HOLOPHANE ILLUMINATION

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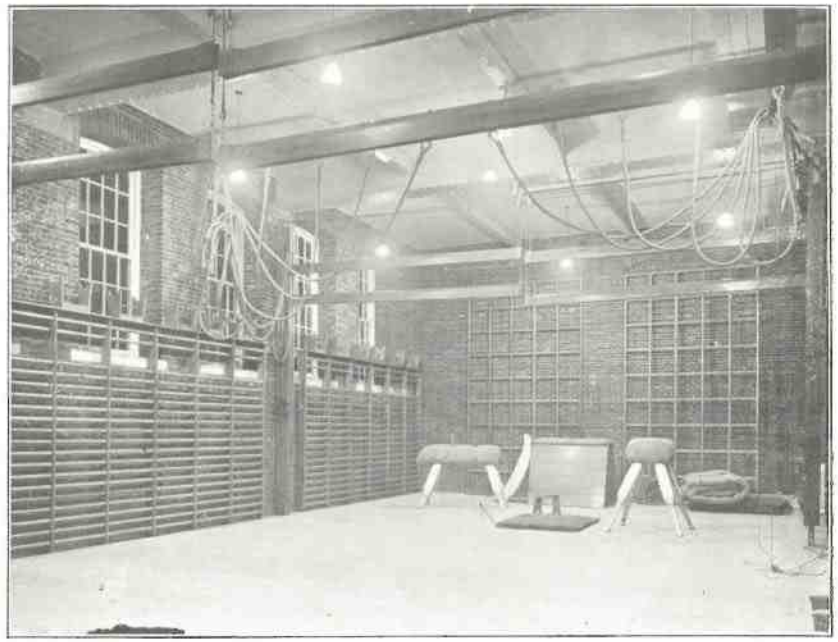
DECEMBER, 1912.

HOLOPHANE ILLUMINATION.

"The glass of fashion and the mould of form."—*Hamlet.*

Vol. III. **DECEMBER, 1912.** **No. 4.**

HOLOPHANE ILLUMINATION AT THE CITY OF LEEDS TRAINING COLLEGE.



The Gymnasium at the City of Leeds Training College illuminated by Tungsten Lamps and Holophane Reflectors.
(*Photo. taken entirely by artificial light.*)

THE HOLOPHANE System of Illumination has been widely used in educational institutions of every description. It is equally well suited to the illumination of school-rooms, laboratories, workshops, and gymnasiums.

A Publication for those interested in efficient illumination, and published by Holophane Limited, at 12, Carteret Street, Queen Anne's Gate, London, S.W., from whom additional copies may be had on application.

LIGHT NOTES.

THE ILLUMINATION OF A LARGE TRAINING COLLEGE.

THE City of Leeds Training College, the lighting of which is described on pages 41–45 in this number, is an excellent example of a large Holophane installation, over 3,000 points being installed. The photographs used in this number are selected with a view to showing varied conditions of illumination; each one presents a different problem, and required special treatment. The whole installation, in short, is a good illustration of what Holophane glassware can do.

A point to be noted is that all calculations of the illumination were made beforehand and the positions of the lights settled actually before the foundations of the building were laid. In every case the results came out almost exactly as expected, thus showing that it is quite possible to predict illumination beforehand provided the data regarding the distribution of light from lamps and reflectors are accurately known. The fact of the lighting arrangements being decided at such an early stage was a decided advantage. It is naturally not so easy to get the best conditions of illumination when advice is sought *after* the rooms are papered and furnished and the positions of the outlets fixed; however, even when this is the case much can be done with Holophane reflectors.

SHOW WINDOW LIGHTING.

Some additional good examples of the use of Holophane reflectors for Show Window Lighting are also given (pp. 46–48). Much attention is being given to this subject all over the country, and every merchant vies with his neighbour in producing novel and striking effects.

Few things are more important to secure a good display than the method of lighting adopted. The focussing type of Holophane reflectors is found particularly useful for concentrating the light on the goods in the window and the method of putting an additional high candle-power unit in such a reflector at one corner of the window, so as to throw a diagonal beam of light, is being quite generally adopted. This serves to remove any tendency to "flatness" in the effect, and often gives just that additional degree of shade needed.

