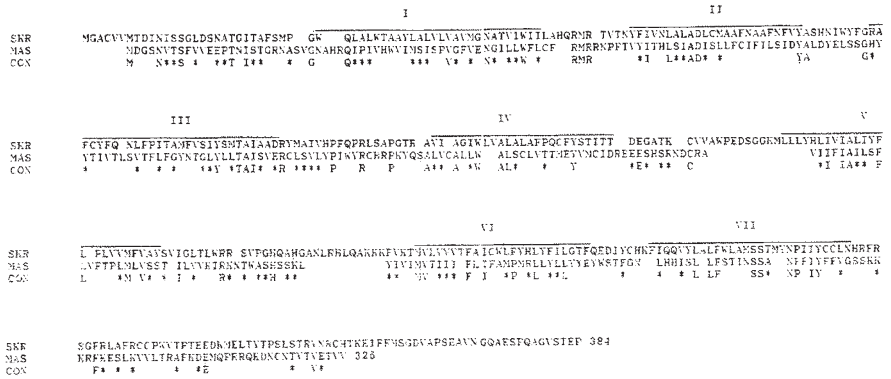

Fig. 2 Alignment of the amino-acid sequences of bovine SKR and human MAS oncogene product. Residues conserved in both proteins are shown below the sequences; the asterisk indicates favoured substitutions[7]. Positions of putative transmembrane segments I-VII are indicated.

family members and SKR. Using slightly different alignments from Masu *et al*[1] the degree of similarity, using Dayhoff rules for conservative substitutions[7] is SKR: M1, 38%, SKR: M2, 34%, SKR: β_2, 39% and SKR: rhodopsin, 46%. Masu *et al*[1] note that these results predict SKR would be coupled to a second-messenger transduction system by a GTP-binding protein. It is unclear what the best guess for the second messenger should be, but other evidence implicates the inositol lipid signalling pathways[8]. This poses an interesting dilemma, because there are three sequenced receptors linked to inositol lipid hydrolysis: platelet-derived growth factor (PDGF) receptor, M1-muscarinic, and now SKR, but they do not have any obvious intracellular site for the appropriate G protein. Indeed, the PDGF receptor belongs to a completely different class of receptor, having the extracellular domain, one transmembrane segment, and an intracellular domain with a tyrosine kinase activity. Thus, more sequences will be awaited with considerable interest in the expectation that functional consensus sequences may eventually be defined for interactions with the appropriate G-protein species.

As noted in an earlier News and Views article[8], the substance K receptor may be uniquely associated with mitogenic activity among the family of receptors to SK and related peptides. This suggests that we should be on the lookout for any similarities in sequence with identified oncogenes. As shown in Fig. 2, SKR has striking similarity to the human oncogene *mas*[9]. The *mas* oncogene was first isolated by Wigler and colleagues using total genomic DNA and a novel tumorigenicity assay, so it was predicted to encode a transforming receptor with an unknown ligand. When compared with the family of seven-transmembrane segment receptors, *mas* is most similar to SKR (44%). Consequently, SKR and *mas* could define a subfamily with growth-control activities. As a corollary of this, the *mas* oncogene product is predicted to couple to inositol phospholipid metabolism, a biochemical response repeatedly correlated with mitogenic activity[10]. □

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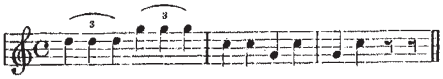
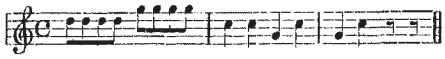
100 years ago

In *Nature* for August 11 (p. 343) there is an interesting article on music in nature; the writer evidently being inclined to deny that true musical notes, and especially several notes in succession . . . can be found in bird songs. However this may be in the Old World, we have in the New one example of a bird which not only sings, or rather whistles, pure and well-sustained musical notes, but has a succession of notes to form a simple melody. I refer to the scarlet tanager.

While we were at The Thousand Islands early in the summer of 1886, one of these brilliant fellows carried on a courtship among the trees close to our cottage, repeating incessantly during the first two days that we heard him sing the following strain,



in a clear, bright whistle. After the first two days he changed his song thus:-



and for three weeks he made no other variation, except that he occasionally repeated the last two notes a third time, thus filling out the bar. The notes were taken down by a trained musician, and if whistled gave the tanager's song exactly.

Coburg, Ontario. A.P. COLEMAN

From *Nature* **36**, 605; 27 October 1887.

Marine science

Ocean flux of Chernobyl fallout

Michael P. Bacon

THE disaster last year at Chernobyl in the central Soviet Union is, somewhat surprisingly, of considerable interest to marine scientists. The accident effectively initiated a world-wide 'tracer' experiment on a scale that would never have been planned deliberately. K.O. Buesseler *et al.* and S. Kempe and H. Nies on pages 825 and 828 of this issue, and S.W. Fowler *et al.* in previous work (*Nature* **329**, 56–58; 1987), report the use of Chernobyl fallout to trace the downward transport of sediments in the Black, North and Mediterranean seas.

One of the most important developments in marine science over the past 10 years has been the growth in the use of sediment traps to record fluxes of material carried by particulate matter settling in the ocean. It is now possible to leave moored sediment traps unattended at any depth in the ocean for periods of 1 year or longer and to collect as many as 25 sequential samples of the settling particles at predetermined time intervals (Honjo, S. & Doherty, K.W. *Deep-Sea Res.*, in the press). This is the technique used to observe radionuclides from the Chernobyl fallout 1,000 metres below the sea surface in the Black Sea and 200 metres below it in the North and Mediterranean seas.

The observed flux of fallout at depth in the oceanic water column is a dramatic demonstration of the processes by which the oceans assimilate materials and become cleansed of contaminants. Marine plankton play leading roles in these processes. Primary production by phytoplankton creates the solid surfaces on to which reactive contaminants are adsorbed, and the feeding and digestive activities of zooplankton cause the aggregation of fine suspended debris into larger particles that sink rapidly (tens or hundreds of metres per day). Both the papers in this issue report that the largest fluxes of radionuclides occurred during plankton blooms.

It is of particular interest to note the speed with which the fallout nuclides first arrived at the collection depth. The traps