

as the constituents of wax might have been collected by the bees before they were confined for experiment, and stored up in their own bodies, or that the wax might be derived from the fat of their bodies, which, in the proportions of its ultimate constituents, is very similar to wax. To put these objections to the test, MM. Milne Edwards and Dumas jointly undertook to repeat the experiments. They first ascertained by analysis the quantity of fatty matter in the bodies of a given number of bees, and the quantity of waxy matter accidentally contained in the honey with which they were fed, during confinement. The result of the experiments proved that the quantity of wax produced in a given period by each bee exceeded very nearly three times the combined amount of waxy matter contained in the food, and of fat in the body of each bee at the commencement of the experiment, besides a large amount of fat still contained in its body at the close. These experiments most incontrovertibly prove that the constituents of the wax could not have pre-existed in the bodies of the bees; but that wax is a true formation, the result of changes which the constituents of the food undergo, through the agency of special organs, during the process of nutrition.

So again experiments on the functions of insects, when combined with anatomical examination of their particular structures, and compared with the vital phænomena and structure of analogous parts in our own bodies, and the higher animals in general, lead us to equally important results.

MISCELLANEOUS.

NOTE UPON THE HABITS OF THE COMMON TOAD.

THAT the food of the Toad consists of insects as well as worms, is a fact with which every naturalist is familiar, though all are perhaps not aware of the extent to which in certain instances it preys upon the larger Coleoptera, chiefly of the Carabideous kind. I once found during the summer, concealed beneath a very large stone, one of these reptiles, the stomach of which was filled with the detached heads, thoraces, abdominal segments, elytra, &c. of *Steropus madidus*, *Oma-seus melanarius*, *Calathus*. These hard parts, more or less broken, and with the flesh dissolved out and digested, had undergone no further change, so that the species they belonged to could be perfectly well determined. I have since met with toads, in chalky districts where these beetles abound, which were literally *crammed* with them, and among others have found in the egesta the remains of *Carabus violaceus*, and of some also of the large Curculionidæ, such as *Otiorhynchus niger*. I have myself forced an ordinary-sized toad to swallow alive successively two of the first-named insect, which it effected without much difficulty, and have known it in confinement to devour two *C. moniles* inclosed along with it. These observations tend to throw some light upon the explanation of toads being found in holes of rocks and hollows of trees, whither they had probably resorted in search of the abundant store of insect-food which these situations afford, and where they might remain until the cavity became closed

up. It would be curious to witness in what manner the toad manages to seize and secure such a powerful prey as the *Carabus*, as something more than the viscid and adhesive secretion of the tongue must be required for this purpose.—ALFRED TULK.

PROPAGATION OF THE GENUS SYLLIS.

Among other results obtained by M. de Quatrefages in studying the Annelida, the most singular is that which relates to the propagation of *Syllis*. He met upon the coast of Brittany with a great number of this genus aggregated together in a manner similar to that described and figured by O. F. Müller in the double Annelide, named by him *Nereis prolifera*. M. de Quatrefages has proved that the two individuals are formed in *Syllis* also, at the expense of a single one, by the body of the latter becoming strangulated in the middle, and dividing, after the first rings of the posterior segment are modified, so as to constitute a head. But the two individuals, though thus similar in their exterior, are endowed, according to him, with very different functions. The first continues to be nourished in the ordinary way and to perform all the necessary vital functions, and in all probability becomes complete by reproducing a tail similar to the one which it has lost. But the second, formed at the expense of this tail, is destined only to multiply the species; its alimentary canal exhibits a tendency to become atrophied, and it appears to be nourished as it were upon matters pre-existing in its body; but it incloses the whole of the generative organs possessed by the parent stock, and after its separation continues to live sufficiently long for these organs, by fulfilling all their functions, and producing either ova or spermatozoa to insure the perpetuity of the species.—*Abstracted from the Comptes Rendus*, Jan. 15, 1844.

VESSELS PIERCED BY THE WEAPON OF THE SWORD-FISH.

