

On the Origin of Cats and Carnivores

A.W. (BILL) MEHLERT

ABSTRACT

Creation scientists are working on ways to identify the biblical 'kinds'; the created units or groups as described in the book of Genesis. Evolutionists classify on the assumption of common ancestry and morphological similarities and differences. These two approaches are diametrically opposed. Creationists can reasonably employ similarities to construct non-evolutionary 'trees' which are in accord with scriptural constraints and do not clash with known scientific facts. It is proposed to study the cats of the world and the origins of the felines and carnivores, and to suggest a non-macroevolutionary hypothesis; one which is in accord with creationist thinking.

INTRODUCTION

Cats, large and small, are among the most beautiful and graceful of all God's creatures. They are classified by evolutionists as carnivores along with dogs, weasels, bears and hyenas, and are quite varied in morphology and behaviour. Cats have so far not been the subject of detailed creationist discussion, and the time is now opportune for such an examination.

Most of the differences between and within the four existing feline genera relate to size, colour and behaviour; yet the unmistakable stamp of their type can be clearly seen in the variety evident in their unity, which is simply another way of stressing variability within distinct types of animals and plants.

The entire felid family (which includes extinct forms) is too vast a field to be adequately covered in a single article, and therefore I have made no attempt to discuss in detail every species or breed, or to go into excessive detail.

CAT RELATIONSHIPS AND MORPHOLOGY

The superfamily Feloidae is classified as part of the order Carnivora (see Table 1).¹ Currently-living members of the group including the subfamily Felinae are divided into four genera and approximately 35 species (Table 2).² There are also about 40 genera of extinct cat forms ranging from the Oligocene geological series to the Pleistocene.³

Among the reasons for classifying cats, dogs, weasels,

bears, raccoons, etc. in one single order, are the following:

- (i) Most are predators, with the exception of the pandas.
- (ii) Most modern forms possess slicing or shearing teeth called carnassials.⁴ The triangular cusps of the carnassials allow cats and other carnivores to slice through the toughest of flesh and gristle, which results in the familiar eating habit of turning the head to one side as the animal shears off chunks of meat. The carnassials are believed by transformists to have evolved from ancestors whose fourth upper premolar (P⁴) and first lower molar (M₁) became adapted to slice or shear the flesh of their prey. These teeth fit together perfectly and are a key feature of the order, although in a few species they are somewhat different, as in the case of the pandas which have grinding surfaces.
- (iii) The *bauplan* of carnivores includes apparent fusion of two wrist bones (scapholunar) of the limbs; the much smaller clavicle or collarbone in comparison with other mammals; a strong, agile body — especially in dogs and cats; and tremendous jaw power.
- (iv) Many typical carnivores such as the canids possess 44 teeth — six incisors, two canines, eight premolars and six molars in each jaw. However, most cats, with their rounded heads and short jaws, possess about 30 permanent teeth, with large cheek teeth and canines along with small incisors. The usual dental formula of cats is I12, C4, P10 and M4.
The main cat characteristics are as follows:
 - (a) The presence of retractile claws.

ORDER — CARNIVORA (Extant and extinct carnivorous placental mammals)	
SUBORDER	– <i>Fissipedia</i> (land-dwelling carnivores)
Superfamily	– <i>Feloidea</i> – cats, hyenas
Families	– <i>Viverridae</i> – Old World forms <i>Hyaenidae</i> – hyenas <i>Felidae</i> – cats
Superfamily	– <i>Canoidea</i> – dogs, bears, raccoons, mustelids
Superfamily	– <i>Miacoidea</i> – ancestral fissipeds (miacids)* *now extinct

Table 1. Superfamilies and families of the Order Carnivora (terrestrial forms).

FAMILY — FELIDAE	
Genera	– <i>Panthera</i> (lions, tigers, jaguars, snow leopards: five species) <i>Acinonyx</i> (cheetahs, one species) <i>Neofelis</i> (clouded leopards, one species) <i>Felis</i> (bobcats, domestic cats, lynxes, ocelots, wild-cats, pumas, about 28 species)
Subfamily	<i>Machairodontidae</i> (extinct sabre-tooths)

Table 2. Classification of the Family Felidae.

- (b) There is a vital vocal distinction between most large specimens of the genus *Panthera* and the smaller cat varieties — the ability of lions and tigers to roar; whereas smaller cats are restricted to snarling, screaming and meowing. The ability to grunt or roar loudly is possible because most large cats possess pliable cartilage at the base of the tongue, instead of the fully ossified hyoid in the smaller varieties. This ossification restricts the movement of the larynx, resulting in the weaker sounds made by smaller cats.
- (c) Cats have excellent binocular and colour vision, especially in the dark when their sight is several times more efficient than that of humans. Their hearing is also very good, but the sense of smell is not as acute as that of the canids.
- (d) Most cats except lions and tigers are quite adept in the trees, and most are solitary in their habits with the notable exception of lions, which usually dwell in family-like groups or prides.
- (e) In size and weight there is quite a deal of variation among felines — a male tiger can measure more than three metres in length from nose to tail-tip, stand about a metre at the shoulder, and weigh up to 250 kilograms. A smaller cat such as the lynx of North America may measure less than

one and a half metres in length and weigh less than 25 kilograms. The puma or cougar is the largest of the indigenous North American cats and can attain a length of two metres with a body weight of about 90 kilograms, yet it is classified as a 'small cat', *Felis concolor*.

- (f) In colour patterns, there is wide variation ranging from the common tabby to the spotted leopards, the black leopards (the so-called panthers), the tawny lions and black-striped tigers. The New World South American jaguar resembles the African leopard in some respects, notably in its tawny coloration with black spots, while the snow leopard (now rare), and clouded leopard of India and east Asia have much lighter colouring.

Variations in colour, size and behavioural patterns in the cat family match those of the canids, but in general morphology the range of variation is somewhat less. Apart from the hyoid mentioned earlier, there is very little osteological variability in the family. All cats are structured on the same basic plan, with only small or relatively unimportant deviations, regardless of whether the animals are small or large, arboreal or terrestrial, solitary or social, and even the mongrel or common alley cat has a great deal in common with the majestic African lion.

Geographic Distribution

Placental cats are native to all settled continents with the exception of Australia, which is home to unique marsupial 'cats' that are deceptively, yet only superficially similar to the placental forms. On the North American continent are found the puma or cougar, commonly called mountain lions, and two smaller types — the lynx, and the similar-sized bobcat. All are solitary in their habits. The chief prey of the puma are hoofed mammals such as deer and elk, and its territory may be as extensive as 100 square miles. The bobcat, slightly smaller in size, feeds mainly on hares, rabbits and other small mammals. Lynxes have a fairly similar diet.

Another large cat is the jaguar of Central and South America (*Panthera onca*), which resembles the more widespread leopard of Africa, the Middle East and Asia in colour patterns and size. In fact, it is the only large cat of the genus *Panthera* found in the New World. Surprisingly for its size, the jaguar does not roar but seems restricted to grunting and snarling. It is, like the leopard, at home in the trees, and it feeds mostly on birds, sloths, deer, peccaries, frogs and even monkeys. It is commonly a little larger than the Old World leopards, measuring over 1.8 metres in length and weighing up to 115 kilograms.

The feline known for its great speed is the African and Middle Eastern cheetah, one of the smaller great cats, and the only extant species of its genus (*Acinonyx*). With an average length of about 1.5 metres, it resembles somewhat the spotted leopard in colour patterns; yet there are significant differences from other large cats which may justify its classification in a separate genus. It is the fastest land animal and can reach speeds up to 100 kph for brief distances while in pursuit of prey.

It is also more loosely built with a smaller skull and face, and flatter ears. The cheetah's prey includes impala, hares, wildebeest and various other ungulates. With its flexible spine, light weight and long legs, the cheetah is a highly specialized carnivore. Among other differences from the large cats of the genus *Panthera*, are increased air-breathing capacity and the important but nevertheless fairly minor feature, the non-retractile claws. Actually the cheetah can retract its claws, but they lack the protective 'sheaths' which cover them in other large cats, and this seems to give the cheetah extra traction in high-speed chases.

We now turn to the rest of the *Panthera* species and, in addition, to the lone member of the remaining 'big-cat' genus, *Neofelis*, or clouded leopard. Leopards have the widest geographical range of any large cat; their territory extending from south, west and northern Africa across that continent into the Middle East, India, China, South-East Asia, and even into some of the Indonesian islands. This beautiful animal, usually coated with black spots on a brown background (but occasionally nearly black all over, the so-called panther), has long captured the imagination of all peoples of the world.

There are as many as seven living sub-species of leopard, and as a group it is extremely successful, being highly adapted to most terrains and is well camouflaged. Unlike the lion,

leopards usually forage at night, preying on birds and small mammals. They are at home in the trees and often drag the carcass of the victim into a tree, leaving it wedged between branches for consumption at leisure. One type of leopard, which is not classed in the genus *Panthera*, is the so-called clouded leopard *Neofelis nebulosa*, a medium-sized creature which inhabits parts of India, Burma, China and Nepal, and some of the Indonesian islands. Only about 1.3 metres in length, and weighing only 20 kilograms, it is, like other leopards, an arboreal creature with a coat of grey with darker spots. It preys on squirrels, monkeys and birds. Apart from some minor dental and cranial features, it differs very little from the other leopards.

