Galongs. This is written by Capt. Sir George Duff-Sutherland-Dunbar and is beautifully illustrated.

To mention by name even all the more interesting papers given in these Memoirs and Journals would occupy many pages; as already suggested, they give abundant evidence of a new life in our Eastern Empire. The suggestion might be offered, however, that the division of these publications into at least three sections, each with its own separate volume, would be both an economy and a convenience.

NEW FRENCH MAGNETIC CHARTS.[1]

IN France terrestrial magnetism is included in meteorology, and the actual survey upon which the present work is largely dependent was made by M. Moureaux, director of Parc St. Maur Observatory, then the central magnetic station for France. Prof. Angot, who is director of the French meteorological service, was responsible for the last magnetic charts relating to the epoch January 1, 1901. Whether fresh charts will continue to be published every ten years appears as yet to be undecided. Two methods were considered of obtaining the secular change data, necessary to derive results for January 1, 1911, from those for 1901. The first consisted in taking fresh field observations in a sufficient number of places, and some observations having this end in view were taken by M. Eblé in 1912 and 1913. These have served to some extent as a control, but the second method was that actually depended on. It consists in utilising the secular change data published by observatories in France and adjacent countries, including Potsdam, De Bilt, Valencia, Greenwich, Kew, Falmouth, Val Joyeux, Munich, Pola, Naples, Coimbra, and San Fernando. The ten-year secular changes at these stations were plotted in a map, and curves of equal secular change drawn, from which were deduced the secular changes appropriate to each station. The method is obviously more suitable for France than for the British Isles. But even in the case of France, in the absence of positive knowledge that secular change is unaffected by local disturbance, it is doubtful whether it will be universally admitted that the method is altogether satisfactory for the deduction of charts showing the local anomalies. It is obviously simpler, however, than the carrying out of observations at a large number of repeat stations.

The values deduced for the epoch January 1, 1911, for declination, inclination, horizontal and vertical force, north and west components, and total force are given for from 500 to 600 stations, arranged alphabetically under the several departments. The declination, inclination, horizontal force, and vertical force data are also embodied in four charts. Omitting a few incomplete or obviously disturbed stations, the remaining 538 were arranged according to geographical position in twenty groups or areas. Taking any one group, the mean of the observed values of, say, declination was assigned to an imaginary station, the geographical co-ordinates of which were the mean of those of the actual stations. In this way values were found, practically free from accidental irregularities, for twenty different points. It was then assumed that these twenty values could be represented by an expression, $a+b\phi+c\lambda+d\phi^2+e\phi\lambda+f\lambda^2$, where $\phi+47^\circ$ and $\lambda+2^\circ$ represent the latitude and easterly longitude of any station. The constants were determined both by least squares and by Cauchy's method, with very satisfactory results, showing that a simple quadratic expression suffices to give normal magnetic values with high accuracy for the whole of France.

[1] "Réseau magnétique de la France et de l'Afrique du Nord (Tunisie, Algérie, Maroc) au 1er janvier 1911." By Prof. Alfred Angot. Ann. du Bureau central météorologique de 1911, tome i., pp. 59-95+4 charts.

Tunis, Algeria, and Morocco are treated by themselves (pp. 86-95). The available data consisted of observations taken by Moureaux at thirty-three stations in 1887, and of recent results obtained by the observers of the Carnegie Institution of Washington. The latter had observed at thirteen of Moureaux's stations, thus obtaining data for secular change which were supplemented by results from the observatories of San Fernando, Coimbra, Tortosa, Naples, and Helwan. A six-constant formula of the type already described seems to fit the observations reasonably well. Prof. Angot would like, however, to have fresh observations throughout North Africa, at a considerably larger number of stations. Declination, inclination, and horizontal force charts, representing normal values for North Africa as given by the interpolation formulæ, appear in the text, but on a reduced scale as compared with that adopted for the French charts, which show the actual anomalies. C. CHREE.

