

Gram's method, but took well all aniline stains, such as methylene, blue, gentian, violet. Cultures were made by smearing the surface of agar and blood-serum with the portion of gland, and placing it in broth, and incubating at 37°C. In twelve hours a growth was observed on the agar, taking the form of round discrete discs, pale or nearly colourless. On the blood-serum a good growth was observed in twenty-four hours, but the broth remained sterile for two days, after which a cloud formed, and later a dust-like deposit settled on the sides and bottom of the tube. I attribute this delay to the fact that this broth was faintly acid (I prefer it so for typhoid cultures when doing Widal examinations). Later, some broth, made faintly alkaline, showed a good growth from sub-culture on agar in thirty-six hours. The bacilli from these cultures on agar-serum and in broth were in all respects the same as those found in direct examination of the gland, and they were found also in the sputum of the patient on the seventh day of the disease. They were also present in a scraping of the gland taken by Dr. Mason on the sixth day of illness, and in the bubo and spleen of a guinea-pig inoculated with the same gland-tissue, as will be afterwards described. In hang-drop culture the bacilli was motionless.

On the eighth day of illness I took a sample of blood from the patient and submitted it to the test, with negative result.

The patient died on the morning of the eleventh day.

Post-mortem appearances three hours after death: Body fairly nourished; passive congestion of skin of back; wound in left groin where bubo had been incised. The bubo involved the inguinal glands on left, along the femoral line, and up to Poupart's ligament, and in this upper portion was a small area of softening, containing thick bloodstained pus. Elsewhere the glands were firm and showed hemorrhages on section.

Abdominal Cavity.

Small amount of bloodstained serum in peritoneal cavity.

Bowels empty, distended. Hemorrhagic patches in mesentery, the glands being in places somewhat enlarged.

Liver large, some degree of cloudy swelling.

Spleen enlarged, and soft and friable.

Kidneys enlarged; small hemorrhages under the capsule.

Bladder empty.

Portions of spleen and kidney were removed and forwarded to Wellington for examination, as also a pipette of spleen-pulp.

Bacteriological Examination.

Spleen: A pipette of spleen-pulp was secured. Smears taken direct from this failed to show the *Bacillus pestis*.

Inoculation in broth after forty-eight hours showed a scanty growth of a short bacilli with rounded ends—not, however, showing bipolar staining.

On agar: One tube gave a growth of a coccus (*Pyogene albus*?). The other remained sterile.

The pus from the broken-down portion of the bubo showed abundant bacilli, in staining reaction resembling the *B. pestis* mixed with cocci of various types.

Inoculation Experiments on Guinea-pigs.

A large female guinea-pig was inoculated in the right groin with a portion of the affected gland on the 23rd April. The gland-tissue had been removed on the evening of the 21st April, with aseptic precaution, and had been kept in a sterilised tube of nutrient broth. On the 26th April, three days after inoculation, the guinea-pig showed signs of illness—rough coat, loss of appetite, &c., and a swelling at the seat of inoculation and in the groin at the right side. Death took place on the 29th April after six days and a quarter of illness. *Post-mortem*.—Bubo on right groin about the size of a hazel-nut, and some breaking-down in its centre on section. Liver enlarged, swollen, friable, with a small hemorrhage on anterior surface. Spleen enlarged, mottled, and swollen, showing grey patches on surface and in section. Intestines congested, blood-stained serum in peritoneal cavity. Lungs congested. Smear preparations of spleen, liver, and bubo showed the *B. pestis* in abundance, some good specimens of bipolar staining being observed. *Spleen Cultures*.—Broth: A scanty growth obtained; after about two weeks the bacilli took on involution forms—large club-shaped, &c. Cultures on agar from bubo showed a very abundant growth, the *B. pestis*, however, being mixed with a coccus and some putrefactive bacilli. Liver: Culture on agar showed a good growth of *B. pestis*, mixed with other types, probably putrefactive.

A second guinea-pig was inoculated in groin with a portion of the sputum coughed up by the patient V. on the seventh day of illness. In about three days' time this animal showed signs of illness, with lack of appetite and rough fur, and slight swelling in groin inoculated. However, after about three days more it improved; the swelling cleared up and the animal recovered. The sputum had been kept two days in a tube before it was inoculated into the guinea-pig, which may account for its lack of virulence.

Summary.

B. pestis found in bubo of patient V., both *ante-* and *post-mortem*, and also in sputum; in cultures from bubo (nearly pure); in guinea-pig inoculated from patient V.; in smear preparations of bubo, liver, and spleen, and bi-culture in spleen and liver in satisfactory amount.