

On the colouring Matter of the black Bronchial Glands and of the black Spots of the Lungs. By George Pearson, M.D. F.R.S.
Read February 25, 1813. [*Phil. Trans.* 1813, p. 159.]

It is well known that in men the bronchial glands that are situated near the bifurcation of the trachea are of a very dark colour; that in infancy the lungs in general have little or no such colour; that at the age of eighteen or twenty they have a mottled or marbled appearance, from black or dark blue spots, lines and points disseminated through them immediately under the membranous covering, and that this appearance becomes darker and darker as persons advance in age; and that the same black spots are also observable throughout the whole interior substance of the lungs when cut.

It has been conjectured by some persons that this appearance is owing to sooty matter taken in with the air during respiration, and accumulated in proportion to the duration of life; but in reply to this supposition it has been objected by others, that the same degree of blackness is not observable in brute animals, and that the theory is not supported by any accurate observations of the proportional want of intensity in those persons who might be supposed to have lived less exposed to soot by permanent residence at a distance from any large town, and from any other considerable consumption of fuel.

Dr. Pearson professes himself to be of the former opinion, and adduces a series of experiments to prove that the black matter in question is actually charcoal. In order to collect the subject of his experiments, the black glands in which it is contained are dissected out, and by washing are freed as far as possible from extraneous matter. The colouring substance is then partly pressed out, diluted with water, and found to subside from it as a black deposit. By boiling the black glands in caustic potash the whole structure is destroyed, but the black matter is not dissolved, and after a sufficient length of time subsides from the fluid. By muriatic acid also the glands are dissolved, and black matter is deposited from the solution. Nitric acid also dissolves the glands, but not the black matter which in this case floats on the surface.

By corresponding experiments on the substance of the lungs the same black deposit is obtained, but in much smaller proportion than from the glands."

The black matter thus collected and subsequently dried, having been found to yield carbonic acid by deflagration with nitre or oxymuriate of potash, Dr. Pearson considers himself warranted in concluding that it is charcoal in an uncombined state; that it is admitted along with the air in respiration; that it is retained in the minute ramifications of the air-tubes, and conveyed by the absorbents to the bronchial glands.