The really major figures of the cat family are the African lion and the Asian tiger, both very large animals of imposing appearance. There are seven sub-species of lion and several varieties of tiger, the most impressive being the huge Siberian specimen. Both lions and tigers are quite capable of bringing down large mammals such as zebra, water buffalo, young elephants and moose.

Apart from the already-mentioned puma, lynx and bobcat, there are approximately 25 to 30 species of smaller wildcats with virtually a global distribution except for Australia and New Zealand. The morphology and biology of small cats is very similar to those of the large specimens, with almost no differences of great significance except size and vocals. Many, such as ocelots, are vulnerable to human pressures, such as the fur trade which still flourishes in some parts of the world, and others including tigers and pumas are under the continuing threat of farmers' rifles and the steady loss of habitat.

There is a considerable number of breeds and varieties in the range of domestic cat *Felis domestica* (or *F. catus*), such as the Siamese, Persian, Manx, Chinchilla, Burmese and so on. All are thought to have descended from the African wild-cat *F. sylvestria*, which was already domesticated in Egypt well before the time of David. However, there is much controversy on this subject and the present classification system is not fully agreed to by all systematists. For example, some zoologists would include the clouded leopard and the snow leopard in the genus *Panthera*, in spite of the bony hyoid in the vocal apparatus and their inability to roar.

Biology

Before discussing the matter of origins, it will be useful to consider the question of genetics. As the average reader would know, the morphology of an individual is largely, but not completely, determined by the DNA 'blueprint' implanted in the genes. Half of the genetic material comes from the female parent and half from the male. When a male reproductive cell (sperm) unites with the female ovum to form the zygote at the time of conception, the new individual possesses a blend of traits from the two sets of parental genes. This blend will largely determine the appearance of the new individual. However, there are some complications, one of which is mistakes in DNA copying (mutations).

Another is that all genes are not equal — some are dominant, others are recessive. As an example, if a human individual has inherited a dominant gene for (say) thick lips from the father, and a recessive for thin lips from the mother, then other things being equal, it will have thick lips. However, the recessive gene carried for thin lips may well come to the fore later on, when the descendants produce further offspring.

Random mutations or DNA copying errors can have several effects:—

- (1) A change leading to death or deformity — (a harmful alteration usually causing decreased survival fitness).
- (2) No external effect, or just a slight change say in colour, or in ear or nose shape — that is, a ‘neutral’ mutation having no bearing on survival fitness.
- (3) A recessive mutation which does not immediately reveal its presence, but can show up later in the lineage with mostly deleterious results. Mutations can occur spontaneously, but can also be caused by chemicals and/or radiation.

Evolutionist biologists claim that a very small percentage of mutations may be beneficial under certain circumstances, but no major ones have ever been observed whereby the benefit is great enough to play a role in macroevolution; the change of one type of organism into another different type. Those that do give a survival advantage tend, on close inspection, to involve a loss of genetic information (wingless beetles on windy islands, eyeless fish in caves, etc.).

Micromutations are claimed to have played a part in the balance between black and white varieties of peppered moths in England, but both colours are, and will remain, peppered moths — *Biston betularia*. There is no explanation for the origin of the moths.

The environment can play a significant role in the way the genetic information is expressed — for example, cats dwelling in an area of poor nutritional food supply may be smaller and weaker than their kin who are well supplied with abundant good quality game, but this factor, being eco-phenotypic or environmental in character, will not be passed on to future cat generations. As for natural selection, this phenomenon operates in the sense that fit animals will survive better than less fit creatures, but selection cannot account for the **appearance** of novel features or ‘new’ animals. Selection can explain the **survival** of an advantageous feature, but seems hard-pressed to explain its **arrival** in the first place.

In the case of the mutant tail-less Manx cat, the missing appendage in extant populations is caused by a dominant gene which can also produce a degree of spinal abnormality — spina bifida, and other problems. The actual origin of the mutation which produced tail-less Manxes is not known, but the cats have been observed since the 15th century. Almost all Manxes have to hop rather like rabbits because of their long hind legs and shortened spine — hardly a desirable condition if they had to survive real competition in the wild.

Other mutations are known, such as the curly-coated Rexes which appeared for the first time in 1950.⁵ In 1961 the breed known as the Scottish Fold appeared, when a kitten

was born in Scotland which had uniquely folded flat ears.⁶ Many other cases are known, but all seem to be either disadvantageous unless protected by human intervention, or are trivial and totally unable to account for major features such as eyes, auditory apparatus, kidney functions and so on. In the case of the breed with the deformed ears, the Scottish Fold, the governing council of the Cat Fancy (*sic*) in the UK has refused to recognize the breed because of the likelihood of ear infections and deafness.⁷

FOSSILS AND ORIGINS — CARNIVORES

According to Carroll,⁸ and Colbert,⁹ a reasonable summary of gross evolutionary relationships is as follows:

In the Lower to Middle Tertiary system, the first clearly-recognizable carnivorous types are found as medium-sized terrestrial mammals. There were two major groups:—

- (a) the alleged miacid ancestors of the modern order *Carnivora*, and
- (b) an ‘archaic’ group, the Creodonts, now extinct.

Three highly important morphological characters of carnivores are of great significance here:—

- (1) The carpus (wrist),
- (2) The carnassial teeth, and
- (3) The auditory bullae.

Also important are the presence or absence of the fissures in the terminal phalanges (toes), and connected with this, the matter of retractile claws. In the creodonts and the carnivores, **different** teeth are modified as carnassials which would indicate separate or independent development. In the creodonts the feature involves upper molars M^1 and/or M^2 , and the lower molars M_2 or M_3 , but in the alleged ‘ancestral’ carnivores the last upper premolar and the first lower molar are the teeth in question.

There were two families or suborders of creodonts; the *Oxyaenidae* and the *Hyaenodontidae* of the Eocene series. The creodonts declined rapidly in the Oligocene, except for some hyaenodontids which survived into the Pliocene. In Palaeocene rocks are found the fossil remains of another carnivorous group, the miacid family, which continued through the Eocene and then suddenly became extinct. Their dentition was generally similar to that of the *Carnivora*, and they are regarded by many authorities as being primitive representatives of the later members of the order.

However, the *Miacidae* possessed a couple of ‘primitive’ characters which distinguish them from other ‘true’ carnivores — there was no ossified tympanic bulla enclosing the middle-ear, and the wrist bones were all separate and unfused. In the ‘true’ carnivore families, the scaphoid, centrale, and the lunar bones in the wrist are fused into a single unit, the carpus, and the auditory bullae are ossified. Two distinctive Eocene miacid genera were the small, weasel-like forms *Viverravus* and *Miacis*. (At this stage I should mention that when authorities use terms like ‘primitive’ or ‘advanced’, they are not referring to inferiority or superiority, but primarily to ‘more ancient’ or ‘more recent’ in time.)

According to Colbert these creatures and other specimens are allocated to a superfamily, the *Miacoidae*, consisting of the family *Miacidae* plus some genera of the family *Viverravidae*.¹⁰ Carroll allocates all the viverravids to the superfamily *Feloidea*, which includes cats, hyenas and civets, all under the suborder *Fissipedia* or land-dwelling carnivores.¹¹

According to Carroll the miacids are already clearly distinct right from their **first** appearance in Lower Eocene deposits of North America and Europe.¹² By the Late Eocene the miacids were dominant over the viverravids, but are poorly known except for one complete skeleton from the German Eocene series.

Modern Carnivores

In the Oligocene rock series, modern families of true carnivores are firmly established as fossils, and are clearly distinct from both the miacids and the viverravids by the ossified auditory bullae in the middle-ear. Apparently there were two major groups of carnivores, the *Feloidea* including the felids and the hyaenids, and the *Canoidea*, containing the canids (dogs), the ursids (bears), and the mustelids (weasels).

Most carnivores from the Oligocene and 'later' series are assigned to living families. In this geologic series are found clearly distinguishable dog-types, and the basicranial features are already established at their first appearance as fossils, although the various genera are not usually so diversified as extant forms are. The cats are recognized by a number of features, including the presence of retractile claws and long upper canines.

Some genera of canoids such as *Cynodictus* (Eocene), and *Hesperocyon* of the Oligocene/Miocene, are stated to have retained some features of miacid ancestry. According to Colbert, the cats, once having split from viverravid ancestry, rapidly evolved into fully specialized forms without much change, and by the Oligocene they were highly evolved and not very different from extant cats.¹³ All modern cats are constructed according to the pattern of Oligocene cats.

However, there seems to be a division of cats into two types — the kind with which we are familiar today, and the sabre-toothed type which now is extinct. The genus *Dinictus* seems to be quite similar to extant cats, while another genus, *Hoplophoneus* appears to represent the long-canine (sabre-toothed) extinct varieties. The most well-known of the latter is the genus *Smilodon*, which became extinct only quite recently. Despite this, all modern and extinct cat forms belong to the single family, the *Felidae*, which includes both large and small cats, plus the cheetah and sabre-toothed specimens.

Origin of the Miacids

The immediate ancestry of all Tertiary mammals should be referable to primitive mammalian types of the post-Jurassic system, that is, Cretaceous forms, but in fact there are considerable problems. Mammalian forms of the Cretaceous are very poorly known, but if a major transition actually did

occur, it would be reasonable to expect an acceptable series of fossils and lineages to be available. However, this is not the case.

