

2016 PDF edition

Old Familiar Strains

a newsletter for collectors of radio strain insulators and related items

Volume 6 No. 6

December 1999

**GARTON—DANIELS
AND KEYSTONE
LIGHTNING PROTECTIVE
APPARATUS**

ELECTRIC SERVICE SUPPLIES CO.
PHILADELPHIA NEW YORK CHICAGO

Editorial

Merry Christmas.

This has been an interesting year. Several times I've found myself cutting back in some areas in order to be able to take care of others. (Do you mean that I can't do *everything*?)

There is material enough in the files to carry us through many future issues of *OFS*. But your stories and articles are always most welcome. It's certainly an encouragement to me when others share some of the writing duties.

Despite the time pressures that I've been under, really it's been a good year. I was able to attend more major radio swaps (6) than most years. And I was able to make it to 5 insulator swaps – also a record for me. I hope that you all had similar successes in your pursuits.

In the new year I'm especially looking forward to seeing those of you who can make it to Enumclaw, WA for the NIA Western Regional convention. I'm planning to be there with a sales table and with a competitive display. Unless I know to expect other strain collectors, I generally just bring an *OFS* display and a small "wanted" board to put on my table. If we plan, I would gladly bring along some spare porcelain or glass strains, or lightning arresters, for you.

It seems appropriate to start the new century with a "major" subject. Since my visit to the company's factory in August, I've been intending to profile the strain insulators of Lapp Insulator Company. Additional information on Lapp would be greatly

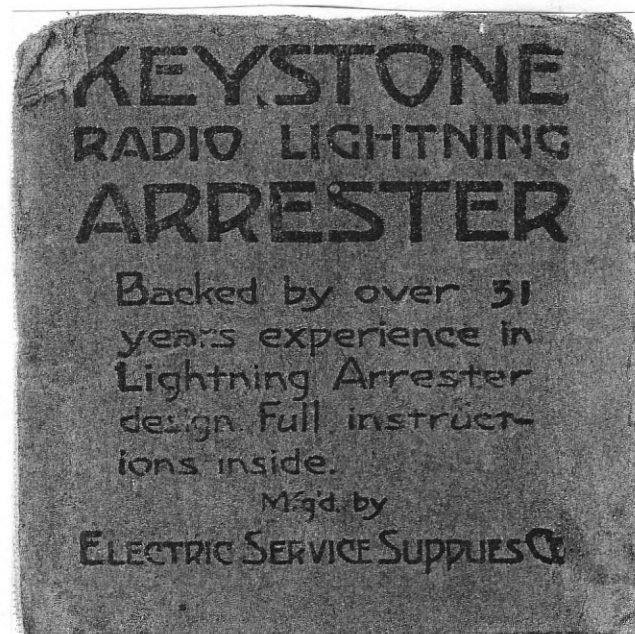
appreciated. I am especially interested in getting copies of catalogs and ads. Lapp has been in business for a long time and made many insulators. Let's make the review as complete as we can.

Among other items, the major focus of the December issue is ESSCO (Electric Service Supplies Company).

The February issue will include an updated annual roster. Please check your mailing label for accuracy and to see if you are up for renewal.

Have a great rest of the year!

Dan Howard



Keystone Lightning Arresters: "I liked it so well that I bought the company"

By Dan Howard

A few years ago, a television ad campaign featured a man claiming that he liked a product so well that he bought the company.

It's just speculation, but I believe that that statement tells part of the story of Keystone lightning arresters.

The Garton-Daniels Electric Company of Keokuk, Iowa developed and owned the patents for several very sophisticated lightning arresters in the late 1800's. Some Garton-Daniels designs included solenoid coils which would positively open a circuit in the case of a surge or lightning strike. This patented technology would be used for years to come on power and signal circuits.

Electric Service Supplies Company (ESSCO) was initially an electrical parts supplier, like the Heinemann Electric Company that we featured in the April issue. Ads feature all types of electrical equipment including lightning arresters and lightning choke coils.

There is no doubt that they sold Garton-Daniels brand lightning arresters for a considerable period of time. And, sometime

after the turn of the century it appears that they "liked the company so well that they bought it." The Garton-Daniels company became listed in ads as "ESSCO's factory in Iowa."

In a 1979 column in Crown Jewels, Jack Tod says that ESSCO was established in Philadelphia in 1906. The President at that time was Charles G. Mayer and the treasurer was A.H. Englund. Both men had former involvement with the Mayer & Englund Co., also of Philadelphia. Mayer and Englund specialized in equipment for electric railway construction (1:63).

Garton-Daniels was not the only the company which ESSCO may have absorbed.

Tod says that ESSCO acquired at least a controlling interest in the Franklin Porcelain Company of Norristown, PA. Franklin manufactured porcelain insulators (including strain insulators) from the early 1920's through 1928 or 1929. Franklin's power style pin insulators were cataloged and sold by ESSCO. Wet process guy strain



YOU WILL FIND

That the use of a larger number of Lightning Arresters reduces the chance of trouble during storms. If you buy

Garton Lightning Arresters

you will find them the best Insurance you ever had, as the policy doesn't expire.

It will pay you to be posted. Write your supply house or

GARTON-DANIELS COMPANY
KEOKUK, IOWA, U. S. A.

insulators with a circle-delta marking are also believed to have been made by Franklin. (2:127-128)

Tod places ESSCO at 17th and Cambria Streets in Philadelphia (2:127). He also mentions sales offices at six other U.S. cities and Canada. An undated ESSCO ad that was provided by **Bob Puttre**, refers to the "Mayer & Englund Dept., Philadelphia," the "Garton-Daniels Dept., Keokuk" and the "Porter & Berg Dept., Chicago." It also makes mention of offices in New York, Pittsburgh, Atlanta, and Saint Louis.

