with the pigment cells. The dark pigment les contrast strongly with the surrounding ess fluid and cell membrane, so that any ion of position which they may experience very easily observed.

have already remarked that the frog is e of changing from a dark, almost black, a comparatively light appearance, and rse; and this is effected by a change of n of the pigment molecules in the cells. the pigment granules are aggregated together in the cavity of the cell so as under the microscope, a more or less spot, the colour of the frog is light; diffused through the cell, and in part h the tubular processes, the colour is ; and when the pigments are still further through the various ramifications of , so that comparatively few remain in the portion of the cell, the colour of the almost black. Of course, there are some hich are never of a dark colour, but we find that, without exception, the colour frog is darkest the more diffused the pig- nules are through the tubular process- e cells, and lightest the more concentrat- are in the central portion of the cell. supposed by Brucke and Von Wittich en the pigment was aggregated in the portion of the cell this was effected by ening or contraction of the processes of in which it was diffused, but this sup- was first shown to be erroneous by Lis- . *cit.*) On careful examination we find pigment moves from and towards the portion of the cell quite independent of ge in the form and dimension of the its processes. On the contrary, the granules appear to be under the influ- a force or forces which reside in the part of the cell, while at the same time e place to a certain extent under the e of the nervous system. If, for ex- the frog be excited by laying hold of it cause it to struggle, the pigment imme- becomes collected in the central part of and the animal turns pale. Again, if l is brought from a dark place, and to a bright light, the same thing takes ce as has been shown by the light stimulat- pigment cell directly, but by reflex action, the medium of the optic nerve. In this stimulus of light is conveyed by the op- es to the nerve centres, and is thence re- or sent to the nerves of the skin, and y exciting the pigment cells to action, concentration of the pigment in the central cell. Concentration of the pigment ven cell may, besides, be occasioned by itating the part either mechanically or cal re agents. On the other hand, dif- the pigment into the processes of the s to take place when the parts are in quiescence, and seems to be caused by the particles having a repellent action on each other, which comes into operation as soon as the attractive force which is seated in the centre of the central portion ceases to be exerted with intensity sufficient to keep the granules together.

Having thus endeavoured to describe as briefly as possible the nature of these pigmentary movements, let us next consider them when a part in which the cells are seated has been irritated to such a degree as to cause inflammation. We have already seen that one result of irritating a part to such an extent as to give rise to inflammation is to cause viscidity of the blood corpuscles, and in this way to hinder the circulation, notwithstanding that the calibre of the vessels is greater than usual. If now we irritate strongly a small portion of the web of the frog's foot by placing a drop of turpentine or a little mustard on it, we shall find a remarkable difference in the behaviour of those pigment cells which are seated directly under the irritant from those which are situated at a little distance. Let us suppose that at the commencement of the experiment the web is dark and the pigment consequently diffused throughout the processes of the cells, we shall find that while the pigment still remains in a state of diffusion in those cells which are placed nearest the irritant, it becomes concentrated in those cells which are further removed from the irritant, and on which the irritant acts with comparative mildness. On continuing to watch the web, it is found that no movements take place in these cells which are situated at the point of the irritation. The pigment granules remain in the same state as they were at the moment of the application of the irritant, while the surrounding cells which were more gently stimulated exhibit movements of their molecules as usual.

It may now be asked what is the cause of the stoppage of the molecular movements in those cells seated at the point of irritation. We have seen that the molecular movements are in all probability caused by a force which resides in the centre of the cell. We are, therefore, forced to the conclusion that the movements in question are destroyed by the irritant acting so strongly as to paralyse the central force. If the irritation, however, has not been too great nor too long applied, the central force recovers its power, and the pigment again exhibits its usual movements; at the same time, the part begins to swell from the formation of the fibrine and the effusion of serum, and the various signs and symptoms of inflammation ensue. Bearing in mind that what takes place in the pigment cells likewise takes place in all the other cells of the part, we come to the conclusion that the ***first stage of inflammation consists in paralysis of the functions of the part***, and it is owing to this that the blood corpuscles, which flow through the part, become viscid, and stop the circulation; in the same way as they become viscid, and adhere to each other when removed from the ves-