conclusion. But serious doubt having been raised on this point by so high an authority as M. le Chatelier, we have thought it right to make further experiments.

These experiments convince us that the freezing point of molten silver is lowered and rendered variable when the surface is exposed to the air. We also find that by blowing oxygen through the molten metal, the absorption of this gas is sufficiently great to lower the freezing point 20°. Moreover, when the oxygen is removed by the action of either carbon, coal gas, or hydrogen, a constant maximum freezing point is reached. Further, if the atmosphere of hydrogen, or coal gas, be replaced by carbon dioxide, there is no change in the freezing point, whilst if nitrogen be used to sweep out the hydrogen, there is a slight fall. In neither case does the removal of the hydrogen bring about a rise, as should be the case on M. le Chatelier's hypothesis.

Another strong reason for believing that the true freezing point of silver can only be obtained in a reducing atmosphere, is to be found in the remarkable constancy with which a considerable mass of pure silver maintains its temperature from the moment that freezing commences until the whole is solid, provided it has not been exposed to the action of free oxygen. It is also noteworthy that in a reducing atmosphere the melting and freezing points are identical.

Impure substances do not as a rule behave in this way, and hence it is improbable that the silver can contain dissolved hydrogen. In an oxidising atmosphere the freezing point is less sharply marked, and the silver behaves as if it were impure.

These are our reasons for venturing to differ from M. le Chatelier, and we hope that he will further examine the question.

Cambridge, October 12. C. T. HEYCOCK.
F. H. NEVILLE.

Plant-Animal Symbiosis.

IN your issue of August 22, 1895, Mr. Schwarz describes his finding in South Africa some ants inhabiting the thorns of a mimosa tree, by which he evidently means a species of *Acacia*. This symbiosis is well known out here, and probably also in Europe, as will be seen by a reference to Schimper's "Wechselbeziehungen zwischen Pflanzen und Ameisen im tropischen Amerika," p. 48. I first observed ants inhabiting the thorns of *Acacia horrida* in the neighbourhood of Grahamstown about six years ago. I also found them near Port Alfred. As far as my repeated observations go, the partnership between the ants and the trees is a very one-sided one.

The former receive shelter and food from the trees, whereas I have failed to find that the latter derive any advantage from it. This last conclusion is not surprising, as, firstly, amongst the "mimosa"-scrub near Grahamstown, one only finds here and there a tree the thorns of which are inhabited by ants, and as, secondly, in some years *all* individuals of *Acacia horrida* are completely denuded of their foliage over wide areas by caterpillars. Moreover the ants (of which I found two different kinds) are, as Mr. Schwarz rightly observes, not at all aggressive, whereas Belt showed that the little ants living in the hollow thorns of *Acacia sphærocephala* in Central America are very pugnacious, and protect the plant against browsing mammalia and insect enemies.

The two cases are, therefore, very different from one another.

S. SCHÖNLAND.

Albany Museum, Grahamstown, South Africa,
September 16.

The Recent Dry Weather.

WITH reference to the recent remarkable weather, both at the commencement of the year and during September, it is worth while calling attention to the climatological period of about thirty-five years, which Prof. Brückner, of Berne, pointed out as existing relatively to the years or groups of years characterised by marked cold or heat, as mentioned in vol. xliii. p. 163 of NATURE. He therein indicated the years 1700, 1740, 1780, 1815, 1850, and 1880 as centres of cold periods, while the years 1720, 1760, 1795, 1830, 1860 (and now 1895) appear as centres of warm, dry periods. The coincidence for the present year is certainly remarkable, and merits attention as to the causes which underlie these periodic fluctuations of weather.

Dublin, October 11. J. P. O'REILLY.

The Genus "Testacella."

IN NATURE for last year the writer gave a list of the localities for *Testacella scutulum* which had come under his notice. With a view to making this list more complete, and to obtaining a more definite idea of the distribution of the various species of the genus in the British Isles, the writer would be greatly indebted to any reader of NATURE who could forward to him, localised specimens of *Testacella*, alive, or preserved in alcohol, the present month being a likely one for the coming above ground of these slugs, which should now be found under logs and stones in the neighbourhood of rich garden soil.

WILFRED MARK WEBB.

"Holmesdale," Brentwood, Essex.

The B.A. Committee on Coast Erosion.

IN the reference, in your number of Oct. 3, to "Geology at the British Association," the statement as to the Coast Erosion Committee, in their final report, recommending a "Departmental Committee of the House of Commons," to inquire into the subject, is taken from the "first proof" of the report, which was drafted by myself as surviving Secretary. The suggestion has *not* been adopted by the majority of the Committee, who considered their duty did not extend to drawing up and formulating recommendations. This termination I regret, as when the Association adopted my suggestion in 1881, to appoint this Committee, I hoped it would have had a practical outcome, leading to the conservation of our coasts.

CHARLES E. DE RANCE.

A Substitute for Sulphuretted Hydrogen.

IN your Notes of February 14 last, you state that ammonium thio-acetate has been found to be a satisfactory substitute for sulphuretted hydrogen in chemical analysis. Can any of your readers tell me where I can obtain it? I cannot find it in catalogues of chemical manufacturers. RUSTICUS.

THE GRAPHICS OF PIANO TOUCH.

MUCH trouble has been taken in order to construct an apparatus that will reproduce graphically the effects of touch in keyed musical instruments. The experiments are most easily made with the piano, and have therefore been tried on that instrument.

Recently a most interesting article appeared in the *Revue Scientifique*, written by M.M. Binet and Courtier, who have studied this subject closely, and have made many experiments with their apparatus. They have treated the matter very fully in their article, of which the following is a *résumé*:—

When a certain point of perfection has been attained in piano playing, it becomes very hard to distinguish inequality of touch; yet, owing to the varying strength of the fingers, it is only with much practice that perfect equality is possible. As will be seen further on, involuntary movements and irregularities, scarcely perceptible to the ear, are shown by the graphical method.

The apparatus (Fig. 1) is quite simple in construction, and consists chiefly of an india-rubber tube, placed under the key-board, united at its two extremities by a registering drum, also of india-rubber. When the notes of the piano are played, the pressure on the tube causes a wave of air to be sent through it into the drum, upon which is attached a pen that in the ordinary way is made to record its movement on a moving roll of paper. The wave makes the drum vibrate, which in its turn jerks the pen, thus causing irregular marks to be left on the paper. The board on which the tube rests is regulated by means of wedges adjusted by a screw, the board being either lowered or raised. When raised it almost reaches the notes of the piano, and in this case the registering action takes place; but if it is lowered, the whole apparatus is disconnected from the key-board.

When no notes are being played, and the registering drum is connected, *i.e.* the board is raised, merely a straight line is drawn. In Fig. 2, first *a* is struck, then two notes with *b*, then three notes with *c*, and so on. It