

# Millville, New Jersey-- Glass Insulator's Abdication



*“Down in southern New Jersey, they make glass. By day and by night, the fires burn on in Millville and bid the sand let in the light.”*

## WHITALL, TATUM and COMPANY

Thus was a young Carl Sandburg compelled to write upon visiting the Whitall, Tatum and Company glassworks in the very early 1900's. Although not producing glass insulators at the time of Sandburg's observation, the spectacle of insulator production in Millville spanned six decades, and held no less fascination for many even to the end.

With roots tracing as far back as 1806, the joint venture of Israel and John Whitall with Edward Tatum was formulated in 1854, and was known as the aforementioned Whitall, Tatum and Company. Their production facility consisted of two separate glass plants located on the Maurice River in Millville. Less than a half-mile stood between the two facilities. Founded close to abundant supplies of silica sand, an essential raw material, the glassworks flourished.

In early spring of 1922, at the northernmost or Upper Works of what was at that time known as Whitall Tatum Company, preparations were made to begin production of glass insulators. (Figure 1.) Correspondence dated April 12, 1922, indicates that Western Electric's Line Material Inspection Department had received samples of Whitall Tatum No. 1 insulators. Preproduction in nature, these items were produced by a hand-operated side-lever press, and represent the earliest documented glass insulators to come from the plant.

The early years of insulator production at Whitall Tatum centered on an eight-mold semi-automatic I-A machine. Operation of this device

required manual intervention, and production managers at the plant began searching for a swifter means of manufacturing insulators. This search culminated on June 3, 1924, in the delivery of a twelve-mold rotary press manufactured by the Miller Glass Engineering Company of Swissvale, Pennsylvania.

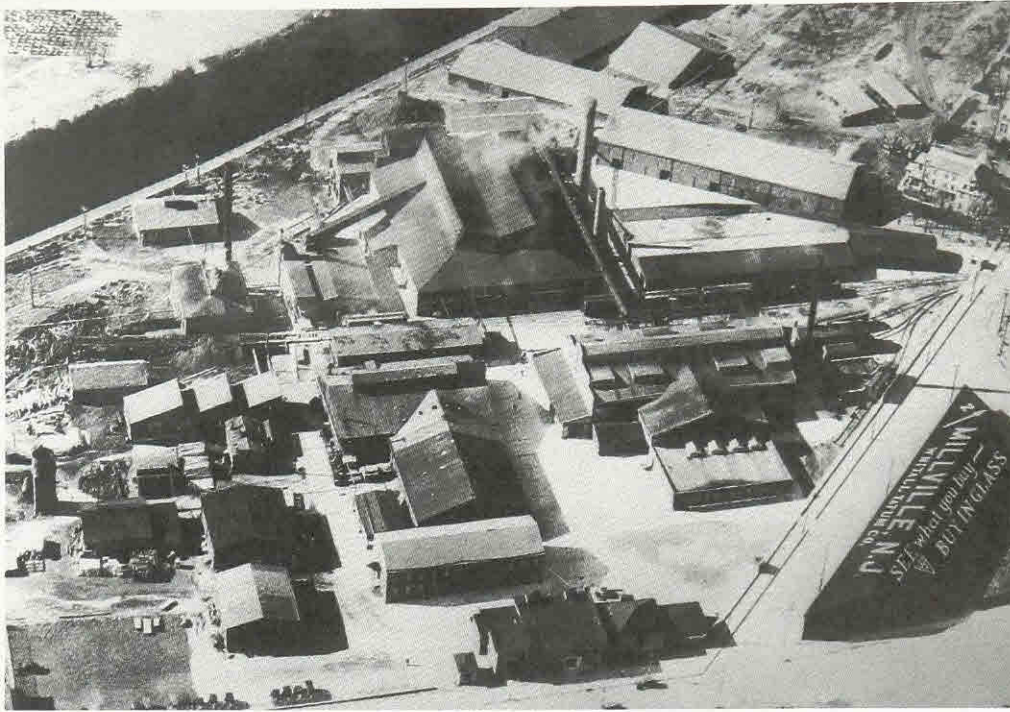
The purchase was prompted in part by the success of a similar device at Canada's Dominion Glass Company. Miller technicians spent close to four months at Whitall Tatum attempting to make their machine produce an insulator, however without success. The press was returned to Swissvale and the matter eventually went to litigation.

