ground that Estelle did not neutralise the urine before adding magnesium sulphate—in other cases the same observer found the albuminous urine to contain albumen only, the globulin being wholly absent.[1] Moreover Maguire[2] has shown that the proportions vary within enormous limits,[3] and in four cases, three of the nature of "cyclic" albuminuria and the fourth puerperal, he discovered globulin alone to be present, with at most only the faintest possible trace of serum-albumen, which it was impossible to estimate. Variations so wide as these can only be accommodated to a theory of glomerular filtration on the supposition that the relative amounts of the proteids in blood-serum undergo enormous alterations, that sometimes serum-albumen is absent, or almost absent, and sometimes globulin, a supposition which again, I think, no one will be prepared to admit. A more satisfactory conclusion is that the amount, and the relative proportions, of the proteids in the urine are only to a certain extent dependent upon the composition of the blood-serum; and that one of the functions of the healthy glomeruli is to prevent the removal of albumen and globulin from the blood when these are

[1] Estelle's statement with regard to the urine of one patient (*loc. cit.* p. 711), "*Ce n'est toujours que de la matière A*" (serum-albumen), is evidently from the context a misprint, B (globulin) alone being present. But by injecting a solution of serum-albumen into the jugular vein of a guinea-pig, Estelle obtained urine giving the reaction of albumen alone. And in the case of a young dog, to which amylic alcohol had been given, he obtained the following results (globulin being determined by the addition of magnesium sulphate):—Blood-serum: albumen 5·2 per cent., globulin 6·4 per cent.; Urine: albumen 0·34 per cent., globulin 0·8 per cent. The percentages of proteids in the blood-serum here given are much larger than those determined by Salvioli (*loc. cit.*), and the proportion of globulin present is placed at a figure much above the normal. It is doubtful whether even 0·08 per cent. of globulin was present in the urine, for, as Ott (*Zur quantit. Bestim. d. Eiweisskörp. im Harn, Prager med. Wochenschr.* 1884) has pointed out, magnesium sulphate brings down a portion of the serum-albumen as well, provided that 0·5 per cent. of acid phosphates be present in the solution. Nevertheless the above figures, even allowing a large margin for errors of experiment, show that there is no immediate relation between the proportions of the proteids in the blood-serum and urine respectively.

[2] *Loc. cit.*

[3] The results may be put roughly thus:—

I. Case of granular kidney—albumen : globulin : : 2·5 : 1.

II. Case of granular kidney and mitral stenosis—albumen : globulin : : 4 : 1.

III. Cases of anæmia and albuminuria with probable fatty degeneration of kidney. Albuminuria, absent at first with rest, came on upon getting up, and bore distinct relation to the amount of exercise taken—albumen : globulin : : 1 : 2·5.