discovered in the mucous membrane of the oviduct of amphibious animals, birds, and Mammalia. Since, however, this phenomenon belongs to the perfectly formed mucous membrane of the genitals in all stages of their existence, and besides, to that of the organs of respiration, it cannot be here fully and particularly considered. I therefore refer to the account which we have given of this discovery in Joh. Müller's Archiv, and to our paper; *de phœnomeno generali motus vibratorii. Wratisl.* 1825. 4.

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Art. X.—*Some Remarks and Inquiries concerning the Germinal Vesicle (Vesicula germinativa.)* Translated from the German * of Professor Rudolph Wagner, of Erlangen, by Martin Barry, M. D., M. W. S., President of the Royal Medical Society of Edinburgh.

There is no doubt but that the acute *Baer* was wrong in regarding the entire ovum of the Mammalia and of man, as the germinal vesicle itself, a very pardonable error, considering the novelty and difficulty of the object, in which *Carus* † has followed him. *Purkinje* ‡ has already recently expressed his doubts of it, and this fortunate discoverer of the germinal vesicle in birds has justly explained the content of the Baerian vesicle as the yolk. Finally *Valentin*, § with the most successful talent for observation, and in connection with *Bernhardt*, has very lately exhibited the true germinal vesicle in the ova (Baerian vesicles) of very different Mammalia, and drawn a parallel between the entire Graafian vesicle, with its various contents, and the ovum of the bird. My less numerous researches accord perfectly in their results with those of Valentin, Bernhardt, and Purkinje; in the explanation of single parts, I can for the present do no more than receive their views. In the following I shall ask attention to a few points, which I recommend to my relative and colleague Valentin, for confirmation and further prosecution.

In *Fig.* 1. there is seen a Graafian vesicle of the sheep, slightly magnified, and represented as lying in the ovary; at *a* the minute ovulum surrounded by the known pellucid non-granulous space. In *Fig.* 2. is the ovulum with the Graafian vesicle, taken out. I found it $\frac{1}{15}$—$\frac{1}{20}$‴ in diameter (about ten of them hav-

*Fig.* 1.

* Müller's Archiv, Jahrgang, 1835, Heft iv.

† *Zootomie*, 2d *Ed. Tab. xx. Fig* 15. With neat delineation of the ovum of the swine.

‡ *Article Ei, in the "Berliner Wörterbuch," Band* x.

§ *Bernhardt Symbolæ ad ovi mammalium historiam ante prægnationem. Wratislav.* 1834. With a very good plate, drawn by Valentin.

ing been measured.) It is externally surrounded by a diaphanous membrane, which I with others, call chorion, without intending thereby to indicate the chorion as a covering of the fœtus. Between the chorion and the yolk-bag, there is a narrow diaphanous space. The yolk-bag presents a finely granulous mass, with single larger (probably fat) granules. With slight pressure, there appears the transparent germinal vesicle, *c*, which measures exactly $\frac{1}{30}'''$. It always contains a round, yellowish, apparently opaque, as it were granulous spot of $\frac{1}{200}'''$ in size, (diameter.) In *Fig.* 3, is particularly represented the germinal vesicle taken out of the yolk, with the spot. In *Fig.* 4, I have selected for comparison a somewhat maturer ovum of the rabbit, in which the yolk already contains numerous, large drops of fat. The ovulum generally measures $\frac{1}{15}'''$, but also from $\frac{1}{12}'''$ to $\frac{1}{20}'''$; the pellucid germinal vesicles, $\frac{1}{30}'''$ to $\frac{1}{70}'''$; the yellowish glimmering opaque spot, $\frac{1}{200}'''$. Once also I saw, instead of a single spot, two smaller ones, lying close together.

*Fig.* 2.


*Fig.* 3.

*Fig.* 4.

The spot has claimed my attention, because I have met with it in other classes of animals: whether constantly in vertebrated animals, I am still doubtful; but it is very distinct, for every observer in Phalangium opilio, ova of which, of different size and developement, I have delineated in *Fig.* 5. At *a* is seen a larger ovum, with pellucid chorion, and opaque yolk, which has already arched over the germinal vesicle. On the latter is seated the granulous spot. At *b*, the yolk has just advanced, and at *c*, is not at all perceptible as a layer of granules. Here also the minute germinal vesicle of $\frac{1}{100}'''$, is furnished with the opaque spot: the germinal vesicle grows for a while together with the spot; and at *Fig.* 6, as well as at *Fig.* 3, there is such a germinal vesicle particularly represented.

*Fig.* 5.


*Fig.* 6.

