cultivation of the Japan paper mulberry tree in Bengal have hitherto led to so little result. The fibre of this tree is much superior to *bhabar*, and, as I stated in several of my annual reports some years ago, it can be most readily grown in Bengal. There is still a small stock of the tree in the garden ready for issue to any applicant who may be forthcoming.

THE RESOURCES OF BRITISH INDIA.

The man of commerce who vaunteth himself and is puffed up, or who in more modern language thinks he knows a thing or two, can always have a lesson in humility by dipping into the pages of Mr. O'Conor or of Dr. George Watt. He prides himself that he has pretty well scanned the commercial horizon, and that if a fortune was to be made, he would not have missed it. But let him glance at any of Mr. O'Conor's trade reports, and his wisdom is made naught. He learns that so many million railway tickets are absolutely necessary, and that not an inch of the requisite cardboard is manufactured in India; or the swelling importations of umbrellas are put before him with the reminder that there is no reason why they should be imported at all; or he is told to consider matches, and think what a *mine of wealth* their manufacture would open up; and so on. But the lesson is even more fully enforced by Dr. Watt in a little pamphlet he has drawn up in answer to a series of questions put by the Imperial Federation League. It is not quite accurate, we should think, to say that the fibre of the aloe is "not at all utilised," in as much as we have purchased door mats made therefrom* ; but doubtless Dr. Watt is right in insisting that its commercial uses have not been adequately realised. Then there is the *sida* fibre, which has from time to time been urged on the attention of the textile world with comparatively little result. It is gratifying to learn, however, that "interest may be said to have been at last aroused in this most admirable fibre, and large supplies are being accordingly collected for experimental purposes." Of *rhea* the world has heard a good deal, and numerous inventions have been patented: but so far no fortunes have been made, though some have been lost. Of Rajmahal-hemp we confess to have hitherto been ignorant, but according to Dr. Watt it is far superior to *rhea*. "A line made of it broke when dry at 248 lb and when wet at 343 lb. against a similar line of the finest hemp, which broke at 158 lb. and 190 lb." Plainly the *Marsdenia tenacissima* would make an excellent hangman's rope. This opens up one considerable market. But the fibres Dr. Watt mentions, of which the value has not been properly gauged, are too numerous to name separately, and he tells us he could give a similarly long list of dyes, tans, oils, medicines and even edible substances well worthy of cultivation. "It is in fact easy to mention many such examples of possible revenue from useless tracts of country or of wild products, which, if experimentally grown, might in a few years rank among the recognised and valued crops of the country." It is certainly curious that while India has *thus neglected her indigenous plants*, she should have gone to the pains to import so many exotics. Study the present crops of the Indian field and garden, and it is astonishing how many exotics we find, many imported from America in comparatively recent times, and others at an earlier, though still historic date, from other parts of Asia or from Africa and Europe. Dr. Watt actually estimates that "from Calcutta to Lahore 50 per cent of the *prevalent* cultivated and wild vegetation has been imported by India within historic times."

Even more important, however, than his suggestions regarding the exploitation of fresh fields in the plant world, is Dr. Watt's emphatic plea for the necessity of improvement in the quality of existing crops. For years back we ourselves have been hammering away at the case of wheat. It has been proved over and over again that Indian wheat can be cleaned far above the limit of refraction fixed by the exporters, but the latter persist in the fiction that the European buyers want dirty wheat. Thousands of tons of extraneous matter are annually shipped to Europe, the trade is discredited, prices are lowered and the demand is curtailed. The story of the Indian cotton trade as told by Dr. Watt is very similar. The Directors of the East India Company recognised a century ago the great possibilities of the trade, and they spent large sums of money in endeavouring to acclimatise the more highly prized forms of the American plant. This money Dr. Watt thinks would better have been spent in an endeavour to improve indigenous staples. However this may be, New Orleans cotton—a staple of far superior quality to the Indian—was ultimately grown successfully in Dharwar, and very high prices were obtained, especially when the Civil War in the United States broke out. Instead, however, of using the occasion to establish a high standard all round, exporters took to adulteration. An attempt was made to check this by legislation, the Cotton Frauds Act being passed in 1863; but the Act failed to effect its object, and was eventually repealed. The subsequent history of the Indian cotton trade is one of *progressive deterioration*. "The reputation of India for its once famous indigenous cottons had been completely destroyed, and its American crop having fallen into disfavour rapidly degenerated in quality, until at the present day it might almost be described as inferior to many of the indigenous cottons." In the last twenty years the exports have made no progress either in quantity or value; and the attempt to supply the English mills has pratically had to be abandoned, 82 per cent of the exports going to the Continent and only 12 per cent to England. Not only so, but the Indian mills themselves are forced to look for their present and future supplies of superior staples to foreign countries. "It might almost be said," writes Dr. Watt, "that progression is deliberately stultified, the labours of centuries ruthlessly thrown away, and a large and important industry practically cornered or restricted in its possible development by interested parties, who advance the plausible axiom that demand is the controlling power of production." There is not a shadow of doubt that the Indian staples could be improved indefinitely by the careful selection of seed and the cultivation of specially selected plants for the production of seed; but if the trader refuse encouragement, the cultivator cannot be expected to move of his own accord. It is quite certain, however, that until reform takes place in the direction indicated by Dr. Watt, the cotton production of the country must deteriorate in quality and it is not likely to expand in quantity.

