

I have often been struck, in many conversations with machinists and engineers of the better class, by their terse and pointed methods of reasoning. If upon such a basis there could be erected the superstructure of a liberal education, the results should be ideal. Manual training should furnish this basis and go beyond it by awakening the incentive towards the getting of further knowledge.

To awaken this incentive is the highest fruit of an educational system, for in the last analysis we find that each individual must educate himself and herself or forever remain a mere repository of useless knowledge.

The old methods of education were merely encyclopedic. The new method should make of each fact a living and working truth.

#### ARTISTIC AND SCIENTIFIC HOBBIES.

As an example of an artistic hobby, Amateur Photography stands out pre-eminently. It has many valid claims to our attention. It develops the artistic sense, trains the judgment, acquaints one with some of the laws of chemistry and optics and above all brings its votaries into close communion with the beauties of nature. It has an amusing side, I was almost going to say a pathetic side, as well. The considerations of light, time and position, as well as the often totally irresponsible action of developers and other items, keeps one continually interested and incidentally adds to one's knowledge in many directions.

It most certainly offers continual exercise in training one's patience and self control; but who will say, who has conquered the A,B,C, and obtained a few successes, that the result is not worth the trouble. Like all really valuable hobbies, it is difficult to attain proficiency therein, and there are ever widening and alluring fields opening up ahead.

My first camera, back about 1887, was a black box with a pin-hole through a piece of ferrotype plate stuck in the front. This did for a few weeks. Then I read up the article on Photography in an encyclopedia and made a sliding box camera with an old opera glass lens. Its productions in the architectural line were more wonderful than the leaning tower of Pisa.

Then a real lens costing about \$3.50 was purchased and a more ambitious attempt was made—beliows, shutter and all.