two graves, one being that of the unfortunate De Röepstorff, killed in 1883, whose memory is still cherished by the natives, and will not readily be forgotten by the members of the Eclipse expedition of 1875, for whom he did so much. He was one of the first to make a scientific study of these islands.

Leaving the harbour by the western exit, the party visited Dring, on Camorta, and thence passing by Bompoka, Teressa and Chaura, where all the Nicobar pottery is made, they anchored off Kachal, where they first found monkeys, and then crossed the Sombrero Channel to the island of Little Nicobar, east of Pulo Milo, where they found good anchorage. The author suggests this as a site for any future European settlement on account of the harbour, the fertility of the soil, and the presence of water. Here monkeys abounded, and in some caves they found a new leaf-nosed bat and the birds-nest swift living together, but never occupying the caves at the same time. After a halt at Kondul, they went to the north side of the Great Nicobar and spent nearly a month visiting villages on the west coast, ending with an excursion up the beautiful valley of the Galatea River. In this island they found some fairly civilised members of the Shom Pen tribe, who live in the interior, and many photographs of them are given. Fig. 1 shows one of their huts with a diagonal bracing to the props. The party left Singapore early in April.

In the second part, which is largely a compilation, the author discusses the two groups of islands more fully, as regards their history, geological formation, climate, products, languages, ethnographical characteristics and origin of the different races of inhabitants. Several illustrations are given of the ornaments, weapons, &c., used in both groups, and of the curious carved wooden images and painted screens used as charms or scare-devils by the Nicobarese. Dampier's narrative of his experiences in the Great Nicobar, in 1688, is reprinted, also an extract from an old account of Kar Nicobar by Dr. J. G. Koenig, a pupil of Linnæus. There is an account of the Kar Nicobarese from information given by Mr. V Solomon, a Christian catechist who has lived among them for many years.

At p. 320, the author has given a summary of his conclusions regarding the origin and variation of the fauna of these islands, based on the theory that the two groups are surrounded by deep sea, except on the north, towards Arakan, and that consequently they have never been connected with the Malay peninsula or Sumatra, and could not have derived their fauna from them. On his hydrographic chart, at p. 166, he shows a wide deep sea channel of more than 1000 fathoms running in from the west between Great Nicobar and Sumatra into the deep Andaman Sea. The depth of this channel has usually been put at about 760 fathoms, but in the latest chart of this part of the Indian Ocean there seems to be no such deep-sea passage between the islands, but a distinct shallowing with a ridge, over which the depth of water does not exceed 950 fathoms in the deepest part about midway between them. The author also estimates the depth of the Ten-Degree Channel at 600 fathoms, but the chart shows a ridge between Little Andaman and Kar Nicobar at a depth of not more than 450 fathoms. The fact that these channels and other ocean depths are so much shallower than the author has been led to believe may modify his conclusions. The question of the geological, zoological and botanical relationships of these islands is a very difficult one, and has engaged the attention of officers of the Indian scientific services for many years past. A great deal has been published on the subject in the official records of the Indian Museum, Marine and Geological Surveys, and the *Journal* of the Asiatic Society of Bengal, which the author seems to have overlooked, and a notice of which would have greatly enhanced the value of the book.

To zoologists, the fact that sixteen new species of mammals and ten hitherto undescribed species of birds from the two groups of islands were collected by Dr. Abbott and the author will be of interest. The former have been fully described by Mr. G. A. Miller, jun. (*Proc.* Nat. Museum, Washington, U.S.A., xxiv., 1902), but, considering that they include some well known forms, and that the islands have been constantly visited by experienced collectors from India for many years past, their all being new is doubtful. The same may be said of the new birds, a list of which is given by the author at p. 331.

Lists of the mammalian fauna, and of the birds of both groups, including the new species, are given with notes on their distribution. The work concludes with appendices relative to the climate, forest trees and timbers, population, education, &c., of the Andamans, also to the flora, population, trade articles, presents and barter, besides tables of measurements of members of different tribes of Nicobarese.

The author has had the great advantage of the assistance of Mr. E. H. Man, who is the greatest living authority on the islands, and the book is a very useful work of reference regarding them. J. W.

