Referring to these higher-grade schools, Mr. W. Mather, of Birmingham, stated that, as an employer, he would prefer not to take any boy to learn his trade in his works who had not passed from the elementary school into a graded school, and spent two years, from about fourteen to sixteen, in systematic study, combined with tool practice and laboratory experiments, however elementary the subjects might be. He would say that any one hundred lads so prepared, and entering on employment to learn a trade, would at the age of twenty-one years be in all respects as artisans superior men to one hundred others who had passed at fourteen straight into the workshop from the elementary school. Another advantage gained by these schools was that it was much easier to see in what direction boys showed the most capacity.

Manual High School, Denver, U.S.A.

As an instance of what America is doing in this respect, I insert the syllabus of the Manual Training High School, Denver, which is taken from the work published by Education Bureau of the United States. The syllabus is for 1896:—

Course of Study.

[Note.—The figures after the studies indicate the number of school-hours per week devoted to that subject.]

First Year.—Mathematics (5): Algebra and plane geometry. Science (4): Physical geography until January; botany. History and English (3): American literature and rhetoric until January; Greek history. Language (4): Latin or German. Drawing (4): Freehand (2); mechanical (2). Manual work (10): For boys—Joinery, sixteen weeks; wood-turning, twelve weeks; wood-carving, ten weeks. For girls—Plain sewing; joinery on alternate days from January to June. Music (1): Chorus-singing. Physical culture.

Second Year.—Mathematics (4): Algebra; plane and solid geometry. Science (5): Physics, with laboratory practice. History and English (3): Roman history until January; rhetoric; English and American literature. Language (4): English or German. Drawing (4): Freehand (2); mechanical (2). Manual work (10): For boys—Pattern-making and moulding, twenty weeks; forging, eighteen weeks; lessons in brazing and soldering. For girls—Drafting patterns; cutting and fitting undergarments; machine-sewing; wood-carving on alternate days from January to June. Music (1): Chorus-singing. Physical culture.

Third Year.—Mathematics (4): Algebra; plane trigonometery; book-keeping. Science (7): Chemistry, with laboratory practice (5); steam-electricity and magnetism* (2). History and English (5†): English history; English literature; civil government. Language (4): English or German; French.‡ Drawing (4): Freehand (2); mechanical (2). Manual work for boys: Vice-work; machine-tool work; construction. For girls: Cooking; household science. The manual work of this year occupies eight hours per week for sixteen weeks, and six hours per week for twenty-two weeks. Music (1): Chorus-singing. Physical culture.

Fourth Year.—Mathematics (4): Spherical trigonometry; surveying; book-keeping. Science (5): Advanced chemistry (5), or advanced physics (5). Manual work (8): For boys—Machine-tool work and construction. For girls—Cooking; household science. Or the pupil may elect advanced work in any of the lines of shop-work already pursued. History (4): One half-year. Study of some period of American history; political economy. Psychology (4): One half-year. Language (5): French, or German, or English. Drawing (2 to 10): Freehand; mechanical; modelling. Music (1): Chorus-singing. Physical culture.

From the above, with the approval of the principal, the student chooses thirty hours' work per week, at least thirteen of which must be chosen from the following lines of work: Mathematics, science, history, language. The manual work is required of all students.

Drawing.

The drawing-work of the school may be classified under three heads: Constructive, representative, and decorative work. The time is divided equally between freehand and mechanical work, the two being carried along side by side throughout the entire course. The equipment of the drawing-rooms includes a good assortment of models, casts, and studies.

Constructive drawing: Includes all drawings relating to the facts of form, such as freehand and mechanical working drawings, geometric problems, surface developments, projections, intersection of solids, and drawings relating to machine and building construction.

Representative drawing: Drawings dealing with the appearance of form, such as drawing from cast and object with charcoal, pencil, and pen and ink. Perspective problems.

Decorative drawing: Includes work relating to the decoration of form—viz., elementary design, historic ornament, decorative design in colour.

First Year.—Freehand: Working drawings of solids; elementary perspective in outline; water-colouring in flat washes; charcoal and pencil drawings from object and cast; historic ornament and design.

Mechanical: Instruction in use of drawing-tools; working drawings to a scale; sections, elevations, and details of machines and parts of machinery; geometric construction; problems in orthographic projection; development of surfaces; isometric projection; lettering and borders.

Second Year.—Freehand: Elementary perspective in light and shade from object with charcoal, pencil, pen and ink; water-colour shading; sketches of machinery; historic ornament and design, conventional forms, designs for ornamental ironwork.

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* With the approval of the principal, shop-work may be substituted for this work. † Three for the first four months. One of the five periods is for unprepared work. ‡ French may be substituted for mathematics in the third year.