

AN INTRODUCTION TO THE GAZELLES

by

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It is appropriate in this first edition of a new periodical to go briefly over the taxonomy (classification and interrelationships) of the gazelles and their relatives, to make it clear what sort of animals we will be concerned with in future editions. I will try to put some zoological perspective on the gazelles, and in future editions go into more detail on different species, drawing attention to new discoveries and new understandings and simply to gaps in our knowledge.

Suitable qualifications for an antelope to be classified as a gazelle would be a preponderance of the following features:-

1. slenderly built
2. relatively small in size (say, under 1 metre shoulder height)
3. horns with transverse rings up most of their length, at least in males
4. horns bent more than once in their length - not just curved back in a scimitar shape (like the Oryx or Sable Antelope) nor forward in a sickle shape (like a Reedbuck)
5. fawn coloured on the upper side and white on the underside, these two zones sharply set off and often with a darker stripe along the flanks separating them
6. a white stripe from eye to nostril, with a black stripe below it
7. a short tail, with a crest of hair rather than a terminal tuft
8. glands on the face (in front of the eyes), in the groin, and between the hoofs

If the animal in question is a hoofed animal, a ruminant, and has most (maybe not all) of those eight characteristics, then certainly most laymen would call it a gazelle; and probably its "book name" (that is, the preferred English vernacular name) would be the "Something Gazelle". There are gazelles that are not as slenderly built as others, that have almost straight horns, that lack face-stripes, and so on; but most gazelles have most of the eight characters. Then there are non-gazelles - ordinary 'antelopes' of some kind - that are small, or slender, or have ringed or S-shaped horns, or gazelline face-stripes;

but without a predominance of most of those features, they are not essentially gazelles.

It should be clear by now that 'gazelle' is not really a homogeneous entity; and the genus Gazella, its formal zoological equivalent, is almost certainly polyphyletic, which means to say that some of the species included in it are not as closely related to each other as they are to various 'non-gazelles'. This seemed likely already in the 1960's, when I wrote a paper on the taxonomy of gazelles (Groves, 1969), wondered if I should include a definition of Gazella, and decided not to because it was impossible. Palaeontologists in the meantime were coming to the same conclusion: the genus Gazella was identified from deposits as old as the late Miocene, some 10 million years ago, and its relatives were quite evidently descended from these ancient 'gazelles'. More recently, it has become still clearer from chromosome studies that gazelles and their non-gazelle relatives are all mixed in together on various evolutionary lines.

In what follows I will continue to include the usual gamut of species in Gazella, but indicate what I think the species-groups are, and so draw attention to where I think a final revision will make the splits. For example, I am sure that group I (the granti group) will have to be recognised as a distinct genus eventually, but I will not take the step of calling them a genus here because I am neither sure which other groups will also require generic rank nor quite convinced that group I are the most distinct. And, although the other members of the tribe Antilopini, the tribe to which gazelles and their relatives belong, are not really central to the theme of this bulletin, they must at least be mentioned because some of them are really just highly evolved descendants of 'gazelles'.

The Antilopini are :-

Litocranius. There is only one species, the Gerenuk, L. walleri, which is very common in the semi-arid country of northern Tanzania, Kenya and the Horn of Africa. The gerenuk has very long thin legs, and a long swan-like neck; a dark, bare preorbital gland area; a very long, low, thick-boned skull; and lyrate horns with very close-set, thin transverse rings. It is a rich chestnut colour with a light stripe on the flanks; white underneath; has a white ring round the eyes; and is about 1 metre high.

Ammodorcas. Only one species, the Dibatag, A. clarki, restricted to the desert country of the Horn of Africa, and rather rare. It is about 75 - 80cm high,

long-necked, fawn with a white underside and gazelle-stripes on the face; the tail is long and tufted; the horns (carried by the male only, like the gerenuk) are curved back then forwards like a reedbuck's.

Antidorcas. Only one species, the Springbok, A. marsupialis, from semi-arid and arid country in southern Africa. The coat markings are very gazelle-like except that the midfacial region is white, and there is an eversible gland on the posterior part of the back, lined with white hair. The horns are stout, turned out then hooked in. It is about 80cm high.

