Pupils taught in the better ways last described can answer two questions satisfactorily. To the second question one replies "I counted it and I know"; the other "I added up a column of six nines and I know." He who is competent to hold an opinion on an educational topic, recognizes at once the great mental superiority of the pupils who can answer both questions; but it is to be feared that not many pupils in our schools can give a reasonable reply to the third question, "how do you account for the fact that six nines are fifty-four"? Now inability to answer such questions as the last is not confined to the multiplication table. In almost all subjects that are taught in schools pupils are able to answer questions of the first kind; in some subjects they can also answer questions of the second kind from experience, usually they can only quote authority; in others, questions of the third kind; in a few instances, questions of all kinds; in not a few, questions of neither the second nor the third kind. It would be most interesting to review from this standpoint the several subjects of our school programmes; here it must suffice to say that in mathematics as generally taught in good schools, answers to the first and second questions are much more satisfactorily given than to the third. For example all pupils who have studied a little algebra will tell you that $-a \times -b = a\, b$; a great many will demonstrate the fact to their own satisfaction and possibly to yours; but you will seek in many directions before you will find an acceptable answer to the question. "How do you account

for the fact that the product of two negative quantities is positive?"

Every pupil who has properly learned the multiplication table will tell you first that six nines are fifty-four; secondly that he knows that this statement is true because in some way or other he has satisfied himself by an independent investigation; and, finally, will in a completely satisfactory manner explain how it comes about that six nines are fifty-four. Preparation must be made for the proper teaching of the multiplication table. This preparation consists in thorough teaching while dealing with the preliminary topics. First the intuitions on which arithmetic rests must be clear. The pupil must have in mind a sharply defined conception—as a student expressed it the other day a clear picture—of every small number up to and including ten. Secondly, numeration and notation, not necessarily beyond one hundred, must be quite familiar so that symbols, as 18, 84, and the names of the numbers which they represent, as eighteen, eighty-four, shall instantly suggest to the mind of the pupil their connotation, ten and eight, eight tens and four. Thirdly, he must have learned his addition table in the right way. When learning the sum of eight and five he must have been taught to make the eight up to ten by taking two from the five so that what has been given to him in the arrangement eight and five, he rearranges into ten and three, which latter arrangement he has learned to call thirteen. The reason is obvious. Our system of numeration is a mere arrangement of numbers into tens, hundreds, etc., and addition