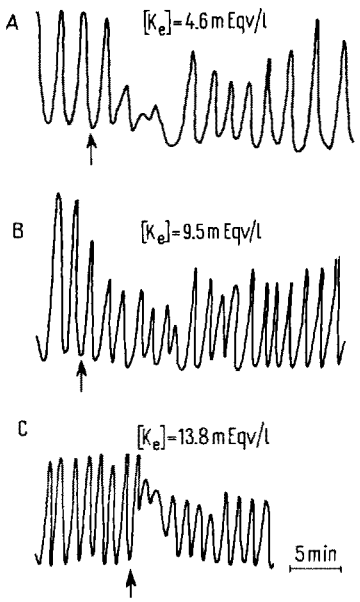

Fig. 2. The change of reactivity pattern of another strip from the same uterus as in Figure 1 when the extracellular potassium concentration is increased. At arrows: 0.01 U prostaglandin from human semen per ml bath fluid.

brane potential of the human myometrium as has been demonstrated for the rat uterus, i.e. increase in the extracellular potassium concentration causes a partial depolarization[3]. It is tempting to assume that the enhancement of the inhibitory effect of prostaglandin when the potassium concentration is lowered is due to the hyperpolarization. On the other hand, the effect on the membrane potential caused by agents that produce a decrease in motility and/or tonus of the uterus is almost unexplored and one can therefore at present only speculate on the possible mechanism. The reinforcement of the inhibitory effect of prostaglandin at low potassium concentration reported in this communication appears of interest since it may open a new approach to study some basic mechanism behind the contraction-relaxation process in the smooth muscle.

Zusammenfassung. Das Reaktionsmuster des nichtgraviden menschlichen Myometriums *in vitro* auf Prostaglandin wird durch die extrazelluläre Kaliumkonzentration beeinflusst. Senkt man die Kaliumkonzentration, so wird der hemmende Effekt gesteigert, erhöht man sie, so wird die hemmende Reaktion nicht nur vermindert, sondern kann zuweilen auch in Stimulierung umschlagen.

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Department of Physiology, Faculty of Medicine, Karolinska Institutet, Stockholm (Sweden), December 6, 1962.

Meiotic Chromosomes of the Small Indian Lark (*Alauda gulgula gulgula*)

In spite of the remarkable progress made in the past few years in our knowledge about the karyotypes of some higher vertebrates, birds continue to be cytogenetically the least known. Due to some peculiar technical difficulties like the high diploid numbers, small size of elements and their exceptionally strong tendency to clump, avian chromosomes have eluded many attempts at their analysis, so much so that some workers have gone to the extent of doubting the very chromosomal status of some of the smaller elements (Newcomer[1]).

Whereas in general there has been no confusion about the larger elements (macrochromosomes), the smaller dot-like elements, variously called micro chromosomes, chromosomoids or accessory chromosomes, have often been difficult to study with routine cytological methods. With the help of some special prefixation treatments, it has recently been possible to study these refractory elements in an unclumped state from the germinal and somatic tissues of various domestic and wild birds (Van Brink[2], Ohno[3], Sharma et al.[4], Krishan[5-7]).

The present study has been made on adult testicular material of the small Indian lark, treated with hypotonic Ringer's salt solution and subsequently squashed in propionic carmine.

In Figure 1 of a first meiotic metaphase, there are eleven large bivalents forming the peripheral part of the rosette-shaped plate and surrounding the 29 small bivalents which range in size from spheres of appreciable size to some minute dots. Except for the largest bivalent, which has a J-shaped structure indicating a sub-median kinetochore, all the remaining peripheral elements are too condensed and short to reveal any constriction or bend.

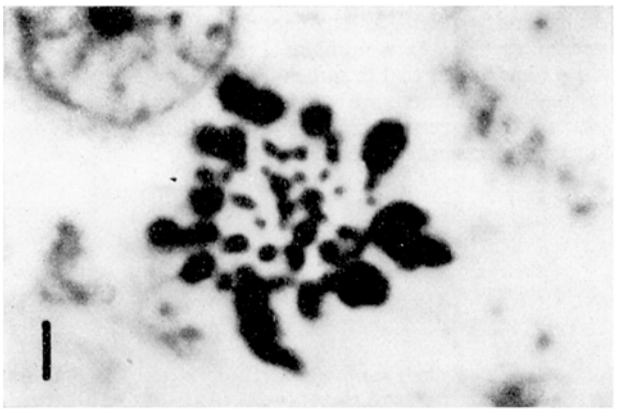

Fig. 1
Meiotic metaphase I plate showing 40 bivalents. ×5200 approx.

In about twelve first meiotic metaphase plates from temporary as well as permanent preparations, a variable number of bivalents between 38 and 42 was observed.

Whereas in the first meiotic metaphase the largest bivalent shows a sub-median bend, in the second metaphase it is very much condensed and appears as a rela-

[1] E. H. Newcomer, Cytologia *24*, 403 (1959).
[2] J. M. Van Brink, Chromosoma *10*, 1 (1959).
[3] S. Ohno, Chromosoma *11*, 484 (1961).
[4] G. P. Sharma, R. Parshad, and A. Krishan, Indian J. vet. Sci. *31*, 6 (1961).
[5] A. Krishan, Exper. *18*, 365 (1962).
[6] A. Krishan, Stain Techn. *37*, 335, (1962)
[7] A. Krishan, Ph. D. Thesis. Panjab University (India 1962).

tively globular body. In Figure 2 of a second meiotic metaphase polar view, nearly 38 elements can be clearly counted. Whereas the largest element in this plate is comparable in size to some of the smaller mammalian chromosomes, some of the smallest elements are at the limit of the effective resolution in a light microscope.

