on the brachiopods of the British islands. During that period, Mr. Davidson has not only prepared the text of his monograph, and numerous collateral and frequently very important papers on the general subject, but has drawn with his own hand more than two thousand admirable and artistic plates by which that text has been illustrated and adorned. Seldom has fortune equipped more completely a student for his life-work than in the present case, when more than ordinary artistic talent, a liberal education, independent means, were joined to unsurpassed devotion in the pursuit of knowledge, and impartiality in the recognition of the labors of others in the same field.

The steady stream of information induced by the publication of successive parts of the monograph has necessitated supplement after supplement. The present and concluding part not only contains such material, but a catalogue of, and index to, the British genera and species, bibliographical and stratigraphical, and, more important than either for the general biologist, a summary of progress in our knowledge of the class up to the present time. This includes notices, under separate heads, of the test, the embryology, the affinities, the adult anatomy, habitat, and ranges in depth, of recent species, characters of the fossil genera, and classification discussed by families. Full space is allotted to the advocates of contending theories: Kovalevski's valuable paper on the embryology is given in full abstract, with excellent figures; various suggested pedigrees are quoted; the brilliant rise, and slow but continuous decadence, of the 'worm theory,' is related, with generous recognition of the sagacity of Morse in the detection of affinities to which the then imperfect knowledge of the molluscan pedigree, and his remarkable researches into the early stages of Terebratulina and Lingula, lent a plausible, but, as it has since proved, a one-sided interpretation. The general conclusion is reached, that, however great the probability of continuous descent, with modification, as an explanation of the various forms of brachiopods now or previously existing, the paleontological record presents many facts inexplicable by, or even opposed to, this theory; while of natural selection there seems to be absolutely no visible trace. The number of British forms which, at the commencement of the work, numbered 13 genera, and 454 partly invalid species, has now expanded to 74 genera, and 976 species and varieties, to which even now accessions continue to be made.

In taking leave of his task, so worthily performed and to be continued by younger hands, the author, in spite of certain infirmities, does not relinquish his studies, but is now engaged on a monograph of the recent species, which it is to be hoped he may be spared to complete to his own satisfaction and the undoubted benefit of science. W. H. Dall.

NOTES AND NEWS.

— The prize of 500 francs, founded by Augustin-Pyramus de Candolle, has been awarded to Professor Planchon, professor of botany at Montpellier, for his memoir on the Ampelidees.

— A geographical society has been established at Rio de Janeiro, under the presidency of Viscount de Paranaguá, with Baron Teffé and Señor Henriques, vice-presidents; Carlos Montéro and Pereira Coruja, secretaries.

— According to the *Oesterreichische monatsschrift für den orient*, the preference shown in England and her colonies for Indian teas is causing considerable anxiety among the native and European tea-establishments of China. Calcutta alone sent to England, in the past year, 62,773,187 pounds, against 58,830,478 in 1883, and 51,579,740 in 1882; while the Australian and New Zealand markets received, in 1884, 1,029,463 pounds, against 696,479 in 1883. To be sure, this figure shows a great falling-off from 1882; yet at present a preference is manifested in Australia for Indian teas, which, like those of Ceylon, whose production probably has a similar future, far surpass in quality the average teas of China. Also the success of Natal, in the production of tea, warrants the assumption that South Africa will soon enter the market. The total export of Foochow, the greatest tea-depot of China, amounted, in the last season, to 77,631,997 pounds, against 81,100,875 for the same time last year. In Hankow, Canton, Shanghai, and Macao the same proportion is seen. The falling-off in the export of all China against the past year amounts to about ten million pounds, and may be ascribed to the reduction in quality of the Chinese teas. How far this decrease may have been due to the French operations cannot be told.

— Another party for the scientific exploration of Greenland is being organized by the authorities at Copenhagen. It will be commanded by the naval lieutenant, J. A. D. Jensen, assisted by Lieut. C. H. Ryden.

— In a recent visit to Russian Lapland, Rabot visited the valleys of Pasvig and Talom and Lake Enara. The entire country is an immense forest, dotted with lakes and pools, and cut by rapid streams. The latter, though very difficult of navigation, form the sole roads of the country. The Pasvig, for instance, in its course, forms more than thirty cascades and rapids. Lake Enara, from which it flows, is an interior sea, dotted with thousands of islets covered with magnificent pines. The climate is very rigorous; the short summer is, however, quite hot, but in August frosts are not unknown. The country around Lake

Enara is level, and forms a depression between the plateau of Finmark and the highlands of Russian Lapland. This, in a political point of view, is important; since it permits of comparatively easy communication between Finland and the coast of the Northern Ocean. There are excellent ports on this shore never obstructed by ice, but hitherto useless for want of communications with the interior. In the near future, the railway, which has already reached Uleaborg, will be completed to the northern coast, and Russia will be able to utilize a part of her possessions, at present little better than a wilderness.

