According to Webster’s Dictionary . . .
a Strain is a nonconducting substance or body, as porcelain or glass, used in insulating wires, etc. Cf. (compare) Conductor, nonconductor.
Radio Antenna and Electrical ... STRAINS

STRAIN INSULATORS were first used in telegraph systems to isolate the signal wire from the ground while still supporting the radio antennas.

A “typical” strain insulator is a piece of glass or porcelain that is shaped to accommodate two cables. The shape of the insulator maximizes the distance between the cables while also maximizing the loading transfer capacity of the insulators.

The total measurement of the ribs and the space between the ribs determines the electrical length of the insulator from eye to eye. A short, compact insulator with more ribs and deeper valleys has more electrical length than a longer one with less or no ribs. Some strains are smooth – some have ribs.

They were used to break the electrical path in any wire link, such as in guy wires used to support utility poles, dead-ending the ends of electrical power lines, and overhead power lines. Note that the interlocking connection wires on all strain insulators (except radio antenna strains) prevent the wire from falling should the insulator become broken. Several older styles of high voltage strain insulators intended to dead-end feeder wires were mounted vertically between two cross-arms by means of a wooden or metal rod or pipe. The large styles were composed of a smaller porcelain part cemented inside the larger diameter porcelain sleeve.

Radio antenna strains were used in homes, on military antennas, aircrafts, commercial repeaters, TV and Radio Broadcast antennas, and boats. Electrical strains were used on power lines.

They were made by various glass, bottle, and insulator manufacturers; porcelain manufacturers; and marble manufacturing companies.

There are hundreds of different names of strains from various places. A few names are Pyrex (NY), Fleron (NJ), Brilliant (OH), Sensory (PA), A.G.K. (NY), Locke (MD), Ohio Brass (OH), Knox (TN), Zicme (Columbia), L.S. Brach (NJ), Birnbach (NY), and Lapp (NY).

Strains were made of porcelain, glass, Steatite, plastic, metal, resin, fiberglass, composite, wood, etc.

Where can you find old strains today? . . . You can find them on/in barns, houses, old poles, sales, flea markets, antique shops, and on the internet.

Glass Radio Antenna Strains in Various Colors ... Sharp Ribs - and - Round Ribs

Anatomy of a Strain
Radio Antenna and Electrical ... STRAINS

Notice the different shapes and number of ribs and no ribs of these strains.

Example of how a radio antenna strain worked.

This strain is embossed FLERON and was made by Star. The color Nu-Blac is a trademark dark gray color.

Artwork Courtesy of Old Familiar Strains... A great publication devoted to research on strains.
**Egg and Johnny Ball Strains**

*compression style*

- **EGGS**
  - NICKNAMED “Hand Grenade”
    - Duquesne Light Co. / Embossed: D L Co
  - Folembay Egg
    - (Aisne, France)
  - Airplane Style
    - ?Cook Pottery
    - (Trenton, NJ)

- **JOHNNY BALLS**
  - (Guy Wire Strains)
    - Wooden Trolley Strain
      - 9½''

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**Wooden and Glass Strains**

*tension style*

- L. S. BRACH
  - (Newark, New Jersey)
  - 2½''
- ZICME Spiral Groove
  - marked with backward ©
  - (Columbia)
  - 1¾''
- Wooden Trolley Strain
  - 9½''

**Porcelain Strains**

*tension style*

- 2½''
- 2''
- 1½''
- 1¾''
- 2¼''
- 2''
- 2½''
- 1½''
- 1½''

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Even strains got fancy!

This jeweled-looking strain was made by D.C. Jenkins Glass Co.

(Kokomo, Indiana)
Pontil Glass and Errors

Notice at the ends where the strain was CUT from the pontil ... most are ground off at the ends.

What are they?

AWNING RINGS ...

They were NOT designed to be an insulator ... BUT were sometimes used as radio strains.

Acknowledgements

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We sincerely hope that those of you who have ever said “WHAT IS A STRAIN?” or “WHAT DOES A STRAIN DO?” ... will be able to answer that question now and be able to recognize a strain the next time you see one. THANK YOU!!

Charles and Sandi Irons