Antilope. Again only one species, the Blackbuck, A. cervicapra, from India. Males only have horns, which are spiralled and evenly divergent in a V. It is fawn brown, with white underside, muzzle and eye-ring; when breeding the adult male becomes black instead of brown.

Procapra. A genus of three species which used to be included in Gazella, but there is now universal agreement that they are far removed from any 'true' gazelles. Their skulls are distinctive; they all have very short tails and big white rump-patches; and the face-glands are small or absent. There are three species:

- P. picticaudata, the Tibetan Gazelle or Goa. 60 - 70cm high; grey with reddish tones, especially around the rump patch, and limbs pale grey; midface dark. The horns in males only, are very long, slender, and closely ringed. It lives on the Tibetan plateau.

- P. przewalskii, Przewalski's Gazelle. Larger, bigger-toothed, and without the reddish colour round the rump patch. There are two subspecies:

P.p.przewalskii: grey-sandy colour (more reddish in summer), found in the Chinghai region (northeast part of the Tibetan plateau), where it is sympatric with (i.e. lives in the same areas as) the Tibetan Gazelle.

P.p.diversicornis: larger, darker, with less massive and less inturning horns. Lives in southern Ganssu and southern Ordos.

- P.gutturosa, the Mongolian Gazelle or Dzeren. The largest of the three, over 70 cm high; yellowish in colour with a dark nose and dark stripes down the front of the legs, and a trace of gazelle-stripes on the face. It has a crest of hair between and behind the horns. It has small face glands, and large glands behind the horns. Lives in Mongolia; its range formerly extended as far east as Beijing.

Gazella. The virtually undefinable genus that includes the remaining species of the Antilopini: as I total it, 14 species. They lack the various specialisations - long necks, dorsal glands, spiral horns - that characterise other genera, and unlike all except the springbok almost all Gazella have horns in both sexes. I divide the species here into five groups, of which four at any rate will probably become full genera in the end.

- Group 1. Large gazelles, in which the white patch on the buttocks sends a wedge forward along the haunches on either side cutting into the fawn body-colour. They are the largest gazelles, 85 - 97 cm high, without such long limbs (especially hindlimbs) as most others. Three species:

G. granti, Grant's Gazelle. The smallest of the three; sandy fawn colour, with poorly marked light and dark stripes on the face, but the light ones extending up the base of the horns; a dark brown spot on the nose; a black tail-tip; very long, divergent horns. An East African species. I think about five subspecies can be recognised:

G.g.granti: the female has a black flank-band (separating the fawn upper side from the white underside), the male does not. From the short-grass plains of Kenya, east of the Rift Valley.

G.g.robertsi: lighter-coloured, and about 50% of the males have peculiar horns bent outwards, with their tips hooked downwards. From Kenya and northern Tanzania, west of the Rift Valley.

G.g.notata: differs in that both sexes have a flank-band, and there is a well-marked pygal band (a black band between the fawn body-colour and the white of the buttocks). From northwest Kenya and southern Ethiopia.

G.g.brighti: neither sexes has a flank-band, and the pygal band is very inconspicuous. From southeastern Sudan and southwestern Ethiopia.

G.g.petersi: the most distinctive subspecies, small in size and the only one in which the fawn colour of the back extends over the croup onto the tail, instead of the whole area round the tail being white. Lives along the coast of Kenya; the recent opening up of Tsavo East National Park, by elephants destroying the bush, has allowed this gazelle to extend its range westward to meet that of G.g.granti.

G.soemmerringi, Soemmerring's Gazelle. Larger, with short horns that are simply hooked inward (rather like a springbok's). Body is pale fawn, and the midface is very dark, often black; otherwise the pattern is like Grant's Gazelle. There are three recognisable subspecies:

G.s.soemmerringi: the smallest subspecies (about 90 cm high); pale fawn, with no dark flank - or pygal bands. From northeastern Sudan and Eritrea.

G.s.berberana: larger, darker and longer-horned. From northern Somalia and northeastern Ethiopia.

G.s.butteri: the size of the nominate form (G.s.soemmerringi), with a distinct pygal band and trace of a flank-band; midface is black; horns are longer, more slender. From southeastern Ethiopia.