## *PULKOVA OBSERVATIONS OF NOVA PERSEI.*

THE Pulkova Observatory has recently issued[1] a valuable contribution to our knowledge of Nova Persei, which attracted so much attention at the beginning of the year 1901. The observations which are here brought together and discussed were those made by M. Belopolsky, and were, for the main part, chiefly of a spectroscopic nature, both photographic and visual.

Fortunately, the high latitude of the observatory allowed this observer to photograph the spectrum of the star during its lower culmination, so that he was able to secure a complete series of 71 photographs, extending from February 26 to June 4; after this date, long exposures became impossible, and eye observations were substituted. In the first instance, the spectroscope employed was mounted on the astrographic refractor, but later (March 31) the 30-inch was substituted. In the present volume, M. Belopolsky gives a very complete account of each photograph, adding the reduced wave-lengths after the computation by the Cornu-Hartmann formula.

It will be remembered that the spectrum of this star underwent rapid changes, not only in intensity, but in the number and positions of the lines. The numerous bright lines with their dark components gradually became less in number, and when the Nova's magnitude began to undergo the short period light changes, the spectrum indicated a stellar and nebulous stage alternately; eventually, as the Nova grew fainter, the nebular spectrum predominated. All these changes are described in detail by M. Belopolsky, and he further gives the measurements of the width, intensity and displacement of the hydrogen and other lines at different epochs of the Nova's life.

In the discussion of the whole set of observations, this observer comes to conclusions which are different from those that are at present generally held. Thus, for instance, he is not inclined to believe that the displacements are due to movements of the Nova according to the Doppler-Fizeau principle. One of his reasons

[1] Publications de l'Observatoire Central Nicolas, vol. xvii. séries ii., 1902.

against this hypothesis is that, as in all new stars, the dark absorption bands are always on the violet side, and the bright radiation bands displaced towards the red; this implies that the former always move towards and the latter away from the sun, which, as he says, is highly improbable. M. Belopolsky does not consider the displacement of the bright lines towards the red end of the spectrum real at all, but only illusionary, in consequence of their unsymmetrical appearance. This unsymmetrical appearance is due, as he suggests, to the absorption bands, which lie nearer to the violet edges of the bright bands. In fact, he says, "streng gesagt existeren keine Ränder der Emissions-Banden," but that they merge into the continuous spectrum; it is only the existence of absorption bands which gives them their sharp edges on the violet side.

Another point which M. Bolopolsky dwells upon at some length is the apparent peculiarities in the behaviour of the intensities of some of the hydrogen and cleveite gas lines, and he is inclined to attribute these interchanges of intensity to actual changes of the lines themselves. Other observers have been more inclined to explain such apparent abnormal features by assuming that a neighbouring line of other origin was becoming bright, while the original line was on the wane. Thus, for instance, when the hydrogen spectrum of the Nova was dimming very considerably and the lines were all weak, one of the hydrogen lines, $H\epsilon$, on the other hand, was becoming stronger. Since the weakening of the hydrogen lines was accompanied by a strengthening of the nebular lines, it was fair to assume that at, or close to, the position of $H\epsilon$ a new line of unknown origin had made its appearance, especially if it were of a similar nature to the nebular lines.

Enough, perhaps, has been said to indicate the general lines M. Belopolsky has followed. There are, however, many other points, such as the individual structure of the bright bands (M. Belopolsky has divided $H\gamma$ into twenty-four and $H\delta$ into twenty-eight parts), to which reference might be made, but these must be left to those readers who will read the original. Four plates accompany the text, the first two giving in diagrammatic form the intensity curves of the hydrogen bands, and the rest reproductions of the spectra of the Nova, with the terrestrial comparison spectra on different dates. It seems a pity that the latter are so very narrow that it is difficult, even with the aid of a lens, to identify more than the very general features, while one can assume that the originals were full of detail. WILLIAM J. S. LOCKYER.

