

alkaline earthy metals are much less soluble, and are generally obtained as crystalline precipitates by decomposition of the potassium salt by the chloride of the metal which it is desired to introduce. It is interesting that these salts are perfectly analogous to the double oxalates of ferric iron and chromium,  $Fe_2(C_2O_4)_3 \cdot 3C_2(NH_4)_2O_4$ , for instance; but the two series are not isomorphous owing to the difference in water of crystallization. Evidence of similarity between iron and rhodium is of course shown by the fact that their most stable chlorides are those derived from the sesquioxides—namely,  $Fe_2Cl_6$  and  $Rh_2Cl_6$ ; but the formation of these double oxalates shows that the connection is perhaps closer than has hitherto been supposed. And the interest in this connection is by no means lessened by the fact that iron and rhodium occupy corresponding positions in the eighth vertical group of Prof. Mendeleeff's periodic classification.

THE additions to the Zoological Society's Gardens during the past week include two Indian Jerboas (*Alactaya indica*) from India, presented by Mr. Cuthbert Johnson; a Bonnet Monkey (*Macacus sinicus* ♀, white variety) from India, presented by the Waterbury Watch (Sales) Company, Limited; a Lesser White-nosed Monkey (*Cercopithecus pelaurista* ♀) from West Africa, presented by Captain Stewart Stephens; a Brown Bear (*Ursus arctos* ♀), European, presented by Mr. John Foster Spence; a Polar Bear (*Ursus maritimus* ♀) from Spitzbergen, presented by Mr. Arnold Pike; a Python (sp. inc.), presented by Mrs. Bertha M. L. Bonser; a Hybrid Wild Swine (between *Sus scrofa* and *Sus domesticus* ♀) from Spain, presented by Mr. Ralph Banks, F.Z.S.; a Brush-tailed Kangaroo (*Petrogale penicillata* ♂) from New South Wales, presented by Sir Edmund A. H. Lechmere; five Violaceous Night Herons (*Nycticorax violaceus*) from St. Kitt's, W.I., presented by Dr. A. P. Boon, C.M.Z.S.; twelve Aldrovandi's Skinks (*Plestiodon auratus*) from North Africa, two Barnard's Parrakeets (*Platyercus barnardi*) from South Australia, purchased; a Laughing Kingfisher (*Dacelo gigantea*) from Australia, deposited; two Wonga Wonga Pigeons (*Leucosarcia picata*) from New South Wales, and a Red-winged Parrakeet (*Aprosmictus erythropterus*) from Australia, received in exchange; an African Wild Ass (*Equus tæniopus* ♀), and a Collared Fruit Bat (*Cynonycteris collaris*) born in the Gardens.

OUR ASTRONOMICAL COLUMN.

THE LATE PROF. CACCIATORE.—Prof. G. Cacciato, whose death we have briefly recorded (p. 208), had been associated with the Royal Observatory of Palermo, during nearly the whole of his life. He was born at Palermo on March 17, 1814, his father being the well-known Prof. Nicolo Cacciato, assistant at one time to Piazzi, and later his successor in the directorship of the Observatory Gaetano Cacciato, on the death of his father in 1841, was appointed Director of the Observatory and Professor of Astronomy in the University of Palermo, and he held these positions until 1849, when, having taken a very prominent part in the revolution of the previous year, he was compelled to leave Palermo by the return to power of the Bourbons. In 1860, however, Garibaldi recalled him to his former position. He spared no pains to increase the power and usefulness of the Observatory, and greatly increased its equipment. It was under his direction that the scope of the institution was enlarged, so that in 1880 it was reorganized in three sections—one of Geometrical Astronomy; one of Physical Astronomy, in the modern sense of the word; and the third of Meteorology.

COMET 1889 d (SWIFT).—A new comet was discovered on July 5'833 G.M.T., by Prof. Lewis Swift, of the Warner Observatory, Rochester, New York. The comet's place was as follows:—

R.A. = 22h. 52m. 30s. Daily Motion, - 2m.  
Decl. = 89° 11'. + 10'.