Although notices have at various times been published respecting vessels at sea being pierced by the weapon of the Sword-fish, it seems to me that the positive information conveyed in the following letter from Robert M'Calmont, Esq. of Eaton Square, London, is worthy of a place in the 'Annals.' The portion of the weapon alluded to and preserved in the Belfast Museum is about nine inches in length, and two inches in diameter. It belonged, not to a sword-fish or *Xiphias*, but to a fish of the allied genus *Histiophorus*.

"London, 22nd October, 1834.

"MY DEAR SIR,—I send you along with this a small parcel containing part of the horn of a sword-fish, which may perhaps be considered deserving a place in your museum, from the manner in which it came into my possession. A vessel of ours, called the *Euphemia*, when on her passage to Brazil a few months ago became rather leaky, and upon examination at the end of her voyage was found to have been pierced by this horn through the copper-plank, and about nine inches through the solid timbers. It was broken off close to the copper, probably by the struggles of the fish, and the other end was

broken off by the carpenter in his endeavours to extract it from the position in which it was tightly wedged, and the point, with some inches of the horn, still remains in the ship. It was splintered by the same cause, and is glued together in the state in which you will receive it.

"It is remarkable that it entered the vessel, not, as one would suppose, in a horizontal direction, but nearly vertically, passing rather obliquely through two of the floor timbers within a few feet of the keel.

"Believe me to be yours sincerely,

"ROBERT M'CALMONT."

"To William Thompson, Esq., Belfast."

The following paragraph which appeared in the *Caledonian Mercury* in October 1843 may be added:—

"*Extraordinary Circumstance.*—The brig *Lord Byron*, of Limekilns, when on her voyage, at the end of last month, from the West Indies to Liverpool, suddenly sprung a leak, without any apparent cause. It was considered advisable to return to Jamaica, and, on the cargo being taken out and the vessel examined, it was found that the damage was occasioned by a sword-fish. The sword or bill of the fish had passed through the copper sheathing, then through the planking, in a slanting direction, to the extent of five inches, and also about eight or ten inches into the dead wood of the keel; leaving an opening in the planking in each side sufficient to admit the hand of a boy. A piece of the sword retained by the Captain is six inches long and one and a half inch thick, of solid bone; but a longer piece remains in the keel. The strength of the sword-fish must be very great, and it may have been the cause of the loss of several vessels. The vessel referred to was carried into port with very great difficulty."

Donegal Square, Belfast, Jan. 31, 1844.

WM. THOMPSON.

UPON THE SECRETION OF SILK.

The question has lately arisen, contrary to the old opinion of the silk (especially that of the silkworm) being contained in a fluid state within the reservoirs, whether it does not exist there already formed into a thread, and the caterpillar have merely to unwind a skein of it in constructing its cocoon. Straus-Durckheim expresses at some length (p. 88. vol. ii. of his recent work upon Comp. Anat.) his conviction that such is the case, both from anatomical observation and experiment, but the researches of M. Robinet have led him to the following different conclusions:—

1. The silk escapes by a simple membranous orifice, situated in a conical and fleshy appendage adhering to the labium of the silkworm.
2. The silk reaches this orifice by a single very short canal resulting from the union of the two serigenous cæcal tubes.
3. The anterior part of these tubes is capillary; the middle is very much swollen, and constitutes the *reservoir* properly so called; the posterior part consists of a very long slender cylinder, which is probably the secreting organ.

4. The silk is in the state of a thick gelatinous liquid in the two posterior parts of these organs. It *solidifies* in the capillary part of the tubes and reaches the external meatus in the concrete state.

5. The caterpillar compresses its thread by the contractions of an angle (*coude*) formed by the two capillary tubes at their point of union. It is thus that it can stop the secretion of silk and suspend itself by its thread.

6. The material of the silk is always colourless, and derives the colour which it presents in certain cases from a varnish existing in the reservoirs and issuing along with it.

