The concentrations of inulin in the urine were astonishing: in one experiment 35.8%; in another 32.3; in another 22.4. In one instance the concentration ratio, U/P, was 150; in another 132.

It must be stated that in more than half the experiments undesirably large variations in the plasma concentrations of the substances studied (particularly of inulin) occurred, due presumably to the methods of administration. Exclusion of these from consideration does not, however, alter the conclusion drawn from the series as a whole, *viz.*, that the plasma clearance of injected inulin is of the same order as that of injected creatinine and higher than that of xylose. We are inclined to ascribe this difference to greater diffusion of xylose than of inulin from the renal tubule.

One main purpose of this publication is to call attention to the possible usefulness of inulin in connection with renal studies.

7565 C

Occurrence of Non-Motile Leucocytes.

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Sabin, Cunningham, Doan and Kindwall[1] observed that when supravital counts were made on blood drawn every 15 minutes there appeared "showers of non-motile cells" at approximately hourly intervals. They interpreted these as being due to degenerating polymorphs which were actually dying in the blood stream. Beard and Beard[2] confirmed the existence of these showers, and were able to increase their magnitude without altering their rhythm by the injection of sodium citrate. More recent workers (Smith and McDowell,[3] Jones, Stephens, Todd, and Lawrence[4]) have been unable to confirm these observations, and find that the non-motile cells occur at irregular intervals and are probably artefacts.

If the non-motile cells are really dying polymorphs, most of them should be old cells, as determined by the criterion of the number of lobes in the nucleus (Cooke and Ponder[5]), whereas if they are

[1] Sabin, Cunningham, Doan and Kindwall, *Johns Hopkins Hosp. Bull.*, 1925, **37**, 14.

[2] Beard and Beard, PROC. SOC. EXP. BIOL. AND MED., 1927, **24**, 614.

[3] Smith and McDowell, *Arch. Int. Med.*, 1929, **43**, 68.

[4] Jones, Stephens, Todd and Lawrence, *Am. J. Physiol.*, 1933, **105**, 547.

[5] Cooke and Ponder, The Polynuclear Count, 1927, London.

artefacts, we might well expect both young and old cells to be affected, *i. e.*, cells of all the classes of the polynuclear count. I have made a series of counts to determine (a) whether the non-motile cells occur regularly, and (b) whether they are always old cells, *i. e.*, cells of the higher classes of the polynuclear count. For each count 2 preparations were made under separate coverslips but on the same slide, and these were examined by the supravital technique, counts of non-motile cells being made in regions of the preparations which initially showed many motile forms. Table I shows a typical series of results. The preparation designated by (a) was the one counted first.

TABLE I.

Preparation	Total cells counted	Polymorphs, %	Non-motiles, %
1 a	100	72	12
b	100	73	4
2 a	100	73	1
b	150	67	9
3 a	150	74	8
b	200	74	3
4 a	100	73	2
b	150	76	14
5 a	200	75	17
b	200	73	4

The nuclei of the non-motile cells became swollen, and the lobation is often obscured: it is possible, in fact, to count the nuclear lobes in only about half the cases. The data on this point are, in consequence, purely qualitative, but where it was possible to distinguish the number of nuclear lobes it was found that there were generally 2 lobes, sometimes one or 3 lobes, and only once 4 lobes. Taken together, the results show that the percentage of non-motile cells show large fluctuations even under the same conditions (*i. e.*, there are large differences between the percentage of these cells in 2 preparations made at the same time from the same sample of blood), whereas the percentage of total polymorphs remains very constant, and also that the non-motile cells are not necessarily old cells. It is a little surprising that a larger number of polymorphs of class IV were not seen, but these, the oldest cells of all, may well have been represented among the non-motiles whose nuclear lobation was impossible to determine. It is to be concluded that the non-motile cells are produced by some uncontrollable factor involved in making the preparation, and that the presence of these cells can not be interpreted as indicating the presence of dying polymorphs in the blood stream.

From purely numerical considerations, it is difficult to see how

one could expect to detect the presence of dying cells by any of the known methods of counting even if they were to die in "showers" at hourly intervals. Assuming that there are 7000 polymorphs per mm.^{3} of blood, and that the average life of these cells is about 15 days (Cooke and Ponder[5]), there would be 20 cells per mm.^{3} of blood dying each hour, or only 0.002% of the white cells in a given volume of blood.

7566 P

Simultaneous Excretion of Creatinine and Certain Organic Compounds of Iodine.*†

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In these experiments the urinary excretion of creatinine has been compared with that of (1) mono-iodo-methane sulphonate of sodium (Skiodan), (2) 3:5 diiodo-4-pyridon-N-acetic acid diethanolamine (Neoskiodan, Diodrast) and (3) sodium ortho-iodohippurate (Hippuran). These 3 organic compounds of iodine owe their practical usefulness in excretion urography to their exceptionally rapid elimination in the urine. Of the normal constituents of urine creatinine is excreted in highest concentration relative to the plasma level. The mechanism of creatinine excretion is not entirely clear (Rehberg,[1] Jolliffe, Shannon and Smith[2]); it is therefore interesting to record that the plasma clearances of these organic compounds of iodine may equal or, under certain conditions, considerably exceed the simultaneously determined creatinine clearances. Their excretion is similar on one hand to that of creatinine, on the other to that of phenol red (Marshall[3]).

In human subjects and unanesthetized dogs various grades of

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† The organic compounds of iodine were supplied by the Winthrop Chemical Company and by the Mallinckrodt Chemical Works.

‡ Determinations of creatinine were made by Miss E. H. Shiels.

[1] Rehberg, P. B., *Biochem. J.*, 1926, **20**, 447, 461.

[2] Jolliffe, M., Shannon, J. A., and Smith, H. W., *Am. J. Physiol.*, 1932, **100**, 301.

[3] Marshall, E. K., Jr., *Am. J. Physiol.*, 1931, **99**, 77.