the days of Creation. The mass-extinction of ancient life by some catastrophic calamity would go far toward recognition of the Flood of Noah as one of the major tectonic events of all geologic time.

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PUZZLING SIMILARITIES

EVAN V. SHUTE*

Many resemblances between animals and plants of different genera, families and orders defy evolutionary explanation. There are both differences and similarities between creatures of different kinds. The evolutionist must decide what features are useful as true species criteria and what features are spurious or misleading. A small but interesting sampling of strange similarities between widely diverse living forms is given here, from a study of spinal tracts, ears, placentae, electric organs, kidney function, fern vessels, milk, brown fat, sweat glands, and other systems: It is asserted that these puzzling resemblances are best explained by special creationism rather than by evolutionary convergence.

Introduction

The eye of a human being has a strange but unmistakable resemblance to that of a squid. Evolutionists have classified this as a case of "analogy" because the squid has obviously no close relationship to the backbone or vertebrate creatures.

An evolution theorist then attempts to explain such puzzling resemblances by divergent and convergent evolution. He imagines first (many million of years ago) that the squid ancestor "diverged" or differentiated from the presumed ancestor of the vertebrates. The squid type developed in one way in evolution, quite distinct from the vertebrate types. This is what is meant in evolutionism by "divergent evolution."

Many millions of years later, it is supposed, both the squid group and the vertebrates evolved eyes and each changed independently to yield a similar type of eye. This is called "convergence" by the evolution theorist in that two obviously different stocks are supposed to have converged to form a similar eye. Such resemblances are also said to be "analogous" or misleading rather than "homologous" or true indicators of relatedness.

If this fascinating phenomenon of analogy occurred only once or twice in biology, perhaps a non-biased observer could reasonably assume that it was a simple case of chance convergence from different groups. Consider the ponderous weight of evidence here, however, and note that *many strange and baffling analogies* exist. Then ask yourself if these data fit best with evolution of one kind from another kind or with the creation of distinct, functional types with similar structures resulting from design.

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The Corticospinal Tract—An Anomaly

The Malayan Tree Shrew *(Tupaia glis)* has long been regarded as a lowly primate. But its corticospinal tract, which controls movement of the body muscles, is located in the base of the dorsal column of white matter, and in all other primates studied it is in the lateral column of the spinal cord.[1] Is a cord tract of basic functional significance critical in phylogeny? If so, how can this anomaly be understood?

Human Embryo and Whale's Ear—Similarity

The human embryo has a solid cord in the external ear, in place of a "canal," until the seventh month of its nine month gestation. In whales a similar condition exists and is highly functional in echo location.[2]

Placentae—Puzzling Patterns

The placenta is a fundamental organ and should help taxonomists. Yet the study of placentae yields some baffling analogies. The outer envelope or membrane of the fetal sac is called the chorion. It becomes anchored to the uterus by little processes called villi that grow into the uterine wall. These villi of the fetal sac develop over all the chorion *(placenta difusa)* in the pig, horse, porpoise, and the mole, *Scalopus.* The villous area forms a band about the equator of the chorionic sac *(placenta zonaria)* in many Carnivora, *Sirenia* (manatee and dugong), and the aardvark. Commonly the placenta or after-birth forms a round plate or disk. But such a placenta *(discoidalis)* can be doubled in many monkeys and the simpler tree shrews *(Tupaia).*

Epitheliochorial placentae, in which there is mere geographical apposition between the chorion and the uterine lining *(endometrium)* and no erosion of the endometrium by villous processes, are seen in the pig, horse, cow, deer, cetacean (whale), lemur, and the mole, *Scalopus.*

Syndesmochorial placentae, where the chorion snuggles close to *eroded* endometrium and so is intimately apposed to connective tissue of the uterine lining, rather than to the more superficial epithelial layer of the endometrium, are seen in sheep and goats.

Endotheliochorial placentae, where the erosion eats away both epithelium and underlying connective tissue (sparing only the endometrial blood vessels) are found in insectivores, bats, carnivores, beaver, sloths, the aardvark, elephant, dog and raccoon.

Hemochorial placentae in which the endometrial erosion is complete, and even the vessels have been penetrated and broken into (and as a result the chorion membrane is bathed in maternal blood), are seen in most rodents, higher primates, the armadillo, some insectivores.