With the disastrous Miller rotary press as incentive, Whitall Tatum engineers began development of a fully-automatic glass-forming machine of their own design, a twelve-mold I-C machine. (Figure 2.) Quickly I-A production was rendered obsolete, because by mid-September 1925, ware production began in totally automated fashion on the new machine.

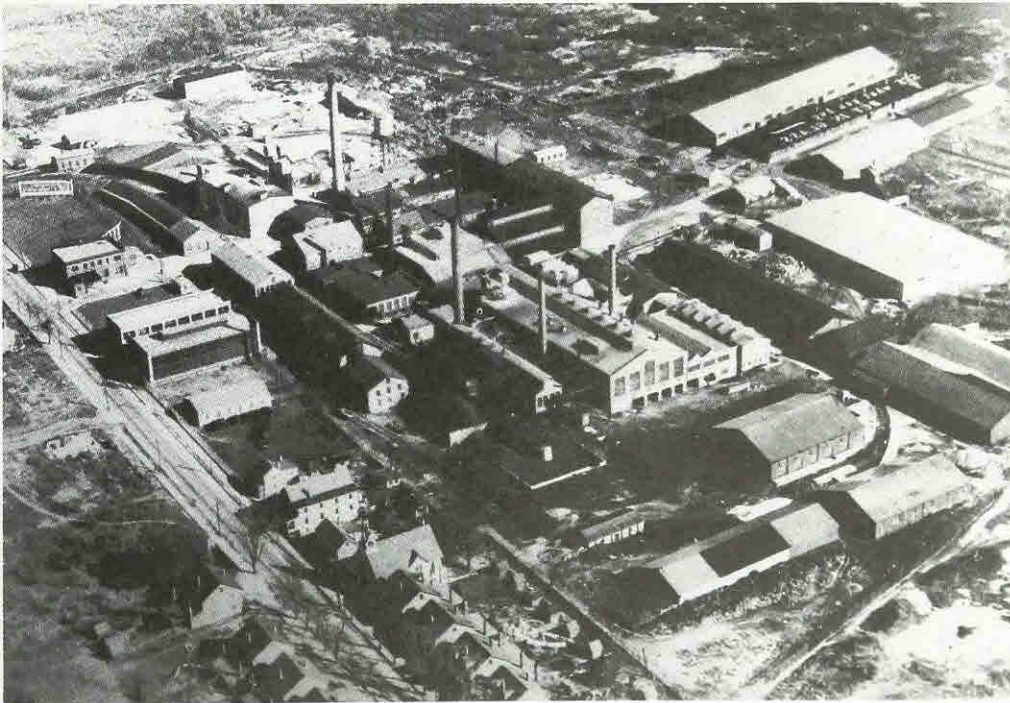
In 1928, Whitall Tatum introduced its I-D glass-forming machine. It was developed in the same twelve-mold configuration as its predecessor, with various improvements for increased productivity gleaned from three years of successful I-C operation. Precisely-sized gobs of molten glass entering the molds in machines of I-D design formed the vast majority of insulators produced during Whitall Tatum ownership.

