REPORT

The West Runton Elephant

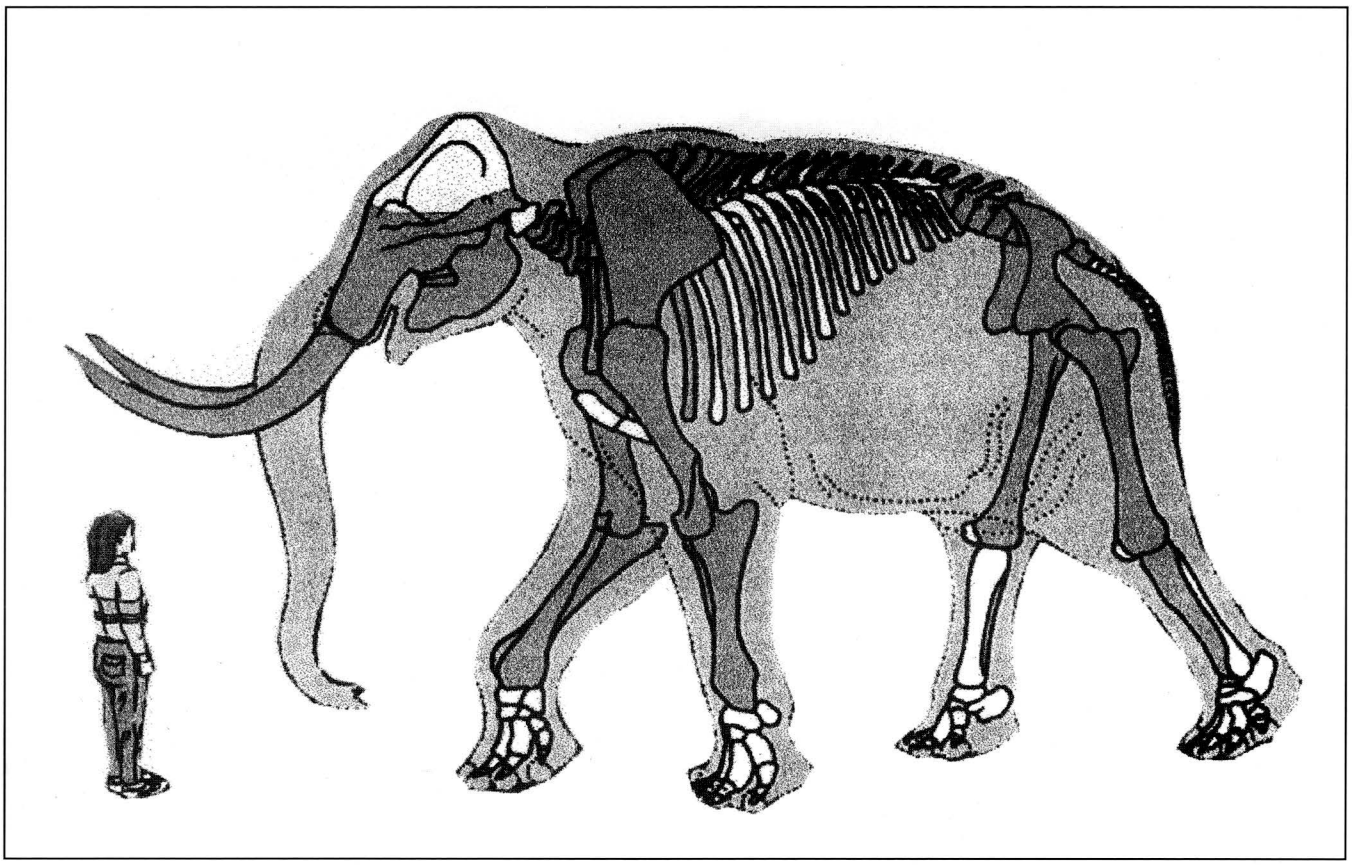
This article is a report of a lecture given to the Society by Dr Tony Stuart of the Norfolk Museum Service on 17 January 1998. The lecture described the discovery and excavation of the oldest fossil elephant skeleton ever to have been found in Britain. This was of particular interest to members who had participated in the Society's weekend trip to the North Norfolk coast at the end of September 1995. Their visit to West Runton, led by Martin Warren, the curator of Cromer Museum, had coincided with the day that excavation commenced to remove part of the cliff, working down from the top, with the aim of recovering the more deeply buried part of the skeleton. Although only part of the elephant had been recovered at the time of the trip, participants were shown a fibreglass replica of one of the thoracic vertebrae, nearly 80cm long, that dramatically illustrated the enormous size of the beast.

Much of Norfolk is underlain by late Cretaceous Chalk. Above the Chalk are extensive Quaternary deposits of sand, gravel, clay and other soft sediments of Early to Middle Pleistocene age. The beds exposed at West Runton form part of the Quaternary sequence. The Cromer Forest Bed Formation occurs on the foreshore and forms the base of the cliff. It is exposed at intervals along the coast from Weybourne to Kessingland and is made up of two distinct parts. The early sediments, which are marine shelly sands dating from one and a half million years BP lie at beach level and are known as Weybourne Crag. Above, forming the lower part of the cliff, is the West Runton Freshwater Bed, which was laid down 700,000 to 600,000 years BP during the Cromerian Interglacial. The Bed was deposited in a river channel and is composed of dark organic matter with silts, clays, sand, clasts of reworked silt, flint pebbles and lots of fossils. Examples of many different species of vertebrate have been found, including birds, fish, mice, voles, rhinoceros, deer, hyena and elephant. Shells, beetles, ostracods and plant remains are also present. The West Runton Freshwater Bed is overlain by marine sands and gravels, deposited during a transgression. The junction is undulating and marked by a marine gravel with occasional freshwater shells — this is named the Monkey Gravel after a find of a macaque bone. The rest of the cliff is formed of Anglian glacial deposits dating from about 400,000 years BP. They are composed of till with clay, sand, gravel and boulders. In cliffs farther along the coast to the east, the till contains spectacular rafts of Chalk, thrust up over each other by glacial pressure. The cliffs along this coast are soft and erode easily when battered by North Sea storms. On average they are receding by 0.3m per year.

