

Last night (9th inst.) the upper northern sky was obscured with cumulous cloud, but in a clear space above the horizon, from N. to N.E., a belt of cloud resembling that of the previous night extended obliquely. In this case the belt was dark; but beneath, and apparently descending from it, bright luminous patches formed of a golden lustre at midnight, and faded out at 1.30 a.m. Wind again from N.W., light. Temperature cool for season.

Examined with a good field-glass, these cloudlets present the usual cirrous type in all but singular luminosity, and little (if any) of the aurora.

D. J. ROWAN

Dundrum, co. Dublin, July 10

Animal Intelligence

A REMARKABLE instance of animal intelligence has lately come under my notice, which I venture to relate as being possibly of interest to the readers of NATURE. In a neighbour's bungalow in this district two of our common house-swallows (*Hirundo javanica*) built their nest, selecting as their site for the purpose the top of a hanging lamp that hangs in the dining-room. As the lamp is either raised or depressed by chains fixed to a central counter-weight, these chains pass over pulleys fixed to a metal disk above, on which the nest was placed. The swallows evidently saw that, if the pulleys were covered with mud; moving the lamp either up or down would destroy the nest; so to avoid this natural result they built over each pulley a little dome, allowing sufficient space, both for wheel and chain to pass in the hollow so constructed, without danger to the nest, which was not only fully constructed, but the young birds were reared without further danger. This is, in my opinion, a wonderful example of adaptation to environment, and showing a step far beyond what may be contended as instinct only.

I may here add another curious case which seems to point to another branch of reasoning. During the dry weather I have been constantly annoyed by wasps building up with mud key-holes, sometimes keys, blank cartridge cases, and even in one case a *pen-holder*. As I did not care to have my gun charged with young wasps, I used to empty out any cartridge case which I found closed up with mud, but one cartridge-case in particular I noticed had been selected. This one I had left on my office table, and each time the wasp closed it up I drew the charge of mud and "grubs," &c.; but as frequently the wasp closed it up again. I may here mention that the wasp used to deposit the egg, and several small grubs in a cell, close over the top, and repeat the operation again till the cartridge was full, when the mouth would be pasted over with a lid of mud. As I repeatedly knocked out the grub and mud, it appears the wasp started a fresh plan. I noticed somewhat to my surprise that the mouth of a cartridge I had but a few hours before emptied was pasted over, so I thought it would be interesting to see how many grubs the wasp had secured in so short a time. I therefore removed the fresh lid, that was still damp, and discovered nothing inside! I am unable to say if this was done to direct my attention to one particular cartridge case or not, while another spot was being used, but I am inclined to believe such to have been the case, for later I noticed a gap made between two bundles of letters in one of my pigeon-holes, well built up with mud, and, of course, as well packed with grubs.

Ballangoda, Ceylon, June 14

FREDERICK LEWIS

Deafness and Signs

In my studies with regard to the sign-languages I have, like others, turned some attention to cases of deafness. In such cases the use of signs, not the finger alphabet, but natural or conventional signs, such as are used by Indians or by deaf-mutes of themselves, have appeared to me to give particular satisfaction to the sufferer. The nervousness attendant upon attempting to make out what is said being avoided, the relief is very great, and more attention is given to what is spoken. Of course such aid to those untrained is but partial, and English people accustomed solely to the use of speech are rather unapt, but nevertheless signs are valuable auxiliaries, and will be found worth trying. Individuals vary in their capability, and inasmuch as many children pass through a period of sign-language, there will be many cases of adaptability. Whoever has watched deaf-mutes conversing, without the finger alphabet or without lip-reading, will recognise the satisfaction they receive from their

intercourse by signs. My only object is to call attention to what has been found by experience to be an acceptable help, and which may be extended in its application.

HYDE CLARKE

The Duration of Germ-Life in Water

A RECENT announcement by Messrs. Crookes, Odling, and Tidy, that *Bacillus anthracis* in water approximately devoid of nutrient material after "a few hours" loses its power to multiply in suitable culture-media, induces me to send you a note of my own results in the same domain.

My observations were commenced in 1877, but were shortly afterwards suspended and not resumed in earnest until May 1885.

So far I have worked only with the various forms of organisms which chanced to be present in the water—usually distilled—employed. For a *preliminary* investigation I regard this as preferable to operating on pure cultures; one is more likely to be concerned with organisms of aqueous habitat naturally, and one sees which kinds predominate from time to time, and which survive.

In dealing with an indefinite variety of micro organisms it is necessary, of course, to be extremely rigid in one's precautions to guard against intrusion of foreign germs, an intrusion which cannot be detected as in the case of pure cultures. On this account I abandoned my original *modus operandi*—it was almost identical with that of Mr. Crookes and his colleagues—and adopted the arrangement of tubes described and figured in a paper by Mr. Blunt and myself in *Proc. Roy. Soc.*, vol. xxviii. p. 202.

Of a series of such tubes containing distilled water, originally rich in germ-life, kept at a temperature varying from 18° C. to 21° C., and examined at intervals from May 2, 1885, down to now, I find that in every one micro-organisms have sooner or later developed on the addition of the nutrient material.

Each tube is a microcosm, and it has been most interesting to observe how, as elsewhere, as time went on, the first dominant form has grown more and more feeble, until it seems to have become extinct, and is now succeeded by races of quite different kind. Whether the new order will yet give place to others remains to be seen. I can at any rate say confidently that micro-organisms vary greatly in the duration of their life in distilled water, and that some forms may survive for at least fourteen months in that medium at an ordinary temperature.

Chelmsford, July 19

ARTHUR DOWNES

The Bagshot Beds

IN reply to the letter from Mr. Irving in NATURE of July 8 (p. 217), I beg to state that a mere abstract of the paper on the Bagshot Beds by Mr. Herries and myself was read at the meeting of the Geological Society on June 9, on which occasion Mr. Irving was not present; that the report of our remarks in NATURE of July 1 (p. 210) only purports to give the conclusions at which we arrive, and not the evidence by which they are supported. We trust therefore that your readers will reserve their judgment until the entire paper is published.

HORACE W. MONCKTON

1, Hare Court, Temple, July 17

A Lubricant for Brass Work

MANY besides myself have probably been inconvenienced by the corrosive action of ordinary lubricants—lard, grease, &c.—upon brass and copper, which causes the plugs of stop-cocks to leak or get fixed in their places, and does much damage to air-pump plates.

Melted india-rubber answers fairly, but it has too little "body," and too much glutinosity; moreover, it does, undoubtedly, in course of time, harden into a brittle, resinous substance. Vaseline is quite without action on brass, and never hardens; but it has not sufficient tenacity and adhesiveness.

A mixture of two parts by weight of vaseline (the common thick brown kind) and one part of melted india-rubber seems to combine the good qualities of both without the drawbacks of either.

The india-rubber should, of course, be pure (not vulcanised), and should be cut up into shreds and melted at the lowest possible temperature in an iron cup, being constantly pressed