

well, the light was steady and of good color, but the expense was found to be greater than for gas. Tests made at Glasgow Scotland were very satisfactory, of the Crompton lamp with a Gramme machine.

Mr. Hiram T. Maxim, of New York, has gained great notoriety by some modifications and improvements in electric lamps, which are highly spoken of by English scientific journals. It is claimed in this country that Maxim is only a plagiarist and that he has borrowed his ideas from Edison's productions. But a similar charge is made against Edison; and Professor J. W. Swan, of England, claims priority of discovery in the essential points of Edison's "invention." Twenty years ago Swan designed and constructed a lamp in which an arch or horse-shoe of carbonized paper was employed, and made incandescent *in vacuo*. But in consequence of difficulties similar to those which have since beset Edison, the lamp was abandoned. However, Mr. Swan, by subsequent experiments, has overcome the obstacles formerly in his way, and has constructed a lamp which *Engineering* pronounces "the most important step that has yet been made in the economical application of electricity to the production of small lights." Not only has he secured the complete vacuum so necessary to continuous incandescence from carbon, but the "carbons" he has constructed are so prepared by a process of his own, that instead of consuming, as those of the Brush and other lamps, they neither waste away to any appreciable extent nor deposit any particles, but, while no thicker than a hair, are "as hard and elastic as a piece of tempered steel wire" and have no tendency to fracture.

Another difficulty in the way of carbon lamps was the blackening of the globes and the consequent obscuration of the light. Mr. Swan, after many troublesome experiments, found that "when the vacuum within the lamp was good and the contact between the carbon and the conductor which supported it sufficient, there was no blackening of the globes and no appreciable wasting away of the carbon." This led him to further trials, until he was able to perfect a lamp free from all these fatal objections. Mr. Swan has come nearer to solving the problem of the division of the electric light for household and street illumination than any other electrician living. And he claims to have accomplished the supposed impossibility of storing up a reserve force of electricity, by which the lights may be maintained notwithstanding the breaking of an engine or obstruction of the dynamo machine.

All this goes to show the probability of greater improvements, in a short time, than have yet been attained in the process of electric lighting, and hence the wisdom of caution and deliberation before entering into agreements which may bind the parties to the use of a system that in a short time will be superseded by something far superior and less expensive. Let others experiment and bear the cost, while the prudent look on and gain the benefit.

THE UTAH QUESTION.

The Sacramento *Record-Union* in commenting on the Utah portion of the President's message says:

"The President is quite severe on Mormon polygamy, and urges upon Congress the duty of abolishing that institution. It is evident that he has not studied the question sufficiently, and that his ideas upon it are rather ecclesiastical than statesmanlike. It is not an easy matter to enforce laws which are obnoxious to the whole community, and this his southern experience should have taught him. His recommendation that the Territorial government of Utah be reorganized in order to give effect to congressional legislation is not at all to the purpose. Any such policy would be sure to help Mormonism by lighting the flames of fanaticism, while it would merely confirm and intensify the devotion of the Mormons to plural marriages. The question is one to be dealt with in the most cautious manner. Violent methods can only make bad worse. It is quite possible that influences now in operation will destroy polygamy if they are suffered to work quietly, but no coercive measures can eradicate an evil so entrenched by superstition and self-interest."

The *Record-Union*, in this paragraph but expresses a very general sentiment on this important question. We have not the least fear that Congress will entertain with gravity any such ridiculous and un-republican measure, as to that which the President has unwisely suffered himself to be committed, nor do we think that any public journal of influence will endorse it. The New York *Herald* it appears would prefer the heroic or military treatment of the "Mormon" question, but such incendiary and murderous sentiments are as little likely to be seriously entertained, as the scheme of two or three politicians who want to control this Territory, and are foolish enough to think Congress will consider their little plot just because an Executive, who is just going out of office, has been incautious enough to recommend it in a ponderous public document.

A LITTLE MORE ELECTRIC LIGHT.

LONDON, the great metropolis of Great Britain, is about to test the electric light for street illumination. We learn from London papers that a civic commission, to whom the subject was referred, have decided to light three districts of the city with the new illuminator. Offers were made by the representatives of various systems, and three of them were selected, namely, the Siemens, the Jablochhoff and the Brush.

