

Department of Agriculture, Bombay.

LEAFLET No. 4 OF 1912.



HINTS ON GRAFTING.



BOMBAY

PRINTED AT THE GOVERNMENT CENTRAL PRESS

1912

Department of Agriculture, Bombay.

LEAFLET No. 4 OF 1912.

HINTS ON GRAFTING.



BOMBAY

PRINTED AT THE GOVERNMENT CENTRAL PRESS

1912

HINTS ON GRAFTING.

GENERAL.

1. Grafting is the art of joining the cut surface of a branch of one tree with a similar surface on the stem of another tree, in conditions which cause the cut surfaces to unite permanently. The branch so joined is called the *Scion* and the stem on which it is grafted is called the *Stock*. The actual joining takes place at a soft region just below the bark. This region is called the *Cambium*.

2. The main uses of grafting are these:—

(a) By grafting we make sure that the tree we thus produce will give the same quality of fruit as that from which we took the scion. One cannot always be certain that trees will “come true” from seed.

(b) Grafted trees as a rule fruit earlier than trees grown from seed.

3. In grafting the following points must be attended to:—

(a) For grafting methods 1, 2 and 3, hereafter described, prepare stocks by putting seeds or cuttings in pots, one to each pot. When the stems of these plants, at one foot from the soil, are at least half-an-inch in diameter then they may be grafted upon. It is no use to graft on thin stocks or on the green parts of stocks. Grafting should always be done on well-ripened wood of at least one year's growth.

(b) The scion also must be of well-ripened wood and of exactly the same diameter as the stock.

(c) Grafting should be done at a time when new growth is just beginning in both scion and stock; that is when buds are beginning to swell and open. Many Indian fruit trees have two or even three such periods every year. The period which occurs during the rainy season is the best one for grafting.

(d) The cut surfaces on stock and scion must be smooth and even, so that the joining is perfect. Figure 1 shows a bad joining, and Figure 2 a good one.

(e) To ensure this the grafting knife must be of the best steel and very sharp.

(f) The cutting of the stock and scion should be immediately followed by the process of joining them together. The cut surfaces must not be allowed to dry up.

(g) After the cut surfaces of stock and scion are placed against each other, tie up the joint tightly with *sopat* (plantain leaf-sheath dried and shredded into long strips and moistened just before use). Then tie tightly above this with twine, and cover the twine with a mixture of equal parts of red earth and cowdung and enough water to make a stiff paste.

(h) The grafted plants should be protected from rain, direct sun, and wind by keeping at first in a shed open at one side and afterwards in a slightly shady place outside. They should be watered daily, enough to keep the soil in the pot wet but not water-logged. Grafted plants in pots thrive best in a hot moist atmosphere.

(i) If insects attempt to lodge in the mud and cowdung covering the joint, wash them out with water to which a little kerosene has been added. Then renew the mud and the cowdung.

(j) Add a little soil and farmyard manure to the pots once in two months.

(k) If shoots appear growing from the *stock* remove these shoots at once close to the stem.

(l) Grafts become established, *i. e.*, the union is complete after six to eight weeks.

SPECIAL.

1. *Grafting by Simple Approach.* (Figures 2 and 3.)

This is the easiest method of grafting and may be used if only unskilled operators are available. The stem of the stock is pared away well down to wood on one side at a convenient height above the pot: in a stem of half an inch thick the paring may be one-sixth of an inch deep. A similar cut is made on the scion. The scion is not cut off the tree till after the union

is complete. The two cut surfaces are joined and tied: see Figure 3. After two months, gradually cut across the scion at A¹ till it is free. Then cut off the stock at B¹. Later trim the plant at A² and B² and tar the cut surfaces.

2. *Tongue Grafting by Approach.* (Figures 4 and 5.)

This is similar to the above except that a tongue is cut in the stock and scion as in Figure 4 and they are joined as in Figure 5. The bark is removed on the outside of each tongue and a flat cut surface made there to fit accurately into the cleft behind the other tongue.

3. *Whip Grafting.* (Figures 6 and 7.)

This is difficult and should be done only by experienced operators. The head is cut off the stock and the end of the stump in the pot then pared down in a slanting way for two inches as in Figure 6. The scion is cut off the tree and its lower end treated similarly. The leaves should be removed from the scion. The cut surfaces are placed together and fixed in the usual way.

