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"And God said, Let there be light; and there was light." That was God given light, daylight, moon light and starlight.

This is a story of man's effort to produce man-made light to push back darkness, so that the capacity of man's endeavors could be enhanced.

There was no improvement in artificial lighting for 20,000 years or so until about 100 years ago. The ancient lamps, or other lighting devices, used by the Orientals, Egyptians, Persians, Greeks and Romans, had a similar appearance, used similar fuel, and worked on the same principle for centuries without change or improvement.

A clay lamp from Asia minor, from the Euphrates Valley, and the bronze Egyptian or Roman lamp were quite similar in shape to the iron lamp used thousands of years later to light the cabin in the Mayflower. (Figures 1 & 2)

It is strange that during advancing civilization, when progress in the arts, science and learning made such great strides, improvement in lighting to dispell the darkness of night or the dimness of the castle or hovel was not forthcoming until our lifetime was approached. Artificial lighting remained practically as in the beginning.

One must marvel, if he thinks of the glamour of the Great White Way, and the night ball game, that only in the past 100 years could we venture out at night without carrying our light with us, and could indulge in various nightly activities, within doors, with adequate illumination.

Remember the story of Abraham Lincoln borrowing books and lying on the floor before the open hearth fire to read by the dull and flickering light. Even later, in his law office, he only had a whale oil lamp to see by; and that was just a little more than a hundred years ago.

It is impossible to know, classify and

date all of the varieties of lighting devices that have come down the ages and that have appeared in the various sections of our country, brought from the home countries of the colonial settlers, from England, Holland, France, Spain, Italy and Sweden for the most part.

In some of the rural and isolated areas of the world and even in the rural and undeveloped sections of our country many old lighting devices are still in use; just as some of the naturalized and first generation Americans still speak the patois of their forefathers who came here from other parts of the world.

From Torch to Candle

The Aborigines probably first discovered fire and light, when they seized a piece of burning wood set fire by lightning and took it to their shelter, their cave or hut. Thus, fire and light became domesticated. Of course, this is all conjecture, we have no proof, but it is quite plausible.

If these early ancestors ventured out at night they might have snatched a brand from the fire, to use as a torch for light, and as protection against prowling animals.

This torch did not go out of usage for centuries. It was used during the prehistoric ages and continued with modification through recorded history. Bronze torch holders were found in the tomb of Tutankhamen. Torches and candles are mentioned a number of times in the Bible.

Torches at the end of the Middle Ages, and beginning Renaissance were placed on the sides of buildings or other advantageous localities. Quite a number of the old buildings of Europe show emplacements for torches or fire baskets. Fire baskets were placed on top of a pole and were also carried.

Fire baskets were used at strategic locations in the Communities of the early American

Colonies to aid pedestrians at night, but chiefly to be used as warning signals of the Indian raiders or in the event of fire. That was how Beacon Hill in Boston was named.

Fuel for this illumination was usually composed of bundles of resinous wood, reeds, bark, leaves, or grass previously soaked in oil or tallow. Coniferous tree torches were called lightwood in the southern Colonies, and fire wood or candle wood in the north.

Romans used rope soaked in wax, tar or resin which was called a link. These links were used for many centuries. One such link was found on a Spanish railroad in 1892. A later name for link was flambeau, carried in the hand or on top of a pole.

Diminutive torches of tallow with a wick composed of various materials were called tapers. Tapers were made with a wick which was pulled through a long, iron vessel called a "grisette", which usually contained heated fat. These tapers were the forerunner of the candles and were used throughout the centuries to the present time. When they were of considerable length they were coiled, the burning end held in an upright position. Long tapers were called "pull-ups" in Colonial Virginia. The tapers were usually held in an iron clamp resembling somewhat the old fashioned iron hair curler that women used to use. These hinged-pincers had one arm stuck in a base and the free arm was weighed to secure the illuminant. (Figure 3)

This was called a rushlight holder, called a "puirman" in Scotland, in which a taper, rush or pine splinter was inserted. Rushes, usually the ones called cat-tails, were cut by our early settlers and thrown into water until softened. Then they were divested of their peel and the pith, after drying, was dipped into scalding fat, grease or oil, and allowed to cool. Sometimes wild beeswax, if at hand, was added. These rushes were facetiously called "fried straw". In Japan and China a bamboo splinter, wound with rush pith formed a wick which was soaked in oil or grease and served the purpose

of a candle when stuck in a rushlight holder. This early type of candle was in general use for many years. It was mentioned that Henry VIII had an account rendered him for "Oil and rushes".

