

in the vicinity of cultivated grass lands, from which the nomadic animals might get a few bites of succulent fodder by craning their necks through the fences, goes on most commonly under the cover of darkness, and the owners of native stock in towns are even in the habit of driving their cattle into private gardens and grass lands, during the night time, for a supply of food. Under the circumstances detailed above, we think it is high time that some measures were passed which will enforce upon owners of native cattle in towns, the duty of having all animals that are being conveyed along public roads secured with ropes and kept well under the control of drovers—two animals to each man; further, all cattle should be prohibited from grazing along public roads. We feel sure that these measures will meet with the approval of all owners of stock who have the welfare of their animals at heart, and are adopting the most approved methods of stock-keeping.

RAINFALL TAKEN AT THE SCHOOL OF AGRICULTURE DURING MAY, 1895.

1	..	Nil	13	..	1.06	25	..	.22
2	..	Nil	14	..	.02	26	..	.01
3	..	Nil	15	..	.34	27	..	.27
4	..	Nil	16	..	2.75	28	..	.34
5	..	Nil	17	..	.11	29	..	.31
6	..	.41	18	..	.01	30	..	.35
7	..	.32	19	..	Nil	31	..	.01
8	..	.48	20	..	.06	1	..	.01
9	..	.01	21	..	.01			
10	..	.01	22	..	Nil	Total	..	12.71
11	..	4.65	23	..	Nil			
12	..	.96	24	..	.01	Mean	..	.41

Greatest amount of rainfall in any 24 hours on the 11th instant, 4.65 inches.

Recorded by P. VAN DE BONA.

OCCASIONAL NOTES.

From the consignment of rhea cuttings received from Calcutta, about 100 plants are now flourishing on the School of Agriculture grounds.

A large quantity of seed was gathered from the Reana plots grown at the school, and after distribution among our Agricultural Instructors, there is still a good deal left, which can be had in small quantities on application.

We have during the past month had further applications for the seeds of the Cow-pea from planters both in Ceylon and India. A trial is going on with two varieties of paddy seed received through the kindness of Mr. Prasanna Nath Lahiri, the writer of the article on Early Paddy which appeared in the April number of the Magazine. These are known as Dinagapore aus paddy and Banafuli rice.

The Ceylon Government Dairy is once more in full working order, having only now completely recovered from the shock which it received in February last year, when cattle murrain worked such havoc with the stock. The daily output of

milk is at present about 40 gallons, all of which goes to the Government hospitals. Six Sind cows and a Sind bull were added to the herd in April—having been purchased from the lot imported by Mr. T. H. A. de Soysa. It is intended to draft out a number of calves and a few cows from the dairy herd (as was done last year), and offer them for sale by public auction in the course of next month.

We have to acknowledge the receipt of the following exchanges:—St. Thomas' College Magazine, Our Boys, Agricultural Journal of the Cape of Good Hope, the Agricultural Gazette of Barbadoes.

LAWS OF CEYLON RELATING TO AGRICULTURE.

CHAP. V.—RULES FOR ENFORCING CUSTOMS.

1. All rules framed under the provisions of Sections 3 and 6 of Chapter III. shall be transmitted by the Government Agent to the Governor, for his approval or disallowance with the advice of the Executive Council; and if such rules shall be approved, notice shall be given by proclamation; and the said rules shall be published in the Gazette, and in the district as to the Government Agent seems fit, and shall thereupon become binding, and shall be as legal, valid, and effectual as if the same had been inserted herein; Provided that nothing in those rules shall be repugnant to, or inconsistent with, the true intent and meaning of this Ordinance.

2. The Government Agent may, if it seems advisable, or shall, upon the requisition of a reasonable number of the proprietors of a district, call a public meeting of the proprietors to add to, amend, or repeal any rules which are in force, or in case he has drawn up rules under Sec. 6 of Chap. III. add to, amend, or repeal any such rules, and draw up new rules in lieu of them. Provided that any alteration, made by proprietors, be determined at a public meeting duly convened, and by such a majority as is required by Sec. 5 of Chap. III., and subject to the provisions with regard to original rules contained in Chap. III., and that all alterations and all new rules made by the Government Agent shall be transmitted to the Governor for approval or disallowance, and shall, if approved, be published as provided in the preceding Section.

CHAPTER VI.

1. When it shall be necessary to convene a Village Council the G. A. shall give notice in the village where the offender resides or where the act is said to have been committed. The complaint shall be publicly inquired into by the G. A. or some person deputed by him for the purpose assisted by a Village Council. The inquiry must be held in the presence of the offender, unless he wilfully keeps away. If the Village Council finds the offender guilty of a breach of any of the rules, and if the G. A. be of the same opinion, the Village Council shall forthwith award and adjudge that the offender do pay a penalty not exceeding Rs. 30. No sentence, which has not been confirmed by the G. A. shall be carried into effect.

Provided that the deputation to convene Village Councils to try breaches of rules, and also the

deputation to any person to act as President need not be special; a general deputation is sufficient.

2. The Village Council shall consist of not less than three nor more than seven men selected by the President from the proprietors of paddy lands in the district. The G. A. or his deputy shall be President, and shall conduct and keep a record of the proceedings; but he shall not vote on any question, but he shall have a casting vote.