The origin of Tertiary mammals including the creodonts seems to be lost in the murky past. According to Colbert, the 'Early' Tertiary placentals arose from primitive Cretaceous insectivore ancestors,¹⁴ but very little is known about these forms, and Carroll makes the comment that marsupials and placentals probably diverged from a common ancestor in the Early Cretaceous.¹⁵ This, of course, is a statement of opinion, and on the same page he observes that placentals have made significant advances over marsupials, especially in reproduction, and therefore these advances '**must**' have been initiated before the appearance of modern orders. Of course marsupials are in no way inferior to placental forms; they are as well adapted to their environment as any other life-form.

Isolated placental-type teeth are identified in Texas Cretaceous deposits,¹⁶ but they do not yield much information about later orders. Furthermore, remains are known also from Mongolian beds, and according to Carroll two genera, *Kennalestes* and *Asioryctes*

'... appear to be almost ideal structural ancestors for later eutherian mammals, ... the closest affinity being with the tree shrew *Tupaia*.'¹⁷

These and two other genera are classified in an

'... ill-defined assemblage, the "Protoeutheria", which is considered a stem group that includes the ancestors of most, if not all, the later placentals.'¹⁸

This again is an opinion, however reasonable, but is based on evidence which is open to other interpretations. While this is interesting, it falls well short of what we would expect in identifying pre-creodont and pre-miacid lineages, and the record does not improve until the Middle and Upper Palaeocene. As Carroll states:—

'... the (poor) fossil record in the latest Cretaceous and early Cenozoic (Tertiary) makes it very difficult to establish the nature of the inter-relationships among the many groups of eutherians found in the later Tertiary.'¹⁹

He continues on the same page:—

'At least 30 **distinct** forms are recognized by the middle Palaeocene.' (Emphasis added.)

While inferences may be drawn from the above outline, the evidence is still disappointingly short of demonstrating creodont and miacid origins, especially in view of the very sudden appearance of so many Palaeocene families.

Carroll observes that relatively minor changes would be necessary to modify the molars and posterior premolars of the Lower Palaeocene genus *Cimolestes* to the pattern seen in early creodonts and carnivores,²⁰ but as shall be seen later, it is not as simple as that, and the evidence is open to alternate interpretations.

The Miacids (about 10 genera)

As with all the major Early Tertiary taxa, these creatures

are also ‘. . . clearly distinct when they first appear . . .’²¹ They too, appear in diversified forms in the Palaeocene but became extinct by the close of the Eocene.²² The carnassial teeth of the *Miacidae* differed from other early ‘carnivores’ in that they consisted of P⁴ over M₁. Two other features distinguish miacids from later carnivores — there was no ossified tympanic bulla and the wrist bones were not fused.

In Romer’s view, the creodonts have a pedigree distinct not only from that of the *Carnivora* proper, but also from most other placentals (including the *Miacidae*);²³ yet, apart from a couple of isolated genera of unestablished and hazy affinities, there is little to indicate the origin of either the order *Creodonta* or superfamily *Miacioidea*. There are certainly no lineages leading to either group. Romer acknowledges that the miacids are poorly known, and that they differ from creodonts in several important respects including the non-fissured terminal phalanges, larger brains and the carnassial teeth.²⁴

Chris Wemmer makes the interesting observation that extant viverrids (civets, mongooses, genets, etc.) —

‘. . . so closely resemble . . . the *Miacioidea* that they are almost indistinguishable from their early Eocene relatives. The tooth structure and skeletal morphology has barely changed for 40 to 50 million years.’²⁵

Many civets bear a superficial resemblance to some cats, but the structural differences are such as to place them in a different family. It therefore appears, assuming the evolutionists’ own time-frame, that little or no evolution has occurred in these animals over a very long period.

As the various families of creodonts and miacoids are so clearly distinct at their **first** appearance as fossils, it seems that any attempt to establish ancestry has failed. Accordingly we shall now move a step further and see whether an evolutionary pedigree for the true carnivores can be traced.

Order *Carnivora* — Which Ancestors?

As most authorities are of the opinion that the true carnivores are derived from the miacids, this family is a good place to start our search for the common ancestors of cats, dogs, bears, weasels, hyenas and so on. If evolution is true, then there must be fossilized ancestral lines leading from either the creodonts or from the miacids.

Carroll,²⁶ Colbert,²⁷ and others are unanimous in rejecting carnivore origins from among any of the creodont forms. Romer’s comment is:—

‘(The carnivores) *did not arise from the creodonts or, it would seem, from their deltatheridan forebears, but sprang from the ancestral insectivore stock by a distinct line, represented by the family Miacidae.*’²⁸

On the same page he then cites the genus *Didymietis* and a couple of other genera from the Middle Palaeocene. These miacid specimens however, lack the ossified tympanic bullae and the fusion of the carpal bones typical of carnivores. They thus resemble the creodonts in these respects yet their terminal phalanges were not fissured as in the creodonts, and the miacid carnassial teeth were formed by P⁴ over M₁,

as in carnivores. We shall return to these characters further on.

Other experts cited by Carroll, such as Flynn and Galiana, believe that the canoids and feloids are traceable to two separate groups — the canoids from the miacids, and the feloids from genera previously included among the viverravids,²⁹ but an opposing view is held by Gingerich who dismisses this view, arguing that there is **no evidence** of evolutionary continuity between the *Viverravidae* and the feloid families.³⁰ Gingerich is a believer in the concept of an independent loss of the M2 or M3 carnassial arrangement in the two groups. This is a form of parallel evolution, an important aspect of evolutionary theory to which further reference will be made.

There is certainly no unanimity among palaeontologists who are attempting to find transitional forms leading to the carnivores. To make matters even more confusing and contradictory, the following facts seem to make it extremely unlikely that carnivores arose from either the creodonts or any of the miacid subgroups:

- (i) Carnivores had fissured terminal phalanges.
- (ii) Creodonts also possessed this feature.
- (iii) The miacids did not.
- (iv) The creodonts lacked auditory bullae.
- (v) So did the miacids.
- (vi) But not the carnivores.
- (vii) Miacids did not possess fused wrist bones.
- (viii) Neither did the creodonts.
- (ix) Carnivores did.
- (x) Miacids had the carnivore-type carnassials P⁴ over M₁.
- (xi) The creodonts had a variety of carnassial arrangements including M¹ or M² over M₂ or M₃.

All these are extremely important diagnostics and cannot be passed over lightly. This leaves the miacids still distinguished from carnivores by two clearly distinct characters — the lack of an ossified tympanic bulla, and the separation of the wrist bones, the scaphoid, the lunar and the centrale, and as Colbert says, ‘*These may seem like small features . . ., but they are important in determining relationships . . .*’.³¹ In view of the rejection of creodonts as carnivore ancestors because of features such as (iv), (viii), and (xi) above (and others), why should the miacids not similarly be rejected on the grounds of (iii), (v), and (vii) above, and other differences?

The evolutionist position thus appears to be somewhat illogical and contradictory, and the idea of miacid ancestry seems to fall just as much short of being convincing as does a creodont ancestry. As a matter of fact, Carroll acknowledges that it is not possible to demonstrate that these two groups, creodonts and carnivores, had a unique common ancestry, thus indicating yet again a considerable degree of parallel evolution.³² The only other possibility, the Upper Cretaceous genus *Cimolestes*, appears to be closer to the ancestry of other non-carnivorous Cenozoic mammals. *Cimolestes* thus is classified as a protoeutherian, and may have been an insectivore.^{33,34}

Romer also agrees that the creodonts and carnivores each had a **separate** and **distinct** pedigree somewhere in the Cretaceous,³⁵ but if we cannot identify connecting lineages for the creodonts, miacids and carnivores, where else can we go?

Although the creodonts, miacids and the true carnivores were somewhat similar in general morphology and probable life-style, this is far short of establishing phylogenetic relationships. Cats and dogs, man and ape, also share some general similarities, yet are clearly distinct from each other both morphologically and behaviourally. Nobody could fail to see the clarity of these distinctions, and so it probably was with the carnivorous types. We have to remember that the various families of carnivores were clearly established and distinct when they first appear in the Oligocene, and this being so, there is no valid or compelling reason to suppose any of them was phylogenetically connected to any other family within the order or to any other group within the *Miacidae* or the *Creodonta*.

Different Families

Suborder *Fissipedia* consists of nine terrestrial families, whether fossil or living — *Miacidae*, *Canidae*, *Ursidae*, *Ailuridae*, *Procyonidae*, *Mustelidae*, *Viverridae*, *Hyaenidae* and *Felidae*. While a number of characters in the order are shared, (carnassials, general skeletal form, fused wrist bones, etc.), each member family is clearly distinct and identifiable. Bear, wolf, civet, cat, weasel, are clearly of different kinds from each other, and these differences are just as important as the general similarities. Although evolutionary biology treats all these families as being descended from one or very few common ancestors, there is little compelling evidence to justify this view.

The Felids and Felines

Finally we come to the question of cat origins — domestic, big cats, the cheetahs and the clouded leopards. The felid family includes about 35 extant cat species in four genera, as shown in Table 2,³⁶ plus extinct genera. Is the family a unity or are cheetahs and the large cats members of separate families? What about the extinct sabre-tooths? How does the 'first' cat relate to present-day cats?

