To me this is a far more important single concept than any other to explain co-ordination of all kinds, even the continuance of the healthy life of cells in higher animals, unless it be that of the influence of protoplasm on protoplasm, *per se*, and directly. Nevertheless, this doctrine of the influence of one cell on another, through chemical agency, which the theory of the constant effect of the nervous system renders clearer for all higher animals, is one that is also indispensable and which we are now beginning to understand in more detail. The main purpose of this communication is to put forward as broad a basis as possible for conceptions of the nature of living things, for the exact demonstration of which in a way to satisfy a rigid logic we must still wait, it may be long, but which we cannot afford, in the meantime, to ignore without making many errors and unduly restricting the field of view.

WESLEY MILLS.

MCGILL UNIVERSITY,
MONTREAL, May 13, 1897.

HIGHHOLE COURTSHIP.

SOME mornings since I observed two highholes on the same branch evidently in courtship. The male, as I took it, would give a few clucks, and rapidly bob its head up and down four or five times describing about a quarter of a circle, and the female then responded with the few clucks and corresponding motions. This was repeated at short intervals, and they flew to another tree, and continued this rather comical performance. Mr. Burroughs, in describing this courtship of the highhole, speaks of the female as 'unmoved,' which, however, was plainly not so in this case. As the meaning of the head bobbing I would suggest that the motion, being much the same as when pecking at a tree or in the turf, may signify the offering of food. The male says, "Come with me and I will find you lots of fat grubs," and the female assents by the same acts and signifies mutuality. The whole is in the same line of sentiment and action as that of the young man who offers his best girl ice cream and soda water. I may also mention that I have often noticed this spring what I supposed to be the male blue jay approach his mate with a cluck and transfer to her bill some article of food, the whole affair appearing to be gallantry. It may even be that the kiss is a survival of lip-to-lip feeding.

As to the pugnacity of birds in early spring I may mention that some seasons since I observed a cock robin fight for some hours his own reflection in a cellar window. This season a mirror was placed upon a wren's box which had been usurped by a pair of English sparrows. The female fought her reflection most furiously, but the male showed more intelligence, investigated carefully, and would retire around the tree and peer out to see if the supposed bird would move toward the nest. At nightfall he took his place before the mirror, as if on guard. A carefully conducted series of experiments with mirrors upon birds and other animals would, by providing the new environment, be of great value in testing intelligence.

HIRAM M. STANLEY.

LAKE FOREST, ILL., May 5, 1897.

A QUESTION OF CLASSIFICATION.

TO THE EDITOR OF SCIENCE: In your issue of December 18, 1896, pp. 918–922, in a communication by myself entitled 'A Question of Classification,' through a typographical error I am made to say that "all other students place the Dakota formation in the middle of our American Upper Cretaceous." The word 'Upper' should have been omitted from this sentence, as it was my intention to say that "all other students place the Dakota formation in the middle of our American Cretaceous and at the base only of the upper of the two great series into which the Cretaceous of this country is divided."

ROBT. T. HILL.

SCIENTIFIC LITERATURE.

The Materials of Construction. A Treatise for Engineers on the Strength of Engineering Materials. By J. B. JOHNSON, Professor of Civil Engineering in Washington University, St. Louis, Mo. New York, John Wiley & Sons. 1897. 8vo. Cloth. Pp. xv+787, with 9 plates. Price $6.00.

This work is divided into four parts, the first treating of the mechanics of the subject, the second of general properties of materials, the third of methods of testing, and the fourth of results of tests. The number of pages in these