

on the 15th April reached a creek which they named Dunsmore, and which led them on the 17th to Cooper River. The country passed through and explored during the next four weeks in the neighbourhood of the same river was generally of an indifferent character, and towards the east the horses on more than one occasion suffered from want of water. Marks on many of the trees showed that it had been visited. On the 21st of May they reached the station of a settler on the Warigo River; and thence passed by Bumarannah on the Darling on the 2nd of June, to Menindie and Melbourne by the usual route.

3. *Explorations in the Interior of Australia by the Burke Relief Expedition, under Mr. J. M'KINLAY.*

THE South Australian Burke Relief Expedition was originally organised with the view of ascertaining the fate of, and affording relief to, that portion of the Burke expedition which perished upon Cooper Creek, after achieving the task so unsuccessfully undertaken by previous explorers. It left the South Australian capital on the 14th of August, 1861, and reached the confines of the settled districts on the 26th of the following month. On the 27th of September the party, consisting of nine whites and two natives, with twenty-four horses, four camels, twelve bullocks, one hundred sheep, and a dog, crossed Lake Torrens, and fairly commenced their arduous task. Though not at that period occupied, the country to the north of Lake Torrens had been visited by many of the settlers upon the southern margin; and one of them undertook to guide the party to the first of a series of fresh water lakes, about fifty miles in advance. It took several days to reach Lake Hope, as the heat of the weather completely knocked up the bullocks; but by the aid of the camels the expedition was extricated. During the stay of the party at the lake district, an excursion was undertaken with the view of ascertaining the truth of a report that some whites were living upon a raft in one of the creeks in the vicinity. On the banks of the creek were marks of a European encampment; the dung of camels proving that it must have been one of Burke's, while *en route* to or from the Gulf to Cooper Creek. The remains of one of the party, since ascertained to be Gray, and showing traces of a violent death, were found slightly covered with earth and boughs; and at a little distance two holes very like graves. A subsequent visit to Cooper Creek left but little doubt about the fate of Burke.

In the course of December the main camp moved to a double

lake, called Appocaldradille. From this point a scout was undertaken to both north and east without finding water for 50 miles. The party consequently moved on to a deep creek, called Appanbara, where, however, they endured much suffering from heat and bad water. After the first rains in February, it was thought practicable to traverse the stony desert. For some days the route lay along a creek called "Cariduro" (probably Eyre Creek of Captain Sturt), where several traces of Burke's party were found. At this period of the journey the main difficulties were due to the floods, which rise very rapidly, and render the whole country a sea either of water or of treacherous mud. Forced by the flood to continue in a north-east direction, over an undulating stony country, the expedition came at length to vast grassy plains, bounded by volcanic hills, among which were obtained some of the most striking views on the journey. On the 7th of May the party reached the gorge through which the Leichhardt flowed towards the Gulf. On the 20th the camp nearest the sea was made, at a point where the tide rose 8 or 9 feet, and where sea anemones floated past in large numbers. On the 21st the expedition commenced its return *via* Port Denison; and on the 2nd of August, after great fatigues and the loss of most of the cattle, the first station in the settled districts was reached.

The PRESIDENT said that after perusing the diaries of these explorers he was astonished at the difficulties which they had overcome, arising from the want of water for many days and the loss of their horses and camels. The results only and the favourable termination of their journeys had been placed before the Meeting. In order to appreciate the importance of their labours their diaries must be read *in extenso*. He hoped some gentlemen connected with Australia would speak to the great merit of these explorations.

SIR CHARLES NICHOLSON, Bart., said the Papers which had been read gave a very clear and accurate summary of the explorations of these adventurous travellers. He had known Mr. Landsborough for several years, and he believed among the whole of the explorers of the Australian continent he was *facile princeps*; he had known him go into the bush, accompanied by only a single native black boy, and be absent for three or four months traversing a country where no European had ever been before.

