

credits the creationist model of lichen synthesis. It simply shows that even man can achieve a *somewhat* successful lichen association through *intelligent manipulation* of the organisms and their environment.

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## WAS THE ICE AGE CAUSED BY THE FLOOD?

REGINALD DALY\*

*A previous article on the connection between the flood and the ice age received considerable attention, and led to a number of questions.† In view of the importance of this matter for the doctrine of a young Earth, it has seemed worth while to answer some of the questions and to enlarge on certain points.—Editor.*

### "Water, water - - - everywhere"?

There is only one way to solve the problem of "Where did the floodwaters go?" and that is by reading and believing that "God made a wind to pass over the earth and the waters asswaged," that is, by evaporation which is the natural result of a strong wind.

The objection is often raised that the earth's atmosphere could not absorb more than a "3-inch layer of water," or a maximum of "30 centimeters," according to one calculation, even if calculated at "100% saturation and 90° F." In reply, it is only necessary to read once again *and believe* the record that "the waters returned from off the earth continually." That is, the rain came "from heaven," not from the clouds which are admittedly totally inadequate as a source, and the waters "returned," away from this planet entirely.

If the objection is raised that no known wind has ever attained the escape velocity necessary to overcome the earth's gravitational pull we need only believe the record that this was a supernatural wind made for this purpose, for

"God made a wind to pass over the earth and the waters asswaged."<sup>1-3</sup>

Once the supernatural origin of the flood is acknowledged other pieces of the puzzle begin to fall naturally into place. The ice age follows as the natural aftermath of the flood. Each cubic centimeter of water that evaporated removed 540 calories of heat from the surroundings. A layer of water five miles deep, covering the earth's 197 million square miles of surface would lower the temperature by  $2.2 \times 10^{27}$  calories which is more than sufficient to explain the ice age on the land, and also the 25° fall in temperature of the oceans as stated by Sir Arthur Holmes:

The mean annual temperatures . . . were 25° C. . . . The general fall in temperature since the Chalk was deposited has been estimated from pollen and other plant remains as well as by the oxygen-isotope method . . . the cooling affected the bottom waters of the open Pacific until they were reduced nearly to the freezing point. . . . Today the oceans are cold because of the vast amount of melted ice they received . . . but at the onset of the Ice Age there was no melting ice to cool the oceans. Nevertheless, cool they did.<sup>4</sup>

The words "since the Chalk" means of course, according to Holmes, since the Cretaceous Age of Chalk, 65 million years ago, but according to flood geology, since the heavier calcium carbonate of chalk was precipitated in the closing days of the flood.

The record states that "the mountains were covered"<sup>5</sup> and this implies that Antarctica's ice-

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†Daly, Reginald. 1973. The cause of the ice age, *Creation Research Society Quarterly*, 9 (4):210-217.

cap floated off northward. This six-million-cubic-miles icecap would absorb  $1.8 \times 10^{24}$  (1.8 septillion) calories of heat in melting, or three septillion calories if figured on the basis of a larger 10-million-square-miles icecap, one mile thick, such as probably existed prior to the flood. (See author's *Earth's Most Challenging Mysteries* for quotes proving the earlier icecap to be much larger in area and thickness than the present-day six-million-square-miles icecap.)<sup>6</sup>

#### Formation of Ice Masses

The "Climatic Optimum" that, according to C. E. P. Brooks, climatologist, raised earth's temperature  $5^\circ$  is the natural aftermath of the ice age and follows it automatically.<sup>7</sup> Just as every cubic centimeter of ice absorbs 80 calories of heat in melting and a further 540 calories in vaporizing, so it returns 540 calories in condensing and a further 80 calories in freezing. A six-million-square-miles icecap one mile thick would "heat" (that is, moderate the bitterly cold Antarctic climate) by  $1.4 \times 10^{25}$  calories (14 septillion), which would be sufficient to raise the earth's temperature the required  $5^\circ$  and account for the hitherto unexplained "Climatic Optimum."

Now it has been objected that this is merely a juggling of figures, because the 540 calories absorbed in one locality are released in another and therefore it is claimed, produce no net heating (or cooling) effect on the earth as a whole and therefore provide no valid explanation for the "Climatic Optimum" (or the ice age). Although this objection may perhaps be valid in part, it should however be noted that the 540 calories needed to vaporize each cubic centimeter of water is new heat, received from outside the earth's system, that is from the sun.

