Industry and Veracity.

There are some virtues which seem to have a peculiar affinity for one another, each strengthening and developing the other by its own power of growth. Such are industry and veracity. Of course we cannot say that the busiest people are invariably the most truthful, but only that the tendency of industry as such is in that direction. It is true that industrial occupations sometimes offer temptations to untruthfulness, and might thereby seem calculated to retard rather than to stimulate the virtue of veracity. The inducements to prevarication in regard to the quality and quantity of goods and labor, and still more to the suppression of facts which would affect their value, are numerous and strong, and some undoubtedly yield to them.

We have, however, thoroughly learned the lesson that mutual confidence is the cornerstone of all social industries, and that truthfulness in word and deed is the only basis of mutual confidence. Truthfulness, therefore, naturally acquires a much higher rank in the minds of an industrious community than it can in any other. With us, in public estimation at least, it occupies the post of honor, and though doubtless many people infringe it in secret, none can be found bold enough to defend it. It is held as a test of noble character that a man is candid, sincere, and trustworthy, that his word is reliable and his promises secure. On the other hand, falsehood, evasion, and deceit are esteemed disgraceful, and those who deal in them are chiefly concerned lest they should be found out.

Mr. Lecky, in his History of European Morals, asserts that different ages and nations have different rudimentary virtues, or virtues upon which they lay the emphasis. Sometimes it has been loyalty to a leader, sometimes patriotism, sometimes the reverential spirit, sometimes independence, sometimes humility. Whoever in any particular community is decidedly lacking in such a rudimentary virtue is below the average of moral excellence, because he has neglected what is generally esteemed the very first element of righteousness. Our own term "common honesty" implies that this is at least one of our rudimentary virtues, without which no one can hope to rise in the scale of moral progress.

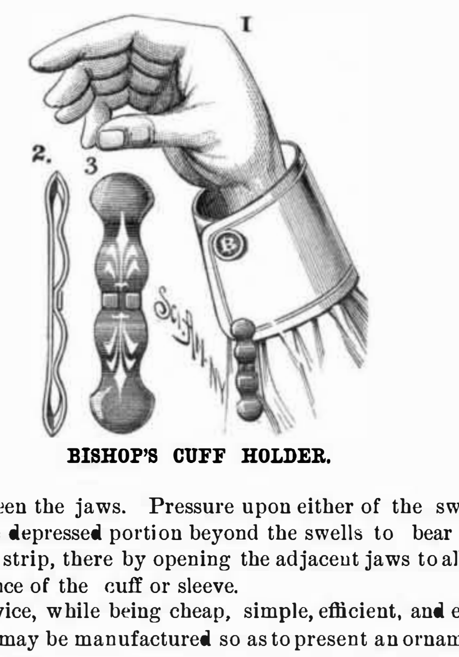
If we compare our state of things in this respect with that which exists among indolent nations of southern climes, or other thriftless communities that love ease better than labor, we shall find a marked difference. Instead of feeling vain in our fancied superiority to such people, perhaps if we compared our practical devotion to what appeals to us as the foundation of all virtue, with their devotion to something else that occupies that place to them, we might feel cause rather for self-abasement. We may rightly feel glad that we have learned the value of veracity, that our industries have proved it to be one of the foundations of all social welfare, of all true business relations, of all progress in morality and civilization. And yet, how far are some from embodying this accepted belief in their daily practice! How many are the evasions, concealments, and insincerities of which men are guilty, how many silences where truth demands speech, how many promises unredeemed, or kept to the letter, but broken in the spirit! It is for what we admit, for what we believe, for what we know, that we are responsible; and if we hold truthfulness in such high repute that we plume ourselves over others on account of it, then we are doubly blamable if we disown it in the conduct of our daily life. Increasing civilization and increasing knowledge open up to us more and more the nature and respective value of the qualities that constitute true manhood. But that manhood can only be realized by constantly infusing the knowledge we gain into our daily life, by vitalizing it in our hearts and conduct, by following closely the ideal we form, and by giving the whole allegiance of our nature to those principles which we honor in our thoughts and with our lips.—*Phila. Ledger.*

A French Wheat Cleaner.