7. The conical form of the thread is due to the gradual narrowing of the capillary tubes, which may be regarded as a kind of *wire drawer* to the silk.

8. All the other appearances which have led to the supposition that the silk existed in the state of a skein within the reservoirs are easily explained by the fact of its solidification in the capillary tubes *before their union*. How this takes place, and under what circumstances, remains to be determined.

When I have torn the capillary tube of a silk-reservoir as near as possible to its junction with its fellow, I have succeeded in drawing out simple silken threads, some of which are several inches long. This result has been obtained *under water*, and I do not think by any one previously.—*Comptes Rendus*, Jan. 15, 1844.

FUCUS LABILLARDIERII, TURN.

It is stated in the observations on this Alga (p. 57), that *Calocladia*, Grev., is identical with *Delisea*, Lamx., and that the Alga which Dr. Greville considered identical with *Fucus Labillardierii* is the same with *Delisea fimbriata*, Lamx. The latter part of the statement is not correct. Since the memoir was printed, Dr. Montagne has received specimens from Lehmann and Lenormand, which have convinced him that some correction here is necessary. The plant of Dr. Greville is the same with *Sphærococcus flaccidus*, Suhr, and is specifically different from, though closely allied to *Delisea fimbriata*, Lamx. He proposes, therefore, to call it *Delisea pulchra*, adopting the specific name of Dr. Greville, which is anterior to that of Suhr. *Delisea fimbriata* will then remain the type of the genus.—M. J. B.

KENTISH BIRDS.

To the Editors of the Annals of Natural History.

Margate, January 1844.

GENTLEMEN,—In my last communication I omitted to mention that in the latter part of September we were visited by an immense number of chaffinches that continued their course in a north-eastern direction. Fresh arrivals continued for several days, coming in a direct line from the continent; as soon as they reached our coast near Kingsgate, some of them, from hunger, staid merely for a few seconds to recruit their strength by picking up a few seeds, and then joined the following flight. I shot several of them, all females. In one of Mr. White's letters, he says he saw vast flights of chaffinches, and

when he came to observe them narrowly he was surprised to find them all hens, and he expresses a wish to know whether these birds do come over from the continent. For my part I am quite satisfied; and after such an opportunity of observing their coming from that direction have no doubt on the subject. After the females had arrived, and a greater portion had left our coast, an immense number of male chaffinches made their appearance, with an equal number of redbreasts; but the chaffinches did not follow the hens as I should have thought, but betook themselves to the farm-yards, doing great mischief to the granaries; and the redbreasts also filled our hedges and shrubs, so that they were swarming alive with them; and in many small hedge-rows of only a few yards' long about Northdown, several hundreds would start out within a yard or so of your gun.

About the 10th of October the wind got out to north-east again, and perhaps you may be surprised when I inform you, that almost every bush, shrub and garden in the vicinity of Margate was for several days swarming with the Golden-crested Regulus* (*Regulus aurocapillus*), and a few of the Fire-crested Regulus (*R. ignicapillus*); of the former I obtained as many as three in a shot for several times, but of the latter I only got seven at different times; but strange to say, the cliffs and houses and walls were completely lined with them; and a friend of mine watched his cat in less than half an hour killing no less than nine; and, to use his own expression, he does not know how many it had killed, but it had been at the work of slaughter all the morning.

The inhabitants, who saw so many birds of so curious a character, put it down at once for a severe winter; in which surmise I did not concur, concluding that some spot must be the place of landing of the migrators. And when, about five years since, I saw a great number of Ring Ouzels (*Turdus torquatus*) about the neighbourhood of Dover, the same opinion was then entertained by myself as well as others; but at any rate the severe weather has been a long time in coming, which for my part I am rather sorry for, as this mild weather is not good for collectors.

Since my letter of last month I have only obtained the following specimens:—

Snow Buntings (*Emberiza nivalis*).

One specimen of the Great-spotted Woodpecker (*Picus major*).

One Slavonian Grebe (*Podiceps cornutus*).

