

Before any making remarks upon the contents of the foregoing table, it may be well to give the following explanations:—

Pepper is the fruit of *Piper nigrum*, a perennial climbing shrub which is cultivated chiefly in the East Indies. The fruit is a small drupe, *i.e.*, a stone-fruit like the cherry, with a fleshy outer portion (pericarp). This berry-like fruit grows in closely packed clusters, each consisting of from 20 to 30 drupes, upon a common stalk. Portions of this stalk (peduncle) may be found in every sample of black pepper-corns, and on examination will be found to shew concave depressions where the berries were attached. "The plant is capable of growing to a height of 20 or 30 feet, but for the sake of convenience is usually kept low, and is often trained on poles." *Flückiger and Hanbury*.—This peculiarity in the culture of the pepper plant is of very considerable importance, since the trailing habit of the vine brings the pendulous clusters in close proximity to the earth, and explains the fact that a good deal of sand and clay are invariably found attached to the soft pericarp. This mineral matter is dried into the skin of the berry during its later treatment.

BLACK PEPPER.—For the production of black pepper the fruit is plucked before it is quite ripe, and "dried in the sun, or in bamboo baskets near a gentle fire." The outer soft portion of the drupe shrivels, turns black in colour, and ultimately becomes quite hard and brittle, and so firmly adherent to the stony inner portion as to be practically incapable of being separated from it.

WHITE PEPPER.—When white pepper is wanted, the berries are allowed to ripen before picking. They are then soaked in water for a time to soften the outer portion (pericarp), which is then removed by friction. After this treatment the berries are dried in the sun. It will appear, therefore, that the varying amount of sand and clay which necessarily adheres to black pepper berries should be entirely absent from those of white pepper.

The *Ground Pepper* of the shops should be nothing else than the berries above described passed through a suitable mill.

The analysis of 73 samples of commercial ground pepper, of which details are given in Table I, furnished the following data:—

Genuine pepper,	20 samples.....	27 per cent.
Adulterated pepper	38 do	52 do
Doubtful	15 do	21 do
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	73 do	100
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The chief reason why so many samples are classed as doubtful is that no maximum limit is fixed to the amount of mineral matter which may properly be allowed as an unavoidable impurity in pepper. Owing to the trailing habit of the plant, as pointed out already, a certain amount of sand, clay, and other components of the soil, attaches itself to the soft exterior of the berry and dries fast to it, so as to be difficult of removal except by a process which would rub away a large portion of the fruit itself. It is of first importance to determine the limits within which this adhering matter may be considered as a necessary and unavoidable impurity, since there is a strong temptation to add such foreign matter fraudulently. Of course white pepper, which has, as explained, undergone a decorticating and cleansing process before export, should be practically free from adherent earthy matter.

By burning a known weight of pepper, under proper conditions, the whole of the organic matter (ash) represents the amount of mineral matter which properly belongs to the structure of pepper, plus the adventitious mineral matter which has attached itself to the berry during growth, or has been fraudulently added to the ground pepper. The *total ash*, less the amount properly belonging to pepper tissue, is, therefore, a measure of the foreign mineral matter present in a given sample. On treating this ash with hydrochloric acid practically the whole of it is dissolved, excepting that part which consists of sand. It is evident that the undissolved por-