

## Plate-Culture and Staining of Amœbæ.

By JOHN MASTIN, R.B.A., F.R.M.S., etc.

The subject of Amœbiasis is a deeply interesting one, the name Amœbæ being given to the lowest members of the animal kingdom of the jelly-fish type, which are without a definite body-cavity or any trace of a nervous system. These have no eyes, head, feet, or body, but apparently represent a mass of semi-liquefied jelly. Some of these amœbæ circulate in the human body and in the bodies of other animals, especially when, through some lowering cause, such bodies are in a reduced state and thus form a ready hunting ground. These amœbæ, gathering together and traversing the whole system, absorb the nutrient parts of the body and take the red colouring matter out of the blood, which becomes so weak and altogether enfeebled that the strength and general tone of the system are brought down even still lower. In addition to this, their nature is such that bacteria find in them a favourable and ready means of culture, assimilating with them perfectly.

Other forms of amœbæ take seas, rivers, ponds and stagnant pools as their hunting-ground, and here the peculiar nature of the protozoa is exceptionally well adapted for development.

As already mentioned, the amœbæ are like a mass of jelly, without form, and having no indication of organic life. If one of these creatures is gathered in a spoon, saucer, or other receptacle and shielded from contact with insects and animalcula, it soon becomes perfectly liquid like water, and as clear. Evidently it is now dead, as no amount of feeding will restore it to its jelly state and the food remains untouched.

If, however, it is fed with beef-extract and small animalcula, it absorbs its food in a very interesting manner. Being somewhat of a sticky nature, any insect creeping, or favourable food falling, on it, is retained and, in spite of all struggles, imprisoned. Watch as carefully as possible and no movement can be seen—not even a tremor or contortion of the amœbæ—and yet slowly, but surely, the insect sinks into the jelly-like mass till it is completely embedded. Long before this happens it has abandoned its struggles, which, by this time, have ceased for ever. It has now all the appearance of a small fly or bean in the middle of a glass of, say, calves'-foot jelly, or like a fly in amber.

Again, no movement can be seen, but the

insect almost imperceptibly dissolves, till the jelly-like mass is again clear throughout its substance, and another meal has been disposed of.

When in water some varieties are wholly invisible. Being perfectly transparent and semi-liquid, these open out and float at varying depths, partaking of the colour and movement of the water in which they are existing. They thus form a death-trap to any suitable insect chancing to brush across them. Should, however, an insect be caught which would prove harmful, or fight to such an extent as to rupture the mass, the amœbæ, by withdrawing their stickiness, and at the same time causing a series of convolutions to pass over their surface, gradually lift the obnoxious prisoner so high that it appears to rest on the apex of a cone, which, suddenly sinking, leaves the insect suspended in water, and before it could fall and be again attached it is carried away by the stream or itself escapes. How these actions take place is something at present above human knowledge, the amœbæ possessing no head, brain, or feeling, so far as is known. In fact, this animal is a mystery, for even the most searching examination fails to reveal anything more tangible in its entire substance than a semi-liquid mass.

In using this for culture, it is sometimes difficult to get good results, because of the tendency to dissolve, as already mentioned, but owing to its great affinity for bacteria, if advantage is taken of symbiosis, then the results are almost entirely satisfactory, but will vary considerably in accordance with the particular amœbæ and bacteria employed.

The culture subject is so very wide that it is difficult in a few words to lay down a course which will answer for all varieties, but as a general guide it may be said that Agar-agar, moist and dry, answers as well as anything.

Most experts have their own methods of culture, and naturally think these the best; such should, of course, use the particular food from which they can obtain the best results. It will, however, be found that if a medium containing agar and extract of beef with a little salt, is used, the result will be highly successful with most kinds. This should be made into plates, and the amœbæ placed in the centre, then the bacteria at each side, and streaks of bacteria and amœbæ alternately, till the required space is filled, always working from both sides of the central amœbæ. After a few days, samples can be taken for independent culture, but they should be symbiotic, and contain both the amœbæ and bacteria, so that both may grow together, otherwise results cannot be

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