50 YEARS AGO

Les Néanderthaliens. Par Étienne Patte — At the time of the original discovery in 1856, the Neanderthal skull aroused controversies which to-day seem to have been unnecessarily acrimonious, but then such controversies always do seem (and, because of the hidden emotions engendered, perhaps always will be) the fate of discoveries of early man or his progenitors... Perhaps more has been written and speculated about Neanderthal man than any other Palæolithic type, and there is no reason to suppose that the last word on his origin and fate has been pronounced... it is commonly accepted that he represents a separate species, *Homo neanderthalensis*. Whether this specific distinction is really warranted will probably only be determined with the accumulation of still more skeletal remains. **W. E. Le Gros Clark**

From *Nature* 9 March 1957.

100 YEARS AGO

In a letter in NATURE (August 2, 1906) I gave an account of some experiments which I considered proved that the α particle as initially expelled is not charged... But it is clear that if, as Rutherford considers probable, the α particle carries a multiple charge, the results I published do not by themselves suffice... I had hoped long ere this to submit this point to an experimental test, which is simple enough to do by varying the strength of the field. But I very much regret I have no longer the essential facilities necessary to carry on the investigation, particularly the means of obtaining a steady supply of liquid-air, and there does not appear to be any immediate prospect of my being in a position to repeat the experiments. The question at issue is a somewhat fundamental one in the relations of electricity and matter... so nothing remains but to withdraw what I have already published. **Frederick Soddy**

From *Nature* 7 March 1907.

50 & 100 YEARS AGO

the same questions more than 60 years ago. ■

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PLANETARY SCIENCE

Water cycling on Mars

Victor R. Baker

The Meridiani Planum region on Mars is rich in minerals derived from evaporation, but lacks a topography consistent with standing water. Do the deposits stem from upwelling groundwater early in the planet's history?

A succession of sophisticated spacecraft missions has led to spectacular advances in the understanding of Mars' global hydrology over the past few decades. One of many examples is the discovery of abundant hydrated sulphate salt minerals. These minerals are found at many locations on the planet — most notably at Meridiani Planum, the landing site of NASA's robotic Mars rover Opportunity — and prove that water must once have been abundant on the surface of Mars. On page 163 of this issue, Andrews-Hanna *et al.*[1] use a numerical model to simulate the evolving global flow of subsurface groundwater early in Mars' geological history. They place their simulation in the context of the formation of the enormous volcanic uplift feature known as Tharsis.

One way of developing a model of martian hydrology comes from a comparison with what we know about Earth. Western science was painfully slow in achieving its understanding of Earth's hydrological cycle. Many, if not most, of Isaac Newton's scientific contemporaries held the view that Earth's rivers were ultimately fed from upland springs. The springs were presumed to discharge water from within the planet, in much the same way as blood flows from a cut in an artery of the human body. Water from the oceans was presumed to return to the land through subsurface veins.

By contrast, Eastern philosophical writings had long held that Earth's water flowed as

NASA/JPL/CORNELL

Figure 1 | A well run dry? The Burns formation of Meridiani Planum is rich in evaporites. It is one of the sites where groundwater came to the surface and evaporated early in Mars' history, according to a model of the planet's hydrography produced by Andrews-Hanna *et al.*[1]. Earlier evidence from the Mars rover Opportunity for past evaporation of liquid water at the site had been difficult to explain in the absence of a topographic basin where water could stand. In the right foreground lies the Wopmay rock, whose distinctive lumpy appearance could be due to cracking processes caused by exposure to water.