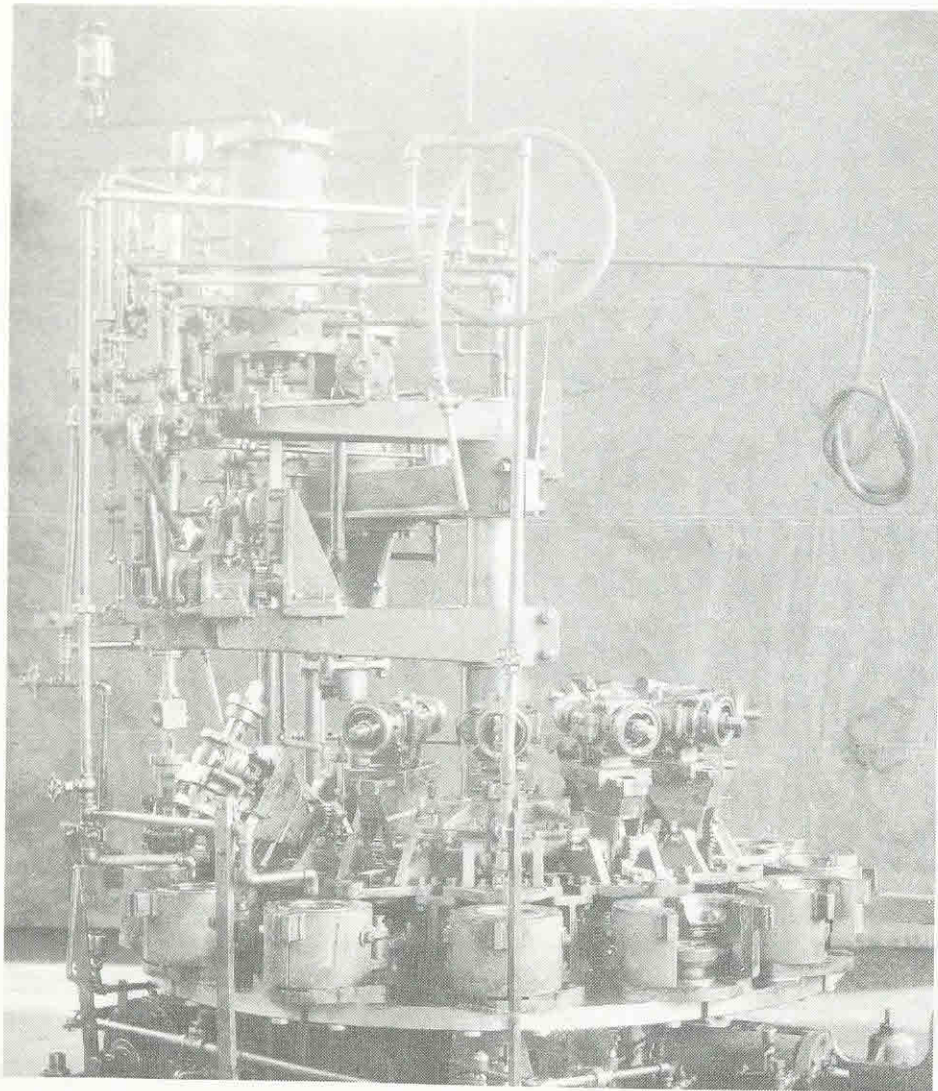
Whitall Tatum insulators can be found





*(Figure 1.) (Above) An aerial view of the Upper Works of the Whitall Tatum Company, taken in 1932. It was commonly known as the "Glasstown "plant. It was razed by Armstrong Cork Company after that concern acquired the Whitall Tatum factories in 1939 and moved to South Millville. The large building on Columbia Ave. with "Millville, N.J." painted on the roof served as a warehouse. (Below) An aerial view of the Lower Works of the Whitall Tatum Company also taken in 1932. (Photos courtesy of Don Wentzel)*





*(Figure 2.) The I-C machine's introduction began the week ending Sept. 19, 1925, according to 1947 correspondence related to the production of Armstrong's 100 millionth insulator. This data also indicated that the machine was fully automatic. (Photo courtesy of Ward Lindstrom)*

*A photo taken in 1928 of trucks waiting to be loaded with Whittall Tatum Company insulators. The first truck's sign reads: "215,000 GLASS INSULATORS From Whittall Tatum Co. for Automatic Electric Co. of Chicago, Ill. Shipped to Rio de Janeiro, S.A." (Photo courtesy of Don Wentzel)*



WHITALL TATUM CO.      GLASS INSULATORS

**No. 1 W. T. CO.**  
*Weight, 24 Ounces*  
**Western Union and Postal Standard  
 Double Petticoat Glass Insulators**

The No. 1 Double Wall Telegraph Insulator is a standard on U. S. A. Railroads for Telephone, Telegraph and Signal Lines. It is for use on toll circuits of greater length than 100 miles, and on shorter lines where insulation conditions are very severe.

Size of box	10 3/4" x 18 3/8" x 33 1/2"
Number in box	100
Net weight	150 lbs.
Gross weight	180 lbs.

*Prices on application*

*For domestic shipment Insulators can be supplied in cartons of fifty*

WHITALL TATUM CO.      GLASS INSULATORS

**No. 2 W. T. CO.**  
*Weight, 16 Ounces*  
**Toll Line Insulator**

is standard on toll circuits less than 100 miles long.