## THE BRITISH ANTARCTIC EXPEDITION.

THE first news of the British Antarctic Expedition since the departure of the *Discovery* from New Zealand in December, 1901, has been brought by the relief vessel *Morning*, commanded by Captain Colbeck, which arrived at Lyttelton on March 25. Captain Colbeck found the *Discovery* in MacMurdo Bay (Victoria Land) on January 23, 1902; all was well on board and only one serious casualty had occurred—the loss of a seaman named Vince, who fell down an ice-slope into the sea and was drowned. Commander Scott's official report of the voyage of the *Discovery* up to the time of meeting with the *Morning* has been telegraphed home by Reuter, and is as follows :—

The *Discovery* entered the ice pack on January 23, 1902, in latitude 67° south. Cape Adare was reached on January 9, but there a heavy gale and ice delayed the expedition, which did not reach Wood Bay until January 18. A landing was effected on January 20 in an excellent harbour situated in latitude 76° 30′ south. A record of the voyage was deposited at Cape Crozier on January 22. The *Discovery* then proceeded along the barrier within a few cables' length, examining the edge and making repeated soundings. In longitude 165° the barrier altered its character and trended northward. Sounding here showed that the *Discovery* was in shallow water. From the edge of the barrier high snow slopes rose to an extensive heavily glaciated land with occasional bare precipitous peaks. The expedition followed the coast line as far as latitude 76°, longitude 152° 30′.

The heavy pack formation of the young ice caused the expedition to seek winter quarters in Victoria Land.

On February 3 the *Discovery* entered an inlet in the barrier in longitude 174°. A balloon was sent up, and a sledge party examined the land as far as latitude 78° 50′. Near Mounts Erebus and Terror, at the southern extremity of an island, excellent winter quarters were found. The expedition next observed the coast of Victoria Land, extending as far as a conspicuous cape in latitude 78° 50′. It was found that mountains do not exist here. Huts for living and for making magnetic observations were erected, and the expedition prepared for wintering. The weather was boisterous, but a reconnaissance of sledge parties was sent out, during which the seaman Vince lost his life, the remainder of the party narrowly escaping a similar fate. The ship was frozen in on March 24. The expedition passed a comfortable winter in well sheltered quarters. The lowest recorded temperature was 62° below zero.

The sledging was begun on September 2, parties being sent out in all directions. Lieutenant Royds Mr. Skelton and party established a "record" in an expedition to Mount Terror, travelling over the barrier under severe sleighing conditions, with a temperature of 58° below zero.

Commander Scott, Dr. Wilson, and Lieutenant Shackleton travelled ninety-four miles to the south, reaching land in latitude 80° 17′ south, longitude 163° west, and establishing a world's "record" for the farthest point south. The journey was accomplished under trying conditions. The dogs all died, and the three men had to drag the sledges back to the ship. Lieutenant Shackleton almost died from exposure, but he has now quite recovered. The party found that ranges of high mountains continue through Victoria Land. At the meridian of 160° foothills much resembling the Admiralty Range were discovered.

The ice barrier is presumably afloat. It continues horizontal, and is slowly fed from the land ice. Mountains 10,000 feet to 12,000 feet high were seen in latitude 82° south, the coastline continuing at least as far as 83° 20′ nearly due south. A party ascending a glacier on the mainland found a new range of mountains. At a height of 9000 feet a level plain was reached, which was unbroken to the west as far as the horizon.

The scientific work of the expedition includes a rich collection of marine fauna, of which a large proportion are new species. Sea and magnetic observations were taken, as well as seismographic records and pendulum observations. A large collection of skins and skeletons of southern seals and sea birds has been made. A number of excellent photographs have been taken, and careful meteorological observations were made. Extensive quartz and grit accumulations were found horizontally bedded in volcanic rocks. Lava flows were found in the frequently recurring plutonic rock which forms the basement of the mountains.

Before the arrival of the *Morning* the *Discovery* had experienced some privation owing to part of the supplies having gone bad. This accounted for the death of all the dogs. She was revictualled from the *Morning*, however, and the explorers are now in a position to spend a comfortable winter.

As the *Discovery* left Port Chalmers on December 24, 1901, and reached Cape Adare on January 9, 1902, the statement that she entered the pack ice on January 23 is obviously an error; the correct reading is probably "January 2–3."

In addition to the above, the following telegrams have been transmitted by Reuter, under dates March 26, 27, and 28 :—

Captain Colbeck, of the *Morning*, said in the course of an interview that he thought the chances of the *Discovery* being free this season were doubtful.

Nine of the *Discovery's* seamen, who are tired of the