Cretaceous series. I need not refer to the Mästricht beds, except to notice that a mixture of Tertiary and Cretaceous types of mollusca is also apparent in them. One circumstance, however, lessens the value of the evidence presented by the mollusca and the flora; we are so little acquainted with either the Gastropods, the Dimyaria, or the plants of the White Chalk age, that it is possible these may have inclined more to Tertiary types than those of the Grey Chalk would lead us to suspect.

I believe that in the American Cretaceous molluscous faunas there is precisely the same mingling of types described above, and if so, they should surely be bracketed together, rather than with our Neocomian Gault, or even Grey Chalk, which present no such mixture and contain few Tertiary types, except in unimportant groups, as Dentalium. Further, we must not overlook the oft-repeated negative arguments that we have no dicotyledonous plants of these ages in Europe, and that *Baculites*, &c., may have survived longer in America than in Europe. The whole series in America forms, so far as I gather, a natural sequence, the age of one part of which, the Laramie, can be fixed as Middle Eocene, and I think, before correlating the remainder with the older Cretaceous beds of Europe, with which neither their fauna nor flora agrees, the position occupied in the American series by the older Eocene, and the transition beds which I have enumerated, should be as far as possible ascertained. The matter is thus still, and must remain for the present, in an unsatisfactory state; but the importance of removing all doubt as to the relative position of those American beds which have yielded such magnificent palæontological data, and of the more typical British strata, is so great that I hope Prof. Newberry will not let the subject drop.

J. S. GARDNER

Gradations between Hermaphroditism and Gynodiœcism

ABORTION of the stamens in some portion of the flowers occurs in different species of the genus Dianthus. *D. superbus* has been shown to be gynodiœcious in my work on "Alpenblumen" (p. 202, Fig. 79). *D. deltoides*, the only species growing near Lippstadt, has lately been examined by myself, and has been found under certain circumstances to become gynomonœcious and gynodiœcious. Of *D. Carthusianorum* among 167 flowering stalks sent me from Thuringia by my brother, Wilhelm Müller, there were two producing female flowers with greatly aborted stamens. *D. deltoides* near Lippstadt offers interesting gradations from hermaphroditism to gynodiœcism. On the border of a meadow of some hundred stems examined by myself, all flowers, without exception, proved proterandrous, with normal development of anthers and stigmas. In the grass-grown slope of a sandy hill ("die Weinberge") likewise all stems produce proterandrous flowers, but on many stems the stamens, although emerging above the petals before the development of the styles and stigmas, bear diminished whitish anthers not opening at all, and containing only some shrivelled pollen grains. Lastly, in a barren sabulous locality ("Schützenplatz") many of the stems produce female flowers, with stamens aborted in the same degree as shown in *D. superbus* ("Alpenblumen," Fig. 79D), and not unfrequently such female flowers and proterandrous hermaphrodite ones are found on the same stem.

Lippstadt HERMANN MÜLLER

Red Stars

DR. DOBERCK, who has paid particular attention to colour in his observations of Doubles, has kindly sent me the following list of red stars found by him in 1880. The first column gives the number, and the second and third the positions (for 1855) in the B.D. :—

No.	α h. m.	δ ° ′	Colour.	Date in 1880.
+ 4°877	5 7	+ 4 59	Red	Jan. 30
*	3 12	±64	Glowing red	Feb. 8
5°1790	7 40	5 46	Ruddy	,, 14
20°1775	7 13	20 42	Pale red	,, 14
22°1198	6 1	22 13	Pale red	,, 14
26°2250	11 37	26 2	Red	March 8
33°4456	22 6	33 53	Red, but very pale	Sept. 10
20°5386	23 45	20 51	Pale red	,, 10

* Dr. Doberck does not give the number of this star, but it seems to be, probably, 64°301.

Dr. Doberck remarks that the two stars on both sides of *η Draconis* are pale red; and in *Coma Ber.* and south of it are several ruddy stars.

