ON CERTAIN CHANGES IN THE FORM OF THE RED CORPUSCLES OF THE BLOOD, PRODUCED BY CERTAIN FLUIDS.

By WILLIAM ADDISON, M.D., F.R.S., Fellow of the Royal College of Physicians, London.

It is well known, when freshly drawn blood is examined in the usual way with a microscope, that the fluid—liquor sanguinis—is seen transparent or clear, the red corpuscles adhering together in rolls. The outline of the corpuscles is smooth or even, and no marks are visible on their surface or in their interior.

There are, however, frequently to be seen, as exceptions, a variable number of corpuscles floating separately in the fluid, which exhibit an uneven, a spotted, or perhaps a prickly looking outline. The capsules of these corpuscles appear beset with sharp points, or the outline of them is rumpled and uneven, and they have lost their tendency to adhere together. These altered forms have been described by Hewson, Gulliver, and other observers. They are usually seen at the outer edges of the film of blood under examination.

The two forms of the red corpuscles of the blood here described are shown in the figure below. They are to be seen without adding anything to the blood.

EXPERIMENT I. With the point of a lancet, mix together a very small drop of blood and an equal amount of a weak solution of common salt (two grains of the salt to half a fluidounce of water); or mix a drop of blood with an equal quantity of very dilute solution of potash or soda. Upon an examination with the microscope, the whole or a great majority of the corpuscles will be found to have assumed the forms 2. Now add at one of the edges of the thin covering glass a drop of the

diluted hydrochloric acid (*Ph. Lond.*); and forms 2—i. e., the prickly or rumpled forms—will be seen changing into forms 3.

The capsules of the uneven corpuscles (2) may be seen gradually to lose their rough or prickly appearance; they become again smooth; and a bright matter of various forms shows itself, nucleus-like, in their interior (forms 3).

The order of this experiment may be reversed thus. Mix a drop of very diluted hydrochloric acid (one drop of hydrochloric acid to twenty drops of water) with a drop of blood, whereupon the majority of the corpuscles will be found to have assumed forms 3. Now add at one of the edges of the covering thin glass a drop of liquor potassæ, and forms 3 may be seen gradually to change into forms 2.

EXPERIMENT II. Dissolve twelve grains of refined sugar in a fluidounce of water. Make a fluidrachm of this solution alkaline to the ordinary test-paper with solution of potash; and make another drachm of the sugar-solution acid to litmus-paper with hydrochloric acid. With the alkaline solution produce forms 2, as in the first experiment; and then add at an edge of the covering glass a small drop of the acid solution,

and forms 2 will be seen changing into forms 3. Reverse the order of the application of the alkaline and acid solutions, and forms 3 will be seen changing into forms 2. Lemon or orange juice may be substituted for the diluted mineral acid.

In this experiment, the solution of common salt before spoken of may be used instead of the sugar solution; an alkaline saline solution producing forms 2, and an acid saline solution producing forms 3. Forms 3 may be changed into forms 2 by adding to the edge of the covering glass a drop of liquor potassæ; or, reversing the order of the experiment, forms 2 may be changed into forms 3 by adding at an edge of the covering glass the diluted hydrochloric acid of the *Pharmacopœia*.

Now, it is to be observed, in making these experiments, that the corpuscles, in undergoing the changes from forms 2 to forms 3, or from forms 3 to forms 2, resume for a period their normal form 1; that is to say, the corpuscles, in the process of their change from one abnormal form to the other, resume their usual or natural figure and appearance, without any unevenness of the capsule, and without any bright or other spots in their interior.

Moreover, during the transition, they also regain their tendency to adhere together in rolls or masses, and individual corpuscles may be seen elongated very much before their renewed tendency to adhere together is overcome.

When a liquid is added to the edge of the thin covering glass, as in these experiments, it diffuses itself irregularly between the contiguous surfaces of the upper and lower glasses; and the observer will have to find the place or places in which the phenomena described are taking place.

Numerous little currents are usually the result of the added fluid; and it is extremely interesting to observe a stream of corpuscles of the forms 2 enter a channel scarcely wide enough to admit two of them abreast, and to see them all issue at the other end of the channel with the forms 3.

We can then, by an appropriate application of alkaline and acid fluids, impress particular forms upon the red corpuscles of human blood. We may see them gradually change from one form to another, and observe during the transition that the corpuscles regain, for a longer or shorter period (dependent upon the strength of the reactions), their normal figure and adhesive properties—properties which are in abeyance whilst they retain either the form 2 or the form 3.

With respect to the emission of moving tails or filaments, or molecular matter, from the red corpuscles when under the influence of sherry wine (described in *Proceedings of the Royal Society*, vol. x, No. 37; and *BRITISH MEDICAL JOURNAL*, June 11th, 1859), I find that an acid reaction in the vinous fluid is an essential ingredient towards producing this remarkable phenomenon. The corpuscles from which the tails issue are much more nearly allied to forms 3 than to forms 2. Moreover, upon testing the several vinous liquids with which I have succeeded in producing the tailed forms, I find they have all of them an acid reaction upon litmus-paper.

[To be continued.]

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SALE OF POISONS IN FRANCE. A medical student, named Delorme, and a retired apothecary, named Boucaumont, have been tried before the French Tribunal of Commerce on the charge of homicide by imprudence. The following were the circumstances of the case:—A young girl, eighteen years of age, went astray, but after awhile was seized with remorse, and determined to commit suicide. A friend remonstrated, and, as he thought, succeeded in persuading her to abandon the intention. A few days afterwards she called on Delorme, and in the course of conversation took up a phial containing an arsenical compound. "Do not touch that," he said, "it is poison." "I am not afraid of poison," she replied; and from what afterwards transpired, she appears to have secreted the phial, and went away. Two days later she committed suicide by means of this poison. The phial having been traced to Delorme, he was arrested and tried for his imprudence in allowing the girl to obtain the poison, and Boucaumont for supplying the poison, contrary to the regulations in force. The defence of the former was, that he did not know that the girl had taken the phial, and of the latter, that it was supplied with the understanding that it was required for experiments. The tribunal condemned each to three month's imprisonment, with the addition of a fine of 50*l.* in the case of the apothecary.