

LETTERS TO THE EDITOR.

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The Fur Trade.

It is recorded in the "Life of Professor Owen" that on one occasion Lord John Russell sent him a bone, requesting that it might be identified. Owen replied that it was an ordinary ham-bone, pertaining to the genus *Sus*, and was informed that Lord John had received from President Grant what purported to be a bear's ham, concerning which he had his doubts, hence the inquiry.

It is not improbable that naturalists are occasionally appealed to in a similar manner for judgments on the identity of furs. In these circumstances, they may well be excused if they lack Prof. Owen's assurance, or are found entirely wrong. The mysteries of the fur trade are surely beyond the understanding of even a skilled zoologist; but there is an American publication in which they are revealed to the astonished reader. This is the retail catalogue of Albrecht and Son, of Minnesota. This firm does a very large business, and has no wish to deceive its customers as to the nature of their purchases, and yet cannot get away from the current trade names. Consequently, it publishes a detailed synonymy, some of which has not yet found its way into zoological works. I venture to extract a few items from the instruction and entertainment of those who have not access to the catalogue.

Alaska Bear.—"The best Minnesota Raccoon, coloured a dark brown."

Adelaide Chinchilla.—Australian Opossum.

French Ermine.—"Made from selected skins of the French Coney."

Baltic (White) Fox.—"The fur of the large Hare of northern Europe."

Iceland White Fox.—"White Thibet Lamb, combed until the hair is straight."

Kamtschatka Fox.—"Trade name of the northern Timber Wolf."

Baltic Lynx.—"This fur is secured from the large Belgian Hare of northern Europe, dyed a jet black."

Finland Lynx.—Australian Wallaby.

Natural Black Marten.—"From the black Marten (commonly known as skunk)."

Russian Marten.—American Opossum.

Russian Mink.—Mongolian Marmot.

Siberian Pony.—Russian Calf.

Inland Seal.—French Coney.

Coast Seal.—"Albrecht coast seal is made from the skins of the French Coney."

But the catalogue itself should be in every zoological library. It contains other items of interest; thus it appears that one may spend the trifling sum of 625 dollars on a muff made of Russian sable. Single skins of this animal are valued as high as 500 dollars when of the best quality.

T. D. A. COCKERELL.

University of Colorado, September 11.

An Attempt to Determine the Supposed Change in Weight Accompanying the Radio-active Disintegration of Radium.

SOME time ago Mr. Grant and I designed and constructed a micro-balance (Proc. Royal Society, A, vol. lxxxii., p. 580) for the purpose of demonstrating, if possible, the occurrence of a change in weight accompanying the radio-active disintegration of radium.

We have recently been attempting to do this, using 7.5 milligrams of pure radium bromide. It was necessary to have two balances of great sensitiveness in order to carry out our proposed experiment, and the two balances which we have used have each a sensitiveness of 2.5×10^{-9} grams, and for both of them the resting point has not varied by more than 5×10^{-9} gram during several periods of observation varying in length from a week to a month.

The plan of our proposed experiment was as follows. The two balances were mounted side by side in the same balance case in such a way that the images of a fine illuminated slit could be reflected on to the same scale from the mirrors on the two balances.

One of the balances was to serve as a check on the second, which was to be used to determine the weight of the active deposit from the radium. This second balance was of the type B figured in our paper (*loc. cit.*), and was provided with a fine fibre attachment and quartz hook from which could be suspended a piece of fine platinum wire.

A piece of stout platinum wire was passed through the wall of the balance case, and well insulated from it, and by a mechanical contrivance this insulated wire could be brought, when desired, into contact with the wire suspended from one end of the balance beam. By means of this second wire the suspended wire could be raised to a negative potential of five hundred volts.

Through the wall of the balance case were also passed two glass tubes leading to an air-circulating apparatus and to a bubbler containing the solution of radium bromide.

By means of this circulating apparatus the air contained in the balance case could be bubbled continuously through the radium bromide solution, thus keeping it charged with the radium emanation. As this decayed into radium A, the latter in the electric field should be driven to the charged and counterpoised platinum wire and accumulated there, and so its weight determined.

The behaviour of the balance was investigated with the greatest care, and after many disturbing effects had been discovered and eliminated one at a time, it was finally shown that the resting point of both balances was constant for at least a month, when every condition was the same as for the actual experiment with the single exception that the bubbler contained water instead of the radium bromide solution. Thus the following changes in conditions did not affect the resting point by more than 5.0×10^{-9} gram:—(a) Releasing and arresting the balance beam; (b) touching and jerking the suspended platinum wire; (c) starting and stopping the circulation of the air; (d) charging and discharging the platinum wire.

The experiment was then started by replacing the water in the bubbler by the solution of radium bromide and the behaviour of the balance again tested, when it was found that the resting point was still unaffected by the operations (a), (b), and (c).

The wire was then charged, and it was expected that this would cause an increase in weight of the order of 10×10^{-9} gram per day, but instead of this an increase of weight of about 30×10^{-7} gram has been found to occur.

Whilst it is not impossible that this increase in weight is due to radio-active changes, it is so much greater than that calculated on the basis of the electrical evidence that the conditions of the experiment require to be re-examined with the greatest care. An explanation that suggests itself to us is the following. With the balance case used by us and described in our paper (*loc. cit.*) the ground joints and flange are necessarily made vacuum tight by some form of lubricant. We have used the so-called rubber grease, which probably distributes vapour of heavy molecular weight throughout the balance case, although its vapour pressure is far too small to be detected by ordinary methods.

It is possible that the ions produced by the emanation and its radio-active products form nuclei for the condensation of this vapour, and that these condensed aggregates are driven with the charged nuclei to the charged and counterpoised platinum wire, there accumulated, and weighed.

The balance case and other apparatus employed is being modified so as to exclude all possibility of condensation of vapour, and it is hoped, when the necessary preliminary study of the behaviour of the instruments has been carried out, to determine whether the large change in weight that has been observed is an accompaniment of the radio-active process or an adventitious effect.

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