

charge of observations on the barometer, two the thermometer, two the rain gauge, two or more to take observations of the clouds—all observations to be made three or more times a day and carefully recorded. As soon as some facility is acquired they exchange places and record observations of a different kind. On Friday the observations on the barometer and thermometer are charted on the blackboard, and at the close of the term the observations are recorded for permanent preservation. For a few days after each change a little attention is necessary to see that observations are correctly taken, but pupils soon learn to do it with reasonable accuracy and usually take pride in doing it well.

It is believed that by these and similar means, not only skill in observing and recording meteorological phenomena may be acquired, but a general taste for observing nature cultivated.

In reference to the introduction of experiments, as a general rule, they should come after the class have studied the subject in the book. The true function of the experiment is not to entertain and amuse so much as to instruct and inform. They should be explained carefully by the teacher if necessary, and then by the pupil. Sometimes an experiment may be performed and the class called upon to explain it and tell what it proves.

Another exercise that may be engaged in with profit is to give a fact or occurrence and ask the class to bring in an explanation the next day. To illustrate: you relate in the class that an exploring expedition that crossed the Andes and descended the Amazon, found the barometer to stand higher at the base of the mountains than at a point a thousand miles down the river and a thousand feet or more nearer the sea level.

If, after proper time for reflection, the class fail to reach the explanation, let their attention be called to the appearance of the water flowing rapidly in a shallow stream over any obstruction that reaches half way to the top of the water. The analogy between this and the westward flow of the trade winds across such a barrier as the Andes Mountains, will be pretty certain to suggest the true explanation of the phenomenon in question. But while whatever apparatus may be within the teacher's reach should be used freely, pupils should study the diagrams and cuts in the text-book, until they can reproduce and explain them on the blackboard. Nothing short of this will give them that quickness of apprehension and educated eye that will enable them to comprehend new demonstrations and explanations such as they will meet occasionally through life. It must not be forgotten that one important object of school training is to prepare the pupils for making future acquisitions as well as to impart present knowledge.

Much interest may be added to the teaching of Natural Philosophy by a recurrence to its history. What is more calculated to enhance the learner's appreciation of the beautiful simplicity of the laws of falling bodies than an account of the vagaries and whimsical conjectures of the wisest of the ancients in regard to them? Their notions of motion as "strange" or "common," "natural" or "unnatural," the "principle" of "things seeking their own place," or as when flame goes up through the influence of a "principle of levity" and a stone falls in virtue of a "principle of gravity," were no more ridiculous than the explanation of why water rises in a pump barrel, because "nature abhors a vacuum," though it appeared in time that this abhorrence did not extend above 33 or 34 feet.

How suggestive of the true theory of the barometer, are the remarks of Pascal writing to his brother-in-law to test the newly invented instrument by carrying it to the summit of a high mountain in his vicinity! "You see," he writes, "that if it happens that the height of the mercury at the top of the hill be less than at the bottom, it will follow that the weight and pressure of the air are the sole cause of the suspension, and not the horror of a vacuum; since it is very certain that there is more air to weigh on it at the bottom than at the top; while we cannot say that nature abhors a vacuum at the foot of a mountain more than on its summit." It would not be difficult to multiply illustrations of this point, were it necessary.

In reference to the mere mechanism of teaching, but a single point can be alluded to here.

The superiority of the topical method of recitation is now generally admitted, yet considerable difficulty is often met in putting it into practical use. So far is this true, that it may be safely affirmed that the use of the method is much less general than the belief in its intrinsic merits.

A teacher sets out with the determination that he will not ask questions on the lesson, but require the pupil to "tell all about it."

But when day by day a part of the class demonstrate their want of ability to tell more than the merest fraction of all about it, his ardor begins to cool and finally the topic method is quietly laid aside. With superior classes this need not be the result, but with ordinary classes it is very likely, if not certain to be.

To meet this difficulty and to render the topic method practicable

with all grades of students, I have introduced into my classes the use of printed topic books. In these the work for the term is divided into a suitable number of lessons and the principal topics treated of in each lesson, given in the order of the text-book.

Pupils use the topic book in reciting until the lesson has been gone over once or more, without questions.

After this is done, questions are asked and other means taken to ascertain whether the principles of the lesson are understood.

To this method is objected that it helps scholars too much, that it would be better for them to write out their own outlines.

This may be true, yet many pupils have not the necessary ability to do this; for it requires some considerable knowledge of a subject to write a good outline of the most important topics of a lesson including five or six closely printed pages.

Some would require pupils to commit the outline to memory and recite without the use of the outline. The advantages arising from this course are somewhat dubious. No good end seems to be served as far as philosophical habits of thought are concerned,—and surely learning a long list of topics in a particular order with no hope or expectation of remembering them, will be an injury to the memory rather than a benefit.

In favor of the use of the printed topics it may be urged:

1. They are convenient, always ready, and by using them the lessons are practically assigned for every day of the term. If a pupil is absent one day, he cannot excuse a failure the next, by saying that he "did not know where the lesson was."

2. It furnishes the teacher who prepares the outline with a chance to omit from the recitation any thing which he thinks redundant, too abstruse or otherwise inappropriate, and to add any items which he may think ought to be added to the matter already to be found in the text-book.

3. It secures a regular distribution of the work of the term and ensures time for a thorough review.

This method has thus far proved so satisfactory and useful, that we design extending it to other branches.—*Pennsylvania School Journal*.

A Valuable Historical Record.

The following is a list of the Presidents and Vice Presidents of the United States as well as those who have been candidates for those offices, since the organization of the Government:

1789—George Washington and John Quincy Adams, no opposition.

1797—John Adams, opposed by Thomas Jefferson, who having the highest electoral vote, became Vice President.

1801—Thomas Jefferson and Aaron Burr, beating John Adams and Charles C. Pinckney.

1805—Thomas Jefferson and George Clinton, beating Charles C. Pinckney and Rufus King.

1809—James Madison and George Clinton, beating Charles C. Pinckney.

1813—James Madison and Elbridge Gerry, beating De Witt Clinton.

1817—James Monroe and Daniel D. Tompkins, beating Rufus King.

1821—James Monroe and Daniel D. Tompkins, beating John Quincy Adams.

1825—John Quincy Adams and John C. Calhoun, beating Andrew Jackson, Henry Clay, and Mr. Crawford, there being four candidates for President, and Albert Gallatin for Vice President.

1829—Andrew Jackson and John C. Calhoun, beating John Quincy Adams and Richard Rush.

1833—Andrew Jackson and Martin Van Buren, beating Henry Clay, John Floyd, and William Wirt, for President, and William Wilkins, John Sergeant, and Henry Lee for Vice President.

1837—Martin Van Buren and Richard M. Johnson, beating William H. Harrison, Hugh L. White, and Daniel Webster for President, and John Tyler for Vice President.

1841—William H. Harrison and John Tyler, beating Martin Van Buren and Richard M. Johnson. Harrison died one month after his inauguration, and John Tyler became President for the rest of the term.

1845—James K. Polk and George M. Dallas, beating Henry Clay and Theodore Frelinghuysen.