LETTERS TO THE EDITOR.

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Botany by Indian Foresters.

A GLANCE at the *Indian Forester* for February affords a complete refutation of recent charges brought against the Indian Forest Department for neglect of botany.

This number commences with a most able and interesting account of the forests of the Sudan, written by Mr. Muriel, of the Indian Forest Department, who was sent last year to examine the forests along the Blue and White Niles and the Bahr-el-Ghazel. After travelling for 4600 miles, Mr. Muriel wrote a description of the chief components of the Sudanese woodlands and savannahs, and especially of the cultivation of *Acacia verek*, the Sudanese gum tree, from which last year 80,000 cwt. of gum, valued at 80,000*l.*, was delivered at Khartum.

Ordinary timber is valued at 2*s.* a cubic foot at Khartum, while large quantities of wood fuel are required for steamers on the Nile and for locomotives, as well as for culinary purposes, so that the importance of the protection of the forests against incendiary fires and unrestricted grazing and felling is evident. Mr. Muriel has given a very interesting account of the fauna of these regions as well as of their flora, and it is satisfactory to learn that the very able forester and botanist, Mr. A. F. Broun, who has recently assisted Sir D. Brandis at Kew in his new book on the Indian forest flora, has been appointed Conservator of Forests in the Sudan.

In the same number of the *Indian Forester* is a paper by Mr. A. W. Lushington, of the Indian Forest Service, on the identification of seventy-four Indian species of Loranthaceæ by means of their ramification and leaves. He states that it is not uncommon in southern India to find forests completely ruined by these parasites. "The vegetation, weakened by forest fires, is incapable of battling with these pests, and as the better species of timber trees are less well supplied with sap than the inferior species, the former are the first to be killed." As the Loranthaceæ are classified by their flowers and the latter exist only for a short period, while the forest officer has a very large district to supervise and may not meet with some of the species in flower, the utility of Mr. Lushington's work is apparent.

Babu Upendranath Kanjilal, of the Indian Forest Department, has just published a most excellent and handy volume on the local forest flora of the School Circle, North-West Provinces of India, where the forests range in altitude from 1000 to 10,000 feet above sea-level. This work is also referred to in the February number of the *Indian Forester*, in which is also found a list, systematically arranged, of trees and shrubs in the Jerruck division of Sind, by Mr. G. K. Betham, of the Indian Forest Department.

Any habitual reader of the *Indian Forester* will see that Indian forest officers pay considerable attention to biology, chiefly as regards plants and insects; but, after all, their chief duty is the economic management of the Indian forests, and the great amount of work this involves and its value to the Indian Empire can be appreciated only by those who have given a fair attention to forestry in all its bearings.

Besides British India and the included and adjoining native States, such as Cashmere, Indian foresters are now employed in Siam, the Philippine Islands, Cape Colony and the Sudan. Owing to the great devastation of woodlands in the Transvaal and Orange River Colonies, which is graphically described in a recent number of the *Revue des Eaux et Forêts* (the *French Forestry Magazine*), it is to be hoped that a sound administration of forestry may soon be established in these territories.

Coopers Hill, February 24. W. R. FISHER.

Cherry Disease.

MY attention has just been called to a letter in your issue of January 30 from Sir W. T. Thiselton-Dyer, which gives the strongest possible confirmation to my contention that a fully equipped State Agricultural Laboratory is a national desideratum, and that in this respect Britain is behind other countries.

Your correspondent implies in his letter that with Kew and the British Museum in existence there is no pressing need for any other institution. The Director's letter proceeds to relate what Kew has done "promptly and in ordinary routine" for the protection of the British farmer against the cherry disease; and the sum of it is that in November, 1900, Kew answered an inquiry from Mr. A. O. Walker by telling him that the fungus on the cherry leaves sent by him was *Gnomonia erythrostoma*. The next step taken by Kew—and the only public one—is the director's ungenerous criticism of what has been done meanwhile by the Royal Agricultural Society. (Mr. Walker's letter to the *Gardeners' Chronicle* in May, 1900, was apparently his own private action, in no way initiated by Kew, and was certainly not an official step.)

A pathogenic fungus can be named at any time in ordinary routine for an individual inquirer either at Kew or at the British Museum; but this is the smallest part of the work of a State Agricultural Laboratory.

The Royal Agricultural Society of England, which—public-spirited though it be—is not a State-supported institution, took some practical steps. It was not until December 1900 that a specimen of the cherry disease was received at the laboratory of that Society, and at the next council meeting on February 5, 1901, I reported on the disease. This report was published in the agricultural papers of that and the following weeks, and was widely distributed in leaflet form by the Society among the Kent cherry-growers, to its own members and to non-members indiscriminately. A conference with the cherry-growers at Maidstone followed, and the result has been that the disease was carefully observed, and sufficient information reached the Society's laboratory to enable the publication in its *Journal* of a detailed account of the disease as it has appeared in England. I regret to add that I have received specimens of wild cherry from Somerset attacked by the Gnomonia.

Any benefit which may conceivably have come to the British farmer from Kew in this matter accrued indirectly in May through the action of a private individual. The Royal Agricultural Society had already in February taken the valuable practical steps which in most other countries would have been the duty of a State Agricultural Laboratory.

I need not trouble you in regard to your correspondent's kind correction of an intentionally indefinite description in my report, which has been put right in its final form, issued ten days before his letter was published; nor with his other criticisms upon your report of the meeting of the Royal Microscopical Society, criticisms which to an intelligent and careful reader answer themselves. WILLIAM CARRUTHERS.

44 Central Hill, Norwood, February 22.

MR. CARRUTHERS' letter is open to some criticism. Taking it, however, as it stands, it proves conclusively that in the case of the cherry-leaf disease everything has been done by existing agencies that was practically possible. This particular instance therefore affords no basis for the demand for a State Agricultural Laboratory.

As I have already stated, the disease does not appear to have been brought under the notice of the Board of Agriculture. Had it been so, that department, if it had seemed desirable, could have relieved the Royal Agricultural Society of the task of preparing and distributing a leaflet. Mr. Walker, however, points out in NATURE for February 6 (p. 318) that "the disease has almost disappeared, though no preventive measures such as stripping the leaves were taken."

The object of my letter was to make a protest against the present tendency to demand fresh State machinery instead of endeavouring to increase the usefulness of that which already exists. W. T. THISELTON-DYER.

Kew, February 26.

Identity of Negative Ions Produced in Various Ways.

FROM the results of some experiments which I have recently made, it can be shown that the negative ions produced in various gases by Röntgen rays, or by collision, are all identically the same and are smaller than the molecules of hydrogen.

The following results have been established by the researches on this subject which have been already published (J. S. Townsend, *Phil. Mag.*, February 1901; J. S. Townsend and P. J. Kirkby, *Phil. Mag.*, June 1901; P. J. Kirkby, *Phil. Mag.*, February 1902):—

(*a*) The negative ions produced in a gas by Röntgen rays