THE VOLUNTEERING SYSTEM.

BY MRS. JANE POLLOCK ANDERSON,

Evanston, Ill.

In condemning the final examination as a means of determining the pupil's standing, I suggested a substitute, which I have been working upon for the past six years.

Though there were many flaws in it in the beginning and still a few after six years, yet on account of its justice, it is a very satisfactory method to teacher and pupil.

I am endeavoring to describe it somewhat fully, in the hope that I may help those just beginning to use it, to escape some of the disadvantages I have worked out of; and yet, each one who tries it, will have to work out his own problem to a certain extent.

I call it "The Volunteering System," because each pupil volunteers his answer upon every question asked and in such a way that he disturbs no other pupil.

This system was adopted as a method of doing away with several apparent injustices in the class room; and also of accomplishing certain results that seemed almost impossible by any other means. The injustices were: one pupil getting the credit for giving a recitation, that many others in the class could have given as well or better; one pupil getting the only question he could not answer, while the others were fortunate enough to get questions they could answer, though they might not have been able to answer other questions; some pupils being called upon oftener than others and thereby getting a more pronounced success or failure; some pupils being more disconcerted than others by being called upon to recite, and therefore giving a poorer recitation than others who were no more competent. The results to be accomplished were: better attention and more interest on the part of the whole class because each question was put to all; more quiet in that no one spoke out and no one urged the teacher to call upon him by the raising and even vigorous shaking of hands; more self-reliance and assurance on the part of the pupil, in that he had to take a stand for what he thought was right; more of a chance for the weak pupil, in that he had time and quiet to think out his answer, undisturbed by the usual monopoly of the so-called sharks, and the same chance as the shark to get up, showing that he wanted a chance to tell what he knew.

To give a little clearer idea of how these results were accomplished, I will go into detail as to how the system is managed.

Suppose we have upon the board the figure for the proposition: "If two triangles have two sides of the one equal respectively to two sides of the other and the included angles unequal etc." and the triangles with the smaller angle placed upon the other. I say to a class, "Volunteers, how many see in the figure on the board, the figure of a proposition we had last week?" This being a question whose answer depends entirely upon their power of observation and association of ideas, perhaps no one rises immediately, but everybody studies the board intently. Finally one or two get up, happy and exultant but in no way disturbing those still trying. Others get up and then others and soon I call on the weakest one up for his answer. I ask for those who agree with him and they signify agreement by raising the hand. I count them, take in who they are and tell them to sit down. I call on the weakest one left standing and go through the same process until none is left standing. I have given no sign of approval to any one of the answers. Then I say, "Those who said 'the sum of the diagonals of a quadrilateral is greater than the sum of two opposite sides' stand up again." I give these pupils one mark.

In using this system, the class soon joins the teacher in trying to conceal all signs of agreeing or disagreeing until they are asked to show their agreement by raising of hands. At first they had hard work to keep back their enthusiasm for the right answer and their disapproval of the wrong. But they soon saw that if the bright pupils revealed their ideas the weak ones would raise their hands for what the bright ones thought correct and that would never do. The pupils are just as anxious for justice as we are, and the results of this system depend upon very careful management as you can see. Careless observers might think that this method would lead to an enormous amount of guessing and taking of chances but this is not the case.

I found my pupils very conscientious; they could be trusted to such an extent that I finally changed my system of bookkeeping. At first my class book pages were diagrams of the seating of my classes, a square for each pupil, and without looking at the book, I could put a straight mark in a pupil's square for every mark he received. Gradually, I allowed them to keep track of their own marks, not interrupting the recitation to take them but waiting till the end of the hour. They certainly checked each other up! They knew just how many marks their neighbors ought to have. Then, finally, I let the marks go for a week or two; the

only objection to this was that sometimes they lost the books in which they kept track. This was not such a calamity, for in some of the advanced classes, the pupils themselves suggested doing away with the marks entirely, because by this system, not only the teacher, but the pupils can tell the rank of nearly every pupil in the class in relation to every other pupil. This shows how little need we had for a final examination. You understand that the number of marks they received did not decide percentage. It simply designated rank or order.

That takes me back to the question of why I vary the number of marks given according to the style of the question asked.

Suppose I say "Volunteers, give me one condition under which angles are equal," or "Give me one condition under which triangles are equal." On correct answers to this type of question I give two marks. That is, on all subjects which they ought to know thoroughly by review, as well as on all questions discussed thoroughly the day before, I mark double. There is room for discussion here. I fought it out in my own mind, and talked it over with every class. The pupils think it fair, but every day of my life I felt a little unjust when I marked more on the review than on originality. But this is my best excuse, we have a greater number of pupils always, who can learn a lesson by plodding, after it has been explained, than we have of the original kind. And while I do all in my power to give the original pupils a chance, the others must be given an incentive for getting it even second hand.

In algebra, a question of that kind would be "Volunteers, what are we doing?" or "What did you just do?" In my classes, that question has one of seven answers. I never accept the answers, "simplifying," "changing," "canceling," "transposing," and "changing signs." This question needs no originality, it calls for application merely and is marked double. Another question of that kind in algebra would be from a problem that ends with "If $\frac{1}{3}$ of the second be subtracted from 5 times the first, the remainder will be 16. Find the numbers." I ask, "Volunteers, what does $16 = ?$ " or "What label do we give to 16?" After the pupil has been taught to label the known quantity in the problem, before he takes any other step, this question can be answered by a careful reading of the problem. So the answer "16 equals 5 times first less $\frac{1}{3}$ of second" gains two volunteer marks.

