

## ***This Week's Citation Classic***

**Bull B S, Schneiderman M A & Brecher G.** Platelet counts with the Coulter counter.

*Amer. J. Clin. Pathol.* 44:678-88, 1965.

[Clin. Pathol. Dept., Clin. Center and Biometry Br., Nat. Cancer Inst., Nat. Inst. Health, US Pub. Health Serv., Bethesda, MD]

**A method for the machine counting of platelets in human blood is described utilizing small samples of platelet-rich plasma. The method includes correction factors by which the resultant count determined on platelet-rich plasma can be transformed into a whole blood platelet count. [The *SCI*<sup>®</sup> indicates that this paper has been cited over 300 times since 1965]**

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"In the early 1960s at the Clinical Center of the National Institutes of Health, the concept of combination chemotherapy for leukemias and solid tumors was taking shape. POMP no longer applied only to the administrative offices nor MOPP exclusively to housekeeping! The result was a very large increase in the platelet count work load of the Clinical Center Hematology Laboratory.

"At that time, the best available method for the counting of platelets was the phase microscope technique described by the then chief of the hematology laboratory, George Brecher.<sup>1</sup> (The original description of this method is also a *Citation Classic*.) The accuracy of the phase count procedure was excellent, but the method was highly labor intensive. As each new chemotherapy protocol was instituted, the number of platelet counts increased in stepwise fashion, until the laboratory's future appeared to be that of a platelet counting organization that occasionally performed a few other hematologic procedures! The major problem, however, stemmed from the fact that platelet counting is an extremely tedious

task and the hematology technologists, unenthusiastic at the prospect of spending ever more time counting platelets, were threatening to resign *en masse*.

"The obvious solution was to automate the procedure. Red cell counts had been successfully automated in the same laboratory only a few years before. This had occurred subsequent to a visit by Wallace Coulter, with one of the first Coulter Counters<sup>®</sup> under his arm. Despite the best efforts of the laboratory staff, however, that early Model A Coulter Counter could not reliably distinguish platelets from back-ground noise.

"I began my career in hematology almost simultaneously with the arrival in the laboratory of a new cell counter (Model B) and was immediately assigned the task of getting it to count platelets. The task proved surprisingly easy, since the preamplifier section was now sufficiently improved so that platelet pulses could be reliably distinguished from background electronic noise. The required calculations were worked out on the back of an envelope. Only a few minor problems in diluent formulation and hematocrit correction had to be solved as the method went into routine use.

"The paper has undoubtedly been widely cited because it was a methods paper and because the method described has been widely used during the past 15 years. It has served the medical and scientific community well during this time, rendering rapid and reproducible platelet counts with a minimum of technologist involvement. The method's shortcomings have related first to the requirement of platelet-rich plasma as the starting point, and secondly to the consequent need to mathematically retransform the plasma platelet counts back into whole blood counts to render them meaningful to the practicing clinician. Both problem areas have been neatly circumvented in the very recent past by the introduction of a variety of whole blood platelet counters. Whole blood platelet counting is now the method of choice."

1. **Brecher G & Cronkite E P.** Morphology and enumeration of human blood platelets. *J. Appl. Physiol.* 3:365-77, 1950.