Size of box	14" x 16" x 30"
Number in box	150
Net weight	140 lbs.
Gross weight	180 lbs.

*Prices on application*

**No. 3 W. T. CO.**  
*Weight, 10 Ounces*  
**Exchange Line Insulator**

is used on local circuits in exchange areas. The upper wire groove is adapted for tying in the line wire, and the lower groove is employed for leadening under certain conditions.

Size of box	14" x 16" x 30"
Number in box	200
Net weight	125 lbs.
Gross weight	162 lbs.

*Prices on application*

*For domestic shipment Insulators can be supplied in cartons of fifty*

*Whitall Tatum Company catalog advertising.*

WHITALL TATUM CO.      GLASS INSULATORS

**No. 4 W. T. CO.**  
*Weight, 16 Ounces*  
**Deep Groove Double Petticoat Insulator**

is used for electric light wiring on local lighting circuits. This insulator is recommended for 4000 volt distribution.

Size of box	13 1/4" x 16" x 31"
Number in box	150
Net weight	150 lbs.
Gross weight	200 lbs.

*Prices on application*

**No. 5 W. T. CO.**  
*Weight, 17 Ounces*  
**Extra Deep Groove Double Petticoat Insulator**

is used on electric light and power circuits. The extra deep groove (3/4 inch in diameter) takes care of the standard rubber-covered or weather-proof electric light and power wire. This insulator has a capacity of 4000 volt distribution.

Size of box	14" x 17 3/8" x 33"
Number in box	150
Net weight	165 lbs.
Gross weight	215 lbs.

*Prices on application*

*For domestic shipment Insulators can be supplied in cartons of fifty*

WHITALL TATUM CO.      GLASS INSULATORS

**No. 9 W. T. CO.**  
*Weight, 9 1/4 Ounces*  
**Pony Glass Insulators for Telephone Lines**

The No. 9 Single Wall is a small Telephone Line Insulator with Rectangular Side Groove, preventing the line wire from slipping even though the tie wires become loosened. This feature reduces maintenance cost.

Size of box	14" x 16" x 30"
Number in box	200
Net weight	125 lbs.
Gross weight	160 lbs.

*Prices on application*

*For domestic shipment Insulators can be supplied in cartons of fifty*

**WHITALL TATUM COMPANY**  
 225 VARICK STREET, NEW YORK

PHILADELPHIA - 410-416 Race Street      BOSTON - 31 and 33 State Street  
 CHICAGO - 185 N. Wabash Avenue      SAN FRANCISCO - 170 Market Street  
 SYDNEY, N. S. W. - 147 George Street, Agency      BUSINESS BUREAU, 4, 6, & 8, Cedar Street, Agency  
 GLASS FACTORIES: MILLVILLE, N. J.      RUBBER FACTORY: KEYPORT, N. J.

Printed in U. S. A.



## ARMSTRONG CORK COMPANY

The summer of 1938 found the Glass and Closure Division of Armstrong Cork Company assuming control of insulator production in Millville. The cast of characters charged with the responsibility of day-to-day endeavors at the plant remained intact, and business continued unchanged. Eight years passed before the venerable Whitall Tatum name began to be replaced by Armstrong embossings.

With increasing orders from major electrical supply houses such as Graybar Electric, Western Electric, and Public Service Electric & Gas, came greater demand on the company to update, diversify, and specialize their offerings. In response, Armstrong developed six new commercially successful designs - 51C1, 51C1A, 51C3, 512U, CSC and TS, while three styles were redesigned for increased insulating ability coupled with more cost-effective production capability - No.'s 1, 4, and 15 (supplanted by TW). Additionally, the company pursued three experimental ventures - 51C2, 51C4B and modified TW, with perhaps a fourth (a possible 51C4 which might have preceded the 51C4B).

By the fall of 1947, production records indicate that Armstrong had produced and sold 100 million insulators. Unfortunately, that is also the point at which such records cease to exist. Regardless, with twenty-two more years of insulator production ahead, Armstrong undeniably stands as one of this country's most prolific manufacturers of glass insulators.

