

## Telephone and Telegraph Insulators: The End of an Era

John Gilhen

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*John Gilhen, Curatorial Assistant in the Science Section of the Nova Scotia Museum, will be familiar to you as the man to ask about reptiles and amphibians, as well as the author of Museum publications such as The Fishes of Nova Scotia's Lakes and Streams. John is also a serious collector of insulators. He shares with us, in this article, some of his knowledge and enthusiasm about these items of glass and porcelain.*

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For decades practically every railroad, highway and country road was accompanied by the familiar telegraph or telephone poles decked with insulators of interesting shapes and colours (figures 1, 2 and 3). Today construction crews are busy removing the crossarms, brackets, insulators and the open galvanized and copper wire from the eastern cedar poles and, in the case of telephone lines, replacing them with well-insulated copper cable. In many rural areas the poles are also removed and the cable is run underground (figures 4, 5 and 6).

In the near future there won't be a single insulator left on a telegraph or telephone pole in Nova Scotia. Many lines are down now and those that remain are scheduled to come down as modern cable systems with microwave and satellites take over. If by chance the poles in your area haven't been stripped of insulators you still have an opportunity to witness history taking place. Glass companies are phasing out insulator production; it's the end of an era.

In October of 1843 Professor Samuel Morse began construction of the original telegraph. It is interesting to note that this line was first intended to be an underground cable

stretching between Baltimore and Washington, D.C. By December of that year, before the line was completed, it became evident that the insulation was defective and the project came to a halt. Ezra Cornell was brought in as Morse's mechanical assistant and he was responsible for digging up the cable, removing the insulation and starting construction of an open, overhead line. Thus the need for insulators was realized.

Those first insulators developed by Ezra Cornell were very crude objects compared to those in use today. A rectangular notch was cut into the crossarm. At that point the wire was wrapped in cloth (which had been previously saturated in gummed shellac) and pressed between two rectangular pieces of glass. A board was nailed over the top of the crossarm to cover the insulator and protect it from the rain. This effort by Cornell, however, worked well when dry but poorly in wet weather.

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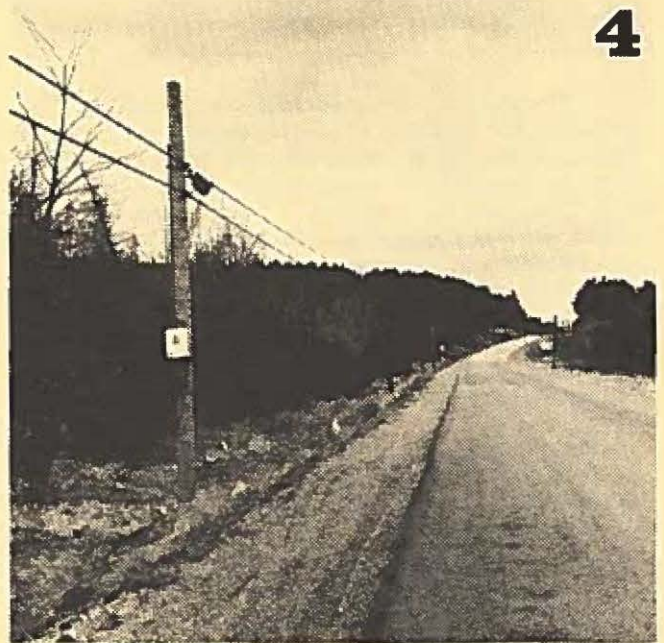
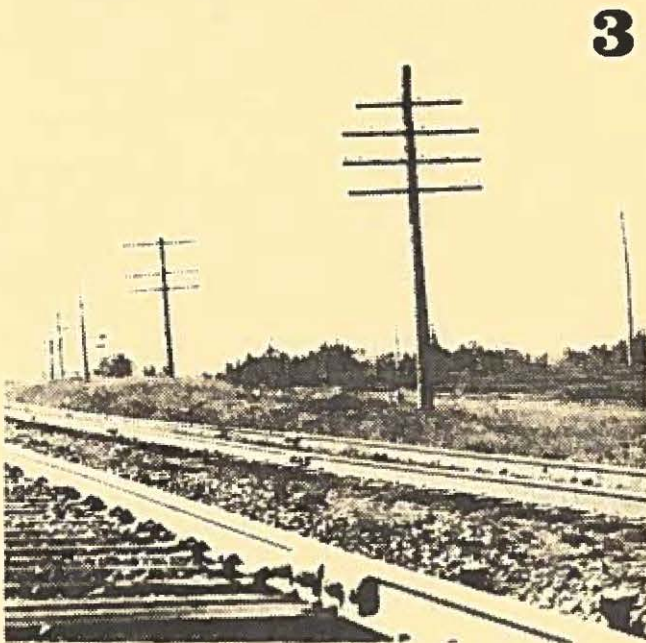
*Figure 1. Telephone line in use along Riverview Road, Port Howe area, Cumberland County. Two wooden, side-block brackets nailed on opposite sides, one higher than the other, near the top of the pole, each support a glass pony insulator.*