During the Reformation, candles were the chief source of illumination. In that era a church in Wurtenberg was alleged to have used over 12 tons of candles a year in its 174 candlelabras, altogether holding 8,830 candles.

Candles made a rather slow start in this country as the source of tallow was meager. There were three heifers and a bull imported in 1624. These were the only cattle until 1630 so that the fat of the deer and bear was used. The wax from the wild bee sought in crevices and stumps was added when it could be found. Later, spermiciti, a crystalline wax, found in the head of the sperm whale, provided good material for candles. The bayberry also made excellent and aromatic candles, which are still on the market.

There are possibly five methods for making candles, depending somewhat on the ingredients. The most common methods, which are in use today, are dipping and molding.

Dipping the wicks made of plaited cotton, linen or flax into hot tallow at killing time, the first frost of the fall, was the tast of most every household in bygone days.

The wicks were weighed at the lower end, and having been dunked into hot tallow, were hung up to cool. This procedure was repeated until the candle was the proper size. Time, patience and some skill was required, as the tallow should not be hot enough to melt the coating from a previous dipping.

Molding the candles in a battery of a number of iron, tin or pewter molds came later. The wicks were kept in the center of the mold by a loop at one end through which a stick was passed; the other end was secured at a hole in the tapered end which represented the top of the candle. The

melted tallow was then poured into the molds and permitted to solidify. (Figure 4)

This was a far easier and quicker way to provide the year's supply. In Europe and in the young America, bands of itinerant candle makers made the rounds of the houses to process the year's supply thus relieving the overworked housewives of this drudgery. Homemade candles were the only source until the 1800's.

Early candles were made from wax called by the French, "bougie", or of tallow called "chandelle". In England there were separate guilds of chandlers, one made wax, the other tallow candles.

In 1840, in Cincinnati, Thomas Emery began making lard oil for lamp fuel and soon began the manufacture of tallow candles. His source of tallow was plentiful because of the numerous meat processing and packing plants which abounded to such an extent that our fair city was called, "Porkopolis".

Oil was discovered in this country in Pennsylvania in April, 1857. Shortly thereafter, paraffin, a by-produce of oil was produced and was found to blend perfectly with tallow. It was less expensive than tallow and eliminated, to a great extent, the odor and smoke produced by tallow candles.

Stearine (stearic acid), another innovation, which further replaced tallow was actually discovered in 1823, before paraffin. It was made from animal and plant fat from which glycerine had been extracted through a saponification process. It was found that about 80% paraffin and about 20% stearine made a good candle. Beeswax was added, in addition, for certain purposes.

About 1860 kerosene (coal oil), another product of crude mineral oil was introduced as a universal lighting fluid for lamps, and this relegated the candles use to only certain purposes.

Candles were and are still used chiefly

in the church. They are composed of from 51% to 100% beeswax. Candles are used in certain industries, for instance, by plumbers and undertakers. Candles are used in the home for dinner illumination, birthdays and for votive purposes. Not too long ago they were used on Christmas trees. They are also found in hotels and other places for emergency use.

The old tallow candles used to drip, and when extinguished, they emitted smoke and unpleasant odor from the after glow of the "snuff", which was the name of the burned wick. To overcome these objections, the snuffer and extinguisher were devised.

The snuffer, looking like a peculiar type of scissors had a broad blade which closed on the opposite blade having a receptacle to catch the debris of the char. Usually at the end of one blade, is a pick with which to dress the wick. (Figure 4)

The extinguisher is a cone, looking like a miniature dunce cap which was placed over the burning candle to extinguish the flame for want of oxygen, and which retained the smoke and odor if left long enough in place. (Figure 4)

Now the snuffer is no longer necessary and the extinguisher need not be used if one can blow out the candle or pinch it adroitly with wetted thumb and forefinger.

