GEOLOGICAL FORMATIONS NEAR LOCH ASSYNT COMPARED WITH THE GLARUS FORMATION

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In the spring of 1975 I was able to visit Europe, lecture on Creationism, and also to observe a few geological formations. A general report on the trip has been given already in the *Bible-Science Newsletter*.[1] There is, however, one point which is perhaps worth while to enlarge on here.

Loch Assynt Formations

I had the opportunity to visit the thrust formations near Loch Assynt, Northern Scotland; and a short time later the Glarus formation, often alleged to be an overthrust, near Schwanden, Switzerland. Both of these formations are described in many books on geology; and it is often assumed that what applies to one, as far as origins are concerned, applies to the other. That assumption is open to challenge.

The Scottish formations, shown in general arrangement in Figure 1, are the Moine, Ben More, and Glen

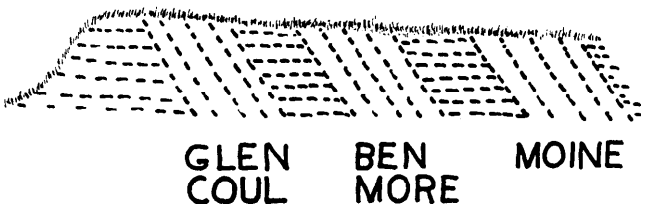

Figure 1. This shows, in outline but not in detail nor necessarily to scale, the Moine, Ben More, and Glen Coul thrusts near Loch Assynt in Northern Scotland. The vertical plane of the drawing may be thought of as along a line of north-west and south-east orientation; the formations shown extend typically over a little more than five miles.

Coul thrusts. They consist of metamorphosed schists and granitic Cambrian and Precambrian. The physical evidence of thrusting is certainly there. As for paleontological evidence, there is little of it; for the rocks are not of the type or age in which one would expect to find many fossils.

Apparently compression from the south-east caused the thrusting. The Moine thrust is farthest to the south-east, then the Ben More, and still farther to the north-west the Glen Coul thrust. The thrust angle may vary from 15-20 degrees as the strata lie over the horizontal strata. The thrust outcrops zig-zag mainly in a northern direction.

In summary, the conclusion that these formations are actual cases of thrusting was reached from physical evidence, not from fossils. So certainly thrusting, on a modest scale such as this, has occurred. It is interesting to compare the thrusting on a small scale which Howe observed after an earthquake.[2]

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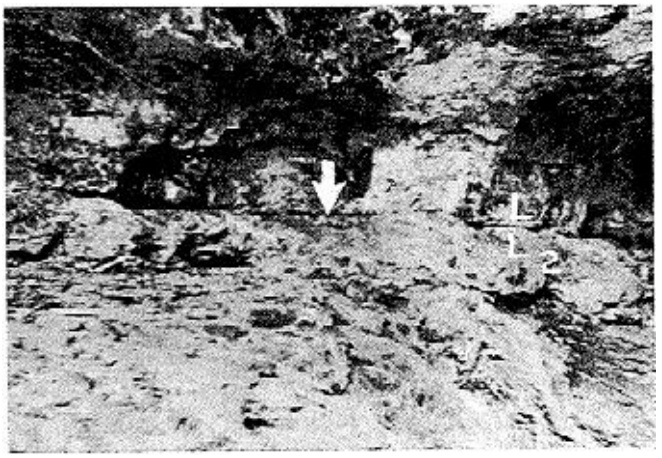

Figure 2. This is a photograph of the alleged Glarus overthrust, near Schwanden, Switzerland. The arrow points to the actual line of the contact. It will be noticed that the petrology and structure are much different above and below the contact. Also, there is no ground-up rock, mylonite, or breccia at the knife-blade contact. L and L_2 indicate positions of two layers of limestone, separated by a thin layer of waterdeposited clay, apparently undisturbed.

The Glarus Formation

At the Glarus formation, conditions are much different. The contact is very sharp, exposed to the south, and almost horizontal. Figure 2 is a photograph of a portion of the formation; the arrow shows the actual contact. Dr. Walter Lammerts has already studied and described this formatiom;[3] I wish merely to note some differences between it and the Scottish formations.

First, this formation was classed as an overthrust on the basis of paleontological evidence. As Billings wrote:

> Parts of some of the great overthrusts in the Alps are so devoid of slickensides, gouge, breccia, and breccia and mylonite that they passed unnoticed and were for a time mapped as sedimentary contacts. It was only after paleontological evidence was obtained . . . that the existence of the great faults was recognized.[4]

At the bottom is slate, classified as Eocene. Above that are two thin layers of limestone, indicated by L above the contact, and L_2 below (See Figure 2). Above that, in turn, is the Verrucano, a coarse-grained arkosic schist, described as Permian.