In the last number reference was made to the plan, adopted in many American cities, of organising shop lighting competitions. It is interesting to note that the merchants in the Tottenham Court Road are arranging a shop window display at Christmas time. Prizes to the value of £87 have been offered, window-dressing experts from the various large stores in London will judge the windows, and the lighting will be an important element to be considered. In addition £50 has been subscribed to provide Christmas decorations for the streets. The contest is said to be causing much interest among the tradesmen in London.

LEGISLATION ON FACTORY LIGHTING.

It is well known that a campaign for the improvement of industrial lighting has been in progress in Europe for some time. France has already appointed a Government Committee to deal with this subject, and according to the *Illuminating Engineer* (London) a Departmental Committee is to be formed in this country almost immediately with the same object. Meantime it may be noted that a bill has been proposed by the New York City Factory Commission in which good lighting will be demanded in general terms, and it is expected that this will take effect from October 1st, 1913.

There is no doubt that the activities of the Illuminating Engineering Societies in this country and in the United States will have a most stimulating effect on industrial lighting. In future, no doubt, there will be legislation on the subject, and it will be considered as natural to expect good lighting as it is to demand fresh air, and pure food and water. People are already becoming accustomed to the idea that a certain illumination is necessary on the table or bench where work is carried on. They will, therefore, be glad to avail themselves of good advice in order to make sure that their lighting complies with the recommendations of authorities. Naturally those systems of lighting which have been developed on scientific lines, and which enable illumination to be calculated with precision beforehand, will be in great request.

ADVANTAGES OF SEMI-INDIRECT LIGHTING.

At the last meeting of the Illuminating Engineering Society the subject of indirect lighting was discussed, and the new Holophane semi-indirect unit was exhibited. On page 46 an illustration of a room, lighted by a single unit of this kind, is shown, and it will be noticed how completely the light penetrates into every corner of the room, notwithstanding the fact that it is lighted by a single 55-watt lamp.

At the meeting referred to some discussion took place regarding the efficiency of indirect methods of lighting. It is difficult to imagine a more efficient type of unit than this inverted Holophane prismatic glass bowl. The loss of light is reduced to an absolute minimum. About 75 per cent. of the light is thrown on the ceiling, and practically all the rest of the light is transmitted through the glass into the room. As is well known, the amount of light actually absorbed by clear glass of this kind is exceedingly small.

In addition the presence of this transmitted light is just enough to take away any impression of flatness in the installation. The bowl appears somewhat brighter than the ceiling; and the small amount of direct light provided gives an agreeable density of shadow.

A GOOD HOLOPHANE SEMI-INDIRECT LIGHTING INSTALLATION.

A Dining Room lighted by one Holophane Semi-indirect Unit with one 55-watt Lamp.

THE above illustration shows the excellent effects that can be secured with the new Holophane semi-indirect unit. The light is diffused into every corner and although, as a matter of fact, the surroundings in this room are rather dark in character, it appears quite brightly lit. The room is approximately 14 by 12 feet and is lighted by a single 55-watt lamp. The energy consumed is therefore *under* 0·4 *watts per sq. ft.* of area and yet the illumination on the table is 2 foot-candles, only diminishing to 1 foot-candle near the walls of the room.

The photograph shows that abundant illumination is provided for the walls of the room, and the fact of some light being transmitted through the glass removes any impression of "flatness" such as people occasionally complain of in the case of total indirect lighting.

THE LIGHTING OF THE CITY OF LEEDS TRAINING COLLEGE.

Fig.1. Library illuminated by Tungsten Lamps and Holophane Reflector Bowls.

(*Taken entirely by artificial light.*)

THE building of this large and well-equipped institution began in 1910, and it was opened in September, 1912. Even before the foundations were laid the method of lighting had been decided upon, information given as to the character of the walls and ceilings and the position of the furniture, and the positions of the light sources determined from the plans. The fact of the method of illumination being decided at such an early stage was naturally a great advantage.

