M.R.O. 14-5,450—22-10-25.

MADRAS RECORD OFFICE.

Government of Madras.

Revenue **DEPARTMENT.**

G.O. No. 1570 Press / Mis.

Dated 26-6- 1866.

Not to be folded or roughly handled

Proceedings of the Madras Government, Revenue Department, 26th June 1866.

No. 565. Read the following letter from the Superintendent Government Chinchona Plantations, to the Acting Secretary to Government, Revenue Department, Fort Saint George, dated Ootacamund, 22nd June 1866, No. 25 A :—

1. With reference to the Order of Government, under date the 16th June 1866, No. 1,474, I have the honor to forward herewith three parcels containing 120,000 seeds of Chinchona Succirubra, 90,000 seeds of C. Calisaya, and 25,000 seeds of C. Officinalis, for transmission to the Right Honorable the Secretary of State for India.

2. Only one Edition of my Manual on Chinchona cultivation has been published, and of this not a single copy is now in my possession, and a further Edition is much needed, which, with the approval of Government, I will at once prepare. In the meantime, I beg to enclose a short paper on the germination and growth of seeds of the Medicinal Chinchonas, which, should the Government approve, I would respectfully solicit the favor of fifty copies being printed and furnished to me for distribution with the seeds we are at present issuing to the public.

No. 566. ORDER THEREON, 26th June 1866, No. 1,570.

Miscellaneous.

1. Ordered that the seeds be forwarded to the Right Honorable the Secretary of State for India, with reference to his Despatch, dated 9th May 1866, No. 17.

2. One hundred and fifty copies of the Memorandum will be printed, of which twenty copies will be sent to the Secretary of State, twenty copies to the Government of Batavia, twenty copies to the Government of Mauritius, fifty copies to Mr. McIvor, as requested, and twenty copies to Dr. Cleghorn. The remainder will be retained in store.

3. Mr. McIvor will prepare a new Edition of the Manual for the Press, as proposed by him, and forward the M.S. to the Government Office when ready.

(True Extract.)

(Signed) W. HUDLESTON,
Acting Secretary to Government.

To the Superintendent Government Chinchona Plantations, Ootacamund.

Ref. S. T. Augusta.

OBSERVATIONS ON THE GERMINATION AND GROWTH OF SEEDS OF THE MEDICINAL CHINCHONAS.

1. The conditions required to produce germination in all seeds are moisture, heat, and air. Moisture must be supplied, but not in an unlimited quantity, or the seeds will rot, as is the case with seeds when sown in too damp a soil, because the power of respiration in the seed is impeded by the excess of water, and it is unable to decompose the quantity of water it absorbs, which collects in the seed and becomes putrid. There must, therefore, be some water, but not too much; and it is generally considered that a mixture of sand and loam is the best soil in which to raise seeds, because the sand keeps the loam from adhering together when watered, and this allows the excess of water to pass through (or drain off), while the loam, by the force of attraction, retains as much water among the cavities of the soil as is required for the purposes of germination; clay or clay-loam retains too much moisture, and seeds sown in such soils are sure to rot. The quantity of moisture must not be too great, and it must be uniform also, that is, the seed-beds must not be soaked with water one day and the next allowed to become dry, because the changes the seeds undergo in germination must take place without interruption, or the seeds will die. To preserve uniformity in this respect, great care is required, especially with Chinchona seeds, as these must be grown either in a glass-house or under thatched (pandalls hurdles, placed in a sloping direction over the seed-beds, so as to throw off the rain, the beds being of course open on the sheltered side so as to admit abundance of light and air.

