is by means of the oxyhydrogen, or lime light, and I propose it with the ordinary methods of illumination.

This lime light was the invention of Lieutenant Drummond, and applied by him in executing the Ordnance Survey in Ireland and Scotland in 1826. Its intensity was such, that it was proved to be distinctly visible at a distance of ninety-five miles. It is so purely white, that the most delicate shade of colour may be distinguished by it as correctly as by daylight, while for photographic purposes, it is invaluable, as it enables the photographer to work by night as easily as by day. To what extent this light is possessed of actinic properties, or whether this apparent power is due to the additional rays of colour in its composition, we must leave others to decide, we will here only endeavour to describe the best form of lime light apparatus which is yet known to the scientific world. The lime-light gives out but little heat, and does not in any manner vitiate or consume the oxygen of the surrounding atmosphere. Let us contemplate the many advantages of a light of this nature in the sick-room, or in the crowded factory, and indeed in any crowded room, as also in mines or tunnels. The ordinary gas-light, on the contrary, consumes a large amount of oxygen, which is the vital air that, in common with living creatures, it requires to maintain existence, nay, it does more than assist us in consuming the oxygen, it *poisons* the air. The atmosphere is composed mainly of oxygen and nitrogen gases, in the proportion of one of the former to about *four* of the latter. It will be seen, therefore, how small a quantity of oxygen we have in any given volume of common air—only one fifth! Now, nitrogen is a deadly poison, being incapable of supporting either combustion or life; and when we deprive any given volume of air of its oxygen, it will be readily understood that we are setting to *four times the quantity* of the poisonous air, nitrogen.

But this is not all the harm that is done; the wax, the tallow, the oils, the camphene, and the coal from which the gas is distilled, belong to the class of compounds known to the chemist as hydrocarbons, so called because they are composed of hydrogen and carbon. In their combustion in every case *without exception, they by* oxygen unites with one portion of the oxygen in the surrounding air, and forms water, and their *carbon* unites with another portion of the oxygen, and forms a deadly poison, known as carbonic acid.

Thus we see that by our present methods of obtaining light, we not only deteriorate the atmosphere by abstracting from it the vital air, but, in addition, pour into it one deadly poison, and set free another four times its bulk. Nor is even this the end of the mischief: the surrounding atmosphere is also heated in proportion to the number and extent of the ordinary gas lights. There are probably few who have not experienced the ill effects of this in the lecture-room, the ball-room, or the theatre.

The lime-light, on the contrary, does not heat the atmosphere, and as oxygen is one of the gases it is provided with, it does not deprive the surrounding air of any oxygen, and as it has no carbon in its composition, it cannot form carbonic acid. It does not therefore require the assistance of the atmosphere, and can be burned just as easily in vacuo; in fact, the lime-light is produced by *ignition*, and the other lights we have spoken of are the result of *combustion*. As a proof of the total absence of heating power in the lime-light we may state that a powerful five-jet lime-light was some short time ago exhibited in the Society of Arts lecture-room, when it was proved that, besides the light being of a purer and *whiter* character than gas-light, it gave as great a light as the large chandelier which was afterward used. The lime-light lamp consumed thirty-six cubic feet of the combined gases in an hour, and did not increase the temperature of the room in that time, notwithstanding its crowded state. By way of testing the one light against the other, the chandelier was then turned "full on" for the second hour, and consumed five thousand cubic feet of gas in that time. It was curious to watch the increase of temperature, even after the first ten minutes, the heat and exhaustion of the atmosphere made the room almost unbearable long before the second hour was completed. The different quantities of gas required in each case, to produce the same amount of light, are worthy of remark. This is surely sufficient proof of its value in the lecture-room.

The advocate, however, of any rival to a source of light so cheap, so manageable, and so beautiful as gas, must be prepared to adduce something more in its favor than that the one is deleterious, and the other not so.

It is hardly necessary to inform our readers, that, in common with all other lights of great intensity, the lime-light may be used for signal lights, as possessing such extreme brilliancy, and cheapness giving it the advantage over its rivals, the electric light. Its use at sea, or by the coast-guard in case of wreck, and in all cases where human property are at stake, the expense is a matter of no consideration for a light of this nature still, when cheapness is combined with safety, the lime-light has precedence over all lights, its cost being represented by pence where that of others is in pounds. Owing to the total absence of color in its composition, it is not only applicable to photographic purposes, but also for printing fabrics. It is found to separate the most delicate shade of color, and, what is of more importance, it does not in the slightest degree injure the most delicate fabrics, or tarnish gilding.

