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THE
MOLOCH
OF
PARAFFIN.

Chicago burnt down. Hampton Court Palace twice set on Fire.



England insists on Safety Lamps for her Mines; why not on Safety Lamps for her Masses?

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HOW MANY HUNDRED TIMES MORE IS THIS
TO OCCUR?

THE PETROLEUM QUESTION.

THE
MOLOCH OF PARAFFIN.

BY
CHARLES MARVIN.

“All were weak before Moloch—the Devourer . . . At the beginning, devotees tried to count the victims” (hundreds of children) “but now so many were piled on the fire that it was impossible to distinguish them—in the lull could be heard the screams of mothers, and the crackling of the grease spattering on the embers. . . . The Barbarians looked on, gaping with horror.”—*Salammbô*.

THIRTIETH THOUSAND.

London:
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PRICE ONE SHILLING.

*Extract from "WITHIN THE HOSPITAL WALLS," issued
by the Hospital Sunday Fund, June, 1886.*

"A WORD FOR M.P.'S.

"THIS one," the House-Governor continued, "is a lamp explosion case. The mother was turning down a cheap paraffin lamp, when it exploded, and burnt the child all over." "Those beastly paraffin lamps!" exclaimed Dyer. "You may well say that," said the House-Governor; "every week we have to admit several people suffering from burns and explosions, and they say that nearly every week an inquest is held in London on somebody killed by them. Parliament insists upon safety lamps for the mines, but considering that hundreds of people throughout the country are annually burnt or killed by oil lamps, why does it not insist on safety lamps for the masses? Most of the cheap lamps might be marked, 'CERTAIN DEATH!' or 'THE HOUSE ON FIRE IF UPSET!' and the manufacturers know it. Do you know that one-tenth of the fires in London are caused by Paraffin Lamps?"

CHARLES MARVIN.

INTRODUCTION.

IN the spring of the year I was invited to act as a Special Commissioner of the *Lancet*, and visit the various London Hospitals, with a view to writing a popular account of hospital life, to be issued by the Hospital Sunday Fund after its appearance as a supplement to the *Lancet*, in order to arouse public sympathy on behalf of those institutions. This task occupied me nearly a month, and during my studies in the wards of the hospitals nothing impressed me more painfully than the frequency with which I came across sufferers from paraffin lamp accidents. One sight I shall never forget—it was that of a white mummy, writhing with pain; from head to foot the body was swathed in bandages, and every time I read in the papers that "the clothes of the deceased were burnt off the body," in connection with any lamp accident case, that mummy, with its heartrending contortions on the hospital bed, rises before my view.

Probably no person in Europe has written more upon Petroleum than I have. The matter in my books and pamphlets may be measured, but hundreds of articles on the subject have appeared in the press from my pen, which would make, besides, many books, if reprinted into volumes. Now it is notorious, that in every country the increase in the use of Petroleum has been accompanied by an increase of accidents. Thus it was not surprising that I should feel saddened that, in promoting a larger use of Petroleum by my writings, I had at the same time multiplied death and disaster. The outcome of this feeling was a determination to publish, as soon as I had accumulated sufficient materials, a pamphlet that should do something, however slight, to check these ravages. In the meanwhile I put into the mouth of one of the characters in "Within the Hospital Walls" an opinion or two, which will be found embodied in these pages.

Since that sketch appeared there has been a discussion in the *Daily News* which displayed how strongly the public felt on the

question, although it was not followed by any very useful results. While the controversy was still in progress occurred the terrible fatality to the steamer "Vaira," on the Volga: a paraffin lamp accident occasioning the loss of over one hundred lives. A little later the magnificent baths at Scheveningen were burnt down through the dropping of a lighted paraffin lamp; and more recently Hampton Court Palace narrowly escaped a like calamity. A letter I sent to the *Times* on the latter affair, expressing the conviction that mineral oil lighting was perfectly safe, if proper safety lamps were used, drew such a number of enquiries from persons anxious to know what lamps and oils I recommended, that I decided to issue the pamphlet without further delay.

Although addressed to the general public, and intended for Dives as well as for Lazarus, I must frankly confess that my main object in view is not so much to enlighten people who have money to buy good lamps, and time to study the merits and demerits of mineral oil illumination, as to direct public opinion to the position of the masses, who have been allowed for a whole generation to be sacrificed to the Moloch of Paraffin, without any serious effort to save them. It is time that this selfish indifference should come to an end, and that steps should be taken to put down Paraffin lamp accidents in this country. I cannot expect my recommendations to please everybody; but I do hope that there will be no difference of opinion as to the desirability of doing something on behalf of the poor women and children who are the chief victims of this scourge.

To promote such an object, I shall be glad to receive particulars of lamp accidents, reports of inquests, &c., from those readers whose interest may extend beyond a mere perusal of the "Moloch of Paraffin."

GROSVENOR HOUSE,
PLUMSTEAD COMMON, KENT,
December 10th, 1886.

THE MOLOCH OF PARAFFIN.

"The hand of the Lord was upon me, and carried me out in the Spirit of the Lord, and set me down in the midst of the Valley which was full of Bones . . . And, behold, there were *very many* in the open valley . . . And the word of the Lord came again to me, saying . . . WRITE."—*Ezekiel*, chap. 37.

Death in the Lamp.

IN Flaubert's masterly romance *Salammbô*, no realistic scene of ancient life excites greater wonderment and horror than that in which the Barbarians are described, during their siege of Carthage, watching the immolation to Moloch of hundreds of children by the civilised though superstitious Carthaginians. Many centuries separate us from those dreadful times, yet there is a constant immolation going on in our midst, upon which the Press and Public, like the Barbarians of old, occasionally pause to gaze with horror. Gas explosions, like lamp explosions, are common enough; but it is no exaggeration to say that the former never excite the feelings of terror and uneasiness that are provoked by the latter. A gas explosion everyone understands. By its disagreeable and stifling odour gas warns those who use it of the lurking danger, and it is only the heedless or the foolish who disregard that warning, and approach it with a light. But the case is totally different with Paraffin. Why a lamp explodes is incomprehensible to the majority of the educated, while to the masses there is something uncanny about the whole affair. A Paraffin Lamp never warns the victim of the impending disaster—with treacherous stillness it emits a cosy, soft, mild light on the table, lulling everyone into a fatal confidence; a moment later, the soft, mild light is a raging torrent of fire, sweeping like lightning over the room, and carrying death and

desolation throughout the habitation. In olden times men would have agreed that a devil lurked in the lamp, and would have propitiated him with gifts to preserve themselves from his devastating fury. We live in civilised days and pooh pooh devils, yet we adopt no civilised means to cast out this devil, but allow him to dwell in the lamps of the masses. Society, however, pays dearly for ignoring the evils afflicting the poor. It may shut its eyes for years to the immolation of hundreds of women and children of the ignorant masses, but the day of reckoning at length comes, and the insatiable Moloch of Paraffin devours at a stroke a whole city.

