

THE LIGHTING OF HOSPITAL OPERATING TABLES.

A lecture on this subject was recently delivered at a meeting of the Illuminating Engineering Society, held in the Lecture Theatre, Home Office Industrial Museum, Horseferry Road, London, S.W.1, under the chairmanship of Dr. J. W. T. Walsh (Director of the National Physical Laboratory, Teddington). The lecturer was Mr. Ernest Stroud.

During the course of his remarks, Mr. Stroud said the problem of Hospital Operating Table Lighting called for a very high intensity of concentrated illumination which must be practically shadowless, but must give a high vertical component of intensity, ensuring penetration into deep cavities.

The super-intensity must be confined to the wound area, at the same time, sufficient illumination must be given around the room to prevent eye-adaptation difficulties, and yet not so much as to compete with the wound illumination.

The high intensity should be produced without striations or glare, and the light unit should be as unobtrusive as possible.

To fulfil these specific conditions, a special unit had been developed, consisting of a number of prismatic plates formed into a panel or false ceiling of relatively large area. The prism construction of the plates was such as to refract the light rays which reach them, into a converging beam of high intensity. Each plate was 12 in. square and was formed with quarter-concentric prisms. They were used in groups of four, each group forming one large lens 24 in. square, having a 12 in. focus.

The complete unit consists of either 15 groups of four plates each approximately 10 ft. by 6 ft.; 18 groups, 12 ft. by 6 ft. or 21 groups, 14 ft. by 6 ft. Over each group of plates

is fitted a lamp and reflector in such relation to each other that the maximum beam strikes the centre of the operating area, thus with a 15 group system, the combined 15 concentrating beams coming from different directions, build up and focus their rays over the pre-determined area.

The method employed differs from a reflector system inasmuch that concentration from the large refracting area secures adequate diffusion, avoids harmful shadows and absolutely avoids glare. The overflow from the lens system gives sufficient general illumination to avoid contrast glare and the optical characteristics of the lens are such that a three-dimensional soft or dissolving spot is developed to take account of varying thicknesses of bodies and heights of tables.

The illumination results taken with a 15 lens system employing fifteen 150-watt lamps, *i.e.*, 2,250 watts, are shown on the curves (see diagram), the maximum horizontal illumination being 1,050 ft. candles, the illumination on a plane 45° from the vertical 725 ft. candles, and the illumination on a vertical plane facing the centre of the table 175 ft. candles, and these high intensities without any semblance of glare.

The smooth sides of the plates are fixed towards the light source and the complete unit being totally enclosed and forming, as it does, the ceiling of the operating theatre, there can be no collection of dust particles and no obstruction projecting into the theatre. (See illustration of complete unit.)

Hospital construction and equipment are matters of interest to all members of the nursing profession, and especially they should acquaint themselves with the latest devices which may be of assistance to the surgeon in the operating room. In this connection above all else the effective lighting of the operating room and table is the most important. It is, therefore, with special pleasure that we publish the above article.

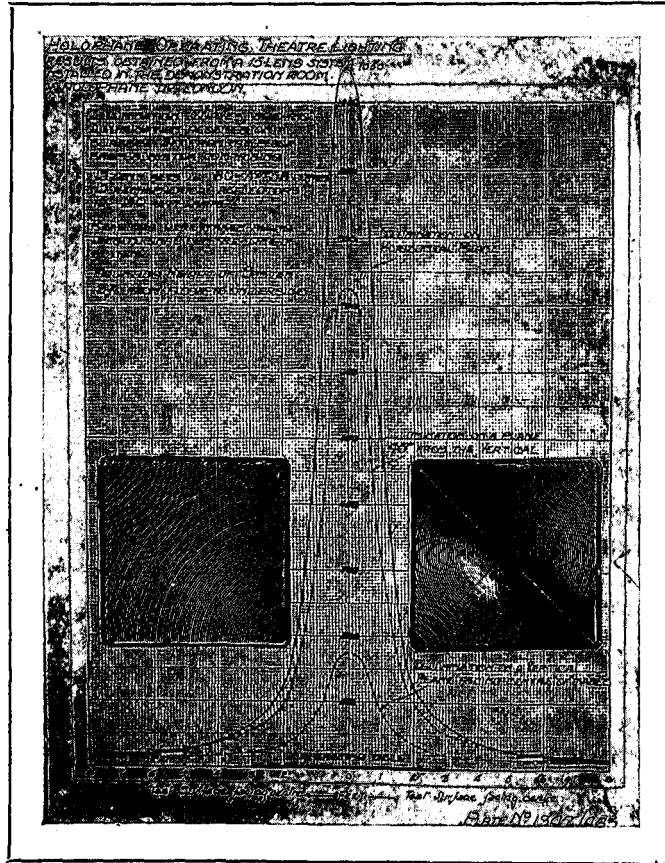


Fig. 1.—Showing conditions of illumination obtained from a 15 lens Operating Table Outfit.

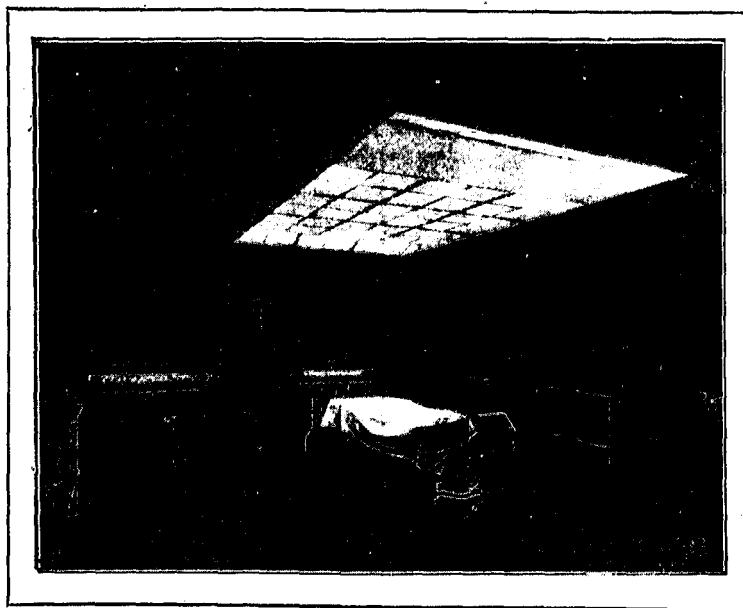


Fig. 2.—A general view of an Operating Room lighted solely by the special unit described.

[previous page](#)

[next page](#)