

**Note on the reducing power of the living animal tissues / by David Fraser Harris.**

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Fraser-Harris, David Fraser, 1867-1937.  
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**Publication/Creation**

[Edinburgh] : [publisher not identified], [1897]

**Persistent URL**

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Note on the Reducing Power of the Living Animal  
Tissues. By David Fraser Harris, B.Sc. (Lond).,  
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(Read April 5, 1897.)

The following demonstration of the avidity for oxygen on the part of the living animal tissues was made incidentally while I was injecting the gelatine and soluble Berlin-blue mixture (Ranvier) into the blood-vessels of cats and rabbits in preparation of histological material. It is a fundamental fact that living cells must have oxygen continually supplied to them; the tissues crave oxygen, and will take it from any substance within their reach capable of yielding it (the inspiratory phase of the internal respiration). Normally the  $\text{HbO}_2$  yields it—the gas reaching the cells *via* the lymph. The left external jugular was chosen, and opened the instant the chloroformed animal's heart ceased to beat: thus, though the animal was "dead" as a whole, its tissues were alive for varying periods thereafter.

The fluid traversed heart and lungs before reaching the aorta and arterial circulation. On cutting up the organs I thought the injection must have "failed" in certain organs, for the kidneys and liver were markedly pale—pale green—and in some of the divisions of the portal vein the gelatine seemed uncoloured or "bleached" white. The lungs were of a deep blue; and such organs as brain and eye were blue, while there was no loss of colour where the fluid and the blood had mixed in the vessels (in a case in which the blood had not been first washed out of the vascular system). Here we had clearly a case of de-oxidation of the deep blue ferric ferrocyanide (Berlin or Prussian blue) to the pale green or almost colourless ferrous ferrocyanide, which, however, underwent re-oxidation on exposure to the air, for the blue colour returned progressively in from ten minutes to twenty-four hours after. Next morning, indeed, organs that seemed empty of injection showed full capillary contents.

It is interesting that there was no reduction of the pigment on the part of the blood itself, and that the feeble metabolism in pul-

monary tissue expressed itself in an absence of any de-oxidative change of colour. Organs, such as brain and eye, in which, compared with kidney and liver, there must be a much less energetic metabolism, remained blue.

These observations corroborate experiments of Ehrlich, in which alizarine-blue and methylene-blue were injected, and found more or less bleached to chromogens ("Der Sauerstoffbedürfniss des organismus," 1885).

When one reads the statement, "the liver is the seat of vigorous oxidation," that is the converse aspect of the subject; it is the seat of great oxidation in so far as its own tissue is concerned, but of correspondingly great de-oxidation so far as the blood and materials in its lymph are concerned.