Fig. Photomicrograph of early sickling-cell haemoglobin C disease observed in the described apparatus.

red cell suspension withdrawn by means of a Foley catheter is measured using the Astrup oxygen electrode.

This technique uses less than 1 ml of blood and permits serial observations of sickling, pO_2 tensions, and oxygen dissociation to be made on a single sample (Fig.)

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Conversion of a continuous flow system into a semidiscrete one for use in automatization of serological methods

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The continuous flow system for automatic analysis (AutoAnalyzer) is much in use in clinical chemistry laboratories. However, when in this system the incubation time for the reactions is prolonged, it causes carryover between samples if the washing time between the samples is not sufficiently long. This means that the number of samples that can be handled in this way becomes fairly small. The discrete system in which the reaction fluids are all added, be it at different times, to a single tube seems more promising. But, this system has other disadvantages such as expense. It is possible to convert the continuous flow system into a semidiscrete system without losing the profit of both (Vargues, Studievic, and Maupas, 1970).

Needed is a second sampler, preferably with a waterbath around the sampling plate as formerly described by Vargues, Studievic, and Ripault (1967) and Gaillon, Ripault, Studievic, and Dausset (1967). The first sampler takes the sample in the normal way, for example, 60/hour with a sample/wash ratio 2/1. After adding reagents the mixture is squirted into a cup of the second sampler which moves synchronously, but with a sample/wash ratio of 1/2. In this way care is taken to have in the cup a completely uncontaminated sample. After a full turn of the sample plate a probe takes a sample from the incubated mixture and after again adding reagents and a short second incubation the sample is read in the colorimeter in the normal way. Another solution which eliminates the second incubation in the continuous flow is to add the reagents during the last part of the turn.

To make the system function automatically it is necessary to rinse the cups. This can be done by draining the remaining mixture by vacuum, filling the cup with saline and draining once more; the probes therefore can be assembled on the moving arm of the second sampler (Fig. 1a).

In this way, for example, a complete complement fixation reaction can be run, with a primary incubation time of 35 minutes and a secondary one of 10

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Fig. 1.

Fig. 1 Sample plate 2 from left to right: 1 sampling after incubation; 2, 3, 4 washing; 5 acceptance of the sample mixed with reagents.

Fig. 2 An example of a possibility to perform complement fixation tests with control of the turbidity.

Fig. 2.

minutes. A possible flow diagram is shown in Figure 2. The secondary incubation is here doubled to give a blank for serum turbidity. The results, which are in good accordance with manual techniques, are published elsewhere. Any reaction requiring long incubation times can be run in this system.

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