Feb. 15.—I send you the list of a few birds that have been obtained on our coast last month.

Several specimens of Sanderlings, *Calidris arenaria*; some of them nearly or wholly white.

Several specimens of the Bar-tailed Godwit, *Limosa rufa*. They are very plentiful along the coast.

Feb. 16.—For several years we have been visited by vast numbers of the Snow Bunting, *Emberiza nivalis*, but in no season do I remember seeing so many as at the present. Their favourite locality

* From Mr. Richard Taylor, jun. we learn that during the first week of the present February, he observed unusual numbers of Gold-crests in Cornwall.

used to be at a place called Newgate, about one mile from Margate ; but now they visit not only Newgate, but all along the range of fields from Newgate to Updown and to Chapel Bottom. They are very wild ; I have tried from year to year to catch them with a lark-net at night, but never could succeed, except only in taking a few. As they visit the clover-lay all the day, I thought that they roosted at night ; but I now find this not to be the case, for on returning from a shooting tour at dusk in the evening along the cliffs near the Infirmary, my attention was attracted by a number of small birds sitting on the fissures of the cliff. On examination they proved to be snow buntings in thousands. This, then, accounts for my not finding them in the fields. On questioning the coast-guardsmen, they told me that about half an hour before dusk they arrive in immense numbers, getting into the small holes and crevices of the cliff ; but as soon as daylight appears they depart in small flights, making a very musical noise.

STEPHEN MUMMERY.

144 High Street, Margate.

METEOROLOGICAL OBSERVATIONS FOR JANUARY 1844.

Chiswick.—January 1. Snow and sleet : clear and frosty at night. 2. Clear : sharp frost at night. 3. Severe frost : overcast : thawing rapidly. 4. Hazy : overcast. 5. Overcast : rain. 6. Mild and fine. 7. Exceedingly clear and fine : frosty. 8. Frosty : fine. 9. Thick haze : cold and dry : overcast. 10. Hazy : drizzly. 11. Overcast. 12. Foggy : heavy rain. 13. Slight drizzle : heavy clouds : squally, with rain. 14. Hazy and drizzly : clouds in strata : densely overcast. 15. Clear and frosty. 16. Sharp frost : very fine. 17, 18. Overcast. 19. Fine : densely clouded. 20. Cloudy, cold and dry. 21. Overcast. 22. Hazy : very fine. 23. Foggy : very fine. 24. Slight fog. 25. Frosty : very fine. 26. Very fine. 27. Slight rain. 28. Rain : fine. 29. Clear : overcast : squally. 30. Fine : showery. 31. Brisk wind, with small hail : stormy showers, snow, sleet, rain : densely overcast.—Mean temperature of the month $2\frac{1}{2}^{\circ}$ above the average.

Boston.—Jan. 1. Cloudy : rain early A.M. 2, 3. Fine. 4, 5. Cloudy : rain early A.M. 6. Fine : rain early A.M. : rain P.M. 7. Cloudy. 8. Fine. 9. Cloudy : snow P.M. 10. Fine : rain P.M. 11. Cloudy. 12. Fine : rain P.M. 13. Cloudy : rain P.M. 14—16. Fine. 17. Cloudy. 18—20. Fine. 21. Cloudy : rain early A.M. 22. Cloudy. 23. Cloudy : rain early A.M. 24, 25. Foggy. 26. Fine. 27. Cloudy. 28. Cloudy : rain early A.M. : rain P.M. 29. Fine. 30. Stormy. 31. Fine : stormy P.M.

Sandwich Manse, Orkney.—Jan. 1. Snow-showers. 2. Snow : bright : cloudy. 3. Snow-showers : clear. 4. Bright : frost : clear. 5. Rain. 6. Bright : rain. 7. Damp : clear. 8. Bright : clear. 9. Cloudy : rain. 10. Showers. 11. Bright : cloudy. 12. Rain : showers. 13. Bright : cloudy. 14. Frost : snow : clear. 15. Cloudy. 16. Cloudy : drizzle. 17. Drizzle. 18. Showers. 19. Hail-showers. 20. Snow-showers : cloudy. 21. Showers. 22. Bright : cloudy. 23. Drizzle. 24. Bright : fine. 25, 26. Showers. 27. Bright : drizzle. 28. Sleet-showers. 29. Rain : showers. 30. Sleet : showers. 31. Snow-drift : clear.