The lighting of by far the greater portion of the building is electric Tungsten lamps and Holophane glassware are employed practically everywhere, upwards of 3,000 pieces being installed. Many of the rooms presented quite interesting problems in lighting The gymnasium, which is illustrated on the front page of this issue, required an exceptional amount of energy owing to the walls being dark red in colour and reflecting comparatively little light; yet it was necessary to allow a certain amount of light to the walls

and not to concentrate the entire light downward. In trapeze work high up in the room a fairly strong vertical illumination is often needed. It will be seen that the lights are studded on the ceiling. Ten 100-watt lamps in Holophane I reflectors are employed. The area of the room is 1,570 sq. ft., and the consumption of electrical energy therefore about 0·6 watts per sq. ft. The illumination on the ground level is 1·5 foot-candles practically everywhere, and the vertical illumination on the wall itself about 1 foot-candle.

In the library, shown in Fig. 1, two distinct methods of lighting are used. The reading tables are spaced down the centre of the room and over these four 200-watt lamps in Holophane Reflector Bowls are spaced. The illumination on these tables is about 3 foot-candles. Down the sides of the room there are bookshelves which project into the room in between the windows and midway between each pair of racks there is a Holophane Reflector containing a 25-watt Tungsten lamp, arranged at the best height to give uniform illumination. The total floor area of the library is 1,800 sq. ft. In addition to the four central bowls noted above there are fourteen 25-watt lamps in all, down the sides of the room.

Our next illustration, Fig. 2, shows what is known as the "Criticism Room." This does not call for any special comment. The photograph does justice to the excellent diffusion

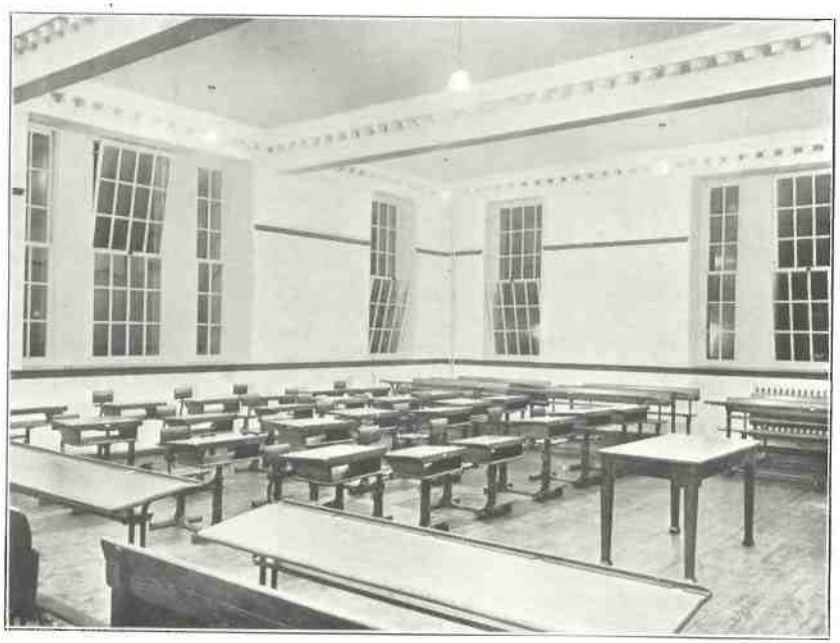


Fig. 2. "Criticism Room" lighted by Tungsten Lamps and Holophane Reflectors. (Note the even and well diffused illumination.)

(*Photo. taken entirely by artificial light.*)

