time interval following the addition of the enzyme so that apparently the same reaction occurs in both compounds. The lack of black pigment formation in the case of the tyrosol experiments is apparently due to the absence of the amino group which would, at least, suggest that the rose-red oxidation colors of a tyrosine-tyrosinase system are dependent upon one type of a chemical reaction and the red-black oxidation colors are caused by a second reaction. It is my experience that the enzyme is necessary to initiate each reaction, and that the second phase of the oxidation will not take place spontaneously, even in the presence of atmospheric oxygen.

273 (2505)

The distribution of water added to blood between the corpuscles and the serum.

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There seems to be uniformity among those who have tried that distilled water injected intravenously or subcutaneously does not act as a diuretic. While the water content of the whole blood or the hemoglobin percentage has been followed the actual water content of the plasma does not seem to have been determined. Owing to the large percentage of solid in red corpuscles it seemed possible that these cells might take up considerable water if the conditions of equilibria were upset. In this paper reference will be made only to experiments done *in vitro*. Two methods were followed. In the first, various amounts of water were added to samples of the same defibrinated blood, and after standing, the various samples were centrifuged and the water estimated in the different sera by weighing. In the second method the defibrinated blood was centrifuged and the serum and corpuscles separated. Portions of the serum were diluted with definite amounts of distilled water and then equal volumes of the centrifuged corpuscles and various sera were mixed and allowed to stand for a couple of hours. The results show that if the amount

of water added to the blood is not sufficient to cause perceptible laking, far more of the water enters the corpuscles than would be expected from purely osmotic considerations. In some of our experiments all of the water added to the blood had entered the corpuscles. An example of this is given below.

Ox defibrinated blood. Original serum had 91.5 per cent water. Dilutions made by taking 14, 13, 12 and 11 cc. of this serum and adding water to make up to 15 cc. 10 cc. of corpuscles mixed with 10 cc. of the sera. After standing 2½ hours and centrifuging, the percentages of water in the sera were: 90.9, 91.2, 91.5 and 91.2 respectively. By the hematokrit the percentage of corpuscles was 44.1 in the original, 48.4, 49.4, 53.5 and 56.4 in the bloods with diluted serum.

The average water content of the serum increased only from 90.9 to 91.5 in eight experiments with different samples of ox blood when 25 cc. of water was added to 100 cc. of the blood. If one takes the original blood as 44 per cent corpuscles and 56 per cent serum and the added water distribution uniformly between the two, one would expect about 92.7 per cent water in the serum instead of the 91.5 per cent found. These experiments were carried out at room temperature.

These results show that water may penetrate the cells beyond the amount expected from a purely osmotic process and must be due to some hydrophilic property of the colloid. These experiments are being continued, using different strengths of salt solution.

274 (2506)

Production of goiter in rats by restricted iodin feeding.

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Two litters of white rats were divided, half of each being placed in a separate cage. They were all fed the following diet: 53 parts oats, 25 parts patent flour, 20 parts linseed meal, one

* Introduced by E. P. Lyon.