of making them, and understanding them rapidly and correctly, are essentials of the highest moment. The engineer is wholly dependent on exact representations of both the horizontal and vertical features of the surface in many of his most important operations, and not less on a proper knowledge of the climate, the rainfall and the natural productions, mineral, vegetable, and animal, of the countries in which he is called on to carry out those operations. The physician must be possessed of a corresponding knowledge of the places to which he sends his patients in search of health, and must discriminate between the characteristics of climate due to geographical position and elevation above the sea-level. To the trader geography supplies information as to the condition of foreign countries to which he sends his merchandise, or from which he draws the commodities in which he deals; it will indicate the most convenient routes for commerce, and open the way to new markets, and to fresh fields from which to obtain articles of utility or luxury. The emigrant seeks from geography direction to a country suited to his capacities and his constitution.

Geography furnishes the key by which to interpret many events of the past, and problems of the present, and supplies the rough materials from which to build up the great structure of natural science. Through its aid, moreover, an instrument of research, otherwise unattainable, may be to some extent provided for the study of physical phenomena. In dealing with many of these, no such control of conditions is within our power as that exercised in some branches of inquiry, whereby it is possible to verify conclusions by the aid of experiment, to vary the conditions of investigation at pleasure, and to draw inferences from the varying results under the changed conditions. But this want may be partly supplied, and a substitute obtained for the power of direct experiment, through observation of the effects produced by the physical forces of nature, under the varied conditions that follow variation of geographical position on the globe.

The application of geographical considerations to the study of meteorology, which led to the use of synoptic charts exhibiting the atmospheric conditions at a given moment over a considerable area, was the immediate cause of the great advance in the interpretation of changes of weather that has taken place during the last fifteen or twenty years. The accumulation of knowledge from various countries, of various forms of life, and of the different conditions under which they are found, could only have been obtained by means of geographical exploration, and it was this, without doubt, that rendered possible the remarkable generalisations of Darwin and Wallace, as to the origin and distribution of species.

I have now discharged the task that I undertook. It remains for the University to carry out in a manner worthy of its reputation the objects which the appointment of a lecturer on geography, w

designed to meet. The instruction given will doubtless supply all needful corrections of the views I have advanced (for I am conscious of very insufficient knowledge of many parts of the numerous subjects to which it was necessary for me to refer), and fill in the outlines beyond which it has been impossible for me to go; supplying illustrations of the particular relations of the geographical conditions of the various parts of the earth with the chief classes of phenomena which they control or influence, whether falling within the range of natural science, history, or the economical interests of man, and keeping constantly before the student, by suitable examples, the necessary interdependence of all that is seen or done on the earth.

I am confident that by these means the University may become instrumental both in providing teachers better qualified to diffuse sound geographical knowledge through all classes of our countrymen, and in training travellers better able to extend that knowledge; objects which are among the special aims alike of the University, and of the Society which I have the honour to represent.

---

*Mr. F. C. Selous's further Explorations in Matabele-land.**

Map, p. 324.

We have received the following letter from Mr. Selous, giving some details of his latest journey through Matabele and Mashuna Land, and notes in explanation of the valuable map of the region which accompanied his letter and which we now publish:—

Zeerust, Marico, Transvaal, *January 5th*, 1888.

I have just returned from a hunting trip in the Mashuna country with three English gentlemen—Messrs. J. A. Jameson (brother of the Mr. Jameson † who was out here in 1880), A. C. Fountaine, and F. Cooper. We have travelled over a large tract of country in search of game, and I have worked out a rough map of the whole country, based upon Mr. Baines's observations, which I have assumed to be correct, and including my previous journeys in Matabele-land. This map I now send you, hoping that it may be of use to the Society. I had a very good prismatic compass given me by Mr. Jameson, with which I took bearings wherever I could, but in some parts of the country it is impossible to do so, as there are no landmarks or hills of any kind. I have made the distance by my reckoning almost exactly the same as Mr. Baines between Lo Magondi's and Mount Wedza, and the error in the compass may account for the difference in the positions of places on his corrected map, and as I have found them by my compass bearings. I have taken

* *Vide* 'Proceedings R. G. S.,' 1881, pp. 169 and 352; 1883, p. 268; 1884, p. 284.

† Mr. James S. Jameson, who joined, as naturalist, Stanley's expedition for the relief of Emin Pasha.

the positions of Lo Magondi's town and Mount Wedza as they stand in Mr. Ravenstein's last map as my basis in that part of the country, and then filled up the country between; and as I have now travelled all that country by several different routes, I cannot think that I am very far wrong in the way I have marked down the courses of the various rivers.

