

speak of it, and in doing so I can hardly do better than use words of my own, which I have used in another place.

"Geology is not merely interesting on account of the revelation which it affords of the past; it is also intimately associated with the history of the present. The great charm of physical geography lies in the fact, that it enables us, in some measure, to understand the operations of Nature, which are daily going on all around us, and to discover the laws by which these operations are governed. We see the intimate connection which exists between the soil and the climate of the globe, and the distribution of organic life. The climate, again, depends not only on latitude, but also upon winds, oceanic currents, the distribution of land and water, and the nature of the surface. Now, geology enables us to go back still further in the chain of causation. It teaches us that the nature of the soil depends upon the character of the rocks which lie beneath. It explains why some districts are rugged and mountainous, while others are level and undulating. It shows the great changes that have taken place in the distribution of land in the past ages, and the causes of those changes. It explains why some countries are rich in minerals, while others are comparatively destitute; and it explains also the formation of the rocks themselves, and of the minerals imbedded in them. It even throws light upon the present distribution of vegetable and animal life. In short, it is scarcely too much to say that physical geography is only half complete if it be not explained and supplemented by the sister science."

#### *Astronomy.*

And just as we deem some knowledge of geology essential to a complete knowledge of physical geography, so also we think it ought to embrace the outlines, at least, of astronomy. The daily and annual motions of the earth, the tides and the seasons, are of course closely connected with geography; but our pupils ought to learn something also of the earth's position in space. They should be taught to realize that it is but one of many planets that revolve round the sun; that some are nearer to the central luminary while others are more remote; that other planets have moons and atmospheres, and the regular recurrence of day and night, summer and winter, just as the earth has; and that the sun itself is but one of myriads of stars, each of which has in all probability, a system of planets revolving round it. We should also point out how the sun is the great centre of the heat, light, and magnetism; and that, just as any great changes on the surface of the sun are at once felt upon the surface of our planet, so it is most probable that changes daily taking place on the earth's surface react upon the sun; and that thus we are led to realize the truth which Carlyle impresses upon us. "Not a leaf rotting on the highway but is an indissoluble portion of solar and stellar systems."

#### *Oral Teaching.*

A question sometimes arises as to the comparative merits of oral teaching, and the use of text-books. My own opinion is, that both methods should be adopted; but that in teaching physical geography, oral instruction should precede the use of books; while, in general geography, text-books should first be used. Physical geography deals mainly with principles which need explanation and illustration, and these can best be given orally. But after any branch of the subject has been fairly grasped by the pupils, it would be well to place in their hands a text-book in which they could find the information they have already learned, put in a concise and systematic form. On the other hand, descriptive

geography deals largely with facts, and these might, in the first instance, be "got up" by the children, and would serve as a basis on which the teacher could enlarge from his greater store of knowledge. And here I would lay stress upon the importance of comparison; every fact learned should be referred, whenever possible to some object with which the pupil is acquainted. The explanation of the unknown by reference to the known is a valuable principle; and comparison has the further advantage of associating ideas, and thus aiding the memory. England will, in many respects, form a good standard of comparison; for apart from its being the country with which we are best acquainted, it has some special advantages. The number 50 plays a striking part in its geography. Its area, exclusive of Wales, is 50,000 square miles, and this will be found a convenient unit in estimating the size of other countries; the parallel of 50° north just touches the south coast of Cornwall; the isotherm of a 50° passes through Dublin and London, and may be taken as the average temperature of the British Islands.

It will be found useful, also, occasionally to give special oral lessons on passing events, such as the discoveries of Cameron, the voyage of the *Challenger*, and the recent Arctic Expedition. Such lessons give a reality to the work done in school, and link it with the affairs of practical life; beside they arouse the interest of children and cause them to enter into their ordinary geographical studies with greater zest. And, if you once get your class to feel an interest in their work, it is wonderful how rapid is the progress.

#### *Text Books.*

It is generally admitted that there has been a great improvement in text-books of all kinds during the last twenty years. Still they are far from being perfect; and, in geographical text-books especially, I am afraid we crowd in too many facts, and do not always make a judicious selection of them. It is true, that with school children, as a rule, memory is the strongest faculty, and there is no great harm in giving it plenty of exercise. But we should take care that the facts which we ask them to learn are suitable, and not such as they will be sure to forget as soon as they leave school. We should impart to them such knowledge as they can assimilate. Their mental appetite is, indeed, vigorous, but we should not, when they look to us for bread, give them a stone.

Next to memory, perhaps the imagination is the most strongly developed faculty in a child; but this fact is generally overlooked. Our text-books are too often crowded with dry, uninteresting lists of facts and names, and seldom with any attempt at description. Of course, a text-book cannot admit of description to any considerable extent, but something may be done. In treating of the surface of a country, for example, instead of giving a number of isolated facts respecting the heights of the mountains, and extent of the plains, we might describe the surface, and so endeavour to place before the mind of the reader the appearance which the country actually presents. Again, with respect to towns and other places, we can seldom give a long description, but we may very often link the name with some striking event or celebrated person. Mr. Quick, in his valuable work on *Educational Reformers*, remarks how popular with boys are books of travel; "but," he goes on to say, "as boys are engrossed with the adventures, and never trouble themselves about the map, they often remember the incidents without knowing where they happened." Now it is important to remember this, and it is one reason why we should seek to associate the names of places