NOTES ON ALOE, SISAL, AND RAMIE FIBRES, DYE AND TANNING PRODUCTS, DRUGS, ETC.
NOTES ON
ALOE, SISAL, AND RAMIE FIBRES,
DYE AND TANNING PRODUCTS,
DRUGS, ETC.

COMPILED BY
J. FERGUSON,
Editor, "Tropical Agriculturist," &c.

Colombo:
A. M. & J. FERGUSON.

1901.
CONTENTS.

PREPARATION OF AND TRADE IN ALOE FIBRE IN MAURITIUS 1—2

ALOE FIBRE and its Preparation—By Evenor de Chazal
(Translated by "Károly Fürdö.") ... 2—18

Notes by Albert Daruty ... 18—19

Description of the Machines by Régis de Chazal ... 19—26

ALL ABOUT DYE STUFFS, OILS, TANNING SUBSTANCES, FIBRES,
STARCHES, CAOUTCHOUC, TOBACCO, DRUGS, &c.,
FOUND IN CEYLON (By the late Henry Meade, written some 50 years ago) ... 27

Dye Stuffs ... 27—30

Oils ... 30—34

Tanning Substances ... 34—36

Fibres ... 36—39

Starches: Arrowroot (Maranta Arundinacea) ... 40

Bitter Cassava (Jatropha Manihot) ... 41

Tapioca, Pannan Nillingoes and Yams ... 41—42

Caoutchouc and its Substitutes ... 42

Tobacco ... 42—44

Drugs and Medicinal Substances ... 44—45

RAMIE AND CHINA GRASS:—Extract from a Report by D.
Morris ... 46—47

SISAL HEMP:—Soil, Planting, Culture, Harvesting, and Ex-
traction of Fibre ... 47—50

Machinery and Yield ... 50—51
PREPARATION OF AND TRADE IN ALOE FIBRE IN MAURITIUS.

We are printing on page 2 et seq., a pamphlet published in Mauritius in 1882 and translated for us in that year. Its publication has been delayed in consequence of the very discouraging results of trials with the "Death" machinery to obtain fibre cheaply from the leaves of *Foureyna gigantea*, the very species of aloe which has been so successful in Mauritius. There it seems to spread and grow spontaneously and to be cultivated and prepared on a large scale, the export of aloe fibre from the sugar island having attained extensive dimensions. The plant could be grown to any extent in Ceylon, and the whole question hinges on the use of machines which will do good work and cheaply. Such machines seem to be available in Mauritius. In 1882, it will be observed, M. de Chazal stated that 3 per cent of the weight of leaves in fibre or 1½ ton of fibre per acre would pay him. As tea cultivation seems likely to be overdone, some of our readers may wish to turn their attention to the cultivation of fibre-yielding plants and to the preparation of the fibres. We therefore publish the long delayed translation, and we hope soon to get further information from Mauritius, especially as to the machinery and appliances (chemicals being deemed objectionable) used in extracting the fibre from the leaves. The mode in which manila hemp (*Musa textilis*) is dealt with in the Philippines is thus described by Mr. Wilkinson, British Consul at Manila:

"Two strong uprights are firmly fixed in the ground and connected by a cross bar, in the centre of which a large broad-bladed knife is fixed downwards on a block of wood fastened lengthwise on the bar; the knife has a strong handle, which is connected by a cord to a long bamboo made to act as a spring by being tied in the middle and the butt parallel and above the bar; the free end thus forms a supple and powerful spring and holds the edge of the knife firmly against the block; below the bar there is a treadle attached by a cord to the handle of the knife: the mode of operation is for the worker to stand opposite the knife placing either foot on the treadle, which he depresses, thus forcing the knife handle down and the blade up; he then places a strip of stalk (called locally *sifa*) between the blade and the block leaving only enough to wrap round a stock on the near side; he then releases the treadle and the knife by the action of the bamboo spring, nips the strip firmly against the block, and on the workman drawing the strip through the pulp is left behind. The apparatus is extremely simple and inexpensive."

"In the Bulletin for April 1887 (No. 4) published by the authorities of Kew, there is a great deal of interesting information regarding the Manila hemp. It is there stated that the whole supply comes from the Philippine Islands; the imports to Great Britain amounts to about 170,000 bales and to the United States about 160,000 bales, equal to about 50,000 tons per annum. The Imports to Calcutta are comparatively insignificant being probably less
than 300 tons per annum. It is stated in the Kew report that a labourer working under pressure "can clean nearly 20 lb. of hemp per diem; but, as a rule, the quantity cleaned by one man working steadily day by day averages about 12 lb.; usually two men work together, one cutting down the stems and splitting them, while the other cleans the fibre. At the current rate of wages in 1879 one labourer's earnings were 7½d. to 8d. per diem."

