and observers can never see the people of New Guinea in the stage of savagery in which he found them when he first went to the island. This gives, of course, a peculiar interest to the record of his impressions. The work contains a map and illustrations, and is published by the Religious Tract Society.

WE have received the first eight numbers of "British Dogs" by H. Dalziel (Upcott Gill). The book will supply admirers of the dog with a trustworthy guide, and it provides in an accessible form much information that will be of service to professionals, as well as to amateurs. The descriptions and plates, with slight exceptions, are very good.

PROF. AYRTON'S "Practical Electricity" is being translated into the German and Spanish languages.

THE tenth volume, lately published, of the series entitled "Monographs of the United States Geological Survey," contains a full account, by Prof. O. C. Marsh, of the Dinocerata, an extinct order of gigantic mammals discovered in the Eocene deposits of Wyoming Territory. The work is admirably illustrated.

THE New York Industrial Education Association will begin in the autumn the publication of a series of educational monographs under the editorship of the President of the Association, Dr. Butler. According to *Science*, the papers will treat of various educational topics, historically and critically; and some of the most influential educators, both in America and in Europe, have promised contributions. It is expected that the first monograph will be from the pen of President Gilman, of the Johns Hopkins University. The arguments in favour of industrial education and statements as to its proper organization and development will occupy a prominent place in the series, but not at all to the exclusion of other topics.

ON Friday, the 15th inst., a students' *conversazione* will be held at the Technical College, Finsbury. There will be a concert and exhibition, and lectures on "Church Bells" and "Spectrum Analysis" will be delivered, the former by Prof. Ayrton, F.R.S., the latter by Prof. Meldola, F.R.S. A demonstration on "The Use of the Secohmmeter" will be given by Mr. W. E. Sumpner.

IN 1880 the Midland Union of Natural History and other Scientific Societies founded the Darwin Medal for the purpose of encouraging original research by members of the Societies forming the Union. The medal is a handsome one, the dies for which were engraved by Mr. Joseph Moore, of Birmingham. On the obverse is the bust of Darwin, and on the reverse a branch of coral, commemorative of one of the most famous of his researches. The subjects for which the medal is awarded are geology, zoology, botany, and archæology. This year it was set apart for archæology, and at the annual meeting of the Midland Union of Natural History Societies, held last week at Malvern, it was awarded to Mr. Edward W. Badger, of King Edward's High School, Birmingham, for a paper on "The Monumental Brasses of Warwickshire."

THE second German Fishery Meeting will be held at Freiburg in Baden on July 29 and 30. An excursion to the Imperial Piscicultural Establishment at Hüningen (Alsace) will be made. All inquiries are to be directed to the German Fishery Society, Leipzigerplatz 9, Berlin.

THE Deutsche Seewarte has issued a second edition of its ice chart (see NATURE, vol. xxxvi. p. 41) compiled from the semi-weekly Atlantic Ice Report, by F. Wyneken, of New York, and from its own observations. The chart shows that the state of the drift ice in April and May was nearly the same as in February and March. Between 48° and 51° W., and north of 42° N., icebergs were frequently met with, but there were very few to the south of this. It is not supposed that the ice will disappear during July, so that vessels cannot yet safely take a more northerly route.

TOWARDS the end of June very remarkable weather prevailed in certain parts of Scandinavia. At Röros, in Central Norway, for instance, it snowed so heavily that sledges might easily have been used. Just before, the weather had been very warm for a long while. In Sweden, on the other hand, several provinces were visited by terrific cyclones, which tore up hundreds of trees by the roots, and unroofed many houses.

AT the annual meeting of the Victoria Institute, to be held at the Society of Arts House on Tuesday, July 19, at 8 o'clock, an address will be delivered by the President of the Royal Society.

THE total value of the fish landed on the coasts of Scotland during the six months ended June 1887 was £556,058, being a decrease under the corresponding period of last year of £38,332, a decrease under the corresponding month of last year of £34,219, and an increase over last month of £9043.

THE additions to the Zoological Society's Gardens during the past week include an Entellus Monkey (*Semnopithecus entellus*, ♀) from India, presented by Capt. W. L. Prentice; a Grey Squirrel (*Sciurus cinereus*) from North America, presented by Mr. Percival Farrer; two Weasels (*Mustela vulgaris* ♂ ♀) from Sussex, presented by Mr. Clement Wykeham Archer; two Blue-headed Pigeons (*Starnænas cyanocephala*) from Cuba, presented by Mr. John Marshall; two Common Gulls (*Larus canus*) from Scotland, presented by Mr. T. A. Cotton; two Lapwings (*Vanellus vulgaris*) from Essex, presented by Mr. Gervase F. Mathew; an Alligator Terrapin (*Chelydra serpentina*) from North America, presented by Prof. Agassiz; a Speckled Terrapin (*Clemmys guttata*), an American Black Snake (*Coluber constrictor*), from North America, presented by Mr. Samuel Garman; a White-fronted Capuchin (*Cebus albifrons*) from Brazil, a Dingo (*Canis dingo* ♀) from Australia, deposited; two Gluttons (*Gulo luscus*) from Russia, a Redshank (*Totanus calidris*), two Lapwings (*Vanellus vulgaris*) from Suffolk, purchased; a Mandarin Duck (*Æx galericulata*), two Red-crested Pochards (*Fuligula rufina*), bred in the Gardens.