Further improvement has been achieved in the development of candle making in the dripless, smokeless and odorless candle. It was found that in the making of candles, if the outer coatings were of stearine, with slower melting property, an elevated rim would form containing the melted paraffin and other components. This prevented overflow and dripping.

It was also found that a wick of plaited cotton, with some of the threads drawn tighter than others, would bend the wick to the outside of the flame, providing better oxygen supply and combustion.

The wick was also chemically treated or "pickled" so as to fuse the ash to the wick.

With these improvements it was found that the candle gave brighter illumination and the smoke and odor were eliminated. All that was left was a light, powdery ash that floated away.

The technique of candle making has been so perfected that time candles have been made. One can determine the exact amount a candle will be consumed in a given time. These candles ususally have hourly markings to tell the time of day. This is nothing new; history reveals that King Arthur of England and Charles V of France used time candles.

With increasing use of candles, there came the necessity for making candle holders as a candle could not be depended upon to stand by itself in its own tallow dripping.

A variety of holders of all sizes, shapes and materials for all purposes were produced. These holders were made of iron, tin, pewter, brass, copper, silver, glass, wood and pottery. Some few gold candle holders were made.

The first were of iron and one of the earliest candle holders consisted of a spike called a "prickett" upon which the candle was impaled. This device was damaging to the candle which was not entirely secure and so was usually discarded in favor of a round holder or socket for the stump of the candle. However, in many parts of the world, especially in places of worship, prickett candle holders are still in use.

The first candle sticks of iron had a bottom saucer or plate from which a long, upright cylinder extended holding the candle. usually fed by a spring or lever which pushed the candle up as it was consumed. Often, there was a hook at the top of the candle stick to hang it from the back of a chair or the mantle, or from the edge of a pickle or prok barrel in the cellar when the good housewife went there for supplies. It was called

a "pork barrel" candle stick. (Figure 5)

There was also one with a strong base, with a rather sharp edge, which was used at hog killing time to scrape away the bristles. It was called a "Hog-scraper" candlestick. The depth of the base might also permit cutting out cookies or biscuits on occasion. (Figure 5)

As the Colonies grew in affluence, brass (earlier called latten), glass, silver and even gold candlesticks, sconces, candlelabras, girandoles and chandeliers appeared.

Glass candlesticks and glass windowed lanterns with candle light became quite popular in the early 1800's, made chiefly by the New England Glass Company after 1815 and the Sandwich Glass Company after 1825. Pottery candlesticks were available, the most attractive being made in Bennington, Vermont.

Our present day use of candles in church, home and industry is rather well standardized, the market showing a gradual increase. The soft, mellow glow of the candle lends a solemn, romantic or festive touch wherever used, which other lighting fails to provide. In spite of the bright beginning of a new era of illumination, candle light is here to stay.

The Lantern

Lanterns came into use as a means of transporting light. They also provided a protection against draft which might extinguish the flame of either candle or lamp not contained in the lantern. Anyone on the move or working in the dark required a movable light.

One must go back thousands of years for the first account of the use of lanterns. In China the "Feast of Lanterns" has been celebrated since 5000 B.C. Pictures of lanterns have been inscribed on stone and in the tombs in early Egyptian, Babylonian and Phoenician times. Lanterns have been referred to in Biblical passages and they were used

by the Greeks and Romans. They were universally used as successor to the torch and continue to be used to the present day, particularly in some industries: for instance, railroad and in rural districts.

The night watchman of past years has been depicted as carrying a lantern and a cudgel, making his nightly rounds, crying the time, and "All's Well" or any pertinent information. (Figure 6)

In 1416, in London, the lantern was ordained to be hung out in winter evenings between hallowtide and candlemass", which was February 2, when the candles were blessed.

In the American Colonies, street lighting of any sort was seldom seen. Possibly, only a lamp set in a window was all that directed a pedestrian. These individuals, venturing out after dark, of necessity carried their own lanterns.

This was especially necessary in the towns as the streets were not paved and sanitation was of very little consideration. Lanterns must also be at hand in the country where a trip to the barn or stable might be necessary. Furthermore, in both town and country, light was required to make haste to the privy in the backyard to avoid mishap. For these purposes, small hand lanterns or finger lanterns were used. (Figure 7)

In March, 1774, the natives of Boston turned out to view the lanterns hung along the principal street, the first illumination of this kind. Prior to this, fire baskets had been erected at places of prominence.

