Their value for herbarium work is undoubted, a fact of which one is continually reminded by the absence of any enumeration for some countries, and the unfortunate incompleteness of most of those which have been set on foot. New Zealand and Australia are well provided for, although the unflagging zeal of Baron Ferdinand von Mueller and his many helpers has already added so much to our knowledge that the "Flora Australiensis" is by no means up to date. Africa, both South and Tropical, is less fortunate, the "Flora Capensis" remaining where it was at the death of Harvey in 1866, and the "Flora of Tropical Africa," although now once more in progress, having come to a standstill in 1877. Thanks to the energy of Sir Joseph Hooker, we are within reasonable distance of the completion of the "Flora of British India"; and the useful "Index Floræ Sinensis," although not a descriptive flora in the sense of those mentioned, is proceeding steadily. But we greatly need floras for the South American continent; and Mr. Hemsley's handsome Botany of the "Biologia Centrali Americana" can hardly be considered exhaustive for the region of which it treats. To take a much more limited area, we have no compendium for Madagascar, and our knowledge of its wonderful flora has to be gleaned from a large number of scattered papers.

The existing floras, however, do not contain in any great degree descriptions drawn from living material; and it is fortunate that the small area to which Dr. Trimen is restricted has enabled him to treat his plants in this rational manner. It is to be regretted that his aims will be to some extent frustrated by the unnecessarily bulky form which his "Handbook" has assumed. The two volumes already issued contain between seven and eight hundred pages, and at least as many more must be occupied by the remainder of the work. The paper employed is much too thick, and by a different arrangement of type considerable saving of space might have been effected, without materially detracting from the appearance of the volumes. It may well be, however, that when the work is completed, Dr. Trimen will issue an abridgement for use in the field, which would occupy to the present handbook the position which Mr. Hayward's "Botanist's Pocket-book" holds with regard to our larger British manuals.

A word must be said in praise of the excellent quarto plates which accompany the "Handbook." They are selected from a series of several thousand drawings, begun in 1823, when Mr. Moon was Director of the Gardens, and preserved in the library. These are entirely the work of three members of one family. Harmanis de Alwis, who has just died at a very advanced age, held the post of draughtsman to the Gardens for thirty-eight years, and was succeeded by his sons, one of whom has held the post for twenty-seven years. Most of the drawings here reproduced are his work.
—*Nature*, Aug. 2. JAMES BRITTEN.

## SISAL CULTURE: OR "THE ROMANCE OF A GOVERNORSHIP."

"Old Colonist" sends the following letter to the Aberdeen *Free Press*; but he seems to forget that a great falling-off in the value of sisal fibre, as in that of all fibres, has taken place of late:—

Sir,—Will you permit me to supplement your interesting article of yesterday on "The Romance of a Governorship" by a few notes on sisal culture?

I have not seen the article in the *Pall Mall Gazette* and would be sorry to spoil a good story, but it strikes me forcibly that the discovery—if discovery it be—is due to Sir Henry Blake, the previous Governor of the Bahamas. Sir Ambrose Shea's "achievement" simply consists in loyally and enthusiastically following up the lines laid down by his predecessor.

Before Sir Henry Blake's time, sisal had only been known in the Bahamas as a troublesome weed. What the Bathurst burr is to the Australian, the ageratum to the Ceylon planter, the sisal plant was to the Bahamian. From time to time vigorous efforts were made to eradicate the nuisance, but without success. The tenacity of the plant was something astounding—

The more you tried to pull it out,
The more it stuck the faster.

The poor islanders gave it up in despair as an irremediable, irremovable pest; and it is not surprising that, when first told of the fortunes that might be made out of the despised weed, the information was received with incredulity.

The best variety of sisal is, however, the agave rigida, var. sisalana, plants of which were imported by Sir Henry Blake and freely distributed in the Bahamas, when the value of the fibre and importance of the industry was soon established. The agave rigida grows wild in several parts of South America. I found it abounding on many of the poor, dry, gravelly slopes of the Peruvian Andes. There is another plant which yields a large quantity of similar fibre—fourcroya gigantea: but the quantity only amounts to 2 or 3 per cent., whereas the agave rigida gives 4 per cent., equal to half a ton of merchantable fibre per acre worth, say, £50 per ton.

As to suitable land, there is any amount of this beyond the limits of the Bahamas. Many millions of acres seem fit for little else, and ought to be had for the asking, in both West and East Indies, Australia, and New Guinea. Any poor, rocky, gravelly soil will answer, and the poorer the soil the better the fibre. Rich, moist land must be avoided, as, though producing abundance of leaf, the fibre is inferior, albeit the sisal plant has the property of enriching rather than impoverishing the soil it grows in, as if intended by Providence to prepare the way for other plants.

The Colonial Governments have indeed, more than enough of this kind of soil to spare in the tropics; and our neighbours in Dundee, with their failing jute industry might do worse than turn their attention to sisal.—I am, etc., A. S.
July 27th 1894.

## STEAM BOILER EXPLOSIONS: THEIR CAUSE AND SOME SUGGESTIONS FOR THEIR PREVENTION.

There still remains in connection with hot-water work a subject which demands more detailed discussion than we have yet given it, for the very numerous and fatal accidents of high-pressure boilers, during severe frosts, seem to me to call for some more light to be thrown on the subject. There is surely need of it when the only suggestion that an expert of many years' experience could give was that people should either not light their kitchen fires during frosty weather, or else not let them out. So much for "experts." Much of the correspondence in the press has also been of a nature to excite panic in the minds of users of hot-water apparatus, and calculated to prejudice people against their use. I will endeavour to show that there is no need for fear, and to prove that, properly fitted up, a domestic hot-water system is as harmless as a domestic tea-kettle, and as little likely to explode. . . . Though I have mentioned safety-valves, it must not be imagined that I consider them a perfect preventive. Far from it. Many of them, faulty in design and make are worse than useless, for they create a feeling of security that is not warranted, and is often rudely dispelled. For instance, a metal seated ground in valve, fixed up in the chimney as many are, will get so firmly corroded in time as to stand more pressure than even the boiler. It will be asked, "In what way can we ensure safety?" In the first place, a large flow and return from boiler to cylinder is essential. A small pipe quickly furs up and quickly freezes. I advise 1¼-inch pipe for this, never less than 1¼-inch. Have the cylinder as near the boiler as convenient. All pipes that are at all exposed to cold or draughts should be wrapped with felt or cased with wood. Keep the expansion pipe inside the roof if possible, as shown. Place a Randell's Patent safety-valve on the crown of the cylinder, and let the tap on the boiler-emptying pipe also be Randell's Patent. No safety-valve is then needed on the boiler. Do not omit the stop tap x 2. If these directions are carried out, all will have been done by the fitter to ensure a good and safe job, and with intelligent and proper management accident is impossible.—From *Cassell's New Technical Educator* for July.