In questions of this kind, which the pupil could answer by simply being conscientious, where there is no excuse for a wrong

answer, I often distinguish between those up with the wrong answer and those who remain in their seats. The pupils feel this difference. For instance, when wrong answers are given, pupils in their seats raise their hands to say "Oh, I thought of that, but I knew it was wrong so I didn't get up." I tell them it is better to be in their seats working off an honest doubt, than to be up satisfied with a false conviction. There is a question here, too, as to whether all in their seats deserve more than those with wrong answers. Some may not be trying.

In stating a new proposition to a class, my first question is always the same. It is "Volunteers, what question are you asking yourselves?" Here again, only those who have been trained to do geometry by the inductive method would know what I mean. My pupils have no excuse for failure on this question and they feel that the habit of asking it, launches them into the heart of the proposition as nothing else would. For instance, if the proposition asks them to prove angles equal, their first question is, "When are angles equal?" If to prove lines parallel, "When are lines parallel?" If to prove a four-sided figure a parallelogram, "When is a four-sided figure a parallelogram?" You can easily see that we have many answers to these questions, and we keep them classified in notebooks and fresh in our minds by daily use of them.

The only reason for varying that first question is to keep my pupils from being dependent upon me, so sometimes I say "Volunteers, who can take the first step in this proposition?" That *first step* must be to ask themselves the question, the second step to answer it. Another thing I sometimes do to help impress upon them this first step is to state the proposition, wait a few seconds and then say "Volunteers, those who have already asked themselves a question, stand up," in this case I do not wait for them to get up slowly and perhaps ask the question on the way up. I call immediately on the weakest one up.

I cannot with justice get away from the step by step volunteering. Sometimes I try to mark on whole propositions but I am forced into the step by step method by a situation like this: some who volunteer to do a whole proposition may fail on one step in the middle of it, and I say "Count that one-half proposition." Then those in their seats may say "I could have gone that far, that was the step that kept me from getting up." So now when I give the class a chance to get proposition marks, I allow them to count one volunteer mark for each step until they fail on a step ;

if they go half way through I call it half a proposition, if all the way through a whole proposition. The pupil who has the greatest number of whole propositions for a month is higher than the pupil who has the greatest number of volunteer marks. This is, of course, the only fair thing for the plodding pupil who hasn't much originality or who is slower to grasp ideas the first time they are presented. The bright pupil is sacrificed to a certain extent, as he always will be while we are compelled to keep in one class those of such varying ability.

Some famous man, Henry Ward Beecher I think, attributes his power of self-reliant reasoning, his power of reaching a conclusion, making a decision and then abiding by it, to an experience like this: A teacher sent him to the board to do a problem. He reached a certain step and she said "Wrong," he worked it over several times only to get the same result at that step and then gave up and went to his seat. The teacher sent two or three other boys to the board, one after the other. All had the same experience. Finally, one boy went to the board, and although he had the same result for this step, he paid no attention to her "Wrong," but worked right on to the end of the problem. When the teacher said, "Good work" and gave him credit for the problem, the other boys rebelled, saying, "Why, we had exactly the same thing." She answered, "You did not know enough about your work, to know that you were right."

That lesson is brought out day after day in this system. Sometimes, after all answers have been given, instead of asking those with the right answer to get up, I ask those with one of the wrong answers. They stand up with a triumphant look at the others, but most of those who know what is right, look at me with a knowing smile, while a few of them will look puzzled. Those who know they are right do not care which set I ask to stand up, they are not fooled, no matter how I act. This is a little hard on those I ask to stand up, it is a disappointment to them and a little embarrassing, but it is a splendid way of teaching them to rely on their own decisions and very often it catches some unfair pupil who did not have that answer but got up because he thought my method was to ask those with the correct answer to stand. Sometimes, I try to act satisfied when I hear the wrong answer and critical when I hear the right, to see if they are being influenced by my attitude, but those who are on the alert are not disturbed. They are the judges and the jury.

I often give oral examinations by giving twenty questions of

about the same value and marking each 5%. It is a big saver of time, more interesting to the pupil and I think of much more benefit in that he has his wrong impressions corrected immediately. There are a few objections to this—a slow pupil needs more time, a nervous pupil is lost because we call it an examination, and a pupil who judges right and wrong by the way it looks when written would rather write. It is perfectly fair, I think, to let all such take a written examination or come to the teacher and by talking it over, prove he understands. Examinations, I think, should be the privilege of those who want to prove to the teacher that they know more than the teacher thinks they know.

Our home work brings out the practice in writing, that some may think this system would lack. Our writing in class is not so much for a mark as for practice, and this constant daily expression in the briefest and best of English does not lessen their power of writing when they are compelled to take examinations. I find it makes them a little slower in writing in some cases, but so much more accurate and sure, because they take time to think.

Many a time, we pay no attention to marks, not even rising to let me see who have answers. They all sit there, thinking a minute or two on each question, then I give the answer. They have the pleasure of knowing they were correct or the satisfaction of seeing why they were wrong, and without embarrassment to the weak.

To me, this is the strongest point in the system—all are working—all are interested—all are eager to get it right, but satisfied to be corrected. All are in the atmosphere for concentration, all are compelled to do some reasoning and so they form the habit of thinking things out—of relying on conclusions reached in this way and of getting the pleasure out of the power of their own minds, and that to me is the only thing worth while in education.

The mineral bauxite is used on a large scale in the manufacture of the artificial abrasive alundum at Niagara Falls. This abrasive is made in the electric furnace by fusing calcined bauxite. Alundum is particularly efficient in the grinding of steel.—*United States Geological Survey.*