18 (714)

The development of experimental pneumonia under direct observation of the lungs in the living animal.

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Experimental pneumonia produced by intra-bronchial insufflation of virulent pneumococci may develop quite rapidly. Thus in the experiments of Lamar and Meltzer it was observed that in one instance seven hours after the injection, nearly complete consolidation affecting the greater part of one lobe was already present. We therefore now made several experiments in which the lungs were under direct observation continuously for several hours after the insufflation of the culture. The procedure has been as follows. The dog was anesthetized by the cone method, and a tube introduced into a bronchus as deep as it could be pushed; the pneumococcus culture was then injected. Immediately after, the tube was withdrawn, so that its lower end was just above the bifurcation, and the arrangement made for continuous intratracheal insufflation. The dog received about "half ether" and was continually under complete anesthesia. The thorax was now widely opened transversely and about two thirds of three or four of the lower ribs on the right side removed; the right lower lobe, which is usually the seat of the inflammation, was now exposed to full view. We shall not enter here upon details. It may suffice to state that *we were able to watch the successive stages from the earliest signs of engorgement to complete hepatization. We were also able to establish changes in the auscultation phenomena in the consolidated parts, in some instances even clearly suggesting tubular breathing.* We intended to demonstrate such experiments, and we prepared several animals for this purpose. The experiments were successful indeed, but we did not take the lateness of the hour of the meeting sufficiently into account. We prepared the experiments too early and all the animals died before the meeting began. The acute infection, the great loss of heat, the severe operation, and the long-lasting anesthesia are severe factors to contend with. So far five hours has been the longest

time we could keep them alive. We show here the lungs of one of these dogs. Death occurred in this instance about four hours after the injection. The quantity of the injected pneumococcus culture was quite large—about twenty cubic centimeters. About two thirds of the right lower lobe is consolidated; as you see, it is very dark and firm, and the surface shows numerous small patches of fibrin.

19 (715)

Differences in the toxic effects of ether and chloroform, as observed under intratracheal insufflation.

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In studying the toxic effects of chloroform and ether, when administered by the method of intratracheal insufflation, we observed various differences in the course of the intoxication brought on by excessive doses of these anesthetics. We shall discuss here, however, only the differences in the toxic action of these drugs upon the functions of respiration and blood pressure. At the outset we have to point out, that when administering the anesthetics by the insufflation method one of their dangerous effects is here eliminated; it is the danger which is bound to result from a partial or complete paralysis of the respiratory function. Under the method of insufflation, life remains safe even when the animal is completely curarized. Observations may be carried on, therefore, even after spontaneous respiration is completely abolished. On the other hand, intratracheal insufflation carried on with ordinary, permissible air pressure, does not cause apnea, that is, the individual continues to carry on its own spontaneous respirations, which on tracings are easily distinguishable from the infrequent partial interruptions of the continuous insufflation of air.

The observations which we wish to report here briefly are as follows. When using ether, a certain dose may be administered which is amply sufficient to keep the animal completely anesthetized, while respiration and blood pressure may remain practically