The diffusing capacity of the lung for carbon monoxide was measured in healthy subjects and patients by a modification of Krogh's breath-holding technique. The reproducibility of the method and the technical, physiological, and pathological factors which might influence the result were studied and a formula for the prediction of normal values was derived. The SFC [this paper has been cited in more than 1,075 publications.]

Measurement of Gas Transfer in the Lung

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The uptake of carbon monoxide during a period of breath-holding was first used as a measure of the diffusing capacity of the lung by Marie Krogh.1 By including an inert tracer gas (helium) as well as carbon monoxide in the inspired sample, R.E. Forster and his colleagues2 were able to calculate what the concentration of carbon monoxide in the expired alveolar sample had been before any had diffused into the blood. This obviated the need to collect two expired samples as in the Krogh method.

I joined Forster in Julius Comroe's laboratory in Philadelphia at the University of Pennsylvania in 1954. Apart from a short period of physiological training with Ronald Christie and David Bates at St. Bartholomew's hospital, my own back-ground was predominantly clinical. I was immediately allotted the task of standardizing this single breath method for clinical use in collaboration with Forster. This entailed an investigation of all the technical and physiological factors that might influence the value obtained, and the derivation of a formula for the prediction of normal values. We then examined the reproducibility of the method in both normal subjects and patients. We were surprised to find that, despite the large number of variables involved, this was remarkably good; so much so, that when we presented our first results to Comroe, he said that he didn't know what we were measuring but that the result was remarkably reproducible. The SFC indicates that this paper has been cited in more than 1,075 publications.


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