The head forms a sharp overhang to the shaft posteriorly.

The greater tuberosity forms an important insertion area for muscles pulling and rotating the upper arm, and also an origin for the large biceps muscle. Anteriorly it is very wide, with a roughened surface laterally. Posteriorly is a large rounded depression for the infra-spinatus muscle and immediately beneath this begins the deltoid crest. This extends down the shaft obliquely until it meets the pectoral ridge, extending from the front of the greater tuberosity. At their junction, a single vertical ridge continues down the shaft vertically. The deltoid ridge is very prominent and marks the insertion of the deltoid muscles pulling the humerus forwards. The pectoral ridge, marking the insertion for the pectoral muscles, is rather weak.

On the flat medial surface of the shaft, in front of the pectoral ridge, is a rather indistinct longitudinal groove, partly obscured by matrix. This is where the median head of the triceps originated.

Proximally, the shaft is oval in cross section with a flat median surface and convex lateral surface. Distally it becomes more rounded and narrows slightly. Because the distal half is missing, nothing can be said regarding the length of the shaft.

The scapulae

There are eight fragments identified as belonging to the scapulae. Only two specimens Nos. 4 and 21 are large enough to allow a correct determination. The other pieces, Nos. 7, 9, 17, 18, 19, 20 and 42 are small, and were left attached to the matrix; their extremely flat, sheet-like appearance indicates, however, that they were part of a scapula. With the exception of No. 42, they were found in a compact but disorderly mass associated with the thoracic vertebrae.
No. 9 is firmly fixed to a mass of fragments, which appear to have been chipped as most are small and splinter-like, and haphazardly piled together. Amongst them is a portion of a thoracic vertebral centrum (No. 8), which however, is hardly recognizable.

No. 21 is part of the right scapula (fig. 22). It was lying in the breccia with the internal side facing upwards and seems likely to comprise the supra-spinous region. If orientated in the correct position, only a portion of the anterior edge is preserved, the rest of the fragment being bounded by broken bone. A reconstruction (fig. 23) illustrates the position of this specimen in the scapula. The scapula spine and the infra-spinatus fossa are missing, and the posterior border of the fragment is represented by a large area of broken bone on the external surface, and which may mark the position of the broken spine.

The anterior border is thicker than the main part of the blade. On its internal surface are two ridges running parallel to it; a more posterior and ventral one and an anterior dorsal one which is considerably sharper. These serve to strengthen muscle attachments and the same are recognised on a leopard's scapula, which was used to help in the identification.

The dorsal part of the blade is extremely thin, becoming thicker towards the edge. Internally, this area is in the form of a large shallow depression, the sub-scapular fossa, marking the origin of the subscapular muscle. Ventrally, towards the apex, the bone thickens, and there is another depression on the external surface, the supra-spinatus fossa. The glenoid fossa is not preserved.

No. 4 (figs. 24a and b) is a portion of the glenoid fossa and internal surface of the coracoid region of the left scapula. It was found close to, but not in articulation with, the head of the humerus.
It is a conical fragment, one side being convex and representing the internal surface of the scapula apex. The other side is a flat section through the specimen exposing areas of spongy bone. The fossa is smooth and concave. This specimen has been considerably corroded.

The fibula

Nos. 50 and 55 are fragments of a fibula (figs. 24e and f). No. 50 is a long fragment and, judging by the width and shape, is probably the middle third. It is triangular in section proximally, gradually narrowing to oval distally. One side of the triangle is in the form of a shallow longitudinal groove, and this extends for about half the length of the fragment. One angle is extremely sharp and extends out somewhat to form a thick shelf of bone, to which would have been attached the inter-osseous membrane.

No. 55 is a much smaller fragment. Its distal end has the same diameter as the proximal end of No. 50, with a similar triangular cross section. It is therefore presumed that it belongs to a more proximal region of the fibula, although not found immediately adjacent to the previous specimen. The other end of No. 55 is slightly expanded. This suggests that it is the portion just below the expanded head that articulated with the tibia.

From the angle and position of the longitudinal flange on No. 50, and from the shape of the flared end of No. 55, it appears that these fragments belong to the right fibula. On what would be the lateral surface of No. 55 there are, proximally, marked rugosities, and the surface is slightly concave. There is a similar rugose, but more marked, depression on the lateral surface of a leopard's fibula.

Both these specimens are robust and suggest a sturdy shank.
The tibia

No. 54 (fig. 24c and d) is possibly a portion of the distal end of a tibia. The fragment is so incomplete however that an accurate identification cannot be made.

There is only a small portion of the circumference of the shaft present, the rest having broken away exposing the matrix-filled interior of the bone. Distally, inclined at an angle of 45° to the shaft, is part of a concave facet, possibly for articulation with the astragalus.