2. Chinchona seeds are exceedingly small and light, being smaller and more oval than the seed of the common birch, and, like it, consists merely of a wing with a minute embryo in the centre. When the seeds are fresh they should be steeped for twelve hours in water, prior to being sown, but when the seeds have been kept some time, or received from a great distance, they should be steeped for about six hours only, for although the steeping in water facilitates germination, it is, nevertheless, liable to injure old seeds, which may be sown without steeping. The most convenient way to steep the seeds is to place them loosely in a bag, and immerge the bag, together with the seeds, into a pail of water. When the seeds have been soaked the prescribed time, the bag is raised out of the pail, and the water allowed to drain off; the seeds are now turned out of the bag, and will be found to have swollen considerably, and in order to separate them, they are mixed with about twice their own bulk of dry sand, this absorbs the extra moisture around the seeds, and on being stirred up gently they separate freely, and become intermixed with the sand, in this condition they are sown on the surface of pots filled with soil, (prepared as hereafter described,) and lightly covered over with a mere sprinkling of fine sand, after sowing, the surface of the pots are slightly watered with the syringe, this watering being repeated in dry weather four or five times a day, in order to support a uniform moisture.

3. The soil we have used with most advantage in the rearing of Chinchona seeds, is composed of leaf mould, or the earth produced by rotton leaves, sifted and mixed with four times its own volume of sand. The leaf mould was, in the first instance, exposed to the sun for two or three days, and thoroughly dried; it was then heated to about 212° Fah., in order to destroy all grubs or larva of insects: after being allowed to cool, it was brought into the potting shed and watered sufficiently to make it moist, but only to that degree of moisture that the particles of soil would not adhere together when pressed firmly with the hand, that is, the earth on being laid down was sufficiently dry to break and fall into its usual form. The leaf mould and sand in this state of moisture were mixed together, and the pots filled, the surface lightly pressed down, and the seeds sown thereon being covered with a sprinkling of sand as above described. The pots were then plunged into beds of moist sand, and just sufficient water being given to damp the surface, but never to penetrate or consolidate the soil; under this treatment the seeds began to germinate very strongly on the 16th day after sowing, continuing to germinate for about two months; one ounce of clean seeds producing on an average from 20,000 to 25,000 plants. The principal art appears to be to keep the soil

in an uniform state of moisture, but never wet. The least excess of moisture causes the seeds to mould and damp off in thousands, while as a matter of course, if kept too dry, they become parched up. As soon as the seeds germinate, they are carefully pricked out into pots filled with fresh earth (prepared as above); this operation is a very delicate one, the seedlings being carefully raised with a small pointed stick out of the original seed-pot, is removed to the new pot, and planted in the soil, while the seed lobes are kept well above the surface. In this way from one to two hundred seedlings are transplanted into a nine-inch pot, and then treated in every respect the same as the seeds, that is, they are never watered heavily, the surface being merely sprinkled and the pots plunged in beds of damp sand, as before stated, to keep the soil in that medium state of moisture in which it was when first placed in the pots. The seedling pots should be exposed to free currents of air especially in moist weather. The necessity for this care is to prevent the seedlings from damping off, to which they are very liable when treated otherwise; it also greatly facilitates their growth, and the formation of roots, the earth in which they are placed being so perfectly open that it is readily affected by the action of the atmosphere, and thus kept in the most favorable condition for promoting vegetation. When treated in this way, our seedlings have made an average growth in one year of over thirty inches, while many of our seedlings which were raised and grown on a retentive soil have not attained the height of three inches in the same period. Chinchona seeds germinate best at a temperature varying from 65° to 75° Fah., they will also germinate, though slowly, at a temparature of 55° Fah., and will sustain without injury a temperature of 80° Fah., the seedlings produced at a higher temperature than this are weak and more or less unhealthy.

(Signed) W. G. McIVOR,
Supt. Govt. Chinchona Plantations.

OOTACAMUND,
22*nd June* 1866.

N1570 3c

29 June 1866.

9 May 1866 N° 17.

Rec. 18th June /66 pp 370 & 371

Returned to England
by 26th June No 30 of 1866 Mis:

Pay = 1866 Oct 8th
Prod of Govt for June
Nr. 1810.

From, The Supt. Govt C. Plantns
Calicammud.

To, The Secretary to Govt
Revenue Dept.
Fort St George

No 25
Dated 22nd June 1866
Recd. 25th
June

Forwards 3 parcels containing
Chinchona seeds for transmission
to the Right Honble the Secretary
of State for India

Encloses a short paper on the
germination & growth of
Chinchona seeds for the approval
of Govt; solicits that 50 copies
be printed for distribution
with seeds to the public.

No 1570 — 26th June

No: 565-566.

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