enter the sinusoids through the periportal network mentioned above. Other arterial branches supply both the portal vein itself and a plexus which surrounds the bile duct. There is some anastomosis between arterial branches of different portal tracts mainly via the subcapsular arterial plexus.

(3) In the mammals so far studied, namely, man, dog, cat, rabbit and guinea pig, there is a well-marked plexus around the branches of the bile duct (Fig. 2). We presume this is the 'arterial' capillary plexus referred to by Mall[4] and others. It is especially prominent around the cystic duct and gall bladder. It is connected chiefly to the portal venous system by both small, direct communications and by branches from the vessels which supply the periportal network. The arterial supply is much less extensive. In places this plexus collects into larger vessels which enter the sinusoidal network.

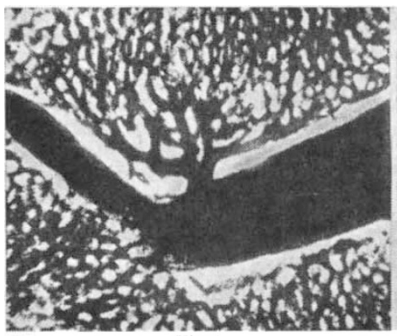

Fig. 1

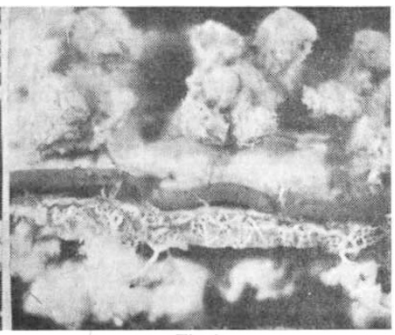

Fig. 2

Fig. 1. Indian ink preparation. Portal vein showing a 'short' branch supplying large sinusoids, some of which run parallel to the portal tract

Fig. 2. Neoprene cast. The background is formed by a branch of the portal vein and clumps of sinusoids. The hepatic arterial branch is dark, and below it lies the peribiliary plexus communicating with the sinusoids

(4) Terminally, the branches of both the hepatic artery and portal vein enter large sinusoids which divide into smaller ones.

(5) The hepatic venous circulation is simpler. Sinusoids drain directly into the central veins, and, in places, into much larger vessels. Sinusoids are often locally collected into short trunks which pass into the larger vessels at right angles to their surfaces. There is no network equivalent to that seen in the periportal circulation.

The portal venous and hepatic arterial circulations do not appear to have direct connexion with the hepatic venous circulation, except through sinusoids.

We could find no direct evidence of anastomosis between the portal vein and the hepatic artery within the portal tracts. The existence of the network of vessels described above, however, strongly suggests that blood reaching the lobule is mixed arterial and venous. There is a high degree of branching and anastomosis of the sinusoids themselves.

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Water Content of Saliva Dried at Various Humidities

In calculations relating to the aerial bactericidal action of certain α-hydroxy acids, it was noted that the calculated rates of diffusion of these acids into air-suspended salivary particles, when plotted against the water content of the particles, did not appear to extrapolate to the expected diffusion-rate in pure water at 100 per cent water content[1]. It was suggested that this might be due to the formation of a shell of dried material on the outside of the particles so that the water content of the particle as a whole, some minutes after its formation, exceeded that of the outer layers, the estimated diffusion-rates being largely determined by the water content of these layers. Measurements of the equilibrium water content of saliva dried at various relative humidities confirm that, at relative humidities greater than 50 per cent, the water content of the salivary particles some minutes after their formation exceeds the equilibrium value.

The measurements were made at room temperatures, 18–20° C., using 0·25 c.c. of saliva from a healthy subject for each determination. The standard error of a determination appeared to be about 20 per cent. The accompanying table shows smoothed values for the equilibrium 'free' water content, derived from some fifty observations, compared with the published figures for the water content of air-suspended salivary particles some minutes after their formation[2].

Relative humidity (%)	'Free' water content (%)	
	Equilibrium value	Air-suspended particles
< 1	(0)	(0)
10	2	—
30	9	8
50	22	25
70	37	51
90	52	78

When these equilibrium values of the 'free' water content, which may be supposed to correspond to the 'free' water content of the outer layers of the air-suspended salivary particles, are plotted against the logarithms of the rates of diffusion of the α-hydroxy acids into such particles, deduced from measurements of their aerial bactericidal action, the resulting line, extrapolated to 100 per cent water content, is consistent with the diffusion-rates of similar substances in pure water.

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