ALOE FIBRE AND ITS PREPARATION.*

BY EVENOR DE CHAZAL.

(Translated by "Károly Fürdö")

PREFACE TO THE SECOND EDITION.

The cordial welcome which this little book has met with at the hands of the public since its first edition, which was brought out at the expense and by the order of the Chamber of Agriculture, the sustained demand of which it has been the object in various directions,—a demand which has led to its exhaustion,—above all, the growing favour which the new industry enjoys, have encouraged me to bring out a second edition.

The only pretention to which this essay has aspired has been to call public attention to a new product, till then little known, but destined, in the opinion of a small number of followers, to march side by side, in the near future, with the great sugar industry in this colony. Its appearance has coincided with the discovery of new appliances, which have given a considerable impulse to the manufacture, because they lower the net cost of the fibres, and also with a rise of the article in the London Market. These two causes united have brought about quite a revolution among us. Important affairs have been seen to take place in a few months; new companies have been formed; large extents of ground have been bought at prices which the former proprietors of land long depreciated no longer hoped to secure; works have been erected; and motion and life have all at once flowed into those vast solitudes of the coast, deserted since the disappearance of the cane.

It has been thought fit to accord to this pamphlet the honour of this transformation.

I will not have the false modesty to think that it has not helped towards it; but I believe that my duty is to make known the true causes of the industrial revolution which has just taken place, and to name the authors of it:—it is those who were not afraid, at the first news of the progress realised, to invest their funds in the new companies,—who, as partisans convinced of the great future reserved for the hardy plant, have not hesitated to devote themselves entirely to it,—and who, sympathizing spectators of the struggles of the early days,

have understood that the moment had come for them to lend their effective co-operation to a work which was to endow the country with an important source of wealth, and have contributed in a large measure in overcoming the last obstacles.

One is, indeed, astonished on ascertaining what immense progress this extraction of aloe fibre, so long despised, has realised in so short a time. To be convinced one has only to cast his eyes over the list of societies formed in these last six months, all of which also are in a flourishing condition, though of recent formation.

The following are the principal in the order of their appearance:

1. **Rouge Terre Hemp Estate Society Limited**, established with a capital of R140,000, and producing about 1,500 lb. per day;
2. **Palmyre Hemp and Sugar Estate Society Limited**, established with a capital of R180,000, and also producing 1,500 lb. of fibre per day, but lime and sugar besides;
3. **Massilia Hemp Society Limited**, established with a capital of R120,000, and producing 20 tons of fibre per month;
4. **Mon Choisy Hemp Company Limited**, established with a capital of R400,000, and producing 30 tons per month;
5. **Vale and Black River Hemp Company Limited**, established with a capital of R450,000, and producing 40 tons of fibre per month;
6. **The Mauritius Hemp Company Limited**, started with a capital of R180,000, and producing 1,500 lb. per day;
7. **La Société de Yemen**, R300,000, and producing fibre and vanilla;
8. **The Albion and Gros Cailloux Sugar and Hemp Company Limited**, established with a capital of R1,500,000.

Beside these joint stock Societies, a great number of private concerns have been set up, of which the principal are:

1. **Vertou**, by M. de Mars, producing from 12 to 15 tons per month;
2. **Palmy**, by M. Bonieux;
3. **P. Toulet at La Montagne Longue**;
4. **D’Uinienville, at Beau Bassin**, one of the promoters of the industry, and long at work;
5. **Vally**, at La Petite Riviere, producing a superior quality;
6. **J. Cauvin, at Les Pailles**;
7. **M. Vigoureux, at Les Bambous**, who not only cultivates vast extents of land covered with magnificent aloes, but is also planting up on a very large scale;
8. **Balaklava**, by Messrs. Samuel Baker & Co., whose machines are put into motion by means of a powerful hydraulic apparatus;
9. **Lastly, St. Antoine**, which combines the latest improvements and will soon begin producing.

All are active; many produce over one ton per day—and some
are already yielding dividends. This is not all. Everywhere planting is going on, and after a lapse of less than five years all that shore where nothing grew beside the "old maid" will be found valuable and entirely covered with aloes.

