

have been accompanied by an uplift, forming land during the early Triassic; but if so, it subsided and was ready to receive the deposits of the upper Triassic. The disturbance at the close of the Triassic formed no land in the northern Sierra region, but that which closed the Jurassic was accompanied by a great upheaval, excluding the sea to the western base of the Sierras. The general structure of the Taylorville region involves a synclinal and two limiting anticlinals. After the folds were overturned toward the north-east, the Grizzly anticlinal was affected by an overthrust fault in the same direction. The throw along this fault in the older strata is so much greater than in those of Jurassic age as to suggest that a large part of the displacement took place at the close of the Triassic, and was followed by movement on the same plane at the close of the Jurassic.

MR. STANFORD has issued an interesting and valuable contoured map of the county of London. The scale is three inches to a mile. The contour lines or lines of equal altitude are drawn at 25 feet intervals. The lowest contour is 25 feet above the level of the sea, ordnance datum, which is 12 feet 6 inches below Trinity high water. The whole of the alluvial flat lying below the lowest contour, or at a less altitude than 12 feet 6 inches above the river Thames (Trinity high-water mark), is covered by a dark brown tint.

THE third volume of reports upon the fauna of Liverpool Bay and the neighbouring seas has been issued. The reports have been written by members of the Liverpool Marine Biology committee and other naturalists, and edited by Prof. W. A. Herdman, F.R.S.

MESSRS. GURNEY AND JACKSON have published the *Zoological Record* for 1891. It is the twenty-eighth volume of the series. Mr. D. Sharp, F.R.S., has acted as editor, and has had the co-operation of many able zoologists. It is intended that in future the volume shall be published in August or September.

PHOTOGRAPHERS will read with great interest an admirable paper by Captain Abney, in the November number of the *Journal of the Camera Club*, on "shutters," which he describes as "a piece of apparatus which is the very joy and toy of the photographer's existence." The paper is fully illustrated.

THE Rev. L. A. Walker sends to the current number of the *Entomologist* some statistics of the entomology of the Hague, where he acted as chaplain during July. The entomology of Holland seemed to him very disappointing in number of species, and also in individuals in the great majority of cases; less productive, in fact, than the ordinary run of country places at home.

AT the meeting of the Linnean Society of New South Wales on September 28, Mr. R. Etheridge, junior, exhibited seeds of the "Bean-tree," possibly an *Erythrina*, from Macdonald ranges, Central Australia. The seeds are strung and used as necklaces by the aborigines, who use the wood of the same tree for producing fire by friction, and also for shields, on account of its lightness.

A COMPOUND of gold and cadmium of the composition AuCd has been isolated by Messrs. Heycock and Neville, and is described by them in the November number of the *Journal of the Chemical Society*. During the course of a series of experiments last year upon solutions of gold and cadmium in melted tin, it was observed that the amount of lowering of the freezing-point of the tin by the simultaneous introduction of gold and cadmium was considerably less than the sum of the effects which each of the two latter metals would produce alone. It was surmised that this difference must be due to combination between the gold and the cadmium. Moreover, the product of this combination appeared to be only sparingly soluble in tin,

for a considerable quantity of a crystalline precipitate was produced, but owing to the difficulty of freeing it from the tin which solidified over it upon removal, the compound was not obtained in a state of sufficient purity to enable a definite conclusion concerning its composition to be arrived at. Messrs. Heycock and Neville now announce that they have succeeded in preparing the compound in an entirely different manner, and in isolating it in a state of comparative purity. The following is the best mode of procedure:—A piece of the hardest combustion tubing is sealed at one end and slightly bent in the middle so as to form a V-tube of very large angle. A quantity of pure gold is placed in the sealed limb, together with three or four times its equivalent of cadmium. The open end is then drawn off so as to enable the tube to be exhausted by means of the Sprengel pump. As high a vacuum as possible should be obtained, and the tube subsequently sealed. The apparatus is then arranged upon a combustion furnace in such a manner that the excess of cadmium when liquefied may run away from the alloy. When the cadmium first melts it is advisable to vigorously shake the tube so as to diffuse the gold well among the cadmium. The combination then occurs suddenly, accompanied by bright incandescence of the gold. When the larger excess of cadmium has been allowed to run away from the compound, the end of the tube containing the latter is heated for about five hours to a temperature about that of the softening of glass, when the remainder of the excess of cadmium distils regularly off, until towards the expiration of the five hours no further condensation occurs. The product thus left behind was found in three successive experiments to contain about 63·7 per cent. of gold, the percentage required for a compound of the composition AuCd. The compound of gold and cadmium thus obtained presents a silvery greyish-white appearance, is very brittle, and exhibits a crystalline fracture. The action of acids upon it is somewhat singular. Cold acids appear to be without material action upon it, but hot nitric or hydrochloric acid attacks it with great energy, the cadmium passing into solution and the gold being left in the shape of the original ingot.

