During anaesthesia with paralysis and artificial ventilation, oxygen consumption was 10 percent below basal, and physiological dead space was 36 percent of tidal volume. Measured alveolar/arterial $P_{O_2}$ gradient was 52 mm Hg with inspired oxygen concentration in the range 21-30 percent and 145 mm Hg at 98 percent oxygen. This corresponded to a mean shunt of 10 percent but correlated positively with age. [The SCI® indicates that this paper has been cited in over 145 publications.]

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Before 1964 almost nothing was known about the effect of anaesthesia on the oxygenation of arterial blood. This was largely because of difficulty in the measurement of arterial $P_{O_2}$, the existence of nitrous oxide. Absorption techniques (such as the Riley bubble) were impossible to use, and indirect derivation from saturation was too insensitive at high levels of $P_{O_2}$. All of this changed when the polarograph became a practical possibility. Long before this device became available commercially, I had built an electrode as described by my former colleagues J.M. Bishop and A.C. Pincock, fusing the platinum cathode into lead glass and grinding the surface flush by hand. We had carefully established the accuracy of our system in the presence of nitrous oxide.

Our conclusions have stood the test of time, but there has been much work by us and others to determine the precise cause of the changes that we observed. Before the paper was published, N.A. Bergman, A.J. Coleman, and I had dispersed to separate continents. I suspect that our paper has been so frequently cited because it was one of the first to provide the essential physiological data on which the oxygenation of an anaesthetised, paralysed, and ventilated patient could be based. The most important recent contribution to the field is by L. Bindslev and his colleagues.


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