4. *Crown Grafting.* (Figures 8, 9, 10 and 11.)

This is a means of grafting on fairly old trees. The head of the tree is cut off about two feet from the ground. The bark of the stump is slit upwards (as in Figure 8) for about four inches, cutting only as deep as the wood and no deeper. The bark at the sides of the slit is eased out by pushing first a thin and then a thick wooden wedge down between the wood and the slit. The scion is cut off the tree and its leaves removed. Its lower end is trimmed on two sides as in Figures 9, 10. It is then inserted behind the slit. Sacking should be used instead of *sopat* and stout cord used. If the tree trunk forming the stock is broad enough more than one scion may be thus inserted.

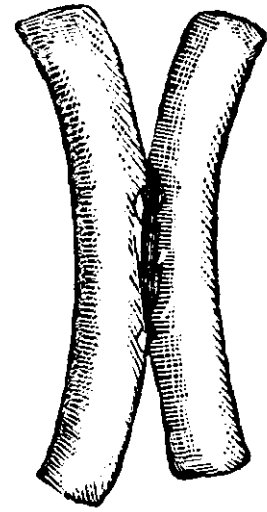
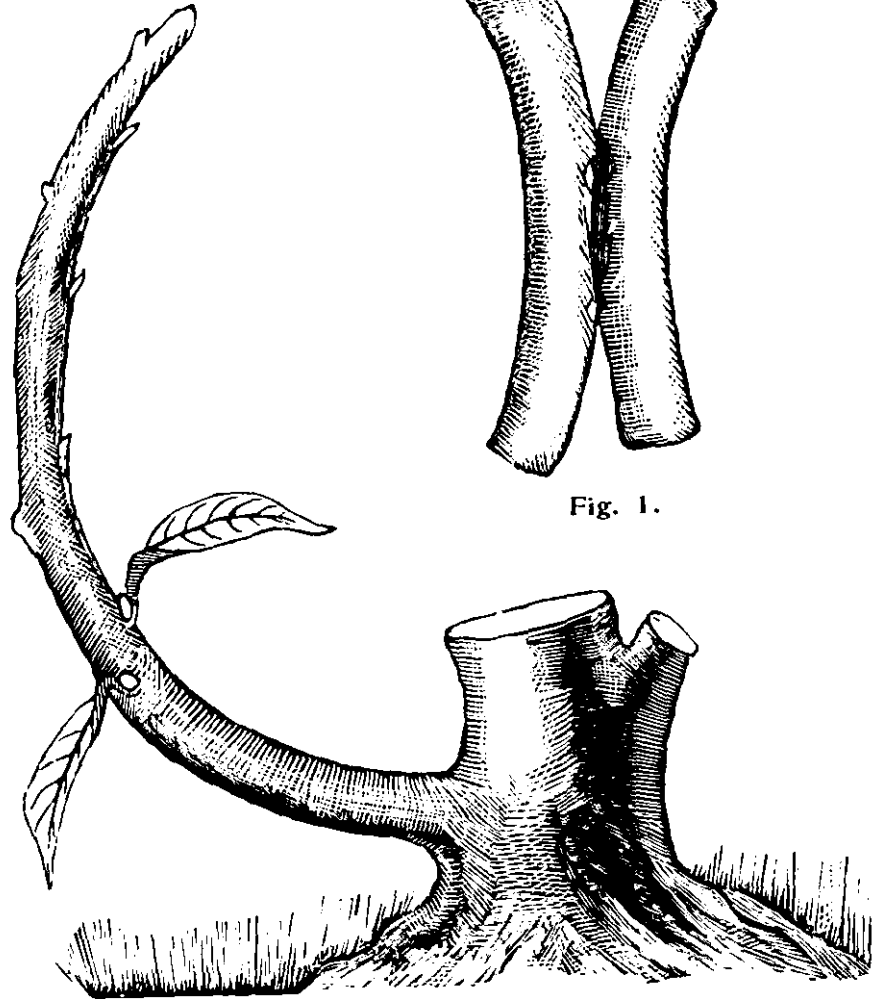
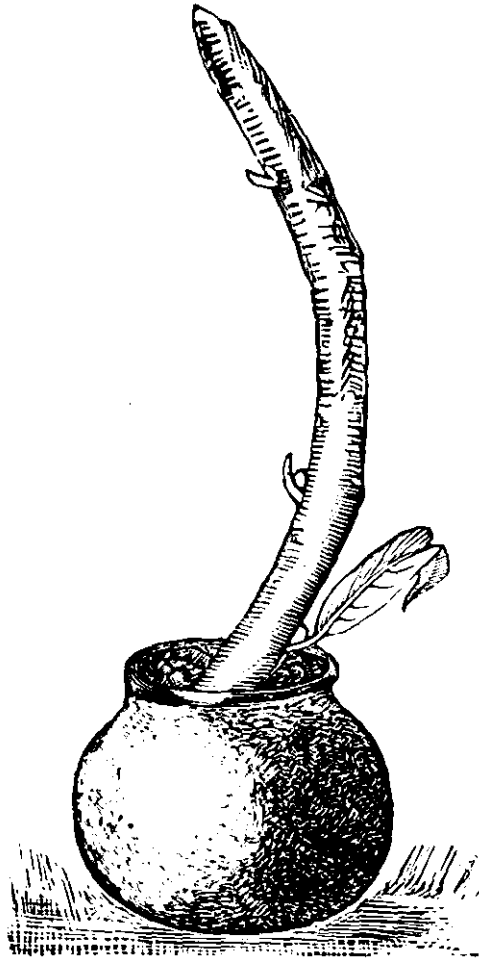


