

INTERESTING CORRESPONDENCE.

THE PEOPLES' COLLEGE.

MESSEURS. EDITORS:—The anniversary meeting of the Trustees of the People's College was held at this place yesterday, and was a very pleasant affair. In sending you an account of it I will give a brief history of the institution.

About thirteen or fourteen years ago, the idea of a People's College originated with several members (in western New York) of an organization called "The Mechanics' Mutual Protection"—an order which had most noble objects in view, and which did considerable good in its day, but is now extinct. The names of its originators I need not give in this communication; although several of them have since then arisen to distinguished positions and are now men of mark. After much labor and trouble it was reserved for the Hon. Charles Cook, of Havana, Schuyler county, N. Y., to give the project a fixed and practical impulse, and he may justly be called its founder. It was chartered by the Legislature in 1853, and its objects found a responsive sympathy in his heart, as he had commenced active life as a laboring man, and gradually ascended the ladder of affluence and public reputation, until he has reached a most distinguished and deserved position in society. On September 2, 1858, the foundation-stone of the edifice was laid amid a large concourse of people, and with very imposing ceremonies; and the main building has now reached its fourth story. Mr. Cook is erecting this structure, which will cost \$175,000, and he has also given a farm worth \$30,000 for industrial purposes, which is one of the main objects of the college. This is a good beginning, and affords evidence, that the institution is destined to be one of the best and most comprehensive in our country. Its main objects are to qualify young men for the efficient discharge of the practical duties of life, and to provide the means for elevating the working men to that position in our republic which they deserve to occupy, but which they do not at present. The exercises of the students are to be arranged so as to educate them theoretically and practically for following the callings which they desire to pursue, as mechanics, farmers, &c. Geology, botany, mechanics, chemistry, engineering, agriculture, &c., together with the classics, are to be taught. Workshops are to be erected for teaching practical mechanism, and students who are too poor to pay for their education can labor in connection with the college to defray their expenses.

The anniversary ceremonies, yesterday, were conducted in the open air. A procession of about 3,000 persons was formed in the village, and escorted to the grounds, near the college, by the Cook Guards. On reaching the grounds, the Hon. Charles Cook, in the absence of the Chairman of the Board of Trustees, was called to the chair, and prayer was offered by the Rev. Mr. Hunt, of Ithaca. This was followed by a most eloquent address by the Rev. Asa D. Smith, D. D. of your city. From beginning to end it was listened to with the most profound attention, and every heart seemed to bound with impulses in unison with the ideas of the speaker. His address was full of sympathy for the mechanical and agricultural classes; and he urged, as the foundation of true greatness, in all who were to receive an education here, the study of the scriptures.

The president of the college, Dr. Brown, afterwards stated, in the form of a report, that about fifty men had been kept at work upon the building for the past eleven months, and that \$30,000 had already been expended upon it. He said that he had already received 200 applications from young men in various parts of the country who were waiting to avail themselves of the privileges of the college, and he asked for \$20,000 from Schuyler county to endow a professorship. The audience gave a unanimous response to the effect that this would be done. It is to be hoped that the several chairs in this college will all be endowed soon, and that it will go on prospering and to prosper. No other college in the world is founded on the same principles, nor is there one which has such thoroughly useful objects in view. It has a lofty mission to fulfill; and those who have labored to promote its interests deserve the lasting gratitude of all good men.

The trustees of the college now consist of the Governor and Lieut.-governor of the State, the Speaker of the House of Assembly, the Superintendent of Public

Instruction, and the president of the college, who are, by the charter, made ex-officio members of the Board; also Horace Greeley, New York; Daniel S. Dickinson, Broome; Washington Hunt, Niagara; T. C. Peters, Genesee; D. C. McCallum, New York; A. I. Winkoop, and W. H. Banks, Chemung; C. J. Chatfield, John Magee, and Constant Cook, Steuben; S. Robertson, Tompkins; George J. Pumpelly, David Rees, Tioga; Charles Lee, John Rose, Yates; T. R. Morgan, Broome; E. C. Frost, Charles Cook, W. T. Lawrence, and Joseph Carson, Schuyler; Thurlow Weed, Albany; Asa D. Smith, D. D., New York.