Besides direct sales from its regional offices and sales through jobbers, the company apparently sold lots of lightning arresters through department store catalogs. My 1923 Montgomery Wards catalog shows both the Keystone ground fittings and the Keystone arrester. Sears also featured the Keystone arresters in its mid-1920's catalogs. Sears sold the arrester by itself or as part of an antenna kit. ESSCO, or another jobber, likely assembled the kits for Sears from various manufacturer's strains, lead-ins and feed-through components. Neither Sears nor Wards listed the Keystone brand name in the ads. However the distinctive octagonal profile is unmistakable. Few companies made arresters that suck out from the wall on brackets, and most preferred simpler round or square-cornered designs.

Pintype insulator collectors may recognize the ESSCO acronym. The Knowles Company made a CD 252 cable insulator for the company. At first it had the Mayer and Englund "M & E Co." embossing and later (after 1906) the marking was changed to "E.S.S.Co. No 401." Milholland's Bicentennial Edition cites CD 252 examples which bear one or *both* company's names. In

fact, the title page of their book features one of the M&E CD 252's (although that may have more to do with Marion and Evelyn's initials than anything else).

Garton-Daniels and Keystone Lightning Arresters

A 1922 ESSCO catalog that I found at the Rakow Library provided a wealth of information about the company's lightning arresters. Keystone brand arresters were the company's low-end offering. They were recommended for protecting "less critical circuits" and for less-expensive transformers. The Garton-Daniels brand arresters were recommended for protecting critical circuits and substation installations.

Most Keystone brand arresters were multiple gap style. Lightning surges would arc across several small air gaps within the arrester and jump harmlessly to ground. The gaps were set just wide enough to keep normal circuit voltages from jumping across. Unfortunately, in all but the lowest voltage circuits, once the arc was established by the high voltage surge, it tended to be sustained by the line current, effectively grounding out the circuit.

The sustained-arc phenomenon is similar to what happened with the arc radio transmitters that were popular prior to World War II. And the solution to both problems was similar. In many high powered radio transmitters, magnets were used to break the arc. In others, a stream of compressed air was directed between the arcing plates to literally "blow out" the arc like a birthday candle. ESSCO called the process "expulsion." The arrester was sealed at the top, but air vents were left open at the bottom. Air, heated by the arc, rapidly

KEYSTONE LIGHTNING ARRESTERS

Expulsion Type

resistance rod "H"; to the lower end of the resistor is secured the clamping band "I," which, being provided with a lip, serves as support for the insulating member "S." Air gap elements are assembled on rod "S," the gaps being formed between brass discharge caps "J-J" by the interposed porcelain spacers "K-K," both of which are permanently secured in place by discharge point "M," whose upper end is enlarged and tapped for threading on to lower end of rod "S" and securely locked thereto by means of pin "L."

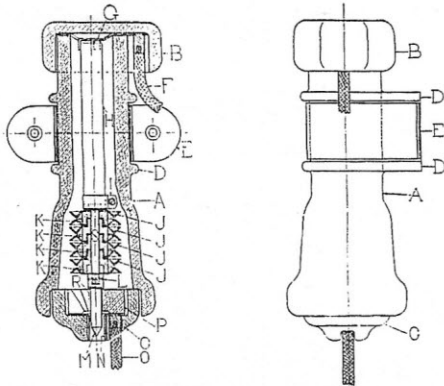


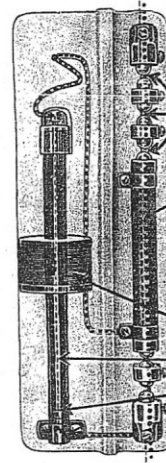
Figure 3—Diagrammatic View of Expulsion Lightning Arrester

expanded and surged through the gap, thereby blowing out the arc. Simple and effective.

The Garton-Daniels product line were typically circuit breaker style arresters. The units employed small air gaps like the Keystone arresters, along with a solenoid that would open the circuit in case of a strong surge. Early units were mounted on Italian marble, slate, or wooden bases. Later, these materials were replaced with glazed white porcelain. Early bases bore name plates on the base or on the solenoid coil. The porcelain units typically had recess-embossed markings. Often destined for long-term outdoor exposure, the circuit breaker arresters were sold with optional cast iron or wooden housings.

GARTON-DANIELS LIGHTNING ARRESTERS

Showing Operation of 3500 Volt A. C. Arrester



Dots show lightning path.
Dashes show normal current path.

Air gaps just large enough to hold back line voltage.

Non-inductive series resistance to limit normal current to ten amperes.

If current following discharge is too heavy to be cut off by air gaps alone,

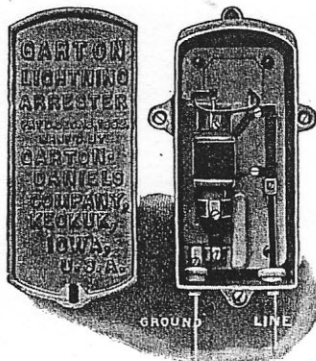
It is shunted into this solenoid, energizes it. Lifts the plunger.

Instantly opening circuit here. Plunger resets automatically.

Garton-Daniels A. C. lightning arresters consist of a small air gap distance, low series resistance and an electrically operated circuit breaker.

Small air gap distance means efficient protection; low series resistance means the elimination of surges, low voltages, winking lights and other voltage disturbances; the circuit breaker means the elimination of lightning arrester grounds and short circuits on your lines.

The third style of arrester, and the one that was eventually sold for radio purposes, is the Keystone Model N and NS. In its line materials catalog, ESSCO recommends these small fixed gap arresters for protecting the neutral wire of a transformers. The only difference between the N and NS arresters is



The Money You Spend

becomes a part of your investment instead of an expense if you buy **Garton Lightning Arresters**. These Arresters are made right and stay right. Let us suggest an equipment and tell you the cost of it.

