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Experiments bearing on the nature of the karyokinetic figure.

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In the three following ways the results of centrifuging the egg of *Cerebratulus* throw light on the nature of the karyokinetic figure.

1. If the egg is centrifuged when the polar spindle is present, the spindle may be carried bodily, without injury to its rays, to the center of the egg, in those cases where the yolk is driven into the region occupied by the polar spindle. If the centrosomes are centers of force, we must suppose that these centers produced at each state in the migration of the spindle new rays and a new spindle. This seems highly improbable when the time usually taken for the formation of the rays is considered. The same reasoning applied to the central spindle would lead to the conclusion that its rays, too, are continually reformed during the migration.

2. When the basic granules of the egg are driven into the region of the segmentation spindle, the granules become arranged along the alveoli through which the rays also pass, and assuming a bead-like arrangement may obscure the rays. Lillie has advanced this evidence as demonstrative of the center of force hypothesis. My observations lead to the opposite conclusion; for I find no evidence that these granules replace the fibers. Whether the granules by changing their nature become incorporated into the polar rays is another question that must be left open at present, but even if they do so, this does not prove the center of the force hypothesis.

3. When the asters of the segmentation spindle become attached to the male and female pronuclei, they may be carried to the light pole when their nuclei are transported to that region. The fibers are often thrown into spirals, which fact is difficult to explain on the center of force hypothesis.