REVERSALS IN THE FOSSIL RECORD: THE LATEST PROBLEM IN STRATIGRAPHY AND EVOLUTIONARY PHYLOGENY†

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Evolutionists have often asserted that evolutionary change is irreversible. In fact, that assertion has the status of a law, called Dollo's Law. However, a search of the literature shows that the evolutionists are being forced more and more to admit that, according to their presuppositions, there have been reversals. Once that admission is made, attempts to resolve the order of strata by supposed evolutionary changes in fossils become very questionable. The matter of reversals in the fossil record is an unreported controversy among paleontologists. Even the minority of paleontologists who recognize the fossil evidence for reversals are very obtuse regarding the implications in stratigraphy and phylogeny, both of which have been developed on the concept of the irreversible nature of the fossil record and of evolution.

What has, since 1893, been considered in evolution and phylogeny to be one of the most secure and undisputed of "laws," namely, the "law of irreversibility," now turns out to have exceptions to it, and the entire concept, with its implications, is open to challenge.

Dr. Gerald R. Smith of the University of Michigan has recently reported finding "reversals" in the fossil record of Idaho fishes. He further suggests that there are many such cases of reversals in the fossil record but that they have either gone unreported in the literature or were considered to be "anomalies" and hence were ignored. In other cases, they were ignored even after they were reported.

A preliminary search of the technical literature by the author of this paper turned up a number of such reversals, including a report of reversals in the fossil record of the ammonites. This phenomena of reversals in the fossil record, with far-reaching implications, has not yet been noted generally by creationists. If the research creationists are encouraged to conduct in the technical literature continues to reveal documented evidence of reversals, it could constitute one of the most serious and substantive challenges to evolutionary thinking on the part of creationists in recent times.

The "law of irreversibility," originally put forward by Dollo in 1893, states that "an organism is unable to return, even partially, to a previous stage already realized in the ranks of its ancestors."[1] It is this law or principle that causes evolutionists to speak of evolution as being a directional or "one-way" process in the development of life.

Dollo's Law refers to matters of morphology and specialization. There is a rule in evolution, known as Cope's Rule, which deals with the widespread tendency of animal groups to evolve toward larger physical size. Because numerous exceptions are known, it is now considered only as a loose generalization by most workers. Dollo's Law should not be confused with Cope's Rule, which does not concern us here, because size changes alone have not seemed to be of great consequence in stratigraphic correlation or evolutionary family trees. On the other hand, changes from "generalized" to "specialized" have been almost universally accepted as irreversible and have been used very extensively in both stratigraphic correlation and in the construction of evolutionary histories.

Law Important for Three Reasons

This law of irreversibility is of utmost importance in evolutionary and geological thinking for three reasons. First, it has been used to explain extinctions. Whereas many creationists believe that extinctions are, at least in large part, the result of Biblical catastrophies such as the Genesis flood, evolutionists have stated the cause of extinction on the part of many organisms to be their gradual evolutionary development from a "generalized" to a "specialized" and then to an "over-specialized" condition.

Specializations are usually found in the feeding and defense mechanisms of organisms, and are said to be their response to the environment. These specializations enable them to achieve a better "fit" in their ecological nitch and to utilize the resources more efficiently.

Hence, a specialized adaptation is considered an advancement not only in ability to survive, but also in evolutionary history since these "advanced" or "specialized" forms would be the descendants of more "generalized" ancestors. However, there is a price to pay. With increased specialization comes decreased ability to adapt to changing conditions. Thus, sudden changes in the climate or the environment are perhaps the major evolutionary explanation for the vast extinctions found in the fossil record.

Since, according to the law of irreversibility, the organism cannot go back to a more generalized condition, it becomes extinct being unable to adapt to the new environment. Hence, reversals in the fossil record force the evolutionist to face anew the problem of extinctions.

Second, the geologic record of the sedimentary rocks is correlated on a world-wide basis according to the law of irreversibility. For instance, if Sedimentary Bed A contains the fossils of a certain kind of fish and Sedimentary Bed B, some miles away, contains the fossils of the same kind of fish but a bit more specialized in certain feeding or defense mechanisms, then Bed A is considered to be earlier in time than Bed B.