The results of Mr. Macdouall Stuart's exploration were certainly very interesting; but in awarding to him the praise which was due to his successful exertions, they ought not to forget the first and greatest of all Australian explorers, the lamented Leichhardt, who twenty years ago made an exploration from Sydney along the whole of the east coast below the Gulf of Carpentaria as far as Port Essington. It was entirely undertaken on his own private resources, assisted by a few of his friends, and it was certainly one of the most remarkable, most extensive, and most successful enterprises ever undertaken in Australia.

With reference to the district lately traversed by Mr. Stuart, north of the northern boundary of South Australia, it was not, strictly speaking, within the jurisdiction of any one of the colonies. In the mean time settlers were pressing out in that direction. Several large parties were about to start from Melbourne and Adelaide with the intention of forming a settlement in that country. It was certainly most desirable that Her Majesty's Government should take some

steps with the view to the organisation of a separate and independent colony in that region. There was every inducement to the occupation of that country. It appeared that there were large tracts of land of the finest possible description available for pasture and agriculture, and therefore capable of being immediately taken up, while on the shores of the ocean there were immense areas suitable for the growth of cotton and various tropical productions. There were rivers accessible to vessels of considerable size. With all these inducements to settlers, unless some decided action were taken by the Government, this country would become a complete Alsatia: people would be migrating thither from the different colonies, taking possession of tracts of land without law, order, or authority among them, and he conceived that the greatest embarrassments and difficulties would ensue in consequence.

It was urged with great propriety that the establishment of colonies ought not to be made a charge upon the Imperial funds. As an Australian colonist, he in common with all his Australian friends believed that this colony of Stuart's Land might be established and placed upon an efficient footing without one farthing expense to the Imperial Treasury. The people who were ready to go there and take up the country were prepared to pay their licences and assessments and to make purchases of land in suitable positions that might be selected for townships. In this way a large and sufficient revenue could be raised to meet the expenses of a local government.

With regard to the Victoria River, it appeared to be the largest tidal river in Australia, the tide rising in it some 30 or 40 feet. With respect to the Roper River, there must be some little discrepancy between the account given by Mr. Stuart and that given by Dr. Leichhardt. In 1844, when Leichhardt crossed all these rivers, the Flinders, the Albert, the Nicholson, and the Roper, he was able to ford the whole of them, therefore it was difficult to conceive how they could be regarded as rivers capable of receiving vessels of any great size.

MR. MARSH, M.P., also bore testimony to the great merits of Dr. Leichhardt, and then referring to the remarks of Sir Charles Nicholson, said he was afraid that gentleman was a little too sanguine about the capabilities of the interior of Australia. His own idea of the interior of Australia fluctuated between a swamp and a desert—sometimes it was one and sometimes the other, according to the seasons.

He was led to this conclusion not only from the history of the colony generally, but from his own observations. For instance, near where he lived there was a large lagoon two or three miles across: very often that lagoon was dry for two or three years together, and at other times it rose to what is known as the present high-water mark. But above that point there was another high-water mark, perhaps some eight feet higher. Between these two high-water marks were trees of very great dimensions, which would have taken forty or fifty years to grow, and which were all dead. What conclusion must be drawn from this? That between these two high-water marks there was no water for any long period between forty and fifty years; that then the water rose to such a height and remained there such a time as to kill these trees. He believed this to be the case with a great part of Australia. Being somewhat of a meteorologist, he had observed that during some seasons the wind from the north-west was always hot and dry, and at other times it would be damp and bring more or less rain. The conclusion he drew from this was that the country to the west over which Stuart and others had passed was sometimes a very wet and swampy country, and at other times perfectly dry and desert. He was, therefore, inclined to think that a great deal of this country which appeared to be very good, the people having passed it at a favourable season, would turn out to be worthless after all. Another circumstance which led to the same conclusion was that there was no elevated land there, and without elevated land there could be no regular streams and no regular supply of water. It also appeared to him,

that although this country came within the wind of the monsoon, it did not come within the rains of the monsoon; and this conclusion seemed to be confirmed by Gregory, who at 150 miles in the interior from the north-west cape of Australia put it down as desert, at the very point where the height of the monsoon ought to blow.