G.dama, the Dama Gazelle. A desert species, with a good deal of white on the body and legs (the white of the underside extends high on the flanks, and so on). There are never any flank or pygal bands; the tail crest is white. Horns are short and go simply up, back, then up again. It is the largest of the three species. I can distinguish only two subspecies:

G.d.dama: the upper parts are fawn to reddish in colour; this tone extends along the back to the croup, and all down the hindleg at least to the hock; it usually gives way to white on the lower shoulders, but reappears halfway down the foreleg; there are gazelle-stripes on the face. This form is found in the western Sahara: from southwestern Morocco south to Senegal, and east to about Lake Chad. In the northwest all individuals have the full extent of the red zone (the so-called "Mhorr Gazelle'), but there is a gradient of increasing whiteness to the east, so that north of Lake Chad many individuals have only a very thin fawn line connecting the reddish body zone to the same colour on the hindleg.

G.d.ruficollis: the upper parts are red-brown, but this tone is either restricted to the neck or going only partway along the back, the rest of the body being white; the legs are at most suffused with reddish; the face stripes are obliterated. This subspecies is found from Lake Chad east to the Nile.

- Group 2. Smaller than the last, similarly proportioned or even shorter-limbed. Colour tends to be rather pale; any flank-band is indistinct; the face-stripes are ill-defined, the nose is white, and the whole face may become white with age. The horns are very long, and may be found in either sex or in the males only. The hoofs are somewhat elongated. The two species are rather different, but characters of their skulls are similar, as well as their chromosomes:

G.subgutturosa, the Goitred or Persian Gazelle. A somewhat heavily built gazelle; the male has a prominent swelling in the throat; the horns in the males are long and lyrate, and multi-ringed, in the female may be absent.

Four subspecies:

G.s.marica: very light in colour, nearly white; the face and body markings are nearly obsolete. Females usually possess horns. Head and body length 99 cm, weight of an adult male 17.5 kg. From the Arabian peninsula.

G.s.subgutturosa: fawn with a reddish hue; face-stripes are present, although inconspicuous. Females usually hornless. Head and body length in male 110 - 116 cm, female 93 - 110; height of male 64 - 75 cm, female 60 - 68. From eastern Turkey, transcaucasian region, Iran, Pakistan and Soviet Central Asia; intermediates between this and the previous form occur in Iraq.

G.s.yarkandensis: sandy-yellow; face-stripes well-developed. Male has rather short, stout horns; female always hornless. Lives in the deserts of the Tarim Basin, Xinjiang.

G.s.hillieriana: like the previous subspecies, even shorter-horned, and very pale sandy in colour. From the Gobi and Caidam.

G.leptoceros, the Slender-horned Gazelle. Face and body markings are always ill-defined; horns (in both sexes) very long, well-ringed, and nearly straight; rather more lightly built than the Goitred Gazelle and lacks the throat swelling. About the same linear dimensions as the larger races of Goitred Gazelle, but weight only about 15kg. It replaces its relative in Africa, where it seems restricted to the ergs of the northern Sahara. Two subspecies:

G.l.leptoceros: smaller, longer-horned. Western Desert of Egypt.

G.l.loderi: larger but shorter-horned. Tunisia and eastern Algeria.

- Group 3. Mostly larger than group 2, but much smaller than group 1; more slenderly built, with especially longer hindlegs, but limb segments themselves not very elongated. These are very strongly marked gazelles, with striking face-stripes, a blackish lateral flank-band, and reddish-toned body colour. The horns are characteristically very strongly, prominently ringed in the male; but in the female the horns are simple, fragile spikes which easily break, so sometimes appearing to be asymmetrical. There are two species:

G.rufifrons, the Red-fronted Gazelle - some of its subspecies are known by their own vernacular names. The colour is cinnamon or reddish-chestnut; the pygal band is weak, there is a light, fawn-coloured band above the dark flank band but it is not usually striking. The horns are feebly S-shaped to nearly straight, with exceptionally prominent rings. There are seven subspecies:

G.r.rufifrons: reddish-chestnut; midface bright rufous; the light face-stripes are light buff, the dark ones rufous. There is no dark spot on the nose. Below the black flank-band is a thin red stripe. Head and body length 110 - 120 cm, shoulder height 77 - 81 cm, weight of adult male 26 - 29 kg. West Africa: Senegal and Mali.

G.r.laevipes: larger, less reddish; light face-stripes are whitish. From Niger east to the Nile.

