

THE BINARY STAR Σ 2107.—This undoubted binary, first measured by Struve in the year 1828, well merits attention, and it may soon be possible to gain an idea of the form of the orbit. The recent measures of Dembowski and Barclay prove the angular velocity to be still increasing, the accompanying diminution of distance requiring pretty large telescopes to be brought into requisition for satisfactory observations. Dembowski calls $\alpha\eta\eta$ principal component a 7th magnitude, bright yellow; the smaller one a 9th and dusky. This star is Hercules 197 (Bode), and its place for 1875^o is in R.A., 16h. 46m. 54s.; N.P.D., 61^o 7'.

HIGH-LATITUDE PHENOMENA.—Our correspondent "H. F. C.," who writes from San Francisco, California, with regard to a statement in the recently-published narrative of the "German Arctic Expedition," that "the moon shone without setting for several days" in November, refers to a phenomenon which must necessarily occur in circumpolar latitudes. As an illustration: In lat. 82° N. and long. 60° W., near which position a part of the expedition about to leave our shores is expected to winter, the moon in December next will rise on the 8th, and will not set until the 18th, attaining her greatest altitude above the horizon at meridian passage on the 13th. The sun during this interval is, of course, invisible in lat. 82° N., but there is continuous moonlight for between nine and ten days, and similarly for other months during the Arctic winter.

THE SOLAR ECLIPSE, 1876, MARCH 25.—This eclipse will be a very similar one to that of March 1858, which created so much interest in its passage across this country: it will be annular, but in those parts of the track of central line, where the augmentation of the moon's geocentric semi-diameter is greatest, the eclipse, though still annular (as in England in 1858), approaches very near a total one. Vancouver Island is situate in this track, which runs about centrally over it, as the following points will show:—

Longitude 127° 6' W.	Latitude, 48° 42' N.
" 126 4	" 49 30
" 125 51	" 49 40
" 125 15	" 50 6
" 122 46	" 51 50

A direct calculation for the third of the above points, in Vancouver Island, gives for the duration of the *annulus* only 7⁵/₁₀₀ seconds, the middle at oh. 25m. 29s. local mean time with the sun at an altitude of 44°: the apparent semi-diameter of the moon is 1¹/₁₀ less than that of the sun. The central line subsequently traverses the Lesser Slave Lake and Lake Athabasca, with slightly longer duration of *annulus*. The eclipse will be visible in its partial phase in the position of the winter quarters at which the British Arctic Expedition aims.

THE MINOR PLANET "LYDIA."—M. Leverrier's *Bulletin International* of April 29 contained a telegraphic notice of the discovery of a supposed new member of the minor planet group, at the Observatory of Toulouse, by M. Perrotin, on the same morning, which in the following *Bulletin* is recognised as No. 110, Lydia, detected by M. Borrelly at Marseilles on April 19, 1870; the ephemeris (*Berliner Jahrbuch*) being much in error. The elements of No. 110, calculated by Dr. Oppenheim of Königsberg, and brought up with perturbations to 1874 (*Astron. Nach.*, No. 1,971), give a position for April 28, differing considerably from that assigned by the observation at Toulouse; but if we apply a correction to the mean anomaly of +1^o 21' 57", the observed and computed longitudes agree, and the latitudes differ only one minute, and the diurnal motions also accord, so that there can be little doubt that the identification of M. Perrotin's object with No. 110 is correct. With the above correction the mean anomaly, April 28⁵ Greenwich mean time, is 262° 8' 27", and thus with the other elements given by Dr. Oppenheim we have

the following positions, which will be pretty near the true ones. At 12h. Greenwich mean time:—

		R.A.			N.P.D.			Log. distance.
		h.	m.	s.	o.	'	"	
May	3	...	15	4 17	...	105 29'5	...	0 ^o 2498
"	5	...		2 27	...	" 25'8	...	
"	7	...	15	0 36	...	" 22'2	...	0 ^o 2481
"	9	...	14	58 45	...	" 18'5	...	
"	11	...	"	56 54	...	" 14'9	...	0 ^o 2476
"	13	...	"	55 4	...	" 11'3	...	
"	15	...	"	53 15	...	" 7'8	...	0 ^o 2482
"	17	...	"	51 28	...	" 4'4	...	
"	19	...	14	49 42	...	105 1'2	...	0 ^o 2499

LECTURES AT THE ZOOLOGICAL GARDENS*

Mr. J. W. Clarke on Sea Lions and Seals

II.