COMET 1889 b (BARNARD, MARCH 31).—This object may soon again be observed in the early morning. The following elements and ephemeris are by Prof. Millosevich, from observations made at the Lick Observatory on March 31, April 15 and 29 (*Astr. Nach.* No. 2907):—

T = 1889 June 10'63608 Berlin M.T.

$\pi = 186 \ 38 \ 20 \cdot 8$   
 $\Omega = 310 \ 40 \ 19 \cdot 3$  } Mean Eq. 1889'0.  
 $i = 163 \ 49 \ 47 \cdot 8$   
log q = 0'353613

Error of middle place O - C).  
 $\Delta\lambda = - 1'' \cdot 3$ .  $\Delta\beta = + 5'' \cdot 4$ .

Ephemeris for Berlin Midnight.

1889.	R.A.	Decl.	Log r.	Log Δ.	Bright-ness.
	h. m. s.	° ' "			
July 19 ...	5 7 52	10 59'0 N...	0'3618	0'4706	0'83
23 ...	5 7 1	10 34'4	0'3635	0'4624	0'85
27 ...	5 5 53	10 7'7	0'3754	0'4534	0'88
31 ...	5 4 26	9 38'7 N...	0'3675	0'4436	0'91

The brightness at discovery is taken as unity.

COMET 1889 c (BARNARD, JUNE 23).—The following elements for this comet are by Dr. H. Kreutz, from observations at Lick on June 23, at Strasburg June 25, and at Munich June 26; the ephemeris is by Prof. A. Krueger:—

T = 1889 July 2'8884 Berlin M.T.

$\omega = 75 \ 19 \cdot 5$   
 $\Omega = 278 \ 6 \cdot 7$  } Mean Eq. 1889'0.  
 $i = 32 \ 50 \cdot 2$   
log q = 0'09248

Ephemeris for Berlin Midnight.

1889.	R.A.	Decl.	Log r.	Log Δ.	Bright-ness.
	h. m. s.	° ' "			
July 14 ...	3 1 51	47 38'9 N...	0'0970	0'1432	0'9
18 ...	3 21 50	48 35'5	0'1005	0'1489	0'9
22 ...	3 41 23	49 17'9	0'1051	0'1548	0'8
25 ...	4 0 56	49 47'7 N...	0'1105	0'1603	0'8

The brightness at discovery is taken as unity.

COMET 1888 e (BARNARD, SEPTEMBER 2).—The following ephemeris is in continuation of that given in NATURE for May 30, p. 109:—

1889.	R.A.	Decl.	Log r.	Log Δ.	Bright-ness.
	h. m. s.	° ' "			
July 11 ...	21 7 34	0 14' N...	0'4287	0'2491	2'5
15 ...	20 52 59	0 36'3 S...	0'4342	0'2487	2'4
19 ...	20 38 17	1 16'7	0'4396	0'2509	2'4
23 ...	20 23 44	1 58'9	0'4450	0'2559	2'3
27 ...	20 9 33	2 42'0	0'4503	0'2634	2'2
31 ...	19 55 58	3 25'0 S...	0'4556	0'2733	2'0

The brightness at discovery is taken as unity.

Mr. Barnard, observing this comet on June 3, at 3 a.m., noticed that it showed only one tail and that this followed the comet, and therefore pointed almost directly towards the sun. The tail was about a degree in length, and some 2' or 3' in breadth; position-angle, 90°. The head of the comet was roundish, with an almost stellar nucleus in an extended condensation, this latter having a position-angle of about 135°.

ASTRONOMICAL PHENOMENA FOR THE WEEK 1889 JULY 14-20.

(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 July 14

Planet.	Rises.		Souths.		Sets.		Right asc. and declination on meridian.		
	h. m.	s.	h. m.	s.	h. m.	s.	h. m.	° ' "	
Mercury..	2	36	10	37	18	38	6	7'1	21 14' N.
Venus ...	1	10	8	51	16	32	4	25'8	18 8' N.
Mars ...	3	16	11	33	19	50	7	3'6	23 32' N.
Jupiter ...	18	38	22	32	2	26*	18	4'0	23 20' S.
Saturn ...	6	32	14	0	21	28	9	30'0	15 59' N.
Uranus ...	12	6	17	36	23	6	13	7'4	6 31' S.
Neptune..	0	50	8	39	16	28	4	8'4	19 20' N.

