5. Illustrations

Figure 5.1: Beef: position of cuts

Source: Meat and Livestock Commission

Figure 5.2: Diagrammatic sketch of the main anatomical parts of the digestive system of the cow

Source: P N Wilson and T D A Brigstocke, Improved Feeding of Cattle and Sheep, St Albans, Granada, 1981
Figure 5.3: Specified Bovine Offal as specified by the SBO Order 1995

Bovines 0–2 months

Bovines 2–6 months

Bovines 6 months plus

Source: MAFF
Figure 5.4: Position of the thymus gland

Figure 5.5: Schema of the abdominal lymph nodes of the ox

Like the circulatory system, the nervous and lymphoreticular systems of mammals, including cattle, are pervasive networks that spread around the whole body. Among its functions, the ‘autonomic’ part of the nervous system is important in regulating the gastrointestinal system. It is believed that one of the routes for the infective agent for transmissible spongiform encephalopathies (TSEs) is through the network of nerves surrounding the intestines. This network has connections to the spinal cord and, via the vagus nerve, direct to the brain – see vol.2: Science.

The lymphoreticular system (LRS) consists of tissues, glands and organs, including the bone marrow, tonsils, spleen, thymus and lymph nodes. It is involved in the replication and spread of TSE agents before the nervous system is infiltrated. The diagram above shows the complexity of just one section of the LRS in cattle, the abdominal lymph nodes. Within the small intestine (ileum) to the right of the diagram are the conglomerations of lymphatic tissue known as Peyer’s patches – see vol. 2: Science.
Figure 5.6: Bovine sagittal section through the brain, showing position of the obex section


Figure 5.7: Spinal cord: cross-section with nerve roots on left side and examples of tracts on right side

Note: although this is a human spinal cord, the bovine one is not dissimilar.

Figure 5.8: Section through the human skull and brain


Figure 5.9: Coronal section through the human brain

Figure 5.10: Sagittal section through the human brain

Figure 5.11: BSE: section from bovine brain showing extensive spongiform change

Source: Central Veterinary Laboratory (CVL)

Figure 5.12: BSE: neuronal axon showing PrPSc accumulation on neurite membrane

Source: CVL
Figure 5.13: Normal human brain structure: section of cerebral cortex showing large darkly stained neurones (centre) in surrounding grey matter (haematoxylin and eosin stain)

Source: National Creutzfeldt-Jakob Disease Surveillance Unit (CJDSU)

Figure 5.14: Sporadic CJD: section of cerebral cortex showing reduction in number of neurones and vacuolation in surrounding grey matter

Source: CJDSU
Figure 5.15: Variant CJD: section of cerebral cortex showing large florid plaque (centre) surrounded by spongiform change (vacuolations)

Source: CJDSU

Figure 5.16: Variant CJD: section of cerebral cortex stained to show aggregates of PrPSc within plaques and more finely distributed throughout the grey matter (PrP stains brown)

Source: CJDSU
Figure 5.17: A slaughterhouse worker, late 1980s

Source: Meat and Livestock Commission