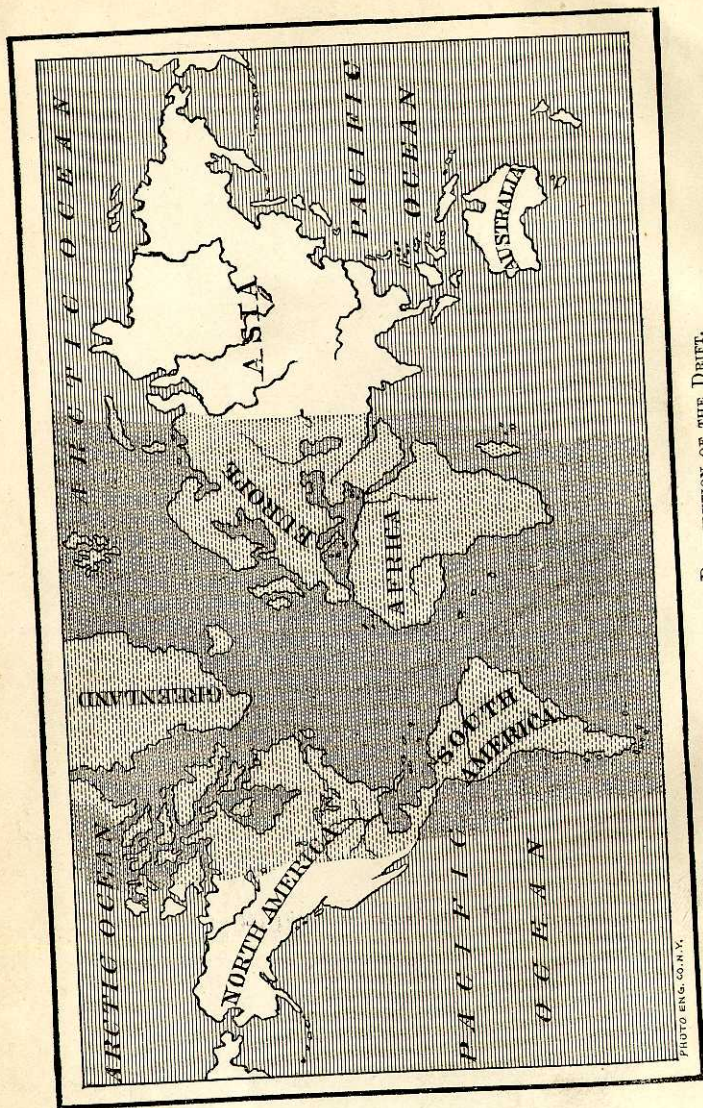




Earth





THE GEOGRAPHICAL DISTRIBUTION OF THE DRIFT.

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CHICAGO, ILLINOIS.

# RAGNAROK:

## THE AGE OF FIRE AND GRAVEL.

BY  
IGNATIUS DONNELLY,  
AUTHOR OF "ATLANTIS: THE ANTEDILUVIAN WORLD."

ILLUSTRATED.

"I am not inclined to conclude that man had no existence at all before the epoch of the great revolutions of the earth. He might have inhabited certain districts of no great extent, whence, after these terrible events, he repopled the world. Perhaps, also, the spots where he abode were swallowed up, and his bones lie buried under the beds of the present seas."—CUVIER.

SIXTH THOUSAND.

G. H. MIDDLEBROOK.

NEW YORK:  
D. APPLETON AND COMPANY,  
1, 3, AND 5 BOND STREET.  
1884.

stones are decidedly in the minority, and indeed a close search will often fail to show them. Clearly, then, the till is not of the nature of a terminal moraine. Each stone in the 'till' gives evidence of having been subjected to a grinding process. . . .

"We look in vain, however, among the glaciers of the Alps for such a deposit. The scratched stones we may occasionally find, but where is the clay? . . . It is clear that the conditions for the gathering of a stony clay like the 'till' do not obtain (as far as we know) among the Alpine glaciers. There is too much water circulating below the ice there to allow any considerable thickness of such a deposit to accumulate." \*

But it is questionable whether the glaciers do press with a steady force upon the rocks beneath so as to score them. As a rule, the base of the glacier is full of water; rivers flow from under them. The opposite picture, from Professor Winchell's "Sketches of Creation," page 223, does not represent a mass of ice, hugging the rocks, holding in its grasp great gravels of stone with which to cut the face of the rocks into deep grooves, and to deposit an even coating of rounded stones and clay over the face of the earth.

