

as great if not greater than that of the sea, analysis showed the proportion of calcium to be definitely lower. In the case of the Californian locality, the amounts of calcium and sodium were 84 and 9010 parts per million respectively, whereas in sea water the amounts in parts per million are approximately 420 and 10,700 for calcium and sodium respectively. Therefore the inability of these and allied forms to colonise the sea itself can scarcely be explained on grounds of calcium deficiency.

Secondly, the Caspian Sea may be cited as an example of a type of lake which, while of a lower total salinity than the ocean, has a much higher proportion of calcium and magnesium salts. Yet insects do not appear to have been strikingly more successful in adapting themselves to saline conditions here than elsewhere.

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Aug. 29.

¹ NATURE, 130, 312, Aug. 27, 1932.
² Thorpe, W. H., 1927: "The Fauna of Brackish Pools of the Sussex Coast", *Trans. S.E. Union of Scientific Societies*, 1927, pp. 27-34.
³ Thorpe, W. H., 1931: "Miscellaneous Records of Insects Inhabiting the Saline Waters of the Californian Desert Regions", *Pan-Pacific Entomologist*, 7, 145-153.

Susceptibility of English *Culex pipiens* L. to Infection with Bird Malaria

IN a recent letter¹ we described a method of inducing females of *Culex pipiens* to gorge on canaries. We have utilised this method for experiments on the infection and transmission of bird malaria by English *C. pipiens*. In the course of our experiments 393 mosquitoes gorged on birds heavily infected with malaria (*Plasmodium relictum*, Grassi and Feletti). 131 of the mosquitoes were dissected and 72 (55 per cent) were found to be infected. On dissection many of the mosquitoes showed more than twenty cysts on the stomach and the salivary glands were heavily infected with sporozoites. The infected mosquitoes readily transmitted the malaria parasite to healthy canaries.

So far as we know, there is no published record of the transmission of bird malaria by *Culex pipiens* in England. It is interesting that, once the experimental difficulties of breeding and feeding the English *Culex pipiens* are overcome, it behaves as a normal vector of bird malaria.

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¹ NATURE, 130, 366, Sept. 3, 1932.

The Vitamin Factor in Dental Caries

Is there not a possibility that the vitamin factor in the production of dental caries is unduly emphasised? That malnutrition may precipitate and intensify decay of the teeth is beyond question, but exception may surely be taken to the inference that if the proper vitamins are present in food all will be well with the teeth. Australian experience is strongly against such an assumption. Here the incidence of caries is admittedly high, but Australia is a land flowing with milk and vitamins; cows are exposed to sunlight throughout the year, whilst fruit

and vegetables are abundant, of good quality and cheap.

A distinguished English biochemist, to whom I referred the argument, suggested that the low phosphate content of Australian soils might be the causative factor, but this is easily ruled out, for deficiency in phosphate lowers the yield of food stuff per acre rather than the phosphate content of such food. Anyhow, if low phosphate were its cause one would find this reflected in the growth of bone; and yet twenty-eight years' association with Australian youth has continually aroused in me a deep admiration for his magnificent physique. Are we not dealing with one of those biological degenerations which may overtake any organ and will lead to extinction of such unless selection is kept busy?

Formerly the edentulous human suffered from grave malnutrition, and the girl with pronounced caries was not only physically unattractive but also repellent. The modern excellence of the dentist's art has stopped both forms of selection and so may we not expect human teeth to go the way of the snake's legs?

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Further Doublets of As V

WHILE examining the spectra obtained by passing varying discharges through the vapour of pure metallic arsenic contained in capillary tubes, certain lines were found to be even more strongly enhanced than those due to the trebly-ionised atom, with increase in the intensity of excitation. A strong doublet at $\lambda\lambda$ 2902, 2785 which was completely suppressed by the introduction of the slightest inductance in the circuit was therefore ascribed to the quadruply-ionised atom of arsenic.

Sawyer and Humphreys¹ reported the identification of four pairs forming the first members of the doublet series of As V. The above pair is found to be the combination $5s^2S_1 - 5p^2P_{1,2}$ and is in perfect agreement with the corresponding pairs in the sequence Cu I, Zn II, Ga III, and Ge IV. The value of the term $5s^2S_1$ found by Sawyer and Humphreys ($\nu = 241540 \text{ cm.}^{-1}$) led to the values $\nu = 207096$ and 205648 cm.^{-1} for the $5p^2P_1$ and the $5p^2P_2$ respectively with the difference $5p^2P_1 - 5p^2P_2 = 1448 \text{ cm.}^{-1}$. This identification is further supported by the detection, in exactly the calculated position, of the inverted group $4d^2D - 5p^2P$.

Classification	λ (Int.)	ν (vac.)	$\delta\nu$	ν (calc.)
$5s^2S_1 - 5p^2P_2$	2785.35 (10)	35891.6	1447.2	
$5s^2S_1 - 5p^2P_1$	2902.38 (8)	34444.4		
$4d^2D_3 - 5p^2P_1$	1635.45 (6)	61145		61143
$4d^2D_3 - 5p^2P_2$	1609.16 (6)	62144	1448	62146
$4d^2D_3 - 5p^2P_1$	1597.61 (5)	62593	449	62591

The occurrence of these pairs of As V in a simple discharge tube leads one to think, that, as a method of excitation of spectra, this simple source affords a very wide range of ionisation of the atom, for example, As I to As V.

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Sept. 15.

¹ *Phys. Rev.*, 32, 580; 1928.