(*12*), who found with Sarcoma 180 that in the early stages of pycnosis there was a considerable increase of DNA in the nuclei. It may be possible that under inanition liver nuclei enter a similar condition, and under continued stress many of the nuclei may pass through severe pycnosis and disappear, thus reducing the number of nuclei in the liver.

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A Suggested Simplification of Blood Volume Analysis Using the Dye T1824

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The analysis for blood volume as initially practiced (*1*) involved drawing a "blank" blood specimen, injection of the dye, and the withdrawal of four additional dyed blood specimens at noted time intervals. Subsequent workers (*2, 3*) established that satisfactory results were obtainable through the use of a "blank" blood, injection of the dye, and blood withdrawal to obtain a "dyed" specimen 10 min after injection of the dye.

The use of the plasma blank, although theoretically correct, is of questionable value in view of problems arising from differences in turbidity and/or degree of hemolysis (*1, 3–5*) between the blank and dyed specimen.

The observation (*3*) that the absorbency of the dye T1824 in plasma at 680 mμ is one fourth the absorbency at 620 mμ has suggested the following experiment designed to demonstrate that the blank specimen is not required.

Pooled plasma specimens were prepared to contain known amounts of the dye T1824, and the samples were blanked out against the same undyed plasma specimen, other undyed plasma specimens, and 0.9% saline containing 2 ml plasma/100 ml (Table 1). The optical density at 680 was subtracted from the optical density at 620, and the result multiplied by 4/3, yielding the corrected optical density that could be equated to μg dye/10 ml plasma:

$$OD = 4/3(OD_{620} - OD_{680}),$$

where OD is corrected optical density, and OD_{620} and OD_{680} refer to readings made at these respective wavelengths in mμ.

TABLE 1

RECOVERY OF THE DYE T1824 USING DIFFERENT BLANK PLASMAS OR SOLUTIONS

Sample No.	μg T1824 added to prepared sample	μg T1824 found			
		Undyed plasma blank	Plasma A blank	Plasma B blank	0.9% saline containing 2% plasma
1	18.8	18.9	18.9	21.3	20.6
2	31.3	32.4	31.5	31.8	31.2
3	37.5	38.7	38.2	38.2	37.0
4	50.0	50.5	51.8	50.5	49.8

It is advantageous to use a plasma blank, rather than a "water" blank, since readings can be made in the most accurate range of the spectrophotometer scale.

Using this technique, the procedure for determining blood volume is thus simplified to injecting the dye and obtaining a single blood specimen at a noted time interval.

Since in time of an emergency particularly, many of the patients whose blood volumes are required are receiving blood, plasma, or other fluids parenterally, the injection of the dye could be made through the tubing connecting the fluid reservoir with the vein. In this form the blood volume analysis is simplified to the point where the patient need be approached but one time to obtain a single "dyed" blood specimen, which can be used to establish the required hematocrit reading as well.

Interesting details concerning the variations in blood volume during parenteral therapy could be established by taking blood samples subsequent to the administration of the dye, using the correction factor established for excretion of dye (*3*).

$$OD(\text{zero time}) = OD_t(1 + .00187t),$$

where OD_t is optical density of the specimen, obtained as above, and t = time in minutes after the injection of the dye.

The blood volume is readily calculated from the optical density at zero time by familiar procedures.

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