He might also observe that, in the papers read to them, although the explorers crossed the country at a favourable season, the general cry was "Water! water! water!" They came to fine country where their horses could feed, and yet the cry was "Water!" It therefore became a question how far this country would stand being stocked. Everybody who had been in Australia knew that when you first went on to a run and stocked it, no matter what the season was, if there was no water there was plenty of grass, because nothing had eaten it up. But when you came to stock it with 3000 or 4000 sheep, the country would not stand it; they ate up all the herbage, there was no shade for the ground, the violence of the sun and wind got into it, and rendered it more dry and arid than it was before.

MR. SAUNDERS, alluding to the remarks of a previous speaker on the influence of the monsoon upon Australian climate, said he thought it might be demonstrated that the solstitial action of the sun across the centre of Australia was the cause of the north-west monsoon. In approaching and receding from the tropic, the sun is vertical for 60 successive days within the belt of $3\frac{1}{2}$ degrees of latitude, between the parallels of 20° and the tropic. In passing from the lat. of 20° to the equator, the sun only occupies the same length of time; so that he is vertical over the $3\frac{1}{2}$ degrees next to the tropic six times longer than he is over any equal part of the remaining 40 degrees of his course. One result of the solstice is much more intense heat within latitudes subject to it than elsewhere. This was quite sufficient to account for that divergence of the ordinary course of the wind from the south-east trades to the north-west monsoon. He should like to remind the Society that there were two other names that deserved to be held in remembrance among the earlier explorers of Australia. One was that of the late Sir Thomas Mitchell, whose accounts of the country beyond the Barcoo were thought to be almost too enthusiastic to be true, but which the present concurrence of evidence proved to be within the mark. The other was Captain Stokes, who with a boat's crew succeeded in penetrating within the shores of the Gulf of Carpentaria, and unfolded those beautiful lands to which twenty years ago he gave the name of the "Plains of Promise." His language was also believed to be exaggerated; but Landsborough, M'Kinlay, and others had confirmed his description of the country in the most emphatic manner. It should be remembered, too, that Captain Stokes who discovered the Albert was also the first to explore the Victoria River. The recommendation of Sir Charles Nicholson that there should be a separate and independent administration for North Australia he held to be of the greatest importance, partly on the ground of the nature of the population which would be attracted to that region; for in all probability there would be a large Asiatic element to deal with there, demanding a system of administration unsuitable for the European population of the more southern colonies.

MR. CRAWFURD dissented from the views of Sir Charles Nicholson about the capabilities of this newly-explored region for colonization by Europeans, and more especially for the rearing of sheep. Even Mr. Stuart stated that he found the shores of the Gulf of Carpentaria a marshy country, and everybody knew that a marshy country was not fit for sheep. He once had a favourable opinion of Queensland for the growth of cotton; but he begged to renounce that opinion, for he was certain Queensland could never compete with the southern States of America. European labour would be too costly, and it was a mistake to suppose that labour could be imported from the Eastern Archipelago; for those

islands, with the exception of Java, were underpeopled, and the natives would never be got to work. With respect then to the recommendation of Sir Charles Nicholson that Government should form a new colony in North Australia, he hoped the Government would do no such thing, for no European community would be able to live and labour in a region which was within from 10° to 15° of the Equator.