Bed B is considered to be more recent because the fossils of the same organism are more specialized, and evolutionists have assumed that this was a "one-way" evolutionary process. A significant body of evidence for reversals in the fossil record could call into question the

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fossil correlation of vast areas of the sedimentary record and the evolutionary system based upon this law of irreversibility.

The third reason for the significance of these fossil reversals is that for years evolutionists have been constructing phylogenetic or evolutionary "family trees" on the basis of the supposed "one-way" character of the fossil record. Using present day specialized forms, they have gone back into the fossil record looking for more generalized ancestors of the present day forms.

There is much paleontological literature which states that fossil reversals cannot occur, and much of the scheme of evolutionary relationships has been developed on this assumption. If fossil reversals prove to be widespread, many—if not most—of the alleged evolutionary relationships can be legitimately challenged by creationists on that basis alone.

The writer was first made aware of the possibility of these fossil reversals in a lecture given by Dr. Gerald R. Smith at the University of Michigan, February 5, 1976. The lecture was part of the Turner Distinguished Lecture Series sponsored by the Department of Geology and Mineralogy at the University. The lectureship brings to the University of Michigan campus some of the most emminent authorities in the world of geology and related subjects.

Dr. Smith is himself the Director of the Museum of Paleontology and Associate Professor of Zoology at the University. His area of specialization is the fishes—both living and fossil. Before coming to Michigan, he was associated with the Museum of Natural History at the University of Kansas. From 1967-1970 he served as Managing Editor of the journal, *Evolution*, the publication of the Society for the Study of Evolution.

Lecture on Lake Idaho

The subject of Dr. Smith's lecture was "Lake Idaho Fossil Fishes: Paleohydrology and Evolution." Lake Idaho—no longer in existence—was a Pliocene Lake located in southwest Idaho in what is now the Snake River drainage basin. In size and depth, a present day analog would be Yellowstone Lake. In climate and ecology, a present day analog would be one of the Great Lakes.

Lake Idaho, however, was unique in that it had more species diversity than has any lake in western North America today. It had more specialization diversity than any lake in all of temperate North America today. It is the amazing degree of specialization of the fauna of this Pliocene lake compared to the present day forms that presents a problem to the evolutionist.

Speaking of the fossil Salmon, *Oncorhynchus salax*, which he found in the Glenns Ferry Formation (the sedimentary beds representing the deposits of the ancient Lake Idaho), Dr. Smith remarked about the greater number of gill rakers which this fossil Salmon had compared to any Recent species. Professor Smith stated:

> The number of gill rakers is one of the primary characteristics by which Pacific Salmon can be studied and identified. Compared with the fossil species, *Oncorhynchus salax*, the important thing here is that this can be interpreted as evidence that the fossil species was far more specialized in this particular characteristic than any of the Recent species. And this will be one of the surprising points that I will be trying to make for the next several minutes, that the members of the fish fauna of Lake Idaho are in most respects more specialized (in several senses of that word) than their modern counterparts.
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> One of the other kinds of fish fossils discovered here are representatives of the whitefish group. The whitefish in the Glenns Ferry Formation is not only larger but more specialized in the possession of elongated jaw bones than any other member of the group. Other whitefish in related species are in western lakes. One of them is nearly coarctic, but none of them are as specialized as the one in this lake, and in particular the one that occupies the Snake drainage today is not specialized relative to this one.[2]

Of the original (Pliocene) fish fauna of Lake Idaho, Dr. Smith stated that one-third of them became extinct altogether. Another third became extinct locally but are represented in some of the other basins. He continued:

> The remaining third changed. They *specialized*, but I have to use that word very carefully because we think of all changes to changing environments as specializations. But in this case, if we look at the specializations that were attained by the surviving third of this system that enabled them to survive the temperature fluctuations and the current of the new environment, they are "specializations" to a *generalized* situation and *generalized* characteristics. Now, this is kind of a surprising thing because if you look at it at face value *it indicates a direct evolutionary reversal.*
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> Theoretically there is no reason not to expect reversals to occur in evolution, but it turns out that the paleontological literature—at least—is full of statements indicating that evolutionary reversals of this sort cannot occur. For example, frequent references in the paleontological literature to the fact that one species, species A, cannot be ancestral to species B because species A is more specialized than species B. Well, I think (at least I'm convinced) that in this situation we've got several inescapable examples of at least minor changes from specializations to generalized morphological conditions.
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> The number of examples of that may be as high as ten, and I covered about ten. Those that involve drainages other than the Snake River might not be true examples of a direct reversal. At least in three cases (the three evolutionary lines—well, somewhere between two and five evolutionary lines) that are pretty much restricted to that same geographical location, especially the genus *Acrocheilus*, which has never been found anyplace but that spot on the map (That's the thing with the slicing pharyngeal teeth); and the genus *Mylophorodon* (the thing with the mollusk crushing pharyngeal teeth) is also a line that is unknown from any other part of the world. It's just been right on that spot and I take this to indicate that the fossil forms are the direct

ancestors of the Recent forms, *and that the changes we observe are direct reversals.*

One of the other worrisome aspects about reversals to a paleonologist—and maybe this is why paleontologists don't want to see them when they exist—is that this obviously means that I can't do a thing with stratigraphic markers with these species (if they are reversing in response to whatever ecological conditions happen to be selecting them at any given time) without a whole lot of independent stratigraphic control (which is why Pete and I and Chris are interested in dating ashes) and other paleontological and geological evidence. We just wouldn't be justified in using these fishes as stratigraphic markers. The mammals have been used as stratigraphic markers out there, and there are statements in the literature about the relative ages of beds based on the number of triangles in mouse teeth. But I don't see that the specializations in the mouse teeth are any different or subject to any different rules of evolution than the kinds of things we observe in the fish teeth.

The other interesting point that is of some importance to people who study evolution and phylogeny these days is that if reversals occur in evolutionary history (as I think we have to accept that they do) and if they are undetected, then it would be impossible for zoologists to study only recent animals to reconstruct the phylogeny of those animals without some mechanism for determining where and when the reversals occurred. It occurs to me that the only place where we can get solid evidence, the only place where we can document the occurrence of non-parsimonious evolution, is in the fossil record.[2] (End of quotation by Professor Smith. Emphasis added)

It is the very limited geographical range of some of the Lake Idaho fossils that seems to establish beyond reasonable doubt that the modern forms are in actuality the descendants of the fossil forms, and that they did indeed experience morphological reversals. This same limited range would make the fact of these particular reversals of very limited importance, for the Lake Idaho fossils are not crucial either in evolutionary phylogeny or in correlation of rock strata.

However, it is Dr. Smith's stated belief that these reversals are widespread in the paleontological record but that they are either unreported as such or else they are reported and ignored because they do not accord with the "law of irreversibility." With this thought in mind, the writer of this paper undertook a very brief and cursory search in some of the evolutionary literature, and located an item in the journal, *Nature*,[3] involving reversals in the fossil ammonites which could well be of the greatest general importance and which had been reported originally in *Biological Reviews*.

Ammonite Reversals Discussed

The ammonites are in the class cephalopoda (phylum Mullusca) which include the squids, octopuses, the pearly nautilus, and the extinct ammonoids. Whereas reversals in the Lake Idaho fossils would be of limited importance—except, perhaps, to establish the fact of reversals—the cephalopods would be of extreme importance since (because of their world-wide distribution and their range from Cambrian to Recent times) they are among the most widely used fossils both for stratigraphic correlation and for the developing of evolutionary family trees.