Admitting, however, to the full that ther is much room for the cultivation of hitherto neglected products and for the improvement of most important staples, such as wheat, cotton and wool, Dr. Watt's survey of the prospects of Indian agriculture as a whole seems to be somewhat optimistic. He points out that there are at least 100 million acres—probably 120 million acres—of land still awaiting the plough; that 76 million acres, of which 43 are actually cultivated, still await irrigation, though they could be irrigated with advantage; that with the extension of irrigation there has always been a marked increase in the double-cropped area; and he quotes with approval a Resolution of the Agricultural Department, which, in drawing attention to this "vertical" expansion of produce, suggests the possibility of an increase of 50 per cent in the produce of the country independently of the extension of the cultivated area. In this way we are led onwards to the conclusion, that "few countries in the world can be said to possess so brilliant an agricultural prospect, if judged of by intrinsic value and extent of undeveloped resources." This account of the matter, however, has to be considerably qualified before it can be accepted as a safe representation of agricultural India as it is and as it may be. No mention is made of a possible decrease in the fertility of the soil. There are, we are aware, specialists, such as Professor

* While there is a regular trade from Mauritius thout any sign of its being specially profitable—*T.A.*

Wallace, who are confident that the soil of India is not being exhausted, but Professor Wallace's conclusions were not always based on accurate data. For instance he greatly exaggerated the quantity of nitrogen which is given back to the soil in the rainfall, thereby of course magnifying its power of self-recuperation. Dr. Voelcker, on the other hand, a very cautious and competent observer, while hesitating to assert that there is a positive deterioration going on, declares that there is absolutely no evidence satisfactorily to establish the contrary. At the same time Sir W. Hunter in regard to the N.-W. P., Sir Charles Elliott in regard to the Nerbudha Valley, Mr. Robertson (formerly head of the Experimental Farm at Saidapet in Madras) and many others have expressed their opinion that the productive capacity of the soil is declining. Sir Edward Buck, again, in the Resolution which Dr. Watt quotes, remarks with satisfaction on the extension of double-cropping consequent on irrigation but it is far from clear that this extension is always an advantage. "Undoubtedly," writes Dr. Voelcker in his Report, with the introduction of a canal into a district comes also the tendency to force the land to bear more crops than it ought to, unless it be plentifully supplied with manure, which is seldom the case." Finally, though it is true that 100 million acres still await cultivation, it is also true that all the best land has already been taken up. The Famine Commissioners calculated that the culturable waste would on the average produce only one-tenth as much as the area already under cultivation. It follows that if cultivation extends, more labour and capital will be needed to bring back what will after all be a much smaller return. Dr. Watt's rose-coloured view of things might be justified were it clear how the ryot in the years to come is to get the manure without which he cannot put back what is taken from the soil in crops: were it certain that irrigation is always judiciously utilised: and were it possible to get the population to move on before the cultivated tracts are so overcrowded that fallow land has to be taken up and the land deprived of its necessary rest. All these are points which an energetic Agricultural Department *may* take up and settle satisfactorily, but in the meanwhile it is prudent to look on both sides of the shield.—*Pioneer.*

COCOA IN VENEZUELA.