But even if it were to be admitted that the objection may be valid that the 540 calories heat of condensation released over Antarctica (and Greenland) was balanced by an equivalent loss of heat in vaporization in the tropics, yet surely it will be granted that the melting of  $10^7$  cubic miles of ice is an entirely new factor which is not (at that time) balanced by any condensation. And although the objection is readily admitted that the melting of  $10^7$  cubic miles of ice cannot cool  $4 \times 10^8$  cubic miles of ocean, yet it is *more than sufficient to initiate an ice age*. And the freezing again after the ice age, on Antarctica's mountains, is sufficient to raise the earth's temperature the required  $5^\circ$  to account for the "Climatic Optimum." This is by no means a mere transfer of heat from one locality to another, but is a net cooling effect as the melting antediluvian icecap initiates the ice age and a *subsequent* net "heating" effect as the freezing postdiluvian icecap brought on the "Climatic Optimum."

At the present time, and presumably during the entire period of the flood-ice-age, two calories of heat, per square centimeter, per minute reached the surface of the earth from the sun. This amounts to  $1.3 \times 10^{24}$  calories per year (which amount will be greatly reduced when an estimated factor for reflectivity from ice and water is included). A little arithmetic will show that this stupendous quantity of heat is enough to melt the Antarctic icecap and/or the European and American ice sheets in such a surprisingly short period of decades, or at most centuries, that the flood-ice-age proponents have no difficulty whatsoever in fitting the entire ice age into a few centuries or millenia following the flood.

#### Melting, Freezing, Refreezing

Under normal conditions heat input from the sun is balanced by an equivalent loss of heat by radiation into space that maintains the over-all temperature of the earth in equilibrium. But the melting of the icecaps, and evaporation of the floodwater, and subsequent refreezing of icecaps are *three new, major factors* that upset the balance and caused a gigantic oscillation of climate that did not return to equilibrium until 500 B.C., according to Richard Flint, glaciologist of Yale, who has written that "as recently as 500 B.C. the climate was still slightly warmer than today."<sup>8</sup> And according to Charles H. Hapgood:

The strange period of high temperature that followed the ice age . . . this warm period has been well established but its cause has been unknown . . . a large part of Antarctica may have been ice-free.<sup>9</sup>

And in another place Richard Flint of Yale has maintained that "the present glaciers of the Alps . . . are glaciers newly created within roughly the past 4000 years."<sup>10</sup> This time of 4000 years since new glaciers replaced old glaciers fits smoothly into flood chronology.

The actual date for the brief interglacial, ice-free period between the melting of the old and the freezing of the new icecaps has been fixed at 6000 years B.P. by carbon 14 dating of green algae, grown in the warm, ice-free interglacial and fossilized on the Beardmore Glacier moraine, 200 miles from the south pole. "Algal remains," wrote Arthur Holmes, "dated at 6000 B.P. have been found on the latest terminal moraines."<sup>11</sup> Holmes believes that it grew there during the "Climatic Optimum." Flood theorists suggest that it may have been floated in, probably later than 6000 B.P. since early carbon dates are usually exaggerated.

The late Richard J. Lougee of Clark University asserted that "Iceberg-rafted erratic stones and boulders became grounded on the submerged topography of northern Kentucky, southwestern Missouri and eastern Iowa."<sup>12</sup> At the time at which this happened, then, probably

most of the United States (exclusive of the mountains) was still submerged under the receding floodwaters.

But the objection has been raised that these icebergs floated "not in the open sea, but in an inland lake, contained by the northern slope of land depressed under the ice." However, there was no inclosed inland lake covering "northern Kentucky, southwestern Missouri and eastern Iowa." Actually the "Leverett Sea," named after geologist F. Leverett, extended from Ohio to Montana and from the Gulf of Mexico to the Wisconsin driftless area. Very possibly the ice age followed the flood so closely that icebergs broke off the continental ice sheet as it entered the "Leverett Sea," drifted across, and were stranded on the emerging "mountains of Kentucky."

It has been objected, and is herewith admitted, that it is not quite fair to expose the absurdity of the shifting crust "theory" that North America drifted down from the Arctic at the fantastic speed of a meter per day, for the reason that "the Pleistocene glaciation is not generally attributed to continental drift." The quotation objected to is from Charles H. Hapgood who suggested that "a movement of the crust that would move North America southward about 2000 miles . . . beginning about 18,000 years ago and ending about 8000 years ago."<sup>13</sup> This is 1000 feet a year, or a meter per day!