THE additions to the Zoological Society's Gardens during the past week include a Purple-faced Monkey (*Semnopithecus leucopygmnus*) from Ceylon, presented by Mrs. Elgee; six Short-tailed Voles (*Arvicola agrestis*) from Scotland, presented by Mr. J. E. Harting, F.Z.S.; two Laughing Kingfishers (*Dacelo gigantea*) from Australia, presented by Mr. J. W. Hornsby; a Golden Eagle (*Aquila chrysaetus*) from Labrador, presented by Mr. J. G. Baxter; a Jackdaw (*Corvus monedula*) British, presented by the Rev. H. W. Reynolds; three — Geckos (*Gecko verticillatus*) from Burmah, presented by Mr. W. G. Blyth; two American Darters (*Plotus anhinga*), a Common Boa (*Boa constrictor*) from South America, four Bar-tailed Pheasants (*Phasianus reevesi* ♂ & ♀) from China, purchased.

OUR ASTRONOMICAL COLUMN.

A BRIGHT COMET is announced in Andromeda, seventy seconds preceding Struve 72.

COMET BARNARD (OCTOBER 12).—The following is a continuation of the ephemeris we gave last week of Comet Barnard taken from *Astronomische Nachrichten*, No. 3125.

		Ephemeris for 12h. Berlin M. T.						
		R.A.			Decl.	Log r.	Log Δ.	Br.
1892.	h.	m.	s.	°				
Nov. 11...	20	46	49	...	+2	33'3		
12...		49	40	...	2	15'7		
13...		52	32	...	1	58'3	0'2262	0'1648 ... 0'97
14...		55	25	...	1	41'2		
15...	20	58	19	...	1	24'4		
16...	21	1	14	...	1	7'9		
17...	21	4	9	...	+0	51'6	0'2250	0'1713 ... 0'94

It may be mentioned that an *Astronomische Nachrichten* circular note contains rather a modified edition of the above places deduced from observations made on October 16, 20, and 25.

Thus for the 13th, the R.A. is given as 20h. 54m. 24s. (app.), and declination (app.) + 1° 54' 5"; and for the 17th, R.A. (app.) 21h. 6m. 39s, and declination (app.) + 0° 46' 4".

COMET BROOKS (AUGUST 28).—Owing to the rapid brightening of Comet Brooks, we give the following ephemeris continued from the same source as mentioned last week (*Astronomische Nachrichten*, No. 3125).

12h. Berlin M. T.

1892.	R.A. app. h. m. s.	Decl. app.	Log r.	Log Δ.	Br.
Nov. 11...	9 56 50	+ 3 18' 7"			
12...10	1 8	2 24' 6"	0'0985	9'9861	15'61
13...	5 29	1 29' 6"			
14...	9 52	+0 33' 8"			
15...	14 17	-0 22' 9"			
16...	18 45	1 20' 3"	0'0847	9'9712	17'81
17...	23 15	2 18' 4"			

OCULTATION OF MARS AND JUPITER BY THE MOON.—

Prof. Barnard communicates his observations of the occultation of Mars and Jupiter by the moon, which occurred in one week during last September, to the *Astronomical Journal*, No. 276. The instrument used was the 12-inch equatorial and the seeing was defined as being very fine on both occasions. At the disappearance of the former planet, which took place at the dark limb of the moon, nothing very striking was noticed, the moon's limb at that point being sharp and not dusky, as had been previously seen in an occultation of Jupiter. The times of disappearance and appearance (Mount Hamilton mean time) were:—

	Disappearance. h. m. s.	Reappearance. h. m. s.
1st contact	9 9 35' 8"	10 45 56' 0" (1s. late?)
Half obscured	9 10 4	10 26 17
2nd contact	9 10 37' 1"	10 26 52' 2"

In the case of Jupiter, which disappeared at the bright limb, a narrow shadow band was noticed fringing the limb where the planet appeared to cut it. This is due, as Prof. Barnard thinks, to the effect of contrast. The times of contacts were as follows:—

	Disappearance. h. m. s.	Reappearance. h. m. s.
1st contact	17 28 10' 4"	18 33 17' 5" (2s. late?)
Half obscured	17 28 55' 0"	18 33 50
2nd contact	17 29 45' 7"	18 34 33' 7"

MOTION OF THE SOLAR SYSTEM.—The question of the exact position of the point in the heavens to which the sun with his system is travelling has been the object of much research and computation, and the present co-ordinates are now considered as being about R.A. 267° and declination + 31°.