What an unsafe Paraffin Lamp cost Chicago.

The destruction of Chicago is a case in point. On Sunday evening, October 8th, 1871, a cow kicked over a lighted Paraffin lamp in a wooden stable, and the oil running out of the reservoir was ignited by the burning wick, and in a minute or two the building was in a blaze. A south westerly wind blowing at the time rapidly carried the flames to the timber yards on the west bank of the Chicago River, and thence they spread through the city. All Sunday night and throughout Monday and Monday night the conflagration raged, and when at last the fire burnt itself out the authorities found that nearly 20,000 buildings had been destroyed, and 100,000 persons rendered homeless. Two hundred and fifty victims perished in the flames, and it cost Chicago nearly £60,000,000 to repair the damage done by that ill-constructed Paraffin Lamp. If this be the biggest lamp accident on record, it might be well to remember that the collective loss of property to the world since, from fires occasioned by Paraffin Lamps, has probably exceeded several times that sixty millions sterling.

London's loss from Paraffin Lamps.

"As a Fire Brigade officer I may state that quite 10 per cent. of fires are caused by the Paraffin Lamp," writes Arthur

W. C. Shean, Captain and Vice-President of the Fire Brigade Association, Incorporated. In 1886 Captain Shaw reported that 238 fires had been occasioned by the "upsetting, &c., of Spirit Lamps." To the London Fire Brigade "Spirit Lamp" possesses a special meaning, which is not generally understood by the Public and the Press. No man going into an inn would ask for a glass of wine, if he wanted a glass of beer. No man wanting to buy a Paraffin Lamp would ask the oil and colourman for a Spirit Lamp. The public know, the trade knows, science knows that the two lamps are quite different, and have as little in common as wine and beer, yet all fires in London arising from Paraffin and Spirit Lamps are lumped indiscriminately under the general heading of "Fires from Spirit Lamps." This anomaly should be rectified, because the Press invariably copies the routine report of the chief officer of the Fire Brigade—"Cause of fire: Spirit Lamp upset," and the public in consequence do not clearly appreciate the damage done by Paraffin. Opinion is uselessly directed against Spirit Lamps, instead of striking the real offender.

What a Spirit Lamp is.

Everybody knows that a Spirit Lamp requires careful treatment, and the sale of Benzoline or Petroleum Spirit is placed by the Government under special restrictions. If the sponge in the lamp be too deeply saturated with spirit, or the lamp be used without any sponge, the article becomes at once dangerous. But the public know this perfectly well, and Benzoline Lamps are looked carefully after in well regulated households, or, more wisely, totally excluded from them. On this account, when a Spirit Lamp sets fire to a house, the public sentiment usually expresses itself in the remark: "Serve 'em right. They shouldn't have had such dangerous "things on the premises." But no man blames anybody for burning Paraffin. Consequently, if the public saw more frequently the proper announcement—"Cause of fire: Paraffin Lamp upset"—they would be more disposed to insist on legislation for dangerous Paraffin Lamps. In the majority of

cases Paraffin Lamps, not Spirit Lamps, are the real offenders ; and in the insurance offices there is no misconception whatever on this score.

Paraffin, Kerosene, and Petroleum.

Before going any further, it would be well perhaps to avoid confusion, by explaining in what sense Paraffin is used by the public. Paraffin is a product obtained from crude shale oil, which crude shale oil is extracted from an oily coal called shale. It is chiefly manufactured in Scotland. Kerosene, or refined Petroleum, is a product obtained from crude Petroleum, a natural oil that flows or spouts from the bowels of the earth like water. In the United States and Russia, Kerosene is the designation for Petroleum lamp oil, but in this country Paraffin is the word invariably used, although the bulk of our lamp oil no longer comes from the shale mines of Scotland, but from the oil fields of America. Thus American Kerosene is sold in England as Paraffin, or, blended or unblended with Paraffin, under some fancy title, such as "Crystal Oil." I have adopted the term Paraffin for this pamphlet in the general sense understood by the Public, and it includes, therefore, the mineral oils of other countries as well as that of Scotland.

A Thousand Million Gallons of Lamp Oil.

Paraffin is a comparatively new illuminant. Mr. Young only took out his patent in 1850, and it was years before the industry became rooted north of the Tweed. The chief impulse to mineral oil illumination, however, was given when Drake introduced the system of boring for oil in 1859. This led to a Petroleum mania in America, and in course of time Kerosene began to find its way to every part of the globe. The Russian industry is of more recent origin, practically dating from only 1878. The production that year was only $1\frac{1}{4}$ million gallons ; last year Baku exported 120 millions, and could have dispatched 250 millions, had there been transport. The annual production of Scotland is 70

million gallons. America produces over 600 million gallons. If to these totals we add the amount of oil manufactured by Galicia and other Petroleum countries, the World's consumption will be found to be very much over 700 million gallons, and should the present rate of progress be maintained, mankind in a very few years, thanks largely to the inrush of the Russian lamp oil, which is sold at Baku for three farthings a gallon, will be burning the prodigious quantity of a thousand million gallons of Paraffin and Petroleum oil. Not bad progress that, for an illuminant which only came into use about the time of the Crimean War.

Legislating for the lesser danger and ignoring the greater.

Such a vast consumption implies storage on a large scale. A hundred thousand barrels of oil are sometimes collected on a single wharf in London. In Russia, where the bulk system is in full swing, every large railway centre and port has its huge reservoirs of oil. Nobel Brothers have a group of 32 such reservoirs at Orel, holding, collectively, more than 18 million gallons of refined Petroleum. Similar tanks are springing up all over Europe, and the Governments concerned are devoting serious attention to the safety of the storage. The argument runs—if the destruction of 1358 barrels of oil caused such a prodigious blaze at Dudgeon's Wharf, on the Thames, last summer, what would the burning of 50,000 or 100,000 barrels of oil occasion ? Therefore Her Majesty's Government, following the example of other Governments, have taken up the question of storage, and a Petroleum Bill is to be introduced next session. Now, on this question of storage, I have nothing to say at present ; but I do confess to a feeling of amazement, that in such common-sense times as ours the real danger should be disregarded for the problematical. How many thousand houses have there been destroyed, how many thousand people scorched and singed to death through the storage of oil in vast quantities ? I believe that, taking the experience of the whole of Europe during the last 30 years, the only answer to this question is, that scarcely

any serious damage or loss of life at all has arisen from such a cause. If, therefore, the *storage* of oil has done very little injury, while the *consumption* of oil has wrought awful devastation, does it not seem a pertinent question to demand that the Government should be a little less eager about legislating for wharves and tanks, and a little more anxious to outlaw the dangerous lamps of the people? I must confess to a sincere conviction that a score of Petroleum Storage Bills would not do a hundredth part of the good to mankind, that would be accomplished by a single Bill for restricting the sale of Paraffin Lamps of dangerous construction.

