Begattung ist; doch erst während der letzten Flugzeit bin ich dazu gekommen, mich nach seiner Herkunft umzusehen.

Durch Drücken des Hinterleibes kann man bei den *Acraea*-Männchen unter dem Hinterrande der letzten Rückenplatte eine sehr ansehnliche Wulst hervortreiben, welche derjenigen ganz ähnlich ist, die die Weibchen der Maracujáfalter (*Heliconius, Eucides, Colaenis* und *Dione*) beim Ergriffenwerden an derselben Stelle hervorstülpen. Dieselbe ist bald nackt, bald mit braunen oder schwärzlichen Schuppen und Haaren bedeckt, die schon bei leisester Berührung sich ablösen. Aus Schuppen und Haaren derselben Form zeigt sich der Anhang der Weibchen zusammengesetzt, wenn man ihn nach Behandlung mit heißer Kalilauge zwischen Glasplatten zerdrückt. — Hunderte von Männchen, die ich darauf untersuchte, zeigten fast alle die Wulst entweder noch behaart oder schon völlig nackt; nur zweimal fand ich die Haare zu kleineren, noch unverbundenen Platten verklebt und zweimal dieselben zu einem dem Anhange der Weibchen ähnlichen, aber noch dünneren und zerbrechlicheren Gebilde verbunden. Wahrscheinlich ergießt bei der Begattung eines der Geschlechter eine rasch erhärtende Flüssigkeit, die demselben seine spätere Dicke und Festigkeit verleihen.

Blumenau, Santa Catharina, Brazil, 1. Mai 1883.

2. On the presence of haemoglobin in the blood of the Crustacea Branchiopoda.

By E. Ray Lankester, Professor in London.

The note on this subject by MM. Regnard and R. Blanchard in the Anzeiger of May 7th 1883, is singularly inaccurate. The writers are imperfectly acquainted with the facts already ascertained and published with regard to the distribution of haemoglobin in the animal kingdom.

There is no novelty in their observation of haemoglobin in the *Crustacea Branchiopoda*. In 1869 I recorded the existence of haemoglobin in the blood of *Daphnia* and *Cheirocephalus* in a memoir entitled »Spectroscopic examination of certain Animal substances« published in the Journal of Anatomy and Physiology of that year p. 119; and I again referred to the fact in a memoir entitled »A contribution to the knowledge of Haemoglobin« published in the Proceedings of the Royal Society of London, No. 140. 1873. My determination of the haemoglobin in the blood of *Cheirocephalus* and *Daphnia* was made by means of the spectroscope and comparison by super-position with standard haemoglobin — in both oxidized and reduced condition. Accordingly

the fact now published by MM. Regnard and Blanchard amount simply to a confirmation of an observation published thirteen years ago.

Further than this MM. Regnard and Blanchard have given an erroneous account of the history of the discovery of haemoglobin in the lower animals and of our present knowledge of its distribution. The first spectroscopic observations on the haemoglobin of the Earthworm were published by me in 1867 (Journal of Anat. and Physiology) and in the same year Nawrocki published his researches on the subject. Rollett did not demonstrate haemoglobin in the insect-larva *Chironomus*, for he did not make use of the spectroscope.

The spectroscopic evidence was furnished by me in 1869 when I also published the fact of the existence of haemoglobin in *Planorbis*, *Cheirocephalus* and *Daphnia*. In Vol. IV of Pflüger's Arch. f. Physiologie 1871, I published the fact of the existence of haemoglobin (ascertained spectroscopically) in the muscular tissue of the buccal mass of the Gastropod Molluscs *Limnaeus* and *Paludina* — and in the vascular fluid of the Chaetopods *Eunice*, *Cirrhatulus*, *Nereis*, *Terebella*, *Tubifex*, *Limnodrilus*, *Lumbriculus* and *Nais*, and of the leeches *Nephelis* and *Hirudo*.

In the Proc. Roy. Soc. 1873. No. 140. I added to this list the red corpuscles of Chaetopods *Glycera* and *Capitella* and of the Gephyrean *Phoronis*: the vascular fluid of some Nemertines: the red blood-corpuscles of the Lamellibranch *Solen legumen*: the nervous tissue of the ventral ganglionated cord of *Aphrodite*: the muscular tissue of the buccal mass of *Littorina*, *Patella*, *Chiton*, *Aplysia* and of the gizzard of *Aplysia*, and of certain muscles in different groups of *Vertebrata*.

Since this I have published three additional instances of red-coloured corpuscles impregnated with haemoglobin viz. in the blood of the Lamellibranch *Arca* (See English edition of Gegenbaur's Comparative Anatomy) and in the coelomic fluid of the Gephyreans *Thalassema Neptuni*, and *Hamingia arctica* K. and D. (this Anzeiger 1881. No. 87 and Ann. and Mag. Nat. Hist. Jan. 1883).

Other instances of the occurrence of haemoglobin have been published by Van Beneden (1873) who detected it in a special vascular system in *Lernanthropus* and *Clavella*, by Hubrecht (1875) who found it in the nervous tissue of Nemertine worms and in corpuscles contained in the vascular fluid of some species and in the proboscidean sheath of others and lastly by Foettinger (1880) who found it in corpuscles in the body cavity of an Ophiurid Echinoderm. The above list is sufficient to shew how entirely MM. Regnard and Blanchard have failed to make themselves acquainted with the

existing knowledge of the subject on which they have undertaken to write, when we compare it with the summary which they offer on p. 253 of No. 138 of this journal and the appended remark »A cela se bornaient nos connaissances sur la distribution de l'hémoglobine dans le grand groupe des Invertebrés, quand, en 1873 etc.«

London, May 1883.

3. Upon the Foetal Membranes of the Marsupials.

By Henry F. Osborn, Asst. Prof. of Nat. Science, Princeton College, N.J., U.S.A.

I have recently been making a study of the foetal Membranes of the Marsupials which has brought out some new facts in regard to the early life history of these animals. I send you an abstract of my results which will be published in full in the July or October number of the Quarterly Journal of Microscopical Science.

My material for examination consisted (1) of a large number of Opossum embryos, which were found in the uterus of a recently impregnated female, (2) a foetus, considerably advanced, which was obtained from one of the smaller Australian Marsupials, (3) a Kangaroo foetus of about twelve days intra-uterine growth. The relations of the membranes in all these embryos were found to be very much as in the Kangaroo foetus described by Professor Owen in 1833. Each embryo was surrounded by a large subzonal membrane. Within this the embryo lay closely enveloped in the amnion. The yolk sac, supplied by two arteries and a vein, was very large and had a disclike area of attachment over about one third of the inner surface of the subzonal membrane. This attached area was in most cases circumscribed by the vena terminalis of the yolk sac and was highly vascular. The Allantois was found in all stages of development, in the Opossum and Kangaroo it was free, in specimen 2. it was slightly adherent to the subzonal membrane without any signs of villi.

In the Opossum embryos, which were the first observed, the subzonal membrane over the attached portion of the yolk sac was found to be covered with conical villi just visible to the naked eye. Under the microscope these were found to be hollow upgrowths of the subzonal epithelium consisting of a single layer of columnar cells. The subsequent relations of these villi could only be conjectured, but in specimen 2 similar villi were found composed of a cap of flattened subzonal cells covering a solid papilla formed upon the surface of the yolk sac. The latter was supplied with capillary blood vessels so that in all respects these yolk sac villi may be considered similar in structure with the simplest type of allantoic villi