At the recent Nice Exhibition was a machine shown by M. A. Maurel, of Marseilles. In the upper part of this machine is placed a hopper immediately over a cylindrical and open topped receiver. Horizontal stirrers on a vertical shaft work in this receiver, motion being given by bevel gearing and a pulley driven off the main shaft of the implement. The wheat to be treated is fed into the hopper and falls thence into the cylindrical receiver beneath, where it is subjected to the action of water delivered at a sufficient pressure to keep the sound wheat at the level of a discharge opening in the side of the receiver, the stones and heavy impurities falling to the bottom, and dust, chaff, etc., floating to the top, where they pass off by an overflow. The sound wheat being carried as described through an opening below the water level, is taken with the stream along a slightly inclined trunk rectangular in section, and in the bottom of which is set a series of catch plates to receive and hold any stones that may have been brought over with the wheat. From this trunk the wheat falls into the bottom of a vertical drying cylinder, after having been previously separated from a part of the water by means of a centrifugal fan. The drying columns, of which there are one or more, have perforated sides containing a series of inclined blades mounted on a vertical shaft and driven at a considerable velocity. By this means the weight is raised to the top of the first column, where it passes out by a discharge to the bottom of the second column, and is again raised, by which time the operation of cleaning and drying is supposed to be complete.

CUFF HOLDER.

The invention herewith illustrated was recently patented by Mr. H. D. Bishop, of West Hampton, N. Y. Fig. 1 shows the device in place on the sleeve, Fig. 2 is a longitudinal section, and Fig. 3 is a face view. Two thin strips of spring metal are so constructed as to form concave jaws, brought to an edge at their point of contact. The outer strip is of corrugated shape on its face between the jaws, thus forming swells upon opposite sides of the center, where it is united to the center of the other strip, which is provided with side wings that are turned over upon the outer strip. The outer strip is properly tempered so as to retain its bent form, and its spring is strong enough to hold the sleeve and



BISHOP'S CUFF HOLDER.

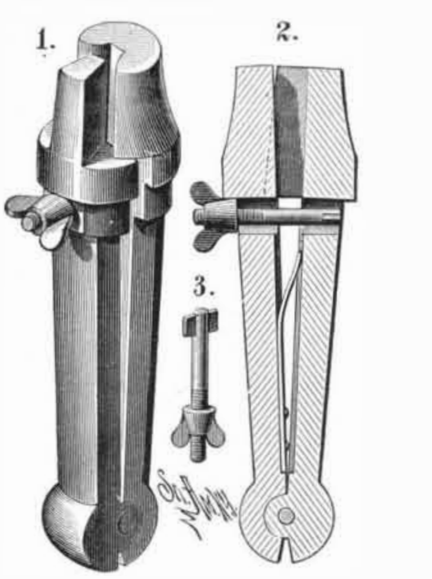
cuff between the jaws. Pressure upon either of the swells causes the depressed portion beyond the swells to bear on the under strip, there by opening the adjacent jaws to allow the entrance of the cuff or sleeve.

The device, while being cheap, simple, efficient, and easy to work, may be manufactured so as to present an ornamental appearance.

WATCH MAKER'S HAND VISE AND RING BENDER.

The main jaw is formed at one end with a cylindrical head that is so cut away as to form diverging cheeks. The opposite jaw is reduced in size at its upper end to form a nose, which closes in between the cheeks of the first jaw for grasping a wire, ring, or other object. The jaws are pivoted together at their lower ends, and between them is placed a spring by which they are forced apart. Passing through corresponding openings in the jaws is a bolt (Fig. 3), which is locked in the opening at one end and is provided at the other with a thumb nut, by turning which the jaws may be opened or closed.

When the tool is to be used for bending rings, the bolt will be removed; and in order that this may be done without taking off the nut, the head is formed with a small plate which passes through slots in the openings; the bolt is locked in



WATCHMAKER'S HAND VISE AND RING BENDER.

place in the jaws by turning it so that the plate or crosshead will be at right angles to the slots when it enters shallow recesses formed at the back of the jaw. When used as a ring bender, the tool will be placed in an ordinary bench vise, and the ring placed between the jaws, which will be forcibly brought together by the vise. Various other uses to which this tool can be put will be readily perceived.

Further particulars may be obtained from the inventor, Mr. C. B. Rubert, of Owego, N. Y.

How to Determine Expansion.

Mr. C. E. Emery made a very complete series of experiments some years ago upon the engines of the United States revenue cutters Rush, Dexter, Dallas, and Gallatin, from which he deduced the following simple rule (subject to certain limitations) for the best ratio of expansion in steam engines:

Rule—Add 37 to the steam pressure as shown by the gauge; divide the sum by 22; the quotient will be the proper ratio of expansion.

Example: An engine is running with a pressure of 90 pounds per square inch; what should be the ratio of expansion? $90+37=127\div22=5{\cdot}77$ = the best ratio of expansion.

Temperature of the Earth at Different Depths.