*Figure 2. Telephone line no longer in use at Fort Philip, Cumberland County. The ten-pin crossarm supports a three point phantom transposition bracket on the left side, and two one point transposition brackets on the right side. Underneath the crossarm there are three wood side block brackets. The large insulators are glass Dominion 42, double petticoats with blunt drip points. The smaller ones are porcelain pony types.*

*Figure 3. Telegraph line in use at Debert, Colchester County. The four crossarms support glass, double petticoat insulators. There is a butterfly transposition bracket on each side of the second crossarm.*

*Figure 4. Telephone pole supporting cables at Caledonia, Queens County.* ▶





Figures 1. to 4.





Figure 5. Abandoned telephone pole with four pin crossarm in a roadside ditch at Amherst Shore, Cumberland County.



Figure 6. Telephone underground cable warning sign near Masstown, Colchester County.

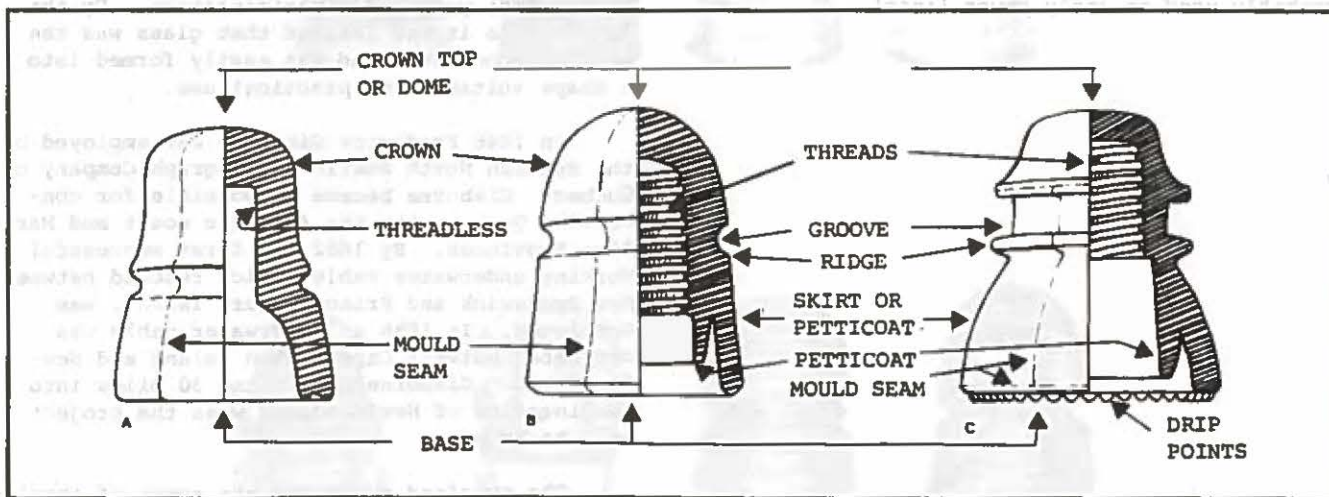


Figure 7. Line drawings of three hypothetical insulators to illustrate the various parts of a) a smooth base, two piece mold, threadless insulator; b) a smooth base, two piece mold, threaded insulator; and c) a three piece mold, threaded insulator with blunt drip points.

