

A NEW METHOD OF COUNTING LEUCOCYTES.

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THE advantage of the method here described is that a total and differential count may be done simultaneously, the whole process taking about ten minutes or less. The only apparatus needed besides the usual Thoma pipette and slide is a small cylindrical tube graduated and corked. The tube of a Haldane's hæmoglobinometer cut down to the level of the 120 mark is very convenient. Liquor potassæ will clean it after use. The diluent must be made up at the time. Its composition is: Distilled water, 12 parts; acetone, 3 parts; methyl alcohol, 1 part; and Wright's modification of Leishman's stain, 4 parts.

This reagent is used as the diluent for the blood in any dilutions from 1 in 200 to 1 in 10. The red cells become almost invisible, the leucocytes stain just as they do in a film, and can be distinguished without the least difficulty. A dilution of 1 in 100 will give some 80 cells on the big square of a Thoma-Zappert slide, which is quite a large enough number to give an accurate total count, and there is no difficulty in finding 300 cells in other parts of the field for the differential. In marked leucopenia a 1 in 10 dilution enables one to find as many cells as are needed in a few minutes. There is no overstaining or precipitation in the course of two hours; there is no difficulty arising from unequal distribution or distortion or bad staining, such as one meets with in film preparations, especially if made on a slide, and in many cases one glance is enough to reveal the condition—as, for instance, a marked eosinophilia, or excess of lymphocytes, large mononuclears or polymorphic cells.

The stain will keep for several hours if corked, but it is best to prepare just enough for use each time; that is the purpose of the small cylinder. With a hæmoglobinometer tube 24 divisions of water and the rest in proportion is enough for a 1 in 100 pipette if it can reach to the bottom.

Besides the absolute cleanliness and the purity of reagents necessary for all blood work, three precautions must be observed.

1. *The Wright's stain must be filtered. It is best to do this at the time of making it up.* I grind up a tabloid with 10 c.c. of methyl alcohol and filter. About 3 c.c. are lost by evaporation, so I grind up the residue in the mortar with another 5 or 6 c.c. of alcohol and pour it through the filter till 10 c.c. have come through. I keep the same filter paper for months, so that the solution is saturated. If now 2½ c.c. of methyl alcohol are added direct to the filtered stain there is no need to add it separately in making up the diluent fluid; instead one can add 5 parts of this diluted stain after the acetone. This dilution in no way impairs its utility for staining films, but is in some ways an advantage, as one need not trouble to prevent evaporation, since it does not so easily precipitate. If well corked it appears to keep for a long time.

2. *The mixture must be very well shaken.* If this is not done a froth will form in the bulb of the pipette.

3. The various operations of mixing and putting the drop on the slide must be done with promptness; especially must the drop be covered as soon as possible, as the cells settle quickly and the acetone evaporates readily. For this reason I imagine a counting chamber with an air inlet would not be very suitable.

If these precautions are observed the method is both simple and satisfactory. The cells are best seen with the flat mirror and when the condenser is screwed down and the diaphragm half closed. A thin cover-slip and high magnification may be used.

I have tried to preserve the red cells for counting also with various modifications of reagent and method, but so far without any success. As the acetone evaporates they become visible, but this is not till after a long while, and they appear to be in clumps. All the methods I have yet tried have resulted either in clusters of red cells or diffuse staining of the leucocytes. It would obviously be a great advantage if a red, white, and differential count could all be done in one operation.

This method was suggested to me by the work of R. Dunger,

who described a similar method of demonstrating eosinophilia, by using eosin dissolved in dilute acetone as a diluent.¹

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A CASE OF CEREBRAL MALARIA: RECOVERY AFTER 48 HOURS' UNCONSCIOUSNESS.

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THE patient was a native of Ysabel Island, aged 18, strong, healthy, and well-nourished, and was employed on a small sailing vessel. On August 25th, 1911, he worked in his usual health during the day. He helped to heave up the anchor at 11 P.M. At 12 midnight he suddenly fell down "with violent convulsions" and deep unconsciousness. He soon became quiet and remained so all night.

August 26th, 10 A.M.: Patient was brought to me. Deep coma present; corneal reflex absent; pupils moderately dilated, equal, reacting slowly to light. Temperature 101° F.; pulse 160, volume and tension medium; respiration rapid and stertorous. The whole muscular system was completely relaxed. No physical signs noted in chest. Abdomen retracted, soft; spleen palpable 2 inches below costal margin, with firm, thick, rounded border. Liver just palpable, soft. No jaundice present. 10.15 A.M.: Quinine bihydrochloride, gr. 30, dissolved in 6 oz. water, given by the rectum. Distinct resistance to movement in arms felt. Fresh films of blood taken now showed a few half-grown pigmented malignant tertian malaria parasites. 11 A.M.: Occasional convulsive movements of arms and hands and facial muscles noted. Later corneal reflexes appeared, and marked resistance to passive movements of arms. Lower extremities soft and flaccid throughout. 3 P.M.: Pulse 150, softer; temperature 101°; respiration more laboured, all the accessory muscles of respiration being called into play. Corneal reflex just present. Quinine bihydrochloride, gr. 30, given by the rectum. 10 P.M.: Respiration rather easier; pulse 140, very feeble; temperature 101°. Corneal reflex present. Continuous movements of arms, hands, and facial muscles now very marked. Quinine bihydrochloride, gr. 30, given by rectum.

August 27th, 6 A.M.: Temperature 100°; respiration quite easy; pulse 116, tension fair, very much improved. The patient was unconscious, but all the reflexes were present except in the lower limbs. He turned his head in the direction of any loud noise. The lower extremities were flaccid and there was no resistance to passive movement. He resisted passive movement to the arms and head. There was now present slight icterus, to be noted in the sclerotics. He immediately rejected any fluid put into the mouth, with thin pus from a rather marked condition of pyorrhœa alveolaris. Bladder emptied by catheter. Bowels moved under him later in day. 6 P.M.: Condition generally unchanged. Pulse 110, rather improved. Still unconscious. 12 midnight: Much brighter, but still quite dazed. Moved legs with some difficulty. Later he sat up and then lay down on the floor, and passed urine naturally. No quinine was given to-day.

August 28th, 6 A.M.: Pulse 100, good quality. Stupid, and could not understand much that was said to him. Could walk with support though the legs were slightly ataxic. Took and ate biscuits given him, but immediately rejected quinine. Slept most of the day.

August 29th: A little weak but quite sensible and walked quite well. Pulse 90, good; temperature 98°. Quinine bihydrochloride, gr. 15, given in solution by the mouth and retained.

Later the boy made a complete recovery and no complications ensued.

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¹ Münchener Medizinische Wochenschrift, vol. lvii., p. 1942.

Dr. J. J. van Loghem, an Amsterdam bacteriologist who was sent out to investigate the epidemic of plague in Java, has now returned, and has received the thanks of the Government for the valuable assistance which he has afforded to the colonial medical officers.