Lanterns were made chiefly of tin, not many of iron or wood, and later of copper or brass. Some of the first lanterns were tin cylinders perforated usually in some design to give minute patterns of light. Other, more practical lanterns, with better illumination, were square with thin cow's horn in the openings or windows. Then later, mica and finally glass lanterns with rounded glass and bull's eyes came into use. (Figure 8)

Although the perforated lantern, jestingly named "nutmeg grater", was called Paul Revere Lantern, there is no authoritative account that Paul Revere looked toward the tower of the Old North Church for a signal from such a lantern as he stood on the opposite shore of the Charles River on the historic night of "April 18th, '75". The lantern that was the signal from the Old North Church, according to all authoritative accounts, and they allegedly have the lantern to prove it, was a square tin candle lantern with flat glass sides. This could have been seen from the opposite shores whereas light from the Paul Revere Lantern could only have been seen from a few feet away. (Figure 9)

It so happens that Paul Revere was a master silver-smith, working in precious metals and it is doubtful that he ever crafted tin or pewter, so that the lantern bearing his name was not of his workmanship.

Lanterns of many shapes and sizes were made during the ensuing years and are still being made. The early ones burned candles, the later ones, containing lamps, burned fish oil, tallow and more recently, kerosene. Now we have electric lanterns or torches using dry cells.

If we return to the last century, we find Charles Dickens on an American tour as a passenger on a boat on the Connecticut River in 1842. He describes the deck lanterns of brass burning whale oil, secured to the outside wall of the cabin. Within the cabin was another swinging lantern with heavy glass cylinder and perforated metal top, with ring handle, which burned whale oil by the light of which he probably wrote the following.

"It certainly was not called a small boat without reason. I omitted to ask the question, but I should think it must be about half pony power. I am afraid to tell how many feet short the vessel was or how many feet narrow. To apply the words length and width to such measurements would be a contra-

diction of terms.

I may state that we all kept in the middle of the deck less the boat should unexpectedly tip over. The machinery, by some surprising process of condensation, worked between it and the keel. The whole forming a warm sandwich about three feet thick."

There are many industries using the lantern or lamp which can be carried. Miners lamps and lanterns were hung on the walls of mines or on the miner's caps. They were, at first provided with open wicks but after many explosions and fires, a means of isolating the flame was devised by Sir Humphrey Davy. (Figure 10)

Watchmen and police used to carry lanterns with bull's eye glass "roundel". Travel lights for coach, ship and train were standard equipment. A farmer was not without a lantern for his nightly chores. Soldiers used lanterns when in the field or camp, some of ingenious design, some folding. These are just a few of the uses of lanterns which are still quite in demand. (Figures 8 & 11)

The Lamp

The origin of the first lamp is hidden in the dim past. A lamp, reputedly 20,000 years of age, burning fat, was found in a cave in France. An oil lamp found in Switzerland was judged to be 10,000 years old. Hayward, in his book on Colonial Lighting, suggests that possibly the cave man, having returned with freshly killed game, relaxes while his help-mate prepares and places it in the fire to cook. While he lounges before the fire he notices some of the melting fat dripping and forming a little pool on the floor. Then some burning moss falls into the pool and suddenly the surroundings become illuminated from the bright flare of the improvised wick.

The cave man had the intelligence to try and repeat the observation, with improved container and wick, and the lamp was born. It took its place

with the primitive implements of warfare and the hunt. Now, vision is extended beyond sundown and another step toward civilization has been achieved. The first lamps were of stone or small skulls and shell. They were later supplanted by clay. In earlier times, even dry birds and fish were improvised into candles by sticking a wick of some material in their throats. When the use of ores became known, lamps were made of iron, tin, bronze, then later of pewter, copper and brass. But over the centuries, the shapes of the lamps and the types of wicks were not improved to any extent, although refinements such as handles, moving parts and artistic designs were added.

It might be interesting to note that the only Aborigines on this continent known to have lamps were the Eskimos who made them of stone, clay and bone, using blubber as fuel. The Indians apparently had no means of providing artificial illumination save the brands from the open fire which they used as torches.