(3)

Garton-Daniels Company, Keokuk, Iowa, U. S. A.

that the N includes an iron strap bracket for attaching it to cross arms. The user provides a hanger for the NS or just suspends it from the wire. Both arresters were made from porcelain. The line lead attaches to the top, and the ground lead leaves through the bottom. This is a common configuration.

The Keystone N and NS arresters are shown on page 12.

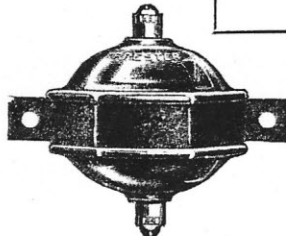
Radio Parts

The earliest ad that I have for Keystone radio lightning arresters is from *Radio News* for November, 1922. As you can see, ESSCO also sold a line of radio circuit components at that time under the Simplex brand name. According to the *Radio Collector's* guide, The Simplex Radio Company of Philadelphia manufactured radios from 1921 (starting with the panel sets) until the late 1920's. It is unknown if there was a direct connection to ESSCO.

Panel style radios were very popular in the early 1920's. The famous Atwater Kent breadboard radios were essentially assembled panel sets. DeForest offered the "Interpanel" sets. Remler and Norco also offered panels similar to

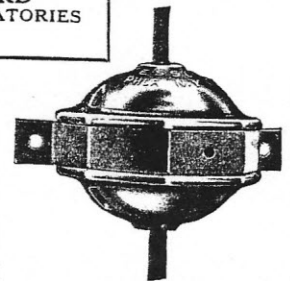
KEYSTONE Lightning Arresters

LISTED AS STANDARD
BY UNDERWRITERS' LABORATORIES
(No. 362A-4)



Type B, Arrester. Price, \$2.00

After you install a Keystone Radio Arrester you will have highly efficient lightning protection for years. They last indefinitely because they have no vacuum to lose nor fuses to blow. They are enclosed in heavy porcelain, sealed and tested. Install them outdoors where an arrester belongs. You do not need a lightning switch. Write for circular and instructions free. Sold everywhere or sent postpaid on receipt of \$2.00.



Type A, Arrester. Price, \$2.00

SIMPLEX PANEL UNITS

Simplex Panel Units make it possible to try-out many different hook-ups and thus determine the best for a certain locality without disassembling the different panels. This is a decided advantage but of no less interest is the fact that the beginner can first purchase one variocoupler panel and one detector panel and have a fairly good receiving set at minimum cost with the advantage of later adding additional units to obtain greater sensitiveness and selectivity. Thus, you can continually add to your Simplex outfit and when you have it complete it is unquestionably one of the most attractive and efficient receiving sets now offered to the public.

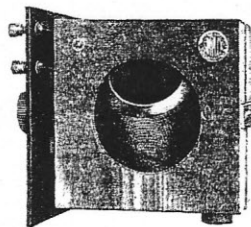
Variometers and vario-couplers are also supplied, unmounted. For Sale by Dealers everywhere, write for circular.

Electric Service Supplies Co.

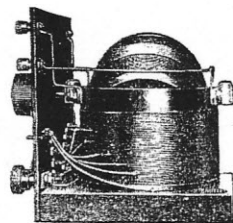
Manufacturers of Lightning Arresters for 30 years
17th and Cambria Sts. Monadnock Bldg.
Phila., Pa. Chicago, Ill.

50 Church Street
New York, N. Y.

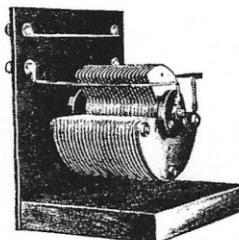
Distributors for Simplex Radio Co.



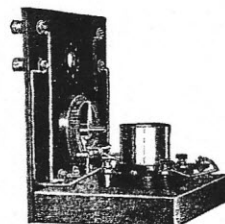
Simplex Variometer Panel



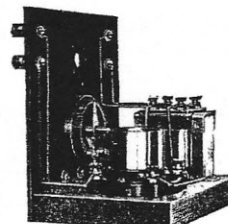
Simplex Vario-Coupler Panel



Simplex Condenser Panel



Simplex Detector Panel



Simplex Amplifier Panel

those sold by ESSCO. Under this system,

the hobbyist could purchase the individual panels for the detector, tuning, and amplifier stages. This offered many advantages. First, it was not necessary to save up for the purchase price of a complete radio all at once. Simple circuits could be constructed from just a few parts, and the set could be improved later as budget allowed. Second, newspapers and magazines of the day regularly published new "hookups." With the panel set up, the experimenter was free to swap a few connections here and there and experiment to find what worked best for him. Third, by selling just the components, and not complete radios, ESSCO and other companies were able to avoid purchasing licenses for patented radio circuits. They just sold the parts and left it up to the user to determine how he wanted to use them.

Lightning Arresters

The earliest Keystone radio lightning arresters were octagonal porcelain units. The later arresters were hexagonal and were made from Bakelite.

The 1922 ad shows two arresters, Type A and Type B. Both units appear to be porcelain and both appear to include the iron strap mounting bracket. The biggest difference seems to be in the end fittings. The Type A arrester seems to have flexible wire leads like the Type N/NS commercial units. In radio use, one of the leads would be soldered to the antenna lead-in wire, and the other which would go to ground. The Type B arrester incorporates screw connections which are tapped into the ends of brass rods.

