg, Ontario, although the latter company added the letter "W" – presumably for Wallaceburg. In addition, it is likely that two other, currently unidentified companies used the logo on packers' ware (or medicinal bottles) and on flasks.

Three tests will help alleviate the probability of misidentification. The first is context, both archaeological and in the bottle design. Southern Glass used the Circle-S mark only during ca. 1919-1920 and used the Diamond-S mark from ca. 1920 to ca. 1924 on both mouth-blown and machine-made bottles. Chicago Glass used the Diamond-S logo earlier, in late-19th century contexts that rule out Southern. Similarly, the Swindells continued to use the Circle-S mark until the 1950s, so contexts after ca. 1925 can only indicate Swindell usage. It is further likely that bottles found in eastern contexts were made by Swindell, while western bottles were manufactured by Southern Glass. Flasks marked "S.G.Co" were mostly made too early for Southern, but some of the packer/medicinal bottles were made during the time Southern was in business.

Second, the shape of the "S" *may* help in the determination. Miller concluded that a specific configuration of the letter was used in Circle-S, Diamond-S, and /S/G/Co/ (parallelogram) logos on Arizona soda bottles. This "S" may or may not appear on all Southern bottles. A specific mold maker, for example, may have only created moulds for soda bottles. It is possible that other "S" configurations may be found on Southern bottles, but it is unlikely that the specific shape would be found on those from Swindell or Chicago Glass.

Unfortunately, we do not have a good set of examples to test. Future research in this area should concentrate on locating a good sample of both Diamond-S logos and comparing the "S" in the center. Another avenue of research that is not presently available is a study of the shapes of the diamonds. Our limited sample suggests that Southern diamonds were horizontally elongated, and those used by Chicago Glass were either compact (i.e., a square revolved 45 degrees) or slightly elongated **(Figure 14)**. Clint (e.g. 1976:169-170) illustrated Diamond-S marks, almost certainly used by Chicago Glass, that were not elongated. These were found only on mouth-blown, screw-top flasks.

Finally, bottle type will help in identification. Bottles made for druggists were most likely manufactured by the Chicago Glass Mfg. Co., as were screw-

Figure 14: Three variations of the Diamond-S mark

cap and other flasks (e.g., see Clint 1976:115, 169-170, 176, 190). Since Southern Glass specialized in soda bottles and milk bottles, those should most likely be attributed to the California company. We have not seen identifiable Southern marks on other bottle types (beside those listed above), although the possibility exists. These might be more difficult to classify.

The S.G.CO./S.G.Co. mark presents a greater dilemma. A very faint SGCo mark on the base of beer bottles is associated with the Seattle Glass Co. Some strap-sided flasks are basemarked with SGCo superimposed on an anchor (also variations without the anchor). A few machine-made packers' bottles and other medicinal bottles had SGCo basemarks, some with a single-digit number. Mold-blown beer bottles made for Baltimore breweries had SGCO heelmarks, and these were made by the Severn Glass Co. The only context for S.G.CO. marks we can substantiate for Southern Glass, however, is heelmarks on machine-made milk bottles.

Jars present an additional problem. There is no reason to believe that grooved-ring wax-sealer fruit jars were made by the Southern Glass Co. at Vernon, although they *were* made by the Southern Glass Co. at Louisville, Kentucky. The "Southern Double Seal Mason" jars are also problematical. *If* Southern made the jars, they are an anomaly. They appear to be machine-made but lack the Star-S mark or any other known Southern mark. The script "Southern" was not used on any other product that we have found. Thus, the attribution of this jar to Southern Glass should be considered doubtful until some contextual references are discovered. Examples of the jar found in excavations in Southern California, for example, would support the Southern Glass identification, while the discovery of examples in Georgia would suggest an entirely different meaning for the term "Southern."

The Sunburst jar, with its "broken" Star-S mark, is also quite suspect. The mark may simply be a logo for "Sunburst." The MCCo monogram likely reflects the company that made the Sunburst brand. There seems little likelihood that the jars were made by Southern.