OUR ASTRONOMICAL COLUMN.

RESEARCHES ON THE DIAMETER OF THE SUN.—In continuation of his investigations on the supposed changes in the sun's diameter from year to year (NATURE, vol. xxxv. p. 496), Prof. Auwers publishes in the *Sitzungsberichte der Königlich Preussischen Akademie der Wissenschaften zu Berlin*, 1887, No. xxviii., the result of his researches on the yearly inequality of the diameter. The existence of such an inequality has been pointed out by Lindenau in his discussion of Maskelyne's observations; by Cesaris, Carlini, and Rosa in the Milan observations; and by Struve in the Dorpat observations. More recently Rosa has discussed extensive series of Greenwich observations of the sun, and also Madras observations; Newcomb and Holden have discussed Greenwich and Washington observations; and Hilfiker has discussed transits of the sun's diameter obtained at Neuchâtel. To these must now be added Prof. Auwers' careful discussion of the Greenwich transit-circle observations, both of horizontal and vertical diameter, obtained during the years 1851–83 inclusive, as well as of the extensive series of Washington and Oxford observations collected in his former paper, referred to above. These discussions all show the existence of apparent inequalities in the sun's diameter during the year, but do not appear to be at all conclusive as to the reality of such variations in the sun itself. In Prof. Auwers' opinion they are due to the effect of temperature on the instrument, or to the effect of difference in the telescopic image of the sun as observed at opposite seasons of the year. Thus a most remarkable inconsistency appears in the results obtained from the Greenwich observations, both of horizontal

and vertical diameter, 1851–83, and from the Neuchâtel observations, of horizontal diameter only, for 1862–83. The following table shows the discordances from the mean for each month of the year for the two series :—

Month.	Greenwich.	Neuchâtel.
	″	″
January ...	−0·36 ...	+0·66
February ...	−0·24 ...	+0·54
March ...	−0·03 ...	+0·24
April ...	+0·22 ...	−0·51
May ...	+0·25 ...	−0·54
June ...	+0·08 ...	−0·34
July ...	+0·08 ...	−0·33
August ...	+0·01 ...	−0·54
September ...	−0·06 ...	−0·19
October ...	−0·10 ...	+0·38
November ...	−0·22 ...	+0·23
December ...	−0·35 ...	+0·41

It appears obvious that these results must be attributed to other causes than physical changes in the sun s diameter.

ASTRONOMICAL PHENOMENA FOR THE WEEK 1887 JULY 17–23.

(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 17

Sun rises, 4h. 4m. ; souths, 12h. 5m. 50·5s. ; sets, 20h. 7m. ; decl. on meridian, 21° 13′ N. : Sidereal Time at Sunset, 15h. 48m.

Moon (New on July 20) rises, 1h. 19m. ; souths, 9h. 0m. ; sets, 16h. 50m. ; decl. on meridian, 17° 15′ N.

Planet.	Rises. h. m.	Souths. h. m.	Sets. h. m.	Decl. on meridian. ° ′
Mercury ...	5 59	13 14	20 29	13 45 N.
Venus	8 23	15 6	21 49	7 53 N.
Mars	2 14	10 35	18 56	24 1 N.
Jupiter... ...	12 43	18 0	23 17	9 15 S.
Saturn... ...	4 11	12 12	20 13	21 6 N.

Occultations of Stars by the Moon (visible at Greenwich).

July.	Star.	Mag.	Disap. h. m.	Reap. h. m.	Corresponding angles from vertex to right for inverted image. ° °
17 ...	85 Tauri	6 ...	1 5 ...	1 45 ...	30 286
17 ...	Aldebaran ...	1 ...	3 16 ...	3 33 ...	139 172
18 ...	115 Tauri... ...	6 ...	1 50 ...	2 40 ...	73 237

July. h.
19 ... 4 ... Saturn in conjunction with the Sun.
21 ... 17 ... Mercury in conjunction with and 3° 40′ south of the Moon.

Variable Stars.

