HEMOCYTOMETER

-Hemo: blood, Cyto: cell, Meter: measurement/counter. Thus, it is an instrument used to count the blood cells.

-It includes: Neubauer's slide ,Cover slip, RBC pipette, WBC pipette.

NEUBAUER'S SLIDE

It is the name given to a thick glass slide. In the centre of the slide, there is an H-shaped groove. On the two sides of the central horizontal bar, there are scales for counting the blood cells.

The depth of the scales is 1/10mm or 0.1mm.

NEUBAUER'S CHAMBER

Neubauer's slide with a cover slip over it, is called a Neubauer's chamber.

Each scale is 3mm wide and 3mm long.

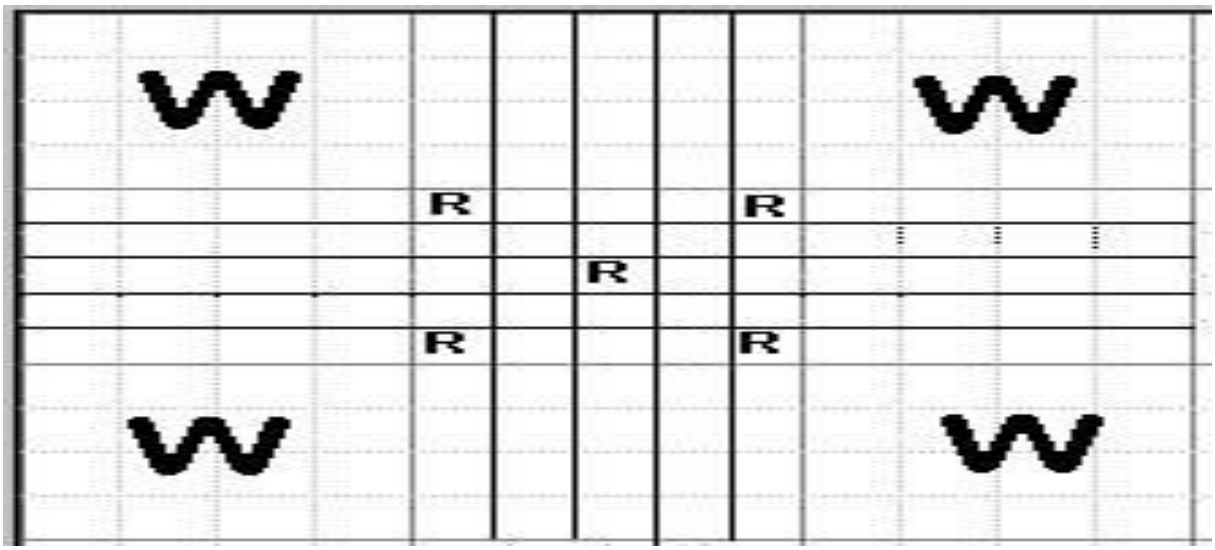
The whole scale is divided into 9 big squares.

Each square is 1mm long and 1mm wide.

The four corner squares are further divided into sixteen smaller squares and are used for WBC counting.

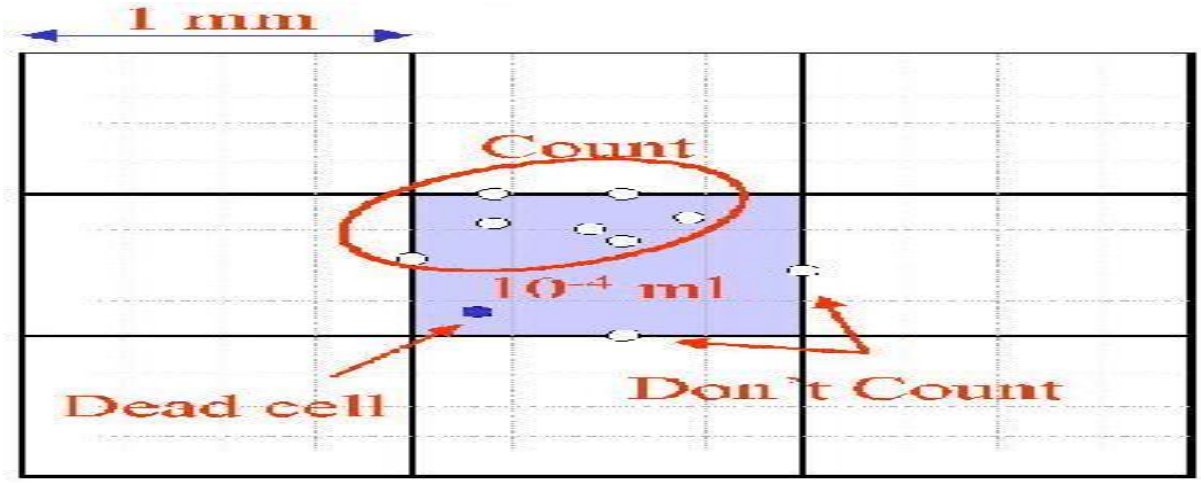
The central square is subdivided into twenty five smaller squares and each of these smaller squares is further subdivided into sixteen smallest squares. These are meant for platelet and RBC counting.

The platelets are counted in all the small squares of the central square, while the RBCs are counted in five small squares, four of corners and one of center. (total of 80 smallest squares).



Cell Counts by Hemocytometer

Counting Rule .Do not count cells touching (Bottom line, Right line), This is to avoid double counting.



DILUTION FACTORS

For RBC counting Blood is filled till mark 0.5 and Hayem's fluid is then filled till mark 101.Both are thoroughly mixed and then few drops are discarded which contain just the diluting fluid in the stem. Thus, 1 portion out of 101 is discarded. So, 0.5 part of blood is in 100 parts of fluid or, 1 part of blood is mixed in 200 parts of fluid. Thus, dilution factor for RBC counting is 200.