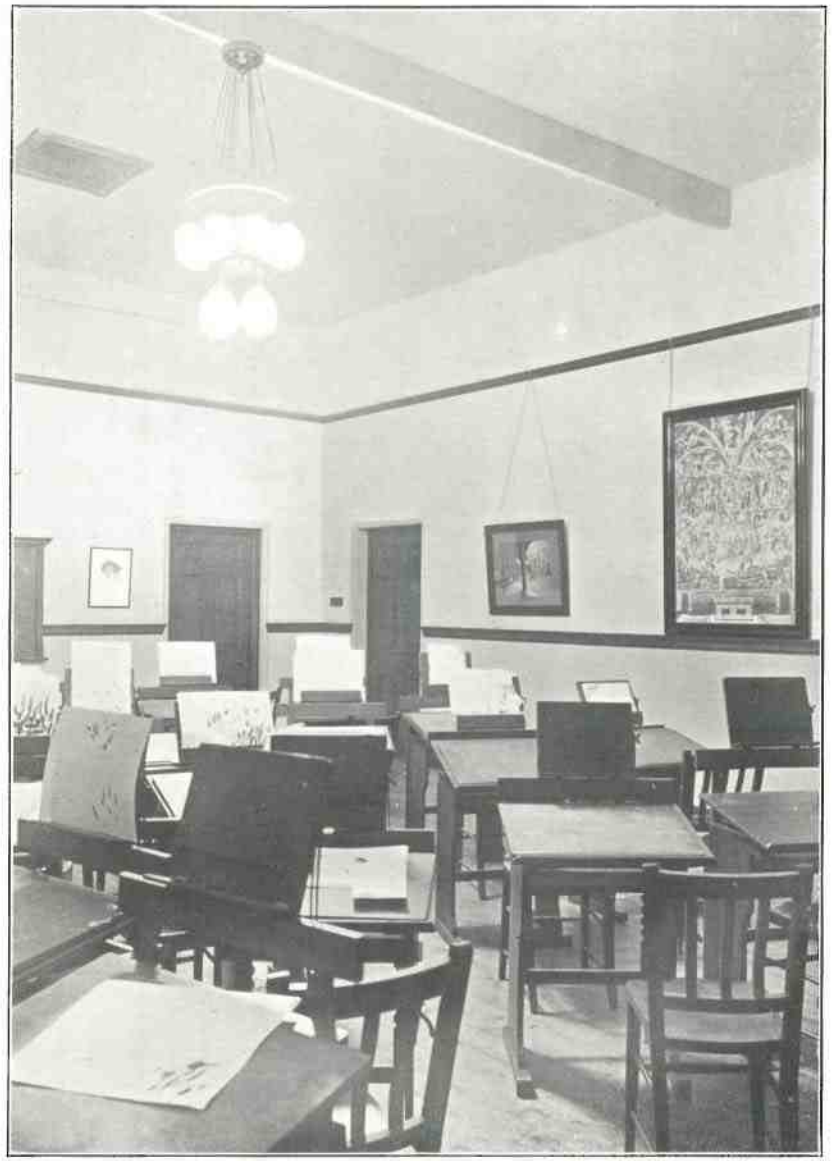


Fig. 3. Art Room illuminated by Tungsten Lamps and Holophane Globes.
(*Photograph taken entirely by artificial light.*)

of light and the illumination on the benches is 3·5 foot-candles.

The method of illumination in the Art Rooms (Fig. 3) deserves special notice. These rooms are lighted by a series of twelve 50-watt lamps, placed in Holophane globes, and the switching arrangements enable either 4, 8, or 12 lamps to be turned on at once. In this way the illumination can be altered, values up to 15 foot-candles being obtainable. But the chief object is to vary the intensity and sharpness of the shadow. The hardness of a shadow depends on the area occupied by the source of light. In modelling and art work very abrupt harsh shadows are rarely desired. Consequently we provide a series of Holophane globes in a cluster. The shadow is always soft but its depth can be graded considerably by turning on more lamps and extending the area of the light-giving surfaces. This arrangement has found great favour in Art schools in the Midlands.

It should be mentioned that in this room the seats and desks are all movable and students can arrange them just as they like. As a rule they group themselves round the model who takes up a position in the centre of the room underneath the chandelier where there is a very strong illumination.

The wood workshop shown in Fig. 4 is lighted by fourteen 50-watt lamps in F type Reflectors. A specially high illumination was considered necessary for this class of work and the value on the benches is as much as 8 foot-candles. The consumption of electricity for this room works out to about 0·8 watts per square foot of floor area—a very low value in view of the high illumination provided. It will be noticed that there is also ample illumination on the blackboard (about 3·5 foot-candles) and the diagram chalked on the board comes out very distinctly in the photograph.