If used indoors, the lamps, burning fish oil or animal fat, gave such an unpleasant odor that an early account stated, "One could not enjoy the good things from the table until his indulgence in wine had made him indifferent to the stench of the smoking lamp."

The Betty Lamp and the rushlight were the sources of illumination in the early American Colonies. The candle was a luxury at that time. The Betty Lamp was called "Crusie" in Europe, a name given it by the Scotts. The Cornish name for it was "Chill" and it was called "Cresett" on the Channel Islands. If there was a drip pan under the Betty Lamp it was called a Phoebe Lamp. (Figure 12)

The first Betty Lamps made in America were of iron. In 1630 a deposit of iron was found at a place called Saugus, ten miles from Boston, and a primitive smelter was established where many of the early lamps were made. It is likely that the influence of the early shell lamps is seen in the shape of the Betty Lamp. The first Betty Lamps were open and shall, or pear shaped, the wick laying

in the narrow end and a hanging device attached to the broad end. Later the lamps had a cover and the wick a trough and finally a tube. The drip pan of the Phoebe Lamp was the same shape, open and shallow.

Better and more ornate lamps came from Europe at first, but the ingenuity and craftsmanship of Colonial artisans, some of whom learned their trade in Europe, copied and in some respects improved upon the article.

Fuel for these lamps was chiefly fish oil from the liver of the hake, herring and cod and later, whale sperm oil. In the back caountry, tallow or lard oil was used. In the Mediterranean countries, olive oil was frequently used and in the Scandinavian countries, cod liver oil.

Wicks were of moss, rush, pith, cotton and flax, occasionally basted with hot wild beeswax. In the south of this country, Spanish moss was used as a wick.

As time passed, iron lamps assumed different shapes and sizes, some elevated on rods as were the pan lamps, some resembling cups. There were many shapes. (Figure 13)

In 1692 an interesting, but deplorable event took place, the eruption of witchcraft hysteria. Iron lamps were used in the prisons where the alleged witches were confined and were called witch lamps. Iron lamps also illuminated the scene of the trials where the prisoners, if they did not confess their guilt to save their lives as some fifty did, were condemned. Nineteen were hanged. One poor soul was pressed to death. One-hundred and fifty more were lodged in various prisons, some of them condemned to death, and two hundred more had been accused when the wicked spell was broken and all were released.

Iron lamps were used in certain industries. We find iron miners, ships and farm lamps for example. (Figure 14)

Tin began to make its appearance and as it was cheaper and easier to fashion into lamps than iron, it became more popular. The tin-smith replaced the blacksmith to a great extent. (Figures 15 & 16)

Many of the tin lamps and candle holders were japanned or lacquered to protect them from erosion. The tin came from England, chiefly from Cornwall where it had been mined since Roman times. Lacquer was also made in England in the Birmingham area.

Earthenware Betty type lamps were produced in the back country, but were replaced by tin which was fashioned into many shapes to meet the requirements of the fuel they were to use. (Figure 17)

Before the middle of the last century, whale oil was becoming quite expensive, as whales were being exterminated. Some means of cheaper and better lighting was imperative and many types of lamps were devised and proposed using lard from "prairie whales", as the hog was called.

This required considerable innovation and ingenuity in order to achieve the proper liquifaction of the lard so that it could be taken up by the wick. One of the patented lamps, made by Smith and Stonesfers, had a screw driven piston to force the lard or the curd, left from cheese making, around and into the broad wick. (Figure 18)

Benjamin Franklin, at his father's tallow chandlers shop in Boston discovered that considerable smoke and fumes from the incompletely burned wick could be overcome by using two instead of one wick. This discovery especially applied to the oil burning lamps. These wicks provided a stronger current of air and more thorough oxidation, giving more complete combustion and better light. He also tried three wicks, but found two were just as good.

Henceforth, most of the larger and better oil lamps were provided with two wicks unless they were used for special purposes such as melting

sealing wax for documents and for postage, or for miniature lamps made to burn only for a short time.