Star.	R.A. h. m.	Decl. ° ′		h. m.	
U Cephei	0 52·3	81 16 N.	July 17,	22 32	*m*
			,, 22,	22 11	*m*
R Corvi	12 13·8	18 38 S.	,, 20,		*M*
δ Libræ	14 54·9	8 4 S.	,, 22,	23 16	*m*
U Coronæ	15 13·6	32 4 N.	,, 22,	20 54	*m*
U Ophiuchi... ...	17 10·8	1 20 N.	,, 21,	2 31	*m*
				22 38	*m*
W Sagittarii ...	17 [illegible]·8	29 35 S.	,, 17,	21 0	*m*
			,, 21,	1 0	*M*
U Sagittarii... ...	18 25·2	19 12 S.	,, 22,	1 0	*m*
R Scuti	18 41·5	5 50 S.	,, 23,		*M*
S Sagittæ	19 50·9	16 20 N.	,, 20,	2 0	*m*
			,, 23,	2 0	*M*
S Aquarii	22 51·1	20 57 S.	,, 18,		*M*
S Pegasi	23 14·8	8 18 N.	,, 18,		*M*

M signifies maximum ; *m* minimum.

Meteor-Showers.

	R.A.	Decl.	
	°	°	
Near *o* Cassiopeiæ ...	11 ..	+48 ...	Very swift. Streaks.
,, 63 Cygni... ...	315 ...	47 ...	Swift. Short.
From Cassiopeia ...	350 ...	52 ...	Very swift.

GEOGRAPHICAL NOTES.

THE July number of the Proceedings of the Royal Geographical Society contains a detailed report of the paper read by Dr. Junker on his explorations in Central Africa. Mr. Delmar Morgan contributes, from Russian sources, a long account of Russian geographical work in 1886, which contains much that is interesting. One of the most important Expeditions was that under J. V. Ignatieff, to explore the magnificent Khan Tengri group of mountains in the Thian Shan, whose summits soar to a height of 22,000 to 24,000 feet. The botanist of the Expedition, A. N. Krasnof, made some extremely important investigations, with especial reference to the flora of the high snow and ice regions of the Thian Shan, as compared with that of the Polar regions recently worked up by Wittrock. M. Krasnof is of opinion that the valley of the Ili once had an entirely different vegetation to that possessed by it now, and that this early plant-life has completely perished owing to the desiccation of Central Asia and the consequent change in its climate. Formerly, M. Krasnof says, the whole flora of the Ili valley was similar to that still preserved at the foot of the snowy mountains, resembling that of Central Russia. At present all the lower chains are deprived of the moisture they derived from melting ice-fields, and have changed their flora in the most radical way, having now only Central Asian forms. M. Krasnof's general conclusions are that formerly the Thian Shan flora was intermediate between the Altai and the Alpine, and resembled more closely that of the Central and Northern Caucasus. The process of desiccation began in the south, and showed itself by the formation of detritus, retreat of the glaciers, and disappearance of lakes. It caused the formation of loess deposits, sand, and pebble-strewn plains, while it diminished the areas of marshes and black-earth deposits. All plants common to Polar and Alpine regions disappeared from the southern slopes and syrts, while coniferous and deciduous arborescent vegetation also vanished from all waterless slopes. Wherever the snow has ceased to lie, the ancient flora has also perished, only a few species having adapted themselves to a continental climate and assumed an Asiatic character.

THE current number of *Petermann's Mitteilungen* contains several papers of special scientific interest. M. Yokoyama contributes an account of a paper by J. Tanaka, on the vegetation zones of Japan, while Herr Ernst Hartert describes the botanical results of his journey along with Herr Standinger in the Western Soudan. Dr. Supan's paper on the climate of Europe, as regards the duration of a certain mean temperature in different areas, will be found of great value in working out the physical geography of Europe. Dr. Supan's object is to show the length of time (the number of months) a mean temperature—low, temperate, or high—prevails in a European area, and to mark off on maps the areas in which the temperature endures, the number of months being expressed by colours. Many geographical and biological considerations depend on such general facts of climate as Dr. Supan is endeavouring to work out. He divides temperature into three classes : (1) 0° Cent. and under, which he calls the "Frost Period" ; (2) 10° to 20° C., the "Warm Period" ; (3) 20° C. and over, or the "Hot Period." The duration of these temperatures he has noted at 471 different stations in Europe and the countries round the Mediterranean. The results, which he has represented cartographically by areas of colour, may be briefly summarized thus :—The lines of equal duration of the "Frost Period" run similarly to the winter isothermal lines, changing from a southerly direction in the West of Europe to a south-easterly and then east-south-easterly in the East of Europe. As regards the "Warm Period," it is only on the Atlantic side of Europe that the lines of equal duration run distinctly south-east, elsewhere on the Continent they approximate very nearly to the parallels of latitude ; while for the "Hot Period" they show a north-easterly direction. Thus in all three maps the contrast between the oceanic west and the continental east comes out very sharply. A glance at Maps 1 and 2 explains why the Norwegian highland was in the Glacial epoch the birth-place of North European land-ice ; the reason is not to be found in the extraordinarily low temperatures, but in the duration of the cold and warm periods. In all districts where a coast range of mountains interposes between the interior and the sea, or where the hills rise abruptly from the sea, the lines of equal duration press closely together, notably in Norway and the Alps. Dr. Supan emphasizes the importance, in considering the climate of Europe