

may be of the greatest practical advantage to our country. Millions of dollars' worth of crops are destroyed yearly by insects; and their ravages will never be successfully prevented till their habits are fully understood; and these habits can only be learned by patient observation.

Children should early be trained to observe and to describe accurately.

In making collections of insects, it is well to get the larvæ and pupæ, as well as the imago or adult insects. Many specimens of cocoons—that is, pupæ with silken coverings—may be obtained from the bushes and trees during the winter; these may be kept in a cool room till the imago comes forth; and then the collector has both the cocoon and perfect insect for his collection; and thereby he also learns what kind of an insect comes from a given cocoon. Larvæ and pupæ may be preserved in strong alcohol; cocoons may be kept in little boxes, or pinned to the bottom of a shallow box; and the perfect insects may also be pinned to the bottom of shallow boxes.

In catching insects, one needs to use a light net. Beetles, bugs, grasshoppers and the like, may be killed by putting them into alcohol. Butterflies, moths and the like, may be killed with one or two drops of benzine on the head. The insect should be killed before putting the pin through it. Beetles should be pinned through the right wing covert; other insects through the thorax. The cases in which insects are preserved, should be made to shut tight, to keep out the dust and little insects that like to prey upon such collections. A piece of sponge saturated with creosote and pinned to the corner of the box or case, drives away those little pests, which otherwise infest zoological collections and do great damage to them, and sometimes utterly destroy them.—*Prof. Tenney in Iowa School Journal.*

2. DISCUSSION AT THE EDUCATIONAL ROOM, BOSTON, ON THE TEACHING OF GEOGRAPHY.

Mr. ARWOOD, of Milton, Chairman of the meeting, opened the discussion, saying that this study is pursued with two objects in view. First, to secure a knowledge of places, and second, as a means of mental discipline. In order to accomplish the first end, some have deemed it sufficient to ask specific questions, which result in the attainment of isolated facts alone. Such an unsystematic method may be useful to mature minds, or may be advantageous in occasional reviews, but when the child is to pursue a course of study in this branch, it will tend to confusion and indefiniteness of ideas. In order to accomplish both the designs of this study, there must be a regular progress from the general to the particular, and also the contrary. In Germany, the children are first taught the geography of their own locality; its elevations, levels and depressions; its waters, moisture, temperature and climate; its soil and its mineral, vegetable and animal productions; its people, with their occupations, condition and form of government. In addition to this, the earth as a whole should be studied, and its grand divisions so accurately known that correct outline maps could be readily drawn. Then, as the interior is learned, maps presenting the natural conditions of the country should be prepared, and as knowledge of the political divisions and location of prominent cities is acquired, the pupil should illustrate his attainments by his delineations. More can be learned by the aid of map-drawing and mapping in a single day than can be in many without them.

Mr. PAYSON. In this study, as in all others, the main point is to secure interest in it on the part of pupils, and when this is done, there can hardly be any method of teaching which will not be successful. The text-book which is used ought never to be considered the only source of information, although it should be the best school geography known. Scholars should be encouraged to acquire from every source such matters of fact or history as will add to the vividness and reality of their knowledge, and the teacher should be even more assiduous than they in attaining the whole subject under consideration. I know a teacher who gives topical instruction, and, subordinate to the topics, brings into her room one or two hundred questions upon them of her own preparation. These she writes upon the blackboards, and the pupils occupy portions of a day in learning to answer them. The next day they are answered very well, and the exercise is made very interesting. Geography may become a dull and useless study if the teacher does not use her best efforts to make it attractive and pleasing.

