internal energy, especially that associated with the longer-period motions, will be in part energy of currents arising from temperature differences, and therefore supplied by the solar heat and not by the energy of the earth's rotation. The contribution from the shallower parts of the ocean may have more chance of falling under the latter head. In any case, the whole question can be discussed only when more is known as to the distribution of the oceanic currents. At present the only motion known at a considerable distance from land is the residual drift, and this only in a few places, chiefly where it exceeds one knot. But as this does not change with the tide, its energy is of thermal origin.

It is more difficult to agree with Mr. Jeffreys's contention that viscous action in a solid earth cannot be an appreciable cause of the slowing of its rotation. By using a special law of viscosity quoted by him (M.N. Roy. Astron. Soc., vol. lxxvii., p. 449) as suggested amongst other possibilities by Sir J. Larmor as a reasonable alternative to the Maxwell-Darwin law used by him previously (M.N. Roy. Astron. Soc., vol. lxxv., p. 648), he himself has considerably modified his previous views. But a wide field of choice is open, of which this is one example. Thus the law might be that the ratio of the stress to strain is $n+f(d/dt)$, where f is any function. In order to give the required values of the earth's retardation and of the Eulerian nutation, the function f is defined for only two values of the argument, and so is to a great extent arbitrary. Evidently suitable forms may be chosen in very many different ways, so as, in addition, to allow for the properties of earthquake waves.

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Stereo-Radioscopes.

WE have read with interest in the Notes columns of NATURE of October 18 a description of what is called a stereo-radioscope, said to be invented by one Major Lièvre. What interests us so much is the fact that Sir J. Mackenzie-Davidson invented the same thing no fewer than twelve years ago. The instrument was made by our firm and put on the market for several years. As the two sources of rays have to be about 6 cm. apart, the only practical method was found to be to build a special X-ray tube with two anti-cathodes in the same bulb.

The apparatus was exactly the thing described in your paragraph. A motor drove an interrupter having two contact blades opposite each other, exciting the two sides of the tube alternately and driving a stroboscopic shutter synchronously with the interrupter.

The great objection to the instrument is that the operator must look into the view-box in front of the shutter, thus fixing his position with regard to the large and heavy instrument. Either this latter or the patient must be adjusted to obtain the proper view.

The difficulty of this is obvious, and results in an expensive and cumbersome apparatus.

HARRY W. COX AND CO., LTD.

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An Optical Phenomenon.

CAPT. C. J. P. CAVE'S letter in NATURE of October 18 reminds me of a similar effect experienced when travelling in a *coupé* compartment at the rear of a train some years ago. From a window at the back of the *coupé* one could watch the ever-disappearing landscape as the train travelled along. The impression created was that every object seen appeared to be rushing away from the train. But a stranger sensation occurred when turning my eyes from the window to objects in the *coupé*, for, during a space of a few seconds, they appeared to be moving rapidly in a contrary direction.

C. CARUS-WILSON.

October 19.

THE effect described by Capt. Cave in NATURE of October 18 can be observed after walking rapidly along the top of a wall and keeping the eyes fixed on the road. On stopping, still looking at the road, part of the field of view seems to be slipping away backwards.

H. M. ATKINSON.

45 Denman Drive, N.W., October 19.

INFANT AND CHILD MORTALITY.

POLITICAL economists are generally agreed that, if a country is to be prosperous and to maintain its place among the nations, its population must substantially and progressively increase. Two cardinal factors are essential to ensure a satisfactory increase of population: (1) a birth-rate maintained at a proper level, and (2) a death-rate not excessive. A falling birth-rate and an excessive mortality are both national calamities; indeed, it may be questioned if France would be quite in her present position had her birth-rate equalled that of Germany. In France the birth-rate, already abnormally low, fell from 23·5 per 1000 in 1887 to 19·0 in 1914, while for Germany for the same years the figures were respectively 36·9 and 28·3, with the result that during this period the population of France only increased from about 38¼ millions to 40 millions, whereas that of Germany increased from 49 millions to 65 millions.

We are in a similar parlous state as regards our birth-rate, for this has been steadily declining from 36·3 in 1876 to 23·0 or thereabouts in 1916 per 1000 of population. The effect of this has been that our increase of population for 1914 was *less* by nearly half a million than it would have been had the birth-rate obtaining in 1876 been maintained. Fortunately, our mortality-rate is one of the lowest in the world, and this, together with a considerable saving of infant and child lives, has enabled us to show a substantial increase of population. We are, nevertheless, still faced with a low and apparently falling birth-rate (for the County of London the birth-rate was 21·5 for 1916, against 22·5 for 1915), and we must, moreover, take into account the serious losses among the adult male population, the potential and prospective fathers of children, owing to the present war. It does not, therefore, appear that any substantial increase in the birth-rate can at present be anticipated.

We are, then, more than ever dependent upon a diminution of mortality if our increase of population is to be maintained. But with a death-rate among the whole civil population of 14·7 per 1000 (1916), we can scarcely expect any considerable diminution in the general mortality. Is there any section of the community among whom the mortality is excessive and might be reduced? An analysis