\* Indicates that the rising is that of the preceding evening and the setting t' at of the following morning.

Sun rises, 4h. 2m.; souths, 12h. 5m. 36'os.; daily increase of southing, 6'4s.; sets, 20h. 10m.: right asc. on meridian, 7h. 35'8m.; decl. 21° 38' N. Sidereal Time at Sunset, 15h. 42m.

Moon (at Last Quarter on July 19, 20h.) rises, 21h. 4m.\*; souths, 1h. 17m.; sets, 5h. 36m.: right asc. on meridian, 20h. 45'2m.; decl. 20° 28' S.

## Variable Stars.

Star.	R.A.		Decl.	July	h. m.	
	h.	m.			h.	m.
U Cephei ...	0	52'5	81° 17' N.	14, 21	5	<i>m</i>
Y Virginis ...	12	28'2	3° 49' S.	18,		<i>M</i>
U Ophiuchi ...	17	10'9	1° 20' N.	18, 1	37	<i>m</i>
X Sagittarii ...	17	40'6	27° 47' S.	14, 23	0	<i>M</i>
Y Sagittarii ...	18	14'9	18° 55' S.	19, 2	0	<i>m</i>
U Aquilæ ...	19	23'4	7° 16' S.	17, 20	10	<i>m</i>
S Vulpeculæ ...	19	43'8	27° 1' N.	15,		<i>m</i>

*M* signifies maximum; *m* minimum.

## Meteor Showers.

	R.A.	Decl.	
Near Algol ...	48	42° N.	Very swift; streaks.
„ γ Draconis ...	270	50° N.	Swift.

## GEOGRAPHICAL NOTES.

THE paper read at the meeting of the Royal Geographical Society on Monday night, by Mr. Basil H. Thomson, was one of unusual scientific interest. It described a visit made by Mr. Thomson last autumn, along with the New Guinea Commission, to the Louisiade and D'Entrecasteaux Islands, both within the British sphere. Mr. Thomson's observations on the natives, on the geology and natural history of these islands, are of special value. The first island described is that of Sudest, the largest of the Louisiades. It is forty-five miles long and four to ten wide. It is of a slaty formation, with veins of crystalline quartz running through it in all directions. The eastern portion is mountainous, the highest point, Mount Rattlesnake, being about 3000 feet high. The highest parts are densely timbered, but the low hills near the sea are covered with grass, whose bright green offers a welcome contrast to the sombre tropical forest. Rossel Island is surrounded by a distant barrier reef of irregular form. The natives are dangerous head-hunters, who, however, kept out of the way of the visitors. With some difficulty the densely-timbered island was crossed, and proved a rich field for the botanist. Even at an elevation of 3000 feet a network of native paths was found. At the village, the inhabitants of which had fled, the party stayed the night. The village was scrupulously clean and the paths well kept. The houses were shaped like an inverted boat, built on a platform some 5 feet from the ground; the interior was reached through two trap-doors in the floor. The natives of Rossel suggest a hybrid between the Papuans and the natives of the Solomon Islands. The stone axe has fallen into disuse, its place being taken by blades of iron procured from wrecks. The language bears no resemblance to any known New Guinea dialect nor to the languages of Eastern Polynesia. St. Aignan Island, called by the natives Misima, is more than 100 square miles in area, being about twenty-eight miles long, and varying in breadth from about eight or nine miles on the east end. The west end consists of a great mountain range named Lakia, about 3500 feet above the sea, composed of schistose slate. The eastern part of the island consists of very rugged hills, through which the streams have cut very deep and narrow gorges. They are composed of coral upheaved by volcanic action, and mixed with conglomerate formed from shingle, and with broken layers of schistose slate. Round the eastern coast there is a fringe of coral, upheaved more recently, rising to a height of more than 100 feet, through which the mountain torrents have cut their way right down to sea-level. The natives are of two types, the one evidently Papuan, and the other betraying strong Malay characteristics, such as the straight hair and not prominent features. The limestone hills which compose the centre of the island were honeycombed with caves and densely timbered. From one great wall of limestone sprang a stream which, after 200 yards of daylight, plunged into a great cave in the opposite cliff. The mouth was a perfect arch, 150 feet from floor to roof. At the far end the river thundered down into a black