G.r.kanuri: a smallish cinnamon-coloured race from the Shari region, south of Lake Chad.

G.r.tilonura: often known as the Eritrean Gazelle. Rather redder than its neighbour across the Nile, G.r.laevipes, and smaller; the light face-stripes are obliterated except around the eye; and the horns are hooked inward at the tips. From the Setit, Atbara and Bogos regions of the Sudan-Ethiopia border.

G.r.albonotata: called the Mongalla Gazelle. The light face-stripes are white; there is a black nose-spot; the forehead is often white; the red stripe below the black flank-stripe is often absent. From the southern Sudan, east of the Nile.

G.r.nasalis: like the Mongalla Gazelle but has much longer horns in the male, is redder in colour, and the dark face-stripes are black. From Kenya and northern Tanzania, west of the Rift Valley.

G.r.thomsoni: larger than the previous form (shoulder height 73 cm in the male, 70 in the female, as against only 61 - 64 cm in nasalis, both sexes); glossy cinnamon colour, with no nose-spot, forehead never white, has more prominent dark knee-brushes. From Kenya east of the Rift Valley, then southwest through northern Tanzania to the Wembere Plains. This subspecies and the previous one are the famous Thomson's Gazelle, or 'Tommie', and together, perhaps with albanotata as well, have usually been separated as a different species, G.thomsoni. But it is obvious that the Mongalla Gazelle is so completely intermediate, in skull characters as well as in the external features described here, that there is a chain of gradually-changing subspecies which simply cannot be broken up into species.

G.rufina, the Red Gazelle. Is a beautiful red colour, with sharply marked black flank-band with a light fawn stripe above it and a thin red one below; midface is chestnut; light face-stripes are well-marked but not white. No nose-spot. Pygal band is strongly developed. The horns are straighter than in G.rufifrons, and less prominently ringed; the skull is different; size is rather larger. Probably inhabits Algeria - but its exact range is a mystery! It is only known from a few specimens bought in markets in Algiers and Oran around the turn of the century, and we badly need to know if it still exists, and if so where and in what sort of habitat.

- Group 4. In this group I put just one species, of whose affinities I am unsure. Traditionally it has been associated with group 5, and has even been placed as a race of G.gazella; on one occasion I suggested it belongs to group 3, and even made it the same species as G.rufifrons - both these suggestions are certainly incorrect. My study of the skull suggests that, instead, it could be related to group 2, despite its quite different habitat.

Gazella cuvieri, Cuvier's Gazelle, or Edmi. Fairly large (height of male 66 - 69 cm); rather dark grey-brown, with a dark brown flank-band and pygal band; well-developed face stripes, dark midface, big black nose-spot. The coat is long and thick. The horns are parallel at the base, then diverge, with the tips pointing in and forwards; they are very strongly ringed, on both front and back surfaces; horns are long and well-formed in females too. This gazelle is restricted to the Atlas Mountains in Morocco, Algeria and Tunisia.

- Group 5. These are the central group of gazelles: the typical small-sized gazelles with horns well but not prominently ringed; well-marked face and lateral stripes; midface not darker than rest of head; ears rather light coloured; and the skull has characteristic features. There are six species, of which one is still undescribed, although a formal description is in press at the moment:

G.dorcas, the Dorcas Gazelle. The smallest species, never as much as 70 cm high; a light fawn in colour, with well-marked face-stripes but generally rather poorly marked lateral flank-stripes, both the light and dark ones. Horns are turned outward then in at tips, well-ringed (15 - 25 rings), and are well-formed in both sexes. The ears are long, more than 14% of head and body length, and when laid forward reach nearly or quite to the nostrils. The limbs, especially their distal segments (shanks), are very long; the forelimb length is 79 - 84% that of the hindlimb. There are seven subspecies:

G.d.dorcas: pale fawn colour; dark flank-stripe faint or obsolete, pygal also faint; haunches and legs somewhat lighter than body; nose pale fawn; ears whitish sandy; face-stripes clear white, extending above eye, dark stripes thin. Horns rather short, either simply curved or more lyrate. Small: height 55cm, head and body length 90cm, weight 15kg. From Egypt, west of the Nile, and eastern Libya south to Tibesti.

G.d.osiris: paler, less contrasting in colour; less black in the lateral face-stripes; flank band never marked but pygal more so. Slightly larger: height 65cm. Found over most of the Sahara, south to Chad, west to Senegal.