Hemoendothelial placentae develop where the total uterine lining, the endometrial wall, and the invasive chorion are both destroyed, leaving only fetal capillary walls separating the fetal and maternal circulations. These are seen in certain rodents—and the insectivore, *Echinosorex.*

Endothelioendothelial placentae, where the integration is almost ultimately intimate, the vessels lying side by side together, appear in the Indian shrew, *Suncus* —perhaps in the marsupial, *Perameles.*

Wimsett[3] concludes that the variety indicated above is far from showing that species repeat or "recapitulate" their evolutionary origin! By recapitulation one refers to a supposed tendency among embryonic animals to re-live and re-display possibly the processes and certainly the forms of their evolutionary ancestors.

In many species such as pigs, horses, sheep, and whales, only patchy capillary invasions of the uterine lining by the erosive outer layer of the placental villi known as the "trophoblast" occur. In others, such as bears, seals, hyenas, molossid bats, there is more diffuse invasion of the endometrium by the trophoblast.

In many animals the outer layer of the placenta (trophoblast) spearheads fetal invasion of the uterine wall, and is the source of placental hormones. In pregnant mares, however, the opposite occurs in that such hormone stimulus and secretion arises from the *uterine* side in the so-called "endometrial cups."

Only monotremes among modern mammals have an egg with a large yolk, but all mammals at some stage have a yolk sac. In Ungulates (horses, etc.) this vanishes early during the time of implantation or attachment of the embryo to the uterus. In man it disappears gradually.

Various quotations from Wimsett[3] are instructive: "Despite the best efforts of many able scholars, the placenta's evolutionary history remains obscure—it is unlikely that certainty—will ever be achieved in this area." Any proposed schemes are not very believable, indeed, and often arise only from "logical necessity." No final evidence remains. "The course of placental evolution may remain forever inscrutable."

Here is an organ which is the literal foundation of life. The lack of correlation between similar forms, and the irrelevance of placental relationship to other major anatomical features, leave the evolution theory in chaos at this point.

Seal Ears Like Whale's Ears

Two widely different mammalian forms, the pinnipeds (seals) and the cetaceans (whales) have members with the same mechanism for pressure regulation in the middle ear. It consists of distensible venous sinuses which function to

maintain the tiny, bony, auditory ossicles in an air-filled space whose pressure equals that outside the tympanum or drum. And yet the bone structure of the base of the skull and ear in the two types of seals, for example, differs widely. This is an example in which the cases of the "watch" are different but the "works" are similar!

True seals and sea lions resemble each other less than each resembles some other carnivorous group. Seals are closer to mustellids (weasel family) and sea lions are closer to bears.[4] Nothing could be more disconcerting to logical evolutionists.

Independent Echo-location Systems

Sonar is used by the South American oil birds, south-east Asian swiftlets, porpoises, dolphins, the fish Gymnarchus and bats.[5]

Electric Organs and Creation

Lissman discusses weak electric charges used for locating prey by not only the fish, *Gymnarchus,* but by a similar mormyrid fish and a quite different fish, a freshwater South American gymnotid. Here are both constant electrical frequency and changing electrical frequency appearing independently in these two families, one in Africa and one in South America.

Seven families of fish have electric organs. In some, the nerve source (innervation) is established indirectly through one or several stalks emerging from one of the surfaces of the "electroplaques" which are complexes of cells designed to shock and transmit shock when touched. Only one surface of each electroplaque is innervated except in certain aberrant knife fishes.

This system of innervation includes such unrelated forms as the African catfish and the mormyrids and one of the American knife fishes. Bennett and Grundfest[6] found that both the giant ray, three species of skate on the U. S. Atlantic coast, a South Atlantic ray *(Narcini brasiliensis)* and the bony fish, *Astroscopus,* had electroplaques which had no intracellular connections and no conducting mechanisms. Therefore these were paradoxically electrical shockers which are electrically inexcitable!

Grundfest concludes that the zoological and physiological relations among electric fishes are curiously confused. Convergent evolution is obvious here to the convinced evolutionist, of course. The electric skates are most troublesome, as their tiny charges are probably useless. Why then can they be held to be adaptive? The creation point of view presents a better *raison d'être.*

Lungs—Strange Resemblances

The lungs of the dog, cat and monkey are widely different anatomically from that of man. Man and the horse have very similar lung structure and both have a bronchial artery supplying the walls of the tiny air sac constituents of lung tissue, the alveoli. This implies a nutrient function for the tiny muscle bundles in the walls of those sacs. Shall I insist that these relationships are phylogenetic?

