100 YEARS AGO

It is much to be regretted that the splendid male Giraffe, presented to the Queen by the Chief Bethoen, of Bechuanaland, died so soon after reaching this country. It was placed on board the s.s. *Roslin Castle* ... and left Cape Town on September 1. The passage was a stormy one, and after the first week the Giraffe declined to eat anything but bread. It was therefore, on reaching London, nearly dead from exhaustion, and only lived for half an hour after its arrival at Regent's Park. This event is the more to be lamented, as the fine young female already in the Society's Gardens ... thus remains without a mate, and there is at present little prospect of obtaining one.

Prof R. C. Carpenter, professor of engineering science in Cornell University has (says *Engineering*) been conducting an elaborate set of experiments on bicycle friction which have led him to the conclusion that no form of gearing can possibly equal the best chain for efficiency and durability. With such the frictional loss has been found to be between 1/2 and 3/4 per cent. of the total power transmitted, this result being obtained with a chain which had previously been ridden more than 2000 miles with a rider weighing about 14 stone. With some other chains less well constructed, a greater loss has been found, the friction lying generally between 2 and 5 per cent.; the maximum shown, even by an old chain which did not fit its sprocket properly, was under 10 per cent. No bevel gears as yet constructed give as good results as these.

From *Nature* 30 September 1897.

50 YEARS AGO

A U.S. Air Force "Skymaster" transport aircraft flew from Stephenville, Newfoundland, to Brize Norton R.A.F. Station in Oxfordshire, on September 22, a distance of 2,400 miles across the Atlantic, including taking off and landing, without being controlled in any way by the crew on board. ... The apparatus automatically controls the take-off and climb to an arranged height. It then homes on a beam sent out by a radio beacon. ... Finally, it sets the machine into the required glide, lands and brakes. In the United States the system is understandably described as 'push button flying'.

From *Nature* 4 October 1947.

answered just yet, because the mammalian *tim* homologue has still not been identified. But the search for Per partners in mouse or human cells will now begin, most likely by using the PAS domain as a bait.

A molecule that could potentially interact with Per in the mouse is the product of the *clock* gene[13], which has been identified by positional cloning in the laboratory of Joseph Takahashi. Mice carrying a single mutation in the Clock protein have a dramatically altered circadian rhythmicity. Strikingly, Clock also contains a PAS domain, which shows significant homology to the fruitfly and mouse Per proteins (Fig. 1). But the Clock protein also contains a bHLH domain, so, in a hypothetical model of Per–Clock interaction, Per could modulate the activity of Clock. Other possibilities may include the association with additional cofactors, or many combinatorial interactions with other, as-yet unidentified, Per- and Clock-like molecules. Importantly, a mouse gene (*RIGUI*) with homology to dPer has just been cloned[14]. Although it is likely that mPer and RIGUI are products of the same gene, RIGUI is thought to contain a putative bHLH domain (Fig. 1) and to oscillate in the retina.

Circadian clocks are common to most living organisms, and they are the best example of physiological adaptation. So this is a very exciting time for those working in the fields of biological rhythms and gene expression — the collection of tools that are necessary for an understanding of the molecular clock is now, dramatically, getting richer. □

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Oceanography

Shades of the sea

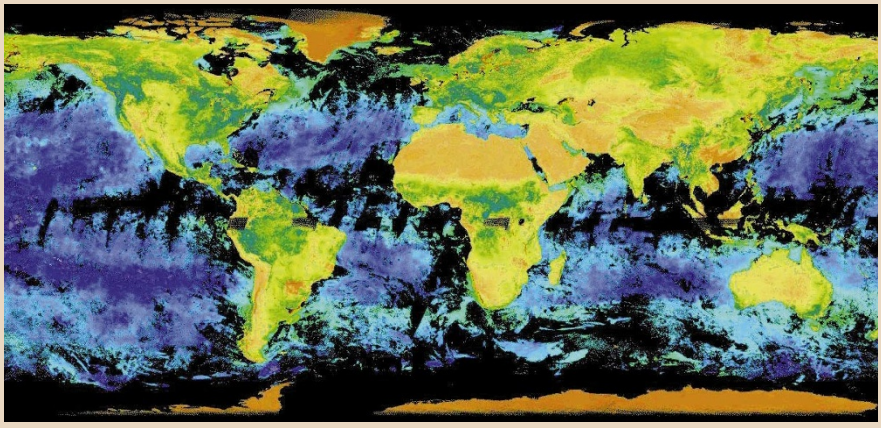
Last month the first results emerged from the long-awaited remote Earth-sensing instrument, SeaWiFS (the Sea-viewing Wide Field-of-view Sensor), which is designed to monitor the colour of the oceans. Ocean colour data provide a means to investigate the abundance of phytoplankton, suspended sediments and organic materials in the surface ocean.

The viability of using satellite-based instruments to measure ocean colour was established over a decade ago. But although the Coastal Zone Color Scanner (a forerunner to SeaWiFS, which operated between 1978 and 1986) provided some information on biological productivity, the data lacked crucial spatial and temporal coverage.

SeaWiFS boasts global coverage every two days, higher sensitivity to visible light, and an improved capability to 'see' through the atmosphere. Moreover, some of the SeaWiFS images (as shown here) convey land-vegetation information as well as data on oceanic chlorophyll concentrations (which are lowest in the purple regions, and higher in the green sea areas).

Studies of ocean colour also have potentially wider social and economic implications. The ability to find pockets of high phytoplankton density, for example, could help in the management of fish stocks. Moreover, SeaWiFS can keep a watchful eye out for harmful blooms of coastal algae, which have been linked to outbreaks of human disease.

Karen Southwell



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