The first district comprises Blackfriars Bridge, New Bridge Street, Ludgate Circus, Ludgate Hill, the north side of St. Paul's Churchyard and part of Cheapside. This will be illuminated by the Brush light. The second district embraces Southwark Bridge, Queen Victoria Street, the lower part of Queen Street, and Queen Street Place, and will be lighted by the Jablochhoff method. The third district includes London Bridge, the upper part of Queen Street, and of Cheapside, King Street, Guildhall Yard, the Poultry, Mansion-house Street, The Royal Exchange, King William Street and Adelaide Place, and will be lighted by the Siemens system.

The Brush lights will be 32 in number replacing 150 gas lights, being fixed on posts not less than 13 feet above the ground, with wires leading from the Anglo-American Light Company's works at Lambeth and from post to post overhead, except where they cross the streets where they will be under ground. The Jablochhoff will have 12 lights replacing 161 gas lights, and be the same kind as at the Thames Embankment, the wires hanging from lamp to lamp and across the streets on high posts. The Siemens will consist of 32 lights, 26 small and 6 large ones, replacing 138 gas lights. The large lamps will be in clear glass globes with umbrella shaped reflectors and will be placed on posts from 70 feet to 80 feet high, while the small ones will be in partly frosted glass globes, and placed on posts 20 feet high, the wires running underground.

This adoption of three different systems will be of benefit to those cities which are investigating the subject of electric lighting, giving good opportunity of testing the advantages and disadvantages of the rival methods, as well as probably suggesting improvements in each.

While still on this subject we will touch on a point connected with it on which there is some misunderstanding. It is generally supposed that there is no danger at all attending the electric light, but that it is "absolutely safe." This is an error which ought to be corrected. Mr. W. H. Preece, of the Society of Telegraphic Engineers, a short time ago, addressed a communication to the *London Times*, showing that "the wires conveying the electric currents may themselves be conveying energy in a form as insecure as a train of gunpowder," and that even if coated with gutta percha or india-rubber, like the copper wires used in telegraphy, the coatings are liable to injury, when the currents may escape to earth, generating heat and producing fire. He shows that in lighting mines the wires can only be rendered safe by costly cabling. He also argues that the liability to accidents is a thousandfold greater than with telegraph wires, and he asserts that several offices have been fired even by the weaker currents employed in telegraphy. He also refers to the instantaneous killing of a

musician in Birmingham, by incautiously touching certain exposed parts of the conductors conveying the currents for electric lamps, and the terrible death of a sailor on the steamship *Livadia* from a similar cause, and recommends the employment of protecting instruments to keep atmospheric electricity out of collieries, rather than the erection of apparatus to convey electric currents within them.

The fatal accident on the *Livadia* alluded to by Mr. Preece, took place while that vessel was on a trial trip from the Clyde to Brest. A stoker was requested to hold an electric lamp, which was about to be hung up, to light the stokehole. He grasped the lamp by a brass rod which encircled it, and at the same time happened to touch one of the bare wires conveying the electric current. He fell dead in a moment. His body being interposed in the track of the current, which is tremendously powerful, he received the shock from arm to arm right across the chest. His death was proven not to have occurred from heart disease, superinduced by the shock, but from actual rupture of the tissues, the discharge being such that he had to be buried at once. A person was also killed at Manchester, England, not long since by incautiously touching the exposed connections of an electric lighting apparatus.

We do not cite these instances as any argument against the adoption of the electric light, but merely by way of caution. Numerous accidents have happened through ignorance in the manipulation of gas, and so with other agencies used for the benefit of mankind. There is no good thing on earth but may be diverted to evil through ignorance or malice. Unskillful persons should not be permitted to handle electric lamps, or interfere in any way with the apparatus used in electric lighting, and great care should be used in the conducting of wires from point to point, or, when the new illuminator comes into more general use, we shall hear of mysterious fires and unaccountable conflagrations, and incendiarism will be charged with many more catastrophes which ought not to be laid at its door.