Right at the outset we can say with reasonable confidence that there may be two subfamilies — the *Machairondontidae* (sabre-toothed extinct forms), and the *Felinae* (extant cats and extinct forms). Alternately they are also known as the cats that slash (sabre-tooths), and cats that bite (the living and some extinct types).

One thing however is certain — the 'first' fossil cats are clearly recognizable as cats, and there appear to have been two fossil lines leading to:—

- (a) the extinct sabre-tooths, and
- (b) the present-day forms.

The first cats, found in the Oligocene geologic series, were a little larger than today's tabbies. Some, such as Panini³⁷ are of the opinion that the extinct Oligocene species *Dinictis*

felina was the ancestor of all felid forms; others such as Carroll,³⁸ believe the early cats up to the Miocene should be referred to as palaeofelids, because of the length of their upper canines and the pattern of the auditory bulla. The extant cats possess fully ossified bullae, a feature slightly different from Oligocene forms.

These early types, also known by some as the nimravids, seem to have vanished by the Middle Pliocene. Fully modern cats are clearly traceable to the Lower Miocene series. On the other hand, Flynn and Galiano have argued for a relationship between the nimravids and the canids,³⁹ but Carroll strongly disagrees. Instead he states that —

*'The monophyly of the cats as a whole seems more firmly established than (is) the exact nature of the relationships between the two subgroups.'*⁴⁰

Some good examples of sabre-toothed forms are the Pleistocene genus *Smilodon*, and the Upper Oligocene genera *Nimravus* and *Hoplophoneus*. Colbert, however, is of the opinion that cats split from a viverravid (civet) stem in the Eocene and have remained as specialised cat-forms without much change, and by the Early Oligocene they were already highly evolved and — *'... not much different from their modern relatives.'*⁴¹ But, as we have seen, Gingerich (cited by Carroll) observes that there is simply **no** evidence of a continuity between the *Viverravidae* and the feline families.⁴²

Colbert continues:— *'All cats are constructed pretty much to the (Oligocene) patterns'*; and then goes on to claim a dichotomy in their history — one line of 'normal' cats with which we are familiar today, and another line, the sabre-toothed forms. He names the Oligocene form *Dinictus* as the ancestor of present-day cats, while claiming another Oligocene form, *Hoplophoneus* as the ancestor of the sabre-toothed forms.⁴³ Both were larger than today's tabby, but in *Hoplophoneus* the upper canines were very elongated. Both genera appear abruptly in the rock record. As the feline types developed (from *Dinictus*), the canines supposedly became smaller; whereas in the sabre-toothed line the canines remained large and the lineage was completed with the appearance of the large sabre-toothed Pleistocene form *Smilodon*, which was as big as a modern lion.

Colbert acknowledges that cats —

*'... show very high rates of evolutionary development at the beginnings of their history... and then remained stationary since Oligocene times'*⁴⁴ (Emphasis added.)

In view of the fact that the jaws of the sabre-tooth specimens could, unlike other cats, be opened almost to a right angle, and because of various features of the skull, I am inclined to believe that this involves too much morphological change, and therefore there may have been two types of cat from the beginning, although we cannot be dogmatic. Bearing in mind the remarkable morphological range we see in the single modern species *Canis familiaris*, it is not beyond possibility that built-in, original genetic variability may also account for the jaw and skull structure of the sabre-toothed forms, without necessarily requiring them to represent a separate created kind.

Romer finds a dilemma here — all known pre-Pliocene felids were sabre-tooths of one sort or another, so if these have given rise to modern cats, this would mean that the canines, having become elongated, became shorter again. He continues:—

*‘Those who believe that evolutionary trends never reverse themselves, are forced to believe that the later felines have descended from earlier Tertiary ancestors who remained in obscurity in Oligocene and Miocene times, and are not readily identifiable, if present at all, in the fossil record.’*⁴⁵

On the same page Romer proposes an all-too-familiar alternative — that there were a series of ‘false sabre-tooths’ which parallel the real sabre-tooths from Eocene to Pliocene and that it is ‘. . . not improbable that the “normal” modern cat tribe has evolved from long-tusked ancestors.’

Weidensaul is another who favours **independent** acquisition of features in several lines of cats, and he removes *Dinictus* from the ancestry of extant cats.⁴⁶ Unfortunately he does not offer any alternative ancestors. Modern cats, according to his phylogeny, simply ‘appear’ in the Pliocene as do the sabre-toothed forms, the *Machairondontidae*; yet his views conflict sharply with those of Carroll,⁴⁷ and Colbert.⁴⁸

Classification Matters

While it can be possibly argued that sabre-tooths and ‘normal’ cats could have separate ancestries, the question of the big cats such as of the genera *Panthera* (lion, tiger), *Acinonyx* (cheetah), and the clouded leopard also arises.

The genus *Panthera* consists of the large cats (apart from the jaguar and snow leopard) which roar, while the others including the domestic cat, the clouded leopard (and also the cheetah), do not have this ability because of hyoid ossification. The cheetah also has another small difference — its claws are retractile, but when they are in this condition, the claws are not protected by a sheath but rather are left exposed. Further, the cheetah has smaller upper canines, and it is a daylight high-speed hunter in contrast to the other cats which stalk their prey.

While the different species of today’s cat are easily recognizable and distinct from each other, the overall similarities in form point strongly to a common origin, with the possible exception of the larger specimens. One can conceive that a mutation could have produced the ossification of the hyoid, or even the opposite, its suppression. Or perhaps the expression of latent genetic material at the right time could also account for this, if all the cats were of a single created baramin.

Also, the question of the lack of a sheath for the claws of cheetahs, and the matter of dentition (small variation), can be accounted for by either micro-mutation or by created genetic variability. Even though the New World jaguar and the snow leopard are included in the genus *Panthera*, neither appears to be capable of doing more than grunting, growling and screaming. Jaguars will also not hesitate to enter the

water in search of food, a character not shared by most other cats. The Asian clouded leopard shares certain characters with the cheetah, the lion and tiger, and the smaller cats. In size it is a ‘bridge’ between the large and the small, and it also possesses a rigid hyoid bone preventing it from roaring.

Although the various genera are so overwhelmingly similar, one could just possibly at most, place the lion, tiger, leopard, jaguar and snow leopard into one created kind (or baramin), and the clouded leopard, cheetah, and small cats separately into another, but this seems extreme in view of the continuity of the fossils, (with the possible exception of the extinct sabre-tooths). We also know that the lion and tiger can crossbreed (the ‘liger and the tigon’), though I have no knowledge of intergeneric crosses such as cheetah-tiger, etc.

There appears to be little fossil evidence for separate origins for any of the cat groups, whether large or small, sabre-tooth or ‘normal’. The earliest cats seem to just appear in the record without ancestral lines of any kind, and therefore I would tentatively consider all cats, modern and extinct, to be descendants of a single pair which left the Ark. The fossils comprehensively fail to document anything more than what can be explained by built-in genetic diversity within the family.

There should be, if evolution is true, many cases where there are lines of transmuting species ‘migrating’ from ancestral major taxa to descendent categories, but in the case of the cats and the carnivores (and other families of the order), these fossil lineages cannot be found.

In a consideration of direct creation at, or close to, what is now represented by the family level, this lack of transitional forms would be expected, but it does not seem to be consistent with mechanistic evolution. If the modern species of dog can become so diverse in its many breeds without evolution being involved, surely the same principle can be applied to the subfamily *Felinae*, and even to the *Felidae*.

Ridley concedes that —

*‘. . . there was no creative input to the dog species while it was evolving under artificial selection (selective breeding); the genetic variation **already present** in the population was all that was needed.’*⁴⁹ (Emphasis added.)

On the same page Ridley goes on to say that the changes produced by artificial selection in dogs is easily large enough for the different forms to count as **different** morphological species. I think this illustrates well the point I am making; further reference to this topic will be made in the summary.

Pleiotropy

This well-known phenomenon would seem to be a major barrier to large-scale evolutionary change in the DNA blueprint of any organism, including cats, and is, I believe, worthy of a separate discussion.

Put simply, pleiotropy means that most genes in an animal or plant have more than one effect. Also, more than one gene is usually involved in the formation and operation of a

given trait. This means that even if the forces of selection which control the maintenance of a trait were eliminated or greatly reduced, the gene(s) accounting for that trait would not be free to vary because they would still be subject to the forces of selection which relate to various other traits with which they are involved. In other words, many genes interlock with each other to a remarkable degree in higher organisms, and it seems rather fanciful to suggest that all genes with a hand in a particular feature would vary favourably at the same time in response to a change in selection pressures.

According to Denton almost every gene that has been studied in higher organisms has been found to affect more than one organ system.⁵⁰ Denton highlights the problem by referring to the multiple effects of one particular gene in the domestic chicken. As can be seen from his illustration,⁵¹ a mutation in this gene causes developmental abnormalities in a **variety** of systems. The gene in question is involved in the development of unique bird structures — the air sacs, downy feathers, as well as lungs and kidneys. His illustration shows the drastic results caused by mutation in a pleiotropic gene in the domestic fowl. The pattern of damage is markedly organ-specific — the wings hardly develop at all; and although the hind limbs reach full length, the digits are deformed; the downy cover is underdeveloped; the lungs and air sacs are absent; the ureter does not grow, and the kidney fails to develop.

Cases such as this have been documented in many instances and would seem to be an enormous barrier to mechanistic evolution by mutation/selection. It is very difficult to see how a mutation with such drastic and degenerate effects on a number of characters could possibly be a positive force in evolution. The very existence of pleiotropy is in accord with creationist belief that the genetic system is a conservative force which acts as an **obstacle** to random change.

