

mer, chisel, fuller, swedge, their care and use. Typical processes—drawing, bending, forming, twisting and welding—making simple objects—gate hook, ring, staple, welded eye.

Machine Shop Practice.—Chipping, filing, cutting screw threads; hardening and tempering, cold chisel, nuts and bolts, hinges, etc.

Sheet Metal.—Soldering, forming, riveting—tin cut, funnel, etc. (Thirteen lectures.)

The making of an original model suitable to farm conditions.

Farm Mechanics.—This course will treat of farm implements and machinery—their construction, operation, adaptability, efficiency and durability: the effect of adjustment and condition of wearing surfaces and edges on draft, and simple repairs. Putting and keeping in adjustment and working condition ploughs, harrows, cultivators, seeders, mowers and self-binders; detaching parts of farm implements and power machinery, including grinders, pumps, fanning mills and gasoline engines; assembling and fixing of parts, testing, and getting machines into working order.

Normal Course.—It is arranged to give teachers, holding at least a second-class certificate from the Normal Schools, desirous to become teachers of Manual Training, adequate instruction in the various subjects comprised in the term "Manual Training." Its object is to familiarize the students as far as possible with materials, tools and processes commonly used in the mechanical arts. It is not intended to impart skill, which can only be acquired by extended practical experience, but to provide a medium of expression in the form of constructive work, and to call into use ethical influences that bring a sense of enhanced

value to the worker, with the result that he feels he contributes something to the life around him. This course of study covers a very large and varied field of work. It is divided into:

1. **Primary Constructive Work.**—Which includes paper folding, cutting, tearing and mounting. Clay modelling, thin cardboard work, basketry, weaving and whittling in thin wood. Art—Hard and flexible point; drawing and coloring of leaves, sprays, buds, birds, insects and flowers; sketching, designing, black and white, color schemes illustrating various harmonies. Structure and function of the brush in defining forms by their masses.

2. **Grade Work.**—Thin and thick cardboard, wood-working, art metal work, drawing, freehand sketches, working drawings. Plane and solid geometry. Isometric projection, construction and constructive design, tools, their care, use and sharpening; analysis of the action of cutting tools; timber, its structure, growth, disease, seasoning; principal varieties of lumber, yield, trees and their economic values.

3. **Metal Working.**—Materials, tools and processes; common work-shop materials, cost; malleable, cast-iron, wrought-iron and steel, copper and brass, zinc and tin, lead; the uses of fluxes, tallow, resin, zinc chloride, borax.

Machine Shop Practice—Tools, templets, lining out, drilling, drifting, chipping, filing, scraping, methods of unions, tapping and threading.

Lathe Work—Cutting tools for lathe; tools and tool angles, cutting, speed and feed, chuck and chucking, centering, slide rest turning, screw cutting. **Forging**—Care of fire and forge, tools, breaking, hammering, drawing, pointing, bending, shaping, punching,