

and the Southern Cross is always over the same house or tree or other terrestrial object, and at the same height. If the globe representing the earth be fitted with an axis, it may easily be shown that the axis must always point nearly in the same direction. Appendix.

Using the observed facts that the altitude of the sun is much greater in summer than in winter, and employing the models already referred to, the teacher can readily explain that the axis of the earth is not at right angles, but is tilted to the plane of its orbit. If a small piece of paper be fixed on the globe to mark the position of the school, and the globe made to revolve (keeping the southern pole uppermost), the length of time the paper is visible from the position of the sun will explain the varying length of the day at different times of the year. The actual length of the day should be observed, and should also be calculated from the times of sunrise and sunset given in an almanac. The six months' night at the poles may be explained from the models.

The explanation of the seasons naturally follows. The mean temperature at different times of the year should be found. It is recommended that the temperature in the shade should be recorded each day (say, at 9 a.m., at noon, and at 3 p.m., or, if possible, at 5 p.m.), and also the temperature in the sun at noon; and that the corresponding mean temperatures for each week and each month should then be found.

Each teacher must decide for himself whether he can clearly and usefully cover the whole of the ground indicated above. It is absolutely essential that the various steps should be taken at reasonable intervals, time being allowed for observations to be repeated and for the meaning of observations taken to be grasped by the minds of the children. Each of the observations suggested occupies only a comparatively short time. But no attempt should be made to teach mathematical geography in one series of lessons in a few days, or even weeks or months. The rule must be, strictly, one step at a time; and at every step co-ordination should be made with matters of direct human interest. The explanations cannot be given effectively without the use of a globe or ball, and it would be of great service if each child or pair of children had a small globe for the earth, with another globe or ball to represent the sun. Most of the work is, of course, of such a nature that children in a primary school cannot be expected to give formal written answers to questions upon it; all examinations should therefore be taken orally, with the models actually before the class.

#### *Political Geography or Social and Commercial Geography.*

Unless step by step throughout the course the lessons in physical and mathematical geography are linked with the lessons in social and commercial geography the former will be to a large extent aimless, and without real human interest to most of the children. This part of the subject should therefore be taken in each year of the Senior Division—indeed, it should be begun, in the form of simple stories of travel and adventure told by the teacher, in the Junior Division. If geographical readers are used, the reading lessons should be explained fully by the aid of maps, and, where possible, of pictures and other accessories.

The course should consist of lessons on some of the following subjects, as shown in the program presented by the teacher in accordance with the syllabus.

New Zealand: (1.) Its natural productions of geographical or commercial interest—*e.g.*, ores and minerals, rocks, insects; birds and other animals; plants, native and introduced. (2.) Influence of the position, soil, climate, and natural productions of New Zealand upon the occupations, trade, and general life of the people; internal and external communication.

The five zones; their climate; animals and plants characteristic of each—*e.g.*, regions of pines, rye, wheat, maize, rice, and also of gooseberries, apples, vines, figs, oranges, bananas, palms, pineapples, dates, coconuts; habitat of the polar bear, reindeer, whale, buffalo, camel, elephant, lion, tiger, ostrich, and also of the kangaroo, crocodile, seal, herring, cod, penguin, shark, humming-bird.

Alluvial plains and valleys; areas of cultivation on the world's surface; wheat and chief wheat-producing countries; other articles of food-supply—*e.g.*, maize, rice, meat, fish, butter and cheese, sugar, tea, coffee, fruits, &c.

Coal, iron, gold, silver, petroleum: where found; effect on manufactures, industries, and prosperity of various countries.

Cotton, wool, silk: where most largely produced and manufactured. Other important animal products, such as leather, ivory, &c.

Timber, different kinds of; other vegetable productions, indiarubber, &c. The different races of men, and where they live; their houses; degree of civilization; effect of climate and other physical conditions on civil-