

early in the form of two long cords, which open close together into the intestine in the region of the rectal section. According to this observation I do not hesitate to adopt Witlaczil's view, according to which the green cell-mass in the abdomen of the viviparous Aphides (which is likewise arranged into two cords) represents the Malpighian vessels of other insects. In a very pale Aphis-embryo I was able clearly to detect, besides the very distinctly marked dorsal vessel, the point of convergence of the two cords, but without distinctly seeing the point of discharge (as in *Coccus hesperidum*).

The egg of the viviparous Aphides, for which I have here and there, for convenience' sake, employed the antiquated term "pseudovum," therefore presents exceedingly interesting and very distinctly observable developmental processes, which cannot be sufficiently studied. In recent times Dr. Arnold Brass* (of Leipzig) and Dr. Ludwig Will† (of Rostock) have occupied themselves with the earliest stages of development. The last-mentioned gentleman has also already announced the publication of a work upon the later stages of the Aphis-embryo. In course of time many other workers will certainly have to be registered for this highly interesting subject.

VII.—Notes on the South-Russian Spongillidæ.

By Dr. W. DYBOWSKI †.

DR. P. T. STEPANOW, Professor of Zoology in the University of Charkow, has had the kindness to send me some specimens of the freshwater sponges for scientific investigation. The sponges preserved in the Museum of the above University and those collected by Prof. Stepanow himself are from the following localities:—

1. From the river Udy (a right affluent of the Siewiernyj Daniec), Gov. Charkow.
2. From Lake Lebedin (Cirle Lebedin), Gov. Charkow.
3. From the river Kolomak (left affluent of the Worska, a branch of the Dnieper), Gov. Poltawa.

* "Das Ovarium und die ersten Entwicklungsstadien des Eies der viviparen Aphiden," in Zeitschr. f. Naturwiss. Bd. iv. (1882).

† "Zur Bildung des Eies und des Blastoderms bei den viviparen Aphiden," in Arbeiten des Zool. Instit. zu Würzburg, 1883, Heft 3.

‡ Translated by W. S. Dallas, F.L.S., from the 'Sitzungsberichte der Naturforscher-Gesellschaft bei der Universität Dorpat,' Bd. vi. pp. 507-515 (1884).

4. From the river Siewiernyj Daniec, Gov. Charkow.

5. From Lake Wielikoje (Circle Lebiedin), Gov. Charkow.

Offering my best thanks to the sender of these sponges, I now communicate the results of my investigations upon them.

These results are as follows. The Spongillæ of these five localities represent three species, namely :—

A. *Spongilla lacustris*.

B. *Meyenia (Ephydatia) fluviatilis*.

C. *Dosilia* (?) *Stepanowii*, n. sp.

The first two of these * I have only briefly described ; but the third, as a form hitherto unknown to science, has received as accurate and detailed a description as possible.

Spongilla lacustris, Carter, occurs in very thin lamellæ, coating in spots or cones the leaves of *Acorus Calamus* and *Quercus* sp. ; they are evidently quite young and undeveloped specimens, in which I have consequently found no gemmules. The skeleton-spicules are 0.224–0.130 millim. long, 0.010–0.002 millim. thick †. The size of the parenchyma-spicules varies between 0.050 and 0.060 millim. in length, and 0.002 and 0.004 millim. in thickness. These spicules perfectly agree with those described by me (*loc. cit.*).

Among the spicules such deformities frequently occur as I have already described and figured (*l. c.*) ; but among the most peculiar are the clavate and pin-shaped spicules, the heads of which are sometimes quite smooth and rounded, but sometimes variously misshaped, or furnished with small spines ‡.

Localities. Daniec, Kolomak.

The *Meyenia fluviatilis*, auct., agrees perfectly with that described by me (*l. c.* p. 13). I have before me four fragments of a large, fully developed sponge and a couple of smaller ones. In all numerous gemmules are present. The fragments belong to cushion-like sponges ; the smaller sponges, on the contrary, are growing round a stem, 8 millim. thick, of *Arundo* sp.

Localities. Lake Lebiedin, river Udy.

* See Dybowski, " Studien über die Süßwasser-Schwämme des Russischen Reiches," in *Mém. Acad. Sci. St. Pétersb. sér. 7*, tome xxx. no. 10, p. 6, tab. i. figs. 4, 6, 7, and p. 13, tab. i. fig. 3, and tab. ii. fig. 9.

† In my memoir (*l. c.*) p. 10, column 1, line 4 of the measurements, 0.009 is erroneously printed instead of 0.002, and in column 3, line 6, 0.028 instead of 0.002.