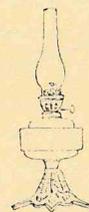
The appeals of Juries to put down "Such trash."

How many times have British Juries declared that "something ought to be done" to put down Paraffin Lamp explosions. Let me quote an instance, so far back as 1884. Mrs. Charlotte Goodwin, in the summer of that year, was turning down the wick of a new lamp, previous to getting into bed, when the reservoir burst, the blazing oil ignited her night dress, and she was carried, like many scores of other victims, to the London Hospital to die. At the inquest, after the husband had explained that the lamp was a cheap one with a china reservoir, and that he had always paid a good price for the oil to ensure obtaining a safe article, the Jury appended as a rider to their verdict, that they "Considered that some steps should be taken to put a stop to the sale of such trash as the lamp that had caused the death of Mrs. Goodwin." Since then hundreds of thousands of "such trash" have been sold, but no Member of Parliament has troubled himself about putting a stop to the sale of them. Sir John Humphrey, the Coroner, said that lamp accidents were exceedingly common, but "he could only give publicity to the recommendation; outside his province he could not take action." In this he was probably right enough, but the question naturally rises—Whose duty is it to take action? The Government have made it their duty to legislate for storage, which no Jury has complained of yet, while the recommendations of Juries about dangerous lamps have been wholly disregarded.

The Lamp to blame, not the Oil.

A little more than a year ago, at a Paraffin Lamp inquest at Plumstead, the Jury asked the Coroner whether it was not possible to put a stop to these fatalities; upon which the Coroner replied that he was sorry to say that although deaths were constantly happening, he was not aware of any cure for the evil. This reply represents pretty correctly the attitude of the Government and of Society in general in the matter. A Lamp explosion is an act of God; and man, in his present imperfect condition, is not responsible for it. Such a barbarous view of the matter is one I wholly repudiate. God may make Petroleum Oil, but, judging by results, the Devil alone is responsible for bad Lamps. Sir John Humphrey, the late Coroner for East Middlesex, at one of his many inquests over persons killed by Lamp explosions, said it was a "pity people did not pay more for Oil," implying that the Oil was to blame, not the Lamp. But this view—that a good Oil in a bad Lamp will eliminate the evil—is a dangerous fallacy. Sir Frederick Abel and Mr. Boverton Redwood, our two best scientific authorities on Lamps and Oils, have declared that a good high-priced Oil (*i.e.*, an Oil with a high flashing point) may be more dangerous in a bad Lamp than even the cheap Paraffin sold in poor neighbourhoods.* Consequently the chief source of the mischief lies in the Lamp.

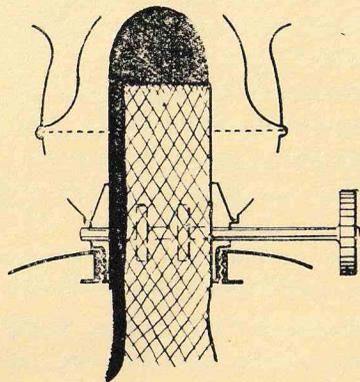
The commonest type of Unsafe Lamp.



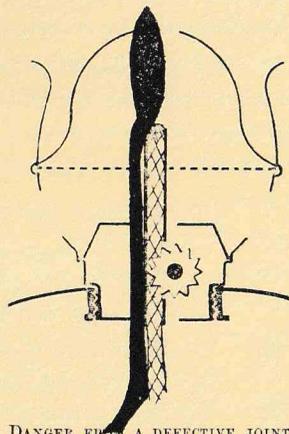
The commonest type of Lamp in use among the people is that with a flat wick, moved up and down by a wheel, and having a reservoir of china or glass. It is sold from sixpence upwards, and in poor neighbourhoods the windows of oil and colourmen's shops may be seen crowded with them. A large proportion of accidents are due to this Lamp, which not only violates

* "Experiments have demonstrated that a Lamp containing an Oil of high flashing point is more liable to become heated than if it contained a comparatively light and volatile Oil, in consequence of the much higher temperature developed by the combustion, and of the comparative slowness with which the heavy Oil is conveyed by the wick to the flame. Safety in the use of Mineral Oil Lamps is therefore not to be secured simply by the employment of Oils of very high flashing point (or low volatility), and the use of very heavy Oils may even give rise to dangers which are small, if not entirely absent, with Oils of comparatively low flashing points." SIR FREDERICK ABEL and MR. BOVERTON REDWOOD, in a jointly-signed letter to the *Daily News*, September 21st, 1886.

one of the fundamental laws of safety by having a breakable reservoir, but possesses no safeguard whatever against communication between the light and the vapour in the lamp. If, therefore, the wick be too narrow—and an ill-fitting wick is a frequent source of danger with these flat wick Lamps—or if a joint be defective, or the wick tube become enlarged and distorted by use, the conditions are produced favourable for an explosion. “I have shuddered,” writes Mr. Crosby, a Pimlico Oilman, “when people have “shown me burners with the “wick attached and burnt or “charred quite half-an-inch “down the burner, solely from “an ill-fitting wick. Lamp “dealers ought never to suffer “or allow a person to guess a “wick without the burner.” Moreover, this type is very difficult to keep clean, because it is not easy to get at all the parts of the burner, particularly below the gauze; thus charred wick is apt to accumulate and generate a blaze just above the small air orifices on each side of the wick tube, and in immediate contact with the reservoir gas. Altogether, therefore, this Lamp of the masses is about as bad as bad design and bad workmanship could make it, and comes clearly under the category of “such trash” as the Jury in the Goodwin case recommended should be suppressed by law.



DANGER FROM AN ILL-FITTING WICK, OR DISTORTED WICK TUBE.

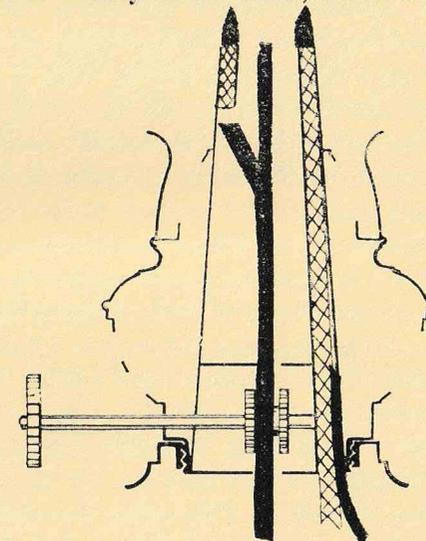


DANGER FROM A DEFECTIVE JOINT.

The Lamp of the Lower Middle Classes.