Urine Concentration Analogies

The mountain beaver, *Aplodontia rufa,* has been called the "oldest living rodent." It can scarcely concentrate its urine[7] for example. Like birds, it does not have thin segments in its kidneys of looped *vasa recta.* Birds can concentrate their urine only slightly. The beaver and certain squirrels are similar in a poor ability to concentrate urine. But other squirrels concentrate their urine quite well!

Vascular Ferns—A Problem for Phylogeny

In flowering seed plants there are cellular tubes known as "sieve tubes" which carry sugar foods around the plant. Most non-seed plants such as ferns do not have such sugar tubes, yet cells resembling true sieve-tube members have been found in the phloem of three species of the heterosporous fern, *Marsilea (M. quadrifolia, M. drummondii,* and *M. hirsuta)*[8] See Figure 1. Here is a case in which sieve-tubes or sieve-tube-like structures must have evolved independently in *Marsilea ferns* and in the flowering plants. The creationist objects and asserts it more reasonable to believe in creation by design.

On the other hand, most ferns have water conducting tubes (xylem vessels) in their underground stem (rhizome) **and** in their leaves (fronds). *Marsilea,* however, are peculiar in that all of them have vessels in their rhizomes

Figure 1. Note the leaves of Marsilea fern that are shaped like a four-leaved clover. The leaves both rest upon and stand above the surface of the water in which the fern grows. Unlike other ferns, Marsilea plants contain cells that resemble sieve-tubes. Also, *Marsilea* plants have xylem vessels in their rhizome stems but none in the leaves whereas other ferns have xylem vessels in stem and leaves.

alone but none in their fronds. This is unique among ferns (Filicales), or elsewhere outside the flowering plants for that matter.

Reproductive bodies of *Marsilea* ferns are large spores and small spores borne in complex spore cases known as sporangia. Based on this complex sporangial type, *Marsilea* is the most specialized of the Marsilaceae, but on the basis of frond or leaf form, it is the most primitive genus! This poses an odd puzzle for evolutionists. *Pteridum*, the bracken fern, has vessels also, not solely confined to the roots, and less specialized than those of *Marsilea. Pteridium* is terrestrial; *Marsilea* is aquatic.

Using the evolution theory then, one would be forced to believe that vessels evolved independently in the water fern *(Marsilea)* and in the bracken fern. This too is a preposterous conclusion.

Water Content of Milk

The dairy cow gives milk which is 88 per cent water. Camel milk is also 88 per cent water. Collared peccary milk is about 84 per cent water.

On the other hand, the kangaroo rat's milk averages only 50 per cent water. The only other organisms as low are the harp seal, 44 per cent; the hooded seal, 50 per cent; the California sea lion, 47 per cent; the blue whale, 47 per cent; and the fin whale 54 per cent.[9] Here are basic divergences and curious relationships surely. How could they possibly be phylogenetic?

Brown Fat—An Amazing "Omission"

Brown fat is an important site of heat production during exposure to cold in most newborn mammals—except the pig.[10] From the standpoint of evolution this is a peculiar omission?

A Copepod Eye—Design in Nature

The minute copepod, *Copilia*, has two eyes with a pair of lenses in each.[11] There is one retina, but the posterior lens moves continually. This animal measures 3 mm. x 1 mm. x 1 mm. It actually has an optic nerve. The microscopic structure is very much like that of a conventional compound eye, as seen in insects. The eye parts move independently. Do copepod eyes give evidence for design and creation, or evidence for evolution and natural selection?

Apocrine Sweat Glands—Human, Sheep

Welsh mountain sheep spontaneously develop a mass discharge of their apocrine sweat glands, followed by a rest period as they recharge. Apocrine glands are skin glands which disintegrate superficially as they discharge, but soon are reconstituted. The corresponding human glands react very similarly.[12]

Once again, it is odd that man finds particularly close structural similarity to a certain single animal species far removed from him on any phylogenetic tree that the most ardent transformist could imagine.

