



# Science and the Creator

## "This great and wide sea"

David Burges

IT HAS BEEN well said that our planet should be called not 'earth' but 'ocean', because no less than seventy-one per cent of its surface is covered by water, resulting in the beautiful blue appearance it displays when viewed from space. And it is the great oceans that make life possible on the earth, because they act like enormous storage heaters, smoothing out extremes of temperature and providing an equable climate for life. It is the abundance of water that sets the earth apart from all the other planets in the Solar System, furnished by the Creator as a unique and wonderful place for life. The psalmist celebrates this aspect of God's creation in the memorable words: "O LORD, how manifold are Thy works! in wisdom hast Thou made them all: the earth is full of Thy riches. So is this great and wide sea, wherein are things creeping innumerable, both small and great beasts" (104:24,25).

### Ocean circulation

There are few more enjoyable leisure occupations than visiting the seaside, whether to explore the rocks and coves, to swim in the rolling waves or simply to lie on a sunny beach. Many of us, too, will at some time have experienced the pleasure of travelling by ferry or cruise ship across the sea. Since ancient times the oceans have been one of the most important means of travel and trade between nations: "They that go down to the sea in ships, that do business in great waters; these see the works of the LORD, and His wonders in the deep" (107:23,24). The Apostle Paul was certainly one such, although he was unfortunate enough to have endured shipwreck on at least four occasions and to spend "a night and a day . . . in the deep" (2 Cor. 11:25,26; Acts 27), which must have been a terrifying experience.

But scientists have only in recent years begun to appreciate just how important to the climate

and ecology of the world is the circulation of the great oceans.<sup>1</sup> This circulation is made up of a network of currents, transporting huge quantities of heat, salt and other properties around the world. It is estimated that the volume of water moving in any one of the world's five largest ocean currents, such as the Gulf Stream, which warms the British Isles, is around fifty times the combined flow of all the earth's freshwater rivers.

One of the great issues of modern times is global warming, attributed to the increasing concentrations of carbon dioxide (CO<sub>2</sub>) in the atmosphere, the result of man's excessive use of fossil fuels. In fact ocean circulation is one of the principal effects controlling the amount of CO<sub>2</sub> in the air; water at the surface dissolves CO<sub>2</sub> from the air and locks it away safely as it sinks into the ocean depths. In addition, tiny marine plants called phytoplankton absorb CO<sub>2</sub>. However, some climatologists believe that global warming is already disrupting the established pattern of ocean currents, and that this could limit their ability to absorb CO<sub>2</sub>, hence the increasing sums being spent on research into the role of the oceans.

There are several factors driving the ocean currents, interacting in complex ways. The temperature and salinity of sea water vary and so affect its density. Cold, salty water is more dense and consequently sinks, drawing in warmer water above. Hence there is a large-scale circulation caused by cold water sinking to great depths in the polar regions in winter, drawing in surface water from the tropical regions. The prevailing winds, such as the mid-latitude trade winds, also drive surface currents. A third effect is the Coriolis force, caused by the earth's rotation,

1. D. Cornwell, "Ocean Circulation", *New Scientist* 'Inside Science' series, 20 May 2000.



The Mediterranean Sea near Paphos, Cyprus

which deflects ocean currents to the right in the northern hemisphere and to the left in the southern hemisphere. The resulting pattern of circulation ends up as a number of enclosed flow patterns called gyres. The speed of these gyres varies from around 0.1 metres per second up to as much as two metres per second in the case of the Gulf Stream.<sup>2</sup>

#### El Niño

El Niño, a disruption of the ocean-atmosphere circulation system in the tropical Pacific, has become well known in recent years because of its apparent connection with extremes of climate in many parts of the world.<sup>3</sup> In normal conditions the trade winds blow towards the west across the tropical Pacific, piling up warm surface water in the western Pacific, so that the sea surface is about half a metre higher at Indonesia than at Ecuador. In an El Niño event these winds slacken, and the tepid water flows back across the Pacific to the South American coast, cutting off the cold polar current flowing up the South American coast. The result can be to bring droughts to Indonesia, Australia and further afield, and storms and excessive rainfall to the Americas.