The next common type of burner, both here and on the Continent, is that known as Cosmos, which may be seen in every oil and colourman's shop, and very frequently in the elegant designs given herewith. The wick is a round one, or, rather, a flat wick is wound into a circular condition. If it does not fit closely, a firing passage is left between the flame and the reservoir, and where the wheels revolve in the tube is usually an air orifice, which is a permanent source of dangerous intercourse between the flame and the Paraffin vapour. In common with the usual flat wick burner, it possesses the defect that the lighted wick can be readily turned down into the reservoir of heated oil. The improved form of Cosmos burner, called the “Vulcan,” has a flame spreading button fixed into a narrow hollow tube running down to the reservoir. If this button be omitted, there is an air passage left exposed from the flame to the reservoir. Almost invariably the reservoir is of china or glass, often of the flimsiest character; and by a perversity, in many cases these flimsy glass reservoirs rest inside handsome strong bronze stands. Hence if these lamps, which at the distance look showily strong, be upset, the stand allows the weak glass reservoir to drop out, and break to pieces on the floor. Like the lamps of the masses, these lower



DANGER OF A COSMOS BURNER.

middle class lamps foul easily, and it is not a simple matter to cleanse them, even with patience and strong soda and water.

Where a little Law is wanted.

Before advancing to the higher type Paraffin Lamps it may be well to note the evils that arise from the bad design and the bad workmanship of the flat and round wick lamps, costing from sixpence to six shillings apiece, used by the masses and lower middle classes. First, as to the breakable reservoirs. In December, 1885, an inquest was held at East Greenwich on Sarah Carter, aged 62, who was taking a Paraffin Lamp off the mantel-piece, when it slipped through her fingers, broke to pieces on the hearth, and allowed the oil to run out and ignite, burning her to death. The Coroner said that he had known several cases of the kind, and had communicated with Sir Frederick Abel with a view to preventing such accidents. Sir Frederick Abel's reply is plainly and practically embodied in the Fifteen Commandments issued by the Metropolitan Board of Works for preventing Paraffin Lamp accidents. "The oil reservoirs should be of metal, rather than of china or glass." Both he and Mr. Boverton Redwood, as well as the majority of experts with whom I have discussed this subject, agree that the large proportion of lamp accidents are due to the infringement of this simple rule. Many of the distressing fatalities I have investigated would probably not have occurred, but for the lamp reservoirs having been constructed of the fragile materials condemned by science.

Accidents from Fragile Reservoirs.

Instances in support of this opinion are as plentiful as blackberries. In October last, Mrs. Nicholas, of Llanelly, was hastening to the door with a Paraffin Lamp, to admit her husband, when she stumbled and fell, smashing the reservoir. As usual, the oil ran out, was ignited by the wick, and in a moment the

poor woman was in a blaze. Her screams brought down her little boy, who opened the door for his father, and enabled him to extinguish the flames. The woman, however, died in great agony a few hours after. At Tiverton, in September, 1885, Robert Pearse upset a lamp on the table and broke the reservoir. The victim tried to escape, but was overcome by the smoke and fumes, and fell to the ground. When rescued he was shockingly burnt, and died; his wife and daughter were also severely injured in trying to drag him from the house. Another similar case occurred at Clapham Rise in July this year. Margaret Humphries, a housekeeper, was going to bed, when she knocked over a table on which she had a small Paraffin Lamp she kept alight all night. The lamp broke, and when the son, hearing dreadful screams, ran in, he found "the woman fully dressed and in flames, the whole apartment likewise being in a blaze." The fire was extinguished, and the sufferer was taken to St. George's Hospital, where she died. Had the reservoirs in each instance been of metal, no fatality would have probably occurred.

A Ripening Question for Public Opinion.

So strongly do I condemn lamps with glass and china reservoirs, that I must lay it down as a definite rule that a lamp that cannot be knocked off the table without breaking the reservoir ought not to be tolerated on anyone's premises. How many accidents occur from the tilting of the table! In 1884, Alice Maud Field, of Bermondsey, living in a room with an unlevel floor, tilted the table and knocked the lamp over. She was taken to Guy's Hospital, dreadfully burnt, and died a few hours after admittance. Rebecca Fox's case, in August this year, was less open to commiseration, for she went to bed the worse for drink, and was found on fire in bed, with a table upset and a broken Paraffin Lamp alongside it. The case of Mr. John Arthur, of Jersey, however, was of a different character. He was reading last summer near a table, on which stood a lighted Paraffin Lamp. Suddenly he was seized with an epileptic

fit—to which dire malady he was subject—and fell to the ground, overturning the table. The Paraffin Lamp rolled off, and was broken, and when Mr. Arthur was discovered, his face, hands, feet, and trunk were terribly burnt. In Russia, this summer, the daughter of a Volga shipowner, named Yakimoff, was lifting a Paraffin Lamp from one end of the table to the other, when it slipped out of her hands, broke, set her on fire, and the poor girl, to use the words of the local correspondent of the *Moscow Gazette* “ran from storey to storey of a three-flat house, a living pillar of fire, shrieking “in vain for succour.” She lingered for eight days in agony before she died. I might fill a whole pamphlet with cases of this kind, but surely I have given enough to support Sir Frederick Abel’s dictum—metal reservoirs should be used, and not glass or china. Yet, in spite of the recommendation of science, and the countless warnings at inquests, manufacturers keep on making by hundreds of thousands lamps with smashable reservoirs, and the masses, in their ignorance, continue to buy them. Here is where the Law should step in.

Explosions caused by blowing down Lamps.

Next to fragile reservoirs, the extinguishing of lamps leads to the majority of accidents. In August this year, Rebecca Davies, an artificial flower maker, of Islington, “was blowing down the “chimney to put out the light, when the reservoir exploded.” Her brother, hearing her shrieks, ran in, “and found her with every “particle of clothing burnt off her body.” She was taken to Bartholomew’s Hospital, where she died. Another notorious case was even more dreadful. The wife of a sign writer at Westbourne, near Bournemouth, was blowing down the chimney of a lamp, when it exploded and burnt her so frightfully that, after lingering in the hospital for a fortnight—during which both her arms were amputated close to the shoulders—she died, leaving a family of seven young children under the age of ten, and a husband with hands severely injured in his attempts to smother the flames. Now, surely,

in the name of common sense, our legislators might leave off pottering over Petroleum wharves and stores, framing laws for the mischief that *may* occur, and deal decisively with the evil that *does* exist already, and manifests itself in such horrible fatalities as the Westbourne case. Of course, wiseacres will say—people should not blow down lamps; they should follow the fourteenth recommendation of the Metropolitan Board of Works, which says:—“Turn down the wick “till there is only a small flickering flame, then send a sharp puff of “breath across the chimney—not down it.” But this is no infallible safeguard. An explosion took place at the Slade, Plumstead, in December this year, which I investigated, where the consumer regularly adopted this course. The lamp was one of the cheap ones shown in the first diagram. The puff sent the flame into the reservoir, which burst, and the blazing oil flew all over the place. But for the prompt assistance rendered by two soldiers passing by, a paralysed woman in bed would have been burnt to death.

