

- ⁷⁵Wald, G. *Op. cit.*, p. 365. (Reference 9)
- ⁷⁶For example, radiocarbon dating (See Whitlaw, R. L. 1970. Time, life, and history in the light of 15,000 radiocarbon dates, *Creation Research Society Quarterly*, 7 (1):56-71, 83), decay of the earth's magnetic field (See Barnes, T. G. 1972. Young age vs. geologic age for the earth's magnetic field, *Creation Research Society Quarterly*, 9 (1):47-50), stalactite formation (See Keithley, W. E. 1971. Note on stalactite formation, *Creation Research Society Quarterly*, 8 (3):188), fossil footprints (See Meister, W. J. 1968. Discovery of trilobite fossils in shod footprint of human in "trilobite beds"—a Cambrian formation, Antelope Springs, Utah, *Creation Research Society Quarterly*, 5 (3):97-102; and Rusch, W. H. 1971. Human footprints in rocks, *Creation Research Society Quarterly*, 7 (4):201-213); and age of the solar system (See Slusher, H. S. 1971. Some astronomical evidences for a youthful solar system, *Creation Research Society Quarterly*, 8 (1):55-57).
- ⁷⁷Bada, J. L., B. P. Luyendyk, J. B. Maynard. 1970. Marine sediments: dating by the racemization of amino acids, *Science*, 170 (3959):730-732.
- ⁷⁸Eglinton, G. and M. T. J. Murphy. *Op. cit.*, p. 457. (Reference 22)
- ⁷⁹*Ibid.*, p. 455.
- ⁸⁰Bada, J. L., B. P. Luyendyk, J. B. Maynard. *Op. cit.*, p. 731.
- ⁸¹Hare, P. E. and R. M. Mitterer. 1967-68. Laboratory simulation of amino acid diagenesis in fossils. *Carnegie Institute of Washington, Yearbook 67*: 205-208.
- ⁸²Bada, J. L. *Op. cit.*, p. 1372. (Reference 49)
- ⁸³Kvenvolden, K. A., E. Peterson, and F. S. Brown. *Op. cit.*, p. 1081. (Reference 47)
- ⁸⁴Eglinton, G. and M. T. J. Murphy. *Op. cit.*, p. 457.
- ⁸⁵Bada, J. L., B. P. Luyendyk, J. B. Maynard. *Op. cit.*, p. 730.
- ⁸⁶McKenna, M. C. 1971. Route to late Cenozoic temperature history?, *Science*, 172 (3982):503.
- ⁸⁷Wehmiller, J. and P. E. Hare. *Op. cit.*, p. 907. (Reference 45)
- ⁸⁸Bada, J. L., B. P. Luyendyk, J. B. Maynard. *Op. cit.*, footnote 15.
- ⁸⁹Kvenvolden, K. A., E. Peterson, and F. S. Brown. *Op. cit.*, p. 1081.
- ⁹⁰Eglinton, G. and M. T. J. Murphy. *Op. cit.*, p. 462.
- ⁹¹*Ibid.*, p. 458.
- ⁹²Kvenvolden, K. A., E. Peterson, and F. S. Brown, *Op. cit.*, p. 1081.
- ⁹³Hare, P. E. and R. M. Mitterer. *Op. cit.*, p. 205.
- ⁹⁴Eglinton, G. and M. T. J. Murphy. *Op. cit.*, p. 458.
- ⁹⁵Wehmiller, J. and P. E. Hare. *Op. cit.*, p. 907.
- ⁹⁶Eglinton, G. and M. T. J. Murphy. *Op. cit.*, p. 458.
- ⁹⁷*Ibid.*, p. 458.
- ⁹⁸*Ibid.*, p. 459.
- ⁹⁹*Ibid.*, p. 463.
- ¹⁰⁰Elie, E. L. *Op. cit.*, p. 81.
- ¹⁰¹Williams, E. L. 1971. Resistance of living organisms to the second law of thermodynamics: irreversible processes, open systems, creation and evolution, *Creation Research Society Quarterly*, 8 (2):117-126.
- ¹⁰²Harris, M. 1971. Mutagenicity of chemicals and drugs, *Science*, 171 (3966):51-53.
- ¹⁰³Lammerts, W. E. 1970. Why not Creation? W. E. Lammerts, Editor. Presbyterian and Reformed Publishing Co., Philadelphia, pp. 254, 301, 308.
- ¹⁰⁴Armstrong, H. 1970. Why not Creation? W. E. Lammerts, Editor. Presbyterian and Reformed Publishing Co., Philadelphia, p. 293.
- ¹⁰⁵Neurath, H. *Op. cit.*, p. 8. (Reference 55)