On the external face of the shaft there is a rounded vertical ridge which is terminated distally by a distinct notch. There is not much similarity with the same region of a leopard's tibia, except for the steep-sided depression for the astragalus. The specimen was also found in association with the fibula pieces, but the above identification is only tentative.

The metapodals

Five specimens are identified as metapodals, all of them incomplete (fig. 25a – e). Nos. 51, 52 and 53 lay next to and parallel to one another in the breccia, somewhat separated from Nos. 45 and 46.

In all the specimens, the proximal and distal ends are missing. In Nos. 45, 51, 52 and 53, lying at the edge of the breccia block, the distal halves have been removed by the blasting. The proximal ends are recognised by a distinctly triangular section, which narrows slightly down the length of the bone. No. 45 is a displaced distal portion, as one end is a flattened oval in section. Nos. 45 and 57 are long and slender, the latter one with a slight curvature.

At one end of all the specimens, except No. 45, which has both ends mechanically broken, the periosteum is very thin, and there is
what appears to be a rim surrounding a flat to concave surface. This is very similar to the distal ends of the ribs and sternebrae, all of which would have been covered with cartilage in life. If this were the case, these metapodials would have had incompletely ossified epiphyses. The bones seem to be remarkably slender for the size of the rest of the material, which does not show any other signs of growing stages. The epiphysis of the humerus (and also of the femur in breccia block B) is completely ossified, with no sign of a suture. It is thought that these metapodials may belong to another, young individual.

The phalanx
No. 57 is a small first phalanx. It is very slender with a flat ventral surface, on which there are two prominent ridges at the sides for muscle insertion. The proximal facet is shallow and the distal condyles small. It is too small to belong to one of the metapodials, and since it is fully ossified, probably belongs to an adult small mammal.

Nos. 10, 36, 44, 47, 56 and 58 are minute fragments which are unidentifiable. No. 31 is an incomplete rodent mandible with one of the incisors.

BRECCIA BLOCK B

Figs. 26 and 27 are plans of the breccia block with the bones numbered. A list of the bones recovered and their identification is on page 53.

The femur
No. 62 is the almost complete left femur (figs. 28 and 29). It was
lying in the breccia in articulation with the left tibia. The only portion missing is a slice from the proximal end, just lateral to the head. This was removed by the blasting and the cancellous bone is clearly shown.

At the proximal termination, there is the head, projecting medially at an oblique angle. It is smooth and spherical, with the margins overhanging a short distinct neck. The head is rather small for the length of the shaft. The great trochanter on the lateral side of the head has been removed by the blasting, and with it the digital fossa. On the medial side, opposite the position of the great trochanter is a large conical projection, the lesser trochanter. On this inserted the iliopsoas muscles, a group of thigh extensors.

The shaft is long, straight and cylindrical, widening fractionally at both ends. In the middle it becomes oval antero-posteriorly. On the lateral side immediately below the great trochanter, this is a sharp longitudinal ridge which continues for about one third of the shaft's length.

A smaller ridge extends obliquely from level with the lesser trochanter across the posterior surface. These were origins for the vastus group of thigh extensors which inserted on the patella.

Anteriorly, the shaft expands into the two large condyles which articulate with the tibia. Each condyle is rounded ventrally, but tapers up into a prominent ridge anteriorly. The intercondylar notch is deep, and continues between these ridges as a shallow groove. The condyles project posteriorly from the shaft to allow maximum flexion of the shank. Posteriorly on the shaft, above the condyles are two tubercles, the lateral one larger and set at a somewhat higher level than the median one. These provided an origin for the foot extensor muscle, the gastrocnemius.
The tibiae

No. 60 is the complete head of the left tibia (fig. 30a and b) with a small portion of the shaft. The bone is broken obliquely and the marrow infilled with matrix.

On the dorsal surface of the head are the two tuberosities for articulation with the femur, the medial one placed slightly anterior to the lateral one. Posteriorly and laterally they jut out as a ledge over the shaft. The anterior portion of the head extends out into the curved longitudinal cnemial crest which merges into the shaft as it is followed ventrally. On the lateral side, the tuberosity overhands the shaft, where there are two concave crescent-shaped facets for muscle origins. Next to these is a flat triangular facet for the fibula head, which was in articulation but subsequently removed.

The portion of the shaft present has a triangular section with a flat posterior face. On this there are two slight longitudinal ridges marking the origin and insertion of shank flexor muscles.

