pounding of such agents. It should be noted further that the ratio of the emulsifiable oil to the cationic detergent per given weight of textiles is a critical one and that colored textiles require less detergent than white articles. After trial of several cationic agents available, "Roccal," a quaternary ammonium compound (alkyl-3-dimethyl-benzyl-ammonium chloride), appeared to be most suitable.

Blankets treated according to the above procedure and containing 2.5–3.0 per cent of oil by weight of the textile are not oily to the touch, nor are they distinguishable from normally washed controls in appearance or texture. The approximate cost of treatment of a blanket, over and above the usual washing charge, is approximately \$.03–\$.05, while the cost for a sheet is \$.01–\$.015.

Experiments involving shaking or mechanical agitation of blankets impregnated with oil emulsion have shown them to retain over 90 per cent of bacteria and dust when compared to untreated controls. The effective duration of a single treatment is at least six months. Laboratory evidence suggests that the "Roccal" retained in the blankets may be bactericidal to organisms settling and remaining on the textiles.

The oil-treatment process described above offers definite practical advantages in that (a) a single stable emulsifiable preparation is used for impregnation of both cotton and woolen textiles, (b) controlled concentrations of oil can be introduced into the textiles, (c) no waste of oil is involved, (d) the added bactericidal detergent may result in lasting and improved sanitization of treated materials, and (e) an easily determined end point is available to judge the completeness of impregnation.

Subsequent papers to be presented in more detail will deal with: (a) the effective duration of a single impregnation of textiles with oil-Roccal emulsion; (b) the influence of textile treatment combined with floor oiling on the rate of upper respiratory infections, the carrier rates for streptococci, and the dust and bacterial content of air; (c) the minimal effective concentration of retained oil; and (d) the effect of the washing of treated blankets on their residual oil content and dust-retention properties.

Addendum: While this article was in press, Puck, Loosli, *et al.* reported similar results (*Amer. J. Hyg.*, 1946, **2**, 91–120). This work will be considered in greater detail in subsequent publications from this laboratory.

References

1. Harwood, F. C., Powney, J., and Edwards, C. W. *Brit. med. J.*, 1944, **1**, 615–616.
2. Loosli, C. G., and Robertson, O. H. *Amer. J. med. Sci.*, 1945, **209**, 166–172.

A Multiple Light Source Microscope

George I. Lavin
Rockefeller Institute for Medical Research
New York City

It is often of considerable importance to be able to compare microphotographs of tissue which have been made by light of different wave lengths. With this in mind a setup has been arranged so that this can be accomplished without the necessity of moving the light sources when a change in wave length is desired.

This arrangement is shown in Fig. 1. It can be

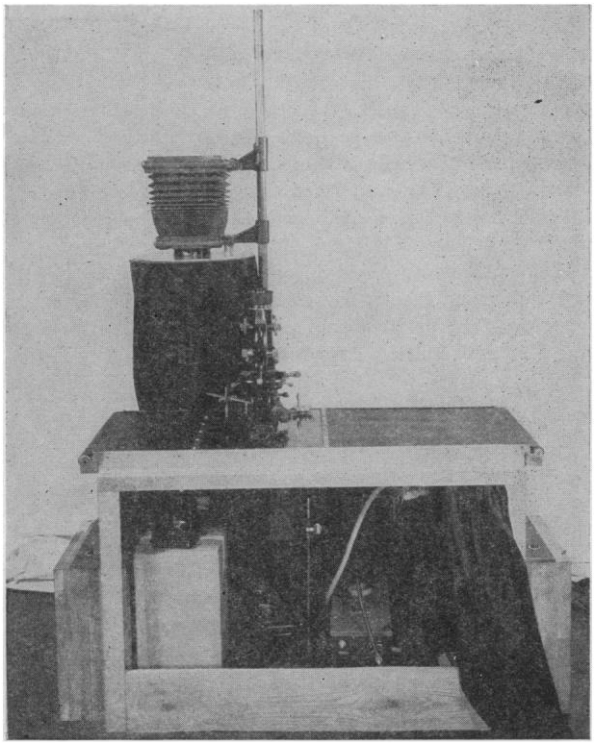

Fig. 1

seen that the light sources are in a row, and the microscope and camera are mounted above on an optical bench. At either end are small black window shades, so that when the microscope and camera are moved from one light source to another, one shade pays out and the other winds up. Once the sources are lined up this never has to be done again. The black cloth draping is necessary in order to protect the eyes from ultraviolet light.

At present pictures can be taken using visible, infrared, polarized, fluorescent (3,600 A.), and 2,537 A. light (*1*).

Reference

1. Lavin, George I. *Rev. sci. Instr.*, 1943, **14**, 375.