stretched position, and it is thus that the artist should represent it. It is daily to represent things as they appear, rather than as they actually are, at a given instant of time.

The line-drawn form resulting in the case of the outstretched pencil (when sufficiently reduced), if it does not disappear altogether, in the case of the galling horse's legs. This is owing to the rapid internal changes of form in the legs.

Your correspondent, Mr. W. G. Simpson, Bart., states in his excellent letter produced in Nature, vol. ix., p. 535, that a galling horse might be represented with all its legs gathered under it. I venture to disagree with him for the reason that the two intense moments in which I have referred to a former part of this letter are not simultaneous when the legs are in their extreme position gathered under the body, and therefore no such distinct image of them for that position can be produced.

The "momentums" are only coincident in the other extreme, viz., the outstretched position. The artist's representation of a horse's pace is the same as that of the legs, and it is thus that other objects in motion, can be determined by similar reasoning.

Y. E. BAGGOTT-BENNETT


Force and Momentum

It is commonly said that change of momentum is evidence that force has acted or is acting on the mass, and that the rate at which the momentum is changing is the measure of the force. Then, in his lecture on "Force," Prof. Tall says: "Force is the rate of change of momentum" (Nature, vol. ix., p. 541).

This is not true if the mass be variable. Suppose a sphere of ice moving with constant velocity to a straight line through hot space. The mass, and therefore the momentum, is changing at a very rapid rate by the evaporation of the ice. The evaporation being supposed momentary, it is a constant velocity, any force impressed on the sphere by the mutual repulsion between the solid and the vapor thrown off at all a point, r is balanced by an equal force at the other. The evaporation of the sphere is not a change of momentum, but of the product of the mass times the velocity. Incidentally, it is true that the amount of momentum is not a proper measure of the action of force. When a variable mass, m, is in motion, the proper measure of the force acting on it is any given instant as well as the rate of change of momentum, but the product of the mass times the velocity is not.

E. G.

"There is no such thing as a "variable mass"; and our correspondence's difficulty arises from his mistaking the momentums of each of the parts (however small) into which a mass may be divided. In most cases we see the velocity to which the parts may be divided. In most cases we see the velocity to which the parts may be divided.

Change in Apparent Position of Geometrical Figures

This challenging illusion to which Mr. Bulley refers (Nature, vol. ix., p. 543) has long been known, and various explanations have been given of it by physicists. Sir Charles Wheatstone, in 1845, showed clearly that it is a mental operation, while combining the idea of Prof. MacCormack, who attributed the illusion to the number of points in the figures at the moment of changing the latter, and in Wundt's points.

...out, "the change of figure frequently occurs while the eye continues to look at the same angle."

In the following note it is seen more clearly that the operation is a mental one, because there is neither movement of eye, body, or statical muscles. The extreme squares have their corners joined by straight lines. The lesser square will appear as a point in the eye, but to the larger, according to the figure on the representation of a truncated pyramid, or the representation as the eye of a room with its sides all being away to the distant square wall. Here no eye muscles are exercised; the image on the retina remains unaltered, and the easy operation is a mental one, turning to the results of past experience.

W. A. WISLOCKI


Mutual Attraction of Spectral Lines

I do not know that it has been remarked that a line in the diffraction-spectrum (whether bright or dark) must be shifted from its normal position in one direction line by the other. Neighboring lines must be attracted if both are bright or both dark, and repelled if one is bright and the other dark. The reason is that the lines are only at points of minima and maxima, and the differential coefficient of the sum does not vanish at the same points as the differential coefficient of the separate terms. The shifting will be the greater in the case of a faint line near a very intense one. I have succeeded in this way in shifting the position of lines by measurable amounts (1' to 2')

C. S. PRICE

EXPLORATION OF TIMOR

It will, perhaps, be of some interest to the readers of Nature to bear that Mr. Riedel, the Dutch resident on Timor (Kupang), who formerly lived on Celebes, and collected a great deal on this island for European museums, and who is known by his various writings on different scientific questions concerning the East, has just returned from a twenty-five days' journey through Central Timor from 135° 39'-125° E., as he wrote us in a letter dated October 6. No European has made such a journey through Timor before, and it has been very troublesome. But the country is, Mr. Riedel remarks, a splendid one, and very ven. The Timorese, who, according to the assertion of M. Haxby, live in the interior of Timor, nor did he hear anything of a Cassaya which was reported from there recently. Mr. Riedel collected many geographical notes, and sketched a map of the parts he visited. A small collection of plants was forwarded to me by Mr. Riedel, and I have sent them to Keep, as Prof. Oliver formerly had the kindness to determine some botanical collections of Mr. Riedel's from Celebes.

A. B. MEYER

Dresden, November 29.
Royal Zoological Museum

LAND SHELLS OF THE AUSTRAL ISLANDS

The small island of Seruha (Oceania of Capt. Cook) is about 300 miles south-south-west of Tahiti; it is eight miles in length and has an elevation of 1,000 feet, over 100 feet consisting of coral reefs which have been upheaved to that altitude. Mr. Charles de Gange, a resident and experienced naturalist, has collected a number of land-shells, which have been studied...