

Kinetochores or Centromeres?

IN his recent communication¹, Dr. Mather seems to have no argument against the applicability of 'kinetochore'. He sponsors 'centromere' largely because it is used by a number of investigators. But I, for one, am not convinced that it is the "best term in use to-day". To Dr. Mather 'centromere' may imply a visible particle, but to many it will connote a part that is centrally placed in a topographical sense. No such meaning is of course intended. My advice concerning the confusion that may arise from the addition of still another to the series of words involving 'centre' rests on my experience as a teacher. Perhaps the validity of such advice will be more apparent if I point out that in 1936 Darlington² himself used 'centrosome' when he evidently meant 'centriole'. The argument that no such confusion has attended the use of a series of terms involving 'chroma' is not well chosen, for in one place in the same paper (p. 266) Darlington writes 'chromosome' when he means 'chromomere'.

So far as priority is concerned there seems little room for argument. Sharp proposed the term 'kineto-

chore' in 1934. Nebel³ adopted it in 1935 and I myself⁴ first used it in June 1936. Darlington⁵, in 1935, was still using "spindle attachment chromomere" and, if I am not mistaken, it was not until December 1936, six months after my publication, that he employed 'centromere', probably unaware of its previous use in a different sense by Waldeyer. He made no reference at all to 'kinetochore' which, as I have said, does not carry the disadvantages of the term sponsored by himself.

I suggest that we submit the matter to the proper committee at the coming Congress of Genetics at Edinburgh. I, for one, should be quite willing to accept its decision.

FRANZ SCHRADER.

Department of Zoology,
Columbia University,
New York.
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¹ Mather, K., *NATURE*, **143**, 289 (1939).

² Darlington, C. D., *Proc. Roy. Soc.*, B, **121**, 264 (1936).

³ Nebel, B. R., *Zuechter*, **7**, 132 (1935).

⁴ Schrader, F., *Biol. Bull.*, **70**, 484 (1936).

⁵ Darlington, C. D., *Proc. Roy. Soc.*, B, **118**, 33 (1935).

Points from Foregoing Letters

J. ROTBLAT compares the increase in the neutron effect obtained by means of uranium with that produced by aluminium and copper, and concludes that v. Halban, Joliot and Kowarski are correct in ascribing the uranium effect to the increase in the number of neutrons resulting from the fission of uranium nuclei, rather than to the simple reaction ($n,2n$).

O. R. FRISCH compares the radioactive decay curve of the uranium fission products with a calculated curve, the calculation being based on simple statistical assumptions about the distribution of decay periods. The good agreement indicates that the individual features of the decay curves are very nearly eliminated on account of the large number of decay periods.

J. ASHMEAD has measured the specific heats of copper sulphate and copper potassium sulphate below 1° K. The curve for copper potassium sulphate has only a maximum due to magnetic interaction, but copper sulphate has also a maximum at higher temperatures. This indicates that there may be a contribution to the specific heat from Stark splitting even when the orbital momentum would normally be considered quenched, leaving the ion in an 2S state.

The minimum sparking potential of deuterium is found by F. LLEWELLYN JONES to be strongly characteristic of the cathode material, and is about 3 per cent greater than that of hydrogen. At higher pressures the sparking potentials are identical.

G. STENVINKEL states that the emission spectrum of AIH from an electric furnace shows that AIH is formed in an activated electronic state. This formation is a function of the time. There are several anomalies in the intensity relations of this band spectrum.

D. VAN DANTZIG considers that the particle density of a chemically homogeneous, relativistically perfect fluid cannot be calculated from the stress tensor, as it depends upon the temperature also. For an ideal gas the relations between these quantities can be

determined explicitly. This is done to a second approximation.

A. EAGLE suggests that the whole system of extragalactic nebulae may not be retreating from the galaxy but revolving about it; the displacement of the spectrum lines being due to a change of period of vibration due to the velocity.

E. L. HIRST, J. K. N. JONES and Miss W. O. JONES show that the polysaccharide alginic acid, which is an important constituent of certain seaweeds, can be transformed into a less viscous form of low molecular weight. A major feature of the structure of alginic acid is a chain of *d*-mannuronic acid residues linked together by glycosidic links connecting the 1:4 positions. This structure is compared with that of cellulose and that of pectic acid.

Further experiments on homing in white storks, carried out by K. WODZICKI, Wł. PUCHALSKI and H. LICHE, attempted to examine the influence of the magnetic field of the earth and the reactions of birds taken in different directions.

The three main types of gonadal hormone will produce in some circumstances a similar biological effect. A new example is recorded by H. BURROWS, who finds that, given to rats on the day of birth and afterwards, progesterone, like oestrone or testosterone, will cause hypospadias in females and delayed descent of the testes in males.

J. M. OLENOV states that the percentage of lethal mutations found in the X and also in the II chromosomes in *Drosophila melanogaster* individuals that had vitamin B₂ withheld until the twentieth day of their larval life is about the same as in the control group. If the number of induced mutations corresponded to the time elapsed, the percentage of mutations brought into evidence in the experimental group (duration of development thirty days) should have been three times as large as in the control (duration of development ten days). The decrease in rapidity in the mutation process may be due to a slowing down of the process of spermatogenesis.