#### Continental Drift Considered

This presents proponents of continental drift and "plate geology" with an intolerable contradiction. But *there is no way to evade the arithmetic*. And it is even more fantastic to conceive of America (and Europe) drifting north to the Arctic four times, and back again three times, in order to explain the four ice ages of the Pleistocene and the three intervening "interglacials."

But instead of acknowledging the absurdity and throwing out continental drift entirely, geologists have evaded the facts and compromised by attributing Pleistocene glaciations to *some other cause*, and attributing to continental drift *only those ice ages that can be said to have occurred prior to the Pleistocene*, as for instance the supposed movement of America northward "back in the Mesozoic," and southward movement of Australia to Gondwanaland, in the Paleozoic.

"There is good reason, in fact," wrote Ronald Fraser, "to accept the evidence that Laurasia split into two parts—now North America and Europe—back in the Mesozoic period."<sup>14</sup> He also wrote of "Australia's journey south in Pre-Carboniferous times" and of its return, "from the heartland of Antarctica in mid-Mesozoic times."

Neither India nor Africa had to be made to journey south to the Antarctic, in order to explain their ice ages, because they both presumably

originated as parts of the mythological continent of Gondwanaland and are said to have drifted around the south pole in "doodle-like-loops," or "migrations" while being glaciated. F. Ahmad of India's Aligarh Muslim University wrote that "if the route of drift followed doodle-like-loops as traced by the wandering of the south pole during the Permian period, which fossil evidence indicates, then the movement must have been much faster than 15 cm a year."<sup>15</sup> And Arthur Holmes of the University of Edinburgh has stated,

It is another of the queer facts of geology that until quite recently in its long history Africa seems never to have drifted far from the Antarctic regions. Its migrations were over and around the south pole until it began the long northward drift that followed the Ice Ages of the Permo-Carboniferous: a migration that it shared with most of the other continents.<sup>16</sup>

But surely there must be something wrong with the "fossil evidence" or its interpretation if it indicates "doodle-like-loops" and "migrations" and 5000-mile journeys through solid rock. On this Fraser wrote,

Guided by convection currents in the mantle the four continental masses of South America, Africa, India and Australia were scheduled to set sail from the heartland of Antarctica in mid-Mesozoic times for their present anchorages: voyages of anything up to five or six thousand miles in the last two hundred million years, at a cruising speed of two or three centimeters a year.<sup>17</sup>

Astronomer Ernst J. Opik has commented,

Alfred Wegener and his followers actually tried to explain in such a purely mechanical manner all paleoclimatic changes: the succession of warm and cold periods was ascribed to the transplantation of the same locality from the tropics to the Arctic Circle and back again.<sup>18</sup>

This concept of migrations to and from the poles involves such utter confusion in four trips of America to the Arctic, "doodle-like loops" of India and "migrations" of Africa *before* "Gondwanaland sundered" and their 5000-mile journey *after* they "tore loose," that geologists are forced to abandon the absurdities of continental drift and are left without any acceptable causal agent whatsoever, as J. K. Charlesworth of Queen's University, Belfast frankly admitted:

The cause of all these changes, one of the greatest riddles in geological history, remains unsolved, despite the endeavors of generations of astronomers, biologists, geologists, meteorologists and physicists it still eludes us.<sup>19</sup>

That is an amazing confession; almost unbelievable, that all the world's physicists, astronomers, geologists and meteorologists, the finest minds from the world's universities, cannot invent even as much as a respectable theory to solve the ice age. According to A. P. Coleman, University of Toronto glaciologist:

Scores of methods of accounting for ice ages have been proposed . . . no theory is generally accepted . . . hopelessly in contradiction with one another and good authorities are arrayed on opposite sides.<sup>20</sup>

And according to Gordon Robin:

More than 60 different hypotheses of the origin of the ice age have been proposed and further suggested causes are published every year or two. . . . Similar contradictions appear throughout the literature. There is, however, no need for pessimism. . . .<sup>21</sup>

#### Cause, or Causes Remain Mystery

But not only is the "cause" acknowledged as an insoluble mystery, but also the various aspects and detailed features, which Dr. R. A. Daly of Harvard University frankly recognized: "The Pleistocene history of North America holds ten major mysteries for every one that has already been solved."<sup>22</sup>

