

0.27 mgrm. of ammonia; that we took 5.5 mgrm. of strychnine and obtained 0.30 mgrm. of ammonia; and that we took 10 mgrm. of sulphate of quinine and obtained 0.45 mgrm. of ammonia.

The absolute errors, therefore, were—

	Milligrammes of ammonia.		
	Calculated.	Found.	Error.
Papaverine	0.25	0.22	0.03
I. Sulphate of cinchonine	0.48	0.57	0.09
II. " "	0.24	0.27	0.03
Strychnine	0.28	0.30	0.02
Sulphate of quinine	0.456	0.45	0.006

giving a mean error of 0.035 mgrm.

I have to remark, in reference to these five examples, that they are not cases selected by me to exhibit the accuracy of our process, but cases picked out from a great number, in order to exhibit what takes place under the most unfavourable circumstances. In contrast with these are Frankland and Armstrong's six determinations, five on urea and one on hippuric acid, given by themselves as exemplifying the accuracy of their method, and showing a mean error of 0.35 mgrm. of nitrogen—just ten times as much as ours under the most unfavourable conditions.

I observe you say that the amount of ammonia obtainable from albumen by the action of alkaline permanganate is influenced by the degree of concentration of the solution, the amount of heat applied to the retort, and consequent rate of distillation, and the time to which the solution is exposed to the action of the alkaline permanganate.

It would be just as true and as much to the point to say that the amount of carbonic acid obtainable from sugar depended on the amount of oxide of copper with which it is mixed, and the length of time to which it is exposed to a red heat.

I am able to affirm most positively that there is no difference in the yield of ammonia from albumen, whether the solution be of a certain strength or six times as strong, or whether the distillation be rapid or slow; and in proof of this I refer to a set of experiments on albumen, published in 1867. If the action of the permanganate be pushed to the ultimate limit, the yield of ammonia is constant.

Your assertion that water which has been distilled from permanganate, and gives no reaction with the Nessler test, yields ammonia on being again distilled with permanganate, will not astonish persons who have had experience in the working of our process. The explanation of this fact is now, I believe, tolerably well understood, and is simply this: that when water contains so minute a quantity of ammonia as not to impart a colour when 100 cubic centimetres of it are treated with Nessler test, it may still contain sufficient ammonia to yield a perceptibly ammoniacal distillate if one litre be made to yield 100 cubic centimetres of distillate.

In conclusion, you mention some difficulties in applying our process to the effluent water from sewage farms. I will not, on this occasion, describe how these difficulties are overcome. Suffice it to say that they have been overcome by very simple and obvious means.

J. ALFRED WANKLYN

11, Harrington Street, London, June 17

Parasite of the Beaver

MAY I occupy a few lines of your valuable space for a brief note upon the singular parasite of the beaver, *Platyssylla castoris* Ritsema (*Platyssyllus castorinus* Westwood)?

On the kind application of Messrs. Wayers and Roelofs, of Brussels, Mr. Ritsema very courteously presented me, some months ago, with a pair of this insect, the remarkable characters of which seem to deserve a more extended notice than has been given by himself or by Prof. Westwood, who almost at the same time described it from specimens obtained from a different source.

The former has classed it with the so-called suborder, *Suctoriora*, or *Aphaniptera*, as a family or series equal in value to the *Pulicidae* (fleas, jiggers, &c.), while the latter considered it so peculiar as to represent a new order of insects, which he named *Achreiptera*.

After a careful study of a series of beautiful dissections made for me by my friend the Rev. A. Matthews, I have to dissent from both of these views, and to regard it, in accordance with my impressions at first sight, as *Coleopterous*.

The appearance of the insect is such as to mark it, on the most superficial inspection, as a distinct family. In the wonderful

structure of the mentum, with three immense posterior lobes, it shows an affinity, though remote, with the singular genus, *Leptinus*, which is also the type of a family (*vide* Le Conte, Proc. Acad. Nat. Sciences, Philadelphia, 1866, p. 368). But the lateral lobes in *Platyssylla*, broad triangular processes, are in *Leptinus* only narrow spines, projecting in the same manner over the gular plate.

In the form of the antennæ it resembles *Gyrinus* and *Parnus*, and in other less important parts of the body it has unmistakable affinities with various members of the Clavicorn series, such as *Staphylinidae*, *Silphidae*, and *Corylophidae*, though especially with *Trichopterygida*, in the very extraordinary genus *Limulodes*, Matthews.

A very rare character is the reception of the antennæ in cavities on the dorsal surface of the prothorax; such characters are found in *Physemus* of the *Byrrhidae*, *Myhocerus* Er., the affinities of which are doubtful, and in *Usechus* Motsch. of the *Tenebrionidae*. In those three genera the antennal cavities are round fossæ, while in *Platyssylla* they are grooves extending along the whole lateral margin.

My object in the present note is not so much to express an opinion on the systematic position of this wonderful animal (which I will discuss fully in an illustrated memoir now in preparation), as to call the attention of your readers to the possible occurrence of similar epizoa on other aquatic mammals, especially rodents.

The complex affinities of this genus indicate that it either was in former times, or is at present, a widely distributed type. The European beaver, the capybara, and the musk rat, may, perhaps, when examined, be found to support allied forms.

I will conclude by observing that the insect has no organs with which to perforate the substance of its patron, and cannot eat living tissues or fluids; it is, therefore, not a parasite in the strict sense of the term, but an inquiline, living upon effete material, perhaps epidermal scales. The larva should be diligently sought for by those that have the opportunity, both in the houses and on the bodies of the beavers, as a knowledge of the development and transformations will be of importance in recognising more fully its affinities.

I trust that this note may stimulate further investigation on the part of some of your readers.

Lausanne, June 19

JOHN L. LE CONTE

Vespertilio

YESTERDAY a neighbour, in cutting down a very old, widespread broadleaf (*Criselimia littoralis*), came suddenly on a great crowd of bats. Whilst he was chopping he noticed that his dog seized something, which he found to be a bat. From a huge hollow limb of the tree seventy-five bats were dislodged; they fluttered into the bush, keeping just above the ground.

Ohinitahi, New Zealand, Feb. 14

T. H. POTTS

Origin of Cyclones

I HAVE to thank Mr. Whitmee for his statement about the formation of cyclones at the Samoan and neighbouring islands in the latter part of the Southern summer. It will be seen that though I was ignorant of the fact when I wrote in my former letter on cyclones, it confirms my theory that they originate "in the meeting of the trade-winds in the northern and southern hemispheres, at some distance north or south of the equator." The cyclone region in which the Samoan and Fiji islands are situated is probably an extension of that of the Southern Indian Ocean.

JOSEPH JOHN MURPHY

Old Forge, Dunmurry, Co. Antrim, June 17

THE POPULATION OF THE PHILIPPINE ISLANDS

ACCORDING to the latest, not yet published, statistics, the Philippine Islands are inhabited by 7,451,352 inhabitants, distributed into 43 provinces and 933 cities or villages. 1,232,544 pay tribute to the Government, and the number of 7,451,352 is calculated on the supposition that about the sixth part of the whole has to pay tribute. As there exist in all the islands, even in Luzon, independent tribes,