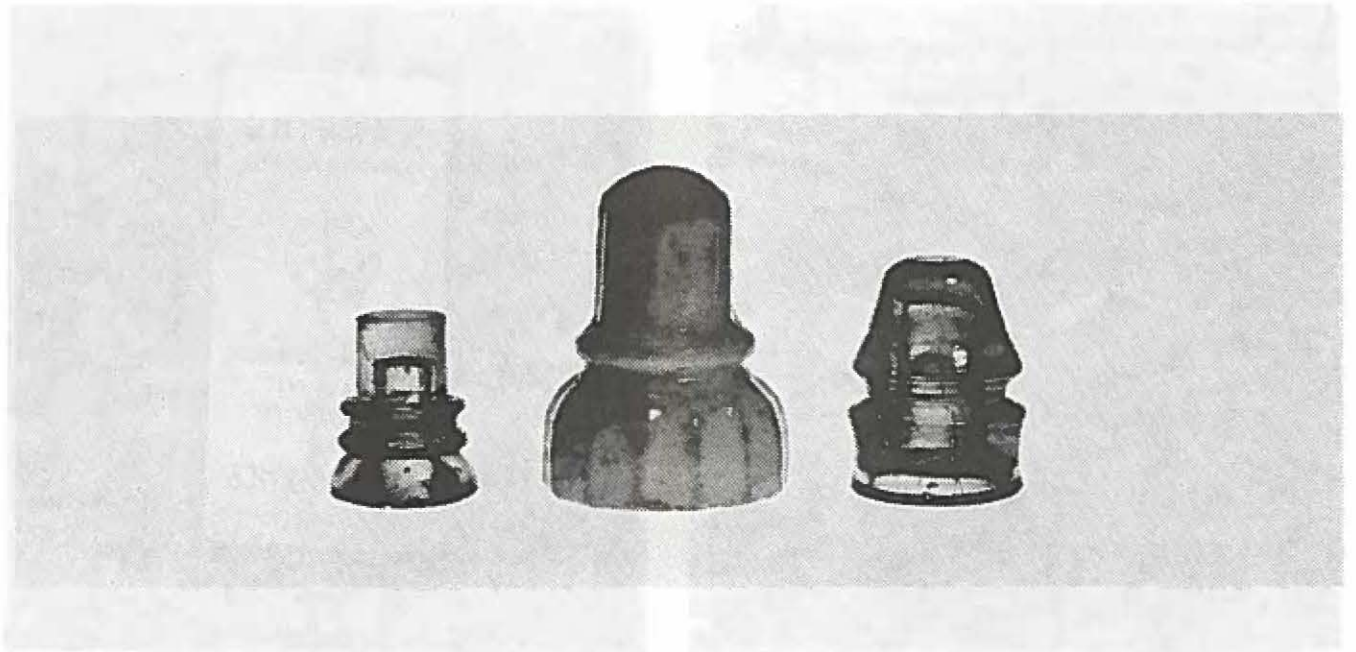


Figure 8. Three different threadless insulators seen in Nova Scotia antique shops. From left to right a "compromise style", a glass no name hat style and a flint "Elliot" hat style (probably used on early power lines).



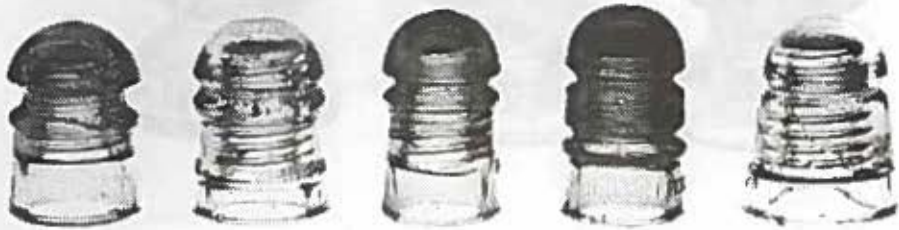
Very few people understood the principle of insulation at that time, as evidenced by the number of primitive insulators, including one made of wood with a metal top, used during those first years of experimentation. By the late 1840's it was learned that glass was the best non-conductor and was easily formed into a shape suitable for practical use.