— Van Braam Morris, Dutch resident at Ternate, has recently made some interesting discoveries on the northern coast of New Guinea, which he visited officially for the purpose of familiarizing the natives with the Dutch flag, and arranging a peace between several contending tribes. After determining the longitude of Mapia, it was found that Stephen Island of the charts has no existence. The coast near Walckenaer Bay was visited; and several rivers of considerable size, as well as a large lagoon, were found, which were before unknown. The population, calling themselves Bongos, were numerous and friendly, living in houses built on piles in the water. Cocoanuts were so abundant that two hundred and fifty could be purchased for twelve cents; and large quantities of kopra are made. Subsequently the Amberno River was visited, and ascended sixty miles or more with a depth of six fathoms, with a fathom less in the channel over the bar. In latitude 2° 20′ south, the river emerges from the mountains; and here were shoals beyond which the party did not go. The current was extremely rapid. The male inhabitants of its banks were timid but friendly: the women always took refuge in the forest. They call the stream 'Mamberan' (or great river). It has never been ascended by civilized man; and it is claimed that the results of Van Braam Morris's explorations are more important to geography than any work done in this region during the century, and only second in New Guinea to the work of Albertis.

— Messrs. Charles Scribner's sons published, May 1, the book of Stepniak, the nihilist writer, author of 'Underground Russia,' entitled 'Russia under the tzars.' The timeliness of its publication is a matter of accident, as the author and translator have been for some time superintending its passage through the press in London; but it is particularly welcome at a moment when universal attention is fixed upon its subject.

— Within a week of the publication of Messrs. Scribner's authorized edition of 'The Russians at the gates of Herat,' they were obliged to print nine thousand copies to supply the demand, and another edition of three thousand has just been put on the press.

— Reports from Japan state, says *Nature*, that grave fears were entertained of an outbreak of the long quiescent volcano Fujiyama, and that officials had been sent to investigate the matter. The people living in the neighborhood believed an eruption to be imminent, because, while the snow on the mountain had begun to melt two months before the usual time, all the wells at the fort became dry, and difficulty was experienced in procuring water. The phenomenon is considered the more remarkable from the fact that the winter has been unusually cold, and that the surface of the snow remains hard, the part nearest the ground being the first to give way.

— The council of the New-England meteorological society has deemed it advisable to select a new subject for special study during the summer season of 1885, and has chosen thunder-storms as offering at once the greatest number of features easily observed, and promising in return the most interesting results. The desired observations will be divided into several classes, in order to bring the work within the reach of all who are willing to take a share in it. Observations are to be taken through the summer whenever a thunder-storm can be seen or heard. Besides these, special observations of wind, temperature, etc., are desired on the Saturdays of June (June 6, 13, 20, 27), at intervals from noon to nine o'clock P.M., whether a thunder-storm is in progress or not. Saturdays are chosen with special reference to securing assistance from the scholars in our many schools. Instructions, and blanks for records, will be sent on application to W. M. Davis, Cambridge, Mass.

— Vol. i. of the Transactions of the scientific association of Meriden, Conn., which has just been printed by the association, appears as a tribute to the memory of a deceased member, Miss Emily J. Leonard, whose catalogue of Meriden plants, left incomplete at her death, occupies the principal part of the pamphlet. Although the plant names have in a few cases served as stumbling-blocks in the way of the editors, the list, which includes 749 phenogams and pteridophytes, is very creditably presented.

— *Nature* reports that the National fish-culture association of England has transferred another large consignment of white-fish fry to the lakes in the Isle of Mull in order to further their acclimatization to the waters of this country. Hitherto many experiments have been tried in this direction, but with no success. The American government is rendering valuable assistance in effecting their propagation, and are watching the result of the endeavors now making with keen interest.

— The French government has granted the use of the Palace of Industry, in the Champs Elysées, for the purpose of holding the Great industrial exhibition (*Exposition du travail*), which will remain open from the 23d of July until the 23d of November, 1885.

— The collections and library of the New-Orleans academy of sciences have been removed to rooms furnished by the Tulane university. It is hoped that some additional vigor may be imparted to the academy by the presence of the scientific men visiting the exhibition. E. T. Merrick, ex-chief-justice of Louisiana, is president.

— Systematic observations of auroras have been made at the Engineer station, Willet's Point, N.Y., under the direction of Gen. H. L. Abbot since 1870.

The uniformity and continuity of the system of observations make the results of much interest. Three sentinels are on duty during the night, and each is required to report, when relieved, whether he has seen any auroral light during the night, and, if not, whether the sky has been sufficiently clear to permit any to be visible. At the end of the year the number of auroras, taking the mean result from the three observers, are added, and also the number of nights on which auroras could not have been seen owing to clouds. The probable number for the year is obtained by increasing the observed number in the same ratio as that of the cloudy nights to the clear nights. The results are shown in the following table. The last column of the table gives the average number of sun-spots as observed by Prof. D. P. Todd.