Fig. 1.

Fig. 2.

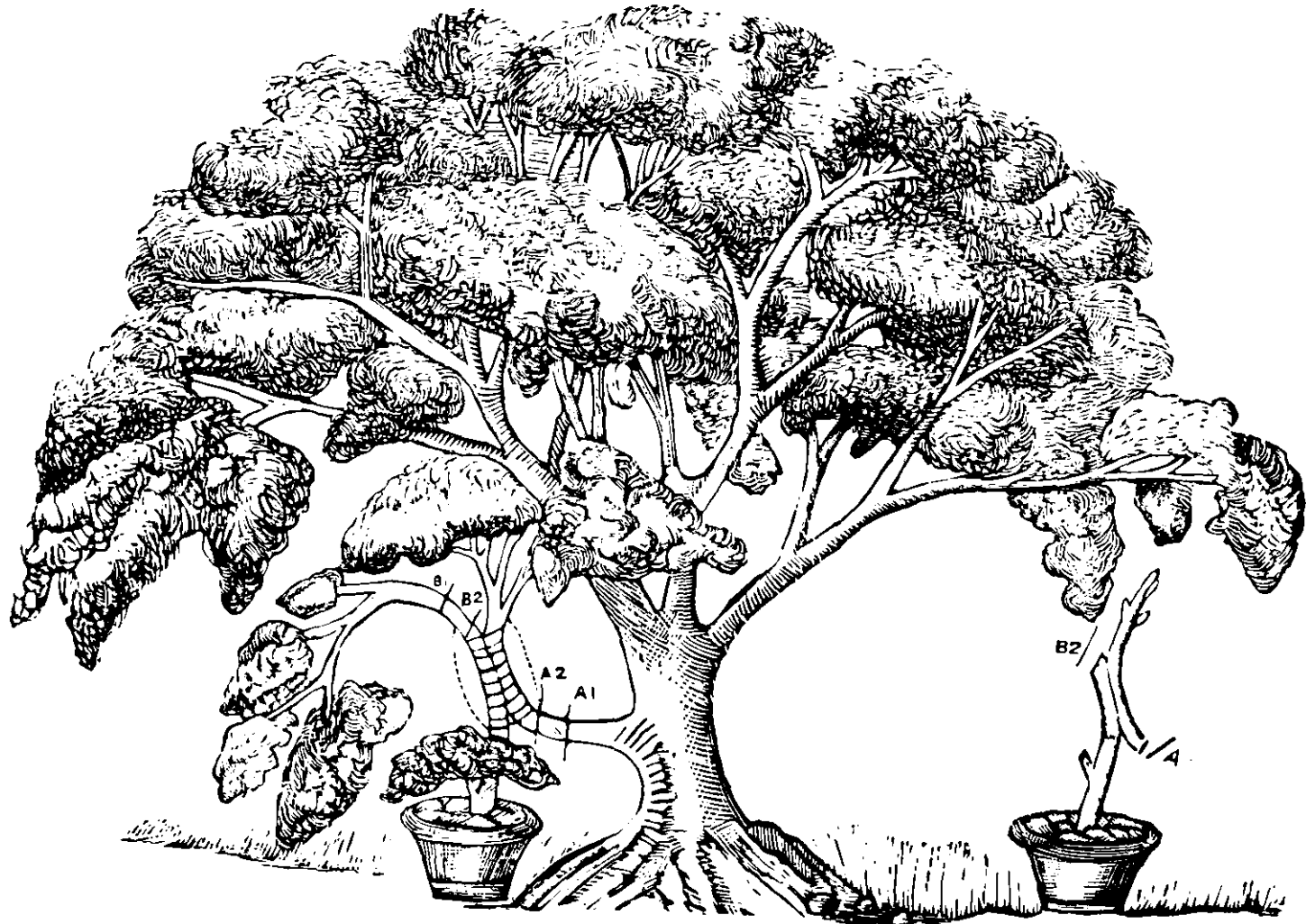


Fig. 3.

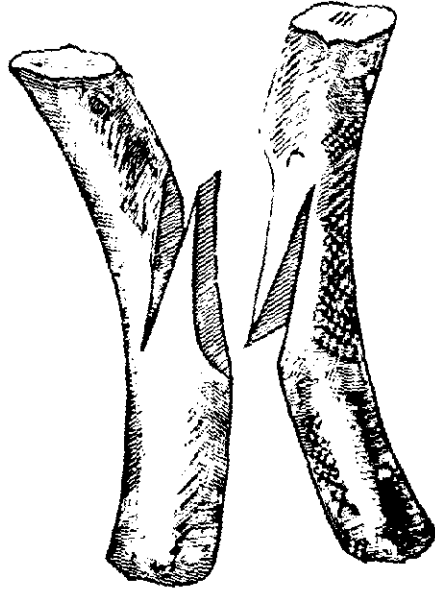


Fig. 4.

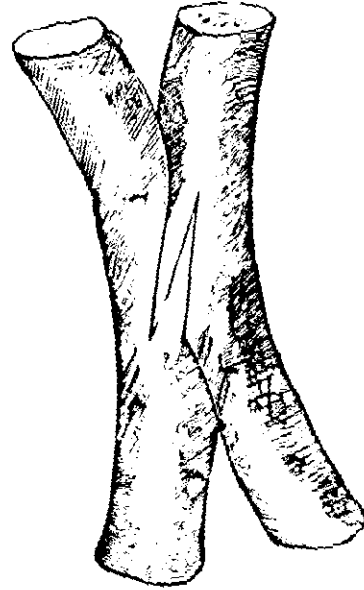


Fig. 5.