I've not had the chance to examine a Type A unit so I can't say much about it. It is suspected that the company simply made cosmetic

changes to its Type N commercial unit (perhaps labeling it for radio use) and then began selling it to radio hobbyists. The Type A arrester only appeared in 1922 ads. The flexible leads on the Type A unit would have required soldering or acquiring special wiring clamps to achieve reliability for outdoor use. You couldn't just twist the wires together and expect the joint not to corrode and fail. While soldering the units in would give added reliability, it would have been a nuisance for many consumers. I expect that the Type A unit was dropped entirely in favor of the Type B arrester by the end of the year.

I have two different Type B arresters in my collection. The first (and I presume the earliest) is embossed "AERIAL ARRESTER E.S.S.CO. PHILA. N.Y. CHGO." The bottom of the arrester has what appear to be glazed-over weep holes on either side of the ground connection.

The second Type B arrester is embossed "KEYSTONE RADIO LIGHTNING ARRESTER E.S.S.CO. TOP." It has a plain bottom.

The Type B arresters are octagonal when viewed from the top. Both are a white porcelain that is finished with a light coppery brown glaze. The glaze has an almost iridescent quality similar to some power insulators with "radio" glaze. The porcelain arresters are held together with nuts and bolts and the halves are sealed on the underside with a tar-like material. These big guys measure 3-3/8" maximum diameter.

In 1923, ESSCO ads were changed to show a new version of the Type B arrester. This unit also incorporates screw connections. However, the brass rods are machined to an

**KEYSTONE
RADIO LIGHTNING
ARRESTERS**



Should be on every aerial the year 'round. Provides highly efficient lightning and static protection for the home. Fully approved by Fire Underwriters. Can be installed out-doors. Has no vacuum to lose. Install one in your aerial lead now—be safe.

This pioneer radio arrester is backed by 31 years experience in lightning arrester design.

For sale by Dealers everywhere, or sent post-paid for \$2.00. Write for circular.

Electric Service Supplies Co.
17 & Cambria Sts.
Philadelphia

Monadnock Bldg., Chicago
50 Church St., New York




angle, and the screw is tapped into the side of the rod, rather than into the end.

The arrester was changed again in 1923 or 1924 to a Bakelite casting. The Bakelite units are smaller (3-1/8" max dia.) and lighter than the porcelain examples. A brass mounting strap replaces the iron strap used with the porcelain arresters. Unfortunately, the Bakelite finish was not resilient. Used units that have been out in the weather tend to be flat and discolored. When new, they were a shiny dark brown color which looked great with the polished brass hardware. The Bakelite arrester is embossed only on the top surface. Markings are "KEYSTONE RADIO LIGHTNING ARRESTER TOP E.S.S.CO." The top and bottom halves are permanently held together by three rivets.

Keystone lightning arresters were probably pretty good sellers. Both Sears and Montgomery Wards mass marketed them

**KEYSTONE
RADIO LIGHTNING
ARRESTERS**



Retail
Price \$1.50

In Canada
\$2.00

Approved by
Underwriters E-1835

**Easily sold whenever you sell
antenna material**

A strong, sturdy, reliable protector required to relieve the antenna system of dangerous accumulations of static or lightning which may result in serious damage. Manufactured by a company having over 34 years' experience in the design of lightning protective apparatus.

The body of this arrester is made of genuine Bakelite, thus providing the very best insulation between antenna and ground with no loss in strength of incoming signals. The rugged discharge electrodes are inside the body, where they are in an absolutely water, dust and damp proof enclosure. All metal parts are of brass.

Write for Discounts

Electric Service Supplies Co.
*Mfrs. of over one and one-half million
lightning arresters*

PHILADELPHIA NEW YORK CHICAGO
17th and Cambria Sts., 50 Church St., Monadnock Bldg.

through their widely read catalogs. In addition to publishing its own catalogs, ESSCO regularly advertised in the popular radio hobbyist publications and it had a network of sales offices.

Today, both the porcelain and the Bakelite units are commonly found. However, many arresters are found with the bracket straps missing. Collectors take heart. The Wards ad says that it "can be suspended from the lead-in wire or fastened to any support." If your mounting strap is missing, just hang it from a piece of wire on your display and say that you are demonstrating the lead-in suspension arrangement (ha ha).

INSTRUCTIONS for Installation

OF KEYSTONE RADIO LIGHTNING ARRESTERS & GROUND FITTINGS

Approved by National Board of Underwriters

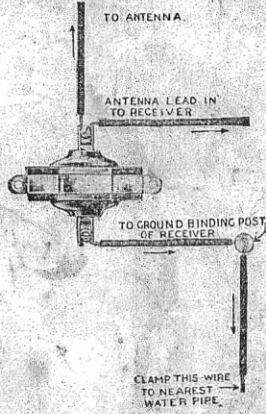


FIGURE 1

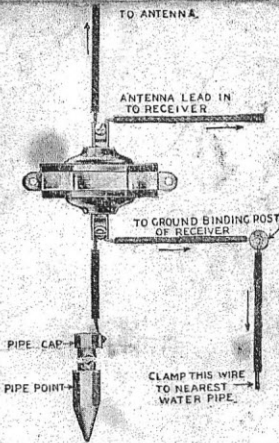


FIGURE 2

Then with a maul or heavy hammer drive the pipe into the earth, leaving not more than 3 or 4 inches above the ground; unscrew the iron cap, attach the brass cap and screw it "home." Pour two or three buckets of water around the pipe to enable the earth to quickly and tightly close in on same. The use of the iron cap for driving the pipe is recommended on account of the fact that in hard earth particularly the standard brass cap is apt to become quite battered up, perhaps closing the hole provided in same for the reception of ground wire. If the iron cap be not used,

The principles underlying the grounding of Keystone Radio Lightning Arresters are fundamentally no different from those underlying the grounding of lightning arresters on lighting, power and other electrical circuits. Since a highly efficient arrester can be rendered practically worthless through a poor ground, it is very important, particularly in protecting delicate radio apparatus, that good and efficient grounds be provided and as well that they be maintained in good condition. Bear in mind that lightning arresters can't have too good a ground.

