

down with 0.85% NaCl. If a radio-opaque embolus is desired lipiodol (5%) is added to the melted agar and emulsified. Such emboli more nearly simulate in form and consistency those forming from the blood constituents in man.

We have used the method thus far in 25 dogs and an abscess has developed in each instance. The abscesses so formed are true abscesses and not areas of coagulation necrosis. Microscopic sections are easily made with the embolus *in situ* and in quantitative work the presence of approximately the same number of organisms in each embolus is of advantage.

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Experimental Production of Bronchogenic Abscess of the Lung.*

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The etiology of post-operative lung abscess has been a subject of much interest and controversy during the past decade. Two theories have been presented as to the etiological factors of this condition, embolic and bronchogenic. Embolic lung abscess has been experimentally produced with almost routine regularity. Although most factors suggest a bronchial route of infection, little success has attended many ingenious methods by a large number of workers to produce this condition experimentally. The following method of producing bronchogenic lung abscess is presented because of its simplicity and dependability.

Eighteen dogs and 3 goats were narcotized with morphine sulphate. The infective organisms employed were human tubercle bacilli, H-119, which are a branch of the strain H-137. Under fluoroscopic control, a small ureteral catheter was passed through a bronchoscope into the finer ramifications of a tertiary bronchus of one of the lower lobes. By employment of the fluoroscope, the infective organisms could be placed in any desired part of the lobe. 0.2 cc. of a fairly heavy suspension of the organisms in lipiodol were injected into one or both of the lower lobes. The course of

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the lesion was followed by roentgen-ray. Cavities as large as 2.5 cm. in diameter could be demonstrated.

Results. Some of the dogs died due to the magnitude of the abscess cavity or to the added burden of infection spread to adjacent lobes. Other dogs were sacrificed at intervals. There was practically a routine production of an abscess cavity from 1 to 2.5 cm. in diameter following the injection. One goat died following the administration of barbital. Another goat developed convulsions and died soon after operation. The third presented an abscess 2.5 cm. in diameter demonstrable by roentgen-ray.

Abscess cavities formed from 10 days to 2 weeks following injection, and persisted as long as 7 months. It might well be that a substance having a higher specific gravity would be necessary to retain infective organisms in a dog's lung than in a human lung, while an abscess was being produced. The above method is being used at present in an attempt to produce bronchogenic lung abscess with pyogenic organisms.

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Inverse Concentration Ratios for Sodium and Potassium in Gastric Juice and Blood Plasma.

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The acidity of the gastric juice is the result of the secretion of fluid at least as rich in chloride ion as the blood plasma but less concentrated with respect to fixed base. It has long been known that the sodium ion concentration in gastric juice is less than in blood plasma in direct ratio with the free acidity of the juice. The behavior of the other metallic cations has not been so carefully studied. Bliss¹ showed that the average potassium content of the gastric juice in the dog and man was consistently higher than the normal potassium concentration in the blood plasma. He presented no simultaneous analytical figures for blood and gastric juice in the same individuals, and consequently his conclusions could not be taken without qualification. Austin and Gammon² studied the potassium concentration in gastric juice but made no comparison

¹ Bliss, T. L., *Ann. Int. Med.*, 1930, **3**, 838.

² Austin, J. H., and Gammon, G. D., *J. Clin. Invest.*, 1931, **10**, 287.