In 1846 Frederick Gisborne was employed by the British North American Telegraph Company of Quebec. Gisborne became responsible for connecting Quebec with the Atlantic coast and Maritime Provinces. By 1852 the first successful working underwater cable, which reached between New Brunswick and Prince Edward Island, was completed. In 1856 an underwater cable was completed between Cape Breton Island and Newfoundland. Gisborne penetrated 30 miles into the interior of Newfoundland when the project went bankrupt.

The overland route and the types of insulators used by Gisborne are not known. A number of insulator enthusiasts (often referred to as "pole cats") from across Canada and the United States are very interested in Gisborne's line. They continue to search for a small fortune in threadless glass.



Figure 9.



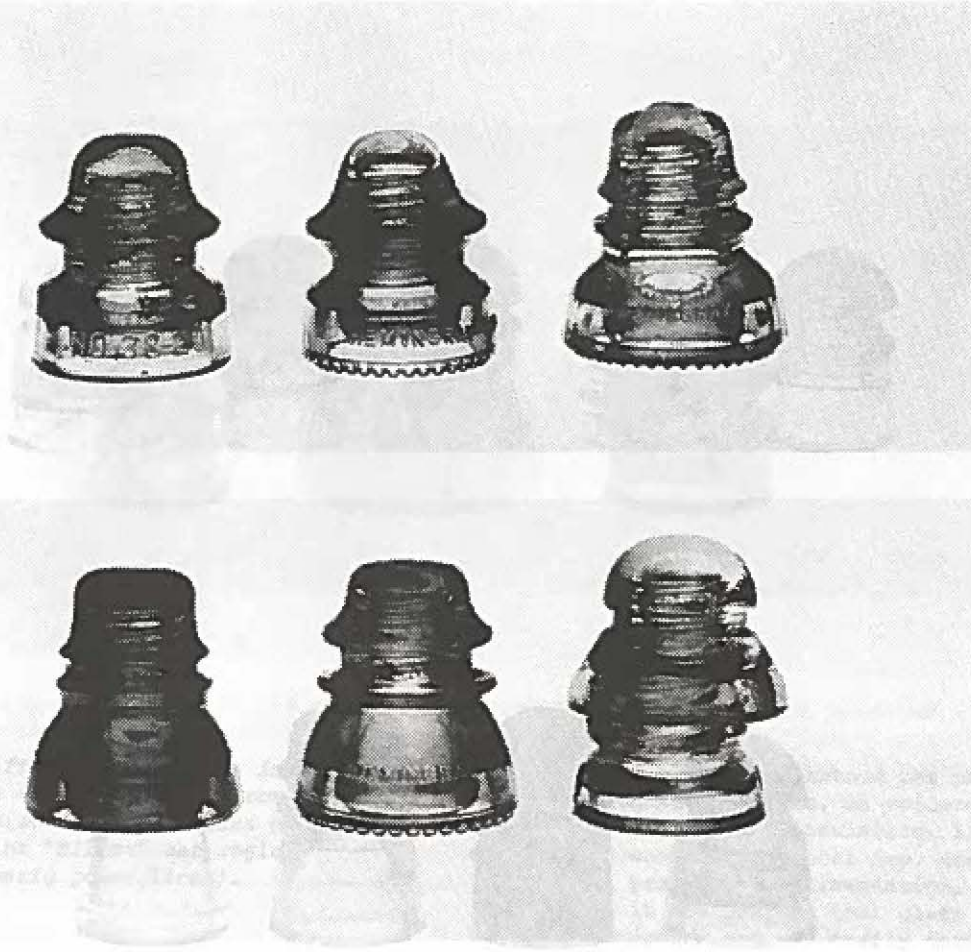


Figure 9. A representative collection of the different types of American glass insulators used on telephone and telegraph lines in Nova Scotia.