In the chemical laboratories focussing reflectors are used for the central benches, intensive reflectors for the side ones. Twenty 25-watt tungsten lamps are used in all and the illumination on the benches is 3·4 foot-candles. This room receives about 0·6 watts per square foot. There is also plenty of light on the shelves carrying the bottles at the side of the room.

In this note only a few of the most interesting rooms have been described, but there are many others in which exceedingly good lighting has been provided that are necessarily omitted.

The City of Leeds Training College may stand as an excellent example of a modern educational institution where everything—including the lighting—is up to date, and there is an interesting variety of problems in illumination to be studied. We understand that the lighting has given great satisfaction locally and the arrangements do great credit to the Consulting Engineer, Mr. J. Fulshaw Watson, M.I.C.E., M.I.E.E. The contractors for this important lighting installation were Messrs. S. Dixon & Son, Swinegate, Leeds.

Fig. 4. Workshop illuminated by Tungsten Lamps and Holophane Reflectors. Note the distinctness of the diagrams on the blackboard.

Fig. 5. Chemical Laboratory lighted by Tungsten Lamps and Holophane Reflectors. Abundant illumination on tables and shelves. (*Photographs taken entirely by artificial light.*)

HOLOPHANE ILLUMINATION IN A CHEMIST'S SHOP.

IN the last number of *Holophane Illumination* an account was given of the lighting of the pharmacy department of Messrs. Quinn & Axten's well-known store at Brixton.

The two illustrations facing this page refer to another chemist's shop, that of Mr. A. Ness, in the Brixton Road (London, S.W.). The main body of the shop is approximately 22 by 22 feet, and is lighted by nine 55-watt lamps in focussing reflectors nine feet up. The consumption of energy is therefore about 1 watt per square foot and the illumination over the counter is excellent—as much as 7 foot-candles being obtained.

The second illustration refers to the window, the lighting for which is separate, and it will be seen that here, too, a bright and effective illumination has been obtained.

The lighting scheme for this shop was designed by the South London Electric Supply Co., Ltd.

LIGHT AND ILLUMINATION: THEIR USE AND MISUSE.

IN the last number of the *Illuminating Engineer* (London) a popular summary of simple rules of good lighting has been printed under the above title. This is an European version of "The Primer on Illumination" previously issued by the American Illuminating Engineering Society, and is to be reprinted for circulation. The rules given are of a tentative nature but should prove a valuable guide to those concerned with lighting. The issue of simple recommendations expressed in popular language is a most important step and should do much to popularise good illumination among the general public.

Much of the advice given relates to the choice of shades and reflectors. Concentrating and Diffusing types both have their respective fields of utility and a series of photographs is given showing the comparative effects of a bare lamp, diffusing translucent reflector, and opaque concentrating reflector.

The Holophane spacing rules are based entirely on the knowledge of what each reflector can do. By their aid one *knows* that with certain lamps and reflectors a certain definite even illumination can be secured. When dealing with unscientific forms of shades, for which such data have not been determined, one is quite at a loss to say what the value of the illumination will be, and how it will be distributed.

The requirements now being asked for in schools, factories, etc., demand a certain illumination on the desk, table or bench and by the aid of Holophane glassware the proper value can readily be obtained.

Two photographs of a chemist's shop lighted by Tungsten Lamps and Holophane Reflectors.
(Taken entirely by artificial light.)

AN ATTRACTIVE SHOP WINDOW LIGHTED BY TUNGSTEN LAMPS AND HOLOPHANE REFLECTORS.

THE above is a photograph of a shop window forming part of the premises of Messrs. Barrance & Ford, Ltd., of Hastings. The photograph was taken at night-time entirely by the artificial light and shows well the uniformity of illumination secured. As in previous shop lighting installations described, the lights are concealed from view and are covered by reflectors which concentrate by far the greater part of the light on the goods in the window. The contents of the window are light in character and "stand out" in marked contrast with the relatively dark surroundings.

A special use was made of 100-watt lamps in focussing reflectors fitted in the top front corner of the window and throwing the light diagonally across. These are used with good effect in the fading afternoon light.

The installation was carried out by Mr. W. F. Brown (19, Havelock Road, Hastings) and much satisfaction has been expressed at the effect produced, which proved fully up to the client's expectations.

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