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Production of pneumonic lesions by intrabronchial insufflation of unorganized substances.

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Earlier communications from this department have shown that intrabronchial insufflations of virulent pneumococci in dogs produce lobar pneumonia similar in every respect to the lesions of lobar pneumonia as observed in human beings. In later experiments, Wollstein and Meltzer demonstrated that, at least macroscopically, typical pneumonic lesions can be produced also by avirulent pneumococci and by the saprophytic bacillus megatherium. Microscopically it was established that the lesions produced by the virulent pneumococci contained a great amount of fibrin, while the lesions produced by the last-named organisms (avirulent pneumococci and bacillus megatherium) contained only very little fibrin.

In the present series of experiments various unorganized substances were insufflated into the bronchi of dogs which were killed after twenty-four or forty-eight hours. The substances were: aleuronat suspension in starch solution (autoclaved), starch solution, egg yolk, lecithin, egg white and cholesterin. The results were striking and are as follows: aleuronat, starch, egg

yolk and lecithin produced lesions which macroscopically could not be distinguished from those produced by insufflation of pneumococci. Egg white never produced pneumonic lesions of any extent and even in the occasional patches many of the bronchioles and alveoli containing this protein showed microscopically no nucleated cells whatever in their lumina. The few patches produced by cholesterol were associated with the bronchioles and adjoining alveoli. We shall not describe here the nature of the histological pictures of the lesions under discussion; we shall merely mention the fact that those lesions produced by aleuronat and starch were similar microscopically to those produced by virulent pneumococci, that is, the lesion contained in addition to an exudate of similar cells, etc., a good deal of fibrin; while lesions produced by egg yolk and lecithin resembled more those produced by avirulent pneumococci and bacillus megatherium.

In brief, we may say that our experiments have demonstrated definitely that the hepatization of the lungs, similar to the one observed macroscopically in lobar pneumonia, can be produced by such unorganized substances as aleuronat, starch, egg yolk and lecithin, while egg white does not produce such an effect. The following chart illustrates our results:

Substance Injected Intrabronchially.	No. of Animals.	Lesion.		Lung Culture.
		Patches of Consolidation.	Lobar Type of Consolidation.	
Aleuronat in starch solution	8		+	8 sterile.
Do.	2	+		2 "
Starch solution	7		+	6 sterile.
Egg yolk	11		+	7 "(1?).
Do.	1	+		"
Lecithin	6		+	4 "
Egg white	5	-	-	5 "
Do.	4	+		4 "