Threadless insulators were used up to about 1865 or shortly after. This type of insulator (figure 7a) was simply pushed on a pin and held there by means of friction and a type of binding agent such as molten sulphur and a piece of burlap. This proved to be insufficient since the binding material in time would dry and shrink, allowing the insulator to be easily jarred off the pin, especially during storms. For this reason threadless insulators are rarely found in mint condition. The best ones found are

usually chipped or cracked while many others are in pieces. Realizing the scarcity of threadless insulators most collectors are delighted to obtain pieces which they can fix together.

Three different types of threadless insulators have been seen in local antique shops (figure 8) but it is uncertain if they were used on lines in Nova Scotia. Information is lacking on Canadian threadless, partly due to the fact that pole cats do not give out locality data when they find one, since they are prestigious items. Duplicates have great trade value. Threadless insulators were formed in a two piece mold and since they were made over 100 years ago, deserve the distinction of being called "antique."



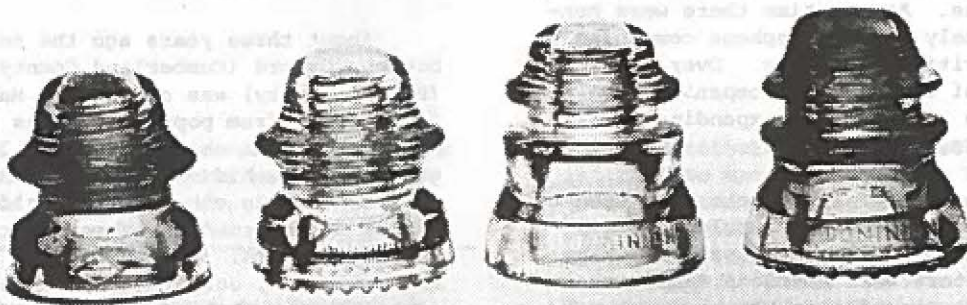
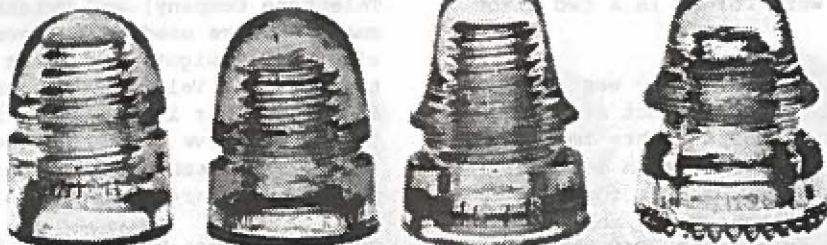
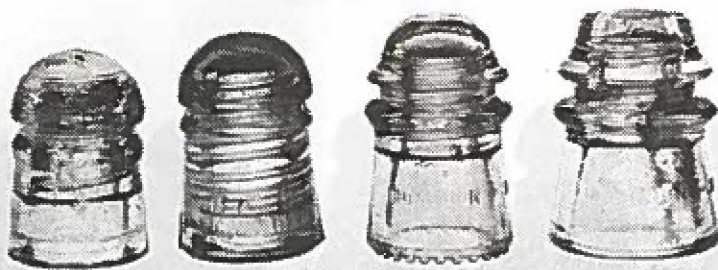


Figure 10. A representative collection of the different types of Canadian glass insulators used on telephone and telegraph lines in Nova Scotia.

It must have been a great relief to the telegraph companies when Louis Couvet was granted a patent pertaining to threaded insulators on July 25, 1865. No more frequent excursions for repairmen through rugged unsettled areas to fix those threadless back on their pins and replace broken ones. The earliest threaded insulators, like the threadless, were formed in a two piece mold (figure 7b).