Always install arrester in upright position (as illustrated) and note that top is marked "top." Also, when placing hand around arrester see that the binding post screws are facing outward so that they will be accessible after the arrester is permanently fastened in place.

Fig. 1 herewith shows one method of grounding Keystone Lightning Arresters. Antenna lead-in runs directly to "top" binding post of the arrester and may continue on to the receiving set without cutting the wire. From the lower binding post of the arrester run wire to receiving set and continue same wire to the nearest cold water pipe, making connection with an approved ground clamp. This connection may likewise be made to grounded steel framework of a building or to some other grounded conductor if a water pipe is not available; it should not be made to a gas pipe.

While such a ground connection ordinarily would suffice for most installations, it has two serious disadvantages, viz.:

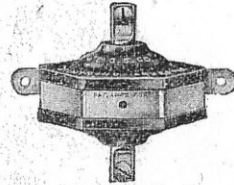
(a) Many water pipes and other so-called "grounded" structures are only partially grounded due to the use of insulating couplings, rusty joints, etc., and consequently offer only a more or less efficient ground.

(b) In all lightning protective installations it is desirable from both the standpoint of personal safety and fire risk to get the lightning discharge to the earth as quickly and as directly as possible, thus avoiding the dangers which obtain when, for example, the discharges have to travel through a long length of pipe or across rusty and high-resistance joints to reach earth.

It is therefore recommended that in all cases where one can do so that the above mentioned clamped water pipe ground be supplemented by a driven pipe ground as shown in Fig. 2. For ease in installing such pipe ground we have for many years manufactured the "Pipe Points" and "Pipe Caps" illustrated on other side of this sheet. These are made for ordinary 1-inch iron pipe, and, while plain pipe may be employed, it is always recommended that galvanized pipe be used on account of its greater durability in many soils.

To make such a ground, secure from your Radio dealer a set of Keystone Ground Fittings, consisting of a galvanized malleable iron point and a brass cap; then secure from your plumber a six-foot section of 1-inch galvanized iron pipe; it is also well to secure a standard 1-inch iron pipe cap. Screw the point securely to one end of the pipe and the iron cap to the other; do not screw this iron cap "home," as it has to be removed later and the brass cap screwed on instead.

(OVER)



Keystone Radio Arrester, Price \$1.50 Sent Post Paid on Receipt of Price

be smaller than No. 14 B. & S. Where this wire runs for any distance it should be considerably heavier than No. 14—the larger it is the better; in any case, it should be protected from mechanical injury.

Antenna wire to instruments must enter house through an insulating bushing or tube and should not be smaller than No. 14 B. & S. Ground wire to instruments and water pipe ground should likewise not be smaller than No. 14 B. & S.; where arrester is installed outside, the ground wire entering the house need not be protected by an insulating bushing or tube. If bronze or copper-clad steel wire be used, No. 17 B. & S. is the minimum size permitted for above purposes.

Finally it is recommended that radio lightning arresters be installed out of doors, as in this location they afford minimum fire risk, and if so installed and grounded in accordance with Fig. 2 a lightning arrester installation of exceptionally high efficiency and safety results.

KEYSTONE RADIO LIGHTNING ARRESTERS

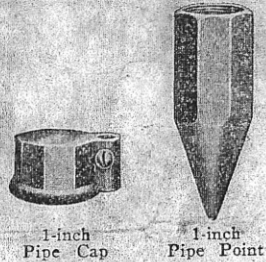
For Radio protection, the Keystone Radio Arrester is particularly desirable on account of the following important features:

Small size, making it suitable for installation in the most convenient location. Weatherproof, thus enabling it to be installed out of doors, where any form of lightning arrester should be installed.

Entirely enclosed and sealed, thus assuring that the internal parts cannot be misplaced and the efficiency of the arrester decreased thereby.

Far superior to a lightning switch used alone. Operators frequently forget to throw a switch to ground when through receiving, and even when receiving, static or lightning of dangerous potential may suddenly collect on the antenna and discharge to ground through the apparatus. The Keystone Arrester is always "on the job," is entirely automatic, and cannot forget to properly operate.

Keystone Ground Fittings



These two fittings are used on either end of a pipe which may be driven into the earth and thus an approved ground connection secured. Packed in carton with complete instructions for making ground. Retail price, \$1.10. Sent anywhere postpaid on receipt of price.

Form ME-851

protect the brass cap by holding a block of wood on it when driving, hitting the wood instead of the cap itself.

The arrester ground wire is now run down to the cap, inserted in the wire lug provided, and the clamping screw securely tightened up. It is always preferable as well to solder the ground wire into the cap, though this is not absolutely essential.

A ground made in accordance with Fig. 2 and as described above will be found particularly efficient both from the standpoint of instrument operation and lightning protection, and is heartily recommended wherever facilities exist for connection to water piping or other grounded structures as well as for driving an earth pipe ground.

A few remarks as to the size of wires, etc., may be of value.* Lead wire from antenna to arrester should be not smaller than No. 14 B. & S. Ground wire from arrester to earth pipe should be at least the same size as lead wire from antenna to arrester and should not in any case

Constructed by a company having over thirty (30) years' experience in the design and manufacture of lightning arresters for railway, power and lighting circuits.

Low capacity and high resistance, thus assuring that its installation will not disturb the constants of your receiving circuit. Built according to principles standard in lightning protective apparatus for years; having no carbon plates to disintegrate and short-circuit the gap; no fuse to blow and so, perhaps, disconnect the arrester when most needed; no vacuum to lose and so reduce the efficiency to a point where the arrester would be practically valueless.

A wireless antenna on your home may become a fire hazard if not properly protected. Install a Keystone Radio Arrester and thereby secure efficient and foolproof protection at all times.