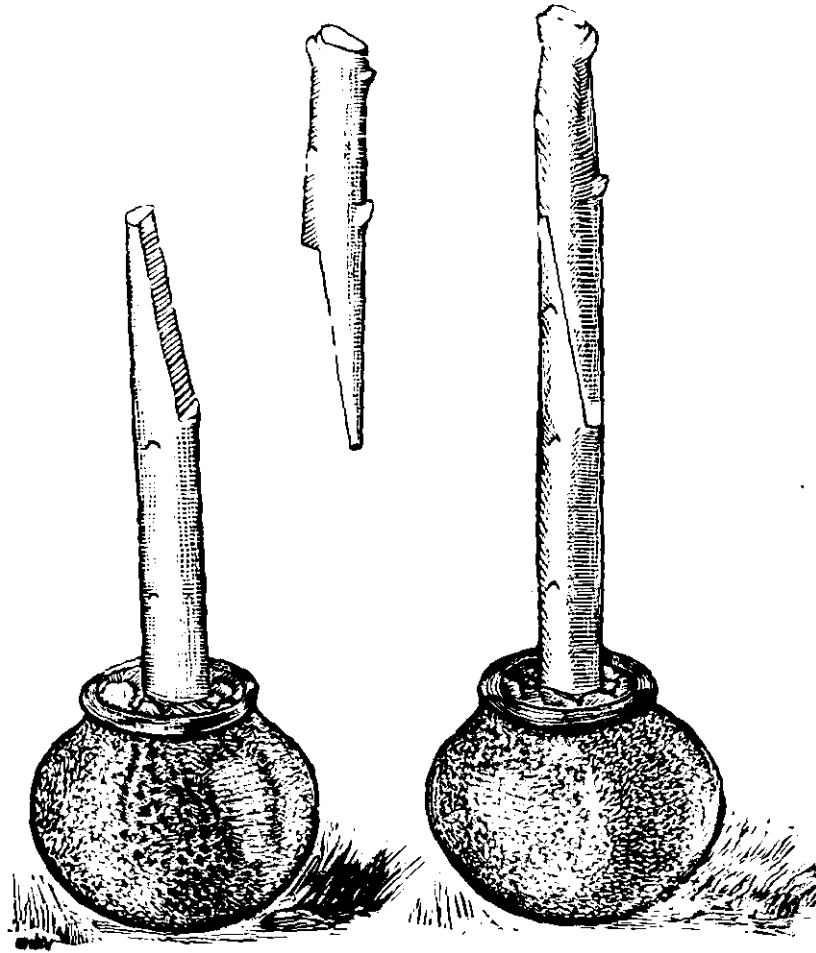


Fig. 6

Fig. 7

Fig. 9. Fig. 10.

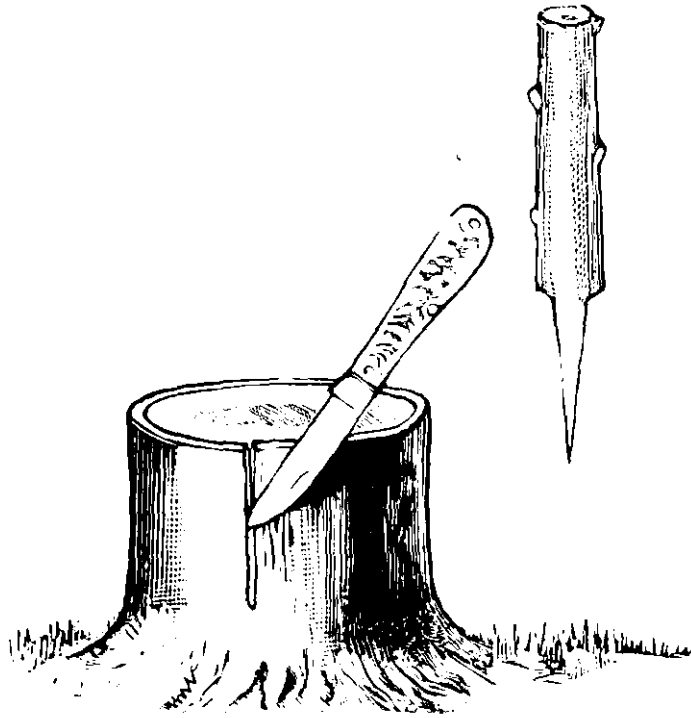


Fig. 8.

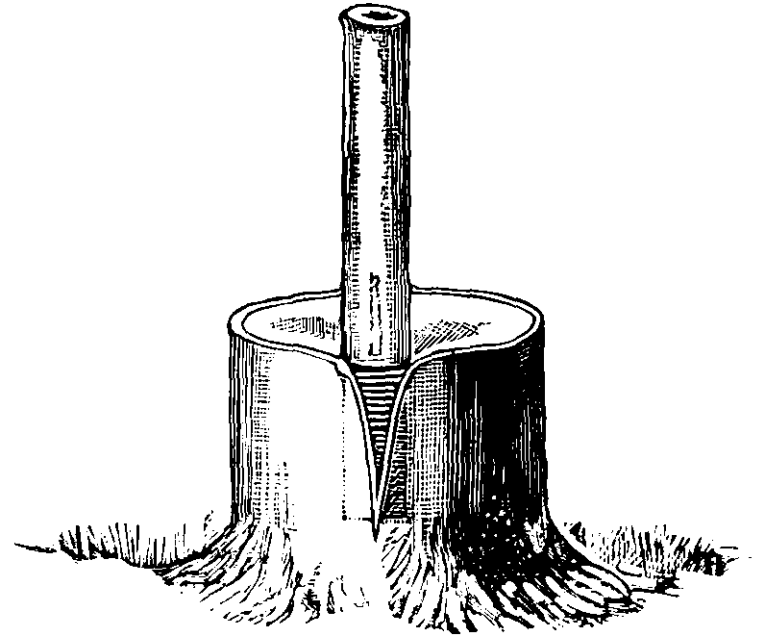
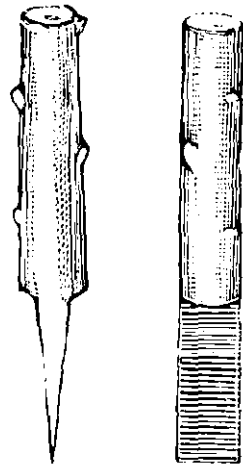


Fig. 11

LIST OF AGRICULTURAL BULLETINS PUBLISHED BY THE DEPARTMENT OF AGRICULTURE FROM 1908 TO 1912.