RAINFALL IN NORWAY DURING 1916.[1]

THE director of the Norwegian Meteorological Institute has, with commendable promptitude, published the twenty-first annual volume of rainfall data, viz. that dealing with last year's returns. The daily rainfall is given *in extenso* for about 200 stations, additional information regarding the nature of the precipitation, whether in the form of rain, snow, or sleet, being afforded by the international symbol affixed to the reading when the downfall was other than rain. A monthly summary shows, for each of 476 stations, the actual precipitation, the maximum daily fall, and date of occurrence, along with the number of days with more than 0·1 mm. and more than 1·0 mm. of rain respectively; the mean depth of snow is also given and the greatest depth recorded. The monthly and annual rainfall expressed as a percentage of the average is shown for sixty-four stations.

No general summary of the results appears, but there is an excellent large-scale map in two sections showing the distribution of the annual rainfall for 1916 by isohyetal lines drawn for each 200 mm. The maximum rainfall, shown by the isohyet of 3000 mm. (118 in.), appears in three small patches close to the coast, between lat. 60° and 61° N., the highest rainfall, 3127 mm. (123 in.), being at Indre Matre (height 15 m.), in lat. 60° N., long. 6° E. The smallest rainfall, about 200 mm. (8 in.), occurs in several areas of no great extent north of the Arctic Circle, the most extensive being an oval patch about eighty miles long and fifteen miles broad, situated due south of Hammerfest. The isohyets in some districts near the coast are very crowded, especially in areas contiguous to the wettest spots, where the rainfall in rather less than forty miles falls off from about 120 in. to 32 in.

As compared with the average, the rainfall of 1916 on the mean of sixty-four stations was 5 per cent. in excess, but individual stations varied from 51 per cent. above to 41 per cent. below the average. Rainfall was much above the average at most stations to the south of lat. 63°, but north of Trondhjem (lat. 63·4° N.) there was a pronounced deficit, ranging in general from 15 to 40 per cent. The only marked exceptions were at Gjesvair and Vardo, stations to the north of 70° and far to the east. In no month did the rainfall show a general excess or defect over the whole country, although March and August were dry, and January wet nearly everywhere. In February, June, and October to December there was a pronounced tendency to rainy conditions in the south, while a drought was experienced in the north of the country.

[1] Nedbørjagttagelser i Norge, utgit av Det Norske Meteorologiske Institut. Aargang xxi., 1916.

In September, on the other hand, the opposite distribution prevailed.

From an examination of the detailed summaries it would appear that the greatest daily rainfall, 140 mm. (5·51 in.), occurred on April 1 at Livastøl, a station in lat. 59° N., long. 6° E. Only nine daily falls exceeding 4 in. were reported in the year under notice, and, with one exception, these all occurred in the south. A very useful table is given showing the height above sea-level and geographical co-ordinates of all the stations, which can thus be readily identified on the map.

R. C. M.

PLANT DISEASES IN THE WEST INDIES.

VARIOUS root diseases which cause serious loss in crops of cacao, coffee, limes, and arrowroot in the West Indies have been investigated by Mr. W. Nowell, whose conclusions are published in the West Indian Bulletin (vol. xvi., No. 1). In all cases the roots are attacked by the mycelium of species of Rosellinia, a cosmopolitan genus of fungi which has long been known to include several parasitic species. In most cases the source of infection has proved to be either the forest stumps left to decay when the land was originally cleared, or, in the case of cacao, the stumps of shade trees, such as bread fruit and avocado pear. The fungus establishes itself on the dead stumps as a saprophyte, and from these the mycelium spreads to the healthy roots of the crop. The general conditions which favour the spread of the parasites and the most suitable methods of isolating the infected area and controlling the disease are carefully discussed.

In the West Indian Bulletin (vol. xvi., Nos. 2 and 3) Mr. W. Nowell gives a first report on an investigation of the internal disease of cotton bolls in the West Indies. The young lint is badly stained, and in severe cases more or less completely rotted, by the action of bacteria or of certain specific fungi, which are described in the first of the two papers. Four distinct species of fungi have been isolated and studied in culture. They appear to be all closely related, and are probably to be referred to the genus Nematospora. Further investigation is needed, however, to determine the systematic position of the genus. The results of the experiments recorded in the second bulletin show that infection results from the attack of certain cotton-stainers, bugs. *Nezara viridula* and *Dysdercus spp.*, which puncture the ovary walls in order to reach the seeds. The damage caused by the bugs includes the death of a certain proportion of the seeds, and possibly a localised discoloration of lint in young bolls; they are, however, the agents by which the fungi and bacteria are introduced into the ovary, and there produce the characteristic boll disease.