Counting chromosomes in nine second meiotic plates showing discrete elements without any apparent scattering or clumping, has revealed numbers between 38 and 42.

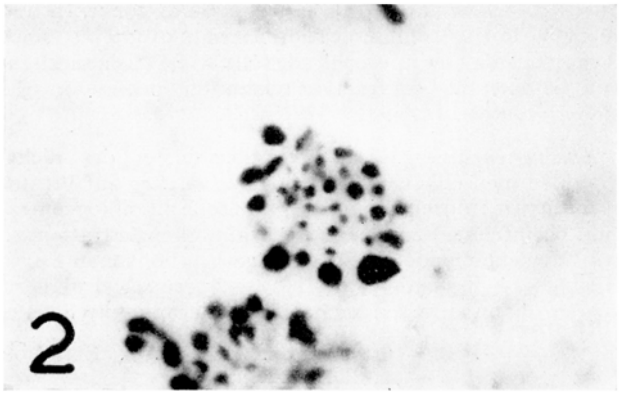

Fig. 2
Meiotic metaphase II plate showing nearly 38 elements. ×3250 approx.

Due to the extremely small size of some of the elements in the meiotic divisions, it is not possible to say with certainty what constitutes the exact haploid number in the present species. As a number of plates show between 38 and 42 elements, and in some of the best plates from both the meiotic divisions either 41 or 42 elements could be counted, it appears probable that either of these two numbers represents the haploid set.

The present author is of the view that variations in the haploid chromosome number recorded are caused by the clumping of some of the smaller elements. Evidence from the second meiotic divisions of the present material does not support the observations of NEWCOMER and BRANT[8] and NEWCOMER[1], who described that 'there is a marked reduction in number and volume of the chromosomoids and by the second metaphase and anaphase they have virtually disappeared' in the domestic fowl.

Handling of the avian material with some improved prefixation treatment-squash techniques[6] has convinced the present author that the so called avian microchromosomes are in no way non-chromosomal. Evidence from the present material, and that of some other birds[4,5,7], strongly suggests that there is no decrease in the number of the smaller elements with the progress of meiosis and that they retain their individuality throughout the mitotic and the meiotic cycle and do not act as mere reserves of DNA for the larger elements.

Résumé. Les chromosomes méiotiques des testicules des petites alouettes de l'Inde (*Alauda gulgula gulgula*) ont été examinés après prétraitement avec la solution hypotonique de Ringers. Dans chacune des deux métaphases méiotiques, on en a compté un nombre variant entre 38 et 42. Dans certaines des meilleures plaques, on a compté 41 ou 42 éléments. Il n'est pas possible de savoir avec précision le nombre haploïde exact, à cause des dimensions extrêment petites de quelques éléments. L'auteur pense que la variation en nombre provient de l'agglutination de quelques petits chromosomes[9].

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Zoology Department of the Punjab University, Chandigarh (Punjab, India), November 24, 1962.

[8] E. H. NEWCOMER and J. W. A. BRANT, J. Hered. *45*, 79 (1954).
[9] I am thankful to Dr. G. P. SHARMA, F.N.I., for his kind supervision and help during my tenure as a research fellow in his department.
[10] Present address: Department of Microscopical Anatomy, Medical Faculty, University of Western Ontario, London (Canada).

Histamine Formation in Bone Marrow

Histamine formation by decarboxylation of histidine has been demonstrated isotopically in tissues of all mammalian species so far investigated, in contrast with results obtained by a non-isotopic method which SCHAYER[1] and KAHLSON[2] have refuted as inadequate to the purpose. In the rat, the level of histidine decarboxylase is singularly high in some tissues characterized by a high rate of cell multiplication or cell renewal, such as tissues of the embryo, gastric mucosa, wound and granulation tissue of healing skin wounds (for references see KAHLSON[2]). In the mouse Landschütz I ascites tumour, a high correlation between histidine decarboxylase level and mitotic index was found[3].

The bone marrow was examined in this respect since this tissue is a site of high rate of cell multiplication. Bone marrow was obtained from the humerus, femur and tibia of rats, the age and sex of which are noted in the Table. In each of the three last experiments of the Table, tissue from two rats was pooled. Histidine decarboxylase activity was determined by incubating samples of bone marrow with 40 µg ^{14}C-histidine and measuring the amount of ^{14}C-histamine formed, expressed as counts per

Histidine decarboxylase activity in rat bone marrow

Age in days	Sex	Amount of tissue incubated g	Cpm/g
41	♂	0.07	30000
43	♀	0.11	20000
45	♀	0.08	26000
46	♀	0.10	21000
48	♀	0.11	40000
52	♂	0.17	21000
54	♀	0.13	24000
63	♀	0.06	58000
76	♂	0.16	26000
140	♀	0.18	25000
140	♀	0.23	31000

[1] R. W. SCHAYER, New York Academy of Science Conference on *Mast Cells and Basophils*, in press.
[2] G. KAHLSON, Proceedings XXII International Congress of Physiology, Leiden *1*, 856 (1962).
[3] G. KAHLSON, E. ROSENGREN, and C. STEINHARDT, Nature *194*, 380 (1962).