The Southern Glass Co., its updated history, and its marks provide a much richer field of study than was shown by previous researchers. The inclusion of marks used by the Chicago Glass Mfg. Co. also increases the richness of this study. Hopefully, future research with larger samples of bottles with the earlier Southern marks and from other companies and contexts will disclose still more methods to distinguish between the S.G.Co. marks that are sill unassigned.

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Footnotes:

[1] Although the company was incorporated in 1918, it did not produce glass until the following year. The factory actually closed in 1930. Even though there are bottles with the Southern Logo and date codes for 1931, they were certainly made at the Illinois-Pacific factory.

[2] Although the capital stock was authorized at $10,000, only $150 was actually subscribed at the time of incorporation, $50 from each of the three directors (Articles of Incorporation, California State Archives).

[3] Swain (1935:335) stated – presumably on the basis of conversations with McLaughlin – that "In 1920, two years after starting the Southern Glass Co., McLaughlin withdrew and started the McLaughlin Glass Co." McLaughlin himself noted that his new factory "started up the first week of January 1920" (Padgett 1996:36), suggesting that he had withdrawn at least a couple of months earlier. Conclusive evidence for a 1919 withdrawal is found in a "Certificate of Proceeding Authorizing an Increase of Capital Stock" (California State Archives), signed on December 30, 1919, by Southern's three directors – consisting of Latchford, his wife, and Marble. The absence of McLaughlin indicates that he had already withdrawn.

[4] Certificate of Proceeding Authorizing an Increase of Capital Stock (California State Archives).

[5] The Glass Bottle Blowers Association. In the 19th century, the GBBA represented blowers in the green glass factories, while the American Flint Glass Workers Association (AFGWA) represented those in flint (i.e., colorless) glass factories. The development of machine production in the bottle plants in the early 20th century led to conflict between the two unions over who would represent machine workers. The Flints, however, consistently represented mold makers.

[6] Certificate of Increase of the Capital Stock of the Southern Glass Company, May 15, 1923, California State Archives.

[7] Since Lynch did not patent – and evidently never manufactured – feeders, it seems evident that the machines were intended to be used with feeders then being offered by other companies. The only specific reference we have found to such associated equipment is to Tucker-Reeves-Beatty feeders (*Glass Industry* 1924).

[8] While Southern may have been the first California company to adopt fire polishing, it had been heavily advertised since 1923 by the Graham Glass Co. of Indiana.

[9] The common use of ginger ale as a mixer for highballs did not escape the attention of the Dry forces, and there were organized efforts to have it banned by hotels and restaurants (*Pacific Bottler* 1928b; 1929b).

[10] As it turned out – and contrary to widespread impressions in the industry – Hartford's litigation over its early patents was generally unsuccessful. Its reputation for effective litigation involved defense of its 1926 and 1928 patents, and, if Southern had installed its feeders in 1924, they presumably would have antedated any enforceable claims by Hartford. Additionally, the veto clause of the Hartford-Owens agreement was voided by mutual consent in 1931. The Supreme Court in 1945 struck down Hartford's selective licensing of feeders (Bishop 1950). All of this, of course, came too late for Southern.

[11] Miller also sent photos of three color variants of the same bottle, each with the Circle-S mark.

[12] We know now that the 1916 and 1918 dates are too early; Southern did not begin production until 1919.

[13] We have seen only five examples, embossed with labels for dairies in Corona, Los Angeles, Porterville, San Diego, and Sierra Madre.

[14] Giarde used the company date range (1917-1931) provided by Toulouse (1971:457-458). As noted above, the only solid evidence for milk bottle production is from 1921 to 1930. While the company could have used the S.G.CO. heelmark from 1921 onward, our only certain dates are from 1924 and 1925.

[15] Unfortunately, Creswick failed to illustrate this jar.