normal soils, but we do find abundant evidence of the activity of organisms detrimental to the ammonia-producing bacteria. We are therefore justified in regarding these detrimental organisms as one of the factors limiting soil fertility. We have shown that partial sterilisation destroys these organisms, and that it causes an increase in numbers of ammonia-producing bacteria, in the amount of ammonia produced, and in the fertility of the soil; these factors are all so closely connected with one another that no reasonable doubt can be entertained of the existence of a causal relationship between them. E. J. RUSSELL.

Rothamsted Experimental Station, Harpenden.

Precocity of Spring Flowers.

I HAD occasion to remark in a letter to NATURE (No. 1477, vol. lvii., February 17, 1898) on the unusually early flowering of many winter and spring flowers in the December of 1897 and the January of 1898; so many of these records have been surpassed already during the recent remarkably mild period that I am venturing to put a few of them before your readers. For the last twenty years I have kept a record of the first flowers of about eighty species of wild and garden spring flowers in this county, and the season named above is the only example which at all approaches the present one in the precocity of flowering.

The winter aconite began on December 8, and has been flowering profusely since the middle of the month, when about a hundred blossoms were gathered in one day; other early dates are December 20, 1911, December 23, 1897; the first week in January is the mean, the latest January 27, 1887. Green hellebore, January 10; usually end of February; latest, March 26, 1902. Fetid hellebore, December 1; usually early February; latest, February 21, 1904. Lesser celandine, December 1; usually early February; latest, March 12, 1900; other early records, January 20, 1898 and 1901. Wild white sweet violet in the hedges, January 5, many to be seen now, whereas mid-February to early March is its usual season. *Pyrus japonica* on many walls has been as much covered with flowers throughout December as it is usually in April and May.

Strawberry-leafed cinquefoil, December 24; usually begins in February. Gooseberry, January 5; a bush in the garden with many opened flowers. Hedge parsley abundant in the hedges in January; usually begins in mid-April. *Lonicera fragrantissima*, from December 18 onwards; usually begins early in January; earliest, December 10, 1900.

Adoxa moschatellina (Moschatel), in bud January 11; usually flowers in April. *Petasites fragrans* (winter heliotrope), mid-November, occasionally as early, but more usually December and January. Yellow coltsfoot, January 7; usually early March; earliest previously, January 21, 1898, February 20, 1897; latest, March 26, 1909. Primroses abundant in December and early January. *Omphalodes verna* abundant December; usually early March; latest, April 1, 1902. Spurge laurel, December 20; usually early in February; January 12, 1912, January 29, 1898, March 18, 1897. Dog's mercury, ♂ flowers, November 28; earliest previously, December 21, 1900; latest, March 12, 1900. Hazel, both ♂ and ♀, January 5; earliest ♂, December 24, 1911, ♀, January 16, 1906.

Chimonanthus fragrans (winter sweet), very abundant from November 14; earliest before, December 9, 1907. Yellow crocus, January 5; earliest, January 22, 1901, January 24, 1898. *Galanthus Elwesii*, November 14. Common snowdrop, December 28; earliest, January 8, 1912. Foliage has been out for some time on honeysuckle and elder, and even the "brushwood sheaf round the elm-tree bole is in tiny leaf," which, according to Browning, should not occur until April! Flower-buds are swelling on English elm and grey willow.

ELEONORA ARMITAGE.

Dadnor, Herefordshire, January 13.

MANY references are being made to the numbers of plants in flower now to be found in various parts of the country. May I give a list of those I gathered on January 6 in our garden in South Devon, ranging from 230 to 500 ft. above sea-level?

Gorse (double French and single), ivy, jasmine (yellow), honeysuckle, crocus (yellow), polyanthus, primrose, berberis, *Daphne mezereum*, ribes (pink and white), daisy, veronica (purple and pink), laurustinus, azalea (white), rhododendron (red), clianthus ("parrot's bill") mignonette, heath (white and Mediterranean), violet (Russian, white, and Neapolitan), rose (pink, yellow, and "Dorothy Perkins"), genista (yellow), passion-flower, forget-me-not, snowdrop, lavender, cyclamen, tobacco-plant (white), ivy geranium (pink), wallflower, borage, *Helliborus* (*foetidus*, *orientalis*, and *niger*), arabis, *Garrya elliptica*, arbutus, solanum, pansy, *Aubrietia purpurea*, and *Pieris* (*Andromeda*) *floribunda*. T. MARY LOCKYER.

Salcombe Regis, Sidmouth.

THE effect of the mildness of the winter is shown in the number of wild plants now in flower, some of them evidently survivors from the autumn, others early spring flowers, and yet others entirely out of season. During a walk on January 3 and 4 from Brighton through Ditchling and Haywards Heath to Balcombe, we observed no fewer than thirty wild flowers in blossom, many of them being abundant.

The list is as follows:—Daisy, gorse, dandelion, cinquefoil, primrose, feverfew, avens, red deadnettle, hawkweed, groundsel, chickweed, shepherd's purse, yarrow, lesser celandine, garlic mustard, dwarf spurge, spear thistle, barren strawberry, ivy-leafed speedwell, corn marigold, dog's mercury, dove's-foot crane's-bill, field speedwell, herb robert, white dead-nettle, cress, lesser periwinkle (a garden escape), and the following, all young plants: wild-beaked parsley, buttercup, and rose campion.

EDITH HOW MARTYN.

Light Perception and Colour Perception.

THE Departmental Committee on Sight Tests has recommended a method of classifying colour-blindness by measuring the luminosity of the colour sensations by means of the flicker method of photometry. The degree of abnormality is estimated by the ratio of red to green compared with the normal. This classification is absolutely erroneous. Light perception and colour perception are quite distinct—that is to say, there may be considerable defect of colour perception without defect of light perception. The first two cases of colour-blindness (dichromics who confused red and green) examined by me on the method suggested by the Committee had a ratio identical with the normal, whilst a man who had not the least defect of colour perception had an abnormal ratio. Prof. A. W. Porter and I examined one of the above-mentioned colour-blind men by another method, and we could not detect the least defect in the perception of luminosity in any

© 1913 Nature Publishing Group