

At the time that the larvæ were leaving the oesophagus a lack of subjects for examination proved a serious handicap; however, with the foregoing facts established, it is possible from an anatomical standpoint to trace with a fair degree of accuracy the course of the larvæ from the oesophagus to the back. In cattle the oesophageal opening of the diaphragm is situated some 4 or 5 inches below the eighth thoracic vertebra, and is formed by the right crus of the diaphragm, which divides into two branches, uniting again below the opening. The oesophagus is partly covered by pleura, and it may therefore be assumed that the larvæ pass under the pleura; once there they may follow one of two courses, viz., up the crura or across the diaphragm. The latter course will now be considered, as it is the only one that we have direct evidence about. The larvæ follow the general direction of the muscle fibres of the diaphragm, downwards and outwards, until they gain the cartilages of the ribs. The costal attachment, of the diaphragm extends in a nearly straight line from the upper fourth of the last rib to the junction of the eighth rib with its cartilage and along the latter to the sternum. It would therefore appear that the larvæ follow the ribs in this region. Proceeding along the posterior border of the ribs in company with the vessels which are ventrally sub-pleural, they pass with the vessels between the intercostal muscles. Upon reaching the upper part of the intercostal space some larvæ may pass directly into the canal through the posterior foramen and possibly entrance may also be made through the intervertebral foramen which is smaller. No evidence of the latter has, however, been found, while in the case of the former evidences of larval passage have been noted. The natural course of the larvæ upon reaching the upper part of the intercostal space, would be to pass between the external intercostal and the levator costarum, then under the longissimus, passing between that muscle and the transversalis and eventually gaining the skin.

That the larvæ may pass up the crura of the diaphragm upon leaving the oesophagus appears likely—such a course would be considerably shorter than the course up the ribs, and possibly may be the route most commonly followed. No insurmountable difficulties would be encountered, beyond the possibility of having to pass between the fibres of the sublumbar muscles, which at this point are comparatively thin; further, the neural canal could be easily reached, and exit made through the posterior foramen, either further up or down the spine. The only evidence we have of such a course being followed is the actual finding of larvæ in the neural canal. The larvæ are situated on the thoracic side of the crura of the diaphragm, and from here must pass to the lumbar region, either down the canal or along the fibrous tissue between the muscles.

Professor Carpenter found larvæ just outside the muscular coat of the gullet, in the thoracic region, close to the diaphragm, which finding supports our contention.

In one of the animals examined, we found a distinct track along the posterior border of the ninth rib. This track was of a green colour and was plainly visible, leading up to the spinal canal, through the posterior foramen. The fatty tissues surrounding the cord in the canal was tinted the same colour. Altogether eight larvæ were found in the spinal canals of about twenty animals examined. The larvæ were encountered in the dorsal region and four of them measured respectively, 1.2, 1.2, 1.0, and 1.4 cm., giving an average of 1.2 cm. Two were found emerging from the posterior foramen. On the same date those found in the gullet averaged 1.5 cm. and a number of larvæ found just under the skin of the back were the same size.

The larvæ were found in the areolar tissue which surrounds the dura mater: whenever we found one there were evidences of greenish pigmentation and of a gelatinous infiltration at different points along the cord. The fat also exhibited some curious grey degenerate areas, so that it is evident that the larvæ cause some irritation. Moussu informed one of us (S.H.) that he had seen nervous symptoms in cattle which he attributed to this cause. The occurrence of these inflammatory tracks was noted, even where no larvæ were found.