Explosions while turning down a wick, or carrying a Lamp.

It is quite a common thing for these cheap lamps to explode on simply turning down the wick, the flame thereby being brought closer to the explosive vapour in the reservoir. In June this year Edward Walker, a middle aged engine-fitter of Camberwell, went to the kitchen mantel-piece, just before midnight, to extinguish the lamp. As he turned down the wick the lamp exploded—the widow declared in her evidence that he did not blow down it at all—and “set his head ablaze,” the fire extending to his chest and body before it could be extinguished. He was taken to Guy’s Hospital, and died there the next night. In this case the explosion was caused by working down the flame to the gas in the reservoir. Many explosions are caused by working up the gas to the flame, the slopping about of the oil when a lamp is shifted from one place to another driving up the gas to the light. In November, 1885, an inquest was held at the London Hospital on a little girl named Catherine Levi, who was carrying a paraffin lamp when it

exploded in her hand and burnt her to death. Another case in September this year was very distressing. A poor woman named Alexander took a Paraffin Lamp and was going into the bedroom to look at her children, when it burst and set her on fire from head to foot. She threw herself on the bed, in which was her infant child, setting fire to the bed clothes, and then ran into the kitchen, where the flames were extinguished. The child was found burnt to death, and the mother died of her injuries the next evening.

Explosion of Lamps through a draught.

Here, again, the wiseacres will say: "Paraffin Lamps ought not to be carried about." But how about explosions of lamps at rest? Last autumn Jane Wood, a housekeeper at Woodville House, Highgate, was standing near a table, when the light flickered and the reservoir burst, causing the oil to run over the place and set fire to her dress. Her master tore up the carpets and mats and wrapped them round her, but she died seven hours after admittance into the University College Hospital. In this case a draught was apparently the cause of the explosion. It certainly was in the case of Mary Difford, the wife of a hawker, who was killed at Battersea this year. The lamp had just been filled and trimmed, and was placed on a nail in the shop, exposed to a draught. Hearing a sudden report, as though a gun had gone off, she ran from the parlour to the shop, and found that the lamp had exploded, and that the oil was blazing on the floor. In trying to extinguish it her dress caught fire, and she ran into the garden screaming for assistance, leaving the shop in flames. When an inquest was subsequently held upon her at St. George's Hospital the Coroner said the case was very painful, "but unhappily not an uncommon one." People are sometimes recommended not to blow down a chimney, but turn down the flame and let it flicker itself out. A servant girl did this at Hampton Court Palace this year, the flickering being so faint when she closed the cupboard that she thought the light was out. The result is well known. An explosion took place of this

lamp at rest, and nearly fifty apartments were damaged by fire and water; the loss exceeding £10,000.

The scientific explanation of Lamp explosions.

The explanation of all these explosions is a very simple one. Paraffin at the ordinary cool temperature of the pantries and sculleries in which it is stored, and even at a much higher temperature, does not readily take fire. One has only got to test this by pouring some Paraffin into a cup and applying a lighted match to it, when the oil will extinguish the match. But Paraffin heated and emitting steam is a different matter. The phenomenon is identical with that which occurs with snapdragons. Everybody knows that if cold brandy be poured on a cold dish, the plums will not blaze. The dish must be first warmed, to raise the temperature of the brandy, then the spirit blazes readily enough when a light is applied. A few weeks ago a little girl, aged six, the daughter of Mr. T. Jones, master mariner, of Aberavon, Cardiganshire, was sent with an earthenware jar to fetch some Paraffin. On her return she stumbled and broke the jar, spilling the oil over her clothing. In its then condition the oil was harmless enough, but the poor little thing went into a house to dry herself, and as she stood before the fire the steam or vapour from the Paraffin suddenly burst into a blaze, "enveloped her in flames, and she died a terrible death." Now it is this vapour, emitted when the oil is hot, that does all the mischief. Mixed with a due proportion of air, and touched by a flame, it becomes as explosive as gunpowder.

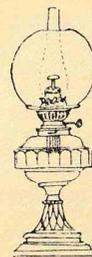
The dangers common to Lamps.

When a lamp upsets and the reservoir breaks, it is this vapour that establishes a junction between the flowing oil and the burning wick, and the result is a sudden blaze, which is commonly, though not always correctly, called an "explosion." If a lamp,

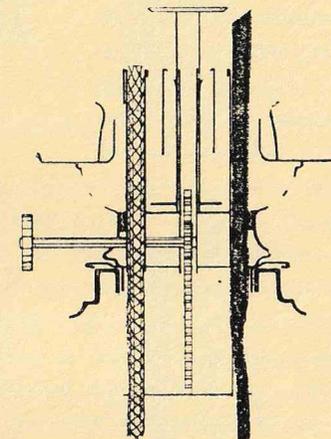
with a reservoir only partly filled, be carried about, or even shifted from one part of a table to another, so as to agitate the liquid, a mixture of vapour and air may make its escape from the lamp in close vicinity to the flame, and by becoming ignited, determine the explosion of the mixture in the reservoir. This escape, as I have explained, may occur through the wick-tube itself, or through openings close to the wick-tube, large enough to allow the gas or the flame to pass them readily. A draught, or the common practice of blowing down a chimney, may cause an inrush of air, thereby increasing the explosive properties of the mixture of the vapour with a little air contained in the reservoir; and the flame of the lamp may at the same time be drawn or forced into the air-space filled with that mixture, especially if the flame has been turned down, as the light is thereby brought nearer to the reservoir. If the quantity of oil in the lamp reservoir be but small, and the air space consequently large, the ignition of an explosive mixture produced within the lamp will obviously produce more violent efforts than if there be only space for a small quantity of vapour and air, because of the lamp being comparatively full. A common, cheap oil may give off so much vapour, that by expelling most of the air it may be only feebly explosive. A dear, high flashing oil, on the other hand, produces less vapour; but the mixture of vapour and air in the reservoir may be more violently explosive, because the proportion of the vapour to the air is likely to be nearer that demanded for a powerfully explosive mixture.

Does a safe Paraffin Lamp exist?

