

necessary to point them out at length, as a second edition will certainly see the greater number corrected. The book unquestionably supplies a need: it attempts to do for industrial chemistry what Mr. Watts's well-known work does for the theoretical part of the science, and we can wish it no higher measure of success than that it should meet with the favour which that work so deservedly enjoys. T.

OUR BOOK SHELF

Annual Report of the Superintendent of Government Farms. (Madras, 1877.)

THIS report of Mr. W. R. Robertson is one of great value; it comprises an account of the present state of native agriculture in the district of Coimbatore, and a statement of the work carried out at the experimental farm at Sydapat.

The information respecting native agriculture was obtained during a three months' tour of inspection. The general condition of the country is clearly most deplorable, and unless improved methods of farming are adopted there is apparently nothing but starvation and ruin before the majority of the ryots. The land irrigated from rivers and tanks forms about 1-25th of the area under cultivation; this land receives scarcely any manure save that supplied by the water; it nevertheless maintains good crops, and its money value is 20—25 times greater than that of land unirrigated. Mr. Robertson complains of the great waste of water: an ordinary crop of paddy will receive during its growth about twelve feet of water. If the crops were manured, far less water would suffice. A still greater saving would be effected by growing crops requiring less water; four or five acres of wheat or maize could be produced with the water required for one acre of paddy. Irrigation by means of wells is employed to some extent; the wells being private property, the water is used with far greater economy than is the case with river irrigation. Mr. Robertson strongly recommends an improved form of water-lift known as the "double mhote;" by this a single bullock can raise as much water as, on the native plan, is accomplished by four bullocks. Facilities for sinking wells should also, he thinks, be increased.

The unirrigated land has of late years very considerably decreased in fertility, and the number of cattle per acre is now only about one-half the number maintained in 1838. "The curse of Indian agriculture" is the employment of cattle manure as fuel, and this custom increases as the jungle is destroyed and brought under cultivation. The author strongly recommends the compulsory planting of fuel trees throughout the country; these would improve the climate as well as furnish the much-needed fuel. A striking feature of the unirrigated land is the entire absence of weeds, a true indication of the poverty of the soil. The greater part of this land is never manured, and is cultivated chiefly for grain crops, *Penicillaria spicata*, *Sorghum vulgare*, and *Eleusine coracana*; fodder crops and pasture are rarely met with. Were fodder crops more largely grown, the live stock increased in proportion, and the cattle manure all returned to the land, a great increase in fertility would be effected. The addition of organic manures to the soil, or the ploughing in of green crops, would also considerably increase the power of the soil to retain moisture, humus being of all the ingredients of the soil that which possesses the greatest water-holding power. Artificial manures are never employed: saltpetre may be purchased at a low price, but it is all exported, and never applied to the land.

It is pleasant to find, towards the conclusion of the report, that a School of Agriculture has lately been

opened at Sydapat. Now that the causes of the agricultural depression have been clearly pointed out, we may hope that active steps will be taken to provide a remedy.

R. WARINGTON

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.]

[The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to ensure the appearance even of communications containing interesting and novel facts.]

The Size of the Indian Tiger

In a book recently published entitled "Thirteen Years Among the Wild Beasts of India," by Mr. G. P. Sanderson, of Mysore, at pages 272, 273, the following remarks occur regarding the size of the tiger, and in reference to certain measurements of that animal given in a small volume entitled "The Royal Tiger of Bengal: his Life and Death," published in 1875.

The author (Mr. Sanderson) says,—“Regarding the size of the tiger, once a much disputed point, all careful observers are, I believe, agreed in accepting Dr. Jerdon's view ('Mammals of India') as thoroughly correct. He says, 'The average size of a full-grown male tiger is from 9 to 9½ feet,' but I fancy that there is little doubt that occasionally tigers are killed 10 feet in length, and perhaps a few inches over that; but the stories of tigers 11 feet and 12 feet in length, so often heard and repeated, certainly require confirmation, and I have not myself seen an authentic account of a tiger that measured more than 10 feet and two or three inches. I know," continues Mr. Sanderson, "two noted Bengal sportsmen who can each count the tigers slain by them by hundreds whose opinions entirely corroborate Jerdon. My own experience can only produce a tiger of 9 feet 6 inches and a tigress of 8 feet 4 inches as my largest. Of course writers start up now and again, as the author of the 'Royal Tiger of Bengal' did two years ago, and give us something like the following:—'The full grown male Indian tiger may be said to be from 9 to 12 feet or 12 feet 2 inches, the tigress from 8 to 10 feet, or perhaps in very rare instances 11 feet in length.' It is only fair to the author to state, however, that in the next paragraph he looks with doubt upon Buffon's tiger of 15 feet, and would only with greater hesitation accept the recorded statement that Hyder Ally presented a tiger to the Nawab of Arcot that measured 18 feet.

A portion only of the paragraph in my book is quoted; the most important, the first part, being omitted; it is as follows:—“The statements as to the length they (tigers) attain are conflicting, and errors are apt to arise from measurements taken from the skin after it is stretched, when it may be 10 or 12 inches longer than before removal from the body. The tiger should be measured from the nose to the tip of the tail as he lies dead, before the skin is removed. One that is 10 feet by this measurement is large, and the full-grown male does not often exceed this, though no doubt larger individuals (males) are occasionally seen; and I have been informed by Indian sportsmen of reliability that they have seen or killed tigers over 12 feet in length.”

This account of the size of the tiger really, therefore, substantially agrees with Dr. Jerdon's, except that he says, "The stories of tigers of 11 feet and 12 feet in length, so often heard and repeated, certainly require confirmation." This confirmation is supplied. The following examples may be adduced:—

Lieut.-Col. G. Boileau killed a tiger at Muteera, in Oude, in 1861, that was over 12 feet, the skin, when removed, measured 13 feet 5 inches.

Sir G. Yule, K.C.S.I., has heard once, at least, of a 12-foot tiger fairly measured, but 11 feet odd inches is the largest he has killed, and that twice or thrice.

Col. Ramsay killed a tiger in Kumaon, 12 feet. I have myself seen and killed tigers over 10 feet, and have notes of some: one, for example, killed in Purneah, in 1869, 10 feet 8 inches in length.

Gen. Ramsay mentions the skin of a tiger partly killed by himself near Benares that measured over 12 feet. This had no doubt been stretched, but it was a very large tiger.

Col. J. Sleeman does not remember having killed a tiger