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a variation dependent in part upon the degree of hæmoglobinuria, but mainly due to the state of renal activity. Thus diuretics, such as sodium nitrate, caused a dilution of the hæmoglobin-containing urine, although in a given time the total amount of hæmoglobin excreted was markedly increased.<sup>1</sup> This pointed to augmented activity of the glomeruli under the influence of the diuretic. The relation of the hæmoglobin in the "laky" blood-serum to that in the urine I found to vary from 1.0:0.22<sup>2</sup> to 1.0:3.45<sup>3</sup>; or in other words the urine contained in the one instance only about one-fifth of the hæmoglobin in the serum, in the other it held over three times as much. Variations so great as this, and the possible presence of so much more hæmoglobin in the urine than in an equal volume of blood-serum, can be accounted for by none of the theories of filtration at present put before us.

I am aware that Senator <sup>4</sup> has pointed out what is perhaps an error in my previous paper. It was there stated that if an excretion contained more of a given substance per unit-volume than did the original fluid, then some other laws beyond those of filtration must necessarily be at work. Now W. Schmidt<sup>5</sup> has found that in the filtration of solutions of gum and salt, and gum and urea, the filtrate may be richer in sodium chloride to the extent of from 0.02 to 0.07 per cent. and in urea from 0.006 to 0.08 per cent. And Runeperg<sup>6</sup> and Loewy,<sup>7</sup> in a series of observations upon albumen solutions containing salt, found that the salt in the filtrate might be one-tenth (Runeberg), and onehalf (Loewy), more per unit-volume than in the original fluid. To all these observations objections may be brought. The separate results of each of the three appear to vary without adequate cause. Thus both Runeberg and Loewy found now more, now less, salt in the filtrate than in the mother-fluid. Nor again is there any consonance between the amount of excess found possible by each observer. But even granting that a filtrate may contain, as these observers contend, some increase in the relative amount of any one or more constitutents over

<sup>1</sup> Loc. cit. p. 415. <sup>2</sup> Ibid. p. 417.

<sup>3</sup> Ibid. p. 407.

<sup>4</sup> Senator, Virchow's Archiv vol. cxi. p. 228 (1888).

<sup>5</sup> W. Schmidt, Annal. d. Physik vol. cxiv. pp. 364-389 (1861).

<sup>6</sup> Runeberg, loc. cit. p. 55.

7 Ad. Loewy, Zeitschr. f. physiol. Chemic vol. ix. p. 537 (1885).

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