G.d.massaesyala: more ochre in colour, and with horns more usually of the lyrate type. From the Tell of Algeria and the Rif Plateau of Morocco.

G.d.isabella: a deeper, redder colour with a poorly-marked light flank-stripe but a darker, often nearly black, lower one, and a black pygal band; haunches and limbs lighter than body, and contrasting; midface dark chestnut, with a black nose-spot in most individuals; ears darkish sandy-grey; face-stripes broad, light ones not pure white. Horns of male always simple, curved type; of female, less well-formed than in previous three races. Larger: head and body 91 - 100cm, weight of male 14 - 18kg, of female 9 - 16kg. Ranges

east of the Nile, from Eritrea along the Red Sea coast to Sinai and the Negev of southern Israel and Jordan, but apparently not beyond the Edom escarpment.

G.d.pelzelni: brighter in colour but otherwise very like G.d.isabella; horns nearly straight and only slightly inturned at the tips. Afar region, Djibouti and northern Somalia.

G.d.beccarii: richer, more chestnut than isabella, with flank-band blackish; nose spot absent; much larger. This is a somewhat mysterious race, known only from two specimens from the highlands of the upper Anseba River in Eritrea.

G.d.saudiya: small in size, sandy brown, with little or no trace of flank stripes, and pygal stripe faint; haunches and legs little lighter than body; midface pale reddish; ears pale buff; no nose-spot; light face-stripes buffy-white, dark ones thin, reddish. Tail short, only 10% of head and body length (compared with 12 - 16% in others). Horns long in both sexes, straight (perhaps slightly inturned at tips), diverging regularly in a V. Known from Saudi Arabia, Kuwait, and southwestern Iraq. Because it is so unlike its neighbour, G.d.isabella, and so different from other races, it is an open question whether it is really a race of this species or not.

G.bennetti, the Indian Gazelle or Chinkara. Sandy or tawny coloured, rather poorly-expressed flank stripes and pygal stripe; haunches and legs light, contrasting with body; midface dark chestnut; ears dark sandy grey; nose-spot, if present, rather smudgy; light face-stripes off-white, not extending above eyes, dark ones deep red. Ear reaches about halfway towards muzzle. More heavily built: male weighs about 23 kg, female 15 - 18 kg, for a height of 58 - 61 cm. Horns in male rather straight, their tips slightly outturned, rings more prominent than in other species of this group; in female, fairly long, well-formed. Previously I have included this species in G.dorcas, but the differences are rather sharp (and the ranges do not abut), so it seems better to recognise it as a distinct species. Four subspecies:

G.b.bennetti: tawny coloured with contrastingly lighter haunches and legs; darker brown-red in middle of back, and region of lower flank-stripe the same colour, with a duller zone between. From the Ganges Valley and the Deccan.

G.b.christyi: much paler, silvery drab-brown; very short-haired. Desert country of Gujarat and Rajasthan.

G.b. subspecies, undescribed: very large, long-horned in male; female smaller; colour a rich tobacco-brown. Salt Range, Punjab.

G.b.fuscifrons: long-coated, grey-sandy; flank-band nearly obsolete; female has especially long horns. Southeast Iran and Pakistan west of the Indus.

G.gazella, the Mountain Gazelle of Israel and Lebanon and the Common Arabian Gazelle of the Arabian peninsula. Larger than the two previous species (height more than 60 cm, head and body length over 1 metre), and usually distinguished by the strong contrast of the light fawn haunches and legs with the darker fawn or grey-brown body, the dark - sometimes blackish - dark flank-band, the dark sandy-grey ears, and the horns of the female being short, weak and often deformed. The males' horns vary in shape; the face-stripes are never pure white; the nose-spot is always black and conspicuous; and the ears reach only about halfway down the muzzle (they are less than 14% of the length of the head and body). There are four subspecies, one of them undescribed:

G.g.gazella: large, dark, rather straight-horned. Head and body over 103 cm long; weight of male 24 - 28 kg; extremities (ear, tail, limbs) relatively short. Dark brown-grey; light flank-stripe very clear, dark one smoky grey-brown; pygal stripe well-marked; midface deep rufous, forehead dark brown. Not a desert form: lives in the mountains of northern Israel, southern Lebanon and the border areas of Syria.

