

be performed, although we are here unable to follow the connexion between the means and the end. In some glands, for example, the minute arteries, on their arrival at the organ, suddenly divide into a great number of smaller branches, like the fibres of a camel-hair pencil: this is called the *penicillated* structure. Sometimes the minute branches, instead of proceeding parallel to each other after their division, separate like rays from a centre, presenting a *stellated*, or star-like arrangement. In the greater number of instances, the smaller arteries take a tortuous course, and are sometimes coiled into spirals, but generally the convolutions are too intricate to admit of being unravelled. It is only by the aid of the microscope that these minute and delicate structures can be rendered visible; but the fallacy, to which all observations requiring the application of high magnifying powers are liable, is a serious obstacle to the advancement of our knowledge in this department of physiology. Almost the only result, therefore, which can be collected from these laborious researches in microscopic anatomy, is that nature has employed a great diversity of means for the accomplishment of secretion; but we still remain in ignorance as to the kind of adaptation, which must assuredly exist, of each structure to its respective object, and as to the nice adjustment of chemical affinities which has been provided in order to accomplish the intended effects.\* Elec-

\* The only instance in which we can perceive a correspondence between the chemical properties of the secretion, and the kind of blood from which it is prepared, is in the liver, which, unlike all the other glands, has venous, instead of arterial blood, sent to it for that purpose. The veins, which return the blood that has circulated through the stomach, and other abdominal viscera, are collected into a large trunk, called the *vena portæ*, which enters the liver, and is there again subdivided and ramified, as if it were an artery: its minuter branches here unite with those of the hepatic artery, and ramify through the minute lobules which compose the substance of the liver. After the bile is secreted, and carried off by hepatic ducts, the remaining blood is conducted, by means of minute hepatic veins, which occupy the centres of each lobule, into larger and larger trunks, till they all unite in the vena cava, going directly to the heart. (See Kiernan's Paper on the Anatomy and Physiology of the Liver, Phil. Trans. for 1833, p. 711.) A similar system of ve-