

All the genera of the Malpighiaceæ worked hitherto have shown polyembryony; but, *M. puniceifolia* does not show any polyembryony.

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¹ Schurhoff, *Die Zytologie der Blütenpflanzen*, Stuttgart, 1926.

² Subba Rao, A. M., "A note on the development of the Female gametophytes of some Malpighiaceæ and Polyembryony in *Hiptage madablota*," *Curr. Sci.*, Dec. 1937.

Two Different Chromosome Complements found in *Gryllotalpa* (Orthoptera) from Ahmedabad, Western India.

THE genus *Gryllotalpa* has furnished very interesting material for chromosomal studies to several authors.¹ Taxonomically, it is rather intriguing, as compared with the existing variety of species or forms, about which systematists are often in doubt, the variations in respect of the chromosome complexes found in the forms collected in such diverse regions of the world as America, several localities in Europe and lately Japan and India are indeed striking. On reference to the literature cited below it will be found that chromosomal garnitures of forms so far investigated show remarkable variations not only in the number and size of the elements composing them but in the form and behaviour of their idiochromosomes also.

Some years ago the material on which the present observations are based was collected in the vicinity of the Gujarat College, Ahmedabad. Unfortunately, the individuals, nymphs and adults, from which the gonads were dissected out, were not kept separate. They were regarded as members of one and the same species, *Gryllotalpa africana*, Pal. B. following the observations made by Lefroy.² In this material two different chromosome complements are found. In the testes of some individuals 23 chromosomes are found to form the spermatogonial (2N) set (Figs. 1 and 3). This chromosome complex has been so far seen only in the Japanese form of *Gryllotalpa africana*, Pal¹ (Ohmachi). The other garniture seen in our slides is



Fig. 1.



Fig. 2.

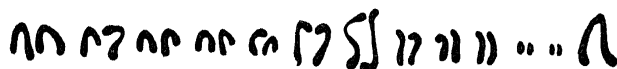


Fig. 3.

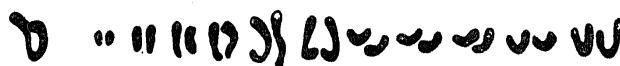


Fig. 4.

The spermatogonial complements of *Gryllotalpa*.
(4000 ×)

composed of 25 elements, two more in number than that observed in the previous one (Figs. 2 and 4). These additional chromosomes are represented by the two smallest dot-like elements, shown by 'm' in Fig. 2, while the other elements between these two chromosome complements are quite similar as seen in Figs. 3 and 4. Such a chromosome complex consisting of 25 elements, as noted above, has never been known in any species of *Gryllotalpa* so far studied. It is a matter for further investigation whether these two different sets of chromosomes found in *Gryllotalpa* from this locality are due to the fact that they come from two different forms or species, or they have resulted from the occurrence of two supernumerary chromosomes as is generally found in Hemiptera.

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¹ Rath, O. vom., *Arch. f. mikro. Anat.*, 1892, 40.

—, *ibid.*, 1895, 46.

Senna, *Mon. Zool. Ital.*, 1911, 22.

Baumgartner, *Science*, 1912, 35.

F. Payne, *Archiv. f. Zellf.*, 1912, 9.

—, *Jour. of Morpho.*, 1916, 28, No. 1.

D. Voinov, *Arch. Zool. Exp.*, 1914, T. 54.

—, *ibid.*, 1925, T. 63.

H. de Winiwarter, *Extrait des Archiv. de Biologie*, T. 37, Fac. 4.

F. Ohmachi, *Proc. of Imperial Acad.*, Tokyo, 1929, 5, No. 8.

² M. Lefroy, *Indian Insect Life*, 1909, W. Thacker & Co., 2, Creed Lane, London.

Chromosome Numbers in Some Economic Flowering Plants.

CHROMOSOME numbers in several species of economic plants have been determined

No.	Name of plant	2n number	Size of chromosomes	Remarks
1	<i>Arachis hypogaea</i> , Willd. ..	40	Normal	Sterile plant without normal flowers or fruits. Short internodes and close set leaves (<i>Proc. Ind. Acad. Sci.</i> , 1936, 3, 218).
2	<i>Moringa oleifera</i> , Lamk. ..	28 plus 2 fragments	Small	The n number was previously reported by the authors to be 14 (<i>Curr. Sci.</i> , 1937, 5, 479).
3	<i>Coriandrum sativum</i> , Linn. ..	22	Medium	Reported for the first time.
4	<i>Vetiveria zizanioides</i> , Nash ..	30	Medium	The numbers in other oil-yielding grasses of South India were reported by Babu (<i>Curr. Sci.</i> , 1936, 4, 874).

in this laboratory. The table above gives the 2n number of some of the species.

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An Attempt at Foreshadowing Monsoon Rainfall in Mysore.

IN Vol. XXIII, Part II of the *Memoirs of the Indian Meteorological Department* (1922), Sir Gilbert Walker has given a formula for foreshadowing the monsoon (June to September) rainfall of Mysore, which is as follows:—

$$\begin{aligned} \text{Mysore rain} &= + .16 \text{ (India pressure, May)} \\ &\quad - .26 \text{ (Zanzibar rain, May)} \\ &\quad - .38 \text{ (Java rain, October to February)} \end{aligned}$$

with a joint correlation coefficient, $R = .57$.

In obtaining the above formula the rainfall of the whole State of Mysore was used for the years 1875 to 1919. Owing, however, to the paucity of rain gauge stations in the earlier years, the rainfall of Mysore was based on the records of only eight district headquarters stations from 1875 to 1890; from 1891 however the records of 74 stations were utilised, and the number rose to 77 in 1896 and remained at that figure upto 1919.

It is well known, however, that the State could be divided into two district regions, the Malnad and the Maidan. The Malnad or the land of hills and rain, comprises the Western Ghats and the narrow belt of hilly

country adjoining it along the western border of the State—a region of ever-green forests and torrential rainfall aggregating in places to over 300 inches in the year. The Maidan or the level country comprises most of the Mysore plateau, where the annual rainfall is in places 25 inches or less. Nearly 90 per cent. of the annual total is gauged in the monsoon months of June to September in the Malnad, but not more than 50 per cent. of the annual rainfall occurs in the Maidan region in this period. July is the wettest month in the year for the Malnad, while September is the wettest month for the Maidan region. Further, while a strong monsoon on the west coast is favourable for rain in the Malnad, it is during periods of weak monsoon, when the development of local convection is favoured, that good showers occur in the Maidan parts.

It was therefore considered desirable to treat the Malnad and Maidan regions separately in our investigations in deriving fresh foreshadowing formulæ for Mysore. Nine taluk stations in the Malnad with an average rainfall of 85 inches in the monsoon season, June to September, were selected to represent the Malnad. The other seventy taluk stations with a seasonal average of 13 inches represent the Maidan region. The rainfall data for the 43 years 1893 to 1935 were utilised.

The correlation coefficients of the monsoon rainfall of these two regions were worked out with the pressure, temperature or rainfall of many of the centres of action used by Sir Gilbert Walker in his latest paper