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I.—*On an Organism found in Fresh-pond Water.*

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PLATE XXXVII.

IN the month of August this year, on removing some water from a small pond in the New Forest, near to Lyndhurst, and examining it microscopically, among sundry infusoria, growing and decaying algæ, with other matters, were noticed some bodies which were quite unknown to me, and finding in the references at my command no corresponding descriptions, I venture to offer a few details, accompanied with coloured† figures, trusting they may interest some of the Fellows of the Royal Microscopical Society, to whom possibly they may be partially or fully known.

They apparently belong to the Protozoa.

The general character of these little bodies may be stated as consisting of irregularly circular or sub-globular sarcodic or “mucogelatinous” masses, often very bright at the edge, containing small granular or corpuscular bodies of various sizes, and of a highly refracting nature, the whole having a very strong *violet or lilac tint* when seen by transmitted light.

These small masses differ considerably in dimensions, as will be noticed by the figures, the smallest containing only a few of the

EXPLANATION OF PLATE XXXVII.

All the figures are magnified 415 diameters, and represent various states of the sarcodic granular masses without and with the vacuolations; except the figures corresponding to the letters *a*, *b*, &c.

a, Amœbaform little bodies found free in the same water with the lilac-coloured masses $\times 2040$.

b, The corpuscular bodies seen under elevation and depression of the focus, $\times 2040$.

c, The ruptured cell-envelope of the mass removed to the growing slide, with some of the contents still enclosed, $\times 168$.

* Represents part of a medium-size mass with granular bodies separated at a little distance from each other, the viscid protoplasm probably undergoing diffuence.

† The original plate, which was exhibited to the Society, is very prettily coloured. The lithographic one accompanying this article is, however, uncoloured, because of the immense expense of producing coloured plates.—ED. ‘M. M. J.’

corpuscles, the largest a very great number. In many of the medium size, and most, if not all, of the larger ones, the general mass appeared to be vacuolated, often very irregularly, with the outlines of the vacuoles indistinct, or rather ill-defined. Upon long watching, the relation of these to each other might now and then be seen to alter, yet there was no appearance of pulsation. In only three examples were noticed any projections having the character of pseudopodal protrusions, and these were exceedingly delicate, short, and seemed ill fitted for progression of the masses in the ordinary manner of pseudopods. In several of the masses the general shape could be seen to change slightly, and in two was noticed some activity of the mass evinced by a restless kind of motion; an effort apparently to twist round on their axes, and this to the right hand, as seen in the field of the microscope, then returning to a less than their former position, towards the left or starting point. One was watched for a period of about half an hour, yet it never made more than one-quarter to one-third of a revolution. No motion could be detected amongst the little granular bodies *imbedded* in the ordinary masses. Their size was remarked to be very variable. In some of the masses they were enlarged and separated to a considerable distance from each other, though adherent by the viscid protoplasmic substance, and such masses appeared to have a general tendency to diffuence. In others, which seemed to have reached a particular stage or period, the muco-gelatinous substance was condensed into a distinct structureless cell-membrane or "cell-envelope," thus passing, in all probability, into a sessile condition. One such mass was removed along with several of the smaller viscid masses by a very fine camel-hair pencil on to a growing slide, having a tin-foil cell cemented to the centre, for the cover to rest on when over the aperture in the slide, thus to give freedom of motion for any of these small bodies; but unfortunately putting down the thin covering-glass ruptured the "cell-envelope." The small granules or corpuscles set free were watched under the microscope for some period. At first they moved somewhat slowly, but when at a little distance from the mass they jostled and jerked themselves about in a very active manner, much after the fashion of motile zoospores; yet with a power of 2000, Gundlach's immersion, No. vii. A, I failed to distinguish then or later any cilium. When two were adherent by the viscid substance between them, the motions were very violent, often as a sort of springing apart from each other to obtain freedom. Very many of these little bodies soon jerked themselves across and out of the field of the microscope. They soon ceased to exhibit activity, and after thirty hours they were motionless, and had not regained it or altered in any visible particular; after fourteen days in the growing slide they appeared rather less in size. It is very possible the "cell-envelope" was ruptured

before these bodies had attained to their proper growth. Being desirous of preserving this particular mass for watching in the growing slide no reagent, as iodine, &c., was applied.

In some of the medium-size masses, and even in the smaller ones, without any distinct border to the edge of a denser character than the general mass, these corpuscular bodies were larger than those which were set free by the rupture of the enclosing membrane, but whether they differ *inter se* from the enveloped granular bodies is unknown.

On the sixth day in the growing slides amongst the little motionless corpuscles some Bacteria were present, as *Bacterium termo*, and *Bacillus subtilis*, Cohn.

Each of the corpuscles showed a well-defined central dark point on focussing up, which appeared bright and surrounded by a fine dark ring on focussing down; not exactly as if containing an ordinary nucleus, but rather as if it depended upon the pyramidal shape of a highly refracting central body; yet in some this small central mass under high powers appeared irregular in outline, and as if disposed for division, though without any corresponding difference in the outer portion of the corpuscle. *Vide* Fig. $\times 2040$.

The masses when compressed indicated no distinct aperture, though in two uncompressed there appeared a small pale circular spot with a better-defined edge than the vacuoles, which possibly might represent an orifice or nucleus; yet it was only seen in two, so may have been accidental. When divided by force the masses remained separated, and were not drawn back, nor did there seem to be any tendency to divide, further than that many looked as if they had thrown off part of the mass which remained as a smaller globular or circular body adherent to it by the edge, sometimes two or three such being present.

The term vacuole has been used to mean simply a more or less outlined differentiation of parts of the internal sarcodic mass, and which appeared to alter in shape or position so slowly and indistinctly as to be only noticeable under long examination.

With the above characters I have found it somewhat difficult to relegate these bodies to any definite place amongst either the Phytozoa or Protozoa, though they fall, I think, more nearly to the naked Rhizopoda. No defined nucleus was certified as being present in any of the masses, nor was any act of fission noticed, and nothing of the character of ingesta was seen in the interior of any of them, so that the nourishment is probably drawn from the surrounding medium in a soluble state.

The only Amœbaform or true Rhizopodous bodies found in the same water were very minute sarcodic masses with comparatively long processes; some of these are figured, though they may not bear any relationship to the violet-coloured masses nor to the little

corpuscles. Yet it is just probable that the motile zoospore-like bodies may, after losing the motile condition, pass into an Amœba-form state, still in the growing slide this has not been observed, the conditions possibly being at variance with the natural state.

As the distinguishing characters do not seem to correspond exactly with any of the recognized genuine naked or testaceous Rhizopoda, but to fall nearest to the genus Amœbæa, I propose, at least temporarily, to name it *Pseudo-amœba violacea*.

Since so much industry has been shown, especially by Hæckel and others, in enlarging our knowledge of the Protista, it was judged better to bring the subject before your Society, though so imperfectly outlined, than to allow it to pass unheeded; trusting that the deficiency of the present details may be supplied hereafter by an extension of its life-history, if such be presented by future research.