These are the principal reasons assigned by such scientific authorities as Sir Frederick Abel, and I can well imagine the reader exclaiming to himself after perusing the list, which is by no means exhaustive, What escape can there be from the Moloch of Paraffin! For the masses and the lower middle classes, with the lamps they at present use, there is no escape whatever. With regard to people who can afford to buy good lamps and good oils, even they do not always obtain the



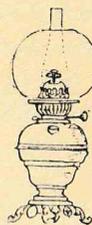
security they are ready to pay for. Without turning this pamphlet into an elaborate treatise on lamps, let me indicate what I consider the defects of some of them. For instance, let me draw attention to the failings of the widely advertised *Mitrailleuse Burner*. This consists of a dozen or more cylindrical wicks arranged in a circle and held in a frame, which is raised or depressed by a rack and pinion. Should, by any failure of the mechanism, arising from wear or tear, a wick slip down into the reservoir, or what is more probable, should one or more wicks out of the dozen be omitted, through the carelessness of the servant, or through an insufficient supply of wicks, a strongly heated passage would be created between the flame and the reservoir. I have pointed out that in the lamps of the masses a loosely fitting wick often causes explosions by allowing intercourse through the single tube between the flame and the gas in the lamp. In the *Mitrailleuse* are no less than a dozen tubes, and there is naturally a strong temptation to omit the wicks of some of them, if the supply of wick runs short. Moreover, it is largely fitted to glass and other breakable reservoirs.



DANGER FROM THE OMISSION OF A WICK FROM A MITRAILLEUSE BURNER.

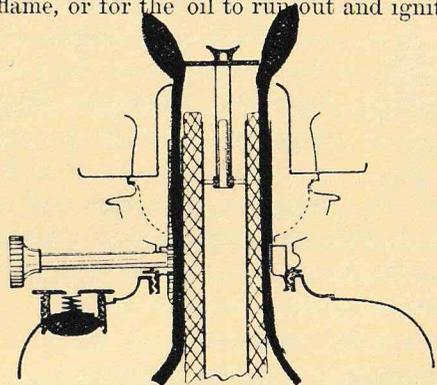
Dangers from Side Fillers.

Another lamp for which safety is claimed is the *Lampe Belge*. The first defect of this is the existence of an annular space between the wick tube and outer tube, thereby allowing intercourse between the flame and the vapour in the metal reservoir. Another is the use of a side-filler, which Sir Frederick Abel and other experts condemn, because the omission of the nut,



through accident, or carelessness, or loss, provides a large opening for the gas to ascend to the flame, or for the oil to run out and ignite if the lamp be upset.

If the nut were loosely screwed in, the fall of the lamp might also cause it to drop out and allow the oil to flow to the flame; and this contact would also be consummated, if the lamp were upset, by the oil running down the annular opening I have just referred to. It

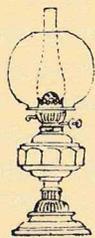


DANGER THROUGH THE OMISSION OF THE SIDE FILLER, &C., OF THE LAMPE BELGE.

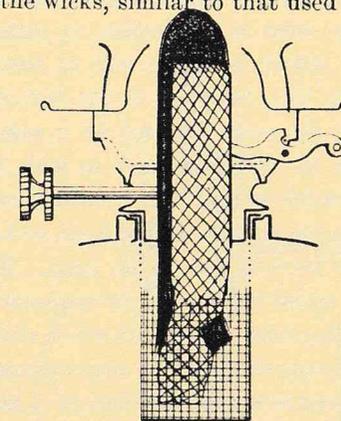
may be regarded as a primary essential for a Safety Lamp, that it should not have any opening or feeding place other than that provided by taking out the burner. A side filler seems convenient, because, when the reservoir is empty, one can pour in a fresh supply of oil without turning out the light; but this is a most dangerous practice, and is, moreover, detrimental even to the consumer, since after the reservoir is exhausted the wick always wants trimming, and when the chimney is removed to do this, it is just as easy to pour the oil into the reservoir direct as through the side filler.

The dangers of the Duplex Lamp.

More popular, however, than either of these is the Duplex Lamp, for which in certain forms safety is claimed. I am sorry to have to express my conviction that this does not reach my standard of safety, because the introduction of the Duplex Burner made a great advance in mineral oil illumination years ago, while more recently endeavours have been made to render lamps of this type more perfect by the adoption of a

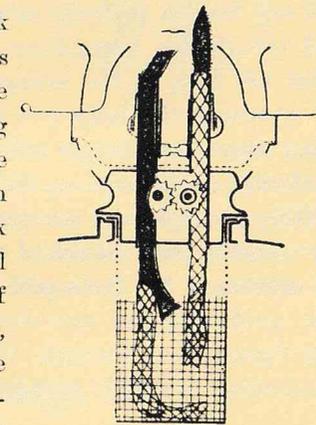


cylinder of wire gauze, to enclose the wicks, similar to that used in the construction of miners' safety lamps. As the majority of Duplex Lamps have not this arrangement, let me point out first that if a loose fitting wick be used, or the tube becomes distorted, a firing passage is created similar to that in the flat wick lamps of the masses. In common with these lamps, danger may occur through turning down one of the two wicks into the reservoir, thereby creating a very large passage



DANGER FROM AN ILL-FITTING WICK IN A DUPLEX LAMP.

between the flame of the other wick and the reservoir. Or again, this danger may occur through a single wick being used instead of two, owing to an insufficient supply. To obviate these dangers, a gauze tube has been introduced into the newer Duplex lamps, the belief being, that if the small quantities of inflammable mixture of paraffin vapour and air in this tube, or cylinder, be ignited by any of the above causes, flame will not be communicated to the explosive mixture outside the gauze tube in the reservoir.



DANGER FROM A FALLEN WICK IN A DUPLEX LAMP.

The Safety Gauze Tube in the Breakable Reservoir.

But a lamp that cannot be knocked about, exposed to wear and tear, and be trusted in the most careless hands, is not a Safety Lamp in my estimation. Through a flaw in manufacture,

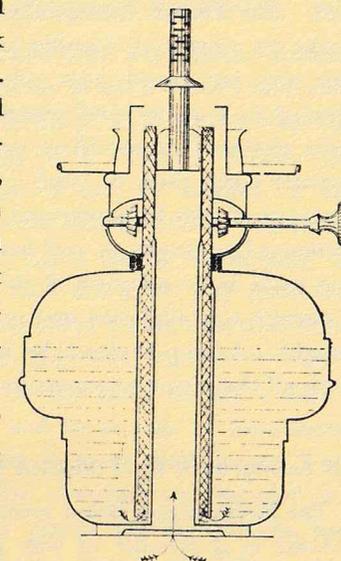
or through the rough usage common with servants, there may arise a perforation or rent in the gauze; in which case the safety principle will at once become non-existent. Worse than this, however, is the fact that the gauze tube, being loose, may be easily omitted by a careless servant, as the burner fits just as well without it as with it. Or it may be lost and not replaced, or again the consumer may think that huddling the wick into the tube spoils the light, and for the sake of more illumination may leave it out of the lamp. These are very serious drawbacks. To avoid explosions by persons blowing down the chimney, an extinguisher is provided, which slides up and puts out the flame. This is unquestionably an improvement, but its existence may not be known to all the members of a household, and a stranger or a new servant blowing down the chimney may cause the very danger it is intended to dispel. But, in excess of these considerations, I cannot call any lamp a perfectly safe one that has a breakable reservoir, and the Duplex lamps have still reservoirs made of glass. Of what use then is the extinguisher and the gauze cylinder, if by upsetting the lamp you may smash the glass reservoir and bring about that danger which Mr. Boverton Redwood and Sir Frederick Abel assign as the principal cause of lamp disasters. "Although explosions sometimes break lamps, the danger arises principally from the risk of overturning and breaking the lamp." No opinion of Mr. Redwood's could be plainer than that.