For WBC counting 0.5 part of blood is mixed in 10 parts of fluid So, 1 part of blood is in 20 parts of fluid .Thus, dilution factor for WBC counting is 20.

For Platelet counting 1 part of blood is mixed in 100 parts of fluid, so dilution factor for platelet counting is 100.

RBC COUNTING

Total no. of RBCs in 80 smallest squares = X.

No. of RBCs in one smallest square = X/80

Volume of one smallest square = $1/4000mm^3$

No. of RBCs in $1/4000mm^3$ = X/80

No. of RBCs in $1mm^3$ = X/80 x 4000

No. of RBCs in 200 times diluted blood = X/80 x 4000

No. of RBCs in undiluted blood = X/80 x 4000 x 200/mm^3

= X x 10,000/mm^3

WBC COUNTING

Total no. of WBCs in 64 smallest squares = X

No. of WBCs in one smallest square = X/64

Volume of one smallest square = $1/160mm^3$

No. of WBCs in $1/160mm^3$ = X/64

No. of WBCs in $1mm^3$ = X/64 x 160

No. of WBCs in 20 times diluted blood = X/64 x 160

No. of WBCs in undiluted blood = X/64 x 160 x 20/mm³ = X x 50/mm³

PLATELET COUNTING

Total no. of platelets in central square = X

Volume of central square = 1/10mm³

No. of platelets in 1/10mm³ = X

No. of platelets in 1mm³ = X x 10

No. of platelets in 100 times diluted blood = X x 10

No. of platelets in undiluted blood = X x 10 x 100/mm³ = X x 1,000/mm³

FOCUSING

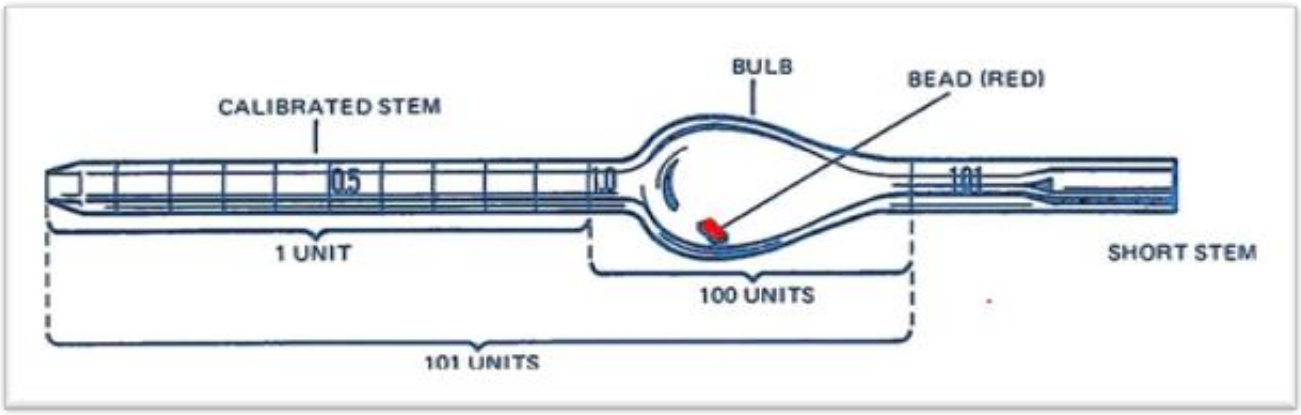
4X to see the general formation of slide.

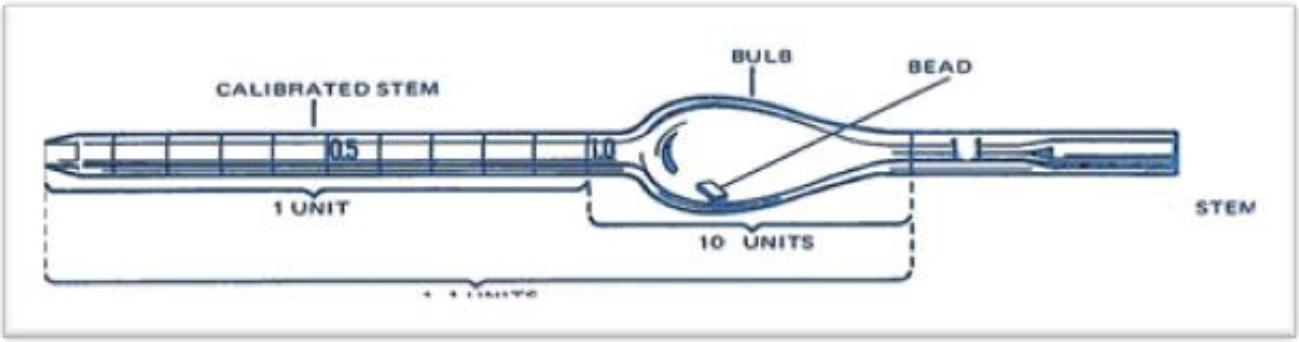
10X for WBC counting

40X for RBC counting

DIFFERENCES BETWEEN RBC AND WBC PIPETTE

	RBC pipette	WBC pipette
1	It has a red bead	It has a white bead
2	It has graduations up to mark 101	It has graduations up to mark 11
3	Size of bulb is larger	Size of bulb is smaller
4	Size of lumen is smaller	Size of lumen is larger


BULB
BEAD (RED)
CALIBRATED STEM
0.5
1.0
101
1 UNIT
100 UNITS
SHORT STEM
101 UNITS


BULB
BEAD
CALIBRATED STEM
0.5
1.0
1 UNIT
10 UNITS
STEM