work, the cost of these lights is only a fraction of that of the table lamps supplied for similar purposes by the optical and laboratory supply companies.

Along the middle line of each of the laboratory tables, which are 9 feet, 10 inches by 42 inches, and 30 inches high, and which are designed to accommodate three students on each side, three such lamps are fixed. For the installation of each lamp the following parts, which can be secured from any jobber of electrical supplies, are needed:

1 Single flush convenience outlet.
1 Single convenience outlet plate.
1 Medium, screw base to standard adapter.
1 Sectional switch box.
1 Four inch porch band.
1 C. R. I. (crystal rough inside) glass ball, 8 x 4 inches.
1 100-watt "daylite" lamp.
2 1-inch round head brass screws.

Connection of the lamps to a wall outlet is through a wire attached to the under surface of the table top; current is supplied to the convenience outlets, which are sunk in holes in the table top.

The total cost of these items per lamp at the time of our installation was slightly less than $2.75. We have found the illumination sufficient for the use of the binocular dissection microscope and for standard compound microscopes for all magnifications up to that supplied by the 2 mm oil immersion objective and ocular 10. If the diffuse illumination coming directly to the user's eyes from the upper part of the lamp proves unpleasant, which in practise it seldom does, the upper part of the ball may be painted on the inside surface with white, opaque paint. If for any reason it is desired to remove the lights so that the table, entirely free from obstructions, may be used for other purposes, it is only necessary to remove the two wood screws from the "porch ring" and slip the adapter with the daylight bulb out of the receptacle.

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SPECIAL ARTICLES

INFECTION IN MICE FOLLOWING INSTILLATION OF VESICULAR STOMATITIS VIRUS

WE have previously stated[1,2] that intracerebral inoculation of anesthetized white mice with the virus of vesicular stomatitis of horses uniformly induces characteristic lesions in the organs of the central nervous system. Recently Webster and Fite[3] have succeeded in transmitting a fatal infection to mice by means of intranasal instillation of louping-ill virus.

Regular transmission to mice of a lethal infection has also followed nasal instillation of the Indiana and New Jersey[4] strains of vesicular stomatitis virus. The cerebral tissue, aseptically removed from mice succumbing to the experimental infection induced by intracerebral injection of the virus, was ground in a sterile mortar with hormone broth of pH 7.5 to a 1:10 suspension and filtered through a Seitz disk, and instilled intranasally in doses of 0.04 cc by means of a tuberculin syringe fitted with a blunt needle. The nasal tissues were not injured.

Within four to six days, the animals developed hyperesthesia, tremors, incoordination, spastic paralysis most marked in the posterior extremities and prostration, followed by death on the fifth to eighth day. The series of nasal infections was carried through twelve passages—in each transfer the brain of nasally infected mice having been used as the inoculum.

The pathological changes are similar to those occurring in guinea-pigs and mice[1,4] inoculated intracerebrally with neurotropic vesicular stomatitis virus. The nerve cells of the hippocampus in the brain and the anterior gray matter of the cord contain typical intranuclear inclusion bodies, such as are found in the epithelial cells of the guinea-pig pad inoculated with the virus of vesicular stomatitis or of foot-and-mouth disease and in the nerve cells of the guinea-pig inoculated intracerebrally with the virus of vesicular stomatitis.

In addition to the effective brain tissue in dilutions as high as 10^7, the virus in the 26th generation of tissue cultures[2] in dilutions of 10^6 and in the filtrates of affected guinea-pig pads was found to be active when instilled nasally in mice. The question arises whether in the field vesicular stomatitis may be conveyed by nasal inhalation of the incitant.

It appears, therefore, that the virus of vesicular stomatitis is strikingly active in a minute quantity (1 to 10 million dilution) in the nasal passages of mice and that the uninjured nasal mucosa is as sensitive to infection as is the injured brain or pads of animals.[5]

These experiments suggest that the closely related

[1] H. R. Cox and P. K. Olitsky, *Proc. Soc. Exp. Biol. and Med.*, 30: 654, 1933.
[2] H. R. Cox, J. T. Syverton and P. K. Olitsky, *Proc. Soc. Exp. Biol. and Med.*, 30: 896, 1933.
[3] L. T. Webster and G. W. Fite, *Proc. Soc. Exp. Biol. and Med.*, 30: 656, 1933.
[4] H. R. Cox and P. K. Olitsky, *Proc. Soc. Exp. Biol. and Med.*, 30: 653, 1933.
[5] All operations were done under ether anesthesia.

virus of foot-and-mouth disease may also be infective in high dilution through intranasal inhalation.

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ACTIVE IMMUNIZATION TO ANTHRAX BY MEANS OF HETEROPHILE ANTIGEN

SINCE the work of Forssman[1] showing the existence and action of heterophile antigens and antibodies, subsequent investigations have shown these to be widely distributed in animals and bacteria. Recently, Combiesco, Satamtesco, Nestoresco and Adam have demonstrated this antigen in anthrax bacilli.[2]

The work of Bailey and Shorb,[3] and that of Powell, Jamieson, Bailey and Hyde,[4] indicates that the heterophile antibodies play an important rôle in the protection, treatment and recovery in pneumococcus infections.

Thus the following experiment was done to determine whether or not heterophile antibodies play any rôle in anthrax infections.

Two rabbits were inoculated with boiled sheep corpuscles. After a period of two weeks had elapsed from the last injection, a small amount of blood was removed from the ear vein and a titration made to determine their heterophile antibody content. Then these two rabbits, along with two controls, were given subcutaneous inoculations of a virulent anthrax bacilli. The results are shown in Table 1.

TABLE 1

Previous treatment of rabbits	Heterophile Titer*	Amount of turbid suspension of virulent Anthrax bacilli inoculated	Results
None	none	0.2 cc subcutaneous	Died in 3 days
None	none	0.2 cc subcutaneous	Died in 4 days
5 intraperitoneal injections of 5 cc of 20 per cent. solution of boiled sheep corpuscles.	800 units per cc	0.2 cc subcutaneous	No ill effect. Observed for a month
5 intraperitoneal injections of 5 cc of 20 per cent. solution of boiled sheep corpuscles.	3200 units per cc	0.4 cc subcutaneous	No ill effect. Observed for a month

* Heterophile unit is defined as sufficient antibodies to hemolyze in the presence of complement 0.1 cc of washed erythrocytes diluted 1 plus 3 in terms of whole blood concentration.

From the above experiment it is evident that immunity developed by stimulation with the heterophile antigen in sheep's corpuscles protects rabbits from anthrax infection.

Since heterophile antibodies can be produced by oral administration of the antigen,[5] this method of anthrax immunization might be adaptable to the protection of individuals whose occupation exposes them to anthrax infection. Such individuals as wool sorters and tannery workers might be protected from anthrax infection by oral administration of the heterophile antigen in sheep corpuscles.

The use of heterophile antiserum in the treatment of anthrax infection is being studied, and will be reported later.

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