Midventral Gland in Unrelated Organisms

A gerbil is a small burrowing or jumping rodent as large as a rat, found in Egypt and S. Africa. Various species of gerbils have a specific midventral gland, its secretions probably used to demarcate territory. Curiously, other animals systematically removed have one like it, e.g. *Blarina* (an American shrew); *Neotoma* (wood rat), *Peromyscus* (deer mice); *Cricetus* (American rats and mice), *Sigmodon* (cotton rats), *Martes zibellina* (martins and fishers), and *Rattus exulens* (another of the rats).[13]

Chromosomes—A Primate Puzzle

Man has 46 chromosomes, but the gorilla, chimpanzee and orang-utan have 48. Four species of gibbon have 44 and the siamang (a Malaysian ape with exceptionally long limbs) has 50.[14]

The chimpanzee is most like man in karyotype or chromosome picture. It has 17 metacentric (chromosomes with two arms equal) and two *small* acrocentric (asymmetrical) pairs of autosomes (non-sex chromosomes)—as we do—but four in place of man's three *large* acrocentric (asymmetrical) pairs. The X-chromosome (shared by male and females) is similar among primates, but the Y (male) chromosome is variable.[15]

We are alike but different—something that fits with creationism and something that children in zoos realize at a glance.

Giant Pandas—Where Do They Fit?

Is the Giant Panda a bear or a Procyanid (a group close to the bear-like dogs)? Placing it in the Procyanid group must undo the foundation classification of a large group of carnivores, for bears of the Miocene and Pliocene left skeletons like that of the Giant Panda. But by custom the Giant Panda is placed among the Procyanids for lack of a better classification.

On serological grounds and in brain configuration Giant Pandas seem to be bears, but in chromosome structure and with respect to their remarkable genitalia they resemble raccoons (Procyanids). However, bears roar and Giant Pandas bleat. Bears are carnivores and Giant Pandas herbivores. The Giant Panda is an awkward animal for evolutionists.[16]

The Dubious Hyrax

Is the rabbit-sized hyrax the nearest relative of the elephant? It was first regarded as a rodent like the guinea-pig. Then Cuvier related it to

the hippopotamus. Milne-Edwards and Huxley put it with the elephant. Now it is placed in a separate order, the Hyracoidea, next to the Proboscidea (order of elephants).

Hyrax toes have hoof-like nails, like those of such South American rodents as the agoutis. It has a gland in the mid-back like that of the South American rodent, the capybara. However, the hyrax appears in the Oligocene for the first time, later than the "earliest elephant," the *Moeritherium*. This is a bit awkward chronologically, of course, if one approaches the problem from the uniformitarian framework of long time periods.

The hind feet have three toes with hoof-like nails, resembling those of modern tapirs and extinct horses. The hoof-like nails of the front feet are on five toes. The two outer toes are small or "vestigial''—intermediate between those of the tapir and rhinocerus and those of the elephant and hippopotamus. The skeleton of the feet is like that of the elephant and hippopotamus.

The teeth are in hippopotamus pattern and the cheek teeth are nearly exactly in the rhinocerus pattern. The brain is like that of hooved animals rather than that of rodents. The stomach resembles that of horse and rhinoceros. The placenta is hemochorial, as in most rodents, but in elephants the placenta is endotheliochorial while in the horse and hippo it is epitheliochorial (as discussed above). The truth is that the hyrax is unlike any other living thing.[17]

Prostoglandins Distribution

Of the seminal fluids examined to date, only those of man, monkey, sheep and goat contain prostaglandins[18] This relationship would certainly defy evolutionary explanation.

Special Nostrils of Antelopes

In each nostril of an antelope *(Saiga),* there is a sac lined with mucous membranes. These appear in no other mammal but the whale.[19]

Summary

Are the spinal tract, or the placenta, or the sonar, or the apocrine sweat glands, or the midventral gland sufficient criteria to establish phylogenetic relationship? Shall we heed the lesson read to us by the vessels of ferns? Does a copepod's eye on the surface of the sea, make it our cousin? Is there really such a phenomenon as "convergence"? Is convergence perhaps a part of neo-Darwinian ratiocination, or an instance of the Creator's humor?

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(Continued from Page 135)

ture. The book will be especially important to students and parents faced with dogmatic teaching of evolutionary thinking, and to those interested in challenging evolutionary textbooks used in public and private school science classrooms.

Articles in this book provide further evidence that qualified specialists in various fields of science are convinced that special creation affords a more reasonable and satisfying philosophy of origins than evolution.

—THE EDITORS