And Adrian Scheidegger generalized far beyond the limits of the ice age and continental drift, and included in his thinking convection currents, polar wanderings and all the theories of orogenesis of mountains. Yet he concluded with the sweeping generalization that "Something fundamental is wrong with each and every one of the theories."<sup>23</sup> The importance of these problems," wrote Hapgood, "compels us to admit that we do not have an integrated, effective theory of the earth we live on."<sup>24</sup> And he stated further, "Nothing could better betray the extent of our ignorance of the dynamic processes that have shaped the face of our earth than this confession of ignorance."<sup>25</sup>

This presents the scientific world with a master problem that underlies most so-called mysteries: Why cannot scientists solve problems of historical geology? And the answer to this question is relatively simple: Scientists have subdivided the sum total of reality into two supposedly conflicting hemispheres, the natural and the supernatural. They have then arbitrarily consigned the supernatural to the realm of the mythological, and—*ipse dixit*—declared it to be "unscientific." Hence the ice age with its supernatural cause embedded in the universal flood remains a tantalizing enigma for which the community of scientists have no solution.

As the ice age remains a tantalizing and frustrating "mystery," so does the earth itself, as is admitted by Hans Cloos, geophysicist: "We know only the unimportant things and the details. Of

the great slow strides of the earth's gigantic history we comprehend hardly anything at all."<sup>26</sup>

The explanation is the same. Just as the ice age with its cause embedded in the supernatural, cannot be understood apart from the Biblical flood, so the earth itself with all its features cannot be understood apart from its supernatural origin. Whereas by contrast, when the supernatural is acknowledged, most of the so-called mysteries, of mountain formation, origin of oceanic trenches and ridges fit easily into place as is shown in detail in the author's *Earth's Most Challenging Mysteries*.

If it were possible for any geologist to explain the earth or its features on a purely naturalistic, nonsupernatural basis, one would expect Sir Arthur Holmes to be the best qualified to present a sound formulation, for he received the Vetlesen Prize, awarded in 1964, "for scientific achievement in a clear understanding of the earth, its history and its relation to the universe." But at the close of his 1250-page search for an understanding of the earth's geological features he can offer only the hope that some day, in the indefinite future, a sound theory of the earth might be forthcoming: "So we need not despair of ultimately finding at least an adequate explanation. . . . Meanwhile that happy day has not arrived."<sup>27</sup>

Scheidegger, in his *Principles of Geodynamics*, presented a full and critical discussion of all the leading "theories" of orogenesis, including contraction, convection currents (with which he links continental drift), polar wandering and rotational variations, and the undulation group with various implications of gravity tectonics. He concluded that "something is wrong with each and every one of the theories," and that "the problem of finding the cause of the various geodynamic features must be regarded as still unsolved."<sup>28</sup>

Jeremiah wrote: "They have forsaken me, the fountain of living waters, and hewed them out cisterns, broken cisterns, that can hold no water."<sup>29</sup> Likewise here, we see that as soon as people forsake God's account of origins and of the earth's history, they find themselves with theories which indeed cannot hold water. Or as expressed by geophysicist Adrian Scheidegger, "Something fundamental is wrong with each and everyone of the theories."<sup>30</sup>

#### References

<sup>1</sup>It may be noticed that the "wind" could have been a "spirit," for the words are the same in Hebrew. If "spirit" is indeed intended, that makes the supernatural element even more explicit.

<sup>2</sup>Genesis 8:1.

<sup>3</sup>Genesis 8:3.

<sup>4</sup>Holmes, Arthur. 1965. *Principles of physical geology*. Ronald Press, New York, pp. 718-720.

<sup>5</sup>Genesis 7:20.

