The above-mentioned parts have definite shape and well-defined borders, and they are embedded in, and surrounded by, a structureless gelatinous (?) material which has taken a pink stain.

The following works may be consulted :—Friedberger and Fröhner, "Pathology and Therapeutics of the Domestic Animals," translated by Zuil, vol. ii., p. 493; M'Fadyean, "Journal of Comparative Pathology and Therapeutics," vol. ii., p. 1, 1889; Sims Woodhead, "Bacteria and their Products."

DESCRIPTION OF PLATE III.

FIG. 1. (Leitz, obj. No. 3, Oc. No. 1); C, a colony of botriomyces; B, and B, granulation tissue; A, recent fibrous tissue.

FIG. 2. (Leitz, one-twelfth oil-imm., Oc. No. 1, draw tube 170 mm.). The same colony of botriomyces as sketch No. 1. A, examples of round bodies, stained pale green, presenting no trace of internal cells; B, grape-like body, containing cocci. C, granulation tissue.

FIG. 3.—Diseased cervical vertebra from Mr Hill's case of equine tuberculosis.

POST-MORTEM NOTES ON TWO INTERESTING CASES.

By STEWART STOCKMAN, Professor of Pathology, Dick Veterinary College, Edinburgh.

PULMONARY ACTINOMYCOSIS.

A PIECE of lung from an aged cow was kindly sent to me by Mr Riddoch, M.R.C.V.S., Inspector at the Edinburgh Abattoir, in the hope that it would be interesting to the students of the college. The suggestion was that it might be a case of verminous pseudo-tuberculosis. Under the pleura and in the substance of the lung were a number of small and very firm greyish nodules, which varied in size from a pin's head to a hempseed. They were most abundant under the pleura, but were also well distributed throughout the spongy tissue of both lungs. They were not nearly so numerous as the nodules in a case of miliary tuberculosis. There was no central softening.¹ Many of them were situated in the interlobular septa and around the smaller bronchial tubes. The borders of the nodules were very sharply defined and the lung tissue between was open. Mr Riddoch was unable to tell me whether the bronchial glands were enlarged or not, but was positive that no nodules existed on the parietal pleura or in any of the other internal organs.

On microscopical examination colonies of the actinomyces in the club form were found in the centre of the nodules. Around the parasite were fibroblastic cells. Outside the latter were spindle cells, and at the periphery was a distinct ring of fibrous tissue. A connection could be traced between many of the nodules and the bronchioles; indeed, some of them were present in their walls. They seemed to follow the distribution of the bronchial tubes. Away from the nodules the

¹ I have also seen a case of pulmonary actinomycosis in which marked softening was present in the centre of the lobules. Evidently the fibrous and caseous varieties of lesion are found in other organs as well as the tongue.

alveolar walls were thicker than normal, their epithelial lining was proliferating slightly, and a few fibroblastic cells were present. These cells had not wandered any distance from the wall, and the alveolar cavity was practically empty. As far as one may judge from macroscopical and microscopical examination, the infection had operated by way of the bronchial tubes.

PNEUMONIA IN A CALF.

Among the specimens sent to my *post-mortem* class at the Edinburgh Abattoir was the carcase of a two-months-old calf. The flesh was flaccid, dropsical, and of a red colour. The anterior lobe of the right lung was hepatised and airless. On section it appeared mottled in red and grey. Certain small areas were much denser than other parts. These denser areas had the appearance of foci, and slightly resembled an acute tubercular lesion. I carried a portion of the lung to my laboratory for further examination.

On examining sections microscopically the bronchial epithelium was found to be in a state of catarrh. Some of the air cells were filled by a dense collection of leucocytes, which almost obliterated the walls of four or five adjacent alveoli. Many of these cellular foci were on the course of the bronchial tubes, and some of them were present in the walls of the latter.

When sections were stained by Gram's method, two forms of micro-organisms could be made out in the dense cellular areas. The one had the form of cocci, the other was evidently a mould consisting of fine short threads which took the stain feebly. Away from the denser portions the alveoli contained a large number of catarrhal cells and leucocytes, but neither fibrine nor blood.

Reasoning from the usual reaction of the tissues and blood cells to pathogenic bacteria, it may be inferred that these microbes were associated causally with the pneumonic lesions. From the nature and disposition of the changes it would seem as if the microbes had entered by way of the tubes.

Semmer and Perroncito have both described cases of pneumonia in the calf, apparently due to micrococci. Attempts to experimentally reproduce the pulmonary lesion by intra-tracheal injection of cultures of these organisms are almost always attended by negative results.

Apparently a predisposing influence, almost as important as the presence of the microbes themselves, is necessary before the latter can act. It also seems probable that those cases of pneumonia which are not caused by the presence of animal parasites are in large part provoked by bacteria. Further, we know that some bacteria, harmless to a vigorous organism or tissue, are capable of causing serious lesions when present with debilitating influences.

NOTE ON THE USE OF BARLEY AS HORSE FOOD.

By JOHN MALCOLM, F.R.C.V.S., Birmingham.

THE question of horse food and horse feeding is for the veterinarian and the horse-owner an ever-green subject, and it requires no apology for referring to a matter possessing such general interest and import-