Keystone Radio Arresters and Keystone Ground Fittings are for sale by Radio Dealers, Electrical Dealers and Department Stores everywhere. If your dealer does not carry the material, order directly from us.

ELECTRIC SERVICE SUPPLIES CO.

Manufacturers of Over a Million Lightning Arresters

17th AND CAMBRIA STREETS PHILADELPHIA, PA.
53 W. JACKSON BLVD., CHICAGO

* Wire standards vary somewhat in different sections in accordance with rulings of local Boards of Fire Underwriters; the above standards are those recommended by the National Board of Fire Underwriters.

(OVER)

Ground Fittings

ESSCO also sold ground fittings. As they did with the Type N commercial lightning arresters, they made a smart marketing move by repackaged their stock power line hardware as "Radio" accessories, thereby opening an entirely new market. This ad shows that the company's "Keystone Ground Fittings for Grounding Radio Receiving Sets" were a simply a point and cap for a ground rod. The point would facilitate driving the rod. And the cap provided an attachment point for the radio's ground wire.

Conclusion

I find it interesting that the company claimed on its box (pg. 3) and elsewhere that it had experience making lighting arresters dating to the early 1890's. They were clearly resting upon the laurels of Garton-Daniels - although without crediting the company.

Like Heinemann, ESSCO was probably a victim of industry consolidation during the depression. Although it had a fairly diverse product line, by this time, its valuable 1880's patents would have expired and other technologies would have come along.

I have found some information from the late 1920's period concerning a Crystal Valve lightning arrester. In 1930, John Robert McFarlin (of Philadelphia) received a patent¹ for a granular-filled lightning arrester. ESSCO was designated the assignee of the patent. This unit would have been designed for power-line usage. In a trademark published in 1929², ESSCO claimed use of

¹ Patent #1,763,667 issued June 17, 1930 to John Robert McFarlin filed Apr. 5, 1926. U.S. Patent Gazette June 17, 1930.

² Trademark Serial # 254,074 U.S. Patent Gazette

the Crystal Valve name since 1926. This trademark would clearly have related to an arrester of the type mentioned in McFarlin's patent. And, in fact, the filing date for the patent was April 5, 1926. I have found little else about it.

Radio Lightning Arrester Checklist

(please report any that are not listed here)

Type A - Porcelain, flexible connections
1922 (pg. 7)

Type B (1) - Porcelain, "Aerial Arrester,"
screw connections in ends (pg. 7)

Type B (2) - Porcelain, "Radio Lightning
Arrester," screw connections in ends (pg. 7)

Type B (3) - Porcelain, screw connections in
side of posts (pg. 9)

Bakelite - (pg. 9)

End Notes

1. John & Carol McDougald, "*Insulators A History and Guide to North American Glass Pintype Insulators*" 1990.
2. Jack Tod, "*Porcelain Insulators 3rd edition*" 1988 reprinted by Elton Gish in 1995.

Acknowledgements:

Thanks to the Corning Museum of Glass
Rakow Library

Sept. 12, 1929 pg. 292.

Thanks to our friend **Dick Mackiewicz** whose acquisition of a Garton-Daniels lightning arrester inspired this inquiry.

Photo Credits:

- Front cover – ESSCO 1922 Catalog
(courtesy of Rakow Library)
- Editorial page – Keystone lightning arrester
box & Ground Parts boxes
- Pg. 4 – Garton-Daniels ad *Electrical World
& Engineer* 10/10/03
- Pg. 6 – ESSCO 1922 Catalog pg. 10
(courtesy of Rakow Library)
- Pg. 6 – ESSCO 1922 Catalog pg. 22
(courtesy of Rakow Library)
- Pg. 6 – Garton-Daniels ad *Electrical World
& Engineer* 8/29/03 pg. 38
- Pg. 7 – ESSCO ad *Radio News* 11/22 pg.
892
- Pg. 9 – ESSCO ad *Popular Radio* 11/23 pg.
78
- Pg. 9 – ESSCO ad Radio Trade Directory
8/25 pg. 12
- Pg. 10 – Keystone instruction sheet (form
ME-851)
- Pg. 12 – ESSCO 1922 Catalog pg. 20
(courtesy of Rakow Library)

Sources:

- Electric Service Supplies Co. "*Garton-Daniels and Keystone Lightning Protective Apparatus*" Bulletin No. 183 February 1st, 1922 courtesy of Rakow Library.
- Electric Service Supplies Co. "Undated ad" (courtesy of Bob Puttre).
- Howeth, Captain L.S., USN (retired), "*History of Communications-Electronics in the United States Navy*" Washington: United States Government Printing

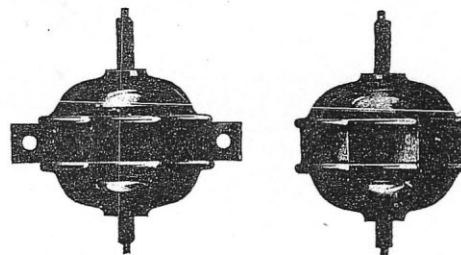
Office, 1963.

- McDougald, John and Carol, "*Insulators A History and Guide to North American Glass Pintype Insulators*" St. Charles, IL, 1990.
- McMahon, Morgan E, "*Radio Collector's Guide*" Glendale, CA: Vintage Radio, 1973.
- Milholland, Marion & Evelyn, "*Milholland's Final and Complete Glass Insulator Reference Book 4th Revision*" Port Angeles, WA: Pen Print, 1976.
- Mills, Brent, "*Porcelain Insulators and How They Grew*" LeRoy, NY: published privately, 1970.
- Montgomery Ward & Co., Catalog 1923.
- Sears Roebuck, Catalog Fall, 1925 pg. 559.
- Tod, Jack, letter *Crown Jewels of the Wire*, October 1979 pg. 24 as reprinted in *Crown Jewels of the Wire* June, 1999 pp. 22-23.
- Tod, Jack, "*Porcelain Insulators 3rd edition*" 1988 reprinted by Elton Gish in 1995.