This spot, which I consider constant, at least in the Mammalia, I call the germinal spot *(Macula germinativa.)*

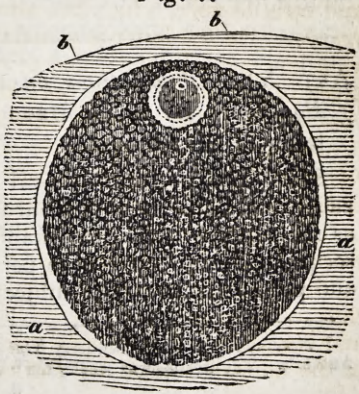
The germinal vesicle presents in the different classes of animals, various marks on its surface, which I shall point out in another place. I have now seen this germinal vesicle, besides in the animals named by Purkinje, also in Octopus, among

the Gasteropoda, only in Patella. With some practice and acquaintance with the parts, one may find this delicate structure also in animals that have lain in spirit: its content becomes in spirit dark and opaque, as for example in fishes. I have not yet found the germinal vesicle in our native snails; whereas, in Unio and Anodonta, it is very distinct and firm; hence these animals are to be much recommended for the first observation. It constantly presents (in these animals?) two spots circular in form, which intersect each other, (varieties rarely occurring,) the larger of them may bear a certain resemblance to the germinal spot. I have quite recently seen the germinal vesicle distinctly, though without any mark (on its surface) in the Ascaris, but it was very minute: I could not with decision see it in the remarkably formed ova of the Tænia, and as little hitherto in the Distoma. In the cra-fish the germinal vesicle is very distinct; the granulous spot I did not find, and discovered it to be wanting also in Cyprinus, Gadus, and the Batrachia, while I found it very distinct in some ova of Salmo. It may be, that I have overlooked or mistaken it; still more probable is it, that it passes through metamorphoses, and depends upon circumstances which are yet to me unknown.

That in the human ovum there is present a germinal spot, appears to me probable. What may be its meaning? Does it stand in a certain relation to the embryo? Is it perhaps still further organized? How remarkable is what we know of the compound organization in the Mammalian and human ovum; it is a true encasing, (Einschachtelung)—in the Graafian vesicle lies the vesicle of Baer, in the Baerian vesicle, the vesicle of Purkinje. Is the germinal spot again to have its content? Hitherto, with an enlargement of 800 times, (diameters) I have not been able to discover any thing in it distinctly.

For further contemplation I have given in Fig. 7, a more schemal section of the Graafian vesicle of the sheep, represented in *Fig.* 1, and which in *Fig.* 7 is seen lying in the ovary. *a* is the germ couch, (stroma,) of the ovary, *b* the serous peritoneal covering. The Graafian vesicle presents a double membrane, and a granulous content; the ovulum itself is surrounded by the pellucid border, then next inclosed

*Fig.* 7.



by the chorion, and shows a dotted yolk; within, lies the germinal vesicle, with the germinal spot. For observance of the germinal vesicle and germinal spot of the Mammalia, I recommend powerful enlargements of 300 to 500 diameters.

I wish that these remarks and inquiries may induce naturalists to make observations in the ensuing spring.

*Supplement.*

Since the end of last year (1834) I have unremittingly inquired into, and already prepared forty tables of drawings of, the ovum in the different classes of animals. It is thence shown:

1. That the primitive parts of the ovum are the germinal vesicle and the germinal spot, as is most satisfactorily demonstrable in insects; the yolk is added at a later period.

2. The germ is, at its first appearance, that which I have named germinal spot. It is a layer or granulous mass, which appears sometimes single as a spot (Mammalia, snails, insects, &c.)—sometimes forms several scattered globules, (Crafish, Fishes, Batrachia,) which at an earlier period I erroneously considered as drops of fat. It is fixed to the internal surface of the germinal vesicle, where it is immersed in the albuminous fluid of the same.

3. I have distinctly observed the origin of the germinal layer out of the germinal spot. This gradual metamorphosis from the minutest germinal vesicle, measuring at times less than $\frac{1}{100}$th of a line, to the mature ovum, the relation to the germinal vesicle, &c. is of great interest.

The number of animal species examined is very considerable, and my micrometric observations may be not far short of a thousand. I wish only yet to extend my researches among marine animals. *

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ART. XI.—*Observations on the Experiments of Professor Panizza.* By S. D. BROUGHTON, Esq. F. R. S., &c. in a letter to the Editor.

SIR,—I HAVE recently read the details of Professor Panizza's experiments, in your Journal, with very great satisfaction, as they appear to be remarkable for accuracy and minute description, and to have been performed with considerable skill and perseverance. The subject of his experiments is difficult

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* Note by the Editor, (Müller.) The supplement is taken from a letter of the Author's. The treatise was sent to the "Archiv" last year. (1834.)