Lester and Bohlin claim that mutations in genes which are intricately involved in development produce hopeless monsters:—

*'Many genes, if not most, exhibit multiple phenotypic effects . . . a mutation in one gene does not limit its effect to only one phenotypic character. There may be many . . . phenotypic alterations due to the mutation of a single gene.'*⁵²

Denton's example of the chicken exemplifies this, and it would appear that pleiotropy is a stumbling block to any major change. Loring Brace and Ashley Montagu also raised this problem, conceding that evolution by means of natural selection would be impossible under these circumstances. Yet then they say:—

*'Since the evidence for Darwinian evolution is simply overwhelming, there must be a flaw in the assumption of universal pleiotropy.'*⁵³

As pleiotropy is now clearly a fact of biology, it seems they would rather deny that fact than yield their belief in evolution.

The Biostratigraphic Question

Thus far I have not raised the matter of fossils and geology and will only deal with it briefly here because the subject is so large in scope.

Those who accept uniformitarian geology and extremely long time-scales will be quite content to see the fossil remains of creodonts, miacids and 'early' carnivores, in what are described as Palaeocene, Eocene or Oligocene rocks, as being reasonably in accord with evolutionary theory. However, studies by creation-oriented geologists and others have pinpointed quite a few conditions where historical geologists seem to have problems with the field evidence. Of course it is correct to say that diluvial hypotheses also are faced with their own set of difficulties, the problem for both sides being that nobody is really in a position to verify past geologic events — all views must be inferences, however reasonable, drawn from the physical evidence.

Vast time-scales of millions and billions of years have also been subject to a number of valid objections by creationist physicists such as Gentry⁵⁴ and Humphreys.⁵⁵

The creationist must consider the relationship of the fossils with the way they are found in the global rock systems — do they reflect a world-wide Flood or a slow-and-gradual deposition over vast aeons of time? Flood geology involves two aspects — the pre-Flood and post-Flood populations of organisms. It is presumed that most pre-Flood land animals were buried by the Deluge; the few survivors, mostly from the Ark, then speciating and radiating afterwards in a rapid dispersion which filled the available ecological niches.

From my studies of Deluge geological works, I have come to the conclusion that the Great Flood occurred recently (thousands of years bc), with severe after-effects lasting hundreds or thousands of years thereafter. How does this relate to the fossils of the Early to Mid-Tertiary? According to Morton, rock series described by historical geologists as Miocene are generally about the time the Flood ceased its geologic work,⁵⁶ for in the Miocene the vast global depositions common to previous periods and eras seem to have ceased. Much would depend on global effects — that is, certain other geologic series such as the Palaeocene and the Eocene or the Oligocene could mark the boundaries of Flood activity, depending on location. The Miocene is only a statistical term here, not an absolute world-wide designation.

What we may call 'Miocene' may indeed be the limits of Flood activity in some places, but not in others. Creationist geologists are continually seeking more definite answers regarding these problems in the field. Creation-oriented geologists such as Snelling,^{57,58,59} Austin,^{60,61} Woodmorappe,^{62,63} Morton,⁶⁴ and Tyler,⁶⁵ and earth scientists such as Oard⁶⁶ and Wise^{67,68,69} already have made a number of extremely valuable contributions to creationist geological perspectives, and creationist work in this field shows continuing improvement with the passage of time.

How good is the fossil record? The oft-repeated claim

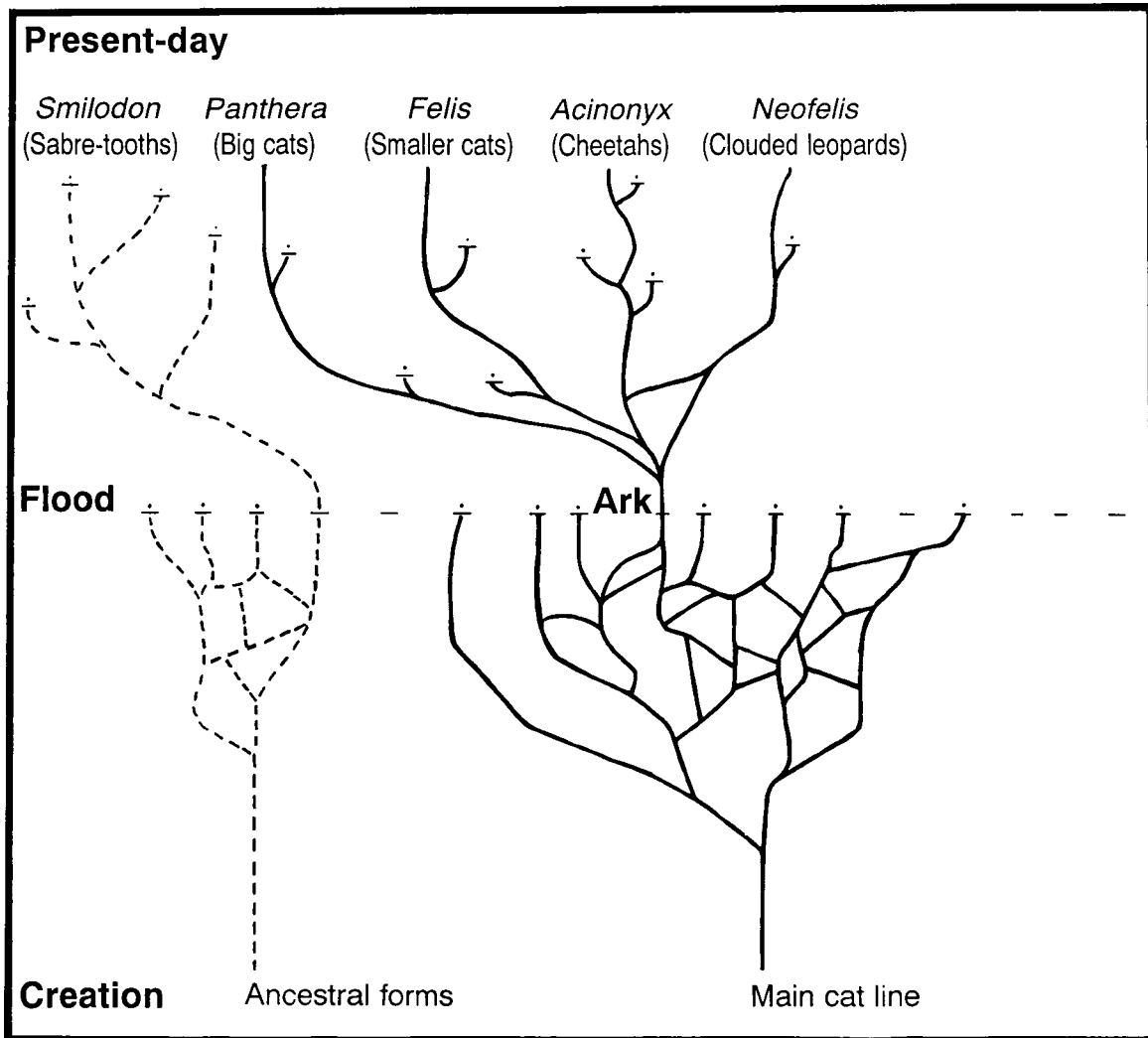


Figure 1. Possible history of cats since the Creation. The sabre-tooths may have had a separate ancestry. The heavy horizontal lines represent extinction. In the above manner, the genome of original cat baramins could have been distributed among descendent genera before and after the Flood. Cross-fertilization before and after the Flood could have ensured the post-Flood to present-day variability. Modern forms therefore may not always closely resemble extinct cats because of the many recombinations of genetic material. Speciation, (based on pre-existing created genetic information), probably occurred faster after the Deluge due to much greater environmental change. Some genetic material may also have been permanently lost. Only one breeding pair of each baramin was saved on the Ark. Recombination effects could mean that modern cats, although slightly different from pre-Flood forms, are still clearly recognizable.

that the imperfection of the geologic record can explain the lack of intermediate and transitional forms is not satisfactorily borne out by the facts. After nearly 150 years of searching, the cupboard is almost as threadbare as it was in Darwin's day. Tables supplied by Shute,⁷⁰ and Denton,⁷¹ show conclusively that the opposite is true — the geologic record is far more complete than most people realize, and thus the lack of transitional lineages is more glaring than ever, even allowing for the fact that not all past forms were subject to fossilization.

Figure 1 is an illustration of how the cat baramin could have developed and speciated before and after the Flood. The forms below the line delineating the Deluge would have mostly been buried and fossilized. The lineages leading up to the Flood (and the Ark), would have contained most of

the genetic material of the family via inter- or free-breeding, and in the severely changed post-Flood environment, speciation could again have occurred at a more rapid rate. Some of these forms would have been buried and fossilized by post-Flood catastrophic processes, plus natural river and lacustrine flooding right up to recent times.