During the last 200 years, many isolated teeth and bones of a wide range of Pleisocene mammals have been eroded from the cliff. In December 1990, Harold and Margaret Hems were walking along the beach after a storm when they spotted a large bone protruding from the Freshwater Bed. The Museum Service was informed and excavation revealed that it was the pelvis of a huge male elephant. A much smaller ankle bone, also from an elephant, was found nearby. Evidence of three kinds of extinct elephant, two species of mammoth (*Mammuthus meridionalis* and *Mammuthus trogontherii*), and the straight-tusked elephant (*Palaeoloxodon antiquus*) had previously been found in the Cromer Forest Bed. To make an identification of the new specimen, more bones would be needed.

In December 1991, Rob Sinclair noticed that heavy seas had exposed several more, large bones in the same part of the cliff and contacted the Museum Service. It now became apparent that this might represent a find of major significance. In the following January a rescue excavation was carried out by staff from Cromer and Norwich Museums with the help of volunteers. This excavation recovered about a quarter of the skeleton, including most of the backbone, parts of the right front limb and importantly the lower jaw. The jaw bone enabled the elephant to be identified as *Mammuthus trogontherii*. It would have stood about 4 metres high at the shoulder and weighed about 10 tons, about twice the size of a present day African elephant. The right humerus was partly uncovered but could not be excavated for safety reasons as it might have caused the cliff to collapse. From this dig, coprolites from hyenas were also found, together with teeth marks on an elephant foot bone, suggesting scavenging after the animal had died. At this point the excavation was stopped. The concentration of bones in such a restricted area suggested that more of the skeleton might well be present, but further progress would require the removal of 20 metres of cliff. This would be very expensive and would require planning permission, local support and a lot of organisation. The site was returned to normal and the prospects of completing the excavation were investigated. This took some time. In the autumn of 1993, small-scale defences were erected to protect the cliff from further erosion until the excavation could begin.

Eventually, major funding was secured from the Heritage Lottery Fund and Anglian Water. The necessary permission was obtained from English Nature and the landowner. Work started on 30 September 1995 with the removal of overburden from an area 15m × 5m at the top of the cliff by North Norfolk District Council. On 9 October, the Norfolk Archaeological Unit started to mark out the site and begin excavating. As well as traditional recording methods, the Swedish consultancy Arkeologikonsult provided state-of-the-art surveying and computer processing of data. After two weeks of digging there was great relief when the bones were reached. Many were orientated steeply to the horizontal and at first seemed to be scattered



Outline of the West Runton Elephant showing bones found 1990-95, from an illustration by Ashley Sampson.

randomly. For safety reasons the site was excavated piece-meal and bones removed after support and plaster encasement. The site reconstruction was thus built up over time. By the end of November 1995 the archaeologists had completed their work on the site. This left the skull, with one tusk attached, to be removed by the remaining museum staff. A steel cage was built on site and — as the weather deteriorated — the skull was lifted to safety by crane.

It is generally unusual to find the skull preserved with the rest of an elephant skeleton as it usually floats away due to its buoyancy in water. The top half of the cranium was shattered, but most of the animal seems to have been recovered except for the feet and tail, which were probably scavenged by hyenas. Over 10 tonnes of Freshwater Bed sediments were also removed for a variety of research specialists to investigate all aspects of the environment in which the elephant lived over half a million years ago. Evidence so far suggests it was very like the present Norfolk Broads, with reeds and willow growing in marshland in low lying areas and temperate forest on high ground. A rich variety of wildlife abounded.

Comparison with modern elephants suggests that the animal was about 40 years old when it died. The knee of the right rear leg shows a healed break and deformity, probably caused by fighting. The disabled creature may have got stuck in the muddy reed bed and been unable to get out. This may explain why it died with its front end upright, rather than on its side as might be expected. The unusual angles and relationship of some of the bones suggests that they were disarticulated and jumbled before burial. It has been suggested that members of the herd may well have returned to the site some time later and trampled the bones into the soft sediment. This may also account for the hundreds of tiny scratches on some of the bones. Modern elephants often behave in this way, returning to the remains of their dead relatives and trampling and rolling their bones. The position of the head in an upright posture near the rear end of the beast is explained by its buoyancy, causing it to break free from the rotting carcass and drift a few metres with the current. The disintegration of the top of the skull probably followed sometime later due to exposure to the elements.

Excavation is only the beginning of the job. Preparation of an elephant for display typically takes several years. The bones have to be removed from their plaster jackets and conserved before reconstruction can take place. It is hoped that the skeleton and a full-sized replica will be on display in Norwich Museum within the next few years.

We are grateful to Dr A. J. Stuart, BSc, PhD, DSc for allowing us to make use of his Norfolk Museum Service publication: The West Runton Elephant, Discovery and Excavation, *from which the illustration was taken, and for editing the first draft of this report.*

Alan Filmer, Inga Filmer and Judy Small