J. BIRMINGHAM

Millbrook, Tuam, September 18

Bombay Rainfall and Nile Floods

IN looking over data of the rainfall at Bombay and comparing them with the ebb and flow of the Nile for the corresponding years from 1849 to 1880 inclusive, I was so struck with the similarity, almost identity, of magnitudes, that I have been led to copy them out, and perhaps you may consider them worthy of publication in your most valuable journal. Within a trifling fraction the whole of the annual rainfall at Bombay happens in the months of June, July, August, and September. Very rarely a little falls in May, perhaps a little more frequently, some in October, but these small quantities but slightly augment the sum total. They are included in the four months' totals in the following table:—

Year.	Rainfall of June and July in Bombay.	Ditto June, July, and August in Bombay.	Ditto June, July, August, and September in Bombay.	Variation from mean atmospheric pressure.	Lowest ebb of the Nile.	Highest flood of the Nile.	Wolf's sun-spots.
	inches.					feet.	
1849	74·5	88·16	118·88	−·011	1·64	22·31	95·4
1850	36·5	43·11	51·15	−·001	1·64	18·47	69·8
1851	77·7	101·3	106·14	−·013	1·8	23·13	63·2
1852	49·59	60·25	75·46	−·004	2·59	16·73	52·7
1853	52·71	61·27	69·65	+·005	·9	23·01	38·5
1854	55·23	74·43	89·79	−·005	1·8	22·81	21·0
1855	24·98	28·13	35·10	+·015	2·85	16·5	7·7
1856	52·40	62·93	71·08	−·003	1·3	22·81	5·1
1857	38·92	60·93	79·23	−·001	1·42	18·7	22·9
1858	37·92	49·37	61·9	+·003	·32	19·52	56·2
1859	59·86	75·57	81·84	+·003	·29	19·65	90·3
1860	57·69	66·88	74·65	−·003	·08	23·42	94·8
1861	66·43	102·95	106·08	−·012	1·8	23·32	77·7
1862	38·35	62·0	76·56	−·026	1·8	16·53	61·0
1863	58·33	71·8	80·33	−·017	4·13	21·78	45·4
1864	39·37	51·39	56·60	+·023	4·59	14·43	45·2
1865	30·6	69·61	73·46	+·002	3·11	18·47	31·4
1866	64·63	88·5	92·39	+·013	2·54	23·2	14·7
1867	44·93	62·06	73·57	+·015	2·29	19·3	8·8
1868	47·83	71·78	78·43	+·027	2·16	17·1	36·8
1869	58·49	87·2	115·39	+·005	1·57	23·01	78·6
1870	53·39	64·48	81·06	−·012	1·88	22·81	131·8
1871	30·37	39·33	47·2	−·004	2·29	21·98	113·8
1872	60·59	71·21	67·61	−·014	1·23	22·7	99·7
1873	38·69	75·61	87·42	+·002	1·64	19·35	67·7
1874	67·54	78·78	93·56	+·001	·98	25·82	43·1
1875	42·79	58·70	88·08	·0	1·31	21·8	18·9
1876	40·87	52·81	58·93	+·007	−1·88	21·37	
1877	51·99	55·9	70·96	+·037	−1·96	16·8	
1878	73·73	95·63	123·1	−·011	−·72	26·18	
1879	36·95	66·22	73·41			25·03	
1880	38·79	43·55	71·23			21·45	

The floods of the Nile are mainly caused by the heavy rains which descend upon the high tablelands of Abyssinia, a range of mountains on the opposite side of the Indian Ocean to that of the Ghauts, but parallel to them and under the same latitudes. The inference to be drawn is obvious. The great south-west monsoon which sweeps over the Indian Ocean in the summer months produces a like effect in both cases, inducing fertility and plenty, alike on the plains of the Concan of India and the Delta of Egypt. It may be mentioned that the lowest ebb of the Nile always happens in June, and the highest flood about the end of September and the beginning of October. I have included in the table a column showing the variations of the mean barometrical pressure, and a column giving Wolf's observation of sun-spots, taken from NATURE, vol. xxi. pp. 477–82.

MORGAN BRIERLEY

Port Said, September 8