No.	Year.	Subject.	Price. Rs. a. p.
30	1908	Field, Garden and Orchard Crops of the Bombay Presidency, by G. A. Gammie, Economic Botanist, Bombay	0 12 0
31	1908	Establishment and Management of the Dairy Farm, by G. K. Kelkar, Assistant Professor of Agriculture	0 3 0
32	1908	Locusts in India, by H. M. Lefroy, Imperial Entomologist, Pusa	0 8 0
33	1909	Cultivation of Broach Cotton in Dhárwár, by M. L. Kulkarni, Divisional Inspector of Agriculture, S. D.	0 4 0
34	1909	Night-soil—A Valuable Manure, by G. K. Kelkar, Assistant Professor of Agriculture, Agricultural College, Poona	0 4 0
35	1909	Kalar in Sind, by G. S. Henderson, Deputy Director of Agriculture, Sind	0 4 0
36	1910	First Experiments in the Treatment of Grape-vine Mildew in the Bombay Presidency, by W. Burns, Economic Botanist	0 14 0
37	1910	An Examination of the Seed-supply of the Broach District, by G. D. Mehta.	0 4 0
38	1910	Experiments with the Water-Finder, by H. K. Mehta, Assistant Professor of Physics, etc., Poona Agricultural College	0 5 0
39	1910	The Salt Land of the Nira Valley, by Harold H. Mann, Principal, Agricultural College, Poona, and V. A. Tamhane, Laboratory Assistant, Agricultural College, Poona	0 5 0
40	1911	Cultivation of Guavas near Poona, Dhárwár and Limbgaon, by L. B. Kulkarni, L.Ag., Agricultural Department, Bombay	0 12 0
41	1911	Groundnuts in the Bombay Decan, by G. K. Kelkar, Assistant Professor of Agriculture, Poona	0 4 0
42	1911	Note on Long-stapled Cotton in Sind, by G. S. Henderson, N.D.A., N.D.D., Deputy Director of Agriculture, Sind	0 3 0
43	1911	An Examination of the Seed-supply of the Broach District, Part II, by G. D. Mehta, L.Ag. (Bombay), B.A. (Camb.), N.D.A., N.D.D.	0 5 0
44	1911	Preliminary Study of the Red Rot of Sugarcane in the Bombay Presidency, by G. S. Kulkarni, L.Ag., Assistant Mycologist	0 8 0
45	1911	Second Year's Experiments in the Treatment of Grape-vine Mildew in the Bombay Presidency, by William Burns, B.Sc. (Edin.), Economic Botanist to the Government of Bombay	0 14 0
46	1911	Seed Selection Series, I. Broach Cotton, by T. Forster Main, B.Sc., Deputy Director of Agriculture, Bombay Presidency, Poona	0 8 0
47	1911	San Hemp (<i>Crotolaria Juncea</i>), Táq (Maráthi), by P. C. Patil, L.Ag., Divisional Inspector of Agriculture, C. D.	0 4 0
48	1911	Poona Furnace (in the Satara District), by P. C. Patil, L.Ag., Divisional Inspector of Agriculture, C. D.	0 7 0
49	1911	An Examination of the Seed-supply of the Ahmednagar District, Part I, by G. D. Mehta, L.Ag. (Bombay), B.A. (Camb.)	0 5 0
50	1912	An Examination of the Seed-supply of the Ahmednagar District, Part II, by G. D. Mehta, L.Ag. (Bombay), B.A. (Camb.)	0 3 0
51	1912	Third Year's Experiments in the Treatment of Grape-vine Mildew in the Bombay Presidency, by W. Burns, B.Sc. (Edin.), Economic Botanist to the Government of Bombay, and G. B. Patwardhan, B.Sc. (Bombay), Assistant Economic Botanist	0 3 0
52	1912	Muscovado Sugar Machinery and its scope for <i>Gul</i> manufacture in India, by G. N. Sahasrabuddhe, L.Ag.	0 8 0