The cocoa pods are carried to out-houses and spread in the shade, where they should be left for eight days in order that they may become mellow. They are then opened with a knife, the beans taken out and placed upon tables exposed to the sun until they become red.

To ferment or sweat the beans they should be placed in a cellar or in boxes and barrels in a cool place for 4 or 5 days, covering them with banana leaves with weights above, but must be stirred and aired every morning and evening, after which they are spread out in the sun and dried until they sound hollow on being stirred, when they are ready to be sacked for the market.

These beans, roasted or boiled for some time, will make and inferior kind of chocolate destitute of any fatty principle, but very agreeable to the taste; this process is resorted to amongst the poorer classes.

The ordinary class of cocoa comes from Rio Chico and Higuerote (Port Carenero) and the better class from Ocumare and Caracas. Prices range from £3 to £3 5s and from £5 to £6 per 100 lb. Much cocoa has been lost owing to the prevailing heavy rains.—*British Consular Report.*

FIVE GOOD POINTS IN A COW.

(From the *Australian Agriculturist.*)

Name some good points of the dairy cow?

If you can find these five points in a cow, she will usually have the power of paying for her board and saving a profit for her owner. We name them in the order of their value: 1. Long, large udder, broad and elastic. 2. Soft, mellow skin, covered with "mossy" silky hair. 3. A large barrel with broad ribs, wide apart, and very firm muscles in the abdomen. 4. Broad loins with long rumps and lean hips. 5. Long neck, clean cut face, and large eyes.

If possible, water should be kept in reach of the cow, also salt. Give as much food three times in the hours—at 6 a.m., 12 p.m. and 6 p.m.—as the cow will eat without waste and properly digest; effect, nutritious and wholesome milk will be produced if the cow is from good stock.

GRAFT, BUD, OR SEED.

The idea that in order to get good varieties of fruit we must bud or graft from existing trees that are known to be such prevails so extensively that no other system of propagation can be said to be in general practice. Yet it is true of the most of our fruits that the best as well as the poorest of the varieties we have originated are seedlings. Not a few fruit growers are suspecting that the practice of budding and grafting has a tendency to degeneration and is at a least a cause equally potent with climatic changes and soil exhaustion for loss of vigor and the want of the power to resist unfavourable influences, in which the fruit trees of the olden time were superior to those of the present. That gratifying or budding on stocks and roots is the only certain method of reproducing exactly the variety we wish to perpetuate is freely admitted, but may it not also be true that the practice should become more general of raising fruit trees from selected seeds? In case of the peach we may fairly expect trees from the best varieties to possess many of the good qualities of the parent stock, and if the vigor, productiveness and freedom from disease of old time orchards can to any considerable extent be regained, it is certainly worth trying for. That we can originate a variety of the apple which will reproduce itself from the seeds with the same uniformity as from its scions is scarcely to be expected. It seems reasonable, however, to believe that by planting young trees from seeds of our best apples, short distances apart in the rows, and leaving them to be tested in future and then cutting out the least desirable, we may secure orchards of excellent fruit and, at the same time, more prolific and longer lived than many of the grafted and budded kinds of the present time.—*Field and Farm.*

TEA CHESTS.

Mr Roberts, lately of Ceylon, showed me the model of an improved wooden Tea Chest he had patented. You know the success the Acmé tea chest has secured; but although these are an admitted great improvement upon the wooden chests of recent patterns, the dealers here—and, more especially, the warehousemen—do not like them, because they are of metal, and, if injured, cannot be patched up as the wooden chest can be. Mr. Roberts believes that his new patent wood chest will meet all the objections urged against those of old pattern. What is more, he tells me he can contract to deliver them in Colombo for two shillings each, as against the three shillings and fourpence charged for the Acme metal chest. The sides of Mr. Roberts boxes are hinged together and fold flat. When extended and the bottom piece placed in the grooves cut in the sides to receive it it shuts squarely and tightly, and the binding hoops also hinged to open out and finally secured in place by a single screw. The lid as at present designed, though Mr. Roberts tells me he is improving upon this. Slides in the grooves in the side, and when in and secured completes a remarkably firm and neat chest. The lead lining is put in while the box is opened out flat and so secures a perfect fit altogether I was much