THE Sebastopol Biological Station, under Dr. Sophie Pereyaslavtseva, continues to bring out important biological works. In the last number of the *Bulletin* of the Moscow Society of Naturalists (1888, No. 2), Mrs. Pereyaslavtseva publishes (in French) the first instalment of a most valuable work which she has written in association with Miss Marie Rossiiskaya, on the embryogeny of the Amphipods, being a continuation of her previous studies in the embryogeny of Rotifers. The development of *Gammarus pœcilurus* is described in the first part of the work, and an idea of its detailed character may best be given by mentioning that the various stages of development of that one species are illustrated by no less than one hundred and twenty microscopical sections beautifully printed in colours. Two more representatives of Amphipods (*Caprella* and *Orchestia*) have been studied in the same way, while the lady students who work at Sebastopol under the learned lady-director of the station are now studying other species of Amphipods, and especially of *Gammarus*; so that a complete work on the embryogeny of that important zoological division is expected to be ready by the end of the autumn. For the present, Mrs. Pereyaslavtseva refrains from suggesting general conclusions, but at the end of her monograph she points out that throughout the embryonal development of *Gammarus pœcilurus* the cells of its tissues are endowed with amœboid movements. Those movements are less pronounced in the ectodermic and mesodermic layers, and yet the cells of the former are moving and protruding pseudopods even when the endodermic layer has taken the shape of a fully formed pouch, and its constitutive cells may be considered as epithelium. As to the cells of the mesoderm, they maintain the capacity of both locomotion and overlapping (*chevauchement*) even at very advanced stages of the development of the embryo—that is, until the elaboration of the muscular tissue has been completed. These phenomena have been noticed in all the three genera of Amphipods already studied, and most probably they are common to all Amphipods.

MESSRS. MARION AND CO. send us an account of a "detective camera" which has been planned to meet the requirements of the inexperienced as well as the experienced in photography. It has the appearance of a leather dressing-case or despatch-box, and has the special advantage that the person using it sees the exact picture he is to get on his plate, the same lens giving the image on the screen and taking the negative. Another "detective camera" of which Messrs. Marion and Co. have issued a description is in the form of a book, and can be used secretly, since there is nothing to indicate its real purpose.

IN an article on "Irregular Star Clusters" (NATURE, November 1, p. 13), it was stated, with regard to an apparent member of a scattered group in Ophiuchus, that its position "was found, by the comparison of photographs taken by M. von Gothard in 1886 with Vogel's measures of eighteen years previously, to have changed to the extent of 45″, or at the rate of 2½″ annually (*Astr. Nach.*, No. 2777)." Dr. H. Kreutz, of the Kiel Observatory, writes to us to say that more recent measures of Dr. B. von Engelhardt (*Astr. Nach.*, No. 2859) have proved this to be incorrect. The difference between Gothard's photographs and Vogel's measures was due to an error in Vogel's work.

THE additions to the Zoological Society's Gardens during the past week include two White-tailed Eagles (*Haliætus albicilla*), British, presented by Mr. R. H. Venables Kyrke; two Short-eared Owls (*Otus brachyotus*), captured in the Red Sea, presented by Captain John Marr; a Little Grebe (*Tachybaptes fluviatilis*), British, presented by Mr. Howard Bunn; two Spotted Ichneumons (*Herpestes nepalensis* ♂ ♂), an Indian Otter (*Lutra nair* ♂) from India, a Sclavonian Grebe (*Podiceps auritus*), British, deposited; four Knots (*Tringa canutus*), European, purchased.

OUR ASTRONOMICAL COLUMN.