‡ The figures necessary for the more ready intelligence of all the descriptions here given, I have prepared with the aid of a Hartnack's prism, and will publish them when opportunity serves.

Dosilia (?) *Stepanowii*, n. sp.

This Spongilla, from Lake Wielikoje, is of very peculiar interest. So far as I know, no form similar to our sponge has hitherto been described among the European Spongillidæ, at least, I have been unable to find any notice of it in the literature accessible to me; on the other hand, among the exotic (American and Asiatic) Spongillidæ, I find analogous, and, it seems to me, nearly allied forms.

The genus *Dosilia*, Gray*, which Carter† places in his "*Meyenia*," possesses two species—*Dosilia plumosa* (from Bombay) and *D. Baileyi* (from New York). The latter appears to me the form most nearly allied to our sponge‡.

To justify and support my opinion I will here give as accurate a description as possible of our sponge, and then place side by side the most prominent characters of the two (Russian and American) sponges, so as to facilitate for other authors the comparison of the two sponges with one another.

Description.—Of the sponge under consideration I have before me six small spirit-specimens, all of which are defective and do not enable us to form any definite notion of their form. They are chiefly shapeless masses, growing round various foreign bodies (such as leaves and stalks of grasses, fragments of bast, very thin twigs, and even quills of a small wing-feather). The specimens in spirit are pale tawny, and look not unlike soaked bread. The skeleton-spicules are long and slender acerates with acute ends, that is to say, they have the form of the spicules proper to the Spongillæ with smooth spicules in general; but they are somewhat smaller, their length being 0·200–0·104, and their thickness 0·065–0·004 millim. The surface of the skeleton-spicules is, however, not smooth, but furnished with very short, acute, and exceedingly scattered spines§.

* J. E. Gray, "Notes on the Arrangement of Sponges, with the Description of some new Genera," in Proc. Zool. Soc. Lond. 1867, pp. 550–553, pls. xxvii. & xxviii.

† Carter, "History and Classification of the known Species of *Spongilla*," in Ann. & Mag. Nat. Hist. ser. 5, vol. vii. (1881), pp. 78–107, pls. v. & vi.

‡ Neither of the two species mentioned is known to me by autopsy. I have drawn my conclusions as to the affinities of our sponge only from the statements in the literature, and must therefore for the present abstain from a certain and final decision.

§ The above-mentioned spines are so small and inconspicuous that they may very easily be overlooked. They are most conveniently observed with the light of an oil-lamp and with the objective no. 8. When they have once been observed they may quite easily be recognized with objective no. 4. The spines appear most distinctly at the periphery of the spicules.

The skeleton-spicules of the sponge under notice constitute, as it were, a transitional form between the smooth and the spiny Spongillid spicules*. The parenchyma-spicules are also remarkably peculiar and characteristic. They are small acerates, measuring 0·040–0·050 millim. in length and 0·025–0·010 millim. in thickness, and furnished with spines; in form they generally resemble those of *Spongilla lacustris*, but the form and arrangement of the spines are quite different from those in the spicules of the latter *Spongilla*. Here the spines occur in three different forms: the middle portion of the spicule is beset with long, obtuse, vertically projecting spines, but the two ends present small, pointed hooklets, while towards the middle of the spicule there exist pointed erect spines. The long straight spines of the middle section are frequently also covered with small acute spines; the free end of the spine is sometimes rounded off, sometimes truncated, and sometimes furnished with a knob or a T-shaped rod. The gemmules I have not been able to find, but I found in the parenchyma of the sponges numerous amphidisci.

The spindle-shaped amphidisci are very long; their dimensions are as follows:—

	millim.
Total length.....	0·040–0·028
Thickness of the shaft.....	0·002–0·004
Diameter of the disk	0·012–0·010

The shaft is furnished on its surface with large perpendicular spines.

The two terminal disks (*disci*) are furnished at the margins with deep notches; the teeth thus formed have a perpendicular position.

The actual form of the disk, as well as the number of teeth on each disk, I have been unable to ascertain.

If we summarize the most important characters of our sponge and compare them with those of *Dosilia Baileyi*, it appears that the two sponges must belong to the same genus, but are specifically different.

These characters are as follows:—

Dosilia Baileyi, Carter (*l. c.* p. 95).

“Coating, surface smooth. Structure friable, crumbling. Skeleton-spicule curved, subfusiform, gradually sharp-pointed, smooth. Flesh-spicule minute, curved, fusiform, gradually sharp-pointed, covered with erect obtuse spines throughout, extremely small towards the extremities, and extremely long and perpendicular about the centre of the shaft. Statoblasts

* See Dybowski, *l. c.* tab. i. figs. 3 & 5.

globular; aperture infundibular; crust, which is thick and composed of granular cell-substance, charged with birotulate spicules consisting of a long, straight, sparsely spiniferous shaft whose spines are large, irregular in length, conical and perpendicular, terminated at each end by an umbonate disk of equal size, deeply but regularly denticulated, whose processes are claw-like and turned inwards, arranged perpendicularly, with one disk resting on the chitinous coat and the other forming part of the surface of the statoblast.

