new name *Allogromia ovoidea* for that animal misidentified and illustrated by Schultze in 1854.

It was not until 1934, when De Saedeleer[7] discussed Rhumbler's work, that a further change of name was accompanied by any comment, although incorrect names had been used before this date[4,6,8]. De Saedeleer agreed that the *Gromia oviformis* Dujardin of Schultze should be *Allogromia*, but considered, without giving reasons, that a change of the specific name from *oviformis* to *ovoidea* was wrong. He proceeded, therefore, to refer to *Allogromia oviformis*, an unfortunate choice in view of the confusion that has arisen from its usage. According to article 31 of the International Rules of Zoological Nomenclature[14] "a specific name which undoubtedly rests upon an error of identification cannot be retained for the misdetermined species even if the species in question are afterwards placed in different genera". De Saedeleer's claim, therefore, cannot be upheld, and *Allogromia ovoidea* Rhumbler is the correct name for the misidentified *Gromia oviformis* of Schultze, with which the quite different *Gromia oviformis* Dujardin, 1835, is not to be confused.

Quite apart from this account of names, the systematic positions of *Gromia* and *Allogromia* are by no means understood. Sometimes referred to as gromoid forms, they are regarded by some workers as Foraminifera and by others as Testacea. The problem will only be resolved by a fuller understanding of the biology of the animals, of their pseudopodial organization, and of their life-cycles. An extension of the works of Jepps[15] and Arnold[16] to other closely related Testacea and Foraminifera is particularly desirable at this stage in order to give a firmer basis for the distinction between these two groups. At the moment the systematic position depends largely on whether a form produces anastomosing, granular pseudopodia (*Allogromia* and members of the Foraminifera) or pseudopodia which do not, or rarely, anastomose, and are non-granular (*Gromia* and members of the Testacea). Such differences are not always clear cut, and so far there has been no functional interpretation of them. As there are many workers who consider these gromoid animals to be living representatives of a primitive group from which the Foraminifera may have evolved, the answers to these problems should help to clarify the origin of this large and morphologically very diverse order of the Protozoa.

R. H. Hedley

Department of Zoology,
British Museum (Natural History),
London, S.W.7.
Sept. 18.

[1] Schultze, M. S., "Über den Organismus der Polythalamien (Foraminiferen)" (Englemann, Leipzig, 1854).
[2] Lankester, E. Ray, "A Treatise on Zoology", Part 1, "Introduction and Protozoa" (Adam and Charles Black, London, 1903).
[3] Doflein, F., "Lehrbuch der Protozoenkunde", Aufl. 2 (Gustav Fischer, Jena, 1909).
[4] Minchin, E. A., "An Introduction to the Study of the Protozoa" (Edward Arnold, London, 1922).
[5, 6] Calkins, G. N., "The Biology of the Protozoa", 1st and 2nd edit. (Baillière, Tindall and Cox, London, 1926, 1933).
[7] De Saedeleer, H., *Mém. Mus. Hist. Nat. Belg.*, Mem. No. 60 (1934).
[8, 9, 10] Borradaile, L. A., Eastham, L. E. S., Potts, F. A., and Saunders, J. T., "The Invertebrata", 1st, 2nd and 3rd edit. (University Press, Cambridge, 1932, 1935, 1958).
[11] Marine Biological Association, "Plymouth Marine Fauna" (1957).
[12] Dujardin, F., *Ann. Sci. Nat. Zool.*, (2), **4**, 343 (1835).
[13] Rhumbler, L., *Arch. Protistenk.*, **3**, 181 (1903).
[14] Schenk, E. T., and McMasters, J. H., "Procedure in Taxonomy", 3rd edit. (Stanford University Press, California, 1956).
[15] Jepps, M. W., *Quart. J. Micr. Sci.*, **70**, 701 (1926).
[16] Arnold, Z. M., *Univ. Calif. Publ. Zool.*, 61 (1955).

Sex Ratio in the Golden Hamster before Uterine Implantation

Most mammalia have a secondary sex ratio near 100 : 100 with a slight excess for the male sex. As male- and female-determining spermatozoa are being produced in equal numbers, the primary sex ratio would also be 100 : 100, provided that the two kinds of sperms are equally able to fertilize. However, a higher mortality-rate in male than in female embryos has been observed in stages in which the sex may be anatomically recognized[1], and is also generally supposed to operate in preceding stages. Based upon this a primary sex-ratio of 150 : 100 has been calculated[1] which must imply a higher frequency of successful fertilizations performed by male- rather than by female-determining spermatozoa.

In order to estimate the sex ratio in as close agreement as possible with the primary one we have determined the sex of a number of embryos before implantation by making use of the morphological differences between the *X*- and *Y*-chromosomes. This was possible in the golden hamster, *Mesocricetus auratus*, as the sex chromosomes, which in this species are larger than the autosomes, may be distinguished from each other[2].

Mated females were killed 80–90 hr. after copulation, at which time the embryos were in the blastocyst stage, containing mostly 20–32 cells. The blastocysts were collected by flushing the uterine horns with Tyrode solution, and treated with a 0·45 per cent saline at 37° C. for 15 min. in order to obtain better spreading of the chromosomes at squashing[3]. The blastocysts were then fixed for some hours in absolute alcohol–acetic acid 3 : 1, stained for 15 min. in acetic-lacmoid solution[4], and mounted as squash preparations in neutral Canada balsam.

Using a Zeiss phase-contrast oil immersion objective (mag. 100 ×, N.A. 1·25) camera lucida drawings were made of the chromosomes of well-spread metaphase plates, and the occurrence of *X*–*X*- and *X*–*Y*-combinations respectively was determined.

As the frequency of metaphase plates was very low—about one plate in every third blastocyst—we introduced a pretreatment of the pregnant females with colchicine[5] in order to increase the number of cells in metaphase at killing. The animals were injected intraperitoneally with 0·025 mgm. colchicine per 100 gm. body-weight 5–8 hr. before being killed. This treatment increased the frequency of metaphases to about one plate per blastocyst, without obscuring the chromosomal morphology.

Until now 51 blastocysts from 39 hamsters have been classified according to sex. Of these, 33 were males and 18 females, giving a sex ratio of 183 : 100, which significantly deviates from 100 : 100 ($t^2 = 4{\cdot}41$, $p < 0{\cdot}05$). The experiments are being continued, and the results from more material will be published in due course.

P. E. Lindahl
G. Sundell

Institute of Zoophysiology,
University of Uppsala.
Sept. 8.

[1] Parkes, A. S., *J. Agric. Sci.*, **15**, 284 (1925).
[2] Matthey, R., *Chromosoma*, **5**, 126 (1952). Sheaffer, C. I., *Virginia J. Sci.*, 46 (1955).
[3] Venge, O., *Nature*, **174**, 608 (1954).
[4] Darlington, C. D., and La Cour, L. F., "The Handling of Chromosomes" (London, 1942).
[5] Waldo, C. M., and Wimsatt, W. A., *Anat. Rec.*, **93**, 363 (1945).