history that are passed in the stomach, muscles, and body-cavity of the mosquito, and of the necessary intermediation of the insect in the spreading of filarial disease among men, were made by a busy medical practitioner, working alone in China, in 1877. They were reported at a meeting of the Linnean Society held in March 1878; they were published in the zoology section of the Society's Journal for 1879; and an amplified account, with a plate of 46 figures representing every stage of the worm's development in the mosquito, from embryo in the stomach to larva in the body-cavity, subsequently appeared in the Transactions of the Society for 1884, at p. 367.

Not even the loneliest man, of course, works alone; as Carlyle says, "all past inventive men work with him there." But in workers there are varieties of aptitude and varieties of circumstance; and in discoveries there are varieties of worth. The discoveries of the highest class are those that enlarge the boundaries of science, that increase understanding, and open out new fields of action. The discoveries, worked out in unpromising circumstances, by that great original genius Patrick Manson, and reported to the Linnean Society in March 1878 and 1884, were of this kind: they established a great luminous principle of pathogenesis—the principle of the necessary intermediation of the bloodsucking insect: and of every man who applies this principle anew it may be truly said that always in the background Patrick Manson, may peace be with him—acknowledged or forgotten—"works with him there."

A. ALCOCK.

Nectar-Sipping Birds.

THE device of *Mirafra Assamica* to reach the nectar in the flowers of Castanospermum (noted in NATURE of April 15, p. 489) has its parallel among British birds. The blooms of several Asiatic species of rhododendron contain much honey, and many of these are defaced at this season by the great tit (*Parus major*), the blue tit (*P. cæruleus*), and probably the coal tit (*P. ater*) pecking holes in the tube of the corolla and tearing away the upper petals to get at the nectary. In some gardens bumble-bees have learnt to make a similar short cut to the nectary of *Salvia patens*; the legitimate entrance, which is furnished with a neat mechanism to ensure cross fertilisation by humming-birds or long-tongued Lepidoptera, being too narrow to permit access for Bombus. Knowledge of the trick, however, is not universal among bumble-bees; for I have found that in some gardens the blossoms of this Salvia remain intact.

HERBERT MAXWELL.

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Aeroplane Crashes: The "Hole in the Air," the "Spin."

THE kind of accident in which Sir Ross Smith and Lieut. John Bennett lost their lives appears to be due to an attempt on the part of the pilot to change the direction in which the aeroplane is moving more abruptly than is consistent with its momentum. Suppose, for example, that the aeroplane could be instantly turned round to face the point from which it had come, its momentum would inevitably cause it to travel an appreciable distance tail first. An approach to this condition constitutes the "hole in the air" of the early airman, and is the harbinger of the "spin": it is the equivalent of "skidding" in the motor-car and is due to exactly the same cause, namely, momentum run riot.

As the motion of translation through the air (the one essential condition to the flight of heavier-than-air machines) is being lost the aeroplane begins to fall, and it is difficult to imagine that the pilot can do anything to arrest the fall except perhaps when it accidentally takes the form of a slanting nose-dive. Immunity from this class of accident can only be attained by judicious "banking" on curves of a radius suitable to the aeroplane and its velocity at the moment, and the complete avoidance of quick-turning movements undertaken for any purpose. Is it possible that in some aeroplanes the steering appliance is unnecessarily powerful and apt in that respect to deceive the pilot?

W. GALLOWAY.

The Athenæum, April 18.

DR. GALLOWAY directs attention to an important aspect of aviation in his reference to a recent accident. The type of failure—a spinning nose-dive—is unfortunately too common, and on any reasonable statistical basis may be expected to remain so until improved aeroplane design is achieved. Whilst rapid turning facilitates "spinning" the fundamental cause is peculiar to the aeroplane and a property of wing form and arrangement. The support for an aeroplane arises from the aerodynamic characteristics of the wings, and a fundamental change occurs when the angle of attack exceeds some 15 or 20 degrees. Above this critical angle the ordinary motion of an aeroplane is extremely unstable and the natural motion is a spin with the nose well down; the details of the instability are clear, but the remedy is unknown and only dimly foreseeable. The difficulty put before the pilot by the instability is accentuated by simultaneous loss or reversal of control. Scientific research is here required; it is, indeed, very urgently needed, but the prospects of obtaining the opportunity are far from good. Financial stringency and insufficient sympathy for research by the Air Ministry are the great difficulties, and not lack of scientific ability in the country. It is to be regretted that the loss of famous men is required to give point to a problem of long standing and that the Aeronautical Research Committee has not the necessary authority to carry out work which its reports show that it recognises as very important.

L. BAIRSTOW.

The Blood-cells of the Oyster.

THE blood-cells (leucocytes) of the oyster have been a subject of great interest ever since Lankester first observed them crawling on the outside of the body parts of the oyster. Recently I have found that these leucocytes will live for 3 or 4 days in sea-water in dishes. If the leucocytes be set free by teasing up the heart of an oyster or by placing pieces of the palps or bases of the gills in sea-water in a petri dish, they are seen at first to be aggregated mainly in masses, but within ten minutes to half-an-hour it will be found that the leucocytes are spread over a large portion of the dish and creeping away from the masses in a flattened amœboid condition on the bottom of the dish or even on the surface film. At the end of 3 or 4 days the cells round off and die. The length of time they remain alive, however, should make these leucocytes—which are very easily obtainable—valuable as subjects for physiological investigations, and further, suggests that it might be possible to *cultivate* them in an appropriate medium under appropriate conditions.

The mode of propagation of leucocytes in oysters is not known, and certainly no definite organ is known to produce them. A division of a living leucocyte has been observed to the extent that the resulting halves could be seen to be separated only by a relatively very long and very fine connecting thread,