On the contrary, here are only angular masses of rock, and a stream which would certainly wash away any clay which might be formed.

Let Mr. Dawkins state the case:

"The hypothesis upon which the southern extension is founded—that the boulder-clays have been formed by ice melting on the land—is open to this objection, that no similar clays have been proved to have been so formed, either in the Arctic regions, where the ice-sheet has retreated, or in the districts forsaken by the glaciers in the Alps or Pyrenees, or in any other mountain-chain. . . .  
"The English boulder-clays, as a whole, differ from

\* "The Great Ice Age," pp. 70-72.

the *moraine profonde* in their softness, and the large area which they cover. Strata of boulder-clay at all comparable to the great clay mantle covering the lower grounds of Britain, north of the Thames, are conspicuous by their absence from the glaciated regions of Central Europe and the Pyrenees, which were not depressed beneath the sea."\*



A RIVER ISSUING FROM A SWISS GLACIER.

Moreover, the Drift, especially the "till," lies in great continental sheets of clay and gravel, of comparatively uniform thickness. The glaciers could not form such sheets; they deposit their material in long ridges called "terminal moraines."

Agassiz, the great advocate of the ice-origin of the Drift, says:

"All these moraines are the land-marks, so to speak, by which we trace the height and extent, as well as the

\* Dawkins's "Early Man in Britain," pp. 116, 117.

## CHAPTER III.

## COULD A COMET STRIKE THE EARTH?

READER, the evidence I am about to present will satisfy you, not only that a comet might have struck the earth in the remote past, but, that the marvel is that the earth escapes collision for a single century, I had almost said for a single year.

How many comets do you suppose there are within the limits of the solar system (and remember that the solar system occupies but an insignificant portion of universal space)?

Half a dozen—fifty—a hundred—you will answer.

Let us put the astronomers on the witness-stand:

Kepler affirmed that "COMETS ARE SCATTERED THROUGH THE HEAVENS WITH AS MUCH PROFUSION AS FISHES IN THE OCEAN."

Think of that!

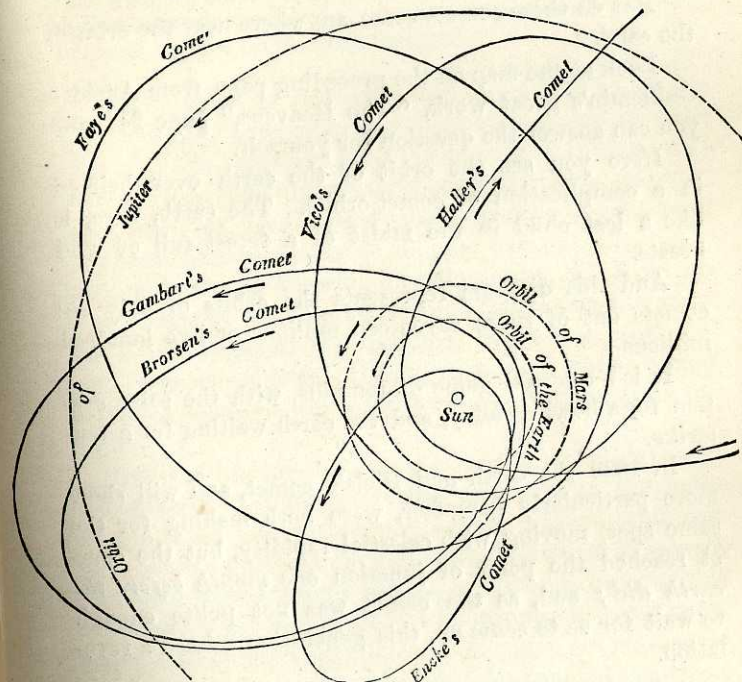
"Three or four telescopic comets are now entered upon astronomical records every year. Lalande had a list of seven hundred comets that had been observed in his time."

Arago estimated that the comets belonging to the solar system, within the orbit of Neptune, numbered *seventeen million five hundred thousand!*

Lambert regards *five hundred millions* as a very moderate estimate!\*

\* Guillemin, "The Heavens," p. 251.

And this does not include the monstrous fiery wanderers who may come to visit us, bringing their relations



ORBITS OF THE PERIODIC COMETS.

along, from outside the solar system—a sort of celestial immigrants whom no anti-Chinese legislation can keep away.

Says Guillemin:

"Leaving mere re-appearances out of the question, *new comets are constantly found to arrive from the depths of space, describing around the sun orbits which testify to the attractive power of that radiant body; and, for the*