Havanna, N. Y., August 11, 1859.

QUALITIES OF BELTING FOR MACHINERY.

MESSEURS. EDITORS:—As the columns of the SCIENTIFIC AMERICAN have furnished much valuable information on the subject of belting, permit me to add my testimony as to the relative durability of different kinds of belts, and thereby, perhaps, save some of your readers from spending their money for that which profiteth nothing.

Having had the management, for several years, of one of the best steam saw and grist-mills in the South, I have had an opportunity to try almost every variety of belting. I am running, with other machinery, a circular saw, of 48 inches diameter, which is cutting upwards of 2,000,000 feet of yellow pine per annum. It is driven from a center-shaft by a 10-inch four-ply belt of vulcanized rubber. The center-shaft is driven by a four-ply belt of the same material, 12 inches wide. The last-named belt was injured by oil, through the carelessness of the engineer; and having heard gutta-percha belting recommended as possessing every good quality of rubber, with the addition of being oil-proof, I substituted gutta-percha in lieu of the 12-inch rubber one; but with very poor success, for it cracked so badly that in less than a month it was a total failure. The injured rubber belt, which had been used constantly for 18 months, was again set to work, and has now run in all 22 months, and is yet good for six months more. The gutta-percha belting, under a light tension and slow motion, might give satisfaction; but it will not do in a situation where its qualities are as severely tested as here—this 12-inch belt requiring a tension-pulley of 400 lbs. weight, and a motion of 2,500 feet per minute, and it has to be shifted to work on fast and loose pulleys. Yet, with ordinary care, a vulcanized rubber belt will last, in this situation, three years, running 12 hours per day.

I will now mention a composition belting manufactured by a company who advertised their goods, and "guaranteed" every belt purchased of them. In April last, I ordered a variety of this belting, such as I was needing, the lot costing about \$120. In place of the 10-inch belt which drives the saw-mandrel before-mentioned, I put in a composition belt, full one-third thicker and heavier than the rubber belt, which had been used for nearly two years. I found it would do as much work with one-half the tension which the rubber belt required, but the material was so rotten that it was with difficulty I could join the ends to last more than two hours. Finally, I succeeded in making a joint which was stronger than any other part of the belt, and then it parted in a new place; so that the belt was entirely used up in two days' running. I wrote to the treasurer of the company, requesting him to order the belt returned, and send me a better article or refund the money; but no notice was taken of my letter. The adhesion of the composition is so imperfect that you can press the edges of an eight-inch belt together, and form a tube through which a cat can pass pass from one end to the other. And this explains the "pliable" nature of the belting.

I have replaced the old rubber belt again. A leather belt of the best quality will last only about six months in this situation. The canvas in the composition belt is of a poor quality, or else the composition rots the canvas. The company's circular states that "the lacings will not tear away, but will retain their hold on the tightest bands," but this is so far from being the case, that one of their belts has given way repeatedly, and that in a situation very favorable for the durability of the belt. It is eight inches wide and 75 feet long, and runs perpendicularly, requiring hardly any tension except its own weight. A vulcanized rubber belt will do service for more years than this "substitute" will do. The old proverb, "Try what you will, there's nothing

like leather," was penned before vulcanized rubber came in vogue for belting and numberless other purposes; yet for crossed-belts, and those running at high speed over small pulleys, the proverb is still good. But for almost every other situation, I prefer belting of rubber. I have in operation some leather belting manufactured by a New York company, which gives perfect satisfaction. Some other, purchased at the same time and place (all warranted to run straight on the pulleys), bears a strong resemblance in its course to that of a snake in the grass, but perhaps not quite so regular in its curves. It is useless to complain of such treatment, for the parties would make it appear that, although the orders, which are accompanied by a check, almost invariably go safely by mail, yet a letter expressing dissatisfaction, or requesting them to make good their promises, is invariably miscarried.

These remarks are intended entirely for the benefit of mill-owners; for, in many cases, steam mills are so badly mismanaged that the proprietors realize little or no profits from them.