“*Locality.* New York. In a stream on the Canterbury Road, West Point.”

Dosilia Stepanowii, n. sp.

Surrounding; surface smooth.

Skeleton-spicules long, pointed, and covered with small, acute, but scantily distributed spines.

Parenchyma-spicules small, pointed, and covered with spines. Spines in the middle section long, obtuse, and perpendicular; at the two ends small, acute, hook-like; towards the middle small, acute, perpendicular. Amphidisci spindle-shaped, their shaft long and furnished with a few large perpendicular spines.

The two terminal disks are toothed at the margins. The teeth have a perpendicular position.

Locality. Lake Wielikoje.

In conclusion, it may be mentioned that I found in the parenchyma of the Spongillidæ just investigated by me some siliceous corpuscles, which it seems to me may be small parenchyma, or coating spicules of still unknown Spongillidæ. From this I conclude that other unknown Spongillidæ must certainly occur in the waters of the Government of Charkow and of South Russia generally.

Would it not be advisable on the part of the University of Charkow to make a prize-problem of the investigation of the South-Russian Spongillidæ? It would be a very grateful theme for a pupil of that University, the solution of which might advance the knowledge of a group of animals which is still but little known not only in Russia but also in the rest of Europe.

Further, I may call attention to the fact that very numerous Diatoms and Algæ are present in the parenchyma of the Spongillidæ, so that these plants, otherwise so difficult to discover, are to be sought in the interior of these sponges.

Postscript.—The Spongilla from Lake Hertha (in the island of Rügen), kindly communicated to me by Dr. Braun of Dorpat, proves, from my investigation of it, to be a *Spon-*

gilla lacustris, auct. It agrees perfectly with the specimens of that species obtained from the Ludwinow estate (see Süßw.-Schw. d. Russ. Reiches, p. 6). This fact is of interest as furnishing a small contribution to the zoogeography of the Spongillæ, especially as, so far as I know, no Spongillæ were previously known from that locality.

VIII.—*On the Synonymy of some Heterocerous Lepidoptera.*
By RUDOLPH ROSENSTOCK, B.A.

I INCIDENTALLY discovered and noted the following synonyms while systematically studying the collection of Lepidoptera in the British Museum. They are for the most part redescrptions by the late Mr. Walker of species previously described either by himself or other authors.

1. NOCTUITES.

Poaphila congesta, <i>Walk.</i>	Venezuela.	=	Anthophila erecta, <i>Walk.</i>	San Domingo.
Remigia triangularis, <i>Walk.</i>	India.	=	Toxocampa costimacula, <i>Walk.</i>	Sylhet.

2. PYRALITES.

Hypena disclusalis, <i>Walk.</i>	Africa.	S.	=	Hypena senialis, <i>Guén.</i>	Central Africa.	
Marimatha confisinalis, <i>Walk.</i>	Loc. — ?		=	Anthophila semipurpurea, <i>Walk.</i>	Loc. — ?	
Pyrallis dispansalis, <i>Walk.</i>	Domingo.	San	=	Carcha hersilialis, <i>Walk.</i>	San Domingo.	
Lepyrodes lepidalis, <i>Walk.</i>	Ceylon, N. India.	}	=	Samea (<i>Guén.</i>) sidealis, <i>Walk.</i>	Sierra Leone. (This is evidently an Old-World species of wide range.)	
Stenia pipleisalis, <i>Walk.</i>	Sierra Leone.					
Hymenia meridionalis, <i>Walk.</i>	India.					
Botys hortalis, <i>Walk.</i>	Santarem.	Bogota,	=	Botys marialis, <i>Walk.</i>	San Domingo.	
— strictalis, <i>Walk.</i>	America.	}	=	— flavidalis, <i>Walk.</i>	N. America.	
— olliusalis, <i>Walk.</i>	America.					U. S.
— ofellusalis, <i>Walk.</i>	Loc. — ?					Loc.
— philealis, <i>Walk.</i>	Venezuela.					Venezuela.
— ænipialis, <i>Walk.</i>	Bogota.	}	=	— lycialis, <i>Walk.</i>	San Domingo.	
— codrusalis, <i>Walk.</i>	Bogota.					Bogota.
				— dorisalis, <i>Walk.</i>	Villa Nova.	