These processes could account for the morphological differences (and similarities) between the various living and extinct forms of the cat family. Woodmorappe's TAB Flood Model⁷² goes some way toward accounting theoretically for the separation and differentiation of fossil forms. It at least provides a working model for future creationist geologists to work on and enhance, and should be carefully studied by those seeking a valid alternative to uniformitarianism. The model shows how biogeographical zonation, acted upon by

processes during the Flood, could have produced what uniformitarians describe as index fossils. The short stratigraphical-range but widely geographically-distributed forms may have been misinterpreted as having time significance. Index fossils may be the result of an interplay between biogeographic zones and the limited opportunities of organisms to become juxtaposed. The work of D. J. Tyler is also of considerable importance in this field.⁷³

The Question of Parallel/ Convergent Evolution

The concept of parallel/convergent evolution and the independent acquisition of features plays a considerable role in evolutionary theory, which in turn is based not only on fossil forms, but also on the **interpretation** of those fossils. Fossils do not speak; humans must speak for them. As in all fields of phylogeny, we find numerous references to these phenomena regarding cats, and authors to whom I have referred cite numerous cases.

Both parallel and convergent evolution refer to the independent acquisition of similar characteristics without the similarities being the result of having inherited them from a common ancestor. Parallel evolution is believed to have occurred in evolving lines where a fairly close relationship may be involved; whereas if the source(s) of lineages is considered to be ancient, that is, unrelated or very distantly related, the appearance of similar features is referred to as being the result of convergent evolution.⁷⁴ Although palaeontologists endeavour to exercise the utmost care, it is inevitable that at least some degree of subjectivity and preconception must creep in. It is not always easy to distinguish phenotypic variability from phyletic evolutionary processes, and often this problem leads to contradictions and puzzles which are difficult to resolve. How does one precisely trace lineages in these cases? Olson points out that there were —

‘. . . many lines of condylarths and much parallelism. Members of the different lines are so similar that it is hard to tell one from another.’⁷⁵

So, how do we tell cousin from ancestor?

This is an immense difficulty, and is probably one of the basic reasons which led Ridley to abandon fossils at the levels of species up to families as being evidence for evolution, and led him to rely almost solely on the broad geologic concept — fish before amphibians, reptiles before mammals, early mammals before primates, and so on.^{76,77} Therefore how much faith can we have that the lineages depicted in textbooks are based on unambiguous evidence? With fossils scarce and widely distributed in time and location, how do we know which characters to work with? As Johanson says, *‘Individuals of the same species can exhibit a remarkable degree of variation.’⁷⁸* (Emphasis in the original.) Johanson went on to say that convergence and parallelism are *‘. . . taxonomic monkey wrenches’* and are *‘. . . pitfalls’* waiting to confound the taxonomist.⁷⁹

If this is so, then a huge portion of the fossil record may

be useless in determining whether present-day organisms are the result of creation or evolution, just as Ridley has conceded. Another reason no doubt is the sudden appearance of virtually all new fossil forms at and above the family level.

The mention of animals or plants acquiring certain new features independently (homoplasy) is very common in the literature. Two good examples are the four-chambered heart and secondary palates in crocodiles.⁸⁰ When we take these factors into account, plus the ubiquitous and systematic missing transitionals, we can see the reason for comments such as those of Ridley, and why an experienced geologist like Olson invites readers to *‘. . . jump over these gaps . . .’⁸¹* an invitation which of course creationists decline.

Some excellent examples of supposed parallel and convergent evolution are found in the South American marsupial fossil forms, which often match their placental counterparts in North America with astonishing consistency. Further, there are quite startling likenesses between such unrelated forms as the Australian marsupial tiger and the placental wolf. For placental mice and rats there are Australian marsupial counterparts, and both Australian and South American fossils include large marsupial cats which in many respects match the large placental specimens such as the cave lion and sabre-tooth forms. Such cases are described as *‘strong convergences’⁸²* Olson also concedes that because of this confusion of ancestral stocks, it is impossible to be sure that the genera placed in a single lineage did actually come from the same ancestors. Various genera may not have had a common ancestor within an ancestral group at all, and this leads to concepts of polyphyletic origins, which further confuses the picture.⁸³ This must also have an effect on the construction of the higher taxonomic groups, an effect which Olson concedes:— *‘. . . the use of higher categories introduces a sort of artificiality.’⁸⁴*

Yet this phenomenon is not so disturbing as alleged parallel evolution which involves more closely related forms and lineages. Despite the similarities, it is a fact that marsupial tigers are certainly a different kind or baramin from the placental wolf, as are the marsupial and placental cats, rats and mice. Evolutionists also believe there is no relationship except possibly in the distant past when marsupials and other mammals allegedly diverged back in the Jurassic, but this common ancestry is **not** believed to be the cause of most of the obvious similarities.

Denton recognized the seriousness of the problem in his 1985 work, and his chapter on homology expressed the difficulty. The allegedly independent origin of extremely similar structures by way of small advantageous mutations is, according to him, a considerable challenge to the theory because it blurs and confuses the concept of lineage descent from common ancestors and therefore attacks the value of homology, an essential part of the theory.⁸⁵ The problem could really be caused by the **assumption** that evolution is true.⁸⁶

To counter this problem, Denton considered that we would need many more transitions or intermediates which

could unambiguously show the required continuum — forms however, which are simply not found except for a handful of disputed cases.⁸⁷ Again, part of the difficulty is that we are working entirely from only skeletal remains; there is no soft biology to examine and evaluate.

The very fact that parallel evolution or homoplasy appears so often in the literature should alert our suspicions that a great deal of interpretation by fallible humans is involved, and therefore some degree of unconscious subjectivity is implied. Creationists are justified in considering the possibility of varying degrees of genotypic and phenotypic variability within baramins, or created kinds, rather than blind natural processes. Can any palaeontologist really be sure that he is dealing with one or more species or even genera? There is little to go on but the skeleton or a portion thereof, despite the fact that they have wide experience in the study of living forms. If more of the soft biology were available it might be a different matter, but due to its virtual universal absence and the sole reliance on shades of variation in skulls and teeth, the consequent reconstructing of foolproof lineages seems to be fraught with danger, at least at grades below the family level.

Taxonomy and Phylogenies

When carefully considered, the art of systematics (and it is an art) is in many cases simply a matter of definition, and Wise clearly pinpoints this weakness in the evolutionary paradigm.⁸⁸ In the lower categories such as **extant** subspecies and species (and sometimes even genera), the problems are not too serious in nature. If interbreeding and crosses are involved, it is usually (but not always) easy to define groups at these levels. Lack of crossbreeding between two very alike creatures or plants does not mean necessarily that they were not once closely related, because isolating mechanisms do exist — mechanisms about which we know very little.

However, serious difficulties can arise when one deals with taxa such as families and orders, especially if only fossil material is available. Such higher groups often are subject to preconception and interpretation, and this is even more evident if parallelism/convergence is believed to be involved. If one is dealing only with fossil material, the problems also are compounded even at specific and generic levels.

One must make a number of subjective decisions as to what really makes a certain genus of cat or miacid an 'ancestral' form. When morphological differences are small, who is to say that specimen 'x' is a separate genus from fossil 'y'? When we consider the obvious variability in just one living species of dog, or one genus of cats, it is really impossible to separate the fossil forms on skeletal material alone. Scientists of the future could be confounded by such a range of variability, and could well place specimens like a Pekingese or a spaniel in a different category from say a great dane or a wolfhound, and attribute it to evolution.

Palaeontologists apply detailed rules when assessing extinct species — morphological comparisons, including the degree of differences and similarities among fossil forms;

sexual dimorphism must be taken into account; whether or not a fossil community is really only a geographic variant and not a genuine evolutionary group; and so on. If a fossil form has modern relatives, more comparisons can be undertaken which involve the morphological range of living versus extinct forms. These procedures obviously are more reliable if a large number of specimens is available for study.

How much confidence can we have in the fossil taxonomic structures, and in the generic and specific lineages such as they are? If we rely on interpretations of genera and species of fossils — that is, which is indeed a 'real' genus or species and not just variations within the same species(?) — and taking into account the plethora of convergent and parallel lines which again further confuse the picture, I would say not much, at least in many cases. We really seem to get more of the thicket of intertwining twigs rather than clear phylogenies, with the trunk of the bush missing or shrouded in mystery.

As most taxonomy and phylogenies involving fossil forms are traced by genera, the results can be misleading. In the case of families, these too are artifacts; that is, human constructs which may have little to do with reality because of the tremendous range of variability. This is even more significant if creation took place as baramins roughly equivalent to a family. Yet the well-known systematic gaps, which are so evident at family level and above, are a powerful argument in favour of creation. If so, the cat, dog, weasel and ursid (bear) families are probably good examples, and extinct families of viverrids, miacids and creodonts are also probably unique created groups phylogenetically unrelated to what are described as true carnivores.

Even in non-creationist circles, dissatisfaction is growing. Denton reports that many cladists are coming to regard traditional evolutionary biology with skepticism, and this threat is drawing fire from conservative ranks.⁸⁹ It is increasingly seen as a threat because the newer system of transformed cladism is, to a degree, a movement away from dependency on evolutionary theory. One prominent transformed cladist who is the senior paleontologist at the British Museum, Dr Colin Patterson, has admitted that he could not identify a single ancestral intermediate fossil form.⁹⁰

Denton quotes Thompson, who described the new systematics as '*. . . running counter to all that we have been taught.*'⁹¹

Denton also points out that the clash between transformed cladism and evolutionary biology is a consequence of the non-sequential order of nature.⁹² Mark Ridley of Oxford was so disturbed by transformed cladism that he strongly attacked it.⁹³ The problem is that transformed cladism works without any assumption of evolution, and Ridley had clearly observed this danger to the theory. His claim that '*. . . evolution is true . . .*'⁹⁴ indicates that his science is dominated by his philosophy.