At a recent meeting in this city of the American Society of Civil Engineers, observations upon the temperatures of the earth as shown by deep mines were presented by Messrs. Hamilton Smith, Jr., and Edward B. Dorsey. Mr. Smith said that the temperatures of the earth vary very greatly at different localities and in different geological formations. There are decided exceptions to the general law that the temperature increased with the depth. At the New Almaden quicksilver mine at California, at a depth of about 600 feet, the temperature was very high—some 115 degrees; but in the deepest part of the same mine, 1,800 feet below the surface and 500 feet below sea level, the temperature is very pleasant, probably less than 80 degrees.

At the Eureka mines in California, the air 1,200 feet below the surface appears nearly as cool as 100 feet below the surface. The normal temperature of the earth at a depth of 50 or 60 feet is probably near the mean annual temperature of the air at the particular place. At the Comstock mines some years since the miners could remain but a few moments at a time on account of the heat. Some ice water was given them as an experiment; it produced no ill effects, but the men worked to much better advantage, and since that time ice water is furnished in all these mines and drunk with apparently no bad results.

Mr. E. B. Dorsey said that the mines on the Comstock vein, Nevada, were exceptionally hot. At depths of 1,500 to 2,000 feet, the thermometer placed in a fresh drilled hole will show 130 degrees.

Very large bodies of water have run for years at 155 degrees, and smaller bodies at 170 degrees.

The temperature of the air is kept down to 110 degrees by forcing in fresh air cooled over ice.

Captain Wheeler, U. S. Engineers, estimated the heat extracted annually from the Comstock by means of the water pumped out and cold air forced in as equal to that generated by the combustion of 55,560 tons of anthracite coal or 97,700 cords of wood. Observations were then given upon temperature at every 100 feet in the Forman shaft of the Overman mine, running from 53 degrees at a depth of 100 feet to 121·2 degrees at a depth of 2,300 feet. The temperature increased:

100 to 1,000 feet deep, increase 1° in 29 feet.
100 to 1,800 " " " 1° in 30·5 "
100 to 2,300 " " " 1° in 32·3 "

A table was presented giving the temperatures of a large number of deep mines, tunnels, and artesian wells. The two coolest mines or tunnels are in limestone, namely, Chanarcillo mines and Mt. Cenis tunnel, and the two hottest are in trachyte and the "coal measures," viz., the Comstock mines in trachyte and the South Balgray in the "coal measures." Mr. Dorsey considered that experience showed that limestone was the coolest formation.

Mr. Theodore Cooper gave a description of a curious slide or slump which recently occurred near Dover, New Hampshire, a large section of a clay formation having gone bodily into the adjacent river, moving trees with it, but leaving between the river and the cavity a bank of considerable width

Bleaching Sponges.

As is well known, chlorine and its compounds cannot be used for bleaching sponges, as they impart a yellow color to the latter, which in addition become hard and lose their fine texture. The method now generally employed is a water solution of sulphurous acid, and requires from six to eight days, and considerable manipulation. According to the latest researches made in Germany, the bleaching of sponges can be performed more conveniently and expeditiously by means of bromine dissolved in water. As is well known, one part of bromine requires thirty parts of water to dissolve it, and thus a concentrated solution can easily be obtained by dropping a few drops of the former into a bottle of distilled water and shaking it. The sponges are submerged in this solution, and after the lapse of a few hours their brown color changes to a lighter one, the dark red bromine solution, changing at the same time to light yellow. By treating the sponges to a second immersion of a fresh solution, they acquire the desired light color in a short time. They are improved still more if finally dipped in dilute sulphuric acid and washed with cold water. It seems strange that such closely allied bodies as chlorine and bromine should act so differently toward the coloring matter in sponges.

Cooking and Heating with Gas.

Dr. J. B. Rich, of this city (37 West 22d Street), has been conducting for some time past interesting experiments with gas stoves. The Doctor weighs the articles he bakes, boils, roasts, or otherwise cooks, and keeps an exact record of the quantity of gas consumed and the time occupied in cooking each article, or all together. The manner in which the experiments are conducted impart interest in the Doctor's investigations, and will insure, when completed, a pretty accurate conclusion as to the relative cost of coal and gas for cooking and heating purposes.

The gas stoves used in the experiments are from different manufacturers, and the Doctor has one of his own invention; but unlike most sanguine persons he does not think his stove much better than some others. But that there is vast economy in the use of gas for all kinds of domestic purposes the Doctor has not a doubt, and when through with his experiments the gas companies, gas stove makers, and the public are all to have the benefit of his investigations.