HISTORY OF BIOLOGY

# A "Non-event"

from a Correspondent

IT is a truth of history and an aspect of human behaviour that momentous occasions recalled in later life by men who took part often gain in grandeur and importance with the passing of time. A study of contemporary documents by J. W. T. Moody (*J. Soc. Bibliog. Nat Hist.*, **5**, 474 ; 1971) shows that the presentation of the Darwin–Wallace papers on natural selection to the scientific world on July 1, 1858, was no exception to this general rule. As Moody points out the occasion has been said to represent the beginning of a new era in scientific thinking—the beginning of modern biology or the Darwinian Revolution—but at the time of its presentation it was something of a non-event.

In the first place, the meeting at the Linnean Society at the critical day had been specially called by the president for the election of a new council member, but the opportunity was taken to deal with other business. A list of donations to the society's library and museum was read and there followed the election of the new councillor by ballot and a lengthy eulogy of the recently deceased vice-president, Robert Brown. Then the secretary read the text of the Darwin and Wallace papers on the laws which affect the production of varieties, races and species with an introductory letter from Sir Charles Lyell and Dr J. D. Hooker, and he followed by reading five other papers on miscellaneous and unrelated subjects.

According to the account of the event recollected by Hooker at the jubilee celebrations in 1908, only Darwin, Lyell, and Hooker himself, had any knowledge of the papers to be presented and Darwin for domestic reasons did not attend the meeting. Gage has noted (*A History of the Linnean Society of London*, 54; 1938) that at that date agenda were not sent to members, so the fewer than thirty members who attended the meeting can hardly have expected a momentous meeting. Hooker seems to have been the source of the impression that the audience was awed by the revelations read to them; in a letter thirty years after the event he wrote "the interest excited was intense . . . it was talked over after the meeting 'with bated breath'. Lyell's approval, and perhaps in a small way mine . . . rather overawed those Fellows who would otherwise have flown out against the doctrine . . .". Moody, however, suggests that the audience were not so much stunned by new ideas as they were overwhelmed by the sheer volume of information loaded upon them. No formal discussion took place at the meeting, the audience was expected to switch its attention instantly from the Darwin–Wallace papers to "Notes on the organization of *Phoronis hippocrepis*", and it is suggested that boredom and bewilderment on a July afternoon, as much as Lyell and Hooker's advocacy, contributed to the overawed silence which greeted the unveiling of the concept of natural selection.

GALAXIES

# Circular Polarization

from a Correspondent

DURING the past two years astronomers have discovered circular polarization in the radiation from a variety of objects. At Jodrell Bank, for example, Conway and Gilbert measured significant circular polarization at 49 cm wavelength from several compact sources (*Nature*, **227**, 585 ; 1970), and a series of reports from Kemp and his colleagues has described the circular polarization in the light from white dwarf stars and planets (*Nature*, **232**, 151; 1971). The range of possible observations is now expanded still further with a terse announcement in *IAU Circular 2343* that circular polarization has been successfully detected in the optical radiation from two extragalactic sources.

For many years observers have determined the magnetic fields in the Sun by measuring the circularly polarized components in spectral lines split by the Zeeman effect. At the Crimean Astrophysical Observatory, Severny, Nikulin and Kuvshinov hooked up a modified solar magnetograph to their 100-inch reflector telescope, and monitored the light from the radio galaxy M87, quasar 3C 273 and a Seyfert galaxy NGC 4151. The condensed, superluminous nuclei in the last two objects gave a positive result: the degrees of circular polarization are $1.2 \pm 0.4$ per cent for 3C 273 and $1.1 \pm 0.3$ per cent for NGC 4151. One X-ray source in the galaxy Sco X–1 was also investigated, but like M87 it gave a negative result.

There are several ways of obtaining circularly polarized radiation, but theorists will understandably want to see a more detailed report before any firm conclusions can be drawn from this new discovery. It is important in that it adds another method for investigating physical processes inside remote compact objects. It is already well established that the synchrotron mechanism may be responsible for the continuum radiation at optical wavelengths, and with certain geometries for the magnetic field a circular component is also introduced into the radiation. An encouraging step in this direction is given by the 49 cm results, where the synchrotron theory seems to satisfy the observations.

SEAFLOOR SPREADING

# Chemical Rates?

from our Geomagnetism Correspondent

SEAFLOOR spreading rates vary from ridge to ridge at any given time and probably even vary with time for any given ridge. The first of these propositions is easy to prove because the patterns of magnetic anomalies close to oceanic ridges may be compared directly with the well-dated geomagnetic polarity-time scale derived from continental rocks of the past 4 to 5 million years. When this is done it clearly emerges that average spreading rates for the past few million years are different for different ridges ; and thus it is safe to say that current spreading rates are also different. Direct evidence for the

# Dybbuks and Tachyons

A FEW years ago a suggestion was made that there might exist particles that travelled with a velocity greater than light. These particles, named tachyons, satisfy the fundamental equation of special relativity:

$$E^2 - P^2 = M^2$$

where $E$. $P$ and $M$ are the energy, momentum and mass of the particle. They differ, however, from ordinary particles in that their mass is imaginary but they have a real energy and momentum. In next Monday's *Nature Physical Science*, Raymond Fox of Haifa, Israel, points out that particles with imaginary mass, imaginary momentum and imaginary energy are also solutions of the fundamental equation, and Fox names such particles "dybbuks". The one important difference between tachyons and dybbuks is that whereas it has been argued that the concept of tachyons violates causality there is no likelihood of such a problem with dybbuks.

Fox gives a description of the possible interactions of these particles and applies the results to an evaluation of the gravitational interaction of a very dense star. An interesting prediction is that the gravitational radiation from a pulsar is very much less than presently estimated. Such a prediction is bound to arouse interest in astronomy circles and the basis of Fox's theory will no doubt be subject to intensive study.