We went again this year to the confluence of the Umfuli and Umnyati rivers, and came straight back from there by a native footpath to Lo Magondi's town. When Mr. Jameson and I reached the same spot in 1880 we travelled all along the bank of the river over a very rough country, and I overestimated the distance. This year, coming back as we did in a straight line on a native footpath, I was better able to estimate it, and have accordingly placed the junction further south, and more correctly I think than I did at first. With regard to Thaba Insimbi, there are two ranges of hills lying approximately as I have marked them. Mr. Baines, whose route lay to the west of the Machabe range, and then round up the Umfuli, and Lundaza and onward to Umtigesa's, *could only have seen the one range*—the more easterly. Let me here say that I always find the country exactly as Mr. Baines marks it *on his actual route*, but directly one gets off his line mistakes appear. As for Herr Mauch's routes, I can make nothing of them. Either he never travelled on some of them, or the whole face of the country has changed since he was there. For example, on Mr. Ravenstein's last map you will see, near the head of the Bembeesan river, a place called Tabuka's, by Mr. Baines, and some distance to the south of it a place called Muzigaguva, on one of Herr Mauch's routes. Now Madabuga (Tabuka) and Muzigaguva were two headmen of Mashuna villages, the said villages being close together, not half a mile apart. These people were destroyed by the Matabele in 1883. Indaima's kraal, another Mashuna headman, Herr Mauch has put on the wrong side of the water-shed. The town stands near the river Tukwe, a tributary of the Lumti, and not on the Bembeesan, where Herr Mauch has placed it; the site of the town is the same now as it was forty years ago. The source of the Sebakwe is about where I have placed it too, about halfway between Sigaro and Umtigesa's. Father Law took an observation at Sigaro in 1880. We crossed the Sebakwe close to that place this year, and I rode up nearly to the source of the river on horseback—a long journey.

At Sinoia, near the river Angwa, there is a very wonderful place. It is an immense circular hole, about 100 feet or more in depth, and 20 yards or more in diameter, at the bottom of which there is a lake or pool of water extending for 60 yards or so in an immense cavern, under the rock. The water in this pool is of a most wonderful colour, a deep cobalt blue, but very clear, as one can see pebbles at the bottom at a great depth. There is a slanting shaft or tunnel running at an angle of about 45°, from a point about 100 yards from the top of the hole, which strikes the bottom of the hole just at the edge of the water. We are inclined to think that all these excavations are the result of old gold workings, and that a vein of quartz has been worked out down the tunnel, and that eventually a spring was tapped, and that the water forming the subterranean lake, has welled up from below. If the whole thing is artificial, and the work of man, a truly extraordinary amount of labour must have been expended in this place. The natives have now built a stockaded town round this old working, or whatever it is, and go down the tunnel to draw water at the bottom. We went and bathed in it, swimming up the cavern to the other end of the pool. The water was quite warm. The rock on each side of the tunnel is covered with innumerable scores, which look as if they had been done with some kind of iron instrument. The natives have no tradition about this most curious place, but they have no traditions of any kind, not even about the large lemon and citron groves—the trees covered with fruit—which one finds in this part of the country.

Mr. Fountaine and myself climbed to the top of the most easterly, and, I think, highest peak of Mount Wedza, and found by the aneroid that it is 1750 feet from the base to the summit. The whole mountain is a mass of very rich ironstone, and we could take no compass bearings at all, as the compass would not work. I took the heights by my large aneroid all over the country, but I will not answer for their correctness. As a starting-point I took Kerr's altitude at our camp [on the Hanyame], 4050 feet, to be correct *

You will find that I have marked on the map all the rivers running westwards from the Matabele country into the Gwai (or Guay) somewhat differently from what they appear on the published maps. My authority is Mr. David Thomas, now dead, a son of the missionary Mr. E. M. Thomas. He made several hunting trips from his father's place, Shiloh, between Emhlangen and Gubuluwayo, to the Zambesi, and found the position and course of the rivers as I have marked them. When I came back from the Zambesi to Emhlangen early in 1878, I crossed the Rutopi (Utopo) near its source, and thought that it probably ran into the Gwai, but from what David Thomas told me, I feel sure that it runs into the Sengwe.

I am now going to cross the Zambesi with my waggons at the junction of the Chobe and Zambesi, and intend to go up to the Barotse country, as I am tired of the region south of the Zambesi. I intend to spend a couple of years in the wilds, hunting and collecting, and shall then, I think, return to England.

CAPE TOWN, *January 27th*, 1888.

I have had three copies made here of my map by the Surveyor-General, Mr. de Smidt—one I have given to him, the second to the

* *Vide* 'Proceedings R. G. S.,' 1886, p. 68.