THE TOTAL SOLAR ECLIPSE OF AUGUST 29, 1886.—Part 5 of vol. xviii. of the Annals of the Harvard College Observatory, contains an account by Mr. W. H. Pickering of his expedition to Grenada in 1886 in order to observe the total eclipse of August 29; and some points in his report have recently been commented on by Mr. W. H. Wesley (*Observatory*, October 1888) and Mr. Ranyard (*Knowledge*, November 1888). Mr. Pickering's original plan of work had been a very wide one, and he took out a great variety of instruments with him, but no assistants besides his wife and a lady friend. It was very late in August before he arrived at Grenada, and this circumstance and the frequent obscuration of the sun before totality on the day of the eclipse caused several items of his programme to result in complete failure. The long focus photoheliograph and the actinometer under Mr. Pickering's own superintendence gave no results, but Mrs. Pickering secured three photographs with a couple of short-focus cameras, and Mr. Glean one with a telescope of 4 feet focus. One of Mrs. Pickering's photographs supplies some very curious features in the shape of some very faint extensions of the corona on the western side of the sun. One of these is a prolongation of a bright synclinal mass, and rises in a narrow jet to a height of 48′ from the limb, and then divides into three parts, two falling back towards the sun right and left of the centre ray, which attains a total height of 60′, then to bend over in a precisely similar fashion. Another extension further to the north rises to about the same height, 60′, and then curves downward again.

Mr. Pickering's spectrum photographs afforded little fresh information, but confirmed Prof. Tacchini's observation of "white" prominences; and two of his small coronal photographs were used to give a determination of the brightness of the corona. These gave the total actinic brilliancy of the corona with the surrounding sky as 700 units, or ten times that of the full moon with surrounding sky. But the *intrinsic* actinic brightness of the brightest part of the corona was only 0·03, whilst the average intrinsic brightness of the sky 1° from the sun on a fine day was determined to be 1200 times as great.

COMET 1888 *f* (BARNARD).—Dr. R. Spitaler has computed the following elements and ephemeris for this comet from observations made at Mount Hamilton, October 30, at Vienna, November 2, and at Hamburg, November 5 :—

T = 1888 September 10·82914 Berlin M.T.

π = 65° 0′ 12″
☊ = 137 34 17 } Mean Eq. 1888·0.
ι = 55 17 10
log q = 0·16873

Error of middle place (O − C).
$\Delta\lambda \cos\beta = -4''$; $\Delta\beta = 0$.

Ephemeris for Berlin Midnight.

1888.	R.A. h. m. s.	Decl. ° ′	Log Δ.	Log r.	Brightness.
Nov. 16	10 5 37	12 25·4 S.	0·2197	0·2414	0·96
20	10 9 56	11 34·3	0·2141	0·2487	0·95
24	10 13 50	10 39·0	0·2081	0·2561	0·94
28	10 17 46	9 38·2 S.	0·2018	0·2636	0·94

The brightness at discovery is taken as unity.

ASTRONOMICAL PHENOMENA FOR THE WEEK 1888 *NOVEMBER* 18–24.

(FOR the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

At Greenwich on November 18

Sun rises, 7h. 26m.; souths, 11h. 45m. 26·0s.; sets, 16h. 4m.: right asc. on meridian, 15h. 37·2m.; decl. 19° 25′ S. Sidereal Time at Sunset. 19h. 57m.

Moon (Full on November 18, 15h.) rises, 4h. 32m.; souths, 0h. 5m.*; sets, 7h. 49m.*: right asc. on meridian, 3h. 59·3m.; decl. 16° 30′ N.

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Planet.	Rises. h. m.	Souths. h. m.	Sets. h. m.	Right asc. and declination on meridian. h. m.	° ′
Mercury..	5 28 ...	10 31 ...	15 34 ...	14 22·4 ...	11 43 S.
Venus ...	10 27 ...	14 7 ...	17 47 ...	17 59·6 ...	25 7 S.
Mars ...	11 41 ...	15 34 ...	19 27 ...	19 26·1 ...	23 28 S.
Jupiter ...	8 50 ...	12 53 ...	16 56 ...	16 45·5 ...	21 54 S.
Saturn ...	22 15*...	5 41 ...	13 7 ...	9 31·6 ...	15 38 N.
Uranus...	3 56 ...	9 23 ...	14 50 ...	13 14·7 ...	7 15 S.
Neptune..	16 22*..	0 7 ...	7 52 ...	3 57·1 ...	18 41 N.