Embossings found on insulators produced in Millville during the Armstrong era are as follows:

### STYLE 1

- (F-Skirt) WHITALL TATUM preceding Catalog Number (such as No. 1)
- (R-Skirt) MADE IN U.S.A. (W/T in triangle)

This embossing was accomplished by simply removing the "CO." from the front half-mold. Markings of this nature were used from 1938 to 1949.

### STYLE 2

- (F-Skirt) WHITALL TATUM preceding Catalog Number
- (R-Skirt) MADE IN U.S.A. (A in a circle)

This style was used briefly around 1943.

### STYLE 3

- (F-Skirt) WHITALL TATUM (in an arc embossing) over Catalog Number
- (R-Skirt) MADE IN U.S.A. (in an arc embossing) over mold no. year of manufacture over (A in a circle)

This style was used from 1941 to 1947.

### STYLE 4

- (F-Skirt) *Armstrong's* in semi-cursive italics preceding Catalog Number
- (R-Skirt) MADE IN U.S.A. (A in a circle) mold no. year of manufacture

This style was used from 1948 to 1960. Four designs can be found with the catalog number embossed in a semi-cursive italics matching the Armstrong's name. They are catalog numbers 2, 10, TW, and modified CD 203.2 TW.

### STYLE 5

- (F-Skirt) Ⓐ rmstrong (A of Armstrong is in a circle) preceding Catalog Number
- (R-Skirt) MADE IN U.S.A. mold no. year of manufacture

This style was used from 1957 to 1969.

Variations include the CD 167 51-C1, found in amber and clear, embossed as follows:

- (F-Skirt) ARMSTRONG in arc over mold no. year of manufacture over (A in a circle)
- (R-Skirt) 51-C1 over MADE IN U.S.A.

Additionally, the experimental CD 228.5 embossed 51-C2 and CD 238.2 embossed 51-C4B, both found in clear, are marked simply with the (A in a circle) trademark.

Embossing Style 1 Chart		
Catalog No.	Configuration	Color
1	CD 154	Clear
2	CD 122	Clear
3	CD 115	Clear
4	CD 162	Clear
5	CD 164	Clear
9	CD 107	Clear
10	CD 214	Clear
13	CD 113	Clear
14	CD 160	Clear
15	CD 197	Clear
511A	CD 272	Clear, Amber

Embossing Style 2 Chart		
Catalog No.	Configuration	Color
13	CD 113	Clear
14	CD 160	Clear

Embossing Style 3 Chart		
Catalog No.	Configuration	Color
1	CD 155	Clear
2	CD 122	Clear, lt. olive, lt. green, lt. blue
3	CD 115	Clear
4	CD 163	Clear
9	CD 107	Clear, lt. olive
15	CD 197	Clear
512U	CD 216	Clear, amber
CSC	CD 128	Clear

style exhibit the only embossing error to be found on an insulator produced in Millville, a reversed "N" found on rear "MADE IN U.S.A."

