THE MONOTREMES

COLIN BROWN*

Received 14 July, 1980

Some have tried to point to the monotremes as links between the mammals and reptiles. That notion is challenged here; it is shown that the monotremes are true mammals, albeit having certain peculiarities. They provide no support for evolutionary theories.

The monotremes, the egg-laying mammals which include the platypus, *Ornithorhynchus anatinus*; *the echidna, the spiny anteater, Tachyglossus aculeatus*; and the somewhat similar *Zaglossus*; are often said to be connecting links between the reptiles and the mammals; or at least to be living fossils, being much like connecting links which lived ages ago. But a closer look shows that the alleged resemblances to reptiles are superficial, and that the monotremes are wholly mammals, albeit differing in some respects from the placental mammals.

The brain and skull of the monotremes, for instance, are quite mammalian in nature. Other features, in which these animals are clearly mammals, include: the heart and the circulation of blood; the diaphragm; the fur and its arrangement; and the kidneys and their supply of blood.

About Milk

The unique thing about mammals, of course, is their provision of milk for their young. If they were primitive mammals, not evolved very far, the milk might be expected to be primitive. What are the facts? The truth is, that platypus milk is not much different from human milk. Moreover, the areola of the platypus is in structure very like the human nipple and areola.

It may be worth while to comment here on the statement, found so often in places where it ought not to be, that the *Tachyglossus*, for instance, licks up the milk from the areola. That notion is false; the *Tachyglossus*, like any other mammal, sucks.

While it does not concern the monotremes, I cannot resist reporting another curious fact about milk, which I found while preparing this article. The red kangaroo, *Megaleia rufa*, can make two kinds of milk simultaneously: milk suitable for the new-born young in one gland and in the other gland milk suitable for a young kangaroo at heel. The two kinds differ considerably: that for the new-born contains, for instance, 51% palmitic acid and 15.6% oleic; whereas the other contains about 25% palmitic and 53% oleic.

Reproductive and Other Organs

The reproductive organs of the female monotremes are sometimes said to be nothing like those of the placental mammals. I can not agree; it seems to me that, in essentials, they are quite like those of the marsupials and the placental mammals, and not at all like those of birds or reptiles.

May we perhaps appeal to the teleology here? When the Creator decided, for reasons which He saw to be good, to have egg-laying mammals, He would naturally design their reproductive systems a little differently.

The monotremes do have a cloaca. So do the marsupials. Most placental mammals do not. But, as so often, there is an exception. The beaver has a cloaca.

An evolutionist would no doubt say that this cloaca is not a homologous organ, and so not related to that in the monotremes. In that case, according to the tenets of evolution, there must have been animals in the line of descent, between the ancient monotremes (or monotreme-like animals) which had no cloaca. Were these hypothetical ancestors, then, placental mammals, or marsupials, or did they lay eggs? Or are there any known facts at all about these supposed creatures? Let me summarize the argument:

(1A) Has the cloaca been passed down to the beaver by the reptilian ancestors which, according to evolution, it had? If so, it would be a homologous organ. But nobody maintains that it is.

(1B) Failing (1A), there must, according to evolution, have been a gap of millions of years, between the reptiles and the beaver, in which the cloaca was missing, and it must have been produced independently in the two cases. But then it shows nothing about relationship; nor, indeed, is it claimed to do so. But if it proves nothing in this case, why should it do so in the case of monotremes?

(2A) But if neither the presence nor the absence of the cloaca proves anything about descent, that is, about evolution, how can any other feature do so? Evolution is left as an hypothesis without any evidence. In that case, Creation is the more reasonable answer. The beaver may have been created with the cloaca, again for reasons which the Creator saw to be good.

(2B) Even if a Creationist should claim that the beaver was created without a cloaca, and acquired it later, an evolutionist could not consistently object. For he was claiming the same kind of thing. Here is another example of what I have called the fourth law of creation, on which I hope to publish more in due time.

(3) The beaver has a scaly tail. One often thinks of reptiles as scaly. But nobody maintains that the two provisions of scales are connected by descent. But if this similarity proves nothing, what reason is there to say that another similarity does?

(4) The beaver has a nictitating membrane; the so-called third eyelid. It shares this feature with reptiles, monotremes, rabbits, birds, some sharks, and the walrus. Nobody claims that any special relationship is thereby proved. But if this resemblance proves nothing, what right has anyone to seize on another as evidence of evolution?