* Indicates that the rising is that of the preceding evening and the southing and setting those of the following morning.

Variable Stars.

Star.	R.A. h. m.	Decl. ° ′		h. m.	
S Ceti	0 18·4	9 57 S.	... Nov. 19,		*M*
U Cephei	0 52·4	81 16 N.	... ,, 20,	0 47	*m*
Algol	3 0·9	40 31 N.	... ,, 19,	22 11	*m*
			,, 22,	19 0	*m*
λ Tauri...	3 54·5	12 10 N.	... ,, 18,	22 59	*m*
			,, 22,	21 52	*m*
ζ Geminorum ...	6 57·5	20 44 N.	... ,, 18,	23 0	*m*
			,, 23,	23 0	*M*
R Canis Majoris ...	7 14·5	16 12 N.	... ,, 18,	5 5	*m*
W Virginis	13 20·3	2 48 S.	... ,, 23,	1 0	*M*
S Coronæ	15 16·8	31 46 N.	... ,, 22,		*m*
β Lyræ...	18 46·0	33 14 N.	... ,, 18,	0 0	*m*
R Lyræ	18 51·9	43 48 N.	... ,, 18,		*m*
T Vulpeculæ ...	20 46·7	27 50 N.	... ,, 21,	0 0	*M*
Y Cygni	20 47·6	34 14 N.	... ,, 19,	2 30	*m*
			,, 22,	2 24	*m*
δ Cephei	22 25·0	57 51 N.	... ,, 18,	4 0	*m*
			,, 19,	19 0	*M*

M signifies maximum ; *m* minimum.

Meteor-Showers.

	R.A.	Decl.	
Near κ Leonis	140°	27° N.	... Very swift.
,, θ Ursæ Majoris ...	143	50 N.	... ,, ,,
,, λ Ursæ Majoris ...	154	40 N.	... Swift ; streaks. The *Leo Minorids*.

GEOGRAPHICAL NOTES.

We are glad to learn from Denmark that Dr. Nansen has been successful in crossing Greenland. Dr. Nansen, it will be remembered, left the ship in a boat off the south-east coast of Greenland, 65° 2′ N., on July 17. He knew his party had to sail south among the ice for twelve days before they succeeded in landing to the north of Cape Farewell in lat. 61°. As he came out at Godthaab, on the opposite coast, in October, he has taken about three months on the journey, which was made in a line about sixty miles south of that he intended to follow. The section crossed by Dr. Nansen's expedition is in the south and narrow part of Greenland, Nordenskjöld's route having been much farther north, and almost in the centre of the land. Unfortunately, Dr. Nansen just missed the last ship from Greenland to Europe, so that he will have to remain at Godthaab till May next. Until then we must wait for full details.