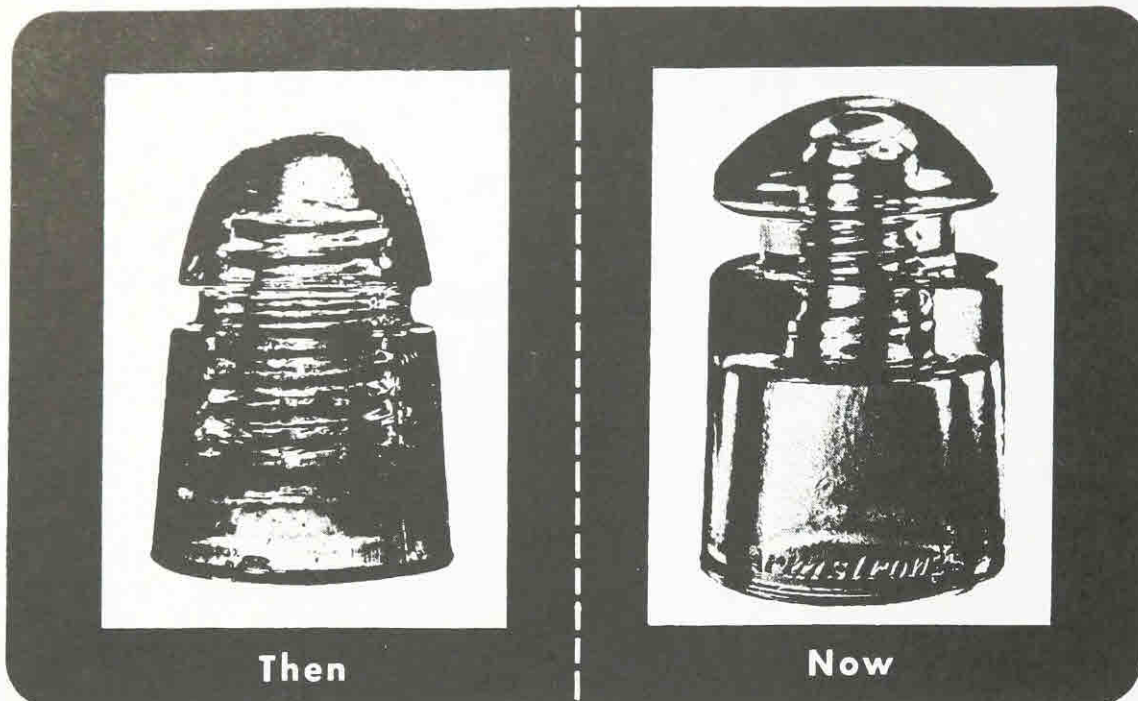
Embossing Style 4 Chart		
Catalog No.	Configuration	Color
DP1	CD 155	Clear, lt. smoky amber
2	CD 122	Clear
4	CD 162	Clear
4	CD 163	Clear
5	CD 164	Clear
9	CD 107	Clear
10	CD 214	Clear
13	CD 113	Clear
14	CD 160	Clear
511A	CD 272	Clear, amber
51-2U	CD 216	Clear, amber
51-C1A	CD 230.2	Amber
51-C3	CD 217	Amber
CSC	CD 128	Clear
TW	CD 203	Clear
Modified TW	CD 203.2	Clear

Embossing Style 5 Chart		
Catalog No.	Configuration	Color
DP1	CD 155	Clear
2	CD 122	Clear
3	CD 115	Clear
9	CD 107	Clear
CSC	CD 128	Clear
TS	CD 129	Clear
TW	CD 203	Clear

Number 2 insulators from mold number 19 in this embossing



*Pictured above are two salesman's samples of Armstrong glass insulators. On the left, a miniature CD 155 is molded as part of a glass pedestal and is embossed with "A in a circle" on both the front and rear skirt. The pedestal is embossed "Armstrong's WHITALL TATUM "on the front half and "DISTRIBUTION INSULATORS "on the rear half. On the right, a miniature CD 216 is embossed indentially to the CD 155 sample. Both are made of clear glass. (Photos courtesy of Bob Brophy)*



## YOU CAN SEE THE DIFFERENCE

There's been a big change in glass insulators over the past twenty-five years. No longer are they full of blow holes and covered with surface irregularities like the old-timer shown above at the left. As you can see, today's Armstrong's Glass Insulator is totally free from structural defects that might cause premature failure in service.

One important reason for this improvement is Armstrong's completely mechanized production lines. Precision machinery, equipped with the latest automatic controls, makes every Armstrong Insulator the mechanical and electrical equal of hand-made laboratory models.

Of equal importance is the basic design of Armstrong's Glass Insulators. Thickness of wall sections and location of wire grooves with respect to the pinholes have been calculated to provide each Armstrong Insulator with the maximum mechanical

strength consistent with its size and class of service.

Armstrong's Glass Insulators have improved dielectric characteristics, too. They are molded from a newly formulated industrial glass that makes them almost completely inert. Hence Armstrong's Glass Insulators have extremely high resistance to surface leakage in wet weather.

Rigid inspection procedures based on laboratory standards maintain a constant check on actual production. Every Armstrong Glass Insulator is inspected visually. It is also hand-gauged for accuracy of thread contour and pinhole diameter. Every production run is checked for resistance to thermal shock.

Finished Armstrong's Glass Insulators are stocked ready to fill your order immediately, whatever its size. They come to you packed in special cartons designed to get them on the job in perfect condition.