Governor, and the third I am sending to you, I myself keeping m original. I had another sheet which I wished to send you, with a seco map made out according to my compass bearings, but somewhere betwe Klerksdorp and here it has got lost, having no doubt slipped out of th centre of the roll in the middle of which it was. If I have time when get back to Klerksdorp, I will make out a second copy from my not book and send you. The map I am now sending you is one of a countr which is bound to be of great importance in the near future, for ther is an alluvial gold-field of large extent and wonderful richness—I spea with some authority, as it has this year been roughly tested with reall extraordinary results—backed by a country of great fertility, an watered most plentifully. However, please understand that my map only a sketch-map, and lays no claim whatever to scientific accuracy I believe it will be found by any one visiting the country to be a fairl correct map in a rough way, but that is all.

Note by Mr. Turner.—Whilst engaged upon the accompanying ma illustrating Mr. Selous's letter, it occurred to me that the following extract from a report by Lieut. E. A. Maund, published in Blue Book C —1643, February 1886, with reference to the altered situations o Gubuluwayo and Inyati, which does not appear to have been referre to elsewhere (except in a new French gazetteer), might perhaps b appropriately introduced here, as explaining the discrepancies in th positions of these towns as shown in various recent maps of this region.

In describing the division of the Matabele country into four militar territorial divisions, he states, on p. 115:—"Each regiment on formation receives a kraal named after it. This is the only kind of Matabele town existing. These kraals are posted near water, and when they have destroyed the wood for miles round, or there is not sufficient water o pasture for the cattle, as they increase by pillage or breeding, then th kraal is burnt, and the regiment builds another in a fresh bit of country A large kraal or town can occupy a place for about ten years. This will account for Inyati having removed from the place marked as such o the maps. Emhlangen is the name of the place [still retained for the station of the London Missionary Society], and the Inyati regimental kraal is now 50 miles to south-east of it, hence the name of the new site is for the time being Inyati; while Gubuluwayo is 18 miles north of the position it occupied four years ago."

This Blue Book includes several official reports, containing a con siderable amount of geographical information and description of the tribes, with the capabilities of the soil, in the country to the west and north of the Transvaal, not otherwise available.

GEOGRAPHICAL EDUCATION IN TRAINING COLLEGES AND ELEMENTARY SCHOOLS.

The following letter on the subject of the prizes offered by our Society for geographical proficiency to the students of Training Colleges, has been received by General Sir Beauchamp Walker, one of the delegates of the Council in connection with the recent examinations for the Society's prizes:—

"Education Department, *Feb.* 25, 1888.

"Dear Sir Beauchamp,

"We have pleasure in fulfilling the promise made to you and to Sir Peter Lumsden in the course of our yesterday's interview.

"We cordially appreciate the judgment and liberality displayed by the Council of the Royal Geographical Society in offering prizes for proficiency in geography to the Successful Candidates at the Certificate Examination; and we believe that the scheme will have an excellent effect both on the students in the Training Colleges, and on the professors and lecturers in those institutions.

"As you are probably aware, the examinations for certificates are not competitive; and no prizes or honorary distinctions are awarded by the Department to the best candidates. All who pass become provisionally entitled to recognition as masters or mistresses of public elementary schools. It may interest you to learn that last year 1383 young men came up from 18 Training Colleges, of whom 534 passed in the First division, 698 in the Second, and 149 in the Third; and that at the same examination 1854 female students presented themselves from 26 Training Colleges, of whom 516 passed in the First Division, 1139 in the Second, and 189 in the Third. The Department does not prescribe books or methods, but publishes each year a syllabus indicating in general terms the scope and character of the Certificate Examination.

"The subject of geography is for the most part taught with much care and intelligence in these 44 Colleges. The instruction is mainly oral, and is given in the form of lectures and conversations, supplemented by text-books, maps, apparatus, and books of reference. The maximum number of marks assigned at the annual examination to Geography is 75; and the papers which you saw yesterday were fair though not exceptional samples of good papers, to which marks ranging from 60 to 70 had been awarded. If it be borne in mind that the average marks attained by the whole 3000 students lie between 45 and 55, you will be able to form a fair estimate of the general level of success reached in the teaching of this subject.

"Having regard to the number and variety of the subjects necessarily included in the Training College course, and to the importance of allotting a due share of time and attention to each of them, your Council will probably agree with us in thinking that the object of the prizes offered by the Society should not be to claim additional and disproportioned effort on behalf of the one study of Geography, but rather to give honourable recognition to the exertions of the best students and teachers of that subject, and to keep before them a high standard of excellence, in regard both to the knowledge of Geography and to the methods of imparting that knowledge in elementary schools.

"In considering how this object may best be attained, it has occurred to us that some slight modifications may be desirable in the proposals of the Society, as they were at first formulated in the letter of General Strachey, addressed to this Department on the 15th of March last. Any suggestion, however, on this point may be properly reserved for the present. After some experience of the working of the plan,