CHARLES LYELL CENTENNIAL

BOLTON DAVIDHEISER*

The year 1975 is one which members of the uniformitarian establishment might have been expected to notice. In fact, the anticipated flourish of trumpets and roll of drums has been strangely missing. It is left up to creationists, then, to comment on the occasion. The year, in fact, is the anniversary of Charles Lyell's death. Lyell's theories in geology went along with Darwin's in biology. It is shown here that not only do the two "theories" go together, but also there is similarity in the ways, not always in accord with good scientific practice, in which the "theories" were promoted.

Charles Lyell, lawyer turned geologist, whose writings were the inspiration of Charles Darwin, died a century ago—February 22, 1875. Darwin wrote of him, "I always feel as if my books came half out of Lyell's brain, and that I never acknowledge this sufficiently . . . for I have always thought that the great merit of *Principles [of Geology]* was that it altered the whole tone of one's mind . . ."¹ At the time of Lyell's death Darwin said, "I never forget that almost everything which I have done in science I owe to the study of his great works."²

As Darwin promoted an evolutionary "theory"† which was not original with him and got it accepted, Lyell promoted a uniformitarian "theory" of geology which was not original with him either, and also got it accepted.

Darwin was anticipated a century earlier by the neglected genius, Pierre Louis Moreau de Maupertuis; and subsequently by lesser figures including his grandfather, Erasmus Darwin. Darwin collected, it is true, much more data than any of the others had done to

obtain apparent support for the "theory" of evolution through natural selection, or "survival of the fittest," as Herbert Spencer called it.

James Hutton formulated the basic principle of uniformitarian geology—that geologic phenomena can be explained by processes operating and observable at the present time. This denied catastrophes—particularly the Biblical flood (II Peter 3:3-6)—as causes of geological formations. Hutton's *Theory of the Earth* was published in 1795, but little attention was paid to his views until John Playfair published his *Illustrations of the Huttonian Theory* in 1802.

Charles Lyell traveled a great deal and accumulated data which he used successfully to promote uniformitarianism. His chief work was *The Principles of Geology*, published in three volumes, 1830-1833.

As the young Charles Darwin embarked on his voyage with the *Beagle*, his friend Professor Henslow presented him with a copy of the first volume of Lyell's

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†Reader attention is called to the fact that Darwin's ideas do not rank in scientific methodology with the Gene Theory or the Atomic Theory according to rigorous analysis. Nor is it possible to consider Darwinian or modern evolutionary ideas as fact as do leading evolutionists such as G. G. Simpson.

Principles. Henslow told Darwin that as naturalist on the ship he would need to know the facts presented in the book, but warned him against accepting the "theory" given to explain the facts. But Darwin did accept the "theory," and by so doing changed the course of history.

Lyell, Darwin — Similar Men

Neither Lyell nor Darwin had formal training in science. Lyell's training was in the classics at Oxford, while Darwin's only earned degree was in theology at Cambridge.

Another similarity between Lyell and Darwin is that both have been accused of trickery in promoting their views in the world of science, where objectivity is supposed to be preeminent. Professor C. D. Darlington, a strong evolutionist, characterized Darwin as employing "a flexible strategy which is not to be reconciled with even average intellectual integrity."³

Similarly Stephen Jay Gould of the American Museum of Natural History, another strong evolutionist, says that Lyell "relied upon two bits of cunning to establish his uniformitarian view as the only true geology."⁴ He enumerates them as follows:

1. Lyell set up a "straw man" to demolish. By that time all the serious scientific catastrophists—who held the geologic view opposed to his own—had discarded a supernatural view of catastrophes. That is, they did not attribute catastrophes to acts of God but to natural causes. Also, they already accepted a greater age for the earth than could be reconciled with Biblical chronology.