But it is not in Mauritius alone that the industrial and commercial world has been moved; our neighbours of the sister-isle, prompt to follow us in our advance, have adopted our processes, and have set themselves seriously to work. Less enterprising, less assisted, but as courageous and active as those creoles of Mauritius who were lately dubbed ‘Lotus Eaters,’ and whom people in certain circles persist in considering as attacked by lethargy, they have in their turn, with the help of some of our compatriots, acclimatized in their country our apparatuses, and are to enter upon a severe but happy competition with us.

If we look further afield, we see that in Ceylon they are giving us attention—as witness this letter which I have received by the mail from the editor of the Ceylon Observer at Colombo:—"We should deem it a great favour if you would send us a copy of your work on Aloe Manipulation.—Signed: A. M. & J. Ferguson." It is the same in Australia, the Cape, Natal, America. From all quarters our experiments are followed with interest, and our mode of procedure is sought to be adopted. Aloe fibre has henceforth its distinct place in commercial transactions, and it is to the island of Mauritius that modern civilization will be indebted for this important article, which will always make its way, forcing itself more and more, at first to the brush manufactory, to the makers of ropes, to the navy, and afterwards to the manufacturers of the finest and choicest textures. We have the right then of being proud of the result obtained, and that of hoping in the immense future which is opened out to us.

Every medal, however, has its obverse: and ours lies in the enthusiasm with which the birth of the new industry was received. We must be on our guard against the danger which may result from a hasty and badly-finished manufacture. If it is true that we have ended by winning the first place, it is no less true that we have only reached it by the force of patience and pains. Nowadays, in order to bleach the fibre, some have lost sight of this fundamental warning, incessantly formulated by our buyers in the English market: "No chemical process." They also add, it is true: "The longest, the whitest, and the softest possible," and it is to obtain one of these desiderata that sulphurous acid has sometimes been employed, or chlorine and its derivatives, such as the hypochloride or the chloride of calcium, in order to bleach the fibre. These means are bad, and they cannot but lead to a fall in the price of our manufacture. And the day that we sow distrust in the market we shall have great difficulty in restoring the paying prices that we are now actually realizing.

We must guard then against employing any chemical means which may be of such a nature as to diminish the strength of resist-
ance of our fibres; the greatest attention must also be paid to the packing, and it must be seen to that the fibres are not put into bales till they are perfectly dry, for the least damp causes mould, and consequently the depreciation of the article. We must, in fact, endeavour always to produce a manufacture of the first quality which shall reserve to us a rank which is soon to be hotly disputed, and not forget that the recommendations of the commercial houses which serve us as intermediaries are invariably to make the longest, the whitest, and the softest possible, and to avoid the use of chemical processes.

I have nothing to add to what I have said in this pamphlet on the recent improvements wrought in the apparatuses for extraction. It has not come to my knowledge that these have been sensibly modified in their construction since the day when I drew attention to them. The progress which may have been realised in this regard depends above all on the careful cultivation and the pains taken with the manufacture. Such as they are these machines are sufficient, and they can await the improvements which will not fail to suggest themselves, especially nowadays when so many interests are engaged in agriculture.

I must, however, mention the experiments that have been made in this direction. Several new machines are in the course of construction, and I myself have an interest in two. However, I do not believe the time has yet come to speak of them in detail. It is enough that it be known that we are not asleep, and that we are aware that the statu quo in the matter of commerce is equivalent to an abdication. The law of progress finds its application here as elsewhere. From America there has lately come to us a new machine, which is under trial at this moment. It is as usual a wheel armed with paddles which scrape upon a surface sometimes movable, sometimes fixed and one which does not differ from any others except in very unimportant points.

Finally, I wish it to be clearly understood, that, of what has been done in the way of inventions, our merchants possess that which is the most simple, the least costly, and which calls for the least exertion, while accomplishing the greatest amount of work. It only remains for me to wish them the confidence which commands success, and the perseverance which insures it.

EVENOR DE CHAZAL.

St. Antoine, 30th June 1882.

