

# A BRAIN CONTAINING GAS CYSTS OF MICROBIC ORIGIN.

BY

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This brain was obtained from a case of typhoid fever which died at the Royal Victoria Hospital in April, 1903, of hæmorrhage and perforation. The autopsy was performed 24 hours after death, and the following conditions were found.

The contents of the thorax were fairly normal, although the heart was large and fatty, and its muscle somewhat cloudy. The abdominal walls appeared to be very tense, and the abdomen prominent, and on opening the peritoneum there was a rapid escape of gas, which burned with a pale blue flame on being ignited. The intestines, which contained a considerable quantity of blood, were distended, and the Peyer's patches markedly inflamed. About 30 cm. above the ileo-cæcal valve, a pin-hole perforation was found, and close beside it an eroded blood-vessel,—evidently the source of the hæmorrhage. The liver was flabby, pale, and friable, and section showed that it was a typical "foaming liver" with bubbles and small cavities upon the cut surface. A portion taken from the centre of this organ floated in water, and microscopical examination revealed bacilli in the walls of the cavities. When the brain was removed, nothing abnormal could be seen in the meninges, hemispheres, convolutions, or basal vessels, and it was at once placed in a ten per cent. formalin solution, without being cut. Sections were made three weeks later, and the peculiar 'Gruyère cheese' appearance was noticed for the first time. Cavities varying in size from a bean to a pin's head were seen scattered throughout the brain. None of these air spaces were nearer than 1 cm. to the external surface, and they became larger and more numerous towards the centre of the hemispheres, where the brain tissue assumed the appearance and consistence of a sponge. In the region of the internal capsule the cavities were particularly numerous, being separated only by very thin walls of brain substance. The cerebellum showed similar though less marked changes, while the mid brain, pons and medulla, were intact. No softening or signs of inflammation could be detected anywhere.

This curious appearance at once suggested the cause, and a smear from the inside of one of the cysts showed a stout bacillus with rounded ends, found singly, or in pairs, chains or clumps, and taking all the ordinary stains as well as Gram's iodine stain. Cultures of course could not be made, but a bacillus having the above mentioned morphological and staining characteristics, which at the time produces gas, is in all probability the *Bacillus Aerogenes Capsulatus*, or, according to the more modern terminology, the *Bacillus Welchii*.