(5) It may be of interest here to add a few general remarks about the beaver, which has been mentioned so

*Mr. Colin Brown's address is 61 Derby Road, Golborne, Gt. Manchester, England.

much. The gestation period is 81-98 days for the European beaver, about 120 for the Canadian. The young, at birth, weigh about 1½ pounds, and are about 15 inches long, about 4 of that being tail. They are born with eyes and ears open; and at about one month old begin looking for solid food, although they are not weaned until about six weeks. All in all, they are very much placental mammals.

Thermoregulation

It used to be said that thermoregulation was poor in the monotremes, and on that ground they were said to be close to the reptiles, which were supposed to have no thermoregulation at all. But, in the first place, it is becoming abundantly clear that the division of animals into warm-blooded and cold-blooded is a gross oversimplification. Reptiles, and, indeed, insects, are now known to have many strategies for keeping their temperatures within suitable limits.

As a matter of fact, in the second place, the monotremes are very similar, in body temperature and in standard metabolic rate, to many eutherian animals. Fur, or other insulating material, is useful in the control of temperature; and the platypus, for instance, has insulation which, in water (where it spends considerable of its time) is better than that of the polar bear or the beaver.

More on Reproductive Organs

In the platypus only one ovary and oviduct function, viz., the left. Both function in the echidna. Snakes and lizards likewise have only one functioning; whereas in crocodiles, turtles, marsupials, and placental mammals two function. Had the reptilian ancestor, from which the platypus is supposed to have evolved, two functioning? If so, why should one become non-functional in the platypus, especially when that did not happen to the echidna? Again, if some reptile, in the alleged evolutionary line, was functioning satisfactorily with one ovary and oviduct, why should it go to the trouble of completely re-arranging itself, along with the kidneys, bladder, etc., and then still later come back to having only one functional?

Longevity

Longevity, or its absence, is another matter of interest about animals—and to ourselves. And it is inherited to some extent, and thus has to do with genetics—and should have to do with evolution if it had ever happened. Is there any pattern there which would reveal the monotremes as especially primitive? Not really. The platypus is believed to live about 17 years, the echidna over 50. There is little relation here. It may be noted that the echidna lives longer than the dog, brown bear, Indian rhinoceros, Bactrian camel, South American tapir, common seal, chimpanzee, and gorilla among the mammals; and longer than the tuatara lizard, loggerhead turtle, and anaconda among the reptiles. The platypus, on the other hand, has a shorter life than many of the creatures mentioned, and even than the common toad, and the common and giant salamanders.

The young monotremes can not live very long without milk, which, of course, their alleged reptilian ancestors could not have provided. A major change in the whole nature of the young would have been needed. There is no evidence for any such change; in particular, the development of teeth, which might have been expected to be related somehow, give no hint of any such change. The embryo of the platypus, for instance, has a replacement premolar which, however, does not erupt but rather becomes reabsorbed. The platypus juvenile dentition is: 0 1 2 3

5 1 2 3

But of these all that remain are:

0 0 1 2

0 0 0 3

and those, of course, are replaced by horny plates otherwise unknown in the world of mammals. This evidence would suggest that the young platypus has always needed milk.

This may be a good place to comment on the so-called pre-lacteal teeth of marsupials. This notion was discussed during the last century, but strong evidence appeared to show that these teeth are normal milk teeth, the development of which, however, is suppressed owing to the peculiar development and suckling habits of the young marsupials.

Some evolutionists argue (but we know that the whole notion is false) that humans have suppressed gills, showing descent from fish. If this were so, how much more would suppressed milk teeth show descent from—(what it pleases us to call) higher mammals! The devastating effect of any such conclusion on evolution needs no pointing out.

Other Features

The monotremes, like other mammals, have seven cervical vertebrae. However, those vertebrae have ribs attached. Many evolutionists have seized upon this fact as evidence of a connection with reptiles. I can not agree. I have examined, for instance in the Liverpool Museum, the skeletons of many reptiles, monotremes, and other mammals. On one occasion, I remarked (concerning the reptiles and monotremes) to the person in charge: "They are not quite the same, are they?" She replied: "They are nothing like the same". In particular, I can not see that the ribs are really similar.

The discussion above has come back to homologous organs. It should be stressed that that notion is far from unambiguous. One can see this by comparing textbooks; some will call the monotremes reptile-like, others only like reptiles in certain aspects.