But Lyell made it appear that he was overthrowing supernaturalism and the concept of a young age for the earth. Actually, the scientific catastrophists commended Lyell for these things because the catastrophists themselves were opposing the theologians and laity who still held Biblical views about these matters.

2. Lyell proposed a "hodgepodge of claims" in four categories.

- (a) "Natural laws are constant [uniform] in space and time." Gould acknowledged that this is not a statement of fact but an *a priori* claim made as a working basis for interpreting the past.

- (b) "Physical processes now operating should be employed in explaining the past." Again this is not a fact, but methodology; and the scientific catastrophists did not mind very much, for they already had given up looking upon catastrophes as acts of God.

- (c) "Geologic changes are slow, gradual, and steady." Here was something which could be examined, and Lyell's view did not always seem to fit the facts. For example, Agassiz' glacial theory, which seemed to have many supporting facts and which was widely accepted at that time, was not in accord with Lyell's view.

- (d) "The earth has remained fundamentally the same since its formation." The admirers of Lyell try to forget this one for, as Gould stated, "... who wants to expose the false steps of a hero?" This is not in accord with evolutionary "theory," but Lyell is a hero of the evolutionists.

Drawing another similarity between Lyell and Darwin, one might point out that Darwin's admirers

try to forget his pangenesis "theory," in which he proposed that all parts of the body of an animal send "pangenes" to the reproductive cells and thereby provide a reproductive pattern for the next generation.

Gould wrote that Lyell believed mammals might be found in the "earliest" geologic deposits. Of course, in recent times, human footprints *have been found* abundantly together with Cretaceous dinosaur tracks in the Paluxy river bed in Texas, and apparently also in Cambrian trilobite beds in Antelope Springs, Utah. Even in the Cambrian and below the Cambrian in the Grand Canyon and also in similar deposits in Venezuela and British Guiana fossil, gymnosperm and angiosperm pollen has been discovered; while according to the evolutionary scheme there should not have been any pollen-bearing plants on earth for hundreds of millions of years after the Cambrian time.

At first Darwin was a disciple of Lyell, but in the end Lyell was a disciple of Darwin. But it took time, for as one of Darwin's biographers expressed, as a gentleman Lyell resented the idea of coming from a monkey or ape ancestry.⁵ That is one problem Darwin did not have. In the sixth chapter of his *Descent of Man* he stated plainly several times not only that human beings came from monkeys but even which kind of monkeys he thought were ancestral.

And as man from a genealogical point of view belongs to the *Catarrhine* or Old World stock, we must conclude, however much the conclusion may revolt our pride, that our early progenitors would have been properly thus designated.⁶

The *Simiadae* then branched off into two great stems, the New World and Old World monkeys; and from the latter, at a remote period, Man, the wonder and glory of the Universe, proceeded.⁷

Misconceptions of Evolutionists

Evolutionists seem to be under two main misconceptions, at least, as to the basis for the conflict between evolutionism and Christian faith.

1. They think a basic issue is personal pride in ancestry. If this can be overcome, they feel, much of the difficulty will vanish. To help, many of them affirm that man did not "evolve" from monkeys and/or apes, but from a common ancestor with them. This is supposed to be preferable and people should not mind so much "evolving" from tree shrews, fish, worms, etc. But when queried as to the appearance of man's closest ancestor with apes, it is admitted the reference was made only to *living* apes and our closest common ancestor with living apes was an ape.

2. Some evolutionists believe the problem is resolved if Christians realize that science has no answer as to the nature of the "first cause." Label this "God," they suggest, and there is no more conflict.

Such ideas merely reflect the ignorance of many evolutionists regarding the matter of Bible-based Christian faith. A fundamental doctrine of Christian faith is the atonement or redemption through the sacrifice of Christ upon the cross. Due to the historical fall of man in the Garden of Eden, all human beings are sinners.

God demands perfection. We cannot be perfect. There is only one way out of the dilemma, and that is

to have a perfect substitute take our place. This Christ did, being Deity and being sinless.

But if presumed evolution is true, then man has developed very gradually from the beast, there were no two distinctly first people, and man is improving

instead of having fallen from a perfect creation. If supposed evolution is true there is no occasion for salvation. Christ becomes a martyr instead of the Savior, a man ahead of his time instead of the Redeemer. This is the issue.

