be done facing the class, and in clear, accurate and forcible language, and in the spirit of one who has a valuable thought which he wishes to persuade others is true. Here then we have training in the correct and effective use of language, in deductive reasoning, both conditional and unconditional, and in the proper logical and rhetorical arrangement of ideas. It is work similar to that done by the lawyer when arguing his case before the court, to that done by the minister when trying to convince his people that the doctrines he teaches are true, to that done by the statesman when trying to convince his colleagues of the reasonable and beneficent grounds for enacting the new law. Some of these demonstrations look like perfect models of arguments, and properly conducted recitations on them seem to be the best possible exercises in clearness of statement and logical argumentation. It would seem to be impossible to put the student intelligently through them without his markedly increasing his power of clear, accurate and forcible expression as well as his skill and power of reasoning. In an abstract example, however, although the thinking may sometimes given the form of deductive reasoning, yet it is quite mechanical compared with that of Geometry. We sometimes feel as though a machine might be made to do the work with less possibility of error than there is in ourselves. It is not a rare thing to find students with much skill in this mechanical manipulation of symbols who are very weak in the work of demonstration. It is to be feared that there is more attention paid to this second kind of work in some quarters than to the first, and that in consequence the pupils lose the best part of the training that their mathematics ought to give them. Especially do we think it is this second kind of work that is in mind when we hear people disparaging the training given by Mathematics.

But of course the best of all training given by Mathematics is that given by Geometry. A careful analysis of the thinking done in demonstrating the Pythagorean theorem by the usual method shows, first, that there is a considerable exercise of the power of invention. New lines have to be drawn which shall divide the figure into new parts having relations to each other and to the parts of the original figure so that by means of of these several relations the parts of the original figure may be compared with each other. Second, there is a much more frequent exercise of the power of holding in mind clearly and at one time several different concepts, and, what is more difficult still, of holding in mind at one time several different relations between concepts. Third, there is an exercise of the power of comparing these several concepts and their relations so as to discover new relations between them. Fourth, there is an exercise of the power of recalling the proper general proposition of which a given statement may be a particular case and drawing the proper inference from these premises. Fifth, there is an exercise of the power of concatenating one syllogism with another until long and parallel trains of reasoning are constructed whose conclusions are to be compared with each other and from which other conclusions are to be drawn.

From this analysis we conclude that the original working out of such a demonstration must train the student's powers of invention, conception and judgment, and his powers of deductive reasoning. It trains the latter as no other study can. When the time for recitation arrives the student is required to write on the blackboard the theorem he intends to prove in accurate, clear, terse and correct language. Then he must