

illumination by artificial lighting paid little or no attention to what was known of the laws governing its application, much less to the structure of the eye.

During the last few—and particularly the last seven years however, there has gradually developed a school of students who have recognised the importance of connecting these things, and from this has evolved all that is now meant by the term "Illuminating Engineering." As to direct results of this, it may be said with a fair degree of accuracy that by applying the specialised knowledge thus obtained it is possible at the present time to get much better illumination than was possible five years ago, at about half the cost, and without the attendant injury to the eyes as was formerly the case where artificial lighting was much employed. To the merchant or manufacturer this means that his employes work at greater efficiency, producing better results than formerly; to the storekeeper it means that his store may be made attractive and his wares displayed better than ever before; to all concerned it means increased comfort, decreased eye strain, less headaches and other nerve troubles, and, in short, more congenial and hygienic surroundings. A subject, the study of which can secure such results, cannot be and is not now set aside as a "fad." It is deserving of much more attention than we can possibly give here. It can only lightly be touched upon in this paper, the main object of which is to direct special attention to it and to illustrate some of the means used and the results obtained.

It is not within the scope of this paper to go very much into the relative claims of the various light sources, whether gas, electric, acetylene or even coal oil lamps. Sometimes this amounts only to the question as to what is available, but where there is no such limitation, every illuminating engineer will select electricity, since electric light, besides being most hygienic is also the most easily controlled by reflectors, and for many other reasons.

A most interesting paper might be written on the subject of artificial lighting, going specially into the various forms of lamps which have been in use from time to time, leading up to the present methods of turning night into day. We would then be carried back to the clay bowl filled with oil into which twisted grasses were placed as wicks; then to the early candle, consisting at first of grasses around which grease was daubed. Slowly, slowly we could watch the trifling improvements in these lamps, including the development of the lantern, as they went about their work of filling the air with smoky fumes. Then we would be able to smile at the crudeness of those who first used petroleum in its crude state; we would watch the millions of gallons of this same petroleum being carried by miniature canals, into the rivers of the south as the quickest