The paper read at the first meeting this session of the Royal Geographical Society, on Monday night, was by Mr. H. H. Johnston, H.M. Vice-Consul for the Oil Rivers, on the Niger Delta. The "Oil Rivers," Mr. Johnston said—so called from the fact of their producing the bulk of the palm-oil exported from West Africa—are the main rivers, creeks, and estuaries lying between the eastern boundary of the British colony of Lagos and the northern frontier of the German Protectorate of the Cameroons. They are chiefly branches of the Niger, and form the Niger delta, but some few of them have sources independent of that great stream ; although close to the sea-coast, within tidal influence, the estuaries of these rivers are interconnected by a wonderful network of more or less navigable creeks. This system of natural canalization is here and there blocked with vegetable growth, sandbanks, fallen trees, or artificial obstacles constructed by quarrelsome or timid natives ; but with a relatively small amount of labour and at a moderate cost, the creeks in places might be deepened and cleared, and inland navigation rendered practicable between Dahome and the Cameroons Protectorate. Mr. Johnston then gave a graphic description of these rivers as they present themselves to one arriving on the coast from Europe. Arriving from Europe by sea, it is generally by the soundings and discoloured appearance of the water that we become aware of the near approach to land, rather than by sighting any part of the shore. When within a few miles of the mouth of one of these rivers, the low coast-line is at first indicated by isolated trees, which appear islets of forest unconnected with each other, and distorted by the mirage of each horizon. Gradually these islets, which are really the loftier trees of the fringe of coast forest, become united in one line of purple green, divided only by the imposing gate of the estuary, for which our ship is bound. The bar of the river may be—as in the case of Old Calabar and Bonny—so deep as to be without danger, or it may be relatively shallow, as at Opobo or Akasa. Once over the bar and within the estuary, we find ourselves surrounded by a lake-like expanse of smooth water, the shores of which are fringed with lofty mangroves with their ghastly white blood-streaked trunks—streaked where the bark has been torn or frayed—and their graceful poplar-like foliage of a sad, dull, yellow-green. Behind the mangroves, however, generally show the dark and dense masses of inland forest, growing where the land has acquired firmness and lies just above the limits of high tide. As far as can be seen from the ship's deck, all and everything that is not yellow water is unvarying mangrove. As you ascend the river further and further from the sea, the mangrove loses its exclusive possession of the shores, even if this possession be not here and there broken by little islets of firm land covered with varied vegetation, and generally the sites of villages. Almost before the water has ceased to be brackish, the Pandanus or screw-pine begins to oust the mangrove, and below its fantastic whorls of spiny leaves the lovely Lissochilus orchids conceal the black mud with their leaves, and rear their stout flower-stems to a height of 6 or 7 feet. As the river is ascended still further, though the banks continue marshy, the now perfectly fresh water enables a varied forest to replace the mangrove and Pandanus, and here perhaps the most extravagant development of vegetation may be seen, recalling past geological epochs rather than the poor and mediocre aspects of Nature at the present time. There is not one prominent kind of tree, but an infinite variety of kinds. There is every type of foliage and every shade of green. At the base of the forest on the water-line grow great Arums of the genus *Cyrtosperma*, with flower spathes of pale green streaked with purple red. Above the Arums gleam out the white bracts of a species of *Mussaenda*, while higher up another *Mussaenda* exhibits huge creamy-white flowers without any bracts at all, and yet another species of this beautiful genus has blossoms of a vivid scarlet. Over the lower branches of the trees hangs a thick green veil of convolvulus, dotted at intervals with large mauve flowers. The Raphia palms are also a characteristic of this river-side forest. Ascending this typical river still further, the marshy banks gradually become firm dry land, and the ground even rises from the water into wooded heights. Gradually the river narrows, and the banks increase in height, and red clay now gives place to outcropping rock. Looking interiorwards beyond the vista of the winding river is the exhilarating prospect of a faint blue range of hills. All influence of the tide has ceased, and the current becomes more rapid. It may be hours, or it may be days or weeks, before we reach the outlying spurs of the first range of hills, the first ascent to the central plateau, over the rapids and falls which mark the change from the interior to the coast region. Here you are out of the forest region of West Africa, in the great park-lands of the interior. Mr. Johnston then went on to describe in detail some of the more important places and districts comprised within the British Protectorate of the Niger Territories.

In a paper read before the last meeting of the Berlin Geographical Society, Dr. von der Steinen described his second exploration on the Xingu, which began at Rio Janeiro in February 1887, and ended at Cuyaba, the capital of Matto Grosso, on December 31 last. The traveller summed up the main results of his journey thus : the topographical survey of the region through which he passed, numerous physical measurements, a complete grammar of the Bakairi of the Xingu, various vocabularies, and a rich collection of the most varied ethnological objects. During his long residence amongst the Xingu Indians, with whom he was on the most friendly and familiar terms, he was enabled to obtain a deeper insight into the manners and ideas of primitive man in the early stages of his culture than any other traveller. Unfortunately, a chest containing his geological specimens was lost, and many of the photographs were injured.

To the November number of *Petermann's Mitteilungen* Herr von Hesse-Wartegg contributes a paper on Lake Tacoragua, in Northern Venezuela, one of the few fresh-water lakes in South America. The oscillation in the extent of the lake is undoubted, ac-

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