Summary of auroral records for fifteen years.

Year.	Clear sky.		Cloudy sky.		Total for year.	Average no. of sun-spots.
	Nights.	Observed auroras.	Nights.	Probable auroras.		
1870 . .	184	50	150	41	99	–
1871 . .	211	60	154	44	104	–
1872 . .	234	60	132	34	94	–
1873 . .	214	54	151	38	92	–
1874 . .	190	18	175	17	35	–
1875 . .	189	14	176	13	27	–
1876 . .	195	9	171	8	17	–
1877 . .	191	7	174	6	13	2.6
1878 . .	185	2	180	2	4	2.2
1879 . .	204	9	161	7	16	2.0
1880 . .	216	13	150	9	22	14.3
1881 . .	191	23	174	21	44	26.7
1882 . .	201	55	164	44	99	28.3
1883 . .	215	24	150	17	41	27.4
1884 . .	180	12	186	12	24	38.0

— According to the explorer, Col. Prjevalski, Thibet appears to be a paradise for gold-diggers. In the letter in which he describes the discovery of the sources of the Yellow River (the Hoang-ho), he writes: In the neighborhood of the southern slope of the Burchan-Budda, we met with about thirty friendly Tauguts, who were employed in gold-washing. The whole of northern Thibet seems very rich in gold. At the gold-washing place we visited, the Tauguts were digging the gravel containing the gold from a depth of only from about one to two feet; and, though the gold-washing was only done in the most primitive way, the Tauguts showed us whole handfuls of gold in large pieces, of which none were smaller than a pea. Doubtless, careful working of the gold-washing process would yield enormous treasures. It seems to me, too, that the prophecy is not too bold, that Thibet, in time, will prove a second California.

— Dr. Aurel Schulze, the son of a German colonist in Natal, has recently returned from a successful journey into the interior. He advanced up the Kuando, or Chobe, for a considerable distance, and proceeded thence to the Kubango, where his farther progress to the west coast was stopped through the hostile attitude of the natives. He returned to Natal by way of lake Ngami and the Transvaal.

— A. Riche has presented a report to the Council of hygiene of the department of the Seine, in which he states that vaseline should not be used for alimentary purposes, as it is injurious to health. This substance has been recommended for use in pastry, as it is said to show no tendency to become rancid.

— The Académie des sciences offers for this and the three following years a medal of the value of three thousand francs, for some important improvement in the theory of the electric transmission of work. The Bordin prize of three thousand francs is also to be given for the best memoir on the origin of atmospheric electricity, and the causes of the great development of electrical phenomena in storm-clouds; this to be sent in before the 1st of June next, the other before the 1st of June, 1886.

— Tea-cultivation is making some progress in Italy. In the province of Novara a plantation is reported to be doing well; and at the agricultural show at Messina, in 1882, Signor d'Amico exhibited a hundred plants three years old, that had been grown in the province of Messina. The Italian government has sent to Japan for a supply of plants.

— The prize offered by the Société d'encouragement pour l'industrie nationale, of forty pounds, for the discovery of 'a new alloy useful in the arts,' has been awarded to P. Manhés, on account of his discovery of the value of an alloy of copper and manganese for improving the quality of commercial copper. Manhés prepares an alloy of seventy-five per cent copper, and twenty-five per cent manganese, and adds it in small quantities to the molten copper after refining and just before casting, stirring the bath of metal at the same time. The manganese of the alloy is stated to immediately combine with the oxygen of the dissolved cuprous oxide, forming a manganiferous slag which is easily removed. The operation is cheap, and very much improves the quality of the copper so treated. Also several of the principal alloys of copper, bronze, gun-metal, brass, are of superior quality when prepared with copper purified in this manner; and copper so treated is more slowly acted upon by sea-water.

— Obrecht published, in a recent number of the *Comptes rendus*, his result for the solar parallax as derived from measures of the photographs of the transit of Venus of 1874, obtained by the astronomers of the French expeditions. The value found is 8.80″, but it is not final, having still to be corrected for some elements in the calculation whose precise value is as yet unknown. A few years ago, Professor Todd, in a similar way, obtained a preliminary result from the American photographs of the same transit, which was 8.88″ for the solar parallax.

— 'The sun,' by Rev. Thomas W. Webb (New York, *Industrial publication company*, 1885), is 'a familiar description of the sun's phenomena.' It is after the style of the scientific primers, and gives in seventy-seven small pages of coarse type a clear idea of how the distance of the earth from the sun is determined, and of what is going on upon the sun's surface.