These small lamps were chiefly used for two purposes. The tavern keeper gave them to his guests, drunk or sober, with just enough fuel to see him to his room and bed. These were called tavern lamps or squat lamps. They were also called night lights for the same household purpose. (Figure 19)

A similar size lamp with one wick was called a "spark" or "Sparking" lamp. It was lighted by the girl when her beau came to call and when it went out it was time to get his hat and leave. (Figure 19)

Pewter brought to the Colonies was well adapted for lamp fashioning. It became quite fashionable and replaced the iron and tin in the more affluent homes. Pewter is an alloy of lead, tin and copper, occasionally, antimony and zinc are added, the more the tin, the less the lead, the brighter and stronger the lamp.

Pewter lamp artisans began by copying the Betty Lamp, but soon developed designs and improvements of their own. Attractive pewter lamps were used for perhaps one-hundred and fifty years in the Colonies and early Republic. The wicks, usually two, were placed in an upright position in a cap that screwed into the top of the oil container. (Figures 20 & 21)

One of the most interesting pewter lamps was the time lamp which was probably first made in Germany, but later in this country. It consisted of an upright glass oil container upon which a vertical pewter strip was attached which registered, usually in Roman numerals, the time in hours. As the oil was consumed the level descended from which the time could be read. The light was a small horizontal box similar to a covered Betty Lamp. (Figure 22)

As the Colonist prospered, pewter was lowered in household standing and those who could

afford some luxury used silver in the parlor and dining room, brass and copper in the bedrooms and other rooms of the household and pewter was relegated to the kitchen and servant's quarters.

Much of the pewter in use at the time of the Revolutionary War was melted down and cast into bullets for the Continental Army so that pewter lighting devices became relatively scarce.

Brass and copper lamps were, at first, brought over from the old countries and were usually of handsome appearance, some quite unique, although some still followed the simple Betty type.

Brass (an alloy of copper and zinc) and copper artisans began to ply their trade later in the Colonies and they copied, for the most part, those made in Europe. Lamps and lanterns made from these metals seem not to be as abundant as candlesticks.

Glass of rather poor quality was made as early as 1639, but was chiefly used for bottles and tableware. Wister, in 1740 and Steigel, in 1765, manufactured beautiful glass articles, some of which were occasionally made into lamps.

There was quite an influx of German glass-makers in 1784 following Wister and Steigel, who settled chiefly in the back country. They did much to develop the early glass industry.

After the War of 1812, English glass-blowers came to this country and glass lamps began to appear more frequently. Blown glass was used before the molded and pressed glass and the pipe mark or the "pontil mark" can be seen on the bottom of the glass, which gives some idea of its age and workmanship.

The most notable producers of glass lamps in this country were the New England Glass Company, established at Cambridge, Massachusetts in 1815 and the Sandwich Glass Company, established in 1825. Because of their excellent craftsmanship and diversified patterns, their lamps, lanterns and

candlesticks gained immediate popularity. Early glass lamps were quite simple in design, but later, various patterns, color and overlay were produced. (Figures 23 & 24)

Whale oil lamps predominated in the first half of the nineteenth century. It was said that more than five hundred patents of whale oil lamps were granted in America during that period and since the use of kerosene in the last half of the nineteenth century, hundreds of additional patents were granted for lamp improvements, some retained and many discarded.

About 1830, camphene, a new fuel providing an excellent illumination with an agreeable odor was discovered. It was produced from a distillation of turpentine over quick lime. Turpentine was obtained chiefly from the Georgia pine, although other coniferous trees yielded an inferior grade. Camphene was frequently mixed with wood alcohol for illuminating purposes. (Figure 20)

However, it was found that camphene was extremely volatile and highly explosive, which made its use subject to some danger. In order to combat these objections to its use, the double wick holders were lengthened considerably and separated into a V-shape to get away as far as possible from the fuel. The wicks were also covered with brass caps when not in use to prevent evaporation and also to extinguish the flames, as blowing was hazardous. The era of the camphene lamp, which began about 1835, did not exceed thirty years, to about the time of the discovery of kerosene.

It was most annoying and quite an undertaking in the early days to get a lamp lighted. Friction matches called Lucifers or Promethian fire were not invented until 1827 and were not generally used until 1833. The only means of lighting lamps, unless one was accessible to an open grate fire, was to make a light. This was not accomplished by rubbing two sticks together, but with a flint and steel, a box of tinder contained scorched linen, cotton, silk, fungus, moss, sawdust of pinewood, etc., and a sulphur splinter called

a "spunk".

