

take some 40 ms to arrive at a fish swimming 0.5 m below the surface (longer than this if the impedance of the water is allowed for). The shock wave set up by the bird, however, would reach the fish in considerably less than 1 ms, and in a good-sized fish the sequence: activation of the VIII nerves \rightarrow activation of Mauthner neurones \rightarrow activation of motor neurones \rightarrow onset of tail flip, would take up not more than 15 ms. Thus the almost inevitable reflex movement of the fish would certainly have begun at the time the bird arrived, and on its completion the fish would be displaced by an amount approximately equal to its own length from the position it occupied when the bird hit the water. ("Purposeful" escape-swimming would usually follow the success of such an evasive but automatic reflex response.)

Whether or not the bird catches the fish would be very much influenced by the depth of the fish, the speed of the bird hitting the water, the momentum and direction of its continued dive, and possibly optical stimuli to the fish, etc.; the latter could, in theory, slightly advance the moment of excitation of the two Mauthner cells in the hind-brain, or influence which fired first, and thus which way the fish moved. Yasargil and I have shown⁸ that the interval between the firing of these cells is the all-important factor in eliciting the reflex response. When both cells fire simultaneously or within about 150 μ s of each other, no tail flip ensues; a mutual crossed inhibitory mechanism operates at every segment of the spinal cord. Any factors which would make the excitability fluctuations (the synaptic noise) in the two Mauthner cells out of phase would increase the probability of the reflex being produced and *vice versa*. Perhaps relatively calm conditions bias the situation in favour of the former probability, and thereafter with increasing windspeed the situation is reversed, the in phase noise component would be increased, the two Mauthner cells would fire within the critical 150 μ s period, and the tail flip would not operate. However, the other suggestions made by Dunn are probably valid, and it seems likely that the characteristics of the Mauthner reflex are among a number of factors which affect the survival chances of the fish, albeit the most important.

Yours faithfully,

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¹ Dunn, E. K., *Nature*, **244**, 520 (1973).

² Diamond, J., in *Fish Physiology, The Mauthner Cell* (edit. by Hoar, W. S., and Randall, D. J.), 5 (Academic, New York and London, 1971).

³ Yasargil, G. M., and Diamond, J., *Nature*, **220**, 241 (1969).

Announcements

University News

Dr A. Ozin, University of Toronto, has been awarded the Meldola Medal and Prize for 1972 of the Royal Institute of Chemistry.

Drs M. J. Owen and R. G. Rose, University of Nottingham, have been awarded the 1972/73 Novadel Prize.

Appointments

Professor A. D. Baddeley, University of Stirling, has been appointed Director of the Medical Research Council's Applied Psychology Unit.

Sir Michael Clapham has been re-appointed Chairman of the Council for National Academic Awards. The following have been appointed members of the Council: Sir David Barran; Mr S. T. Broad; Dr A. H. Chilver; Dr Patricia H. Clarke; Mr D. Davis; Professor L. A. Gunn; Mr T. McI. Howie; Dr Ian M. Mackintosh; Professor G. D. S. MacLellan; Professor D. G. MacRae; Dr R. G. Murray; Mr T. B. Owen; Professor A. M. Ross; Miss A. C. Shrubsole; Professor J. E. Salmon; Mr S. W. Smethurst; Mr K. S. Toft; Rev G. Tolley; Mr G. R. Tyler; Professor M. Zinkin.

The following have been appointed members of the Nuclear Power Advisory Board: Lord Aldington; Mr A. E. Hawkins; Sir John Hill; Sir Peter Menzies; Dr A. W. Merrison; Mr R. V. Moore; Mr J. R. S. Morris; Lord Penney; Mr F. L. Tombs.

Miscellaneous

The Headquarters Office of the Public Health Laboratory Service Board has moved to Lower Entrance, Colindale Hospital, Colindale Avenue, London NW9 5EQ. (01-205 1295.)

Ramsay Memorial Fellowships have been awarded to the following: Mr H. J. L. Clarke, University of Strathclyde; Dr Hajime Kato, Cambridge University; Mr Jose Gonzalez, University of Sheffield.

Corrigendum

In the article "New Antibacterial Agent via Photofluorination of a Bacterial Cell Wall Constituent" by J. Kollonitsch *et al.* (*Nature*, **243**, 346; 1973) the first sentence in paragraph 5 should read "The assigned structure is in agreement with: (a) PMR spectrum (60 MHz; D₂O/DCI): two multiplets (CH₂) centred at 5.3 p.p.m. (J_{H-F}: 47); two multiplets (CH) centred at 4.65 p.p.m. (5.02 and 4.28 p.p.m.)."

Errata

In the article "Embryonic and Adult Chymotrypsins of Chicken Pancreas", by A. Cohen and R. G. Kulka (*Nature*, **244**, 97; 1973), line 3 of the legend to Fig. 1 should read "... chymotrypsinogens from a, 19-d-old embryo . . ." instead of "... 10-d-old embryo . . .".

In the article "Immunological Relationship of DNA Polymerase from Human Acute Leukaemia Cells and Primate and Mouse Leukaemia Virus Reverse Transcriptase", by G. J. Todaro and R. Gallo (*Nature*, **244**, 206; 1973), the symbols were omitted from the legend to Fig. 3 and should read as follows: "●, Effect of antibody (IgG) prepared against reverse transcriptase of gibbon ape leukaemia virus on acute leukaemic cell polymerase; ▲, effect of control sera (pre-immunized animal) on human leukaemic cell polymerase; ○, effect of antibody (IgG) prepared against reverse transcriptase of FeLV on human leukaemic cell polymerase."

International Meetings

November 1-3, Magnetospheric Cleft Symposium (American Geophysical Union, 1707 L Street, N.W., Washington D.C. 20036).

November 1-6, The Royal Society Meetings (The Royal Society, 6 Carlton House Terrace, London SW1Y 5AG; 01-839 5561, ext. 278).

November 2-4, Management for Quality (The Meetings Secretary, The Institution of Metallurgists, Northway House, High Road, Whetstone, London N20 9LW).

November 3, Geologic Data Analysis with Computers (Dr D. F. Merriam, Department of Geology, Syracuse University, Syracuse, New York 13210, USA).

November 4-7, Transport, Survival and Fertilizing Ability of Spermatozoa (Professor C. Thibault, Station de Recherches de Physiologie Animale, INRA, 78350 Jouy-en-Josas, France).

November 5-6, Biochemical Society Meeting (The Meetings Officer, The Biochemical Society, 7 Warwick Court, High Holborn, London WC1R 5DP).

November 5-6, Forward Planning in the Service Sectors (Forward Planning Symposium, Science Policy Foundation, Benjamin Franklin House, 36 Craven Street, London WC2N 5NG).

November 5-7, Normal and Osteoarthritic Cartilage (The Secretary, Professorial Clinical Unit, Institute of Orthopaedics, Stanmore, Middlesex HA7 4LP).

November 8, Analytical Chemistry in the Polytechnics (Society for Analytical Chemistry, Analytical Division, Chemical Society, 9/10 Savile Row, London W1X 1AF).