Recently there has been much work on molecular biology, with the thought of tracing relationships thereby. It is interesting, then, to note that the DNA content of monotremes is from 93% to 98% of that of placental mammals. The corresponding figures for such marsupials as I have been able to obtain information about are 81% to 94%. Is someone ready to say that the monotremes are more closely related to the placental mammals than the marsupials are? Also, it is my understanding that the monotremes, like most placental mammals, are authentic diploid species.

There is Really Nothing Reptile-Like About Monotremes

It has been claimed that some of the monotremes' cells, tissues, and organs are reptile-like; for instance the cortical tissue of the *Tachyglossus* and even more so of the *Zaglossus*. In comparison with the diploglossian reptiles, for instance, it has been stated that the type of cell, and arrangement into tissues is so similar that the one might pass for an illustration of the other.

Very strong words these—and they might lead one to think (maybe they were intended to do so) that these characteristics have been passed down by evolution from reptiles. Or, at least that the monotremes have some reptilian components, again explicable by evolution.

But what is the truth? It is that these animals have no real reptilian tissues, cells, or components. They are true mammals.

Again, it might be argued that the peculiarities of the monotremes have descended from mammal-like reptiles of the past. But one can reply:

1. If the mammal-like reptiles which are invoked were real reptiles having reptile-like tissues which, however, formed mammal-like structures; then in the monotremes, which were supposed to be closely related, the opposite occurs: mammal-like tissues form reptile-like structures. Such a state of affairs would be strange, to say the least!

2. Again, if it should be said that the cells, tissues, and organs of the monotremes are the same as those found in the so-called mammal-like reptiles, then those reptiles must really have been mammals; for the monotremes are without doubt a type of mammal.

3. The only way, then, to argue for a connection with reptiles would be to maintain that the characteristics of the monotremes are really reptilian. But that, as already noticed, would be false. The monotremes have no real reptilian tissues. So the alleged connection with reptiles is completely cut.

In conclusion, then, there is no reason to doubt that these animals were created more or less as we find them, to fill their peculiar niche. If, however, some changes have taken place over the centuries, those changes were not such as to move the monotremes from one kind into another. Again, what I have called the fourth law of creation is seen.

References

Griffiths, Mervyn, 1979. The biology of the monotremes. Academic Press.

Renfree, Marilyn B., 1981. Marsupials: alternative mammals. *Nature* 293(5828):100-101.

Gish, Duane T., 1981. The mammal-like reptiles. *Acts and Facts* 10(12):Impact section. Institute for Creation Research, San Diego.

AN ESTIMATE OF THE CURRENT STATUS OF EVOLUTIONARY THINKING

JOHN N. MOORE*

Received 13 February, 1981

This article is a critical examination of current evolutionary thinking, as exemplified in statements by prominent evolutionists. Six points especially noticeable in this thinking are (1) disregard of the grounds of and limiting principles of scientific methodology; (2) equivocations of the word "evolution"; (3) primary reliance on circumstantial evidence; (4) extensive extrapolation; (5) dependence on error; and (6) use of "cover words" as practiced by evolutionists.

Introduction

An estimate of the current status of evolutionary thinking[1] could be implemented by a critical review of the book, *Evolution*,[2] a 1977 composite publication of statements by four important evolutionists. Another approach to the task of appraisal and judgment of evolutionary thinking could be offered in an article-by-article critique of the September 1978 issue of *Scientific American* (entitled "Evolution") in which nine evolutionists present *their* statements of the current status of evolutionary thought.

In the latter publication the authors are very candid when they admit several problem areas that evolutionists face. With regard to the earliest cells, J. William Schopf states, "Although much remains uncertain . . . " (p. 137). Then James W. Valentine admits, "The details of the diversity and abundance of plant species through Paleozoic and Mesozoic eras are largely unknown." (p. 158) With regard to ecological systems, Robert M. May recognizes that there is a "lack of convincing explanation". (p. 175) And Sherwood L. Washburn is most candid in his statement that the origins of human speech remain a mystery. (p. 206)

As further introduction I provide a specific list (with page references of current problems (explicit and implicit) contained in expressions by the *Scientific American* issue authors:

1. What is the role of chance? (p. 53)

2. What specifies the sequence of nucleotide bases? (p. 56) Which might be transcribed into the question, What is the "code" of the code?

3. How is supposed evolutionary progress to be explained by errors due to mutations? (p. 58)

*John N. Moore, M.S. (Plant Pathology), Ed.D. (Higher Education), is Full Professor of Natural Science at Michigan State University. For thirty-four years he has taught general science courses for non-science majors; and he gives a critical examination of origins a prominent place in the subject-matter.