

well-designed fluorescent system may be obtained at little additional cost,<sup>56</sup> and in many cases the total cost per footcandle of illumination is lower than with a filament system.

#### A. MAINTENANCE

A good lighting system requires a good maintenance program, which includes periodic cleaning<sup>57</sup> of lamps and fixtures, repainting of room surfaces, and replacing burned-out lamps.

Dirt and dust accumulation on lamps and fixtures<sup>58</sup> can reduce light output by as much as 50 per cent (Figure 26). Not only is the generated light that is not

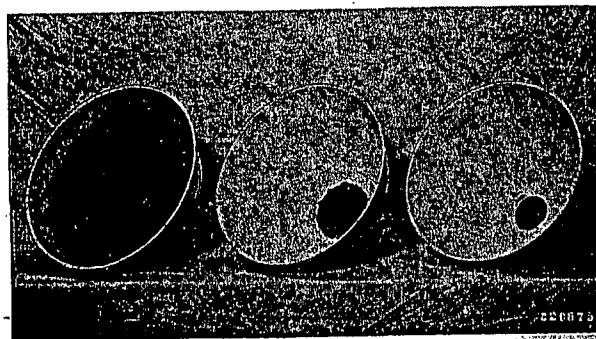


Figure 26. The effect of ventilation on dirt accumulation on reflector surfaces. Dust and dirt settle onto the reflector (left) when no ventilating holes or slots are present. Holes near the top of the reflector (center) provide an exit for the dust laden air, warmed by the lamp to pass through. Portion of reflector below the holes is thus kept cleaner. Holes placed in the hub (right) provide this same chimney effect keeping the entire reflector surface cleaner.

being utilized expensive, but also the loss in illumination may result in lower production and an increased accident rate. For servicing high mounting installations in large areas it is sometimes economical to provide built-in catwalks or movable platforms suspended on a cable (Figure 27) or the crane rails. For fixtures that are mounted lower, scaffolds, movable platforms, or fork trucks are the usual methods employed. Whenever possible, all cleaning equipment, wash tanks, and replacement lamps should be within easy reach of the maintenance man to conserve time and cost of cleaning and relamping. In the average industrial

<sup>56</sup> A. C. Barr and C. L. Amick, *Fundamentals of lighting cost analysis*, Illum. Eng. 260 (1952).

<sup>57</sup> Lighting maintenance—cleaning, *Bulletin LS-166*, Lamp Division, General Electric Co., December, 1954.

<sup>58</sup> C. E. Egeler and R. F. VandenBoom, *Maintenance of industrial lighting*, Illum. Eng. 46, 522 (1951).

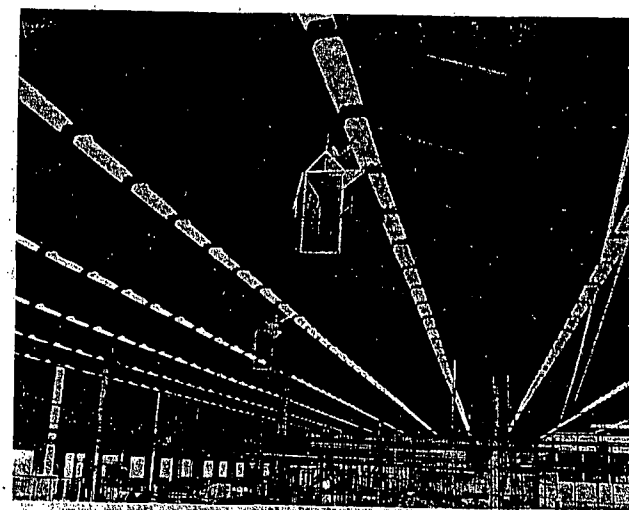


Figure 27. Maintenance of fluorescent fixtures at high mounting is simplified by a system of maintenance cages suspended from cables. Cage, including maintenance man and cleaning equipment, can easily be pulled forward or back by the operator.

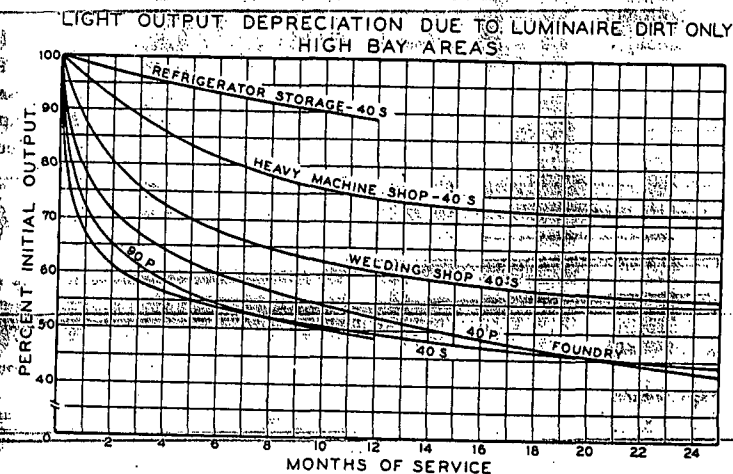


Figure 28. Light-output depreciation due to luminaire dirt only, in heavy industry. P and S represent porcelain enamel and synthetic enamel fixtures, respectively. Wattage of fluorescent lamps used is indicated by the numbers.