The lime-light is produced by allowing a stream of mixed gases (one part of oxygen and two parts of pure hydrogen) to impinge upon the surface of a piece of lime, which is immediately raised to a white heat, and in this state of incandescence, we have what is known as the "lime-light." It may here be mentioned that if common coal-gas or *carburetted* hydrogen is used with oxygen to produce this light, the light will be as pure as when hydrogen is used, and it will cause twice the quantity of oxygen to be consumed, the relative proportions of oxygen and carburetted hydrogen being equal, the carbon of the carburetted hydrogen, as before explained, taking up a portion of the oxygen, to form carbonic acid.

Great, and apparently insurmountable difficulties met the discoverer, Lieutenant Drummond, owing to his mechanical appliances being incomplete; and it is only recently that certain improvements have been made in this respect by which these difficulties have been overcome. The greatest of these impediments was, that when the lime was too suddenly heated, it cracked and fell to pieces, or, as it is technically termed, "decrepitated," when, of course, the light immediately disappeared.

The light emitted from the ignition of the combined gases alone is very faint, though it is the hottest flame in chemistry and somewhat similar in appearance to the flame of spirits of wine. The dimension of the required volume of flame for heating the lime, is, however, so small, as to throw out but very little heat.

Our readers are, of course, aware that the two gases required for the lime-light—namely, oxygen and hydrogen—are the constituents of water, which is known to be the greatest antagonist and extinguisher of flame; the one element, hydrogen, being the most inflammable substance in nature, while oxygen, the other element, is the greatest known supporter of combustion. Water being decomposed into its elements by the agency of electricity or galvanism, is found to consist of hydrogen two parts, and oxygen one part; in fact, the exact proportions of these gases which are necessary to produce the lime-light. The present mode of lighting a lime-light is to allow a stream of lighted hydrogen to play upon the lime for a few moments; the flame is first of a pale yellow, and afterward a deep red, caused by the combustion of the metal calcium in the lime, the oxygen is now turned on, and gradually regulated, so as to produce the best result.

Westminster Bridge was recently lighted for some months with lamps of this description, each having two jets. The South-Foreland light-house has for three months been lit in the same manner, and in this case there were eight jets. There was never the slightest fault or failure, and the lamps were as easily managed as the ordinary gas lamp, they were lighted at sunset, and extinguished at sunrise, and never touched in the interim, thus showing how little attention they required. Liverpool landing-stage has also been lit with these lamps, and it was found to be of great assistance to vessels approaching the harbor at night. It was found also that the naked light penetrates fog to an immense extent—some hundred yards—while other lights are quite useless. It has, moreover, been proved that *neither wind nor rain can extinguish it.*

These lamps may be made of any size, from the modulated lamp for the drawing-room table, to the powerful light-house lamp, and the gases may be made with perfect safety in any sitting-room.

A single jet placed near the ceiling is sufficient to light an ordinary-sized room. The photometric value of the lime-light will of course depend upon the size of the jet, and the pressure upon the gases. Where the consumption of the gases does not exceed one and a half feet per hour, the light produced is equal to four gas-lights, each burning five feet per hour—or one and a half feet give an equal effect to twenty feet; but if the quantity of gases is increased to three feet per hour, a light equal to more than fifteen gas-lights, each burning five feet per hour, is obtained—or three feet give a light equal to seventy-five feet. Again, if the quantity be increased to six feet per hour, a light equal to sixty of the gas-lights is given—or six feet equal three hundred feet.

We may here mention, that after having made so many and such *great improvements* in the mechanical arrangement of the lamps, and the shape and size of the pieces of lime, and being able to obtain pure hydrogen in a variety of easy and cheap methods, we only wanted to make the other of the two gases—namely, oxygen—with equal cheapness. It has long been possible to make it with great facility, in a variety of ways, but the expense of its manufacture was, until lately, a great drawback to the general adoption of the lime-light. It has, however, recently been discovered that oxygen may be made very cheaply from nitrate of soda, the residue being of sufficient value to *nearly* cover the original cost of the material, the labor, and the wear and tear of apparatus. It is almost needless to add that hydrogen may be made very cheaply by passing super-heated steam over red-hot iron borings.—*Chambers's Journal.*