Applegarth Manse, Dumfries-shire.—Jan. 1. Frost : snow-shower. 2. Frost, severe. 3. Thaw : rain P.M. 4. Small rain. 5, 6. Heavy rain. 7. Showers. 8. Frost. 9. Snow : rain P.M. 10. Frost. 11. Fog. 12. Small rain. 13. Frost : fair and fine. 14, 15. Frost : fine. 16. Slight frost. 17. Frost : fine. 18. Frost. 19. Showery. 20. Frost, slight. 21. Fair and clear. 22. Frost : fine. 23. Frost : mild. 24. Fair and mild. 25. Rain at noon. 26. Fair and fine. 27. Fair, but cloudy. 28. Shower, heavy. 29. Wet. 30. Rain : snow-shower. 31. Frost and snow.

Mean temperature of the month $38^{\circ}4$

Mean temperature of January 1843 $37^{\circ}8$

Mean temperature for twenty years $34^{\circ}2$

Meteorological Observations made by Mr. Thompson at the Garden of the Horticultural Society at CHISWICK, near London; by Mr. Veall, at BOSTON; by the Rev. W. Dunbar, at Applegarth Manse, DUMFRIES-SHIRE; and by the Rev. C. Clouston, at Sandwick Manse, ORKNEY.

Days of Month.	Barometer.				Thermometer.						Wind.				Rain.							
	Chiswick.		Boston. 8½ a.m.	Dumfries-shire.		Orkney, Sandwick.		Chiswick. Max.	Chiswick. Min.	Boston. 8½ a.m.	Dumfries-shire.		Orkney, Sandwick. 9 a.m.	Orkney, Sandwick. 3 p.m.	Chiswick. 1 p.m.	Boston.	Dumfries-shire.	Orkney, Sandwick.	Chiswick.	Boston.	Dumfries-shire.	Orkney, Sandwick.
	Max.	Min.		9 a.m.	9 p.m.	9½ a.m.	8 p.m.				Max.	Min.										
1844. Jan.																						
1.	29.606	29.562	29.14	29.36	29.15	29.32	39	27	40	46	31½	33	31½	sw.	calm	calm	sw.	n.	.45	.0822
2.	29.898	29.485	29.20	29.75	29.56	29.45	37	14	30	45	25	30	45	nw.	calm	calm	n.	n.	.....	.....	.....
3.	29.860	29.626	29.63	29.59	29.25	29.50	42	32	28	39	13½	38	39	w.	calm	calm	sw.	w.	.24	.....	.....
4.	29.726	29.510	29.20	29.44	29.29	29.50	51	34	40	40½	33	28	40	sw.	calm	calm	e.	se.	.05	.13	.....
5.	29.569	29.214	29.19	29.02	29.15	28.92	54	44	48	50	38½	40	43	sw.	w.	w.	sw.	e.	.40	.19	.....
6.	29.407	29.199	28.77	28.90	29.12	29.14	52	36	47	49	40½	42	43	sw.	w.	w.	sw.	calm	.06	.06	.....
7.	29.656	29.558	29.12	29.34	29.25	29.47	48	25	43	45½	41	41	38½	nw.	calm	calm	nw.	ese.	.03	.03	1.00	
8.	30.125	29.834	29.46	29.81	29.91	30.05	44	35	35.5	40	30	40	38	n.	nw.	nw.	ene.	.....	.....	.....	.....
9.	30.320	30.303	30.03	30.09	29.92	29.80	40	33	37	39	34	40	40	se.	calm	calm	ne.	s.	.08	.....	.....