*Early 1950's Armstrong catalog advertising "You Can See The Difference". The insulator which illustrates "Then" is a No-Name CD 104 while the "Now" insulator is Armstrong's TS (CD 129). (Courtesy of Tom Moulton)*



## HOW ARMSTRONG'S GLASS INSULATORS ARE MADE

Sand, limestone, soda ash, alumina, borax, magnesia, barium, selenium, cullet—these are the raw materials that are combined in measured quantities to give Armstrong's Glass Insulators strength and weather resistance.

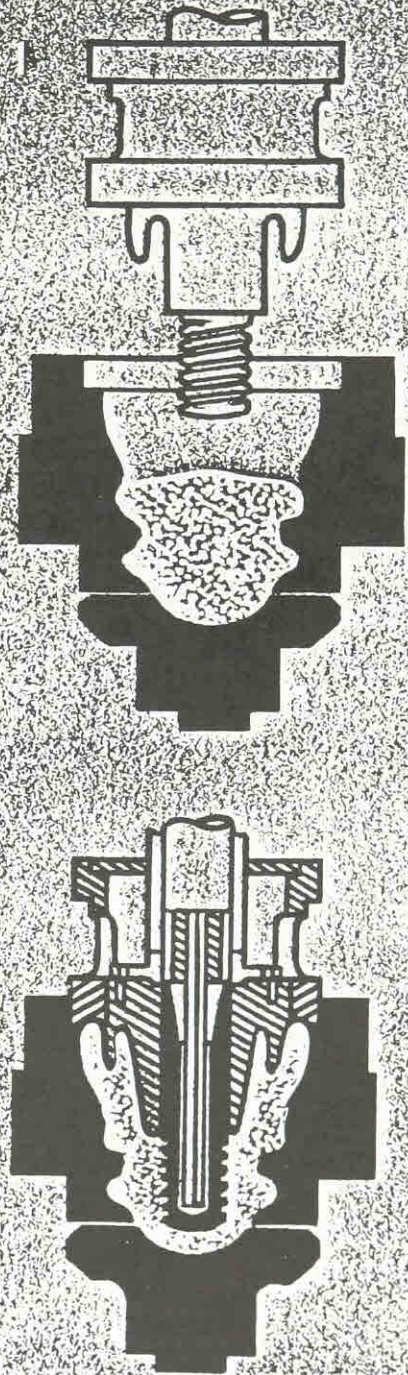
But blending these granular minerals is only the first step. Next, these minerals must be transformed into homogeneous molten glass in huge furnaces. Since each ingredient has a different melting point, careful control of melting is necessary to prevent separation of the materials and resulting defects in the glass.

When melting is complete, a measured gob of molten glass is fed into the automatic insulator machines. Just what happens inside these machines is sketched at the right. After a carefully timed interval during which the still red-hot insulator hardens, mechanical fingers remove the insulator from the mold and place it on the conveyor that carries it through the long annealing oven.

In this final step, precise automatic devices control insulator temperature and prevent undesirable stresses from forming. Cooled insulators emerge at the inspection stations where they are individually examined and gauged.

● The molten gob of glass plunges into the polished mold that provides Armstrong's Glass Insulators with their smooth surface.

● The plunger moves into position forming the pinhole and petticoat. Seconds later, after the glass has hardened, the mold opens and the insulator moves on to the annealing oven.



Early 1950's Armstrong catalog illustrating insulator production. Insulator being made is a CD 155. (Courtesy of Tom Moulton)

# KERR

GLASS MANUFACTURING CORPORATION  
PACKAGING PRODUCTS DIVISION

## KERR GLASS MANUFACTURING CORPORATION

The final chapter of American glass insulator production began to take shape in April 1969, when ownership of the Armstrong plant was assumed by Kerr Glass Manufacturing Corporation. The Kerr Packaging Products division incorporated glass insulators as a small part of their new operation. One might mention that neither Whitall Tatum nor Armstrong was solely committed to producing glass insulators during their respective eras.

As Kerr took the helm of the Millville, New Jersey, plant, competition from porcelain insulator manufacturers was intensifying, and the company was forced to look abroad to market its wares. In fact, the glass insulator as a viable manufactured product in the United States was a dying breed. Ultimately, large quantities of Kerr insulators were shipped outside U.S. borders.