ELECTRIC SERVICE SUPPLIES COMPANY

KEYSTONE LIGHTNING ARRESTERS

Types N and NS Neutral Arresters



No. 50642

No. 50643

Types N and NS arresters are designed for protecting the neutral wire of transformers installed on grounded neutral circuits, where the neutral wire is grounded only at power or sub-station, and not dead grounded at the transformer installation.

They are of the self-contained type, consisting of non-arcing metal electrodes separated by a small air gap, the whole being enclosed in a glazed porcelain body. The type N arrester is supplied with an iron band which slips over the arrester body, so allowing same to be attached to the cross arm or other supporting means. The type N S arrester is designed to be hung directly from the line wire, no other means of support being required. In both types, line lead enters the top of the arrester, ground lead leaving the bottom; both leads are securely cemented into the arrester, and as an added precaution against water leaking in through these seals, a metallic rain shield is attached to the upper or line lead inside the arrester, so effectively shielding the gap and preventing short-circuits from leaks.

These arresters are cheap, simple, durable, of high efficiency, easy to install and inspect; maximum height of either type is 2 3/4"; width, 3 1/4". Iron strap for supporting type N arrester has two 9/32" holes spaced on 3/4" centers. Both arresters are supplied with line and ground leads of No. 12 B&S gauge cable, 12 inches long.

Ground fittings are listed on page 42.

List No.	Std. Ptg.	List Price
50642 Type N Neutral Arrester for Cross Arm Mounting.....	24	\$2.00
50643 Type NS Neutral Arrester for Line Suspension.....	24	1.90

Want a Chuckle (or two?)

In May, **Gil Hedge-Blanquez** phoned to ask me about a strange looking strain on E-Bay.

I was not really on line at that point, but I did manage to get a look at the item before the auction closed. It was advertised as "U.S. Signal Corp. Insulator/Level WWII 1905," Now that's *interesting*. The description went on to say "This is an insulator with a level used by the US Signal Corp. Probably from WWII. Has leather case marked USSA. Made by Manhattan . It was patented October 24, 1905. "

Wow here was a totally new item. But Gil and I had a few questions. Why would you want to level a wire antenna? Why would you carry around an insulator in a leather pouch? He and I agreed that the item was a real mystery. I resolved to look up that patent at my next opportunity.

The day after Thanksgiving was my opportunity. If you guessed that this item might have been mislabeled on E-Bay, you guessed right. Patent 802702 was assigned to Manhattan Electrical Supply Company (MESCO) on 10/24/95 (see below). What they were patenting was a line service tool called a polarity indicator.

I only hope that the high bidder was happy.

Are you concerned that those old-fashioned colored glass and porcelain strain insulators might not be Y2K compatible?

Worry no more!

I'll be glad to trade you straight across for brand new plastic strains that are unconditionally guaranteed to function well into the next century.

(Just kidding)

Strain Shortage Rumors

(are highly exaggerated)

by Dan Howard

Now, on a (barely) more serious note. I've been looking for statistics on strain insulators ever since we started the news letter. How many of them are out there to collect? Does a critical shortage of collectible strains loom on the horizon?

In the June, 1996 issue of *Crown Jewels*, two letters to the editor alluded to the vast numbers of pin insulators that might exist in the United States. By estimating the number of miles of lines and the number of insulators per mile, the authors came up with some huge estimates. I figured that such an exercise might also be possible with strains.

I recently found a table of radio manufacturing statistics on page 91 of the January, 1944 "*Electronic Industries*." The publishers of "*Radio Retailing*," "*Radio Today*," and finally "*Electronic Industries*" apparently had sources in the industry that provided annual production statistics.

Step 1: According to the tables, there were

30,000,000 homes with radio sets in use by 1943. Now not all sets used outdoor antennas. This was especially true after World War II. So let's assume that there were never more than 30,000,000 antennas strung in the United States.

Step 2: The 1943 count of households must have included some apartment-dwellers who would have likely shared a common aerial for the building. So let's back out 5 million households.

Step 3: Also, not all radios used outdoor antennas. Many sets incorporated loop antennas instead. So let's back out another 10 million households.

Step 4: Now we're down to an estimated 15,000,000 antennas. Each dipole antenna has a minimum of 2 strain insulators. So we multiply the number by 2 to arrive at 30,000,000 insulators for civilian use. Remember we're not including radio strains made for the military, commercial, or ham radio use here. These are just for home radios.

Step 5: Now figuring a (generous) 75% attrition rate for antenna strains that were broken in wind storms, were shot with bb guns, or were just taken down and thrown out, we arrive at an estimated 7,500,000 million strains still in existence today.

Finally, dividing that estimated 7.5 million strains still in existence by an estimated 200 active collectors today.....well you get the picture. Looks like it's time to add onto the house (again). And I think that we can put the strain shortage rumors to rest.

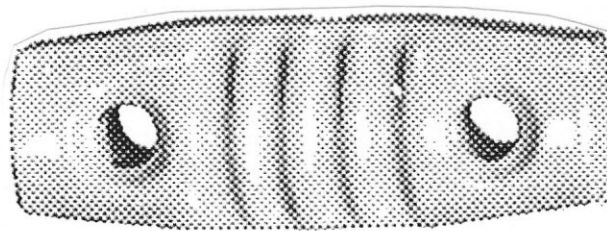
Show Report

On October 9th, I made the short drive south to Nathan Lamkey's farm east of Salem, OR.