The Safest Lamp in Use.



The safest lamp I know of in use is the Defries Safety Lamp, which, although only recently introduced, has already become popular throughout the country. The inventor was Louis Sepulchre, a Belgian, who, as regards brilliancy of light, coupled with absolute safety, has certainly managed to score a success over all competitors. If the reader looks at the accompanying diagram very carefully he will observe in the centre of the lamp a

round metal air tube, around which is the circular wick, around which again is another round metal tube. Thus the oil gets to the wick only at the bottom of the reservoir. Now, if the wick be raised, the oil will follow it up the ring-space between the two tubes. Consequently, a flame depressed by a person blowing down the chimney would have to traverse the whole wick (which being closely confined between the tubes would be impossible) before it could reach the oil, and then would have to pass right through the oil before it could reach the gas floating about on the top of the oil, between the surface and the sides of the reservoir.



THE DEFRIES SAFETY LAMP.

As, when the burner is screwed into position, there is no orifice in the reservoir that will allow the flame to penetrate to the gas, except by traversing the body of the wick and the body of the oil, an explosion by blowing down the chimney is absolutely impossible. To blow down the six-candle power lamps of the masses is to expose one's self to a horrible death—one can blow down the sixty-candle power Defries Lamp with impunity, even though the reservoir be filled with the most explosive oil, *boiled* beforehand to make the test complete.

The Cotton Wool treatment of Lamps.

Now, I hold very strongly to the opinion that a lamp that requires to be treated with cotton wool precautions is not a safe lamp for any household. My conception of a Safety Lamp is, one that can be knocked off the table, thrown at one's wife, carried about the house, and blown down upon without any fear of fire or explosion. The Defries Lamp satisfies all these requirements, and

therefore I designate it a "Safety" Lamp in every sense of that word. The Fifteen Commandments of the Metropolitan Board of Works for preventing Paraffin Lamp explosions are all very well in their way, but people who cannot conform to Ten are not to be expected to hold in vivid remembrance Fifteen; and, moreover, I doubt whether there are fifteen people in all England who have ever seriously borne them in mind. Besides, those Fifteen Commandments are of very little practical value. Take, for instance, the one recommending people to puff instead of blowing down a lamp. Of what value is the adoption of this rule, when, as I have illustrated by examples, an explosion may occur with the same lamp through a draught. A lamp that can be blown down upon with impunity is worth all the fifteen recommendations put together.

No Lamp safe that cannot be trusted with the Servants.

The Metropolitan Board recommends that the wicks should be enclosed in a cylinder of wire gauze, 28 meshes to the inch, and this is being carried out by putting them in a smashable reservoir! But, supposing the gauze tube were used in a metal reservoir, safety would not be guaranteed, because requiring, for the purpose of cleaning, the reservoir to be detachable, and not necessarily forming part of the lamp, it might be omitted by the servants through carelessness or inadvertence. Now, it is an essential feature of the Sepulchre patent that the safety principle is part and parcel of the lamp. The burner is a very strong one; every part of it can be cleaned with a duster without taking it to pieces, which is the drawback of most other lamps, and while it never fouls, the most careless servant cannot possibly omit anything that will rob it of its safety. I attach very great importance to this feature. A man cannot be always pottering about the kitchen, supervising the cleaning and filling of his lamps. A lamp that requires any supervision of this kind, whether to see that the wick fits the tube, or the burner is not foul, or that the gauze tube is not perforated, is not a lamp for my household, however much it may suit others.

Safety Lamps for Romping Children.

The Defries Lamp is not only a safe lamp, but I believe possesses more illuminating power than any other in use. Those I have about my house are 43-candle power table lamps, while the one suspended in my library emits a white light of 62 candles. The so-called Duplex Safety Lamp gives a light of only 31 candles. I have not space or inclination to describe the peculiarities of the Defries Lamp occasioning this superior light, merely mentioning the circumstance to show that safety does not imply any diminution in the illuminating power. In these lamps I have used at different times Russian Kerosene, American Kerosene, common Scotch Oil, and the Special Defries Safety Oil—the latter having a flashing point of 270 degrees Fahrenheit, and for storage or consumption being as safe as Colza. I have gas in every room in my house, but in common with everyone else nowadays am disgusted with the injury it does to my books, my plants, and my pictures, while as for illumination, the single hanging lamp in my library causes my five gas jets to assume a pitiful consumptive aspect when arrayed in opposition against it. The most prodigious and perfect light, however, would not please me if it were not absolutely safe. Perish India rather than that my books and my private papers, the treasures of my library, should be swallowed up by the Moloch of Paraffin! Much though I appreciate Petroleum as an illuminant, I would never tolerate in my house a lamp that could not be trusted with romping children. If the Defries Lamp be knocked off the table, there is a smash of glass, certainly, with the collapse of the globe and chimney, but the light goes out immediately, and it is so long before the oil begins to ooze from the wick tube that the lamp can be picked up before any damage is done to the carpet.

Urgent need of Safety Lamps for the Masses.

Now this is a state of things I do not like to see confined solely to my household. I most earnestly desire to see it extended to the

homes of the masses. Unfortunately, for the moment the Defries Lamp is not sold at a price to bring it within the reach of the lower classes; the cheapest costing ten shillings. But I am informed that this is only temporary; that the company being only a few months old is overwhelmed with orders; and that, all the same, it is making arrangements for manufacturing a Cheap Safety Lamp for the masses. This I hope is correct, because, as I have shown, the masses are exposed to deplorable dangers through the use of the trashy lamps they are at present compelled to buy, and really need a little help from the Government of the country. If an absolutely safe lamp does exist in the Defries pattern, and my opinion, derived from months of actual use and experiments, is simply the echo of Sir Frederick Abel's and Mr. Boverton Redwood's, then in demanding that something should be done to provide the masses with safe Paraffin Lamps, I am not craving for an ideal, or asking for an impossibility. Dives has got his Safety Lamp, ought not something to be done for Lazarus?

A Law to Suppress Dangerous Lamps.