Kerr held the line, continuing insulator production for six years. However, sometime in 1975, one final CSC or perhaps TS emerged from an annealinglehr, was placed in a carton with forty-nine of its predecessors, and glass insulator production on a commercial basis in this country came to an end. Molds and equipment were shipped to another Kerr facility for storage, and hope remained that insulator production might someday resume. That day was not forthcoming.

Perhaps the knowledge of and involvement with an item moving even closer to obsolescence pervaded the plant to a point that it created an atmosphere tolerant to a fair amount of horseplay on the production line. This would explain the fact that most styles of Kerr insulators can be found in flat-top configurations resulting from the removal of the mold top plate. It would likewise give reason for the variety of styles found with impressions of coins on those same flat surfaces.

It is definite that the relaxed attitude at Kerr was instrumental in allowing local collectors to attempt production of a cobalt blue insulator. Failure to activate the stirrer mechanism in the molten glass feeder resulted in the "cobalt splotch" D.P.1. Likewise, the titanium-coated DP1 was a collector-inspired item. Neither of these insulators was intended for commercial application.

Insulators produced by Kerr Glass Manufacturing Corporation can be found bearing the following embossings:

### Style 1

- (F-Skirt) Armstrong preceding Catalog Number (such as D.P.1)
- (R-Skirt) MADE IN U.S.A. mold no. year of manufacture

Note that the circle has been removed from the A in Armstrong and no (A in a circle) trademark appears on the insulator. This style of embossing was used from 1969 to about 1973.

### Style 2

- (F-Skirt) KPP in oval preceding Armstrong D.P.1
- (R-Skirt) MADE IN U.S.A. mold no. year of manufacture

Here again, there is no circle around the A in Armstrong. This embossing style was used in 1969 and 1970.

### Style 3

- (F-Skirt) KERR preceding Catalog Number
- (R-Skirt) MADE IN U.S.A. mold no. year of manufacture

This embossing style was used during all six years of Kerr production.

### Embossing Style 1 Chart

Catalog No.	Configuration	Color
3	CD 115	Clear
9	CD 107	Clear

**Embossing Style 2** is found only on the CD 155 D.P.1, produced in clear glass.

### Embossing Style 3 Chart

Catalog No.	Configuration	Color
DP1	CD 155	Clear, also clear with cobalt splotch clear with titanium coat
2	CD 122	Clear
CSC	CD 128	Clear
TS	CD 129	Clear
TW	CD 203	Clear

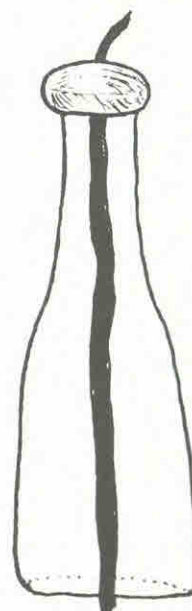


*Final days of packing the Kerr CSC glass insulators.*

## T.C. WHEATON GLASS COMPANY

Another Millville glass factory bears brief mention, that being the T.C. Wheaton Glass Company. Begun in 1888 only three miles north of Whitall Tatum's facility, the company exists today as Wheaton Industries. Although not a producer of any pintype insulators, Wheaton has been definitely identified as the manufacturers of the "bridle wire" insulator sometime prior to October 1923. The insulator bears no embossing and is found in clear with pink or straw tints. It was used as a dry spot insulator for telephone wiring by American Telephone & Telegraph Company.

Additionally, the adjacent Wheaton Village, a recreated turn-of-the-century glass town and museum, has, through the use of their small specialty furnaces, provided the glass for the Holly City and Wentzel-Cobb miniatures.



*A.T.& T. "bridle wire" insulator.*



*Miniature (left) embossed on the front skirt "HOLLY [Holly Leaves] CITY N.J." and on the rear skirt "DPI 71" and miniature (right) embossed only on the front skirt "WENTZEL-COBB TW 1971".*

**"Millville, New Jersey -- Glass Insulator's Abdication"** was written by Richard Wentzel, a lifelong resident of Millville, New Jersey. Richard has been collecting insulators since 1968. His recent acquisition of surviving plant records has led to a historical interest in the development and production of Whitall Tatum, Armstrong and Kerr insulators.