strong band at 4620 Å as the result of a transition in the CCl_4 molecule from the ground level of CCl which is also known by its discrete bands, to the repulsive curve of CCl_4; and the weak band at 3340 Å, similarly to the transition from the same initial level to the repulsive curve of CCl_4, in complete analogy to the continuous spectra in $SnCl_4$.

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1. Asundi and Karim, *Proc. Ind. Acad. Sci.*, 1937, **6**, 328. 2. Cameron and Elliot, *Proc. Roy. Soc.*, 1937, **158 A**, 681; 1939, **169A**, 463. 3 Asundi, Karim and Samuel, *Proc. Ind. Acad. Sci.*, 1940, **12**, 513.

SPERM DIMEGALY IN *ICHTHYOPHIS GLUTINOSUS* LINN.

Sperm dimegaly or polymegaly appears to be unknown in the Apoda. Examination of *Ichthyophis* material revealed a number of dimegalous sperms of this animal. Scattered amongst the normal sperms in the testis, there occasionally is a sperm with a conspicuously large nucleus and which, on closer examination is seen to be double in respect of the "middle piece" and axial filament but single in respect of the nucleus and the acrosome. Such a sperm is shown in Fig. 1.

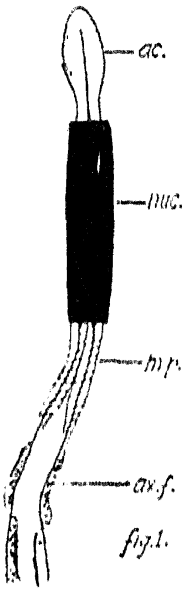

Fig. 1

Dimegalous sperm of *Ichthyophis glutinosus* × 2250

ac.—acrosome. *ax. f.*—axial filament. *m. p.*—middle piece. *nuc.*—nucleus.

It is generally known that in dimegaly, whether pathological or physiological, one or both divisions are suppressed in meiosis with the result that large-sized cells (primary or secondary spermatocytes) proceed to give rise to sperms by spermateleosis. Such di- and polymegaly has been known among insects, particularly the Hemiptera, where large giant spermatids derived from spermatocytes, either without any division or by fusion after division, proceed to give rise to giant spermatozoa.

The sperm figured above is a typical dimegalous one of *Ichthyophis*. The axial filament as well as the 'middle piece' is double while the nucleus and acrosome are single. But the noteworthy fact about both the nucleus and the acrosome is that they are double the normal size of these structures. The nuclear volume of a normal sperm of *Ichthyophis glutinosus* has been determined by me* to be about 25·1 cubic microns, while that of the dimegalous sperm described above is 49·9 cubic microns, nearly double that of the normal sperm. In the matter of the acrosome also, its size is very much larger than that of the normal sperm though I have had no means of calculating the actual volume of this structure.

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* Seshachar, B. R., *Proc. Ind. Acad. Sci.*, 1943, **27**, Sec. B. No. 5, 138.

DEGRADATION OF CHLOROPHYLL DURING TEA FERMENTATION

In the manufacture of black tea the fermenting leaf changes its green colour to a coppery red tone. A rough estimation of this change of chlorophyll has been carried out by Carpenter,[1] Bokuchava,[2] as also in this laboratory, which show that the leaf loses about three-fourths of its chlorophyll during a four-hour fermentation.

Steaming arrests these changes completely, which indicates that an enzyme is concerned in the breakdown of the chlorophyll.

The degradation of chlorophyll may involve (1) formation of pheophytin by removal of Mg by plant acids, (2) hydrolysis by chlorophyllase whereby phytol is removed and (3) oxidation as a result of which the phase test is no longer obtained. Of these, that which tea leaf chlorophyll undergoes during fermentation appears to be limited to the last-mentioned. There was no evidence for the presence of chlorophyllase in tea. No pheophytin was detectable in the acetone extract of crushed leaf either before or after fermentation. During *in vitro* experiments the disappearance of green colour coincided with lack of response to the phase test, indicating an oxidation reaction. This was further confirmed by the fact that hot saponification of the 'fermented' chlorophyll product followed by treatment with acid did not yield phytochlorin *e* and phytorhodin *g*.

The mechanism of oxidation of chlorophyll appears to be as follows:

$$\text{Tea tannin} + O_2 \xrightarrow{\text{Polyphenol oxidase}} \text{O-Quinones}$$

$$\text{O-Quinones} + \text{Chlorophyll} \longrightarrow \text{Tea tannin} + \text{chlorophyll oxidation products}$$