A PROTECTIVE CABINET FOR THE POST-MORTEM EXAMINATION OF INFECTED ANIMALS

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(With Plate 8 and 1 Figure in the Text)

A special cabinet was designed to protect the operator, during post-mortem examinations on animals infected with pathogenic organisms, against the risk of inhaling infected material and the surrounding area from becoming contaminated. The cabinet was suitable for small animals including mice and guinea-pigs.

An open-fronted cabinet, Text-fig. 1, 60 in. wide, by 28 in. deep, by 72 in. high over-all, was constructed with a hollow rear wall (1), this cavity forming part of an air duct (2) connected to an extract fan to provide a continuous flow of air through the working aperture. A full-width slot (3) leading into this cavity promoted smooth air-flow with negligible eddying. The effluent air, which might be infected, was ducted to the main air-cleaning and sterilizing plant in the Institute before discharge to atmosphere.

Two 18 in. diameter turn-tables (4) were mounted side-by-side on a movable plate (5). The turn-tables were covered with renewable wax-impregnated cork disks (6), and the front working surfaces built up flush with the surface of the turn-tables to enable the operator's hands to lie at a natural angle. Each turn-table will accommodate twenty mice or four guinea-pigs. The animals are pinned to the cork surface of turn-tables which can be manually rotated so as successively to bring each animal into position for dissection. The whole working surface including the turn-tables can subsequently be lowered into a shallow tank (7) beneath. This tank is kept filled with Lysol and the table is liberally pierced so that the whole assembly, together with operating instruments and cadavers, is quickly covered when immersed, under control of a lever system (8). A perforated heavy metal lid is placed on each turn-table before immersion to prevent loose organs floating into the tank. After the cadavers have been immersed in Lysol for not less than 2 hr., the whole assembly is raised again, the soaked cadavers are placed in buckets and autoclaved and the instruments sterilized. In the raised (operating) position the turn-table assembly is rigidly located by pins (9). The lever system is actuated by a hand-crank mounted on the side of the cabinet (see Pl. 8, figs. 1, 2).

A plate-glass screen (10) inclined at 45° safeguards the operator against infected droplets and direct splash and at the same time provides a full view of the operating area. A $5\frac{1}{2}$ in. wide opening below the edge of the plate-glass screen admits the operator's forearms. The air velocity through this opening is not less than 300 ft./min. A removable sliding baffle (11) (not shown in the plates) covers half the length of the gap in order to concentrate the air stream.

Interior lighting is by a 4 ft. 40 W. fluorescent tube (12), entirely enclosed and protected against the disinfectant spray. Sterilization of interior surfaces prior to

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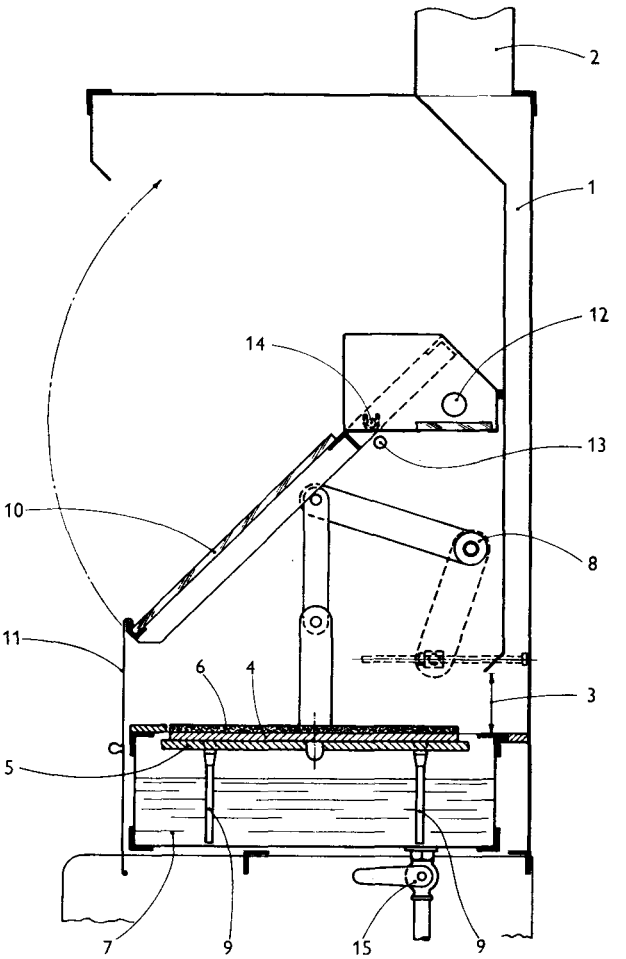
washing down with disinfectant is achieved by irradiation by ultra-violet emanating from a 3 ft. 30 W. ultra-violet germicidal tube (13). Ultra-violet irradiation is maintained for 30 min. by an automatic time-switch, the plate-glass screen providing adequate ultra-violet absorption during this period. The screen was hinged at (14) and can be latched in the raised position during preparation or cleaning-down. All switches, ultra-violet and fluorescent lamp control equipment were mounted on a separate external panel.



Text-fig. 1. Schematic sectional view of cabinet.

The ventilation for this apparatus is obtained from the special ventilation system provided for the isolation units and use is also made of the main virulent air sterilizing plant in the Institute. The simple type of ventilation and filtration of effluent air described by Williams & Lidwell (1957) for protective cabinets could nevertheless be adapted to a post-mortem cabinet of the type described here.

Materials used in the construction of this apparatus were chosen for resistance to the disinfectant used for washing-down; 'Monel' metal being used throughout except for some small components of stainless steel, but several alternative

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Fig. 2

Fig. 1

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materials are available in addition to stainless steel, including plastics and plastic-covered metals; in fact the front edge of the tank was built of 'Tufnol' to offer low thermal conductivity for the operator's wrists. Drainage from the tank of disinfectant is controlled by a lever-operated Saunders diaphragm valve (15) and discharges into an open channel in the floor. The cabinet was supported on glazed brickwork with the working surface at a height of 30 in. above the floor, which is convenient for a sitting position.

The particular apparatus described has been in use in the Tuberculosis Isolation Unit at this Institute since 1951 where many thousands of post-mortems on small animals have been carried out.

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REFERENCE

WILLIAMS, R. E. O. & LIDWELL, O. M. (1957). A protective cabinet for handling infective material in the laboratory. *J. clin. Path.* **10**, 400.

EXPLANATION OF PLATE

Fig. 1. Cabinet ready for use.
Fig. 2. Cabinet with screen raised for preparation work or cleansing.

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