The invisibility of the subtle force called electricity constitutes one of its great dangers, and wherever it is used in such power as is necessary for electric lighting, the greatest possible precaution should be exercised to prevent the terrible results to life and property which may be the effects of so-called "accident."



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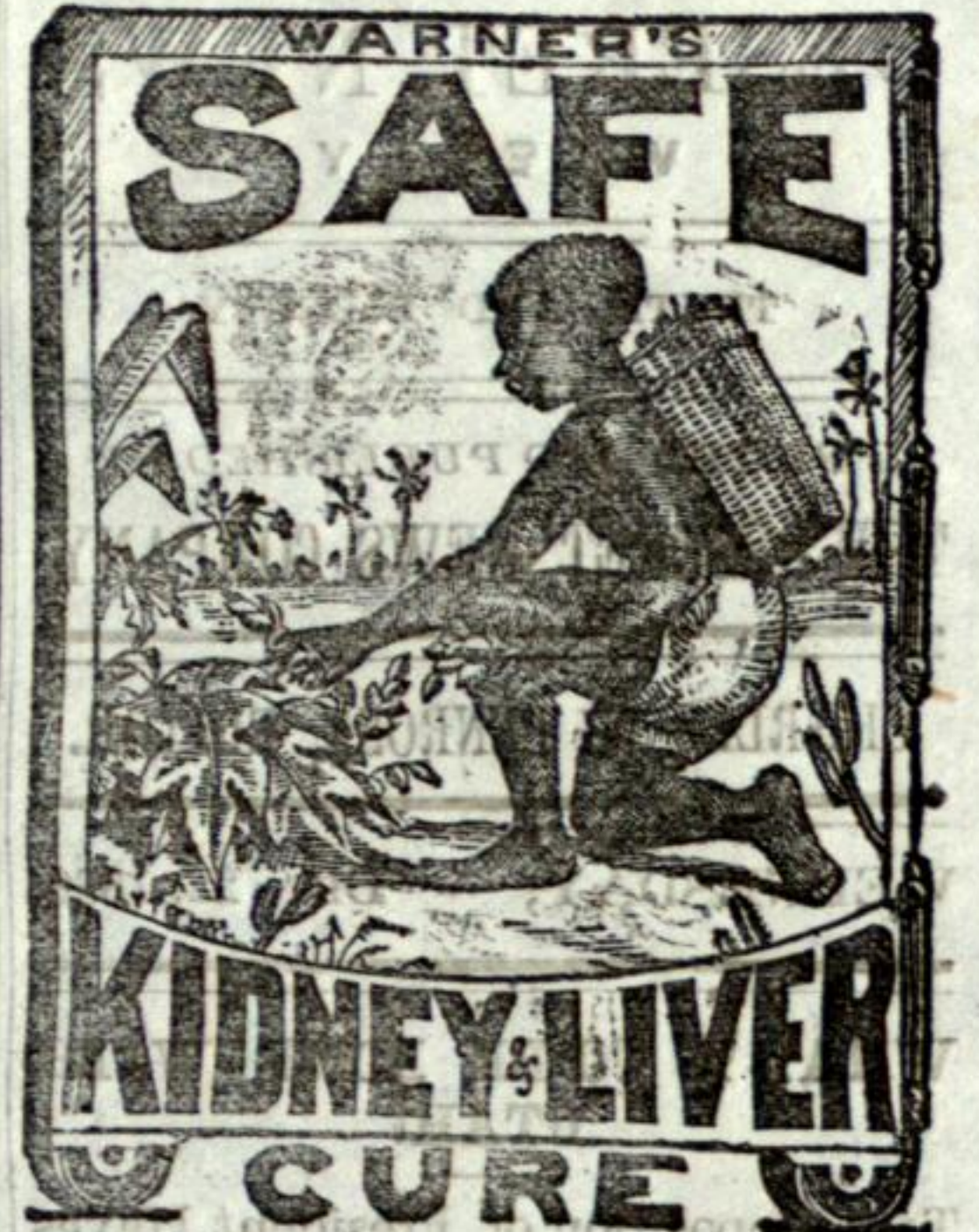
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