

eleven, as soon, in fact, as reading proceeds without conscious effort. In the upper grammar grades it should assume the seriousness of formal study. In the secondary school it has an appropriate place in all the four years.—*Educational Review.*

(*To be continued.*)

The tunnels of the world are estimated to number about 1,142, with a total length of 514 miles. There are about 1,000 railroad tunnels, 12 subaqueous tunnels, 90 canal tunnels and 40 conduit tunnels, with aggregate lengths of about 350 miles, 9 miles, 70 miles and 85 miles respectively.

FORMAL VS. CONCRETE STUDIES IN THE COLLEGE.

PRESIDENT DE GARMO.

THE educated public is practically a unit in the opinion that the college should furnish a liberal education; in this demand there has been little change. But when we ask, What constitutes a liberal education? we find that the advanced thought of the present differs materially from the current ideas of forty years ago. Then the chief subjects were classics and mathematics; little else was taught.

Language is always the means by which we express thought, and mathematics the means by which we determine the quantitative relations of things. Evidently these are important subjects, for without language our thought would remain undeveloped, while without knowing how the quantity of one thing is related to that of others we should not be able to master the material world. Railroads, bridges, ships, cities and the like, would be impossibilities. It is easy to see, therefore, that should we have nothing more in colleges than what is contained in Latin, Greek, and mathematics, we should still have much knowledge useful for life. So great, however, was the old estimation of the value of formal culture, that men were indifferent to the knowledge worth of

studies. In accordance with this view, the classes were taught largely from the former or grammatical standpoint. The ideas expressed by the Greek and Latin authors were not so much regarded as the grammatical construction of the language. To be sure, it is of immense service to bring pupils into contact with such ideas and views of life as are expressed by Plato; yet on the whole it must be admitted that the focus of the instruction was upon the grammatical construction of the language.

However inadequate this theory may now seem, there are still those who regard it as having so large a measure of truth, that it may be well to examine for a moment the favorable side of this formal discipline. In the first place, grammatical study appeals particularly to intellectual aspects of the mind, for it reveals in a somewhat concrete way its logical workings. All thought is of course expressed in language, and can thus be studied through linguistic forms. When the student devotes his time to the discovery of logical relations through a study of grammatical or rhetorical forms, he is in reality working at the beginnings of such subjects as logic,