MR. TORRENS said he had recently returned from travelling through the settled part of the coast line, and he therefore felt emboldened to contradict the last speaker in every respect. First, upon the point of forming a colony on the northern coast, he was persuaded, whether the English Government took the matter in hand or not, that a settlement would be founded there in a very short time. He had no doubt stock-holders would soon be on the tracks of Stuart and M'Kinlay, who had been enabled on a first exploration to take cattle and sheep up with them. Three months ago M'Kinlay told him that he took his sheep up there with the greatest ease, that they continued in excellent condition, and that he lost but one ewe on the entire journey, and this he had to leave behind because it was lambing. This was a practical refutation of the opinion of the last speaker that sheep cannot be grown on the Gulf of Carpentaria. Anybody acquainted with Australia knew that it was the first explorer who had the greatest difficulty in providing for his stock, owing to his not knowing where to find water, whereas those who followed his tracks had the advantage of his previous exploration and knew with certainty where they could hit upon water. In illustration of this, he might mention that a large region in the neighbourhood of Lake Torrens, which Mr. Eyre upon his first exploration pronounced to be worthless, was now some of the finest sheep country in South Australia, and grew very large quantities of stock.

He agreed with Sir Charles Nicholson in thinking that it was desirable for the British Government to establish a local government in North Australia. He certainly should regret to see that portion of country inhabited by an Asiatic population; and if there were high table-lands there, such as he had recently ridden over in Queensland, it would be one of the finest climates on the face of the earth for the European race.

He was fully persuaded of the truthfulness of Mr. McDouall Stuart, who described the country as having continuous ranges, and stated that only on one or two occasions had he to pass a single day without water for his horses. From his own knowledge of Australia he was certain that, if a person travelling there for the first time could say thus much, a man who had been settled in the country long enough to look around and explore the water-courses never need pass a day without water.

From the adaptability of the country for colonization, he thought a colony might be founded there without costing Great Britain a shilling, and he endorsed unhesitatingly what had been said, that the colonists of Australia did not desire one shilling to be expended in founding colonies in that part of the world. There would always be found capitalists ready to advance the first outlay upon the security of the Crown lands of the country; and upon such a system he yet hoped to see a colony founded in Northern Australia so as to prevent those disastrous consequences arising, not only to settlers but to the natives, which would certainly arise unless order and good government and British institutions were imported into that country.

MR. ALFRED WALLACE said he had never visited Australia, but he was well acquainted with some of the adjacent countries which had been alluded to in the course of the evening. He would, therefore, state a few facts, the result of his own experience, which might guide them in forming an opinion as to the availability of Northern tropical Australia for colonization. Two points had been mentioned on which he wished to offer an observation: one was that labour could

be obtained from the Indian Archipelago, and the other that sheep-farming would probably succeed in that district. With regard to the first point, he quite agreed with Mr. Crawford in saying that there was not the slightest hope of obtaining any labour from those islands. The inhabitants were exceedingly few in number and they were extremely lazy: it was impossible to make them work, even in their native islands, and they would not leave their own country to labour elsewhere, except perhaps to live on the seacoast and obtain their livelihood by fishing. The only people who could do the labour were the Chinese; but there were many difficulties connected with them which would not perhaps render the importation of the Chinese advisable. The next point was that the district which it was proposed to colonise was not only tropical but almost equatorial in its character, the Victoria River being in 15° south latitude. He did not believe they would find any country in the world within 15° of the Equator in which the European wool-bearing sheep could exist; consequently the colonists who went to that part of the country with the intention of commencing sheep-farming would be exceedingly disappointed, because even in the more favourable island of Timor, which closely resembled Australia in its physical characteristics, the sheep had no wool. Sheep brought from Australia for the purpose of experiment began to lose their wool after they had been there a year, and in a tropical climate like that they made no fat, which was the only other commodity for which sheep were valuable. Therefore if the wool turned to hair, and if the fat went away, he did not see how sheep-farming could be carried on with success.

SIR CHARLES NICHOLSON, Bart., said no such proposition had ever been made as the importation of native labour from Timor; and as to the possibility of sheep living within the tropics, he believed at this moment there were upwards of a million of sheep actually being pastured within the tropics in the highest possible condition.