- <sup>6</sup>Daly, Reginald. 1972. Earth's most challenging mysteries. Craig Press, Nutley, N. J., and Baker Book House, Grand Rapids, p. 174.
- <sup>7</sup>Brooks, C. E. P. 1949. Climate through the ages. McGraw-Hill Book Co., New York, p. 296.
- <sup>8</sup>Flint, Richard F. 1957. Glacial and pleistocene geology. John Wiley and Sons, Inc., New York, p. 487.
- <sup>9</sup>Hapgood, Charles H. 1958. Earth's shifting crust. Pantheon Books, New York, pp. 54 and 58.
- <sup>10</sup>Flint, *Op. cit.*, p. 491.
- <sup>11</sup>Holmes, *Op. cit.*, p. 718.
- <sup>12</sup>Lougee, Richard J. 1958. Ice-age history, *Science*, 21 November, 1958.
- <sup>13</sup>Hapgood, *Op. cit.*, pp. 194 and 249.
- <sup>14</sup>Fraser, Ronald. 1964. The habitable earth. Basic Books, New York, pp. 91, 97, and 100.
- <sup>15</sup>Ahmad, F. 1966. *Science Journal*, London, p. 11. June.
- <sup>16</sup>Holmes, *Op. cit.*, p. 739.
- <sup>17</sup>Fraser, *Op. cit.*, p. 91.
- <sup>18</sup>Opik, Ernst J. Ice ages, The Earth and its atmosphere. Basic Books, New York, p. 154.
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- <sup>23</sup>Scheidegger, Adrian. 1958. *Principles of geodynamics*. Verlag, Berlin, pp. 289 and 291.
- <sup>24</sup>Hapgood, Charles H. 1959. *Saturday Evening Post*, January 10.
- <sup>25</sup>Hapgood, *Op. cit.*, pp. 79-80.
- <sup>26</sup>Cloos, Hans. 1953. Conversations with the earth. Translated by E. B. Garside. Alfred A. Knopf, New York, p. 84.
- <sup>27</sup>Holmes, *Op. cit.*, pp. 1247-48.
- <sup>28</sup>Holmes, *Op. cit.*, p. 1248.
- <sup>29</sup>Jeremiah 2:13.
- <sup>30</sup>Scheidegger, Adrian, *Op. cit.*, pp. 289 and 291.

## PANORAMA OF SCIENCE

### More Evidence of a Cretaceous Catastrophe

Recent studies of "guyots"—submerged mountain tops—in the mid-Pacific and in Japanese waters have shown that many of them were submerged in Cretaceous times (according to the common geological reckoning) as based on available fossils.<sup>1</sup>

There is more and more evidence to show that what is commonly called the Cretaceous times ended with a catastrophe, in which flooding was involved. Here is another piece of such evidence.

It should be worthwhile for creationists to consider these findings very carefully. For, given the correct interpretation, they may include some of the details, beyond those provided in Scripture, of what happened at the time of the Flood and shortly afterwards.

### Ptolemy's Data Questioned

It is reported, after careful comparison with the results of modern investigation, that some of the data given in Ptolemy's *Almagest* were "fudged," and did not come from actual observation at all.<sup>2</sup>

This matter is mentioned in the thought that it may be of interest to readers of the *Quarterly* for the following reason: Some readers are interested in chronology; and in certain cases chronology has been based on particular information from Ptolemy. It does not seem that the matters concerned in the report cited here are likely to come up on chronology; but if some things really have been fudged, then care and caution should be encouraged in the consideration of all data.

### Wishing Upon a Star May Not Provide Planets

Although it is often stated as a fact that there are very many planetary systems, something like the Solar System, in the universe, the amount of

actual evidence for such a claim is extremely tiny. In fact, one of the chief exhibits is "Barnard's star," which has certain irregularities in its motion. These have been interpreted to be due to the motion of a planet, apparently an extremely large one, near it. Of course this planet, if it is there, has never been observed.

Some recent analysis of the motion of this star has shown, it is now reported, that the star has at least two "dark companions"; and that the planes of their orbits are inclined to one another by at least fifty degrees.<sup>3</sup>

Such an arrangement, of course, would be much different from that of the Solar System, in which the planets are almost in the same plane. One might wonder whether the arrangement of orbits in highly inclined planes would be stable.

Perhaps the irregularities observed are not due to planets at all, but have some completely different cause. And even if there are planets, it would seem possible that their peculiar arrangement might make them unsuitable as homes of living beings.

Indeed, contrary to what some say, the evidence for corporeal living beings outside the earth is so small as practically not to exist at all.

### The Testimony of Halos in Rocks

Halos formed in various rocks and minerals by radiation from bits of radio-active material included in them have been mentioned before in the *Quarterly*. It is possible to judge from the nature of the halo the kind of radio-active material which caused it; and the half-lives of the radio-active materials are known. In many cases it is extremely hard to see how, according to the usual uniformitarian cosmogonies, the radiation could have gone on for long enough to cause the halos, which presumably were formed after the rock had hardened.