

## FROM THE LIBRARY

**The Cause of an Ice Age**, by Sir Robert Ball (Kegan Paul, Trench, Trübner, & Co.), 1891. Pp. 180, 20 × 13 cm. Price about £9 for a used copy from an on-line bookseller (hardbound; no ISBN).

A popular theory for explaining the ice ages involves the periodic changes in the Earth's orbit and the precession of the equinoxes. This theory is known as 'Milanković cycles' after the Serbian scientist Milutin Milanković (1879–1958), who wrote about this in the 1920s. However, similar theories had been around for some decades before the 1920s.

An earlier version of this theory was proposed by the Irish astronomer Sir Robert Ball (1840–1913), a prolific author of popular books and Royal Astronomer of Ireland (1874–1892), in this book. It was the first volume in a series, *Popular Science*, edited by Sir John Lubbock (1834–1913, later the first Lord Avebury). Ball's writing skill is evident in this highly readable and easy-to-follow little book. He makes a very strong case for the validity of this theory. He demonstrates that if the year is divided into two seasons, summer from vernal to autumnal equinox, then winter from autumnal to vernal equinox in the northern hemisphere, 63% of the Sun's annual supply of heat to that hemisphere is received in summer and only 37% in winter, whatever the condition of the Earth's orbit and axis. (He points out that Sir John Herschel wrongly states that the share is 50% in each season.)

The maximum possible difference between the length of summer and winter is 33 days, so one season is 199 days and the other is 166 days (page 97). When summer is much longer than winter, the 63% is stretched out and the 37% is compressed into a shorter period. He argues that the resultant warm but not hot summers and mild winters must lead to a "beneficent climate" (page 99). Conversely, when winter is much longer than summer, the 37% is stretched out and the 63% is compressed into a shorter period. This means that there are short, hot summers and long, cold winters. "This is the condition required for the development of glaciation. During the rigours of the winter the ice and snow accumulate, while the succeeding brief summer is not able to thaw as much water as has been solidified during the winter" (pages 106–107).

Whatever the merits or demerits of the theory that this book presents, it is an excellent model of how to present a scientific theory to the general public. — LISA BUDD.

## ASTRONOMICAL CENTENARIES FOR 2025

*Compiled by Kenelm England*

The following is a list of astronomical events, whose centenaries fall in 2025. Births and deaths of individual astronomers are taken from *Biographical Encyclopedia of Astronomers* (Springer, 2007) and the on-line Obituary Notes of Astronomers and Obituary List of RAS Fellows. For events before 1600 the main source has been Barry Hetherington's *A Chronicle of Pre-Telescopic Astronomy* (Wiley, 1996). For the 17th to 20th Centuries lists of astronomical events came from Wikipedia and other on-line sources, supplemented by