

LETTERS TO THE EDITOR.

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The Effect of Grass on Plants.

In a review of the thirteenth report of the Woburn Fruit Farm which appeared in NATURE a short time ago, special reference was made to some of our experiments which seemed to prove conclusively that the injury done to trees by grass growing above their roots must be due to something excreted from, or resulting from the growth of, the grass, and not to its abstracting anything from the soil, or interfering mechanically or physically with the tree roots. In these experiments the trees were grown in plots of soil or sand, on which rested pans of soil or sand with grass growing in them. The pans had perforations in the bottoms covered by fine wire gauze. The trees used for comparison had, of course, similar pans placed above them, but without grass growing in them. The deleterious effect of the grass in these circumstances was nearly as great as when it was growing in the medium in actual contact with the roots.

These experiments are now being repeated on plants other than fruit trees, namely, tobacco, tomatoes, and barley; the plants are in every case growing in soil, but the pans contain soil in some cases, and sand in others. Where they contain soil the effect of the grass growing in them has been most marked, especially on the tobacco, where the plants are not one-quarter the size of those without grass; where the pans contain sand the effect has been much less, being noticeable chiefly by the paleness of the plant leaves, rather than by the stunting of growth. This indicates that the toxic effect varies considerably with the nature of the medium in which the grass is growing, and harmonises with previous observations that the effect of grass on trees varies considerably with the nature of the soil. With barley no certain effect of grass has yet been noticed, and it is quite possible that grass may not be deleterious to plants of the same order as itself.

It was observed that in all cases the plants with grass above them appeared just at first to do rather better than the others. This is consistent with other observations on this subject, and also with the recognised stimulating effect of toxins in minimal doses.

These experiments have not been completed, but the publication of a note on them may give others the opportunity of repeating them during the present season.

SPENCER PICKERING.

The Local Races of Burchell's Zebra.

IN NATURE for June 6 (p. 364) there is a summary of a paper on zebras by Major Stevenson Hamilton, which was read before the Zoological Society on May 21. The author pointed out that it was possible to shoot in one herd in the Transvaal specimens exhibiting features claimed to be distinctive of such races as *E. burchelli wahlbergi*, *E. b. transvaalensis*, and *E. b. chapmani*. From this circumstance Major Stevenson Hamilton concluded that the subspecies or local races in question had been based upon inadequate museum material.

Presumably the zebras observed, since they were shot in the Transvaal, belonged to the race named *transvaalensis*. It is not surprising therefore that they presented the characters of that form. Moreover, since the Transvaal lies between the areas of South Africa occupied respectively by *E. b. wahlbergi* and

E. b. chapmani, the occurrence of zebras there showing features possessed by those two subspecies is precisely what one would expect. For the subspecific rank assigned to the two forms in question implies the known, or expected, existence of intermediate forms in an intermediate geographical area.

Hence the value of Major Stevenson Hamilton's contribution to the question at issue lies in the proof it supplies, not of the unsoundness, but of the soundness, of the conclusions reached by museum systematists, at all events so far as the races of zebras under discussion are concerned.

Zoological Society, June 12.

R. I. Pocock.

Boulder Clay in Essex.

THE extensive deep sewerage works now being carried out under Mr. H. Tooley for the Essex County Council at Harlow have disclosed facts of considerable interest to students of glacial geology. The main sewer from Potter Street cuts through the hill of Boulder Clay between that place and Harlow at depths ranging up to 32 ft. The excavations and tunnels are entirely in the Boulder Clay, which assumes here an extraordinary till-like character, more so than in any exposure which has come under my observation in southern England. It is a black (rather slimy) clay, such as may well have been derived from the pounding up of Kimmeridge Clay, or Oxford Clay (as the latter is worked at the extensive works of the London Brick Company at Fletton, near Peterborough). Through this numerous chalk fragments are dispersed, and in the lower portions boulders (rounded, subangular, angular, and often beautifully striated) are met with in great quantity.

Among the erratics rocks have been recognised from the Carboniferous Limestone (abundant), the Rothliegendes, the Magnesian Limestone series, the Bunter (pebbles), the Lias, the Great Oolite, the Oxford Clay (by fossils), the Kimmeridge Clay (by fossils), the Chalk and the Eocene (sarsens and septaria), Jurassic fossils (*Ostræa*, *Gryphæa*, and five species of *Ammonite*), are sparsely distributed in fragments through the "till." Details are reserved for the B.A. Committee on "Erratic Blocks."

No trace of any crystalline rock (Scandinavian or otherwise) has been seen.

Referring to "Geology of Oxford and the Valley of the Thames," by the late Prof. John Phillips, F.R.S. (p. 461), one sees that the "northern drift" column receives ample confirmation from the facts stated above.

Taking into account the topography, it would appear that both the Harlow drift and the drift of the Upper Stort Valley have reached their present latitude through the "Elsenham Gap" (B.A. Report, 1910, p. 616), and it may perhaps be fairly inferred from all the facts to hand that the "till-like" Boulder Clay has been composed of material brought thus far south by a tongue of the inland ice of the Chalky Boulder Clay stage, while the drift deposits of the Upper Stort Valley represent in the main the later work of floating ice.

A. IRVING.

Bishop's Stortford, June 14.

Campaign against Rats.

I BELIEVE that it is now unanimously admitted that the rat, both black and brown, is an unmitigated nuisance, both on account of the damage these rodents do and also because of the danger of plague and other diseases being spread by them.

The Sheffield and District Working Terrier Association has for the last two years been doing its best to lighten the scourge in this district; but, of course, isolated effort is useless. Why should not ratting clubs be formed in various parts of the country to try