

they are peculiar to and diagnostic of the malarial poison.

Laveran's organisms resemble the Sporozoa, which have formed the subject of the preceding address, in their having an active amœboid phase, and a sporulating phase. The latter occurs apparently without encystation, and the resulting spores exhibit either amœboid or flagellate locomotion. Certain resting-stages—the so-called crescents—do not, however, appear to be comparable to the crescentic germs of the coccidia.

The amœboid bodies, *Plasmodium malarie*, as they are now called, are to be found within

pigment and are capable of amœboid, more rarely of flagellate, movement. This segmentation is coincident with the chill. After the attack the resulting small plasmodia may leave the larger vessels to crowd into the capillaries of the spleen, etc., where the central lifeless pigment masses are taken up by the leucocytes, but they are soon found within the blood-cells in the general circulation again. The length of time from the invasion of the blood-cells to the occurrence of segmentation determines the character of the fever, and Golgi believes he has made out specific distinctions between the plasmodium of tertian and quartan fevers (Fig. 4

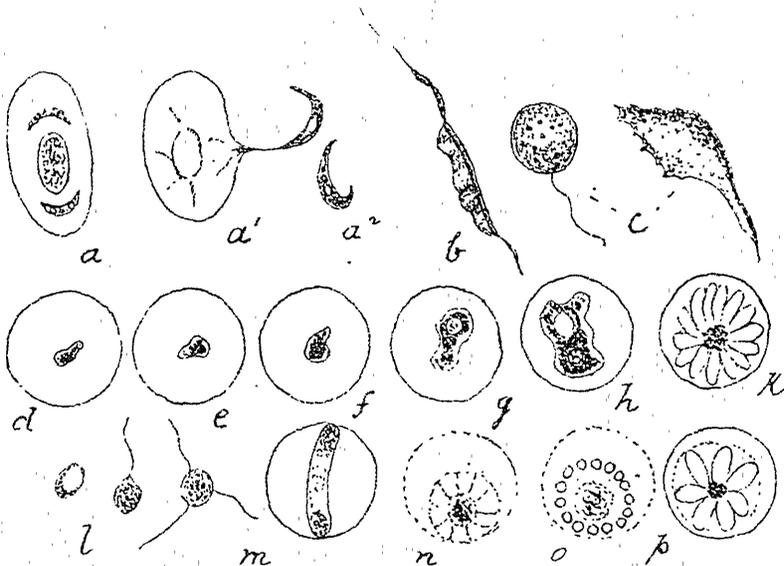


FIG. 4. VARIOUS FORMS OF BLOOD-CELL PARASITES.

a, Red blood-cell of frog containing two crescents of *Cr. panidum ranarum*, a 1, a crescent escaping, a 2, a free crescent; b, *Trichomonas* from fish's blood, c, from frog's blood—two phases; d-k, successive phases of development of *Plasmodium malarie* within human red blood-cells; k, segmentation in the rosette form with central pigment. l, free segments which may be amœboid or flagellate; n, o, plasmodium of tertian, p, of quartan ague according to Golgi.

the blood-cells of the acute cases of malaria, and exhibit a different stage of evolution according to the phase of the attack. During the apyrexia the plasmodia are to be recognized as minute, colorless amœboid bodies (Fig. 4) which gradually grow at the expense of the stroma of the red blood-cells, and become more and more loaded with fragments of black-pigment—melanin—the result of the digestion of the hæmoglobin. Eventually the whole of the stroma is devoured, the plasmodium assumes a globular form, the pigment generally accumulates at the centre, and the peripheral protoplasm segments into a number of young plasmodia, which are free from

o, p). The relationship of the intra- and extracellular crescents (Fig. 4, m) of chronic cases to the plasmodium has not yet been satisfactorily made out, but it may be noted that, while quinine at once causes the disappearance of the ordinary plasmodium from the blood, the crescents are on the other hand quite refractory thereto.

Flagellated forms with three or more rapidly moving lashes are to be met with in some cases, especially in the blood from the spleen, and these have been observed to be developed from the free oval or rounded bodies. Nothing so far can be said as to their significance.