Transmission electron microscopy (TEM) has provided contributions to virology and the discovery, detection and diagnosis of various viral infections. Virus diagnosis by TEM is based on the visualization and morphological identification of virus particles. Therefore, for new or unknown pathogens that may occur in the context of bio-terrorism attacks, or as a result of the manifestation of new pathogens, TEM remains the only method that can provide a quick assessment of all pathogens present in a sample, providing an “open view”. The AHVLA provides a rapid viral diagnostic service for various diseases affecting farmed livestock, wildlife species, captive and zoological animals through veterinary surveillance. Amongst the most common viruses we diagnose are the poxviruses which can infect both vertebrate and invertebrate animals and are often detected from cattle, sheep and goats causing external scabby lesions. The virus group is well known as it includes smallpox (variola). Poxviruses are also regarded as the major contributor responsible for the decline in the UK of the indigenous Red Squirrel (Sciurus vulgaris) due to its susceptibility to Squirrel pox virus first reported in 1981 (1). TEM is used to detect ‘enteric viruses’ which are an important, but diverse group of viruses found in the intestinal tract of animals (and humans). We commonly detect rotavirus and adenovirus. The open view occasionally detects mixed viral infections with an example being both parapox and calicivirus detected in a scab from a Grey Seal. Calicivirus is also the cause of viral haemorrhagic disease (VHD) which is a highly infectious and often fatal disease that affects wild and domestic rabbits and was a notifiable disease in the UK for several years during the 1990s. TEM therefore remains essential for certain diagnostic aspects of Virology (and bacteriology). It was and still is necessary for new virus characterization (e.g. Schmallenberg Virus) and for the initial identification of unknown viral agents in particular outbreaks. The nature of the samples to be analyzed can be tremendously diverse, from body fluids, biopsies, scabs, warts, gut and faecal samples. Additionally the results by TEM are often regarded by many as the ‘Gold Standard’, as viral particles are actually observed. The “open view” approach permits rapid and “catch-all” detection of viruses and makes it especially useful as demonstrated here for the identification and diagnosis of various animal viruses, as well as being used in the initial identification of unknown viral agents in particular disease emergencies and outbreaks and/or in suspected bioterrorism.