The ammonites (subclass ammonoidea), and their earlier relatives, the ammonoids, are coiled mollusks similar in appearance to a ram's horn. In fact, their name comes from Ammon, the Greek name for the Egyptian ram-headed deity. They are among the most widely used fossils for correlation—especially in the Mesozoic Era. Stokes has stated:

> The ammonites (cephalopods whose shells have complex suture patterns) are unequalled as guide fossils for marine Triassic, Jurassic, and Cretaceous rocks.[4]

The extensive use of ammonites in stratigraphic correlation is indicated by the fact that they are used, according to Stokes, to correlate 29 zones of the European Triassic (mainly in the Alps), 35 zones of the North American Triassic, from 40 to 50 zones of the British Jurassic, 10 zones of the United States Jurassic, 24 zones of the Mexican Jurassic, 20 to 30 zones of the Euopean Cretaceous, and 26 zones of the United States Cretaceous—to mention just a few of the areas. *In fact, it was the ammonites of the British Jurassic that strongly influenced the early development of the science of stratigraphy and correlation, and its resulting use in building up evolutionary sequences.* To say that the possibility to reversals in the history of the ammonites is of great importance is a masterpiece of understatement.

The use of these spiral-shelled ammonites as precise stratigraphic markers is based (along with suture patterns) upon the alleged production of aberrant forms, called *heteromorphs*, in which either the whole shell, or part of it, is unrolled. This unrolling has been almost universally interpreted as a sign of overspecialization resulting in extinction. Hence, this one-way or directional history of these ammonites has been considered a very dependable and precise index for correlation and geologic age determination.

Ammonite Heteromorphs Challenged

The challenge to this commonly accepted evolutionary history of these ammonites has come from Jost Wiedmann of Tubingen University.[5] After careful study, Wiedmann demonstrated that these heteromorphs were not aberrant forms at all, but that the uncoiling was probably a normal response to the environment.

In fact, if the coiling of these ammonites in the Devonian Period is considered to be primary, there was a trend toward uncoiling on the part of some groups in the Triassic, a trend toward coiling again on the part of some in the Jurassic, Cretaceous, and even into the Tertiary, with some of the re-coiled forms showing a later Quaternary (probably Pleistocene) uncoiling. Further, some of the Jurassic uncoiled forms he discovered were older than their supposed coiled ancestors.

Here, then, is evidence for actually a double reversal in the history of these ammonites—going originally from coiled to uncoiled, then to coiled (the first reversal) and then to uncoiled again (the second reversal). The am-

biguity this injects into stratigraphic correlation is obvious. A coiled form could be either Devonian or late Mesozoic. An uncoiled form could be either Triassic or Pleistocene.

Further, Wiedmann notes that the reversals in these heteromorphs were not limited to a single characteristic, such as the coiling, but also involved a return ". . . to a phylogenetically older type of suture line" (p. 598). This fact is of no small moment because the alleged "one-way" evolutionary development of the suture is considered the most diagnostic element in all of ammonite phylogeny. Reversals in the suture line of these heteromorphs opens up the possibility that this phenomenon is not limited to them alone, but may be a characteristic of all ammonites. Paleontologists would do well to examine the ammonites afresh with this thought in mind.

Yet, one finds remarks in the paleontological literature such as this one concerning the ammonites: "Regarded as the most distinctive invertebrates of the Triassic period, they are valuable guide fossils for rocks of this age."[6]

In a later lecture in the Turner Lecture series, Dr. Philip D. Gingrich, a curator of the Museum of Paleontology, University of Michigan, and Associate Professor of Geology (formerly of the Peabody Museum, Yale University, where he studied under Elwyn Simons and David Pilbeam), shared Professor Smith's views on fossil reversals. In conversation with him following his lecture, the writer of this paper asked if the evidence for fossil reversals was quite extensive. He replied:

> I'm sure it is. It hasn't been well documented largely because of the methods paleontologists have used in analyzing their fossils. It started out with the concept that evolution proceeds from simple to complex, from small to large, and so forth. Instead of going out and finding fossils in well documented sequences where you have beds with fossils close enough together so you have a dense and continuous record, they have taken their individual fossils, put them on the table, and then said: "This one is advanced, this one is not so advanced, and this one is less advanced, and we have one sequence from primitive to advanced, from simple to complex." You read over and over again about how "This is an advanced character," and "This is a primitive character." What Dr. Smith and I are saying is that when you look at the things in a stratigraphically documented temporal perspective, what you find is not only the complicated with the increase in size, but you have lots of cases where things have become simple, things have become small. The point of this is that evolution doesn't proceed in some direction toward increased complication. The goal of evolution is adaptation. If it is to your advantage to become smaller, you'll become smaller. If you are better adapted having simpler teeth, simpler teeth are what result.
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> But we have a huge school of systematic paleontologists today who don't want to study in stratigraphic context. They want to make simplistic hypothesis about how evolution proceeds, and then they want to take the anatomical characteristics of each of their species or each of their fossils and then sort these out based on what they think is a natural grouping, and what we see in the fossil record is these natural groups evolving independently.[7]