3. The Government Agent or any person authorised by him thereto shall inquire into all alleged breaches of rules, and shall adjudge and award that offenders do pay the penalty prescribed by the Ordinance.

4. The proceedings at such inquiry shall be filed of record in the Kachcheri.

5. The proceedings shall be summary and free from formalities. It shall be the duty of the Council, G. A., or inquirer to do substantial justice between all parties concerned. No advocate, proctor or agent shall be permitted to appear for complainant or defendant.

H. A. J.

MANGROVE BARK.

(Continued.)

Avicennia officinalis is known as the white Mangrove. It belongs to the order Verbenaceæ, of which the genus *avicennia*, comprising some 3 or 4 species of bushes or small trees, frequents the salt marshes on the coast and in the tidal forests of rivers. Ferguson in his "Ceylon Timber Trees" writes of this tree: "Not uncommon on the coast. A preparation made from the ashes of its wood is used by dhobies for washing cotton cloths, and by painters to mix with their colors to make them adhere; the bark is used for tanning &c." The genus is named in honour of Avicenna, an Arab physician, philosopher, mathematician, &c., who lived between 980 and 1037. The barks of various species of *Avicennia* are said to be used in Rio Janeiro for tanning leather.

Bruguiera gymnorrhiza, belonging to Rhizophoraceæ, is a small evergreen tree of shores and tidal creeks. Dr. Watt says of it: "The bark is valuable, and with *Rhizophora mucronata* constitutes the tan known commercially as Mangrove bark. It is a useful astringent used also in dyeing black."

Ceriops Candolleana, known as the Black Mangrove, also belongs to Rhizophoraceæ. It is a small evergreen tree met with on muddy shores and tidal creeks. This and *C. Roxburghiana* are economically not distinguished. The bark is used for tanning, and is described by Dr. Watt as exceedingly valuable for that purpose, imparting a good red colour to leather, and seeming to deserve to be brought prominently to the notice of European tanners. He further states: "They, no doubt, to a small extent, reach England under the name of Mangrove Bark. This, according to Murray, is said to be superior to oak, completing in six weeks an operation which, with the latter, would occupy at least six months. Sole leather, so tanned is also reported to be more durable than any other." It is interesting to note that a decoction of the shoots is used as a substitute for quinine on the African coast. Watt states that the bark of both species of *Ceriops* might be

supplied to any extent and very cheaply from India. The barks also produce a good dye of a brown colour, and they are supposed to strengthen ropes and boatmen's cloths.

SOME INDIAN DYE-STUFFS.

[By J. J. HUMMAL AND A. G. PERKIN.]

[The dye plants mentioned in the following report all belong to the order Rubiaceæ. *Oldenlandia umbellata* or Chay Root is known in Ceylon by the native name of Saya-mul. The root is collected in the Eastern and Northern Provinces, and is in general use among native dyers for colouring cotton cloths. It is also exported to a small extent, we believe. The other dye plants are not, as far as we know, recognised as such in the Island. *Rubia sik-kimensis* is indeed not indigenous to Ceylon, but its close ally *R. cordifolia* (Indian Madder or Munjeet) is our native manda-madini-wel. *Morinda umbellata* (morinda root) is the indigenous kiri-wel or maha-kiri-wel, *M. citrifolia* being known as Ahu.—Ed. A.M.]

The following is a brief abstract of the results of an examination of a few Indian dye-stuffs, made on behalf of the Imperial Institute, and carried out in the Clothworkers' Research Laboratory, Dyeing Department, Yorkshire College, Leeds.

Some of the dye-stuffs here reported upon are among those specially transmitted to the Imperial Institute by the Government of India, as requiring examination.

Chay-root or Indian Madder.—This dye-stuff is the root of *Oldenlandia umbellata*, and is extensively cultivated in Southern India, being largely employed on the Coromandel and Malabar coasts, for the production of fast reds, purples, and blacks.

Its tinctorial properties were long ago favourably reported upon by several authorities in dyeing, but all attempts to introduce it into European commerce were without success.

The chemical principles of the root have never hitherto been properly examined.

The authors' investigation now shows that it contains, as its most important constituent, the same glucoside as occurs in madder root, namely, *ruberythric acid*, besides a very small amount of ready formed *alizarin*, and certain yellow crystalline substances not possessing dyeing power, viz., two *dimethyl ethers of anthra-gallol* C₁₆H₁₂O₄ (A) (melting point 209° C.) (B) (m. p. 225°-227°); a *mono-methyl-ether of alizarin*, C₁₅H₁₀O₄ (m. p. 178°-179°); *meta-hydroxy anthra-quinone* C₁₄H₈O₄ (m. p. 301°-302°); a reddish-orange amorphous powder and a yellow crystalline substance (m. p. 141°-142°) not yet fully examined. Other constituents are: *rudichloric acid*, a wax (C₄₀H₁O)_n (m. p. 87°-88°) and *cane sugar*.

It is interesting to note that purpurin which always accompanies alizarin in the madder root is entirely absent in chay-root.

The tinctorial properties of chay-root are entirely consistent with the results of the chemical examination. Generally speaking, it gives colours similar to those obtained from madder, but owing to the absence of purpurin, they are both purer in tone and faster to soap. Although it appears