MINERAL NOMENCLATURE AND COLOUR.

A PAPER by Mr. Edgar T. Wherry on "The Nomenclature and Classification of the Native Element Minerals" (Journ. Washington Acad. Sci., vol. vii., p. 447, August, 1917) is remarkable for its advocacy of the use of adjectival prefixes for varieties, rather than special or compound names, which involve, as may be remarked, an additional tax upon the memory. This attitude is so very rare among scientific men that the attention of all naturalists may be directed to it. Mr. Wherry thus gives us "mercuriferous silver" for one end of the amalgam series and "argentiferous mercury" for the other, while the former name swallows up arquerite, bordosite, and kongsbergite. "Rhodiferous gold" replaces rhodite and "ferriferous nickel" awaruite, josephinite, occtibehite, and souesite. The realisation that time is very often lost and not gained by the use of technical names instead of descriptive word-groupings will make mineralogists regard Mr. Wherry's work with favour. His paper, however, is much more than a revision of nomenclature, since the element minerals are critically reviewed, with a number of valuable references to recent work.

Messrs. T. L. Watson and R. E. Beard have made a careful study of "The Colour of Amethyst, Rose, and Blue Varieties of Quartz" (Proc. U.S. Nat. Museum, vol. liii., p. 553, 1917), and they conclude that amethyst is coloured by manganese, probably distributed as submicroscopic colloidal particles of an oxide; that the colouring matter in rose quartz is organic; and that the blueness of quartz, as seen in many igneous rocks, is due to the behaviour of light on minute hair-like inclusions of rutile, as previous writers have suggested. No explanation is proposed for the absence of a purple colour in certain examples of rose quartz which show on analysis quantities of manganese in excess of those in ordinary amethyst; the point seems worth raising, since the authors reject the idea that the colour in amethyst depends on the state of oxidation.

A VILLAGE COMMUNITY IN PAPUA.

IN the thirty-ninth volume of the Transactions of the Royal Society of South Australia Dr. B. Malinowski, Robert Mond travelling student in the University of London, gives a valuable account of the people living on the seaboard of south-eastern Papua between Cape Rodney and Orangerie Bay.[1]

The most important native village is Mailu, on a small island near the coast, the inhabitants of which take a prominent place in the trade of southern Papua, and in certain industries, such as pottery and canoe-building, are more advanced than the mainland people. Dr. Malinowski's descriptions refer principally to Mailu itself but the people of the mainland district, who call themselves Magi, are occasionally noticed.

Following Dr. Seligman in his account of the "Melanesians of British New Guinea," Dr. Malinowski regards the Mailu as the most eastern branch of the western Papuo-Melanesian population, the Bonabona division of the southern Massim being in contact with their eastern border. The sociology and culture of the Mailu are of the same type as those of the Koita, so fully described by Seligman. Like the Koita, too, they speak a non-Melanesian language, though this is not explicitly stated by Dr. Malinowski, whose information was obtained by means of the Motu language, which is understood by most Mailu men.

The unit of social life is the village community. The village is a compact group of houses regularly built on land. The houses, on piles, face each other on each side of the village street, with their backs to the sea and the gardens. The men's club-houses, or *dubus*, have now almost died out. The community was the joint owner of the land and fishing rights, and within certain limits of hunting rights. In legal arrangements, institutions, and warfare the community acted together. It is divided into clans, and the wife comes from outside and moves to the home of her husband. Children belong to their father's clan.

Dr. Malinowski gives details of the household, with diagrams of the building. A genealogical census of Mailu village was made to obtain the kinship system and names. Personal names of elders were found to

[1] "The Natives of Mailu: Preliminary Results of the Robert Mond Research Work in British New Guinea." By Dr. B. Malinowski, Cracow, Robert Mond Travelling Student in the University of London. Transactions and Proceedings of the Royal Society of South Australia, vol. xxxix., Adelaide, December, 1915, pp. 494-706, plates xxvi-xliii.