

is full of fine brown pigment granules (fig. 6, *d*). They form an apparently continuous pigmented layer at the base of the phosphorescent organ, but the lines of separation of the margins of the cells can be clearly detected with a high power of the microscope (fig. 6).

The phosphorescent organs are traversed by small blood-vessels (figs. 4, 6), in abundance. These vessels may be seen ramifying in the organs when viewed by a strong light in the uninjured fish. They appear to be more or less correspondingly arranged on the organs of opposite sides. The capillary vessels appear to traverse the organs superficially to the pigment-cells and amongst the bases of the rods, since the tips of the rods may be detected as present above them by careful focussing when an organ is viewed from the surface.

When a portion of a phosphorescent organ is examined with a deep focus from the surface, a network of ramifying pigmented strings and fibres is observed, which lies just above the hexagonal pigment-cells and includes the hexagonal columns in its meshes (figs. 6, 12, 13, 14). The pigmented strings follow mostly the lines of junction of the margins of the hexagonal pigment-cells and thus surround the bases of the hexagonal columns, but they also form long main stems extending for considerable distances in a definite direction, and give off numerous connecting offsets which may directly cross the hexagonal areas. They also send vertical offsets up between the columns which give off fine ramifications and form partial networks at the surface of the phosphorescent organs, amongst or just below the superficial cells. The strings are very deeply coloured by the presence of dark brown pigment-granules. They show enlargements at their points of junction, and these enlargements contain in their interior small masses of pigment darker than the general pigment.

Beneath the components of the phosphorescent organs already described is a layer of connective tissue, which contains numerous large ramified pigment-cells such as occur commonly in the pigmented tissues of other fishes, and which is also traversed by nerves and blood-vessels (figs. 15, 16). I am uncertain whether in the recent condition this connective tissue layer is always in close relation with the under surface of the phosphorescent organ. It is frequently found widely separated from it in my sections, but I think it most probable that, in the recent condition of the animal, it lies closely applied to the floor and against the walls of the phosphorescent organ cavity, with the under surface of the phosphorescent organ closely applied to and in contact with it. It is shown in fig. 2 as seen in an actual section, where it is detached both from the phosphorescent organ and the floor of its cavity, excepting towards the outer margin of the latter. It is attached towards the middle line to the sides of the ethmoid septum where the latter unites with the ridge of the roof of the skull. No doubt it supplies nerves and blood-vessels to the phosphorescent organs. Blood-vessels are frequently seen in sections attached to the under surface of the phosphorescent organ by parts of the connective-