

The conclusion drawn from this analysis is that among the families examined a change in income (according to the definition adopted) is reflected by a proportionate change in food expenditure.

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<sup>1</sup> Bransby, E. R., *Medical Officer*, 60, Nos. 7 and 12.

#### A Comprehensive Fundamental Electrical Formula

THE equation given by Dr. C. V. Drysdale in *NATURE* of December 3 presents a useful picture in electrical concepts of the forces acting respectively upon stationary and moving electric charges. By incorporating permeability in the term for the velocity of electric wave propagation, he avoids, if he does not annihilate, magnetic notions. In the second term of his equation, the force is seen to depend not on the *difference* of the velocities,  $V$  and  $V'$ , of the charges, but on their *product*. This suggests that the force is determined by velocities solely with respect to a basic medium. There is still hope therefore of immortality for Maxwell and for that "glorious work of fine intelligence", the ether.

ROLLO APPELYARD.

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Dec. 9.

#### A Visual Phenomenon

THE interesting visual phenomenon described by Mr. Dartnall in *NATURE* recently<sup>1</sup> was observed by Helmholtz many years ago<sup>2</sup>. The effect—the appearance of a purple after-image in a patch of light alternating at a frequency just below the critical frequency—no doubt arises from the differential rate of development of after-images of different colour, but some observers whom I tested a year or two ago were unable to see the phenomenon, at least under conditions when it could be readily observed by myself and others. I then found that those who could not see the effect were those who gave a delayed type of recovery curve after light-adaptation<sup>3</sup> as recorded by the binocular matching method.

The number of observers tested was insufficient to make the correlation absolutely certain, but the relation may prove of further interest in connecting adaptation processes with after-image phenomena, and the effect might prove of practical value in distinguishing one type of observer from another.

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<sup>1</sup> *NATURE*, 142, 1000 (1938).

<sup>2</sup> v. Helmholtz, H., "Physiological Optics", 2, 255 (Edn. by Optical Society of America, 1924).

<sup>3</sup> Wright, W. D., "Perception of Light" (Blackie and Son, 1938).

#### Points from Foregoing Letters

DR. N. HAMILTON FAIRLEY reports the synthesis of pseudo-methæmoglobin from alkaline hæmatin and native serum albumin derived from man and monkeys, and renames the pigment methæmalbumin. This pigment has not been found within the blood corpuscles and cannot function as a respiratory pigment. It is not excreted by the kidneys, apparently owing to its large molecular size.

Injection of magnesium given subcutaneously to hedgehogs in autumn produces, according to Dr. Paaavo Soumalainen, a cold-blooded state similar to hibernation, but also increases the amount of adrenaline and sugar in the blood. By injecting insulin at the same time, the formation of excess sugar is prevented and a state almost identical to hibernation is induced.

Synthetic vitamin E (*dl*- $\alpha$ -tocopherol) in doses of 0.0075 mgm. per gm. body weight per day protects chicks against encephalomalacia (a deficiency disease brought about by feeding chicks on a special diet), according to experiments by Dr. H. Dam, J. Glavind, O. Bernth and E. Hagens.

The ability of the serum to counteract the surface tension lowering effect of sodium oleate and similar substances (du Noüy phenomenon) is due, according to Prof. D. Rubinstein, to the presence of calcium ions and not to proteins, as generally assumed.

Experiments carried out by J. B. Bateman and Dr. L. A. Chambers with surface films of egg albumin on dilute hydrochloric acid, with various ratios of wall to surface, show that the drag-effect of the walls

which, it was thought, might account for some of the rigidity effects observed, does not in fact appreciably influence the force-area diagrams.

Dr. D. F. Martyn and G. H. Munro discuss criticisms by Appleton, Farmer and Ratcliffe, and Berkner and Booker, of their former conclusion that the Lorentz 'polarization' term is zero in the ionosphere. They advance further experimental facts in support of their point of view.

The 'forbidden' lines 5420, 4309 and 7909 Å. in the Te I spectrum have been obtained by Prof. H. Niewodniczański and F. Lipiński by heating tellurium vapour of suitable concentration to 900° C., especially in presence of argon or helium. The measured wave-lengths agree with those calculated from the known values of spectral terms.

Measurements of transition probabilities in the caesium discharge for transitions giving rise to the continuous spectrum in the visible region have been made by Dr. F. L. Mohler over a wide range of conditions. Values of the transition probabilities and of the continuous absorption coefficients seem to be independent of pressure and electron concentration, and the numerical values are similar to the theoretical values for hydrogen.

Dr. W. H. J. Vernon and E. G. Stroud point out that the characteristic current/voltage curve obtained in their process for the anodic 'polishing' of zinc depends on the use of a potentiometer arrangement for the supply of current to the bath. A possible alternative form of curve is discussed.