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operations with pure numbers are made to precede the use of symbols, and the latter are introduced only after the pupil has had a certain amount of familiarity with the distinction between algebraic and numerical operations,

Another, but, unfortunately, a less familiar fact is, that all mathematical conceptions require time to become engrafted upon the mind, and the more time the greater their abstruseness. It is, the author conceives. from a failure to take account of this fact, rather than from any inherent defect in the minds of our youth, that we are to attribute the backward state of mathematical instruction in this country, as compared with the continent of Europe. Let us take for instance the case of the student commencing the calculus. On the system which was almost universal among us a few years ago, and which is still widely prevalent, he is confronted at the outset with a number of entirely new conceptions, such as those of variables, functions, increments, infinitesimals and limits. In his first lesson he finds these all combined with a notation so entirely different from that to which he has been accustomed, that before the new ideas and forms of thought can take permanent root in his mind, he is through with the subject, and all that he has learned is apt to vanish from his memory in a few months.

The author conceives that the true method of meeting this difficulty is to adopt the French and German plan of teaching algebra in a broader way, and of introducing the more advanced conceptions at the earliest practicable period in the course. Accordingly, the attempt is made in the present work to introduce each advanced conception, disguised perhaps under some simple form, in advance of its general enunciation and at as early a period as the student can be expected to understand it. In doing this, logical order is frequently sacrificed to the exigencies of the case, because there are several subjects with which a certain amount of familiarity must be acquired before the pupil can even clearly comprehend general statements respecting them.

A third feature of the work is that of subdividing each subject as minutely as possible, and exercising the pupil on the details preparatory to combining them into a whole. To cite one or two instances: a difficulty which not only the beginner but the expert mathematician frequently meets is that of stating his conceptions in algebraic language. Exercises in such statements have therefore been made to precede any solution of