

virus produced typical experimental poliomyelitis in the monkey which has been exposed to large doses of X-rays (6 Holzknacht units daily for six or seven days), whereas in the non-rayed control no symptoms were observed. The doses of X-rays were sufficient to reduce greatly the number of circulating lymphocytes in the blood of the monkeys. In another experiment 0.75 c.c. of the filtrate produced typical experimental poliomyelitis in the X-rayed monkey, whereas 1.0 c.c. produced no symptoms in the control.

In an attempt to diminish an active immunity a monkey which had passed through an attack of experimental poliomyelitis and recovered with residual paralysis was exposed to large doses of X-ray so that the circulating lymphocytes were decreased from 27,000 per cu. mm. to about 2,500. Two separate intracerebral injections of active virus failed to produce any further symptoms or paralyses in this monkey.

35 (1410)

Intrapulmonary irrigation.

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In view of the limitations of the intravascular mode of therapy of respiratory conditions, as exemplified in pneumonia, a series of experiments has been conducted looking into the possibility of an intratracheal or intrapulmonary therapy for such conditions.

The data thus far secured demonstrates the fact, fundamental to any such therapeutic procedure, that the lung is much less susceptible to the introduction of fluid than has been generally assumed.

Normal dogs have been used throughout the work and all perfusions or irrigations have been made with normal salt solution. The fluid was introduced by the usual method of insufflation.

Repeated experiments have shown that the lungs can be entirely flooded with salt solution and the process of irrigation continued for at least two hours with the introduction of 30,000 c.c. of fluid without causing any evident harmful signs in bodily well-

being or any subsequent serious microscopic lesions in the lung tissue.

By means of the use of colored solutions, such as India ink, it has been shown that even the last portions of the fluid introduced actually pass throughout the lung tissue and do not simply flow back through the trachea without entering the lung.

Such irrigation procedure is relatively effective in removing material from the lung. The preliminary insufflation of such materials as India ink, protargol, or starch paste, followed by irrigation with salt solution has shown that a large percentage of the indicator was removed by the perfusion. In the same way an irrigation of the lungs with 3,000 c.c. of salt solution following an insufflation of a heavy broth culture of *B. prodigiosus* removed 90 per cent. of the number of organisms introduced.

As a corollary to the above experiments a study was made of absorption from the lung. A series of dogs was given by insufflation 20 c.c. of salt solution per kilogram of body weight, and at stated intervals the dogs were killed and the lungs were examined grossly and histologically. The appearance of the lungs immediately after the insufflation showed them to be filled with fluid. Within 48 hours much of the fluid has been absorbed and after four days the lungs are practically free of fluid. Histologically, the lesions were inconspicuous, giving evidence of but little inflammatory reaction.

The rapidity of absorption was further confirmed by comparative determinations in the same animal of the excretion of phenolsulphonephthalein when administered by intramuscular and intravenous injections, and by intratracheal insufflation. The percentage excretion within two hours after the several modes of administration were:

Intravenous injection.....	78.1
Intramuscular injection.....	72.5
Intratracheal insufflation.....	57.1