There are conflicting theories about the causes of El Niño, but there is evidence that recent epi-

sodes have become more frequent and more severe. This can be seen as affirmation that God is using the ocean currents and the resultant weather to bring pressure upon the nations, as the world is prepared for the advent of His Kingdom.<sup>4</sup>

#### “Wherein are things creeping innumerable”

The ocean deeps form the last great unexplored habitat for living creatures on earth. Since ancient times men have farmed the sea for the wealth of its edible species of fish, and it remains

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2. The Gulf Stream, which flows from southwest to northeast across the North Atlantic, was first charted by Benjamin Franklin in 1769, based on reports by US merchant ships, who exploited it on their outward leg and avoided it on their return home. British merchants at first scorned the longer route, but marvelled that American ships took less time for the Atlantic crossing than theirs!
  3. Information is available at <http://www.pmel.noaa.gov/tao/elnino>.
  4. See, for example, Tony Benson, “Is our weather getting more extreme?”, *The Testimony*, Dec. 1994, p. 445; “The weather threat—an update”, Jan. 1998, p. 21; “El Niño news”, Apr. 1998, p. 121; Tony Benson, *Stormy Wind Fulfilling His Word*, Christadelphian Scripture Study Service, 1983.

a vital food source for millions of people. Yet it is believed that only a small fraction of marine species have been examined and recorded by science. Advances in underwater exploration techniques are revealing new species all the time, many with extraordinary forms and characteristics.

Scientists from over fifty maritime nations, currently compiling a census of marine life, have so far identified about 15,300 species of marine fish, and the total is expected to rise to around 20,000 by the time of the final census in 2010.<sup>5</sup> The range of creatures is great, from microscopic plankton to the world's largest mammal, the blue whale. It is reckoned that fifty per cent of the earth's oxygen is produced by photosynthesis in marine microbes. Little is known about the movements and migrations of this huge array of creatures. Whales cruising at twenty kilometres per hour could circle the globe several times in a year. Some species of fish have been found to migrate across the Atlantic using underwater volcanoes as staging posts.

The count of all marine life forms, including invertebrates, currently stands at around 210,000 species, and could increase to ten times that figure. Census researchers exploring abyssal sediments off Angola found more species per unit

area than any other aquatic habitat on earth; eighty per cent of the more than 500 species collected were new to science. How remarkable, then, that in a prescientific age it was already known to the inspired psalmist that the sea contains "things creeping innumerable"!

### Symbol of His glory

The world's great oceans are truly a marvel of God's creation and of His provision for mankind. By their interaction with the circulation of the atmosphere they enable fertile life to flourish on the earth, facilitate travel and trade between nations, and provide a rich source of food for mankind. Yet most of their wonders are hidden to man's eyes in the fathomless depths! Can it be that they are there primarily for the private delight of the Creator Himself (Rev. 4:11)?

How appropriate it is that the future glory of God's Kingdom, to be introduced by the Second Coming of the Lord Jesus Christ, is prefigured by the splendour of the world's oceans: "For the earth shall be filled with the knowledge of the glory of the LORD, as the waters cover the sea" (Hab. 2:14)!

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5. Census of Marine Life, <http://www.coml.org>.



## Prophecy, History and Archaeology

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# The Sinai Peninsula

## 6. The birds of Sinai (Part 2)

David Green

IN THIS ARTICLE we conclude our look at some of the characteristic birds of the Sinai region by considering eagles and vultures.<sup>1</sup> Though the Hebrew word *neshar* is always translated 'eagle' in the AV, it appears to have been a general term used for large birds of prey, both eagles and vultures.<sup>2</sup> The word *neshar* is derived from the root 'to tear with the beak' or 'to lacerate', pointing to the powerful way in which these birds rip up and tear to pieces the carcasses of the animals on which they feed.

It should be noted that, as well as preying on live animals, eagles feed on carrion like vultures. Likewise vultures do not feed on carrion exclusively, but the largest species may take small

1. The details provided in this article are for the most part taken from *Purnell's Illustrated Encyclopedia of Animal Life and The Natural History of the Bible*, H. B. Tristram, second edition, 1868, SPCK.
2. Tristram prefers to identify *neshar* as the griffon vulture, to which the Arabic *nissr* specifically refers (*op. cit.*, p. 172).