Professor Gingrich introduced the writer to a booklet written by the Finnish paleontologist, Bjorn Kurten, dealing with the return of a lost tooth in the lynx. Kurten wrote:

> The metaconid-talonid complex may be termed a postcarnassial dental element in the sense of Crusafont and Truyols (1958), from its position behind the carnassial shear and within the field of molarization (Butler, 1939). Its presence is usually considered a primitive character, and may probably be so in the majority of cases. It was surprising, however, to find that the condition in the living *Felis lynx* seems to be derived from one in which the complex is absent or almost absent (Kurten, 1957). Even more astonishing is the fact that this seems to be coupled with the re-appearance of M_2, a structure unknown in Felidae since the Miocene. *All of this, of course, is completely at variance with one of the most cherished principles of evolutionary paleontology, namely Dollo's Law.*[8] (Emphases added)

Later on in the same work, he stated:

> This would then be an example of a structure totally lost and then regained in similar form,—which is something that simply cannot happen according to Dollo's Law.[9]
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> .....
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> Our knowledge of the early Tertiary Felidae is still too limited to permit reconstruction of the ancestry of the living cats. They must, however, have descended from forms with a molariform M_2. This structure was lost in all known Felidae in the Miocene. It has not been observed in any fossil Lynx. Its presence in an appreciable proportion of the present-day Northern Lynxes may thus be regarded as evidence of an evolutionary reversal of the same type as the return of the metaconid-talonid complex in M_1.[10]

More Reversals Found

In his brief search of the evolutionary literature, the author of this paper found another excellent illustration of evolutionary reversals and still another possibility. The possibility has to do with the alleged evolution of wings on insects and their subsequent evolutionary loss. George W. Byers (University of Kansas) has written:

> One of the frequently recurring evolutionary questions in entomology is why certain of the Pterygota, or winged insects, which must have required millions of years to evolve wings, have then in the course of further evolution lost the ability to fly, either by extreme reduction of the wings or total loss of them. These modifications may be seen in most orders of pterygotes and among species in a variety of ecological situations, in several species within a genus, or in all the species of a genus or higher taxon, suggesting that wing reduction has occurred at several different times during the evo-

lution of the insects and that it may occur in response to diverse environmental factors.

.....

Loss of wings must have evolved many times independently and from a variety of causes among the large orders . . ..[11]

The case for reversals in the history of the earthworms seems quite well documented. According to G. E. Gates (University of Maine):

This statement, "another instance of a return to a long lost ancestral condition," in a recent manuscript, provoked a referee to deny categorically that any such thing is possible. The various instances, *long known to earthworm specialists*, are buried in systematic literature rarely if ever consulted by other zoologists. A discussion of the subject should then be of general interest especially if the abovementioned denial is representative of current thought.

Some knowledge of oligochaete phylogeny is essential for understanding the reversions. All specialists have agreed that a major trend in Megadrile evolution has been reduction in number of genital organs, ...

.....

In conclusion, anatomical evolutionary reversions of earthworms may involve one or more pairs of organs in a single segment or a set of organs extending through several segments. Reversions already are recorded from species with obligatory amphimixis but more often from morphs (or other species) with parthenogenesis obligatory because of male sterility or inability to transfer or to receive sperm. *Further instances of reversion are anticipated* when the hundreds of species presently known only from a holotype or a very short series are more carefully studied.[12] (Emphases added)

Of special interest is the statement by Gates that these reversals ("reversions" as he calls them) have been long known by earthworm specialists, the reports have been buried in the technical literature, they expect to uncover many more instances of such reversals, and the very possibility of such reversals has been met with vigorous denial. Professor Gerald Smith, in private conversation, stated that these reversals in the fossil record are quite well known by paleontologists working at the species level. But, those working at the higher taxonomic levels deomonstrate a regretable obtuseness and lack of responsibility in acknowledging these evidences from the fossil record because of the mischief it works in efforts to develop evolutionary relationships.