References

¹Darwin, Francis, Editor. 1903. More letters of Charles Darwin. Appleton and Co., Vol. 2, p. 115.

²*Ibid.*, p. 374.

³Darlington, C. D. 1961. Darwin's place in history. Macmillan, p. 60.

⁴Gould, Stephen Jay. 1975. This view of life: Catastrophes and steady state earth, *Natural History*, LXXXIV (2):14-18.

⁵Ward, Henshaw. 1927. Charles Darwin. Bobbs-Merrill, pp. 300 and 304.

⁶Darwin, Charles. The descent of man. New Edition, Revised and Enlarged, 1890. D. Appleton and Co., p. 84. Also The origin of species, and The descent of man. (Modern Library Edition, apparently no year given). Random House, p. 519.

⁷*Ibid.*, p. 89. Also Modern Library Edition, p. 528.

THE FORMATION OF CROSS STRATIFICATION: A NEW EXPLANATION

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Cross stratification has been invariably associated with a sedimentary cause, yet it exhibits significantly different features from those of sediments formed experimentally. Features of cross stratification are contrasted with those of sediments, and it is shown that cross stratification must have a completely different origin. A possible non-sedimentary process forming stratification of surface rocks involves the release of pressure on rocks being elevated from great depths of burial under water. Shattering due to expansion of diffused water disintegrates the rock in successive layers, forming stratified sand. In this new explanation of cross stratification, it is shown how such a process can account for the unique features of cross stratified rocks found in nature.

The Nature of Cross Stratification

The phenomenon of cross stratification has long been considered a sedimentary form of stratification, as the synonyms "current bedding," "torrent bedding," "turbulent bedding" and so forth indicate. The label "false bedding" is another synonym now considered obsolete, although still in use among English geologists, that may reflect an early suspicion that there was something incongruous about it. But that cross stratification is sedimentary in origin seems to have been universally assumed by modern geologists.

A full list of synonyms given by Shrock¹ included "cross bedding," "foreset bedding," "false bedding," "oblique bedding," "diagonal bedding," "inclined bedding," "current bedding," "torrential bedding," "flow-and-plunge structure." All these terms refer to the same geologic phenomenon. Some are merely descriptive, others imply a specific kind of sedimentary environment of formation.

In this paper, since the mode of formation is the subject in question, a non-genetic term will be used: cross stratification. Shrock gave the following definition of cross stratification, which he refers to as cross lamination:

Cross-lamination is the designation now generally used for that structure, commonly present in granular sedimentary rocks, which consists of tabular, irregularly lenticular, or wedge-shaped bodies lying essentially parallel to the general stratification which themselves show a pronounced laminated structure in which the laminae are steeply inclined (as much as 33°) to the general bedding.²

Examples of this kind of stratification are shown in Figure 1.

In this definition a genetic environment is cited: the cross laminations are said to occur in "granular sedimentary rocks." It is cross stratification that distinguishes these rocks as sedimentary.

The main reason for identifying this form of stratification with a sedimentary origin seems to be that no other cause has been imagined. No non-sedimentary geologic process that forms a pattern of stratification seems to be going on at the present time, and past causes in geology are limited to processes that exist today, according to the principle of uniformitarianism.

The uncertainty about the nature and origin of cross stratification, apparent from the obsolete label "false bedding," arises from the contrast between this form of stratification and other forms, sometimes designated "true bedding."

The fact is, in geology, there are two forms of stratification with distinctly different characteristics, and why this is so has never been understood. Both "false bedding" and "true bedding" have some similar features. Both consist of successive planar surfaces that are referred to as stratification. Both may exhibit inclined strata, and both kinds occur in rocks and unconsolidated sands, in apparently similar environments.

In the geologic literature it seems that one form is often confused with the other, and both forms are associated with one environment of formation, and a common origin. This has created a lot of problems in geology. In this article an attempt is made to distinguish between these two forms of stratification, and an explanation of the source of confusion is presented.

A few definitions are necessary. In this article the term "cross stratification" means the natural pattern of stratification that is exhibited in undisturbed sand and sandstones, to which the term is usually applied in geology. This pattern occurs in the unconsolidated materials covering vast areas of the continents.

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