# THE HEWITT MERCURY VAPOUR LAMP.

The British Westinghouse
Electric & Mfg. Co., Ltd.,
London and Manchester.

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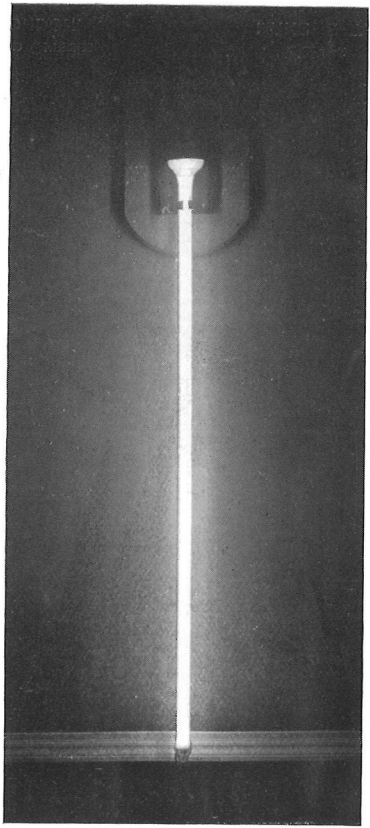
MANCHESTER.



# THE HEWITT MERCURY VAPOUR LAMP,

Which is now on exhibition at the London Offices of the British Westinghouse Electric & Mfg. Co., Ltd., in Norfolk Street, presents an entirely new departure in the field of electric lighting.

It is the invention of Mr. Peter Cooper Hewitt, of New York, grandson of the late Peter Cooper, the famous American philanthropist, and son of Mr. Abram Hewitt, who for many years has been one of the most conspicuous and honoured figures in American public life.

The exhibition of the light in London at this time is due to the fact that the question of lighting the tunnels of the underground railways has now assumed great importance. The management of the District Railway having made many experiments, as yet without entirely satisfactory results, so far as the

ordinary incandescent lamps are concerned, some of the Mercury Vapour apparatus in use in Mr. Hewitt's laboratory in America was hurriedly gathered together, and brought to this country for the purpose of illustrating to the District Railway engineers the possibilities of this new system. And it was thought that the Hewitt Static Converter, which has very great possibilities, although it has yet to be put into commercial shape, would greatly interest people contemplating an extensive use of electricity for power and other purposes. Reference to this Converter is made in another pamphlet.

The Hewitt patent rights for the entire world belong to the Cooper Hewitt Company, of New York, in which Mr. George Westinghouse has a preponderating interest. Works for the manufacture of these inventions are being equipped in New York, and will undoubtedly be established in connection with the Westinghouse Companies in the various countries of Europe.

The Hewitt Static Converter was taken

hurriedly from Mr. Hewitt's laboratory, more for the purpose of showing its size and construction than with any idea that a practically useful demonstration could be made at such short notice in an exhibition room.

## THE HEWITT MERCURY VAPOUR LAMP.

The colour of the light produced by the Mercury Vapour Lamp creates at once a profound impression, due to the absence of red rays, which, for æsthetic purposes, many persons would no doubt prefer. But the introduction of red rays into this lamp could, after all, serve only a sentimental effect, for **the Hewitt Light** is far more suitable for many important purposes than any light containing red rays could possibly be.

All other forms of artificial light now in practical use depend for their light-giving

properties upon the incandescence of a solid —usually carbon—either in the form of a filament, as in the ordinary glow lamp, or in a finely divided state, as in arc and gas lamps. The Mercury Vapour Lamp, as its name implies, derives its light from the gas or vapour of mercury, which, by the passage of an electric current, is raised to a high state of incandescence.

The light emitted by this vapour, though almost entirely lacking in red rays, and therefore producing a considerable distortion in colour values, is for many purposes greatly superior to the ordinary electric light.

The vapour being under a vacuum, there is absolutely no consumption of the light-giving element, and the lamp, unlike all other illuminants of high power, requires no trimming or attention of any kind. Lamps have been run continuously two hundred days for ten hours per day. The expense of operating the lamp is therefore extraordinarily low, the more so as its efficiency is very high, being twice that of the

enclosed arc, and eight to ten times that of the incandescent.

Owing to the form in which the lamp is constructed and the extreme diffusion of light obtained, it may be employed to great advantage for purposes where a considerable illumination is required, and where, on account of its sharp and heavy shadow, the ordinary arc light is unsatisfactory. The candle-power per sq. inch is $\frac{1}{20}$th that of the incandescent, and $\frac{1}{3000}$th that of the arc.

In addition to the advantages of diffusion, the absence of red—well known as the colour most exciting and fatiguing to the eye—makes the light an almost ideal one for work where an absolute comparison of true colour values is not required.