10.	30.291	30.199	29.88	30.15	29.80	29.99	48	30	35	44	33	44½	44½	n.	calm	calm	ne.	wnw.	.01	.19	.....
11.	30.338	30.304	29.94	30.21	30.12	30.01	46	30	41	44	37	46	45½	sw.	calm	calm	s.	s.	.....	.07	.05
12.	30.237	29.992	29.88	29.95	29.80	29.85	44	35	37	45	39	45½	44	sw.	calm	calm	nw.	ssw.	.76	.07	.44	
13.	30.013	29.988	29.60	30.03	30.13	30.08	44	35	37	42	33	40	36	n.	calm	calm	sse.	n.	.03	.40	.07	
14.	30.312	30.116	29.80	30.36	30.40	30.25	40	26	37	39	32	35½	34	ne.	calm	calm	ne.	calm	.01	.08	0.95	
15.	30.346	30.317	30.05	30.27	30.10	30.16	40	20	28.5	36	22½	45	45½	ne.	calm	calm	nw.	w.	.....	.....	.07
16.	30.292	30.133	29.98	30.18	30.11	30.06	39	32	26.5	41½	32	44½	46	ne.	calm	calm	ws.	wnw.	.....	.....	.....
17.	30.197	30.180	29.85	30.13	30.10	30.02	45	39	36	40	29½	45½	45½	n.	calm	calm	ws.	wnw.	.....	.....	.13
18.	30.190	30.150	29.82	30.05	29.88	29.81	44	38	34	48	30	46	42	nw.	calm	calm	w.	w.	.....	.....	.07
19.	30.007	29.932	29.56	29.76	29.63	29.78	48	37	45	48½	40	32	33	w.	w.	w.	nw.	nw.	.....	.....	.17
20.	30.017	30.003	29.59	29.90	29.88	29.80	48	28	34.5	40	32½	32½	34	n.	w.	w.	n.	n.	.....	.....	.05
21.	29.995	29.919	29.48	29.75	29.83	29.78	47	34	41	47	35	41½	44	w.	w.	w.	n.	nw.	.....	.04	.16
22.	29.919	29.865	29.45	29.80	29.89	29.78	49	26	37	41	27½	42½	38	sw.	calm	calm	w&sw	n.	.....	.03	.12
23.	30.100	30.026	29.66	29.95	29.90	29.97	45	35	38	41	28½	45	46	ne.	calm	calm	w	w.	.....	.....	.....
24.	30.242	30.184	29.79	30.02	30.06	29.90	43	23	37.5	45	35½	45½	43	sw.	calm	calm	ssw.	w.	.....	.....	.04
25.	30.262	30.188	29.79	29.98	30.04	29.86	46	36	39	48½	40	46	44	sw.	calm	calm	w.	w.	.....	.....	.17
26.	30.282	30.225	29.79	30.11	30.16	30.02	48	27	36	48½	36	41½	44	nw.	calm	calm	nw.	nw.	.....	.....	.13
27.	30.249	30.134	29.77	30.03	29.95	29.68	50	39	44	50	43	47	47½	sw.	calm	calm	w.	w.	.....	.....	.04
28.	29.900	29.833	29.38	29.62	29.70	29.50	54	32	46.5	50	43½	41	40	w.	calm	calm	w.	wnw.	.02	.10	.33	
29.	29.977	29.745	29.54	29.71	29.40	28.90	54	44	37.5	51	34	38	45	sw.	calm	calm	w.	s.	.....	.04	.25
30.	29.843	29.634	29.30	29.51	29.49	29.22	51	32	45	48	36½	39½	34	w.	w.	w.	w.	wnw.	.03	.04	.22	
31.	29.811	29.799	29.33	29.58	29.78	29.70	41	26	35.5	48½	30½	30	32	nw.	w	w	w.	nw.	.15	.24	.....
Mean.	30.031	29.908	29.57	29.810	29.840	29.698	45.87	31.74	37.9	44.5	33.4	40.20	40.04						2.24	1.68	2.60	4.42



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