THE CORRECT IDENTITY OF 'COCKSCOMB'

Grant (1954) reported the chromosome numbers of the 'Cockscomb' (*Celosia argentea* L. var. *cristata* Kuntze) and of the 'Quail grass' (*C. argentea* L.), as n=18 and n=36, respectively and proposed that 'Cockscomb' should not be treated as a variety of *C. argentea* L. A perusal of taxonomic literature reveals that 'Cockscomb' has been treated as a variety under *C. argentea* L. by many authors (Cook, 1908; Thisleton-Dyer, 1913; Haines, 1924; Bailey, 1947 and others). While this species is found only under cultivation and sometimes as an escape near the cultivated fields, the 'Quail grass' is a pantropic weed, distributed over a wide geographical range producing slightly variable forms.

With a view to find out the inter-relationships between these two types of plants, seeds were collected locally and were sown in pots/beds during 1972 and 1973, in the Experimental Garden, Botanical Survey of India, Allahabad. Further attempts were made to obtain spontaneous hybrids by growing them side by side. Studies were also undertaken to note the percentage of seed germination and pollen sterility, nature of seed setting and the behaviour of the meiotic chromosomes.

Observations revealed a high rate of germination both in 'Cockscomb' (74-78%) and in 'Quail grass' (80-83%). No spontaneous hybrids could be obtained although an appreciable number of plants were grown close to each others for two consecutive years. For getting good meiotic metaphase plates, the best time was found to be during the afternoon (12-30 to 3-30) in the months of November-December at Allahabad. Among the various pre-treatments tried, flower buds kept in an aqueous solution of aesculin in cold (8-10° C) for an hour gave the best scattering of chromosomes in both these groups. In 'Cockscomb' and in 'Quail grass' 18 and 36 bivalents, respectively, were observed with normal meiosis without any multivalent formation. The number of abortive pollens was very low in both case. A high order of seed setting was observed in 'Quail grass' but a lesser number of seeds per flower was formed in Cockscomb. This might be explained by the development of monstreal fasciation in the latter taxon.

The present observations of n=18 and n=36 in the above mentioned two taxa confirm the earlier chromosomal reports on American biotypes. Khiara and Hishimato (1938) induced tetraploidy in 'Cockscomb' and reported a variable number of quadrivalents and reduced fertility. Since in *C. argentea* L. no quadrivalents could be seen and fairly high range of fertility was observed, it would be inferred that this species had not originated through autopolyploidy unless the homology of chromosomes might be presumed to have been lost due to long passage of time since its origin. On the other hand, occurrence of bivalent associations in this species may lead one to attribute allotetraploid origin by interbreeding of two diploid taxa yet to be discovered unless already extinct. Further, Wakakuwa (1931) and Grant (1954) obtained almost sterile hybrids by crossing the 'Cockscomb' and the 'Quail grass'. It may be added that plants possessing higher chromosome numbers are generally considered to be derived from those with lower numbers and as such the prevalent idea that the 'Cockscomb' (n=18) might have been derived from *C. argentea* L. (n=36) is not supported.

From the above observations, it is clear that since there is no close affinity between these two taxa, the Cockscomb can not be treated as a variety of *C. argentea* L. and that Linnaeus's (1753) original treatment of

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C. cristata L. as distinct species, be maintained.

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REFERENCES

Bailey, L. H. The Standard Cyclopedia of Horticulture 1 : 355-356. 1947. Macmillan & Co., New York.

Cooke, T. Flora of Bombay 2 : 570-71. 1908. (Rep. ed. 1958), Calcutta.

Grant, W. F. A cytological study of *Celosia argentea* and *C. argentea* var. *cristata* and their hybrids. *Bot. Gaz.* 115 : 323-336. 1954.

Haines, H. H. The Botany of Bihar and Orissa 3. 1924. (Rep. ed. 1961), Calcutta.

Kihara, H. and E. Hishimoto. Erzeugung polyploider Individuen durch Colchicin bei *Celosia cristata*. *Agr. & Hort.*, 13 : 2623-28. 1938.

Kuntze, O. *Revisio Generum Plantarum*, 541. 1891.

Linnaeus, C. *Species, Plantarum* 1 : 205. 1753.

Thisleton-dyer, W. T. Flora of Trop. Africa 6 : 18. 1913.

Wakakuwa, S. H. A karyological study on the triploid hybrid of the genus *Celosia*. *Jap. J. Genet.* 7 : 17-23. 1931.

EFFECT OF LOW TEMPERATURES ON THE SEED GERMINATION OF AN EXOTIC TEMPERATE SPECIES OF THE GENUS *HIBISCUS* L. AND ITS INTRODUCTION AT THE INDIAN BOTANIC GARDEN

The present note deals with the introduction and culture of an exotic temperate species *viz.*, *Hibiscus lasiocarpus* Cav. in the Indian Botanic Garden, Botanical Survey of India, Howrah. Seeds of this species were obtained through the kind courtesy of the Museum National D'Histoire Naturelle, Paris, France, during March, 1975, in connection with our Seed Exchange programme with this esteemed institution.

Germination studies were conducted by keeping 20 seeds for each set of experiment. Seeds were sown in beds containing well-decayed farm-yeard manure, loose earth and sand 1 : 1 : 1 proportion on 12-11-75, 18.12.75 and 6.2.76 but no germination was observed even after the expiry of about three months from the dates of sowings. Thereafter, attempts were made to raise the seedlings in laboratory condition, using specialised treatments. As the pretreatments with dilute sulphuric acid, potasium nitrate, thiourea etc. among the chemicals and cold and hot treatments may sometimes stimulate germination by breaking up the dormancy of seeds (Crocker & Barton, 1957, Mayer & Poljakoff-Mayper, 1963 and others), several such treatments were made. Seeds were kept in dilute solution of sulphuric acid for 15 minutes and 30 minutes and then after washing the seeds were transferred on moist filter papers soaked with 0.01 m of potasium nitrate and kept in petridishes. The petridishes were then removed inside a refrigerator (6-8°C) and in a incubator (42-45°C) for varying number of days (1 day-5 days). Those seeds treated with dilute sulphuric acid for 15 minutes and kept in cold for 72 hours produced higher percentages of germination than those kept in the same solution for 30 minutes. The seeds which had hot treatments or were kept as controls in the laboratory did not germinate at all. The germination of seeds started after 48 hours and completed within 96 hours. Eight seedlings having radicles and small plumules were transplanted in a nursery bed on 3.4.76 of which only two could survive and produce plants. Among these two plants, one grew faster (about 3-4 cm per week) and attained a height of 72.3 cm by 20th October, 1976. Further growth in height could not be observed even on 20th December, 1976. The other plant exhibited slower growth rate and became 31.5 cm high only. The taller plant produced flower buds during

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