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# A SIMPLE METHOD OF DEMONSTRATING THE ALKALINE REACTION OF THE BLOOD.

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Under a title similar to the above Kühne[1] describes a method of proving the alkalinity of the blood, which although ingenious, is not so expeditious as is desirable for purposes of demonstration. It consists in placing the blood in a small dialyzer (made by moulding a piece of parchment paper into a minute cup) in a watchglass of water and testing after a time the water upon the other side of the parchment paper. Some of the salts upon which the alkalinity depends pass into the water, and the desired reaction is obtained. But whilst this is occurring the blood has generally clotted and its alkalinity may be increasing or diminishing; the result does not give the reaction of freshly-drawn blood.

In addition to this method two others are mentioned by Gscheidlen[2] and Gamgee[3]. One is that of Liebreich[4] who recommends the use of slabs of plaster of Paris, coloured by neutral litmus solution, the drop of blood being allowed to rest upon the slab for a few seconds, and then to be washed off by a stream of water, which removes the red corpuscles, and allows the blue colouration of the place where the blood has rested to be seen. The other, which is due to Zuntz[5], consists in placing the drop of blood to be tested upon glazed litmus paper, previously moistened with strong solution of common salt or sulphate of soda, and after a short time washing the blood off with some of the same solution.

Both of these methods have the advantage over that of Kühne in being rapid, and thus not allowing time to elapse during which the blood may undergo important changes, but they are both liable to objection. Liebreich's method is troublesome in needing the preparation of the porous slabs, and to the method of Zuntz it may

[1] Kühne, in *Virchow's Archiv*, xxxiii., 1865.
[2] *Physiologische Methodik*, pp. 324 *et seq.*
[3] *Physiological Chemistry*, p. 26.
[4] Liebreich, in *Berichte d. deutschen chem. Gesellsch. zu Berlin*, 1868.
[5] Zuntz, in *Centralbl. f. d. med. Wissensch.*, 1867.

be objected that the addition of strong solution of salt effects an alteration in the blood-plasma by causing osmosis from the corpuscles, as evidenced by the shrinking they exhibit. Neither of these objections will apply to the method here to be described.

In the first place it should be mentioned that the introduction of elaborate methods to attain a simple object is due to the assumption that the hæmoglobin of the blood will soak as fast into the pores of the litmus paper used for detecting the reaction as will the alkaline salts themselves. This is not the case, however, with the delicately-coloured glazed litmus paper which is now obtainable[1], and accordingly this may be employed directly for testing the reaction even of a coloured animal fluid like the blood. The mode of procedure is as follows:—A drop of blood, obtained by pricking the finger, is placed upon the smooth coloured surface of a piece of the dry, faintly-reddened glazed litmus paper, and after a few seconds is wiped off with the corner of a handkerchief or clean linen rag moistened with water. The place where the blood has stood is seen to be marked out as a well-defined blue patch upon the red or violet ground. Nothing can be clearer or more convincing than the demonstration of the natural alkalinity of the blood which is afforded by this simple experiment.

[1] The litmus papers used for the purpose were obtained from Messrs. Townson & Mercer, of Bishopsgate Street, and cannot be too highly recommended for their susceptibility to traces of alkali (or acid). The papers are only coloured on one side.