C. W. SHEDD.

Addison, Ala., August 16, 1859.

TOOL-HOLDERS FOR LATHES.

The following interesting letter, giving a history of the various improvements which have been made in lathe tool-holders, is from a gentleman well qualified to give a succinct and correct account. It was called forth by our description of Peck's improved tool-holder, which appeared in No. 7. of the present volume.

MESSEURS. EDITORS:—In my 26 years' experience and observation in the machine and tool business, there have come under my notice many devices for adjusting tools on gib and other lathes; and from the importance of the subject, I have noted somewhat carefully the progress made.

Among the earliest experimentors (to my recollection) was Mr. O. W. Bailey, of Manchester, N. H., who made the first gib lathe ever built in this country. He constructed his tool rest in two pieces; the top part, carrying the tool-post, was attached to the bower or main part by a hinge-joint, and had cast on the bower side a pendant arm hanging down in the hollow part of the lower piece, and was vibrated forward and back by a screw, giving a rocking motion to the upper surface, and producing any required adjustment to the tool.

Mr. James Brown, of Pawtucket, Mass., built and used for six or seven years, and afterwards patented (in 1852, I think) a tool-holder for gib rests, which consisted simply of a thimble with an internal screw, screwed on the top of a round rest, in the center of which was a common tool-post with a long slot and set-screw. To adjust the tool it was simply necessary to slacken the screw in the tool-post, and turn the thimble up or down, as the case required, to the proper height, then to tighten the screw on the tool.

Mr. Rollins, of Nashua, N. H., also built and patented (some six years ago) a tool-holder that is very much like Charles Peck's device; as each of them supports the tool upon convex surfaces resting upon corresponding concaves, which is really the main feature in the two adjustments, and is substantially the same thing in principle.

Mr. C. C. Strong, of Nashua, N. H., built and used some tool-holders that were constructed with a segment of a sphere on the under side of the piece supporting the tool, which segment rested in a corresponding surface, and was held in any required position by tightening the tool, it being adjustable in every direction within proper limits.

The next noteworthy inventor in this line was Mr. C. Van Horn, of Springfield, Mass., who patented, several years ago, a tool-holder that was elevated or depressed by means of a screw and inclined-plane, in substantially the same manner as has been in use some 29 years on a lathe now running in the Newark Machine Co.'s machine-shop, in Newark, N. J., the principal difference between the two being in simply reversing the angle of the plane.

Mr. Lincoln, of the Phoenix Foundry, Hartford, Conn., has also in extensive use an adjustable tool-holder, operated by screw and wedge. Messrs. Gay, Silver & Co., of North Chelmsford, Mass., and Wm. Sellers & Co., and our firm, of this city, have long been using for the same purpose a gib rest very much like the old weighted rest, and adjusted by a thumb screw on the

back side, which device has been abandoned more to facilitate turning larger objects over the rest carriage than for any faults it possessed in its adjustment.

The common ring around a tool-post with steps or notches has been very extensively used, and answers a good purpose, though not perfectly adjustable. But among all the valuable improvements I think there is none so simple and entirely practicable as the adjustment which we use, and which was invented by our foreman, J. Q. A. Brown; it is simply two rings or circular inclined-planes, each having a thick and thin edge, with the common tool-post in the center; these rings are made of wrought-iron, case-hardened, and are milled on their outer surfaces so that the workmen can turn them easily with their fingers. By placing the thin edge of one and the thick edge of the other together the upper surface is level, but by placing the two thick edges together, the greatest angle is obtained, and any intermediate angle is obtained to the slightest degree by turning one or both of the rings, as the case may require.

In a recent visit to several European machine-shops I was greatly surprised to find little or no attention paid to the subject in question, though they universally use gib rests. In fact, the English—who are the leaders in tool-building in Europe—are far behind the Americans in practical conveniences about tools and labor-saving machinery, though they do excel in massive and expensive tools, which our people are beginning to appreciate.