THE Sea Lion that is best known is the Northern Sea Bear (*O. ursina*), which is almost entirely confined to the Pribylov Islands. These islands were discovered in 1787 by a Russian sailor of that name. The slaughter of the animals is under the regulations of the United States Government. There are two islands, that of St. Paul and that of St. George, and the number of seals that have been calculated to exist in a given year upon one of them—namely, 1,152,000—will give a good notion of the multitudes of these animals to be met with at one of their favourite haunts. There is about half that number on St. George, making nearly 2,000,000 on the two islands. Out of this vast number, 100,000 are annually killed, principally young males. In South Shetland the "take" of fur seals was 320,000 in 1821 and 1822, and as all that arrived were killed, the speedy extinction of the colony was the result. The same happened in New Zealand.

A full-grown male *Otaria ursina* is between seven and eight feet long, the female not being more than four feet. The males reach their maximum size at about the sixth year, the females at the fourth. The hairy coat consists of an outer covering of long, flattened, coarse hair, beneath which is a dense coating of long, fine, silky fur.

The next species is Steller's Sea Lion (*O. stelleri*), named in honour of its discoverer. It is much larger than the other species, the males being as much as sixteen feet long. The ears are short and pointed, much broader than those of the Fur Seal. It is found on the island of St. Paul, extending down the coasts of Kamtschatka and California. At San Francisco it inhabits an island in the harbour where Mr. Woodford has built a large hotel, to which parties resort to dine and look at the Sea Lions play. The under-fur of this species is so short as to be useless for clothing purposes.

There is another *Otaria* on the Californian coast, found in Japan also. It was first described by Schlegel from specimens collected by Siebold. It has been named *O. gilliespii*, but it would be far better to adopt the name since suggested by its original describer, and call it *O. japonica*. It is much smaller than the species named after Steller, and the skull presents an exceptionally large crest.

The next species to be mentioned is the one which extends round South America, from Peru to the River Plate—*Otaria jubata*—of which a specimen is living in the Gardens, having been obtained by its keeper, François Lecomte, from the Falkland Islands, when a mere pup. A full-grown male may reach nine feet in length, the females being much smaller. The fur is of no use for sealskin, as the undercoat is very scanty. The male has a mane, and is therefore called "Lion."

Inhabiting precisely the same localities, round Cape Horn and the Falkland Islands, is the Fur Seal of commerce—*Otaria falklandica*. It is much smaller than the

* Continued from vol. xi. p. 514.

other species, a full-grown male being hardly more than four feet long. It is probable that it is identical with one of the New Zealand Fur Seals, described by Dr. Gray as *Otaria cinerea*. If this should turn out to be the case, it will have a wider range than any of the others of the group.

There is certainly another species of Sea Lion on the coast of New Zealand, called Hooker's Sea Bear—*Otaria hookeri*. Its only certain habitat is the Aucklands. It is a large species, the males about six feet long, the females proportionately smaller. Though these New Zealand coasts and islands, together with the coasts of the mainland of Australia, have been visited and surveyed in every direction by English expeditions, no one has ever thought of preserving specimens for museums, so that we really know less about the seals of our colonies than we do about those of foreign coasts. Thus there is certainly a large species on the west coast of Australia, at the group of islands called Houtman's Abrolhos, described by Dr. Gray as *Neophoca lobata*. We are almost equally ignorant about the Sea Lions of the Cape of Good Hope. The species from that locality living in the Gardens—*Otaria pusilla*—is a very small one with an excellent fur. The Antarctic Sea Lion—*Otaria antarctica* (Gray)—is also from the Cape. This completes the number of species of Otarias, which may be thus tabulated :—

OTARIAⁿ

<i>Pusilla</i>	}	from South Africa and the adjacent islands.
<i>Antarctica</i>		
<i>Fubata</i>	}	from Cape Horn and the adjacent islands.
<i>Palklan-tica</i>		
<i>Japonica</i>	}	from the North Pacific.
<i>Stelleri</i>		
<i>Ursina</i>		
<i>Hookeri</i>		
<i>Lobata</i>	}	from Australia and New Zealand.

