

a whirl of air which moves in the same direction as the sound will increase the pitch of the note heard, and *vice versa*. If an instrument could be devised for recording rapid but slight changes of pitch of musical notes, a fairly accurate estimate of the irregularities of atmospheric velocities could be obtained.

C. E. STROMEYER.

Lancefield, West Didsbury,
April 15.

Gravitation and Thermodynamics.

As pointed out by Sir Oliver Lodge in NATURE of April 5, the case I cited of a disc pivoted about its centre of mass and started in motion does not lead to perpetual motion in the ordinary sense. But, as it seems to me, there will be long-sustained, oscillatory, motion. On rotating the disc by a small angle, the descending half will gain, and the ascending half will lose, heat. A turning-moment will arise, and will increase until the angle turned is $\pi/2$. It will then decrease until, when the angle turned is π , the moment is nil. This position gives the condition, quoted by Sir Oliver Lodge, of thermal symmetry about the vertical diameter of the disc. As the disc continues to rotate, due to its momentum, a moment in a reverse sense will be set up, so that when the whole rotation is nearly 2π , the rotation will be reversed. We shall thus obtain an oscillatory motion, long sustained if small friction is involved. In the final position the disc will have rotated from its initial position by angle π . Such a result would be phenomenal, since the mere act of rotating the disc by an infinitesimal angle would, in effect, convert a condition of neutral, into one of unstable, equilibrium.

Dr. Todd has suggested that this peculiar effect would not arise if $\partial\theta/\partial r$ is positive. We should then have the remaining peculiar effect, viz. a condition of neutral equilibrium would by a rotation be converted into one of stable equilibrium. Will this proposal satisfy philosophers?

P. E. SHAW.

Floating Earths.

I SENT Dr. Leaf's letter on "Floating Earths" (NATURE, March 15) to M. Salomon Reinach, and append his answer, which, I think, partly explains the matter.

J. OFFORD.

94 Gloucester Road, South Kensington, S.W.7.

DEAR MR. OFFORD,—

You won't build on uncertain texts. Dr. Leaf translates "in the case of an islet in Tyrrhenia," reading *ἡ ἰσλὴ*, which is corrupt; I prefer *γῆ ρῆς* (Corey), a certain variety of earth in Tyrrhenia—the remainder concerning natural science, excepting *ἢ τὰ ἀγνοώματα ἐκμύρρεται*, words which I take in the "trivial meaning."—Yours truly,

S. REINACH.

Musée National, Saint-Germain,
Le 4 avril 1917.

The New Food Orders.

IN my article in NATURE of April 12 there were inadvertently omitted, probably by myself, some words which make one of my suggestions an absurdity. In reference to the meat ration of the Army, what I meant to say was that "a part of the large meat allowance might, with advantage, be replaced by its equivalent in energy-value of carbohydrate."

W. M. BAYLISS.

EMPIRE DEVELOPMENT AND ORGANISATION.

THE final report of the Royal Commission on the natural resources, trade, and legislation of certain portions of his Majesty's Dominions has recently been issued and presented to both Houses of Parliament. The commission came into being in consequence of a resolution passed by the Imperial Conference in 1911. The members were appointed in April, 1912, six representing the United Kingdom, and one each the self-governing Dominions of Canada, Australia, New Zealand, the Union of South Africa, and Newfoundland. India, the Crown Colonies, and the Protectorates were not included.

The sittings of the commission ended, as they began, in London. In the interval the commissioners made four tours: the first to New Zealand and Australia, the second to the Union of South Africa, the third to Newfoundland and eastern Canada, and the fourth to central and western Canada. They visited every capital of every State or Province in each of the Dominions, and took evidence in all the most important cities. They say:—

In the course of this period we have travelled for many tens of thousands of miles to, through, and from the self-governing Dominions of your Majesty's Empire. In every district of this vast area we have done our utmost, collectively and individually, to make ourselves acquainted with its characteristics, its history, and its aspirations, as we hope, and indeed believe, not without success. We have also had the opportunity of hearing personally the opinions of every section of its population upon the problems upon which we have been engaged. It is therefore with a certain confidence as to their value that we present our unanimous conclusions for your Majesty's consideration.

It is to be noted, however, that in May, 1915, the Government of the Commonwealth of Australia withdrew its representative from the commission, and the final report does not contain the signature of any representative of that Dominion. No reason is given for this action on the part of Australia.

The main object of the commission was to inquire into, and report upon, (a) the natural resources of the five self-governing Dominions and the best means of developing them; (b) their trade with the United Kingdom, each other, and the rest of the world; and (c) their requirements and those of the United Kingdom in regard to food and raw materials, together with the available sources of supply. Broad as the scope of this inquiry was, it could not be kept within the prescribed limits. The commissioners say:—

During the whole course of our investigations . . . we have been conscious of two strong and impelling impressions.

First, for Empire purposes no survey can be complete without including India, the Crown Colonies, and the Protectorates. In themselves, and even as now developed, they form too vital and important a part of the Empire to be left out of present calculations. But it is plainly evident that their potentialities, measured by any fair standard, are immense,