A number of applications for which the light is particularly well adapted, and superior to other illuminants, are the following :—

(1) For all places where goods are handled, as the delivery and receiving departments of factories, wharves, docks, railway yards, storehouses, etc.

(2) For the lighting of railway tunnels and cuts, where the lamps could be run in series, illuminating long stretches of track. The white-washed walls furnish reflectors well suited to the tube, and the dazzling effect of lights containing red rays would be almost entirely eliminated. The extremely long period during which the lamp will run without attention particularly recommends it for this class of work.

(3) For streets, and passage-ways of mills, etc., and all roadways where accurate colour values are not essential.

(4) For the offices of draughtsmen and architects, and all offices where close application to books and papers is required. The ability to read and write under the illumination of the Vapour Lamp for longer periods and with less fatigue than with any other lamp, has been conclusively proved by numerous tests.

(5) In the general interior lighting of mills and factories, and particularly for the illumination of all machinery where

continual attention to the work is required.

(6) For all forms of metal work requiring care and accuracy, as, for example, in the shops of tool-makers and mechanics, gold and silver-smiths, engravers, jewellers, etc., etc. The light is splendidly adapted for bench work, as, owing to the form of the lamp, the hand and tools of the worker cast almost no shadow, and he can "see round his work."

One of the greatest fields of application of the lamp is for all sorts of photographic purposes. The illumination being so diffused and the light composed almost entirely of the so-called "actinic" or chemical rays, it furnishes for this work, where there has never been a satisfactory illuminant, an almost perfect substitute for daylight.

Comparative tests made by experts have shown the advantages of the Hewitt Lamp as an artificial light :—

(1) For portrait photography. The

time of exposure being constant at all times, the photographer can devote his entire attention to the artistic arrangement of lights and shadows, and effects even superior to those in daylight can be obtained.

(2) For photographing interiors as a substitute for the flashlight.

(3) For photographic reproduction, as employed by photo-engravers and lithographers. Hewitt Lamps consuming eight ampères will do quicker and more satisfactory work than arc lamps taking twenty-five.

(4) For photographing wash-drawings, where it is the only artificial light giving as good results as daylight.

(5) For bromide enlargements and lantern slides, no condenser being required.

(6) For all silver and platinum prints.

(7) For blue prints of all kinds. The form of the lamp adapts it particularly to the new mechanical devices for this

work, such as glass cylinders, revolving drums, &c. For printing the light has been proved to be from four to six times as efficient as the focussing arc.

Among the further special uses of the vapour lamp are :—

(1) Advertising purposes. In addition to its novel form and colour the lamp has the property that the tube can be bent into any shape desired, and letters of continuous brilliant light form a most striking and effective display for an electric sign.

(2) In the artificial forcing of plants and vegetables in hot-houses. Experiments in this line have shown remarkable results, and plants have been forced most successfully.

(3) In scenic effects on the stage, or interspersed among green foliage in private houses or halls. In combination with artificial waterfalls, and with palms and other plants, very beautiful and artistic effects have been produced.

(4) In bleaching and other processes requiring a strong chemical light.

Experiments now being conducted seem to show that as a germicide in certain skin diseases the light has properties similar to the so-called Finssen rays.

The colour of the light may be altered by the use of certain dye-stuffs, in reflectors or screens; or, again, by combining with red lamps, so that a soft and pleasing light for general indoor illumination is obtained.

The life of the lamp is theoretically infinite. Lamps used over 2,000 hours show but a slight decrease in efficiency. It is usual, however, at the end of 1,200 or 1,400 hours, to open the tube and wash and re-exhaust, by which simple process the lamp is made for all purposes as good as new.

The lamp may be made in any shape or size desired, from $\frac{1}{8}$ inch in diameter and 3 inches in length to 3 inches diameter and 12 feet in length.

A range of illumination may be obtained

varying from 16 candles to several thousand, according to the size of the tube.

The lamps may be connected in series or parallel. They may be operated on any direct current voltage between 50 and 500 volts, and will allow a regulation of as much as 10 per cent. variation.

The current consumed may be varied from ·2 to 20 ampères.

The efficiency of the light is about ½ watt per spherical candle-power, and under favourable circumstances as high as .3 watt per candle power.

The lamps reach their full candle-power almost immediately on starting, and give an absolutely steady light.

There is almost no radiant heat from the lamp, and the temperature of the glass is about that of an incandescent lamp globe.

The most conclusive proofs of the merits of any new invention are the results obtained from its operation under the conditions of actual service. The **Hewitt Lamp** has been used by a number of representative

firms in New York for some months, and has in every case more than fulfilled the most optimistic predictions of those who have introduced it.