

ness, clearness, and accuracy are what must be aimed at. The mind can be trained to quickness and clearness in reasoning most successfully in abstract reasonings, pure and simple; so algebra and Euclid serve two purposes: not only are they methods of reasoning and the foundation for further methods, but they form a splendid gymnasium for the training of the mind.

There are two functions of the brain which are most valuable, and which the course at the school, together with the Engineering Society, particularly help—I mean reading and observation. It is by means of these two that the student is going to advance himself in the division No. 3. It is in the observing of actual work, and in the reading about work done, that the student has the means of learning methods of practice. The student, after graduating, requires to be employed on actual work.

Consequently these subjects require careful and studious attention, as they will be the immediate means of further advance. Having got employment, read and observe, and assimilate what you read and observe. You know the word assimilate? When a substance is assimilated, it is not only digested, but becomes an intimate part of the animal assimilating it. Don't imagine, by any means, that your course is finished on graduating. Not at all; you have still *everything* to learn; but you are in a position to learn it. You have been taught nature's methods; you have been taught to think, to observe, and to read. You have been taught enough of methods of practice to make yourself thoroughly useful to your employer, and your duty is to learn methods of practice, methods of dealing with nature as found most suitable to modern circumstances.

A word, before closing, about mining methods. In speaking of the work done by the mining engineer, I did by no means mean that all the work described would have to be done by one man; that would be a practical impossibility. In actual work, the greater part of the designing of the appliances would, in all probability, be done by Frazer and Chalmers, of Chicago, New York, Denver, Lima, Tokio, Johannesburg, London, and other places, the chief makers of mining machinery.

The mining engineer in charge of the work would find out what he wanted and give the outline of the general design to this or some other manufacturing company, and would leave all details to them, unless he were a specialist in some particular branch.

The designing of the appliances belongs to the general department of Mining Engineering, and consequently I used the term mining engineer to represent the person or persons employed on the designing of the whole plant. If there were much electricity in connection with the mine, there ought to be a specialist, a mining electrician, as also a specialist for the smelting and assaying, and the same in other departments.