The Dominion Telegraph Company was incorporated in 1868. In 1874, by an Act of Parliament, this Company was granted rights to extend to the Maritime Provinces. Dominion Telegraph lines were used on August 10, 1876, for the transmission of the first telephone message by Alexander Graham Bell from Paris, Ontario, to Brantford, Ontario.

About 1895 insulators were being pressed in three piece molds (figure 7c). Since the turn of the present century many thousands of miles of open wire supported by millions of insulators have been in use. At one time there were hundreds of privately owned telephone companies just in the Maritime Provinces. Over the years, however, many of these small companies have been absorbed by the continuously expanding Maritime Telegraph and Telephone Company.

A great variety of insulators were used by these rural companies as they would purchase second hand material whenever possible. Many of these insulators were American made with such names as W. Brookfield, Hemingray, Lynchburg and Whittal Tatum, embossed on the skirt of the glass types and Fred M. Locke stenciled on the dome of porcelain pony types. A few glass and most of the porcelains have no embossing, and like embossed threadless, are referred to as "no names." Some insulators also have patent date embossing, but this does not mean that the insulator was made on that date since patent dates lasted 17 years.

Canadian insulators were produced by the Diamond or Dominion Glass Company, and many of these have a diamond figure, or Dominion, or both embossed on the skirt. Other embossings noted on Canadian insulators used in Nova Scotia include Canadian Pacific Ry. Co., B.T.C. over Montreal or Canada (the initials denote Bell Telephone Company) and Dwight. The latter, a small beehive used on telegraph lines, was named after H.P. Dwight, the first superintendent of the Montreal Telegraph Company, incorporated in 1847. Another insulator, referred to as an extra deep groove double petticoat, has the number 1678 or 1673 embossed on the skirt and is common only in some areas.

It is interesting to note that the Lamont Glass Company of New Glasgow, Nova Scotia, advertised that they were producing insulators in 1898. None of the insulators found in Nova Scotia, to date, however, have any embossing that would indicate that they were definitely made in Nova Scotia.

About three years ago the telegraph line between Oxford (Cumberland County) and Pictou (Pictou County) was cut down. Many sections far-removed from populated areas were abandoned. Some poles were obscure as they lay in deep grass or were hidden among alders and young conifers, while others were upsidetown at the bottom of railroad embankments or partly submerged in ponds. The insulators displayed on those ten-pin, eastern cedar crossarms represented about one hundred years of insulator evolution.

Each pole had two ten-pin crossarms and with the exception of an occasional rubber pony and mid-span transposition all of the insulators were double petticoat. The rubber insulator is a recent development and served as a quick replacement for broken glass ones. All transposition brackets were developed to allow wires to cross over one another without touching for



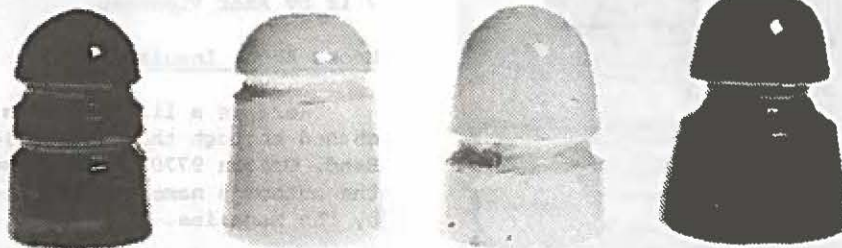


Figure 11. A representative collection of the different porcelain insulators used on communication lines in Nova Scotia.

power induction and greatly reduced noise on the line. The double petticoats varied from the old two piece mold (large beehive with a smooth base) to the three piece mold heavy telegraph type with blunt drip points, to the new three piece mold heavy telegraph type. These latter revert back to the smooth base. Drip points were thought to be an asset in dispersing water droplets from the insulator. The long and sharp but short blunt drip points eventually became more popular.