Tim Wood was the other *OFS* reader on scene. A couple of small sales were over shadowed by a multiple insulator trade that landed me a good dark purple insulator similar to the Brach shown in the last issue. There's just something really neat about brightly colored glass. (I guess that I may not be the first to notice this).

Another by-product of the Nathan's show was identifying another no-name insulator. A gentleman near me had a box full of common insulators like the one shown below. These unmarked white glazed porcelain insulators are commonly found but have not been previously attributed to a manufacturer. I was pleased to see that this gent had an original shipping carton that was marked "New Haven Porcelain Company New Haven, W.Va. 25265." The part number appears to be #8123. According to Jack Tod's book "*A History of Electrical Porcelain Manufacturers in the United States*," New Haven was primarily known for its dry process standard porcelain products. This is the first that I had heard of the company being a radio strain manufacturer.

Unfortunately, this design is not exclusive to New Haven Porcelain. Porcelain Products (Carey, OH) currently makes the same dry-process insulator in its "skyline" light blue glaze and brown or white on special order.



Classifieds

New Reader

Bud Johnson

11833 N 64th St. Scottsdale, AZ 85254

Address Corrections

Gene Condon

1916 Sam Rittenberg Blvd. Apt. 1209
Charleston, SC 29407-4880

Phillip Drexler

P O Box 16445 St. Paul, MN 55116

Roy Parker

525 W. Elk St. Geneseo, IL 61254

Bill Shaw

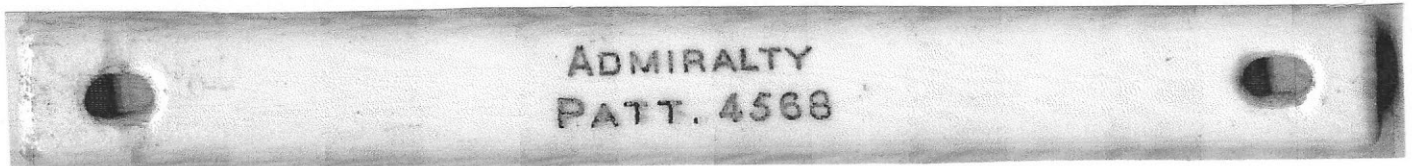
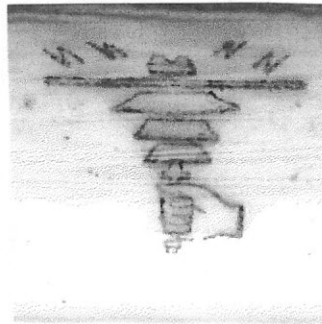
w2hyn@frontiernet.net

Another Embossing Identified

The S&S marking has been attributed to Smith and Stone Ltd. of Georgetown, ON. I have had an S&S lightning arrester, but was unable to determine the origin. Recently, I was pleased to see one for sale on E-Bay, complete with box. I didn't feel compelled to bid on it, but I am always pleased to print the pictures and save the information.

And Another...

My father found this very unusual insulator at a swap meet recently. The insulator is shown below, full sized, along with a close up enlargement of the underglaze marking. **Rick Soller** kindly looked up the marking for me. Apparently, the symbol is a trademark of the Bullers Company in England. Thanks, Rick.



Cook Electric Company Update

Phillip Drexler was kind enough to share some additional information about the Cook lightning arrester that we pictured in the last issue (*OFS* 10/99 pg. 16).

The Cook Electric Company was located in Chicago, IL. I believe that this may be the same as the Frank B. Cook Co.. That company made lightning arresters as far back as my earliest reference (1903). Frank B. Cook was listed at 326 W. Madison in 1923.

Cook Electric is listed through WWII as a lightning arrester manufacturer.

Goes to show that you can't always believe your eyes. In the October issue, I made various statements based on the picture in Cook's ad. Phillip owns two of these arresters and was able to set me straight on some important issues.

The arrester shown in the ad, clearly has a visible gap. Phillip's example has a brass cover. This is not too surprising actually. Brass covers are quite common for carbon block telephone lightning arresters, which just happen to be another Cook product. Phillip theorizes that the illustration in the ad may be a "phantom view" that is designed to show the inner workings of the unit. Other explanations could be that the company made different versions of the unit. Or perhaps they changed plans and redesigned the unit to use the brass cover prior to production.

Phillip's No. R-73 is white porcelain with a brown glaze. Most of the major components are copper, with the exception of the brass nuts and bolts. Copper parts are not often found – I don't know why but most manufacturers

favor brass construction. The base measures 3" x 5-3/4".

I had a chance to check up two patents dates that Phillip found on his Cook arresters. The first, Patent 838304 was issued 12/11/06 to Frank B. Cook for a carbon block type lightning gap. It would be interesting to follow up on this. The illustrated lightning gap is very similar to carbon block gaps found in Western Electric telephone protectors. I wonder if there was a licensing arrangement between the two or if in fact, Cook was a supplier for the company.

The second Cook patent, Patent 843930, was issued 2/12/07 to Frank B. Cook for a non-arcing muffled fuse. This fuse is also similar to fuses on Western Electric telephone protectors from the period.

Phillip Drexler also reports that, after moving to a new home, he checked out a local yard sale. The "rather dirty" strains that he brought home turned out to embossed Knox units. He said that the dirt obscured the embossing at first. After washing them, he found that they were embossed "Knox" "St. Louis" "32." The very thin brown glaze is applied over a white porcelain. [Knox insulators can also be found with a carnival brown glaze]. ED

Thanks for the reports, Phillip.

Congratulations to George Freeman!

George Freeman's Ampliphone horn speaker took first place at the AWA annual contest and he was further honored with the display award for the way in which the speaker was presented. Both are very prestigious awards. Source: *Old Timers Bulletin* 11/99 pg.27.