GENETICAL SOCIETY OF GREAT BRITAIN

ABSTRACTS of Papers read at the NINETY-FOURTH MEETING of the Society, held at 2 p.m. on WEDNESDAY, 10th DECEMBER, 1947, in the Rooms of the LINNEAN SOCIETY, Burlington House, Piccadilly, London, W.1.

THE NUCLEOLUS AND NUCLEOLAR ORGANISERS IN *SPIROGYRA*

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The satellite chromosomes of *Spirogyra* spp. hitherto found only in *S. crassa* are shown to be the nucleolar-organising chromosomes, the nucleolar organising region being apparently the satellite stalk itself. In the resting nucleus the structures representing the satellite stalks are contained within the nucleolus in a loosely coiled form, each stalk being enclosed throughout its length in a specially differentiated tube of nucleolar material which is termed the nucleolar tubule. The coiled nucleolar tubules stain densely while the background material of the nucleolus stains less densely. During the breakdown of the nucleolus in prophase, a characteristic stage, where the contracted nucleolar tubule alone remains around the satellite stalk, is reached. All the nucleolar material has been dispersed at metaphase, but varying amounts of stainable material (according to the species) which may be derived from the nucleolus, have simultaneously appeared throughout the nucleus. According to the species, some of this material is more or less concentrated around the metaphase plate. In one species, some of this material precedes the chromatids to the poles and has accumulated there as globules at a time when the chromatids are only halfway between equator and poles.

Stainable material is sloughed off the chromosomes at telophase and globules arise in the daughter nucleus. The nucleoli are reorganised on the satellite stalks and simultaneously the globules generally all disappear. On occasion one, two or three are left and persist in the resting nucleus (the Binnenkörper and Nebenkörper of the older authors).

Heterochromatic staining is shown by " chromocentres " and alternate blocks along the length of the prophase chromosomes, also by the satellite stalks at metaphase. There are only indications of separate chromatids in prophase ; none at metaphase when the chromosomes have a sinuous shape and are without distinction of right and left arms. Evidence of the existence of matrix and the question of centromeres in *Spirogyra* is discussed.

The historical controversy between Van Wisselingh and Geitler on the origin of chromosomes from the nucleolus in *Spirogyra* is resolved, with the confirmation of the visual observations of Van Wisselingh (1898) and of the conclusions of Geitler, except in regard to the satellite stalks.

THE B-CHROMOSOMES OF *PARTHENIUM ARGENTATUM*

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The B-chromosomes of *P. argentatum* are heterochromatic, remaining condensed in pollen mother cells until diakinesis. Prior to metaphase I they commence to

lose stainability and, *pari passu*, to uncoil until at late anaphase I they are long slender threads. Association, presumably by chiasmata, occurs between them to a moderate degree, but some of this appears to lapse between diakinesis and metaphase I at which stage univalent B-chromosomes are the rule. At anaphase I, the B-chromosomes lag behind the normal ones and the univalent ones tend to proceed together to one pole rather than at random.

SUBDIVISIONS OF THE BLOOD GROUPS MN IN MAN: LINKED LOCI OR MULTIPLE ALLELOMORPHS?

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In comparison with the ABO and Rh blood groups, the MN groups have appeared singularly uncomplicated since their discovery in 1927 by Landsteiner and Levine. A serum, sent from Australia, containing a " new " agglutinin has been found to disclose subdivisions within the MN system.

This antibody agglutinates 72 per cent. of MM, 60 per cent. of MN and 33 per cent. of NN bloods; such bloods are designated by the addition of the symbol S.

Statistical analysis is consistent with the hypothesis that there are either four allelomorphs MS, M, NS and N, or that S is a gene closely linked with the MN locus. The gene frequencies are MS 25·05 per cent., M 26·27 per cent., NS 9·21 per cent. and N 39·47 per cent. Expected phenotype frequencies calculated from these figures agree closely with those observed. The results of family investigations lend further support to the interpretation; S is shown to segregate with M in some families, with N in others.