The colour of glass insulators is of great interest to many collectors. Silica, lime and soda or potash are the main ingredients, with cullet or broken glass used as a catalyst. The natural colour of glass is aqua; the shade depends on the amount of iron in the silica. The presence of manganese in the mixture, by accident or intentionally, turned glass a purple colour. The intensity depends on the amount of manganese present. When there was a small amount in the glass, the insulator was clear but became light purple after a time exposed to the sun's rays. This light purple shade is referred to as sun coloured amethyst and is a very popular shade. A larger quantity of manganese turned the glass a deep purple, or shades known to the collector as royal purple and dark

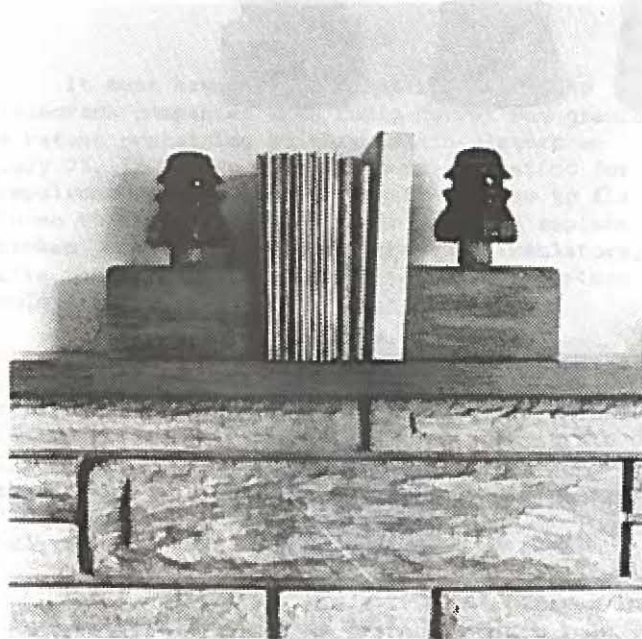


Figure 12. Two glass insulators on parts of an original crossarm, used as book ends for light publications.

amethyst. The great variety of shades in green, blue, amber, etc. were probably intentionally made that colour as a direct result of adding chemicals or cullet of that colour to the mixture. For example, the attractive shades of amber in Dominion 42 insulators were the result of adding old brown beer bottles to the glass mixture.

Why not salvage some of the insulators in your area? With a little imagination you can make interesting keepsakes (figure 12). Anyone interested in the insulator hobby couldn't start at a better time. As listed in the bibliography, there are a number of interesting books on the subject. Those books marked by an asterisk are a must for the serious collector. They include many interesting historical facts

as well as being useful guides to insulators. All of these books can be purchased through the *Old Bottle Magazine*, Box 243, Bend, Oregon 97701.

#### Acknowledgements

The author is grateful to Lawson Lewis, Control Centre foreman, Maritime Telegraph and Telephone Company, for providing information on the function of materials used on telephone lines. Photographs are by Ron Merrick. Figure 7 is by Azor Vienneau.

#### Books About Insulators

Here is a list of books which can be purchased through the *Old Bottle Magazine*, Box 243, Bend, Oregon 97701. The name of the book and the author's name are all the information needed by the Magazine.

- \* Cranfill, Gary G. *Glass Insulators, a Comprehensive Reference*. Sacramento, Calif., Spilman Printing Co., 1973. \$6.00
- McIntosh, Colin. *Canadian Insulators and Communications Lines*. Victoria, B. C., Canada Instant Print, n.d. \$3.00
- \* Milholland, Marion and Evelyn. *Most About Glass Insulatory (3d rev.) + 1976 Price Guide*. Port Angeles, Wa. Pen Print, 1976. \$3.00
- Terrill, Francis M. *Choice Insulators Priced*. Portland, Oregon. Printing and Mailing Services, Inc., 1972. \$3.00
- Terrill, Francis M. *Hemingray Insulators Priced*. Portland, Oregon, Printing and Mailing Services, Inc., 1971. \$3.00
- \* Woodward, N.R. *The Glass Insulator in America*. Houston, Texas, Privately Printed, n.d. \$4.95
- \* (A Must for Serious Collectors)