For these and various other reasons I am strongly attracted to the new classification system outlined by ReMine,⁹⁵ and Wise.^{96,97} Their exciting concept of

baraminology and discontinuity systematics is, in my opinion, one of the most important and much-needed developments in creationist thinking in modern times. Such a system, based on the identification of various discontinuities in fossil and living forms provides, I feel sure, a sound basis for a new wave of systematics which could change the whole way of looking at various life forms existing on this planet, and a major breakthrough has been set up for future development of Creationism.

SUMMARY AND CONCLUSIONS

On the basis of available fossil evidence, the family tree seems to be very threadbare regarding a supposed transition from non-cat to cat. Likewise, the orders *Carnivora*, *Creodonta* and the family of miacids lack any significant connecting ancestral lines. The origin of these orders and of the cat family itself (as well as other families) is not traceable through fossils. Only the tips of the branches and twigs are populated, with the trunk missing, and of course this is in line with all other families, orders and classes of plants and animals, with the possible exception of the class *Mammalia* which is in the 'doubtful' category.^{98,99} All the carnivorous types of mammals seem to appear in the rocks with their basic ordinal features already distinct, and each family clearly separate from all others at their first appearance.

Most, if not all, of the fossil specimens of the cat family are essentially much the same as their ancestors, right back to their first preservation as fossil forms. This is especially so if we take into account the natural variation inherent in living groups. Because some extant cats are different from others (lions, lynxes, pumas, domestic cats, etc.), this does not necessarily imply that any macroevolutionary processes have taken place. Differences and similarities can be the result of creation of one or more cat forms, each of which contained within the genome the created DNA variability which later would be expressed phenotypically as permitted or selected by the environment. Such variation and/or speciation could take place quickly and would not require millions of years to be achieved, and this alone would account for the shortage of transitional lineages.

It is probable that speciation and variation took place before the Flood as well as after. It is also probable that some interbreeding or crossing occurred between newly descendant species as depicted in Figure 1. Such a speciation/variation process, in a drastically changed environment, would therefore account for most of the limited phenotypic differences between modern cat forms and fossil specimens. 'Progressive' evolution is therefore not the only explanation. Diversification from created ancestral cats therefore could be just as effective in producing later cat types from the original created stock(s). This view is reinforced (not just in cats) by the knowledge that crosses are not infrequent between individuals at the subspecific, specific and generic levels,¹⁰⁰ but are virtually unknown at the familial level. Vorpahl recently published an interesting essay on adaptation

which is pertinent.¹⁰¹ He points out that the likelihood of a species being successful without preadaptation is extremely small. In other words, environmental tracking is due to the genetic variability **already** present in the DNA waiting to be expressed at the right time. If organisms had to wait for the right mutation at the time it was needed to survive, most would be waiting forever! Vorpahl is correct when he states — '*Preadaptation to the environment rather than adaptation would seem more consistent with survival . . .*'.¹⁰² This fits in with created genetic variability potential, not with billions of lucky biological accidents. Under an evolutionary concept, it is stretching things to the limit to suggest that so many preadaptations could also arise in advance by chance.

A single pair of dog-kind animals, being the result of interbreeding and mixing **before** the Flood with the various descendants of the original created animals, could easily have possessed most of that **original** genetic information in their genes, and therefore were quite capable of producing the various later different types. There undoubtedly were cases of speciation due to geographical isolation and other factors, thus leading to such diverse forms as coyotes, domestic-type dogs, dingoes, wolves and so on.

Plimer¹⁰³ maintains that such an ancestral pair would have had to possess 'giant' chromosomes, but gives no evidence to support this doubtful view, which seems intended to ridicule rather than contributing to serious scientific discussion. On initial consideration at least, it would seem that a hypothetical pair of organisms having maximum heterozygosity at each locus between them (that is, four alleles for each trait) would have a huge capacity for later variation.

Plimer insists that representatives of these ancestral populations should have survived down to present times. However, after the Flood, a vast range of empty ecological niches and diverse, rapidly-changing environments would mean intense selection pressures. In each of the many separate situations, organisms expressing specific, overt adaptations in their phenotype (that is, **specialized**) would be favoured over their genetically richer but less specialized counterparts. Maximal heterozygosity would therefore seem to be selected against; this needs to be explored in greater detail.

Although fossils can be used to support an evolutionary approach, this can only be on the broad level, as conceded by Ridley.¹⁰⁴ Biostratigraphy, although generally consistent with an evolutionary concept, can be also explained by the approach of Woodmorappe,¹⁰⁵ whereby the fossil horizons are not necessarily the result of eons of slow deposition but came about by the burial of contemporary but biogeographically-separated suites of animals and plants during the Flood. In his 1978 work,¹⁰⁶ he presented a plausible and well-thought-out Deluge-orientated model for the burial of a contemporaneous population of members of the Class *Cephalopoda*. This geologist also has published a very devastating and detailed critique of uniformitarian orthodox biostratigraphy.¹⁰⁷

The fact of persistent and systematic missing transitional individual forms and lineages is probably the most damaging objection to the evolutionist case. Many experts have spent considerable time trying to explain this salient feature of the fossil record, so far with no general acceptance of any one argument. Over 25 years ago the highly experienced and respected American geologist Olson drew attention to this almost universal phenomenon. In his paperback edition, Olson remarked on these gaps and then said — ‘*If we are willing to jump over these gaps, broad patterns of evolution do emerge . . .*’.¹⁰⁸ It is somewhat a pity that more geologists and palaeontologists are not so frank as Olson, because a quarter of a century later, the situation has hardly changed.

The fact of pleiotropy whereby more than one gene is often involved with a trait, makes it difficult to see how any mutation could have beneficial effects on an organism without causing damage in various other regions. Apart from possible minor (micro) variations, it seems that a plausible biological mechanism for mechanistic evolution is still lacking.

Sir Fred Hoyle, one of the outstanding British scientists of this century, recently made a stunning attack on modern evolutionary theory,¹⁰⁹ branding it as ‘scientific fundamentalism’,¹¹⁰ and as being a failure as far as geology and the fossils are concerned.¹¹¹ Even though Hoyle is not a creationist, he points out that our existence can be equally used to support purpose and planning in life-forms.¹¹² He also points out with some vigour that the Darwinian evidence can be shown only at the species level, because the trunk and main branches of the ‘tree’ do not exist except **in the imagination**.¹¹³ Hoyle made a further stinging attack on the ‘arrogance’ of evolutionists in relation to how they have infiltrated the modern education systems and exercise strict censorship against opposing views, and are even very reluctant to fully discuss any of the severe difficulties in the theory.¹¹⁴

On the basis of the available evidence (and lack of it), therefore, it is my conclusion that a process which Richard Carrington once described as a ‘. . . *series of accidents* . . .’¹¹⁵ could hardly produce the amazing complexity and variability we see in the cats and other carnivores, or for that matter in all the rest of the organic world. The evidence taken as a whole seems to point rather in the direction of a creator/designer and away from a chance natural process. It is therefore my belief that the cat baramin (or at most two of these, with many **common design** features) was created by God with the inbuilt genetic capability of diversifying in order to meet the demands of the varying environments encountered since creation.