The Verrucano and the slate are metamorphic rocks; this fact may indicate some movement, which also might have caused heating. But at the actual line of contact there is no evidence of sliding or such motion, as Billings said. Between the layers L and L_2 of limestone is a thin layer of water-deposited clay, apparently undisturbed. On the basis of this fact, apparently whatever happened to the lower (L_2) and upper rocks (L) happened separately, and that certainly one did not slide over the other.

The whole contact resembles very much the unconformity on Winn Mountain in Glacier Park; there are also similarities to the formation at Crow's Nest Pass in Canada.

I suggest that the Glarus formation shows a complex petrologic history of depositions, metamorphism, folding, erosion, fresh deposition, and more regional metamorphism. There are marked unconformities, but no signs of thrusting; only signs of readjustment after the folding.

Conclusion

Creationists need often to point out that the undeniable fact of variation, or micro-evolution as some prefer, is by no means evidence for macro-evolution. Likewise, in this matter of thrusts, a creationist need not deny that overthrusts have occurred on a modest scale, and that the Scottish formations are very likely examples.

But from that it by no means follows that such formations as Glarus, or that on Heart Mountain (near northeast entrance to Yellowstone National Park), are overthrusts, as is so often alleged. Indeed, there is good evidence that overthrusting on such a scale would be mechanically impossible. Moreover, once the falsity of organic evolution is recognized, there is no need to suppose thrusting, in order to have the rocks in what is supposed to be the right order.

References

[1]Burdick, Clifford 1975. European invasion, Bible-Science style, *Bible-Science Newsletter*, 13 (7):3-5. July.
[2]Howe, George F. 1972. Overthrust evidence as observed at faults caused by the San Fernando earthquake, *Creation Research Society Quarterly*, 8 (4):256-260.
[3]Lammerts, Walter E. 1972. The Glarus overthrust, *Creation Research Society Quarterly*, 8 (4):251-255.
[4]Billings, M. P. 1955. Structural geology. Prentice-Hall, New York, p. 131.

ORIGIN AND MAINTENANCE OF OPTICAL ACTIVITY

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Optical activity is a fundamental physical property of all living organisms. Therefore, any theory used to account for the origin of life on earth must also account for this amazing phenomenon. The mechanistic theory, involving chance and natural selection, is inadequate to explain the origin and maintenance of optical activity which is presently observed in the biosphere. However, a teleological theory based upon a recent, highly ordered divine creation, followed by degeneration, will account for this phenomenon. Moreover, such a theory is in agreement with the Genesis account of creation, the laws of thermodynamics, modern chemical theory, and chemical, biological, and geological data.

Introduction

Biological evolution has been a major topic of interest for over a century. However, significant research interest in alleged chemical evolution, i.e., "the chemical events that took place on the primitive, prebiotic earth (about 4.5-3.5 billion years ago) leading to the appearance of the first living cell,"[1] began only recently, but is rapidly expanding. This increasing interest in presumed evolution at the molecular level might well be attributed to the growing respectability of this field for scientific research, to impetus from American and Russian space programs, and to international symposia of leading researchers in this area in recent years. As a result, much good chemical research has been done, but several major problems have been encountered.[2]

One such problem, the origin of optical activity (the property of rotation of the plane-polarized light by a dissymmetric molecule), has been referred to as "the key unsolved problem of detailed biogenesis."[3] Since practically all components of living systems are optically active, optical activity is a fundamental physical property of life as we know it.[4] Any theory, then, used to explain the origin of life on Earth must also account for this amazing phenomenon. Since this phenomenon arises due to the three-dimensional character of chemical compounds, an understanding of the following basic principles of modern stereochemistry is necessary to fully appreciate the problem.

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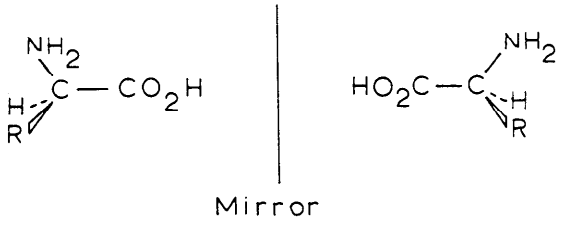

Figure 1. The two enantiomers of an amino acid.

Chiral† compounds may exist as two isomers, called enantiomers, which are mirror images of each other, see Figure 1. Individual enantiomers can generally be shown experimentally to rotate plane polarized light and are thus optically active. Mixtures containing equal concentrations of both enantiomers, racemic modifications as they are called, are found to be optically inactive.

Enantiomers are known to possess identical physical properties, except for the direction in which they rotate plane-polarized light. They also possess identical chemical properties, except when treated with pre-existing optically active reagents. Since, apart

†"Chiral" means literally "handed," in the sense of right- or left-, and is synonymous with "optically active." As mentioned, the direction of polarization of polarized light, upon passing through these materials, will be turned to the right or left, in the way in which a right- or left-hand screw would be turned to drive it. This behavior is associated with a dissymetry in the molecular structure of the material, but the relationship may not be a simple one.