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An Easy Method of Colour Preservation in Plant Specimens for Museums and Herbaria

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Introduction: The preservation of colour of the botanica, specimens has been a serious problem for those working in Herbarial botanical gardens, museums and in fact, all those interested in plants and their preservation. In the usual method of pressing plant specimens between drying sheets and mounting the dried specimens, the natural colour of the flowers and the leaves fade away in a very short time, and later on turn to brown or dark brown colour except in a few cases like *Helichrysm bracteatum*, Andr., *Limonium sinuata* and *Angalis* spp. If only the natural colour of the plant parts, especially of the flower, could be preserved in the dried specimens, it will be great help to the students of taxonomy and curators of Herbaria and museums.

Andrino and Tabije (1934) have suggested a number of chemical methods for natural colour preservation in plant materials as wet specimens for exhibition purposes. These authors have also referred to some useful and interesting methods adopted by other workers on the subject. In 1887, Schonland reported on the preservation of colours in dried specimens. These chemical methods are not only costly but are not sure and easy ones to be followed when the material to be dealt with are large and many. A simple and a very successful method as arrived at from trials here is dealt with in this note.

Method adopted – Sand treatment: The plant specimens as collected fresh for preservation, are dried in layers of sand instead of pressing them in between drying sheets. Fine sand is obtained after seiving out bigger particles. A layer of 2 inches thick sand is spread in shallow rectangular iron or wooden trays of 5 to 6 inches height. The specimens are spread over this layer of sand and covered with further addition of sand to about 1½ to 2 inches. These trays are kept in the shade. For most of the flowers and leaves 4 to 6 days will be sufficient for this method of drying. The sands absorbs moisture from the specimens and they become quite well dried and fit for mounting. The original colour of the leaves and flowers are preserved in the sand-dried specimens

Trials conducted and Observations: Trials were conducted both at the Herbarium and Botanic Gardens, Coimbatore. Flowers and leaves of ornamental plants in different colours were selected for the purpose and given the following treatments. (i) Drying by sand treatment done under open sunlight. (ii) Drying by sand treatment done under shade. (iii) Drying by sand treatment under shade and poisoning the dried material with saturated solution of corrosive sublimate (Mercury

bichloride) in rectified spirit. (iv) Control – dried by pressing in between drying sheets.

The colour of the material before and after the treatment were judged with the colour standards of Ridgway (1942). The results of the trials are tabulated under Table I.

It is seen from the table that out of the 25 materials tried, there was retention of colour in all except *Hibiscus rosa – sinensis* and the red variety of *cannandica* under drying sand treatment. There was fading of the colour. Between the sand treatment under open sunlight and under shade, there was no difference in colour; but the drying of the specimens which was quicker under open sunlight, made the specimens brittle and too difficult for handling.

Some points to be noted: Most of the thin leaves and flowers dry up easily while the succulents do not yield easily under the treatment. For succulent leaves and fruits the changing of the layers of sand has to be done often; however the results were not quite satisfactory. For normal leaves and flowers there is no necessity to give change of sand at frequent intervals. The specimens of the leaves and flowers dried by the sand treatment should not be allowed to become too dry as there will be the difficulty of mounting them as the material becomes very brittle. This is overcome by mounting the fresh specimens to the mounting boards by stitching at a number of points and then keeping the specimens with the mounting board inside the sand. After 4 – 6 days the sand can be removed and the mounting board brushed to remove any dust and sand particles sticking on. Specimens prepared in the above manner are suited best for keeping in show cases in Herbaria or for putting with glass frames for exhibution purposes. Soaking of the dried specimens in the poisoning fluid also results in the fading of the colour. As such either fumigation of the specimens or dusting with napthalene powder are the methods by which insect or fungus attack can be warded off.

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TABLE.

No.	Plants under trial	Family	Original colour	Observations under Treatment: Sand treatment under open sun	Sand treatment under shade	Sand treatment poisoning	Control Pressed in between the drying sheets
Flowers :							
1	Canna indica, L. ..	Cannaceae	(a) Spectrum red	Not retained	Not retained	Deep levid brown	Brown
2	,, ,, (2 varieties) ..	,,	(b) Wax yellow with flame scarlet dots	Retained	Retained	Napthalene yellow with snuff brown dots	Napthalene yellow with snuff brown dots
3	Hibiscus rosa-sinensis, L. ..	Malvaceae	(a) Rose red	Carmine	Carmine	(Deep purplish Vinaceous)	(Deep purplish (Vinsceous)
4	,, ,, (2 varieties) ..	,,	(b) Spectrum red	,,	,,	Deep Heileboro red	Bordeaux mixed with white
5	Althaea rosea, Hohen ..	,,	(a) Amaranth purple	Retained	Retained	White	White
6	,, ,, (Holyhock) (2 varieties) ..	,,	(b) Spinel piak	,,	,,	White	,,
7	Bougainvillaea spectabilis, Willd..	Nyctaginaceae	(a) Carrot red	,,	,,	Whitish red	,,
8	,, ,, ..	,,	(b) Phlox purple	,,	,,	White patches	,,
9	,, ,, 3 varieties ..	,,	(c) Malla purple	,,	,,	,,	,,
10	Helianthus annuus, L. ..	Compositae	Light Cadmium	,,	,,	Light Cadmium	Light cadmium
11	Tayetus patula (Sun flower) ..	,,	(a) Orange	,,	,,	Orange	Orange
12	,, (Margold) French (2 varieties) ..	,,	(b) Light cadmium	,,	,,	Light cadmium	Light cadmium
13	Gaillardia picta, Sweet ..	,,	Amaranth purple	,,	,,	Garnet brown	Garnet brown
14	Chrysanthemum coronarium, Linn. ..	,,	White	,,	,,	Light brown	Light brown

TABLE—*(Contd.)*

No.	Plants under trial	Family	Original colour	Observations under Treatment: Sand treatment under open sun	Sand treatment under shade	Sand treatment poisoning	Control Pressed in between the drying sheets
15	C. Carinatum. Schousb. ..	Compositae	Yellow	Retained	Retained	Yellow	Yellow
16	Cosmos sulphureus, Cav. ..	,,	Cadmium orange	,,	,,	Cadmium Orange	Cadmium Orange
17	Solidago nemoralis, Am. Golden rod ..	,,	Lemon yellow	,,	,,	Lemon Yellow	Pale whitish yellow
18	Amaranthus tricolor, L. ..	Amarantaceae	Amaranth purple	,,	,,	Not retained	Not retained
19	Antigonon leptopus, Hk. & A.	Antignaceae	Rose colour	,,	,,	Brown	Brown
20	Verbena borariensis, L. ..	Verbinaceae	Violet purple	,,	,,	Violet purple	Violet purple
21	Petunia, (single) Juss. ..	Solanaceae	Light mallow purple	,,	,,	Light mallow purple	White
Leaves :							
22	Coleus rehneltianus, Hp. ..	Labiatae	Carbon brown coloured leaf with light elm green margin	,,	,,	Light elm green	Light elm green
23	Iresine celosiodes, L. ..	Amarantaceae	Dark maroon purple leaf with rosolane purple coloured along thoy	,,	,,	Retained	Dark cress green colour
24	Poinsettia pulcherinma, R. ..	Euphorbiaceae	Carmine	,,	,,	,,	Dark purplish vinaceous
25	Manihot utilissima, Pohl. (Ornamental) ..	,,	Dark cress green with green deep sea-foam patch	,,	,,	,,	Rinnsmann's green with light buff patches