As already indicated in some of the quotations in this paper, there is a deep division among paleontologists regarding the matter of reversals in the fossil record. This division has not yet been reported or come to the attention of the informed public. It is one that is touching the emotions as well, for it has far-reaching implications for evolutionary theory at a time when it is already troubled with internal controversy over the roll of mutations and natural selection in the history of life. James R. Beerbower (McMaster University), author of one of the more popular text-books on paleontology, recognizes the possibility of reversals in the fossil record when he writes: "*Unfortunately, this 'law' [Dollo's] only works a six-day week—on Sunday anything can happen.*"[13] (Emphases his). However, nowhere in his text does he deal with the ramifications of what can happen on Sunday as far as stratigraphy, phylogeny, and extinctions are concerned.

In contrast to Beerbower is the response of one of the most famous contemporary paleontologists, Zofia Kielan-Jaworowska, Professor of Paleontology and Director of the Paleozoological Institute of the Polish Academy of Sciences in Warsaw. Between 1963 and 1971, she organized and directed eight joint Polish-Mongolian expeditions to the Gobi Desert. The resulting discovery of a number of new types of dinosaurs and late Cretaceous mammals represents some of the most remarkable paleontological finds of the last half century.[14]

On November 17, 1976, Professor Kielan-Jaworowska lectured at the University of Wyoming, Laramie. In the question period following her lecture, the writer of this paper asked her if she had come across any evidence for reversals in her work in the Gobi. She acted surprized and amazed that anyone would suggest the possibility, and she demanded to know who was reporting them. She knew of no such thing.

Attention to Hominid Fossils

An area of special interest to the present writer has been the area of the hominid fossils. Upon learning of the possibility of reversals in the fossil record, it occurred to him that this matter of reversals might be the best explanation for the problem that has been troubling paleoanthropologists for many years—the problem of the Neanderthalers.

The painful fact is that evolutionary theory—the idea that man and the apes are related and come from a common stock—was not based on fossil evidence. The concept was quite well developed *before* there was any fossil evidence. The theory was, in fact, used to interpret the fossil evidence. It is the most basic historical fact that when Darwin published his *Descent of Man* in 1871, only two fossil discoveries had been made—both Neanderthalers. The Gibraltar discovery in 1848 was in a sort of limbo in Darwin's time and did not even figure in the discussions. Even today, few people have ever heard of it.

The famous 1856 discovery in the Neander Valley of Germany, which gave the Neanderthalers their name, came just fifteen years before Darwin's work on the evolution of man. It did not figure a great deal in Darwin's concepts nor did it shape his thinking on human evolution. He had never *seen* the fossil (let alone *study* it) at the time he published his work. The concept of the evolution of man was based upon philosophical (or theological?) ideas and the circumstantial evidence of *the similarities in appearance* between man and the other primates.

With the belief (or faith) that man and the apes were related came the idea that any intermediate form would have some features common to both. Thus, the more ape features a fossil had, the more "primitive" it was and the closer it was to the common ancestor. The more a fossil resembled modern man in its morphology,

the more "modern" it was (and the later it was dated). Louis Leakey (in 1960) pointed out the error in this type of thinking.

> It has become increasingly clear that our pre-human ancestors must not be expected to exhibit some of the modern ape characters that have in the past been wrongly labelled "primitive," when in fact they are highly specialised.[15]

Paleoanthropologists are obsessed with this concept of the "primitive" to the "modern." It is linked with the concept of the "generalized" to the "specialized" and indicates why the search for man's ancestors centers on forms that are less specialized than is modern man. In this sense, the concepts that dominate in human evolution are the same concepts that are deeply entrenched in evolution generally.

To illustrate this fact, the world-wide correlation of the Pliocene/Pleistocene deposits containing the hominid fossils has been worked out by Vincent J. Maglio (Professor of Geology, Princeton University) using as a guide the fossils of elephants and assuming the "law of irreversibility."[16] To successfully challenge this "law" could enable creationists to place in jeopardy the entire concept of the evolution of Man. Ever since 1932 there has been evidence of reversals in the fossil record of man.