No. 59 is a proximal portion of the right tibia (fig. 30c and d). Only the posterior face is preserved, the anterior face having been sheared off in a nearly vertical plane. On the broken surface, the head consists of cancellous bone and the shaft beneath this is a hemicylinder of dense bone surrounding the marrow cavity.

On the posterior surface, only the lateral tuberosity is present. The facets and muscle insertion areas are identical to those on the left tibia except that the fibula facet is larger. The lateral side is very smooth and flat where the fibula lay against it.

The fibula

No. 61 is the head and proximal end of the left fibula (fig. 31a and b) which was found in position with the tibia. From the medial aspect, the surface of the head is an irregular crescent. In the centre of this are
two tibial facets; a larger flat triangular one and, posterior to it, a smaller tuberous one. The triangular one corresponds to the one described on the tibia. Anterior and posterior to these are two projections, one each side, which expand the head into a fan-shaped structure. Extending from them are slender wings of bone which taper into the shaft.

Laterally, the head consists of two flattened portions with a narrow trough between them. The anterior and posterior flanges form deep depressions below the head, where parts of the muscles extending and flexing the lower leg originate. The shaft is round to triangular in section, but only a few centimetres is present.

The thoracic vertebra

No. 68 is an almost complete thoracic vertebra (fig. 31c-e). From the slight backward slant and from the thickness of the neural spine it is suspected that it is one of the middle thoracics.

The spine is long and flattened in the longitudinal plane, but its tip has been chipped off. Both anterior and posterior margins are sharply crested. For the most part, the spine is thicker anteriorly and thins posteriorly to a narrow wing. On the base of this wing there are well marked vertical ridges marking the origins of trapezius and rhomboideus.

The neural spine extends out from the extreme posterior of the neural arch. On the ventral surface of this extension are the two oblique post-zygapophyses, which are vertically elongated and set close together. The neural canal is smaller than in the cervicals from breccia block A. The prezygapophyses jut out slightly from the front of the neural arch.
The transverse processes are short stout rods, slightly triangular in section, with the apex uppermost. At the distal ends, the apex is accentuated by a marked triangular termination, slanting obliquely upwards, and forming a large tuberosity.

The centrum ends are vertical, circular and flat. There is a well-defined dorso-lateral demi-facet at the posterior end of the left side, for the capitulum of the following rib. Anteriorly there is a pair of demi-facets on the dorso-lateral corners, but they are not easily defined.

Nos. 63 to 67 and No. 69 are unidentifiable fragments. No. 70 appeared as a long blackened rod, but was eventually discovered to be a manganese stain. No. 71 is a small rodent's skull.

Additional post-cranial fragments recovered from another closely associated breccia block have proved to belong to the same individual as the one described above. These are the distal end of a right humerus, which is the exact counterpart of No. 62, and part of the pelvis.

**Specimen 16196M**

Specimen 16196M is the distal end and part of the shaft of a large right femur (figs. 32, 33). It was found isolated from the previous specimens in the grey breccia, and clearly belongs to another individual.

The condylar region is complete. The shaft is broken in an oblique plane and the hollow marrow cavity lined by a thin layer of travertine. The bone itself is heavily mineralized by manganese, staining it black.

This specimen is larger than the femur from the "Basal Red" breccia, but similar in general appearance. The shaft is less convex on the anterior surface and the condylar region fractionally wider than in No. 62. The patellar groove on the anterior surface is also shorter and
projects forward considerably more. The muscle attachment areas are identical.

Specimen 16201N

This specimen comprises six elements of a left ankle joint: the distal portions of the tibia and fibula, the complete calcaneum and nearly complete astragalus, and portions of the navicular and cuboid. All the elements were found in articulation (fig. 34) and belonged to a large animal.

The tibia (fig. 35a) has been cracked and distorted and a portion of the anterior surface has been sheared off. It has the same appearance as the similar region of a leopard tibia except that the two astragalus facets on the distal face are directed more antero-posteriorly and the groove on the medial side for the ligaments of the foot extensors is proportionately smaller. The medial astragalus facet is deep and narrow with a sharp overhang on the medial side. The shaft, which is broken transversely, shows a sub-triangular section and a flat anterior surface.

The fibula (fig. 35b) is broken and also distorted. The distal head has a large flat triangular facet anteriorly that articulates with the astragalus, and a rounded posterior tubercle that articulates with the calcaneum. Above the astragalus facet is a depression that fits on to the facet on the tibia. Laterally, another large tubercle provides a buttress for the ligament groove running round the back of the head. The shaft is very compressed laterally, more so than Nos. 55 and 61 from breccia blocks A and B.

The astragalus (fig. 35d) has the usual irregular shape. Proximally there are the two large convex tibial condyles, the lateral articular process and the median talus, separated by a deep depression.
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