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OUR JOB AHEAD[1]

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THERE has been considerable discussion of the advisability of holding our annual meeting this year. Some saw the physical difficulties involved and favored cancellation. The majority, perplexed by the numerous new problems confronting them as a result of the war, felt even more keenly than normally the need to talk over their problems with their colleagues in other institutions. All felt that to justify a meeting at this time especial emphasis should be placed upon problems connected with the war. Such problems have been the dominant theme of our program.

To-night, I shall exercise my prerogative as your President to speak to you about the job that lies ahead of us as agronomists in the post-war world. My remarks are based on the premise that the war will end eventually in a victory for the United Nations. I would not care to think about any other type of post-war world.

I think I can justify speaking about post-war problems in the midst of the war. This is a war of ideals. We need a clear conception of what we are fighting for, if we are to put our best efforts into the war. We need to express our objectives clearly so that the rest of the world can know what they are and can support us if they believe as we do. The problems of the post-war period will be just as difficult, possibly even more difficult, than those of the war. Internal dissension tends to disappear during a war. It will tend to rise again after the tension of war eases and we begin to consider the superficially

[1] Presidential address, American Society of Agronomy, St. Louis, Missouri, November 12, 1942.

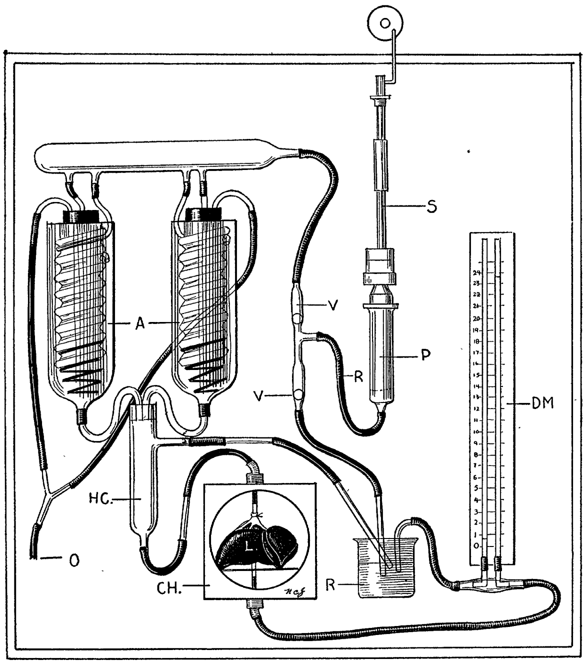

Fig. 1

cent. is 0.25 vol. per cent. This loss of CO_2 from the surface of the liver is sufficient to explain many of the R.Q.'s (arteriovenous) below the level found for the whole organism during starvation, reported in the literature (*e.g.,* Blixenkrone-Møller.[1]).

TABLE I

Arterial Vol. % CO_2	Venous Vol. % CO_2	Vol. % Diff.	A.V. R.Q.	Venous return cc/min gm of liver	ml CO_2 lost min gm of liver	Vol. % correction	Corrected R.Q.
11.01	11.56	0.55	.42	1.8	.0073	.26	.610
9.57	10.37	0.80	.73	1.8	.0055	.26	.965
7.71	9.87	1.87	.57	0.8	.0041	.48	.880
5.5	6.35	.85	.43	2.6	.0039	.19	.530
11.10	12.05	.95	.74	1.8	.0038	.21	.907
6.38	6.85	.47	.66	2.5	.0035	.13	.840

The apparatus shown (Fig. 1) is designed to eliminate several other sources of error as well in the perfusion technic, such as the loss of fluid by evaporation, wide fluctuation in CO_2 and O_2 levels of the perfusate, edema of the liver, turgence and discoloration caused by excessive hydrostatic pressure. Pressure can be kept constant and absolutely controlled within limits found for the portal vein of the cat. The volume of flow through the liver can be held constant and controlled.

The venous return can be estimated for a given period of time by means of the differential manometer (d.m.). A master curve is prepared by plotting the difference in height (h) between the two manometers when various volumes of perfusate are passing through the system (V) per minute. When V is plotted against $\sqrt{h}$ a linear relation is found between the values 80 cc/min and 250 cc/min for V. An extrapolation of this line intercepts the $\sqrt{h}$ axis at a distance (C) from zero. *K* is calculated in the formula $V=K\ (\sqrt{h}-C)$ and is constant between the above limits. Therefore, during an experimental run the differential reading (h) is taken at three levels of (V) venous return and *K* for this experiment is calculated. When *K* for a particular experiment differs from *K* for the master curve described above, h for the experiment is accordingly corrected and the venous return for any particular time can be estimated to within 1 per cent. error from the manometer reading by finding the V value on the straight line, *V* plotted against $\sqrt{h}$.

[1] *Zeit. f. Physiol. Chemie,* 252: 117, 1938.

The sequence of flow through the apparatus shown below is as follows: blood passes from the reservoir (R) through the lower valve (V) to the pump (P), then through the upper valve (V) to the oxygenator (O) and to the hydrostatic column (H.C.), thence to the liver in the box (CH, closed by a friction lid) by way of the portal vein and leaves the liver by the hepatic vein passing the differential manometer (d.m.) and returns to the reservoir.

Oxygen bubbles through warm water and passes downward through the center of the spiral cylinder, then upward around the outside spirals. Perfusate passes down both the outside and inside spirals. There appears to be no loss of fluid by evaporation and the oxygen level in the perfusate remains reasonably constant in a given experiment, which in itself is indicative of a constant volume. The perfusate always to be preferred is one which most closely approaches the O_2 and CO_2-carrying capacity of whole blood and to which a compatible anticoagulant is added.

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BOOKS RECEIVED

Arnow, L. Earle and Henry C. Reitz. *Introduction to Organic and Biological Chemistry.* Illustrated. Pp. 736. C. V. Mosby Company. $4.25.

Gruneberg, Hans. *The Genetics of the Mouse.* Illustrated. Pp. xii + 412. Cambridge University Press and Macmillan. $7.00.

Halliday, Evelyn G. and Isabel T. Noble. *Food Chemistry and Cookery.* Illustrated. Pp. x + 346. The University of Chicago Press. $3.00.

Herrold, Russell D. *Chemotherapy of Gonococcic Infections.* Pp. 137. C. V. Mosby Company.

Milbank, Jeremiah. *The First Century of Flight in America.* Pp. x + 248. Princeton University. $2.75.

Newson, C. V. and H. D. Larson. *Basic Mathematics for Pilots and Flight Crews.* Pp. vi + 153. Prentice-Hall. $1.50.

Putnam, William C. *Map Interpretation with Military Applications.* Illustrated. Pp. viii + 67. McGraw-Hill. $1.25.