G.g.cora: smaller, longer-legged. Head and body about 100 - 104 cm; height 61 cm; colour varies from ochre to dark brown-grey; body markings as in G.g.gazella but face markings different: midface and forehead dark chestnut; dark face-stripes broader and blacker than in G.g.gazella. This is the common form, known simply as Arabian Gazelle, from the Arabian peninsula. Darker, straighter-horned individuals (i.e. more resembling G.g.gazella) predominate along the Red Sea coast, while inland they tend to be lighter in colour with horns that, in the male, bow outwards not unlike G.dorcas isabella.

G.g. subspecies. undescribed: sandy-grey colour with the most extensive black nose spot of any gazelle; very lightly built with long legs, tail and ears. Head and body length 1 metre, but male weighs only 16 kg. Distal limb segments very elongated. Horns of male fairly straight, as in G.g.gazella, but more divergent and inturned at tips. This is confined to the Arava, the Rift Valley extending north some 100 km from the Gulf of Aqaba; it is in grave danger of extinction, only 15 - 20 individuals remaining.

G.g.muscatensis: the smallest race, head and body 90 - 99 cm, height under 60 cm; extremities relatively short as G.g.gazella. Colour reddish-toned dark grey-brown; light flank-stripe poorly marked; pygal stripe poor; midface and forehead deep rufous; dark face-stripes thin. Horns of the outbowed type in males. Restricted to the coastal strip of northern Oman.

G.arabica, which may be called the Farsan Island Gazelle. Very large (the biggest species of the group); bright red-ochre colour; pale flank-stripe well-marked, but dark one obsolete; contrast of light haunches very marked; midface red-brown; ears sandy-grey; nose-spot present; light face-stripes clear white, dark ones thin, dark brown. Ear does not reach nostrils when laid forward. On inner side of hindleg, white of underside extends down to hoof instead of stopping at hock as in most others of this group. Horns of male straight, long, poorly ringed; of female, short and fragile. Only one male and one female are known, both from Farsan Island in the Red Sea; previously the common Arabian Gazelle (here called Gazella gazella cora) has usually been called arabica, but by the rules of zoological nomenclature the name arabica applies only to the Farsan species.

~~G. b. k. Gazella arabica~~
Gazella species, undescribed, which could be called the Yemen Gazelle or perhaps the Queen of Sheba's Gazelle. Very large and dark with straight, thick horns. Colour is nearly black in some lights; the pale flank-stripe is very contrasting, the dark one is black, with a red line below it (bordering the white of the underside); pygal band well-marked; haunches and legs not very conspicuously lighter than body; midface black; ears dark fawn; light face-stripes medium buff, dark ones inconspicuous; white of underside goes all down inner surface of hindleg to hoof; ear short, when laid forward only just reaches eye; male has short thick straight horns with only 12 - 15 rings, female has long well-formed, ringed horns. In a couple of early articles I referred to this as

'Gazella gazella, Yemen race', but recently I concluded it is a distinct species, and a description is in press jointly with a colleague, D. M. Lay. It is known only from the highlands of North Yemen.

G. spekei, Speke's Gazelle. Rather small in size, without the elongated hindlimbs of G. gazella; distinguished by its puffy nose (probably due to a more extensible nasal cavity than other species) and its S-shaped horns in both sexes. Fawn with well-marked flank-bands but indistinct pygal band; midface brownish fawn; face-stripes narrow, indistinct; nose spot present; ear-backs whitish fawn. From Somalia and eastern Ethiopia.

Anyone looking over this list will probably be struck by its messiness and its complexity. So many species! I have taken the line that any population that differs strikingly, sharply and consistently from its relatives, and does not interbreed with them in the wild if their ranges are in contact, is a distinct species: this is no more than the standard practice in zoological taxonomy, but it leads to some disagreements with the 'orthodox' taxonomy - for example, the Farsan gazelle would be a distinct species, but Thomson's Gazelle would not. But, as I have tried to show, there is much we do not know, and quite plausibly there are many more changes that will have to be made.

Chromosome studies suggest, too, that my Group 3 is by far the most divergent group, which standard morphology does not, and that Antilope is very close to Group 5. But that brings us back to where we started: what, exactly, is a 'gazelle'?

References:

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