

likely of themselves to do much towards advancing technical education, except of the professional kind. There is not a single name among them that has been prominently identified with the cause of technical education in England of the sort required by the industrial classes. If further instruction in technological subjects is to be given in the curriculum of the school or university, the persons named would be just the men to suggest the proper course. But what is wanted is a thoroughly practical system of instruction for artisans, and this is precisely what the members of the Commission cannot suggest, because they cannot, or do not understand their requirements. Not long since one of the leading educationists of the old country, a great advocate of technical schools, and one who has devoted much time and thought to the subject, brought from various continental school specimens of the joinery work used as models in those schools, and specimens of several kinds made by the students. In reality these samples would not have been accepted by a jerry-builder in this country, not even for a five or six-roomed cottage. Yet the professor thought them excellent. And why? Simply because he was not himself acquainted with the technical details of the joiners handicraft. If any good is to come out of these Royal Commissions, practical men must be appointed on them, or they will result in absolute failure.

THE Belgian Congress devoted to the study of school-hygiene concludes that every pupil ought to have at least 32 square inches of superficial space; the classes ought not to be numerous; the water closets to face the south; plant trees in the play ground, and secure there for each pupil a space equal to six square yards, and $1\frac{1}{2}$ yards space under the shed: the pupils ought not to remain longer than one hour at a time in class without some bodily recreation; each child ought to have 10 to 20 cubic yards of air, and the latter to be renewed twice or thrice daily; the stores should be placed near the external walls; the window stool ought to be higher than the heads of the pupils, so that the light can fall on them at an angle of 45° .

It would be well if school authorities in other countries realized that these things need careful study, and demand imperatively the carrying out of the results of that study. It is nothing to fill the mind with knowledge if we injure the body in so doing, and learning is ill purchased at the cost of health. School-hygiene is a science which has been neglected until almost recently, and which to-day is but imperfectly understood in many cases, but its importance cannot be overrated, and the observance of its dicta needs to be constantly insisted on.

DESIGN PATENTS ON MACHINERY.

When a builder of machinery originates and applies some useful device, he generally secures it by a patent, but when he studies out and puts into metal or wood some useful forms in a machine, exclusive of device, he hardly ever thinks of applying for a patent on the "design." But a stove manufacturer who has planned and brought into existence some new style of range or heater, generally applies for a design patent at once, as a matter of regular business. Custom of the trade seems to govern the actions of original thinkers and experimenters in either case. Recently, however, the binding force of patents for designs has been brought to the attention of many machinery manufacturers who had hardly given the subject a passing thought before.

In at least one or two late instances apparent (and unconscious) infringers of design patents on certain machines have settled by paying money to the patentees, rather than devote the time and

expense required for a legal contest. Such a development has, as might be expected, awakened unusual interest in this class of patents, among machinery manufacturers, and has set a few of them to tracing up the origin or the antiquity of certain forms and combinations used by them and claimed by other individuals as protected by design patents. As nearly all of our readers well know, it is a difficult matter to originate absolutely new and meritorious styles of ordinary shop tools, yet the possibilities for combinations are ample. The useful features of some of these combinations which figure as the basis of design patents are, to say the least, very questionable. Although patents for designs are as binding during their existence as those for inventions, the former appear in the *Official Gazette of the U. S. Patent Office* only by name, while all the latter are described with drawings and claims. Therefore the would-be original designer of a machine is kept in the dark as to what his competitors have secured if they neglect to place their protected product before the public, unless he sends to the Patent Office for a copy of every design patent as fast as they are announced in the weekly issues of the *Gazette*. The conclusion will readily be reached by every intelligent individual whose attention is directed to the matter, that all kinds of patents issued should be described with drawings in the weekly official publication of the Patent Office, in order that the public as well as inventors and designers shall be protected.—*American Machinist*.

EXPIRATION OF THE MCKAY BOOT-SOLE SEWING MACHINE PATENTS.

By the expiration of the McKay patents covering machines for sewing soles upon boots and shoes, on the 15th of August, a new impetus will be given to the shoe business in the States. Heretofore those who used the McKay sole sewing machines were obliged to pay an average royalty of two cents for every pair of shoes made. Estimating the annual product of the shoe manufacturers of the country of late years equal to 50,000,000 pairs, the royalty exacted of them for this machine has been equal to \$1,000,000 a year. The relief from this tax is a substantial gain to the people, and the free use in future of the machine at a comparatively small cost will probably lead to a large expansion of the production.

The McKay machines had their beginning in the invention of Lyman R. Blake of Abington, Mass., in 1858. Prior to that date nearly all sewed boots and shoes had a light thread of the inner sole cut away, the seam being laid therein, after which it was tacked to the last, the edges of the upper drawn over it, a narrow strip of leather called the welt sewed to both inner sole and upper, and to this welt the outer sole was sewed, all of the work being done from the outside. Hand-sewed work is still done in this manner. By Mr. Blake's machine the stitches were taken directly through the insole, by means of a horn or arm working inside the shoe, and also through the edge of the upper and outsole, without the insertion of a welt. But only the coarsest grade of shoes could be manufactured with this machine. Gordon McKay of this city, soon became interested in Blake's invention, and in 1860 induced Blake to take out fresh patents, one covering the machine-made shoe itself, as a new article of manufacture, and the other covering the process of making; both independent of the original patent on the mechanical structure. He then bought up the invention for \$8,000, renamed it the McKay Sole-Sewing Machine, and set about its improvement. He spent large sums of money in this direction, but it was not until two years later that he obtained for \$300 from Mr. Mathias, of Boston, a patent for channeling the leather as in hand-sewing. The inventor, on realizing its importance, soon applied for a larger price, and on being offered one-fifth interest declined it, and accepted in lieu a cash payment of 9,000 dollars. In 1864 Mr. Blake came once more to the help of the proprietor, and devised a means whereby the horn was heated from an alcohol lamp placed inside of it, the radiation of heat causing the wax to soften on the thread as it passed through, and thus making the machine available for sewing shoes of the finest quality. This contrivance was patented jointly by Blake and McKay. The machine, thus improved, was now taken in charge by a company styled the McKay Sole-Sewing Association. The Association continued to devise and perfect, and even to give away machines, to facilitate their introduction, until no less than \$130,000 had been advanced on the enterprise.

All grades of work could now be produced by unskilled as well as skilled hands, and up to 1875 no less than 225,000,000 pairs of shoes had been made in this country on the McKay machine, while its product at this date must be in excess of 500,000,000 pairs. Nine-tenths of all the boots and shoes ma-