The Plane.

This instrument, when well made, and kept in order, surpasses, in accuracy of performance, all other hand tools. Originally furnished with only one iron, the plane now has usually two, the undermost for cutting the shaving, the uppermost for breaking it in such a manner as to prevent it acting as a lever in lifting or tearing up fibres, in front of the cutting iron. In England the *stock* or body of the plane is generally made of beech; but on the continent apple and pear are frequently substituted with happy results. Through the stock is a vertical aperture, of which the lower portion acts as a guide to the cutting edge, and forms together with this latter the *mouth* of the plane. This effectually regulates the depth to which the cutting iron can penetrate, but it would not be sufficient to prevent it from following the inequalities of the surface to which it might be applied. This would utterly unfit the plane for the purpose for which it is intended; hence, this tendency is overcome by giving considerable length to the stock, which causes a plane in operating on a rough piece of wood, to remove successive shavings from the more prominent parts until a surface level with the deepest original depression is attained. The flatness attainable with a plane is greatly dependent on the skill of the workman. He must always try to plane "hollow" rather than round, for if a plane be sufficiently long in the stock, it is impossible for him to give any appreciable concavity to a surface of moderate size. For this reason roughing out planes, or "jack planes," are made as long in stock as possible, without making them too heavy and inconvenient, the usual size being from fourteen to eighteen inches long. Planes used for "truing," or "trying planes," as they are incorrectly called, are used to correct the inequalities left by the former, and are usually from twenty-two to twenty-four inches in length, or even twenty-eight to thirty inches, in which case they go by the name of "jointers," and are principally used for making long joints. The smoothing plane, which is employed to give the finishing strokes to a surface which has already been flattened, is generally about eight inches long.

In grinding the edge of the cutting iron care should be taken to use a true faced grindstone, and a good flat oilstone. The front iron having once been sharpened will require no further attention, as it lies against the cutting iron in such a position as to protect its edge effectually from ever getting blunted. The cutting iron should be ground to a flat cutting edge at an angle of about 25° on the stone, and then finished on the oilstone in such a manner as to form a fresh "facet," or bevel, making a more obtuse angle with the line of the iron, say about 10° more, so that the total inclination edge will be about 35°. In replacing the second iron on the first, the kind of work for which it is to be used must be borne in mind. If the second iron is brought very close to the edge of the cutting iron, the shaving is broken up more effectually, the work is neater and less liable to tear up; but the labor expended will be greater. As a rule, for roughing out, the edges may be somewhat distant, say about 1-16 in. apart; but for finishing, the top iron edge and the cutting iron edge should be almost on the same level.

The "bed" of the plane iron is made at different angles, to suit different kinds of work; the four angles most in use are known as *common pitch*, which denotes that the back of the iron reposes on its bed at an angle of 45° from the sole, and this inclination is usually employed for all surface or bench planes for soft wood. "*York pitch*" indicates an angle of 50° and is more adapted to use with mahogany and other hard stringy woods. *Middle pitch* or 55°, and half pitch or 60°, are employed with moulding planes, the former being for soft woods and the latter the harder kinds. In the course of time, the mouth of the plane gets enlarged, and out of truth. This may be to some extent avoided by keeping the sole greased by rubbing over with of piece of bacon rind; but sooner or later the mouth must be rendered smaller, which can be done by letting in a piece of box-wood in front of the cutting iron. Some planes, especially those used by cabinet makers, have the sole made either entirely or in great part of brass or iron. With a mouth so fine as it is possible to make these, and by reversing the position of the cutting iron, so as to give it a pitch of about 50°, the use of the top iron is not needed at all.

DANGER OF PROTRACTED SLEEP.—But here, as in so many other cases, the evil of deficiency has its counterpart in the evil of excess. Sleep protracted beyond the need of repair, and encroaching habitually upon the hours of waking action, impairs more or less the functions of the brain, and with them all the vital powers. This observation is as old as the days of Hippocrates and Aretæus, who severally and strongly comment upon it. The sleep of infancy, however, and that of old age, do not come under this category of excess. These are natural conditions, appertaining to the respective periods of life, and to be dealt with as such. In illness, moreover, all ordinary rule and measure of sleep must be put aside. Distinguishing it from coma, there are very few cases in which it is not an unequivocal good; and even in comatose state the brain, we believe, gains more from repose than from any artificial attempts to rouse it into action.—*Edinburgh Review.*

"WHERE did the ore in the iron mountains come from?" We may as well ask where did the turpentine, rosin and tar in the pine tree come from? Can the chemist detect it in the soil from which the tree draws its food, or in the air that surrounds it? The duty of the finite mind is to study effects, not primal causes. You may estimate the tons of iron ores in the iron mountains, or tons of coal in the coal basins, or amount of ores in the lead, copper and zinc fields, and may fuse these in the future and tell the status of the coming populations; you may estimate the number of barrels of tar and gallons of turpentine in the pine flora of a State—yet, the origin of the slippery atoms of the iron and turpentine refuse to be located.

A LADY LECTURER ON CHEMISTRY.—Scotland has produced something of an anomaly in the person of a lady lecturer on chemistry. Miss Charlotte Napier lately gave a lecture on chemistry, in connection with the Blackfriars Useful Information Society of Aberdeen. There was quite a full attendance, and the lecture was illustrated by a variety of experiments, pronounced of a highly interesting and instructive character, was listened to with the closest attention, and an enthusiastic vote of thanks was voted to the lecturer at the close. Miss Napier is quite a young lady, a native of Aberdeen. She studied chemistry at Edinburgh, under the direction of Mr. Falconer King, with the view of assisting her father as an agricultural chemist.

POTTERY AND PORCELAIN.—It was supposed, a few years since, that the ancients knew nothing of covering earthenware with a vitreous glaze, but recent discoveries have shown the contrary. Egyptian researches have thrown considerable light upon the subject of glass. Sir G. Wilkinson, Winckelmann, Layard, and other authorities have proved that glass and earthenware were made 3,500 years ago.