REFERENCES

- Colbert E., 1991. **The Evolution of the Vertebrates**, John Wiley and Sons, New York, p. 436.
- Van Orsdol, K. G., 1984. The cat family. *In: Carnivores*, G. Bateman (ed.), Torstar Books, New York, p. 18, (Table 2).
- Carroll, R. L., 1988. **Vertebrate Palaeontology and Evolution**, W.H. Freeman and Co., New York, p. 633.
- Macdonald, D. W., 1984. **Carnivores**. *In: Carnivores*, G. Bateman (ed.), Torstar Books, New York, p. 12.
- O’Neill, A., 1989. **The Complete Book of the Cat**, New Burlington Books, London, p. 48.
- O’Neill, Ref. 5, p. 48.
- O’Neill, Ref. 5, p. 48.
- Carroll, Ref. 3, pp. 478–483.
- Colbert, Ref. 1, pp. 314–327.
- Colbert, Ref. 1, p. 317.
- Carroll, Ref. 3, p. 633.
- Carroll, Ref. 3, p. 479.
- Colbert, Ref. 1, pp. 323, 325.
- Colbert, Ref. 1, p. 314.
- Carroll, Ref. 3, p. 440.
- Carroll, Ref. 3, p. 445.
- Carroll, Ref. 3, p. 445.
- Carroll, Ref. 3, p. 447.
- Carroll, Ref. 3, p. 449.
- Carroll, Ref. 3, p. 478.
- Carroll, Ref. 3, p. 479.
- Colbert, Ref. 1, p. 316.
- Romer, A. S., 1966. **Vertebrate Paleontology**, Third Edition, University of Chicago Press, p. 231.
- Romer, Ref. 23, p. 232.
- Wemmer, C., 1984. The mongoose family. *In: Carnivores*, G. Bateman (ed.), Torstar Books, New York, p. 126.
- Carroll, Ref. 3, pp. 478–479.
- Colbert, Ref. 1, p. 315.
- Romer, Ref. 23, p. 232.
- Carroll, Ref. 3, p. 480.
- Carroll, Ref. 3, p. 480.
- Colbert, Ref. 1, pp. 316–317.
- Carroll, Ref. 3, p. 478.
- Carroll, Ref. 3, pp. 478–479.
- Carroll, Ref. 3, p. 449.
- Romer, Ref. 23, p. 231.
- Van Orsdol, Ref. 2, p. 18.
- Panini, G. P., 1982. **The Prehistoric World**, Treasure Press, London, p. 168.
- Carroll, Ref. 3, p. 482.
- Carroll, Ref. 3, p. 483.
- Carroll, Ref. 3, p. 482.
- Colbert, Ref. 1, p. 323.
- Carroll, Ref. 3, p. 480.
- Colbert, Ref. 1, p. 325.
- Colbert, Ref. 1, p. 327.
- Romer, Ref. 23, p. 235.
- Weidensaul, S., 1991. **Living Witnesses: Animal Evolution from Pre-history to Today**, New Burlington Books, London, p. 83.
- Carroll, Ref. 3, p. 480.
- Colbert, Ref. 1, p. 325.
- Ridley, M., 1981. Who doubts evolution? **New Scientist**, 90(1259):831.
- Denton, M., 1985. **Evolution: A Theory in Crisis**, Burnett Books, Bethesda, Maryland, pp. 149–150.
- Denton, Ref. 50, pp. 149–150.
- Lester, L. P. and Bohlin, R. G., 1984. **The Natural Limits to Biological Change**, Zondervan, Grand Rapids, Michigan, p. 140.
- Brace, C. L. and Montagu, A., 1977. **Human Evolution**, Third edition, University of Chicago Press, p. 62.
- Gentry, R. V., 1986. **Creation’s Tiny Mystery**, Earth Science Associates, Knoxville, Tennessee.
- Humphreys, D. R., 1994. **Starlight and Time**, Creation-Life Publishers, Master Books, Colorado Springs.
- Morton, G. R., 1987. **The Geology of the Flood**, DMD Publishing Co., Dallas, Texas, p. 102.
- Snelling, A. A., 1991. The formation and cooling of dykes. **CEN Tech. J.**, 5(1):81–90.
- Snelling, A. A., 1991. Creationist geology: where do the ‘Precambrian’ strata fit? **CEN Tech. J.**, 5(2):154–175.
- Snelling, A. A. and Rush, D. E., 1993. Moon dust and the age of the solar

- system. *CEN Tech. J.*, 7(1):2–42.
60. Austin, S. A. and Morris, J. D., 1986. Tight folds and clastic dikes as evidence for rapid deposition of two very thick stratigraphic sequences. *In: Proceedings of the First International Conference on Creationism*, R. E. Walsh, C. L. Brooks and R. S. Crowell (eds), Creation Science Fellowship, Pittsburgh, Pennsylvania, Vol. 2, pp. 3–14.
 61. Austin, S. A., 1986. Mount St Helens and catastrophism. *In: Proceedings of the First International Conference on Creationism*, R. E. Walsh, C. L. Brooks and R. S. Crowell (eds), Creation Science Fellowship, Pittsburgh, Pennsylvania, Vol. 1, pp. 3–9.
 62. Woodmorappe, J., 1983. A diluviological treatise on the stratigraphic separation of fossils. *Creation Research Society Quarterly*, 20(3):133–185.
 63. Woodmorappe, J., 1990. Causes for the biogeographic distribution of land vertebrates after the Flood. *In: Proceedings of the Second International Conference on Creationism*, R. E. Walsh and C. L. Brooks (eds), Creation Science Fellowship, Pittsburgh, Pennsylvania, Vol. 2, pp. 361–370.
 64. Morton, Ref. 56.
 65. Tyler, D. J., 1990. A tectonically controlled rock cycle. *In: Proceedings of the Second International Conference on Creationism*, R. E. Walsh and C. L. Brooks (eds), Creation Science Fellowship, Pittsburgh, Pennsylvania, Vol. 2, pp. 293–301.
 66. Oard, M. J., 1990. *An Ice Age Caused by the Genesis Flood*, Technical Monograph, Institute for Creation Research, El Cajon, California.
 67. Wise, K. P., 1986. How fast do rocks form? *In: Proceedings of the First International Conference on Creationism*, R. E. Walsh, C. L. Brooks and R. S. Crowell (eds), Creation Science Fellowship, Pittsburgh, Pennsylvania, Vol. 2, pp. 197–203.
 68. Wise, K. P., 1986. The way geologists date. *In: Proceedings of the First International Conference on Creationism*, R. E. Walsh, C. L. Brooks and R. S. Crowell (eds), Creation Science Fellowship, Pittsburgh, Pennsylvania, Vol. 1, pp. 135–138.
 69. Wise, K. P., 1990. Baraminology: a young-earth creation biosystematic method. *In: Proceedings of the Second International Conference on Creationism*, R. E. Walsh and C. L. Brooks (eds), Creation Science Fellowship, Pittsburgh, Pennsylvania, Vol. 2, pp. 345–360.
 70. Shute, E., 1961. *Flaws in the Theory of Evolution*, P & R Publishing Co., Phillipsburgh, New Jersey, pp. 186–187.
 71. Denton, Ref. 50, pp. 186–191.
 72. Woodmorappe, Ref. 62, pp. 133–185.
 73. Tyler, Ref. 65, pp. 293–301.
 74. Olson, E. C., 1966. *The Evolution of Life*, Mentor Paperback, New York, p. 107.
 75. Olson, Ref. 74, p. 117.
 76. Ridley, Ref. 49, pp. 829–831.
 77. Ridley, M., 1983. *The Problems of Evolution*, Opus Books, Oxford University Press, pp. 11–14.
 78. Johanson, D. J., 1989. *Lucy's Child: The Discovery of a Human Ancestor*, Viking-Penguin, London, p. 87.
 79. Johanson, Ref. 78, p. 129.
 80. Archer, M. A., 1987. Evidence for evolution from the fossil record. *In: Confronting Creationism: Defending Darwin*, D. R. Selkirk and F. J. Burrows (eds), University of New South Wales Press, Sydney, p. 83.
 81. Olson, Ref. 74, p. 125.
 82. Olson, Ref. 74, p. 148.
 83. Olson, Ref. 74, p. 125.
 84. Olson, Ref. 74, p. 102.
 85. Denton, Ref. 50, p. 152.
 86. Ridley, M., 1983. Can classification do without evolution? *New Scientist*, 100(1386):650.
 87. Denton, Ref. 50, p. 182.
 88. Wise, Ref. 69, p. 351.
 89. Denton, Ref. 50, pp. 138–139.
 90. Sunderland, L., 1984. *Darwin's Enigma*, Master Books, El Cajon, California, p. 89.
 91. Denton, Ref. 50, p. 139.
 92. Denton, Ref. 50, p. 124–140.
 93. Ridley, Ref. 86, pp. 647–651.
 94. Ridley, Ref. 86, p. 650.
 95. ReMine, W. J., 1990. Discontinuity systematics: a new methodology of biosystematics relevant to the creation model. *In: Proceedings of the Second International Conference on Creationism*, R. E. Walsh, C. L. Brooks and R. S. Crowell (eds), Creation Science Fellowship, Pittsburgh, Pennsylvania, Vol. 2, pp. 207–213.
 96. Wise, Ref. 69, pp. 345–360.
 97. Wise, K. P., 1992. Practical baraminology. *CEN Tech. J.*, 6(2):122–137.
 98. Mehlert, A. W., 1993. The origin of mammals: A study of some important fossils. *CEN Tech. J.*, 7(2):122–139.
 99. Gish, D. T., 1985. *Evolution: The Challenge of the Fossil Record*, Master Books, El Cajon, California, pp. 94–129.
 100. Marsh, F., 1976. *Variation and Fixity in Nature*, Pacific Press, Mountain View, California, pp. 49–79.
 101. Vorpahl, P. V., 1993. Adapted or preadapted?: A clinical perspective. *Creation Research Society Quarterly*, 30(1):7–8.
 102. Vorpahl, Ref. 101, pp. 7–8.
 103. Plimer, I., 1994. *Telling Lies for God*, Random House, Sydney, pp. 109–134.
 104. Ridley, Ref. 77, pp. 11–14.
 105. Woodmorappe, Ref. 62, pp. 133–185.
 106. Woodmorappe, J., 1978. The cephalopods in the creation and the universal deluge. *Creation Research Society Quarterly*, 15(2):94–111.
 107. Woodmorappe, J., 1979. Radiometric geochronology reappraised. *Creation Research Society Quarterly*, 16(2):102–129.
 108. Olson, Ref. 74, pp. 124–125.
 109. Hoyle, F., 1993. *Our Place in the Cosmos*, J. M. Dent, London.
 110. Hoyle, Ref. 109, pp. 127–128.
 111. Hoyle, Ref. 109, pp. 132–136, 175.
 112. Hoyle, Ref. 109, p. 33.
 113. Hoyle, Ref. 109, pp. 129–132, 175.
 114. Hoyle, Ref. 109, pp. 10, 13–15, 65.
 115. Carrington, R., 1964. *A Million Years of Man*, Mentor Paperback, New York, p. 265.

A. W. (Bill) Mehlert has a Diploma in Theology and lives in Brisbane, Australia. He is a keen student of Flood geology and the fossil record, including the supposed fossil evidence for human evolution, and has written a number of important articles on these topics in the *Creation Research Society Quarterly* and *Creation Ex Nihilo Technical Journal*.