tunnel, through which it passed under the range, emerging into daylight after some three miles of darkness. Normanby Island, the most easterly of the D'Entrecasteaux Group, is a narrow L-shaped mountain range, with deeply furrowed sides and wide valleys excavated by water-wear. It is probably nowhere of greater breadth than ten or twelve miles, and the area about 350 square miles. The highest parts of the island are perhaps 3500 feet above the sea-level. The south-eastern portion is composed of schistose slate varying much in hardness, interlaid with veins of white crystalline quartz, which is free from any compound of iron or other metal. Traces of gold were found in the creeks. Toward the north end of the island the formation is igneous, consisting mainly of limestone, but in some of the river-beds are large beds of basalt and boulders of siliceous stone. The mountains of Dawson Straits, however, differ much in formation from the rest of the island. The rock appeared to be a sort of porphyry, and furnished indications of tin. The natives have strong Papuan characteristics. They wear the usual dress. Mr. Thomson penetrated some miles inland, passing through no less than thirty-one villages, and seeing many others perched on every available spur or ridge, and surrounded by its plantations. These villages were remarkable for their cleanliness. The cultivation is wonderful, and bears witness of their activity and industry. Normanby Island is the eastern limit of the wallaby, of which were found two varieties. It is also the eastern limit of a bird peculiar to the D'Entrecasteaux Group—the largest of the five species of Manucodia, which are still classed with the birds of Paradise. It feeds on insects, and though the strait which divides Normanby Island from the mainland is only ten miles wide, this bird, which is the commonest of all large birds in the D'Entrecasteaux Group, has never crossed to New Guinea. War and the difference of dialect have so completely isolated the various tribes as to make them different peoples as regards everything but their physical characteristics. At a spot not ten miles from a tribe that would barter all they possessed for tobacco and pipes, were people so ignorant of their use that they put the tobacco into a bottle given them, poured water upon it, and drank off the compound. Ferguson Island, the largest of the D'Entrecasteaux Group, is thirty miles long by seventeen broad, with an area of about 500 square miles. There are three great mountain masses on the island: Mount Kilkerran, on the north-east corner, 6000 feet high; the Maybole Range, on the north-west, which is probably 5000 feet above sea-level; and a lower range in the south-west corner, which is apparently unnamed, and which Mr. Thomson was unable to examine. The formation of the Kilkerran and Maybole Ranges is the same, consisting principally of micaceous schist with veins of white quartz intersecting it. In the beds of the rivers were boulders of quartz, and of a slaty rock very rich in silica, and there were boulders of what seemed to be a kind of porphyry. The south-eastern part of Ferguson and the small outlying islands, Goulvain and Welle Islands, are of igneous formation, and Mr. Thomson noticed two extinct volcanoes and some hot springs. This part is densely populated, owing probably to the fertility of the extensive flats of volcanic deposit. The people were in most respects similar to those in Normanby Island. The inland or bush natives have evidently no communication with those on the coast, except as enemies: they knew nothing of firearms. They are true Papuans. At Mount Kilkerran, near Hughes Bay, it was noticed that the sides of the mountain, consisting of great precipices and steep inclines, were dotted with villages up to a height of 10,000 feet, half concealed in clumps of cocoa-nut palms. Six specimens of a variety of *Paradisaea raggeana* were obtained in this island. Near Seymour Bay there was a large extent of flat land and sago swamp, in which were found some saline lakes, and some hills giving off sulphur fumes strong enough to discolour the white paint on the vessel, which was lying nearly two miles distant. Some of the hills appeared to be composed of alum and sublimed sulphur. There were also springs of boiling water and boiling mud, and in one instance boiling mud was spouted up from a chimney-like cavity in the hill-side. Goodenough Island, the most westerly of the group, was visited. A great range of mountains running north and south, and culminating in two peaks not less than 7000 feet high, forms the centre of the island. On the east side is a plain some seven or eight miles wide, nearly clear of forest. The formation is slaty schist containing much mica and quartz. On the east side are projections of igneous formation, and on the point nearest to the sulphur springs in Seymour Bay is a small crater, probably not long extinct.