PROTOZOA.

NOTES ON A PECULIAR FORM OF *Euglena*.—This animalcule occurs in large numbers in the tank at the Shálámár Gardens, Lahore. It forms a continuous layer on the surface of the water, giving it a deep red to greenish colour. In places exposed to direct sunlight the colour is usually deep red, while in shady places it is greenish.

The animal is characterised by the presence of numerous deep red granules in the whole of the body. The granules are quite distinct from the endoplasm, and, if the body of the animal is ruptured by a slight pressure on the coverslip, they are scattered about in all directions. They are in all respects like the eye-like pigment-spot, but smaller in size. It is difficult to see the inner structure of the animal clearly on account of the presence of these granules.

Examined with the $\frac{1}{12}$-in. oil immersion lens, the ectoplasm is seen to be striated at the margins obliquely, but the ordinary magnification does not show these striations. The green colour of the endoplasm can usually be seen without any difficulty in the living animal, but it can be seen much more easily if the body be ruptured by pressure, when the endoplasm comes out in the form of small, round, uniformly green globules, and the red granules and the paramylum bodies are scattered about.

In the free-swimming condition the animal is highly plastic, assuming various shapes very rapidly. In its elongated state it is generally cylindrical (sometimes oval owing to the posterior part being larger than the anterior) ending posteriorly rather abruptly in a small tail-like process which is generally hyaline, but may be coloured like the rest of the body. The anterior extremity is bilabiate, one tip being larger than the other. The flagellum arises out of the mouth and is equal in length to the length of the body. The body in the elongated state is $\frac{1}{400}$ to $\frac{1}{200}$ of an inch long, the breadth being one-fourth of the length. The large bright red eye-like pigment-spot is situated anteriorly a little behind the mouth. The vacuole is close to the pigment-spot, a little behind and to one side. The paramylum bodies are numerous and of various sizes. The largest have the size and shape of human red corpuscles. They are biconcave or flat round or slightly oblong bodies. The endoplast is very indistinct on account of the red granules.

When the flagellum is present the animal moves forward very rapidly, but when it is lost, as is frequently the case, the forward movements are very slow. The euglenoid movements in both cases are very active.

In the encysted condition this animal resembles *Euglena tuba*, Carter, very greatly, the encysted form being like a flask. It differs from that species, however, in that it does not form any mucilaginous network, in the tubular meshes of which that animal is met with. The Lahore *Euglena* forms a flat homogeneous layer

on the surface of the water. The neck of the flask-like cyst, moreover, is never so long as in *Euglena tuba.*

In the description of *Euglena tuba* given in Saville Kent's *Manual of Infusoria* (part iii, page 385), it is stated that the motile and the encysted forms were not observed together, and that on account of the peculiar shape of the encysted form it was doubtful if the two forms belonged to one and the same animal. I do not know if the two forms have been seen together since then, but in the present species the motile animals were seen many times by the writer coming out of the temporary encystment. In fact, empty round or flask-shaped bodies can always be seen lying here and there near the free-swimming animals, and the escape of the animals can be easily observed by keeping the water containing them for a few hours in a closed vessel. The animals may come out of the encystment while it is round, or may come out when it has assumed the flask-shaped form. In the latter case, the animal never comes out through the mouth of the flask, nor has it ever been seen by the writer coming out of the side opposite the mouth; it appears always to get out laterally. The wall is ruptured on one side and the anterior end of the animal with a small flagellum projects forward. Gradually the whole animal passes through the opening. For a short time after coming out of the encystment the movements of the animal are very slow. At one time during the escape of the animal, it appears to be divided into two equal halves by a constriction in the middle caused by the narrow opening. In three or four minutes the whole animal is out. The mouth of the flask is always striated, but the neck and the body are quite homogeneous and transparent.

When the encysted animal is exposed to bright daylight, the red granules come to the surface, and thus the individual animal and the whole surface of the water have a deep red colour. In shady places the red pigment is collected at one end of the body and the remaining part is perfectly green, and the colour of the water, therefore, is greenish.

The animal greatly resembles *Euglena tuba*, Carter. The chief points in which it differs from the latter are—

1. The presence of the red granules.
2. The absence of network in the encysted condition.
3. The smaller length of the flagellum.
4. The smaller length of the neck.

SHIV RAM KASHYOP, *B.Sc.*

Assistant Professor of Biology,
Govt. College, Lahore.