The proceeding in making a light was to hold the steel or iron in the left hand, a few inches above the tinder, and with flint in the right hand, strike downward against the steel, thus creating a spark, which was supposed to fly into the tinder and cause it to burn or smoulder. Then the splinter covered with sulphur was thrust into the tinder and when it ignited the flame was transferred to the lamp wick.

This task could be accomplished in ten seconds or ten minutes or you name it. This is the principle of the firing pin and pan of the old flintlock and of the new cigarette lighter.

Kerosene or coal oil lamps came with the discovery of mineral oil and displaced all the other fuels, possibly excepting in remote areas where the use of other fuels, frequently in older types of lamps, was continued.

Although, mineral oil was found in a number of places in China a long time ago, it did not come to the attention of Europe and the Colonies possibly until it was produced from shale by the Scotts in the late 1700's. However, it was not put to universal use before about 1860. As mentioned earlier, the first oil lamps had small round wicks, the lard and tallow wicks were thin and broad. Now with the use of kerosene and the invention of Argand and Astral lamps, the wick was a cylinder placed between two cylinders of brass. The inner metal tube was perforated to allow better oxidation and combustion. In addition, a glass chimney was provided for better flow of air and prevention of draft.

The next innovation was gas. Gas was also known by the ancients, but was not used for the purpose of illumination; at least there are no records testifying as to its use. It began taking the place of the lamp in urban communities and ultimately was piped into every room of the house.

In my childhood we had a few coal oil

lamps and candlesticks around the house, but began to use gas and when the Welsbach mantle was introduced, the illumination was increased many fold. I noticed just the other day that we still have gas street lamps on the street where I live, that contain Welsbach mantles which illuminate our thoroughfare with subdued, but sufficient lighting. I wondered if the old fashioned lamplighter, with his long stick containing a taper and a short ladder to reach the lamp, if necessary, is still around. There was something nostalgic about the lamplighter making his rounds at twilight, followed, on summer evenings, by the glow of the fire fly.

In the country, in my youth, they were still using coal oil lamps and lanterns. One of the jokes of the time was about the city slickers, who used gas, laughing at the country bumpkins who came to town and blew out the gas lights before "hitting the hay".

Although electricity was discovered in 1600 and experimented with, the possibility of it being used for light was not considered until after Benjamin Franklin flew his kite in 1752. Finally, Thomas Edison proved its commercial use and thereafter, with leaps and bounds, it began to illuminate the civilized world. Edison's first investigation of lighting, in 1879, began with carbon filament then tantalum and finally tungsten, housed in a vacuum. Now, we have advanced to fluorescent, neon and other types of illumination not dreamed of half a century ago. And so light through centuries of progress, though slow at first, reached a state of excellence. What of the future?

This is a rather brief summary of artificial lighting from the beginning of human knowledge, mentioning various types of illumination from the torch, link, taper, candle, lamp and lantern; using oils, both fish and plant, animal fats, camphene, mineral oil and their products, gas and finally electricity.

Leroy Thwing, formerly editor of the Rushlight. in his book, Flickering Flames, suggests, "If you want a lamp for emergency, a Betty Lamp is a

good lamp to have. It will burn mineral oil, salad oil, Crisco, vaseline and candle ends. A roll of cloth or cotton from a bottle of pills will do for a wick." It can be started with a cigarette lighter or a match. You will have as good a light as your ancestors had up until the middle of the nineteenth century.

In this country the growth was so fast and everyone was so intent upon change that the good, old things were discarded or relegated to the attic, cellar or barn. Because of this disregard, it is quite difficult to accurately date all of the lighting devices still in existence. Only rarely does one find a lovely antique, handed down from generation to generation with prideful notes of its long history of family association.

If we only had an Alladin's Lamp to rub and a Genie to tell us the history of each precious piece of our collection. If we could borrow a Diogenes' Lantern to look for an honest man who could give us authentic information concerning ancient lighting, it would be quite a help.

If only all these candleholders, these lamps and lanterns could talk. What a wondrous story of romance and adventure they could relate. What advances in civilization they could describe with pride as they were there aiding by their glow, the achievements of our forefathers.

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