In some respects intermediate between the Sea Lions and true Seals, is the Walrus, an animal with the head flattened in front, the upper lips with long stiff whiskers, the two enormous tusks, the short bull-like neck, and the vast carcass. Stuffed specimens err in being too distended and smooth, all the natural wrinkles being removed. The hair is thin and short. The attitude resembles in the main that of the Sea Bear, as do the limbs, the thumb being the longest digit, and the hind feet directed forward. There are no external ears, but a fold of skin above the auditory opening. The eyes, destitute of lashes, are deeply set. The tusks, developed in the female as well as in the male, never exceed twenty-six inches in length, including the imbedded root of six inches. The creature is omnivorous. It is becoming very scarce in its favourite haunts, on account of the indiscriminate way in which it is slaughtered. Upwards of 1,000 are still taken annually in the neighbourhood of Spitzbergen. Formerly it was found at Bear Island and on the coast of Finmark. It is still found on the east coast of Greenland, on the west shore of Davis' Straits, about Pond's, Scott's, and Howe Bays. In 1775 they resorted, to the number of over 7,000 a year, to the Magdalen Islands, at the mouth of the St. Lawrence, and the English once had a fishery at Cape Breton. It can be mentioned only as a straggler to our coasts.

Every part of the animal is of value—the tusks, the hide, and the flesh. The word *Walrus* means "Whale Horse," *Ross* being the Danish for a steed. *Morse* is Russian. The Greenlanders call it *Awiik*, a name derived, it is said, from the cry of the young animal.

Seals are in a state of far less confusion than Sea Lions. The species are numerous, Dr. Gray recognising fourteen species and thirteen genera. As a basis for classification, the number of incisor teeth, together with the shape of the hands, leads to a very natural arrangement of the family. Following this, we find that four incisors above and four below unite the four Seals of the Southern

Ocean with the Mediterranean Seal. The six northern species, again, have all six incisors above, and four below, their hands being like those of the "Bearded" and "Common" Seals. Lastly, four incisors above and two below separate off those very remarkable forms, the "Bladder Seal" of the north and the mighty "Sea Elephant" of the south, which have the further point in common of a remarkable development of the nasal passages. The Sea Leopard—or Leopards, if there are really two—together with the Crab-eating Seal, which ought most probably to be united in the same genus with them, inhabit the Antarctic Ocean. In the last-named species the molar teeth are remarkably modified.

The fourth Antarctic Seal is that called *Ommatophoca rossi*—Ross's Large-eyed Seal, known only from specimens procured from Sir J. Ross's Antarctic Expedition. The next species we come to is the Monk Seal (*Monachus albiventer*), which inhabits the Mediterranean and the Island of Madeira.

Of the "Hooded Seal," or "Bladder Nose," till a few days ago a fine male specimen was living in the Society's Gardens. The length attained ranges between seven and twelve feet. Though a true seal, it has the power of using the fore-feet to walk on land to a certain degree. The nose is broad and flat, and in the male the upper wall of the nostril is so loose that it can be blown up at will into a hood. The use of this curious appendage is not known. Its habits are migratory. It is found in South Greenland, rarely in Iceland and Norway, never now at Spitzbergen. The nearest ally to this seal is the "Sea Elephant," described by Anson in 1742, from Juan Fernandez. It has been recorded to be thirty feet long. The nostrils of the male are prolonged into the remarkable appendage which has been the origin of its name, "Proboscis Seal," the tubular proboscis being, when inflated, a foot in length.

Round the English coast there are two species of seals that are tolerably common, the Common Seal (*Phoca vitulina*) and the Great Grey Seal (*Phoca gryphus*). The former frequents both sides of the North Atlantic, Spitzbergen, Greenland, and Davis' Straits. The latter species is far rarer in this country. It is not found in Polar waters nor in the Mediterranean Sea, where the former exists. Further north we come to three other seals, the Bearded Seal (*P. barbata*), the Greenland Seal (*P. groenlandica*), and the Ringed Seal (*P. hispida*); the two latter sometimes appear on our coasts as stragglers.

The lecturer concluded by remarking on the necessity for some international agreement to prevent the destructive effects of the short-sighted policy now adopted in seal-hunting.

(To be continued.)

ON LIGHTNING FIGURES

THE letter headed "Struck by Lightning," and signed "D. Pidgeon," contained in NATURE, vol. xi. p. 405, is valuable, and the more so because it is unaccompanied by any theory. Formerly, when ramified marks appeared on the persons of men or animals, they were always referred to some near or distant tree, of which the marks formed "an exact portrait." Thus, in the *Times* of September 10, 1866, is an account of a boy who had taken refuge under a tree during a thunderstorm, having been struck by lightning, and on his body was found "a perfect image of the tree, the fibres, leaves, and branches being represented with photographic accuracy."

In a paper read by me before the British Association at Manchester in 1861, I attempted to show that such ramified figures are not derived from any tree whatever, but represent the fiery hand of the lightning itself. Very instructive tree-like figures may be produced on sheets of crown glass by passing over them the contents of a Leyden jar. For this purpose the plates (those I used were