I wish to express my thanks to Prof. A. M. Taylor for his interest in this work.

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Mineral Separation by an Electrochemical-Magnetic Method

A simple method has been devised for the separation of minerals with a relatively high electrical conductivity in rock powders. It is based on the selective deposition upon these minerals of metallic iron, in an electrolytic cell, enabling them to be separated from the non-conducting grains with a magnet.

About 5–10 gm. of crushed sample, having passed a 100-mesh sieve, or finer if necessary, to avoid composite grains, is spread on the bottom of a flat-bottomed iron can of 7–10 cm. diameter and 7 cm. height, which is made the cathode and also serves as container for the electrolyte, a strong solution of ferrous chloride with calcium chloride. A disk of sheet iron of somewhat less diameter, attached to a vertical iron rod, serves as anode, and the interior wall of the can should be varnished to restrict electrodeposition to the floor.

A source of direct current, up to 10 amp. at 6 V. or more, such as a lead battery, is connected to the cell, preferably with an ammeter and appropriate variable resistor in series, so that the current density may be varied and controlled. A current density of 0·05 amp./cm.^{2} of area covered by the sample gives ample coating of iron in three or four minutes, and may be raised to a much higher figure if necessary, when adequate iron deposition is almost instantaneous. During the passage of the current the grains should be gently moved about, and for mixtures with a very low content of conducting grains a longer period of deposition is required. After washing and drying the mixture, the coated grains are separated with a magnet, and treated with dilute acid to remove the iron.

The method may be made to yield quantitative results, and the apparatus and conditions adjusted to larger or smaller amounts of sample.

Examples of clean separations of minerals used in these experiments, behaving as conductors and non-conductors respectively, were: pyrite, galena, copper sulphide ores, native metals, graphite, arsenopyrite; and quartz, silicates, barite, wolframite, apatite, rutile, zircon, hæmatite, ilmenite, cinnabar, sphalerite, manganese ores.

The method has application in the common case where the specific gravity of the several constituents is too high for heavy-liquid separation, and the electrostatic and dielectric methods, froth flotation, panning, or selective chemical attack are inadequate. It is of particular value when the mineral sought, conductive or non-conductive, forms the only one with this property in the rock, when it may be quantitatively isolated.

It is hoped to publish a fuller account of the method elsewhere.

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The Carotid Labyrinth of *Rana tigrina*

Hollinshead[1] demonstrated with the Severinghaus staining technique the presence of fuchsinophil granules in the cytoplasm of the carotid-body cells in the cat. Later on[2], he showed that these granules disappear from the mouse carotid-body cells in cases of lethal anoxia. Hollinshead related this disappearance tentatively with the state of activity of the carotid-body cells, as it is known that anoxia stimulates powerfully the release of nerve impulses in this organ.

Using the same staining techniques, we were able to detect cells, in the carotid labyrinth of *Rana tigrina*, which show a great resemblance to the mammalian carotid-body cells, and which likewise contain fuchsinophil granules. These cells occur sparingly and only in the pars arterialis.

In two frogs killed by anoxia, these cells were found to be entirely devoid of the fuchsinophil granules.

This finding may help to clarify the functional role of the carotid labyrinth in Amphibians, and may throw further light upon the evolutionary development of the carotid body in reptiles, birds and mammals. So far, no direct evidence exists that the amphibian carotid labyrinth corresponds to the mammalian carotid body. Palme[3] considered it as a pressor receptive zone only, while the present study may indicate in addition the existence of chemoreceptors.

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Boron in the Nutrition of the Hop

The role of boron in the nutrition of the hop does not appear to have been determined. While many horticultural and field-crops have been reported to demonstrate distinctive symptoms in the absence of a sufficiency of available boron, singularly little has been reported on the reaction of the hop to variation in the supply of boron. No report giving boron-deficiency symptoms has been found in the available literature.

In the 1949–50 season, samples of leaves and cones from hops growing in the Nelson district, New Zealand, were analysed for boron content. For leaves from the top third of the plant in gardens on soils derived from Moutere Hill, the boron content ranged from 31 to 70 p.p.m. in the dry matter, most values, however, lying between 36 and 42 p.p.m.; for corresponding material from soils derived from granite, the figures were 12–36 p.p.m., most commonly 21–28 p.p.m. In the cones, the ranges were as follows: Moutere types, 14–22 p.p.m. (mostly 16–21 p.p.m.), and granite types 13–24 p.p.m. (mostly 13–17 p.p.m.). Samples of soil from these gardens showed water-