MR. HOOD thought some of the gentlemen who had addressed the Meeting were very much astray with regard to the prospects of North Australia. Mr. Marsh seemed to think that the monsoon could not be depended upon in North Australia. He was quite correct, because for several years the tropical rains never reached so far south as Rockingham Bay. But that very fact made tropical Queensland more valuable as a pastoral country and capable of being inhabited by Europeans. In the tropic of Capricorn, at the river Harris, which is about 800 feet above the sea, in the month of September ice has been found two inches thick at twelve o'clock in the day. This peculiarity in the climate from the great radiation makes it exceedingly healthy for the human race, and an excellent country for sheep. This newly-discovered part of Australia promised to be valuable not only as a wool-producing country, but in many other ways. Considerable quantities of gold had been found at several points. There were also large outcrops of copper, in one instance presenting a mass 2000 yards long, 28 feet wide, and 6 feet in height. No one could well conceive the hardships and difficulties which beset first explorers, owing to the uncertainty of procuring water. Landsborough's expedition had been conducted with almost more success than any other had ever attained; but he thought the palm ought to be given to Mr. Stuart.

THE PRESIDENT said before he closed the Meeting that he was very happy indeed to find Australian gentlemen of such intelligence as Sir Charles Nicholson and Mr. Marsh testifying to the great desirability of establishing a colony upon the north coast of Australia. He was proud to think that many years ago he had advocated the establishment of a colony on the northern coast, so that Great Britain might be in possession of the four sides of that vast continent. Mr. Augustus Gregory's expedition had successfully demonstrated that sheep could flourish in that region. He took a large flock of sheep there; they

remained there eight or nine months, and no sheep died. And yet this was the country which Mr. Crawford and Mr. Wallace both said was unsuitable for sheep. Those gentlemen spoke from their experience of India and of the Eastern Archipelago; but they had forgotten the law of isothermal lines. They had forgotten that India was subtended by the ocean, which conveyed heat to lands in the latitude of Madras, while in the very same degree of latitude, south of the Equator, there were great tabular masses of land, which tempered the heat. We had in this physical fact the explanation why sheep and other animals could flourish in that latitude in Australia. The testimony of Australian gentlemen who had visited the country confirmed this fact. To return to the question of establishing a colony in North Australia, he would point out that at the mouth of the Victoria River there was the largest bay along the whole coast, capable of affording an anchorage for large fleets. He had already directed the attention of Government to the subject, for he certainly agreed with Sir Charles Nicholson and his Australian friends that it would be advisable to establish some sort of government there, inasmuch as numerous colonists would be flocking there, and, unless some authority were established, the results might be lamentable.

Ninth Meeting, March 23rd, 1863.

SIR RODERICK I. MURCHISON, K.C.B., PRESIDENT, in the Chair.

PRESENTATIONS.—*The Rev. Thomas Scott, and H. D. Skine and A. H. Barford, Esqrs., were presented upon their Election.*

ELECTIONS.—*Captain Hugh Talbot Burgoyne, R.N., V.C.; Lieutenant the Hon. John Carnegie, R.N.; Lieutenant Charles James Forbes Smith; Rev. Richard Greaves; Rev. Henry F. Tozer, M.A.; Philip Anstruther; Christopher N. Bagot; George C. Brodrick; John Henry Challis; Edward Henry Leveaux; R. Jasper Moore; and Thomas Turner, Esqrs., were elected Fellows.*

ACCESSIONS.—Vol. xxi. of the Transactions of the New York State Agricultural Society; Ordnance Map of Montenegro; Map of the Isthmus of Kraw, presented by Mr. Wise; and the 12th Part of Philip's Atlas, &c., &c.

The PRESIDENT read a letter from Mr. W. Finke, of Adelaide, announcing that the colonists are fully alive to the importance of the discoveries made by Stuart. A private company had already been organised for the transport of stock (sheep, cattle, and horses) overland to the newly-discovered country on the north coast, in Van Diemen Gulf. The party will start in April, overland; and a vessel with supplies will be sent round to meet it on the north coast.