Mr. METCALF, of Boston. What shall we teach is the question of chief importance. Our text-books present the subjects according to the arrangement of the author, and often in an order which is ill-adapted to the wants of a school. They contain many pages of matter which is of little importance, and omit things of moment. I would not have pupils commit much of the book to memory; nor would I be bound in any respect by its methods or contents. The form of a country should be so well learned that it could be drawn

promptly and accurately. Its water and land boundaries should be well known. Then, inside of the country, I would have the surface considered; the slopes, with the river basins, and the rivers and lakes; and in connection with these, some knowledge of the geological structure should be acquired. Then, with the outline map before them, the soil in different regions may be determined, and the climate ascertained. From these the productions can be readily known. The course and character of the country's drainage should be made a means of determining why many commercial cities and manufacturing villages have been located where they are. At a later period, the boundaries of States, and the condition and occupations of the people are matters of great importance. For accomplishing this work, the lessons should be short and definite, and the teacher must spend abundant time in preparation.

Mr. SMITH. Geography will not be taught in the best manner unless some history is united with it. This fact is hardly recognized in our text-books, and yet the relationship of geography to civilization is apparent to nearly everyone, as soon as his attention is called to it. What can be more interesting than to observe how a country has made its people what they have been and still are, how the occupation for ages has been determined by the locality, and the possibilities of advancement have depended upon the natural opportunities of commercial intercourse? The geography of America cannot be learned unless we have a record of early explorations, discoveries and settlements; nor can a country, city or place, be known, unless we have considered the circumstances of its early history; the great men who have lived there; the great deeds which have been performed; the fruits of enterprise and the memorials of its past. The geography of any region will be barren if it does not abound in the records of what man has been and has done there.

Mr. PUTNAM. Map drawing is all important in the study we are considering, but to be useful, it must be practical. Very nice maps upon Bristol board are interesting to visitors, but are not especially profitable to pupils. In my own school, my assistant has for some time been combining geography and history with great advantage in respect to both branches. The pupils are studying the history of our late rebellion. Each of them has prepared an outline map of the United States upon ordinary drawing paper, and with these before them, they study their history lesson under the teacher's supervision. Whenever a town or city is mentioned, its exact locality is determined, and it is represented upon the map. Wherever a battle was fought, a flag is placed; if erect, it denotes a federal victory, if inverted, a federal defeat; beside it is placed the number and day of the month, and the year. Thus, the defeat of the federals at Bull Run on the 21st of July, 1861, would be represented thus: Bull Run, $\frac{1}{2}$ —61, with an inverted flag. The scholars are allowed to learn as many of these dates as they can without pressure. By this course, the pupils are becoming perfectly familiar with the geography of the South, and its recent history; and each branch is proving an inestimable aid to the other. The wall-maps found in nearly every school afford important help in the study of geography, if used, as it was designed they should be.

Mr. WILLIS. There is one branch of this subject which has proved very interesting to my pupils, and which I venture to call comparative geography. The term might be applied to all points of likeness or dissimilarity between countries, regions or states. To illustrate: years ago, I met somewhere with this arrangement of the areas of the grand divisions, and it has proved of great service, being accurate enough for all ordinary purposes. Europe, area, $3\frac{1}{2}$ millions of square miles; South America, 7 millions, or twice as large; Africa, $10\frac{1}{2}$ millions, or three times as large. Then North America has 8 millions of square miles; and Asia has 16 millions, or is twice as large. I have since ascertained that Australia is about the same size as Europe. Is it commonly thought that Arabia is as large as all of the United States east of the Mississippi; that Newfoundland is equal in area to New York State, and Lake Superior equal to Ireland? How many have noticed that Illinois has a length equal to the distance from Albany to Richmond, and that California stretches through the same ten degrees of latitude which separate Boston from Charleston, S.C.? Scholars are surprised on learning these facts, and a few such occasionally presented will make them watchful for like resemblances. One cause of ignorance and error in these respects arises from the varying scales of miles, according to which different maps in the same atlas are prepared. If Massachusetts, Rhode Island and Connecticut, make as large a map as Great Britain and Ireland, the child is apt to consider them of about the same size, unless his attention is called to the matter, or the respective areas are committed to memory. Large wall-maps of the hemispheres can be made of great service in this exercise, and should be consulted at times, to remove this wrong idea in respect to size, which must arise from the maps in the text-book. On another point I wish to ask a question. With