

salts. The point is, as Prof. Cushny shows, that the tubule cells *always* absorb a fluid of the composition referred to, whatever may be the needs of the body at the time. They have no power of choice.

The new view must be welcome to those who wish for simplification. It will probably not appeal to those who hold that this is no advantage to a theory, at all events in biology.

W. M. BAYLISS.

University College, London, June 16.

THE expression "mere machine" is Prof. Cushny's, not mine. One is glad to learn from Prof. Bayliss that this is not to be interpreted too literally. We all look forward to the time when the expression "vital energy" can be expunged from our vocabulary, but whether the "modern theory" helps us to the realisation of this ideal renewed research alone can show. That Prof. Cushny's theory is in the direction of simplification is a matter of opinion.

THE REVIEWER.

### The Origin of Flint.

SIR E. RAY LANKESTER (*NATURE*, June 7) does not say what form of carbon he refers to as the colouring matter of black flints. If it be carbon, why is the coloration not extended to the white cortex? The blackest flint nodules I have seen occur in a chalk-pit near Faversham, but the apparently black silica becomes white when powdered, showing it to be merely an optical effect. I believe that Judd was the first to point this out, more than thirty years ago. I refer to the flints obtained direct from the chalk and not to those which, having become dissociated from the parent mass, have been afterwards subjected to the influence of various solutions.

The white zone on the exterior of a flint does not necessarily indicate decomposition. In flints taken direct from the chalk it is due to the fact that the rock contiguous to the nodule has not been wholly silicified. Sometimes nodules in the chalk are white throughout, being formed entirely of soft, crypto-crystalline silica, the spaces between the quartz not being filled with colloid silica. I have found these near Corfe. There is no evidence of decomposition, and I regard them as representing an early stage in the forming of a flint nodule.

Some decomposed flint pebbles found at Southbourne-on-Sea, described by me in *NATURE* at the time (May 1, 1890), are very similar in appearance, but these results are due to deformation.

Many facts seem to prove that flint has been formed since the chalk became indurated and elevated. The naturally repaired fractured flints found near faults, etc., and the remarkable compound flints which I recently exhibited at the meeting of the Geol. Physics Society, are instances. In some of the latter specimens there are as many as four thick deposits of flint surrounding the original nodule, and as there appears to be little, if any, molecular continuity between the layers, the growth of the compound nodule must have been arrested from time to time during its development in the solid chalk.

CECIL CARUS-WILSON.

THE suggestion of Dr. R. M. Caven (p. 306), that the black colour of flint is due to ferrosferric oxide, is supported by the fact that flints which have been for some time in contact with gas-lime (as when a mixture of these materials is used for road-metal) become stained of a deep blue colour, which has been shown by analysis to be due to ferric ferrocyanide. A dis-

cussion on this subject appeared in *NATURE* in 1904 (vol. lxxi., pp. 83, 126, 176).

F. J. ALLEN.

Cambridge, June 24.

### A Note on Chaffinches and Cuckoos.

ONE day recently I went to look at a chaffinch's nest which I had known of for some time. I had just begun to climb up the hawthorn-tree in which the nest was placed when I heard the "pink, pink" of an alarmed chaffinch, and immediately about five cock chaffinches and more than half a dozen hens and young ones appeared from what seemed to me nowhere. These chaffinches flew all round the tree in a most agitated manner, and one cock actually got on top of my head and pulled my hair vigorously, while a hen, which appeared with the other chaffinches, and I think was the mate of my assailant, flew on to the nest and pecked at me every time I tried to touch it. Their attack induced me to get down; and not until I was more than fifty paces from the tree did the other chaffinches go away.

Not very long after this I was in the garden when I saw two cuckoos which were flying very low, and I could clearly perceive that one of them was carrying an egg in its beak, while the other was crying "cuckoo, cuckoo." I know that there has been much dispute as to whether cuckoos do or do not carry their eggs; but in this instance I can personally testify that a cuckoo was carrying what was obviously an egg.

HONOR M. M. PERRYCOSTE.

Higher Shute Cottage, Polperro, Cornwall,  
June 14.

### Jupiter's Satellites and the Velocity of Light.

I SHOULD be grateful to any readers of *NATURE* who can find time to send me two postcards, one *via* Siberia and the other *via* U.S. America, telling me what is the most trustworthy interval of time between the eclipses of Jupiter's first satellite (sidereal revolution 1d. 18h. 28m.) when the earth and that planet are in conjunction and in opposition. Watson, on p. 503 of "A Text-book of Physics," fourth edition, gives  $T-T'=1992$  sec., and Everett, on p. 82 of "C.G.S. System of Units," gives as the best determination of the mean distance of the earth from the sun  $1.49465(10)^{13}$  cm. If these figures are to be trusted, Römer's method of determining the velocity of light ranks second to none, as it yields the figure  $3.0012(10)^{10}$  cm. per sec.

A. W. WARRINGTON.

Chengtou Fu, W. China, March 3.

### Arcs of Halos.

THE phenomenon described by Dr. Ellison (*NATURE*, June 14, p. 312) is clearly the upper contact arc of the  $46^\circ$  halo, and is not very uncommon, even in the absence of the halo itself.

The Meteorological Office "Observer's Handbook" states:—

"The arcs of upper contact appear with their convex sides turned towards the sun. . . . The colour effects are often brilliant, red being turned towards the sun, *i.e.* on the convex edge of the halo. The coloration of the arc of upper contact of the halo of  $46^\circ$  is frequently exceedingly brilliant."

Meteorological memories are proverbially short, and town-dwellers miss many optical phenomena too common in the country to excite comment.

WALTER W. BRYANT.

Royal Observatory, Greenwich, June 26.