To my appeal that Parliament should deal with lamp explosions in framing its Petroleum Bill next Session, it may be replied that it is not a matter for State interference, and that it would be better to let things right themselves in the natural course of events. To that my answer is, that without legislative interference the public and the masses will never secure perfect protection. However economical may be the methods of manufacture, it will be always cheaper to make unsafe lamps than safe ones; and if Society allows the ignorant poor to be supplied with the trash denounced by Juries, it must make up its mind to suffer from Chicago disasters and Hampton Court Palace conflagrations. In support of this view, let me, without touching the burner, refer to the reservoirs of ordinary lamps. A safe metal reservoir cannot possibly be manufactured so cheap as a flimsy reservoir of china or glass, such as causes the majority of fatal Paraffin accidents to-day; and hence the dangerous reservoir will always be able to

undersell the safe one. It is true that metal conducts heat from the burner to the reservoir more readily than china or glass, but this is no excuse for employing dangerous, fragile materials; because a lamp that cannot, from the imperfections of its design, burn the commonest Paraffin oil safely in a metal reservoir, is a lamp that ought to be suppressed. Louis Sepulchre's Lamp can burn Paraffin safely, boiling hot, showing that there is no difficulty in securing perfect safety under the worst possible conditions one can imagine for a metal reservoir. If the State ought not to intervene in the case of lamps, why ought it to interfere, as it does, with the sale of oil? It steps in and protects the public against the cheaper and more violently explosive oils, and if this be sound legislative policy, then it ought to interpose and protect the public against trashy lamps. It is concerning itself about the *storage* of Petroleum, which does very little harm; wherefore should it close its eyes to the *burning* of Petroleum, which, in the lamps in use, occasions an enormous amount of devastation throughout the country?

Is Moloch to have his own way?

Surely, no one can read the horrible fatalities recorded in these pages and come to the conclusion that nothing ought to be done. Is Moloch to entirely have his own way? No one would recommend that hampering restrictions should be placed in the way of such manufacturers as those who honestly, although not always successfully, endeavour to render their lamps perfectly safe; but who will defend the manufacturers of the rascally rubbish, mostly, I believe, imported from abroad, that is commonly sold to the masses? If State intervention be inadvisable, then I hope that Public Opinion will no longer look on with folded arms, imagining the attainment of safety in Paraffin Lamps to be impossible. The cure for the evil does exist, and I hold that it ought to be enforced as quickly as possible. An investigation by a Government expert should be insisted on in all fatal lamp accidents. That is the very least that can be done. As for the rights of

trade, are not the lives of women and children still more sacred? How long shall Moloch claim his victims, and remorselessly burn them alive without anyone stepping forward to prevent him? This is a question that the Conscience of the country cannot much longer ignore. We insist on Safety Lamps for the mines; let us do something to provide Safety Lamps for the masses.

POSTSCRIPT.

Extract from an article in "TIME" on "Paraffin Lamp Accidents," by the Author, April, 1887.

"In my 'Moloch' I said that my agitation for Safety Paraffin Lamps was not on behalf of the rich and the educated—who have money and time to look after themselves—but on behalf of the masses. The drawback to the Defries Lamp was its cost; this was due to the simple fact that the trade in the higher-priced artistic lamps is more profitable than the trade in the cheaper article, and that while a strong demand existed for the former, one could hardly expect a commercial company to forsake Dives for Lazarus. However, in consequence of the agitation prevailing during the winter, the 'Defries Popular Safety Lamp' has now been brought out, and I trust that its low price will place it within the reach of the suffering classes—it giving a good light with a small consumption of oil. It is a waste of time to attempt to educate people how to use with safety the present dangerous lamps in their homes. Far better to help them re-place them with safety ones. For anyone in search of a mission, there could be no better crusade than to attempt to put down the horrors I have indicated, and to which, occupied as my time is with the Russo-Indian and Eastern Questions, I can only devote very inadequate attention. None the less, so long as philanthropists hold aloof, and leave the masses to struggle with this frightful scourge unassisted, I shall persist in giving every spare moment to fighting the Moloch of Paraffin."

CHARLES MARVIN.

THE ANTI-MOLOCH MOVEMENT.

Appointment of a Lamp Commission by the Russian Government.

Copies of the first issue of the "Moloch of Paraffin" were sent to the principal Russian Ministers, and when the Russian translation was brought out, the *Baku Ivestie*, the organ of the Russian Petroleum industry, declared that "In Russia there are as many lamp accidents as in England; the bloody victims of the Kerosene Moloch may be counted by hundreds yearly. Why, therefore, should Russia not do her best to put an end to the rule of the blood-thirsty Moloch?" Since then the Russian newspapers have announced the appointment of a commission to inquire into lamp accidents. Is not this an example to be followed by our own Government?

The Birmingham Town Council denounces Shoddy Lamps.

The appearance of the "Moloch of Paraffin" provoked a warm controversy in Birmingham, the *Birmingham Daily Post* advocating legislative interference. Subsequently the Town Council of Birmingham (the centre of the lamp industry) declared in its report on fires in 1886,—“That so long as cheap lamps, constructed on wrong principles, are allowed to be sold, fires and fatal accidents will continue to occur.”

The Coroner for Surrey advocates fining Glass Lamp Makers.

At the inquest of Caroline Hall, in January, 1887, the Coroner, Mr. Braxton Hicks, said that "Lamp containers ought not to be made of glass, because, if the lamp fell, there was no escape whatever for the person near it, for the glass broke and the oil poured over them. Nearly every Coroner in the country had held inquests on bodies terribly burnt through lamp accidents, and he thought it would be well if it were made a punishable offence to make and sell glass paraffin lamps."

Two months' agitation in Glasgow.

From the end of January to the end of March prevailed a strong Anti-Moloch controversy in the columns of the *Scottish News*, Glasgow. Of its character and effect the following quotation from a leader in the *Scottish News*, February 22nd, bears encouraging record:—"Three weeks ago we called attention to the enormous number of fires and deaths that are caused by accidents with lamps that burn paraffin and petroleum, and we pointed to a legislative remedy. We did not anticipate the widespread and long-continued interest that has been evoked by our article. From all parts of the country during these three weeks we have received letters urgently asking that protection which we recommended, and latterly, without the slightest solicitation or hint, various persons have sent us sums of money for the purpose of forming a fund to promote publicity for the disasters and agitation for their restriction."

The scourge worse than ever.

Investigations have shown that the evil has greatly developed during the past winter. In the five weeks preceding and following Christmas there were 18 lamp inquests held in the United Kingdom—nearly four a week. The list was compiled from mere ordinary newspaper reading. As hospitals treat at least a dozen injured lamp accident patients to one that dies, it is not too much to estimate the victims to Moloch in the United Kingdom as exceeding

150 killed and 2000 injured annually.

Is this to indefinitely continue?

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