The determination under consideration (*Astronomical Journal*, No. 276) has been undertaken by Prof. J. G. Porter, and is based on the proper motions of 1340 stars, contained in the Publication of the Cincinnati Observatory, No. 12. The method employed for computing the co-ordinates of the apex of the sun's way is that of Prof. Schönfeld; the stars were grouped in four divisions, Division I. including those whose yearly proper motion was less than 0".30 and contained 576 stars; Division II., motion from 0".30 to 0".60, containing 533 stars; Division III., motion from 0".60 to 1".20, containing 142 stars; and lastly, Division IV., the motion exceeding 1".20, 70 stars being included. From these four groups the following values have been deduced, where σ and τ represent the co-ordinates of the apex of the sun's course and $\frac{c}{\rho}$ the velocity of the sun's motion:—

	σ	τ	$\frac{c}{\rho}$
I. ...	281° 9'	+ 53' 7"	0".16
II. ...	280° 7'	+ 40' 1"	0".30
III. ...	285° 2'	+ 34' 0"	0".55
IV. ...	277° 0'	+ 34' 9"	0".66

The last determination of these co-ordinates was made, if we are not mistaken, by Prof. Stumpe, and were given in *Astronomische Nachrichten*, Nos. 2999-3000. The values there de-

duced agree very well with those in question, with the exception of τ in Group I. and σ in Group IV., which consequently throw the mean values rather out. Adopting the same notation, he obtained—

	σ	τ	$\frac{c}{\rho}$
I. Group	287° 4'	+ 42' 0"	0".140
II. "	279° 7'	40' 5"	0".295
III. "	287° 9'	32' 1"	0".608
IV. "	285° 2'	30' 4"	2".057

Summing up the values obtained by some previous workers, the following table gives the co-ordinates obtained:—

Name.	R.A.	Decl.	No. of stars used in reduction.
Gauss	259° 2'	+ 30' 8"	—
Argelander	259° 9'	32' 5"	390
O. Struve	261° 5'	37' 6"	392
Mädler	261° 6'	39' 9"	2163
Airy	261° 5'	24' 7"	113
Dunkin	263° 7'	25' 0"	1167
Kancken	284° 6'	31' 9"	106
Birchoff	285° 2'	48' 5"	480
L. Struve	273° 3'	27' 3"	2509
Stumpe	285° 1'	36' 2"	1054
Porter	281° 2'	40' 7"	1340

SOME REMINISCENCES OF THE MAORIS.

MR. W. COLENSO, F.R.S., has often been asked to record some of his reminiscences of the Maoris, whom he has for very many years had opportunities of studying. This he has now done in a paper printed in the Transactions of the New Zealand Institute (vol. xxiv.), some extracts from which may be of interest for various classes of readers. He says:—

Of the Mako Shark.—Fifty years ago (to go no further back) a Maori chief would be known by wearing certain emblems or insignia indicative of rank, one of which was the tooth of the mako as an ear-pendant; and, as such were plentiful, though distributed, the thought often occurred to me in my early travelling days, What a number of the fish mako there must have been captured or obtained by the Maoris to yield such a large number of teeth! Moreover, on inquiry I invariably found that all the teeth I saw were prized heirlooms, and had descended to the present possessor through several generations, and (as far as I could learn) none had been recently acquired. And while, when travelling along the sea-coasts for many a league on both sides of the North Island during several years, and always on foot, I had both seen and heard of a number of large sea-animals (fishes and mammals) that were driven on shore on the sandy beaches in severe gales from the sea, I never knew of a single mako shark, nor had the Maoris resident on those shores ever heard of one being cast up.

In replying to my numerous inquiries by letter respecting the mako, made many years ago, an intelligent aged Maori chief living on the east coast wrote as follows (or, rather, he being of the old school, and unable himself to write, a young adherent did so at his dictation). I give a literal translation of portions of his letter:—

"You ask, did I ever see a mako fish? Yes; and it is a very large creature, the biggest of all the sharks (*mango*)—in length 2 fathoms measured (*erua maro whanganga nei*), and in thickness 1 foot. It is a true shark, but called by us a mako on account of its teeth. You also inquire concerning its fat or oil, and the edible qualities of its flesh, whether considered choice by us Maoris. Now, there are many kinds of shark, as the mako, the *karaerae*, the *pioke*, the *ururoa*, the *uatini*, the *tahapounamu*, the *taiari*, the *tatere*, and the *mangotara*, and I have not eaten of them all, and therefore I do not know how nice or how fat they all are; and so of this one, the mako. But, my friend, this fish was never desired as an article of food—never so used by us Maoris. The only part of it that we sought and greatly desired to have was its head, and this solely on account of its teeth. When caught out at the deep-sea fishing-grounds its body was never hauled into the canoe, but the head was cut off while it was still in the sea and alongside of the canoe (*ka tapahia moanatia te upoko*): this done, and the head secured, the body was left to drift away on the sea. The head was also immediately wrapped up securely in a clothing-mat (*kahu*), lest it should be noisily wondered at by those who