PORTABLE EYE IRRIGATION UNIT*

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THE introduction of conveyor belts surfaced with polyvinyl chloride compounds in the mines as a safety measure against the fire hazard may give rise to irritant fumes containing hydrochloric acid if such belting is exposed to high temperatures. Cases have been recorded where fumes have caused irritation to the eyes of personnel of mines rescue teams.

To reduce the risk of injury to these persons, immediate irrigation of their eyes is an important factor. To facilitate the rendering of appropriate first-aid treatment, this portable eye irrigation outfit has been designed for underground use. It is intended that it should be kept with the mines rescue team, and be carried with them below ground as part of their emergency first-aid equipment. The irrigation unit can also form part of the normal medical treatment centre equipment for use for eye irrigation, irrespective of the cause.

CONSTRUCTION

The irrigation outfit is housed in a wooden box $12\frac{3}{4}" \times 6\frac{3}{4}" \times 5\frac{1}{4}"$. It has a hinged door, allowing free access to the equipment. This door is kept secure by two small clamps when the unit is not in use. At the top of the box is a carrying handle.

Normal saline solution is used for irrigation. This is retained in a Dextraven bottle, which consists of a glass bottle (B) with a rubber bung and screwed cap. The bottle is retained in the upside-down position in the wooden box by a wooden clamp (C), screwed in position as shown in Fig. 1. (opposite). Air is allowed to enter the bottle through a long, piercing 8" intravenous needle (N), which pierces the rubber bung of the Dextraven bottle. The needle is connected by a length of 3-mm. bore rubber tubing (R1) with walls 1-mm. thick to a glass eye-dropper tube (E1), which contains a plug of cotton wool (W) to act as a filter. The tapering end of this glass tube facilitates connexion with the rubber tube. The glass tube and part of the rubber tube are held by two small Terry clips (T1 and T2). Fluid runs out of the bottle through a small glass tube (G) piercing the rubber bung and connected with a further length of tubing (R2) of 3-mm. bore and 1 mm. thick. This is threaded through a Mohr's clamp (M) as shown in Fig. 1. Another eye-dropper tube (E2) is fixed at the end, but this time with the tapering end outwards.

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FIG. 1.—Apparatus ready for use.

The threading of the tube through the clamp in the manner indicated in Fig. 1 allows the dropper to be held in the clamp with finger and thumb at O and P, the other hand being free to hold open the eyelids. In the position shown, the clamp prevents any fluid running out of the bottle as the tube R2 is nipped at X. If the clamp is pressed firmly together at O and P, the rubber tube is again nipped at Y and again the fluid will not run. Only when the clamp is pressed gently will fluid come through. This prevents a clumsy person from squirting fluid all over the face, as irrigation only takes place when gentle pressure is applied.

On the door of the box is a large Terry clip (T3) housing a bottle of Ocusol eye-drops (O).

When the box is being carried, the fluid may have a tendency to jerk through

FIG. 2.—Apparatus arranged for carrying.

the air inlet, and to moisten the cotton wool. If the wool is wet it will prevent air flowing through; to avoid this the glass tube (E1) containing the cotton wool is removed and placed in the small Terry clip (T4) on the door (Fig. 2). The tip of the second glass eye-dropper (E2) is then inserted into the rubber air inlet tube (R1) as shown in Fig. 2.

The box is strongly made, and the apparatus is simple and stout. It has been found that rough handling does not interfere with its efficiency.

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