M. de Lesseps and the Ship Canal.

M. DE LESSEPS, we fear, has yet his work to do, but if he and his constituents are sanguine it is no business of ours to disturb their satisfaction. The question is one which events only can solve. The opinion in this country is that a Ship Canal across the Isthmus of Suez can never be equally opened for use or maintained in practical operation. There seems to be much the same opinion in Egypt itself, except among some of M. de Lesseps' own subordinates, who have succumbed either to disgust or despair. But in France the popular impression appears to be different. The project is still regarded with confidence and favour, the shares maintain their value, and the prospect is thought encouraging. When we express views of an opposite kind we are accused of jealousy, and believed to be intriguing against "French influence in the East." For all these feelings, however, so far as they have any existence, our neighbours have only themselves to thank. We should never have regarded the Suez Canal as anything more than a bad speculation if the French had not so pointedly told us that it was a spear aimed at the breast-plate of England. That idea would never have entered our heads if it had not been thus proclaimed. Left to ourselves we should have been at a loss to conceive how an enterprise which, if accomplished, would only bring the East nearer to the West, but which was never likely to be accomplished at all, could threaten our national security or detract from our national power. But when our neighbours thus advertised the object of the adventure we naturally cast about to see what was doing. We scrutinized the terms of the compact, scanned the obligations of the Viceroy, speculated on the occupation of Egyptian territory, and began to wonder whether one of the roads to India might not be stopped by a garrison instead of improved by a Canal. Time, however, has abated alarms, and perhaps all the more effectually because it has abated other expectations likewise. "The general opinion," says our Correspondent on the spot, "seems to be that the Canal scheme is gradually drawing on to its natural end."

The truth is, the roads to India are many, and the Isthmus of Suez does not offer the best. If the Canal could ever be constructed, it might be destroyed by competition before it had been open a month. The sea is no longer the surest highway. In these days it is a principle of locomotion that a steam should be exchanged for a railroad at the first practicable opportunity. It has been suggested that Southern mails should be landed at Falmouth to avoid a few miles of Channel. It has been argued that vessels bound to Madras should put their passengers ashore at Cannanore; and it any of our readers will look at a map they will soon see that even if the Egyptian Isthmus had been cut through, modern impatience would never be content with coasting the great angle of the Arabian peninsula by way of the Red Sea. There is an isthmus in those very parts still more important than the Isthmus of Suez. It is traversed by two memorable rivers, and one of them marks the shortest cut to that land of India which seems to act like a magnet upon Europe. The Euphrates Valley Railroad would leave the Suez Canal where a Suez Canal might leave *the route round the Cape.*

If a line were drawn from London to Bombay, it would go straight along the Euphrates, but nowhere near the Red Sea. The Suez Canal would save nothing in a sea journey if the sea journey ended on the coast of Syria. Such a route, M. de Lesseps may say, is all in the clouds. No doubt; but where is his Canal? If we are to rove about the realms of imagination, we may as well take one flight as another. If we are to discard the obstacles of space and nature, let us take the best conception possible. That conception is not the idea of M. de Lesseps, and it is for him to show that what he loses in perfection of design he gains in practicability. We wish him no harm. As a commercial people, we repine at the waste of so much good money that might have been better employed. The worst of the Canal scheme is that it effects no partial or incidental good. If it fails, as all in this country believe it will, to unite the Red Sea with the Mediterranean, it fails utterly. It does not even provide advantageous employment for labor. Native labor could be better invested in other pursuits, and it has been necessary, if report speaks truth, to impress it for this unattractive work.

Egypt's place in Universal History has been delineated by an able pen. It would be curious to speculate on India's place. That Southern headland of the Asiatic continent now acts with extraordinary influence on the politics of the world. The greatest European questions involve this element—in fact, are almost based upon it. The maintenance of the Ottoman Empire, the freedom of the Mediterranean, the destinies of the Greeks, and the prospects of the Russians, are all considered with reference to India. Foreign States believe that India is never absent from an Englishman's thoughts. The attitude we have assumed towards the American belligerents is ascribed solely and entirely to our secret views regarding India. And all this because, a hundred years ago, a few Anglo-Saxon merchants found themselves forced by the gravitation of their race to settle on one of the most ancient thrones of the world and bring a remote Western Island into living connexion with a great Asiatic Empire! All this because between two distant properties there must needs be an occupation road! It is a strange phase of history, but we do not think M. de Lesseps will do much to disturb it.—*London Times.*

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MADAME MALIBRAN.—She may not have been beautiful, but she was better than beautiful—insomuch as a speaking Spanish human countenance by Murillo is ten times more fascinating than many a faultless angel face such as Guido could paint. There was a health of tint, with but a slight touch of the yellow rose, in her complexion; great nobility of expression in her features, an honest, direct brightness of eye; a refinement in the form of her head, and in the set of it on her shoulders, more obvious in 1830 than it could be in 1860, when the desire of female beauty seems to be to obliterate that which so thoroughly expresses grace, high breeding, and character, the turn of the head. But Malibran had her own tastes and fashions in dress. She knew what suited her features. At a time when public singers indulged in crowning themselves with fearses of feathers and gigantic hats (the size which to-day seems so absurd in some creatures by Chalon), I remember to have seen her braided hair circled by a fine Venetian chain, with one small coin serving for clasp, above her forehead, and attracting every eye by the thorough fitness of the ornament to its wearer. Perhaps the chain indicated the character of a woman—if not in her art, in her life at least—thoroughly, fearlessly, and original. Her greatest character was her "Desdemona."