Reversals in Human Fossils

In 1932 at Mount Carmel in Israel human fossils were found in two caves just feet apart. However, the fossil skulls found in the Skhul cave, although very modern in appearance, were actually considered to be older than the fossil skulls found in the Tabun cave which were quite Neanderthal-like in appearance.

The actual report, written by the great evolutionist scholar, Sir Arthur Keith, and his associate, Theodore D. McCown, indicated (p.11) the physical evidence demands that the more advanced Skhul form be dated earlier than the more primitive Tabun skulls. This is just the opposite of what evolutionary theory would predict, and represents a reversal in the fossil record of man. Keith and McCown wrote:

> Further, both the archaeological and the palaeontological evidence now at our disposal make it plain that the Skhul people were antecedent to the various fragmentary individuals recovered from Layer B of the Tabun cave. On anatomical grounds the latter appear to be later members of the human type which we know from our study of the skeleton of the Tabun woman and of the massive male mandible.[17]

Yet, having stated at the beginning of their work (p.11) that the physical evidence demands that the more modern Skhul skulls be dated earlier in time than the more primitive Tabun forms, at the conclusion of their work (p.373) they stated that they were rejecting that evidence on morphological grounds in order to maintain a proper evolutionary sequence. They wrote:

> In rejecting the idea that the Tabun people came after those of the Skhul type we are guided by the very primitive features of the mandible known as Tabun II and the similarity of its teeth to those of the Tabun woman; it is hard to believe that the mandible of the Tabun man could represent people which lived later than the Skhul people.[18]

Thus, as is so often the case in evolutionary studies, the "theory" determines how the facts are to be interpreted rather than the "theory" being based upon the facts.

In 1947, at Fontechevade, France, a second reversal in fossil man was found. Madamoiselle Henri-Martin, daughter of a famous archaeologist and an accomplished scientist in her own right, discovered two human fossil skull fragments that were very modern in morphology and yet pre-dated more Neanderthal-like fossils.[19]

Perhaps one of the most remarkable cases of reversals in the fossil record of man was revealed by William S. Laughlin (then Professor of Anthropology, University of Wisconsin; now at the University of Connecticut). Working in the Aleutian Islands, Laughlin discovered that the Aleut skulls in the lower levels of his excavations were very modern in morphology—not noticably different from those of modern man. He refers to them as Paleo-Aleuts.

In great contrast, the crania of those he calls Neo-Aleuts, found at the upper levels of his excavations, are very low, very broad, and are the most capacious of any in the world.[20] Their morphology is extremely similar to that of the Neanderthalers. What is most remarkable of all is that these dramatic changes in Aleut morphology took place *in just 4,000 years.*

Thus there is remarkable evidence—based upon the reversals in the human fossil record—that "primitive" man and "modern" have lived in certain areas of the world as contemporaries, rather than the one necessarily being ancestral to the other, as evolution demands.

It is also obvious by the remarkable changes from the Paleo-Aleuts to the Neo-Aleuts in just 4,000 years, that the morphological changes between the *Homo erectus* Neanderthal populations and that of modern man could take place in a recent creation context in accordance with the time constraints of the Genesis narrative. (*Homo erectus* is morphologically very similar to Neanderthal Man, but a small version).

Further, the evidence set forth here for reversals in the fossil record is suggestive of a larger body of evidence that could place in jeopardy one of the basic tenents of evolution—its directional nature—and the time demands of that concept.

Conclusions

A search by creationists of the technical literature to build up a body of paleontological evidence for reversals (if such a large body of evidence does indeed exist) would not only be most supportive of the creationist position, but would be a genuine contribution to geology in calling for a reevaluation of those stratigraphic correlations and phylogenetic trees that were developed on questionable evidence.

It is for this reason that I make this report to the creationist community and express my willingness to act as a coordinator or depository for any additional evidence which creationists being to light.

All evidence should be of reversals reported by recognized workers in the field of paleontology and reported by established scientific journals or publications.

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