Mr. President and gentlemen, members of the Chamber of Agriculture,

The attention of the Chamber has been lately, and on several occasions, directed towards a new industry in the development of which I have taken a share large enough to believe myself justified in making it the object of a communication, especially at a time when an important improvement has just been introduced into it: I refer to the extraction of the fibre of aloes.
The proceedings of this Chamber have frequently made mention of the experiments which have been tried in this direction by some of our compatriots, and have many times included letters from the present Director of our Gardens, of whose devotion to our interests you are aware. In fact, during the voyage which he has just made round the world in order to supply our impoverished sugar industry with new species of canes, Mr. Horne has several times given us information regarding the aloe, its future as a commercial plant, and the possibility of extracting the fibre from it economically, by adopting known processes, especially those employed in New Zealand in the manipulation of the Phormium tenax; it was he also, who quite recently put us into communication with Mr. Wilson, a London engineer, to whom you have sent as a delegate our compatriot, Mr. George Mayer. You have been informed of the result of his proceedings. Mr. George Mayer is not a member of this Chamber, but he is interested in the future of aloes, and he is well enough up in the question which engages us to have been able to appreciate the progress realised by the machines which Mr. Wilson is constructing for Mexico, and which have been offered to us. It is apparent from the report sent by Mr. Mayer to the Chamber that these machines are not in any point superior to those that we already possess.

But, gentlemen, while we were seeking on all sides for that perfection so much desired, it has just modestly come to light here, in the very midst of us, realising all our aspirations, and finally established in a durable and definite fashion the industry which for several years has been dragging itself painfully along.

It is needful that I should tell you in detail how this revolution has been accomplished, because you will see in it, as I have done, the source of an increase to the public wealth. I do not pretend to present before you a complete work; my ambition is limited to collecting the scattered materials, to put in order the facts which have come to my knowledge, to fix undefined lines, to bring to your notice, above all, those amongst us who have been the first to enter a track, henceforth widely open to all, which has endowed our country with a new element of prosperity.

I. At the head of these men of energy, whom numerous failures at the outset have not disheartened, and whose perseverance has contributed to the foundation of the industry, my friend, George Bourguignon, naturally presents himself, the oldest surely of all those who have engaged in aloes in Mauritius. Although he has not been directly mixed up in the recent experiments which have resulted in the improvement I have pointed out to you, it can be said that but for him, but for his rare pertinacity, which has ended by triumphing over all obstacles, our country would still be in the gropings of the early days. Bourguignon, however, is not the only one who has occupied himself with aloes: there are others, not less energetic, not less patient than he, although of not such long standing, who have like him inconcei
table rights to the gratitude of prosperity. I will cite simply as they come to my pen, the Valllys, the Ryders, the Lecontes, the Trouchets, the d'Unienvilles. And Cazotet finally, Cazotet, the Lavignac of aloes, the pertinacious seeker whom nothing has discouraged, not even the loss of a little fortune entirely consecrated to the service of his adopted country, a fortune which is on the road to building up anew on those same aloes which have twice ruined him. It is to the painful toil of these courageous men that we are today indebted for seeing our colony endowed with an industry, the rival of sugar, and destined to restore the value of our coast lands, the extent of which amounts to many hundreds of thousands of acres. These seekers had faith in their final success. Behold them rewarded at last. You will not begrudge them the tribute of praise which is their legitimate due.

II. Gentlemen, I would lengthen this essay considerably if I undertook to give you the history of all the machines that have been invented to succeed in extracting the fibre contained in this wild plant. I cannot, however, refrain from mentioning to you that the first thoughts were turned to the mills in use for crushing the canes. Here is what the illustrious Cossigny says on the subject in his remarkable work entitled, "Des moyens d'améliorations proposés aux habitants des Colonies Paris, year XI. This book, which displays an erudition as varied as it is extensive, has now become very scarce.

"The pita aloes afford the negroes, who derive great benefit from them, the material of all the ropes useful for colonial dwellings, where they supply the place of ropes of hemp and flax. This fibre serves to make all that is necessary for harnessing animals of draught and of burden...... The threads of the pita aloes are employed in Manila to make pretty thick stuffs, which are tinted blue, and with which the natives clothe themselves. Once I bought two hundred pieces at the Isle of France, which I distributed to the negroes on my settlement: they made petticoats of them. These stuffs have served me also in making sieves. I am not aware if, at St. Domingo and even at Manila, they soak the leaves of the aloes to separate the threads. This operation does not appear necessary when they are employed to make cordage; but when it is wished to manufacture cloths, the soaking would render the threads more supple and more durable. It is probably to the want of this operation that the fibre owes the stiffness which it always possesses. Then the juice of the leaves could be expressed by causing them to pass between the cylinders of a sugar-mill; then they might be put to soak for some days in stagnant water, which, aided by fermentation, would dissolve the gum which they contain; after which they would be washed in the river. I do not know whether the juice expressed from the leaves, put over the fire to evaporate, would not yield a gum fitted for some purpose. This could be easily proved. I commend these trials to the patriotism of the Colonists.

"In the Isle of France and Bourbon we pay no attention to our pita aloes, which spring up very freely in all sorts of soils, without any