As I understand one of the aims of your valuable journal is to diffuse a knowledge of the mechanic arts, with all past and present inventions, I have ventured thus to advance the foregoing remarks, hoping that they may interest many of your readers and "draw out" some other communications on the subject, thus helping forward still greater improvements in the construction of machine tools.

WM. B. BEMENT

Philadelphia, Pa., August 22, 1859.

RAIN AT DIFFERENT ELEVATIONS.

MESSRS. EDITORS:—There is one remarkable fact connected with the fall of rain, which has never yet received satisfactory explanation. Over any given spot more rain falls at the surface of the earth than above it. Herberden made some experiments to explain the fact, in the following manner: he fixed a rain-gage on the square part of the roof of Westminster Abbey (away from the western towers, which might have obstructed the clouds), another on the roof of a neighboring house, and a third on the ground, in the garden of the same. The number of inches of rain caught on the Abbey roof was 12, on the house-top, 18, and in the garden, 22. The illustrious French astronomer, Arago, has for many years noticed the fall of rain, at different heights, at the Observatory of Paris, and his results (with which hundreds of others agree) are like those of Herberden. It is well-known that the quantity of rain which falls at the foot of a mountain is considerably larger than that deposited on the summit of it. Many explanations have been offered of this most curious fact, but none to which the scientific have given sanction. My own explanation of the phenomena is that the rain, in falling, condenses vapor in the whole way of its descent to the ground, and must, therefore, convert a greater amount of it into water at the surface of the earth than at any altitude above it.

H. B. LIVINGSTON.

Laurens, N. Y., August 18, 1859.

MINERALS IN SOUTH-EASTERN MISSOURI.

A correspondent—F. Woolford, of Paton, Mo.—who seems to be fully posted in the manufacture of pottery and porcelain, sends us a description of the minerals of the south-eastern portion of his State, which he has evidently explored very thoroughly. He informs us that, in addition to iron, marble is plentiful in Bollinger and the adjoining counties, and cobalt, nickel, bismuth and antimony have been found, with silver in small quantities and in crystals. But more valuable than these are the kaolin or china clay deposits, which are found on the eastern spurs of the Ozark Mountains, about 14 feet below the surface, and is overlaid with a strata of red friable micaceous rock, resembling gneiss. In some places it is entirely decomposed, and in others it has the external form of feldspar, and is of good quality, being free from iron and other impurities. It is well

adapted to the manufacture of porcelain, iron-stone china, and other wares. There is an extensive mine of pipe or ball clay, free from iron, and which burns very white in the kiln. It will admit of from 20 to 30 per cent. of silex to make a good pottery. There is also an abundance of fine quartz sand, suitable for glass and glazes for the earthenware; and there is a fine clay in the neighborhood which makes excellent fire-bricks, seggurs, glass-pots, and the like. If coal could be found in this region (which, from its granite character, we do not think likely), it would immediately become the Staffordshire of America; but until cheap and easy means are found for the fuel, we are afraid these valuable resources must lie dormant, and not realize the sanguine anticipations of our correspondent.

WEAR OF BOILERS.

MESSRS. EDITORS:—There is one fact in regard to the wear of ordinary flue boilers which I do not remember to have seen in your journal; it is this, the corrosions of the plates exposed to the fire takes place just at the edge of the overlapping sheet, and the space does not exceed an inch in width, and expands around the boiler, to the water line on either side. I have an old boiler which at this point is not thicker than sheet iron, while the remainder of the sheet is almost as good as new; the furrow is as distinct as if cut with a cold chisel. This matter is worth investigating.

T. LEE.

Central College, Ohio, August 20, 1859.

HOW TO FATTEN CHICKENS.

It is hopeless to attempt to fatten chickens while they are at liberty. They must be put in a proper coop; and this, like most other poultry appurtenances, need not be expensive. To fatten twelve fowls, a coop must be three feet long, eighteen inches high, and eighteen inches deep, made entirely of bars. No part of it solid—neither top, side nor bottom. Discretion must be used according to the sizes of the chickens put up. They do not want room; indeed, the closer they are the better—provided they can all stand up at the same time. Care must be taken to put up such as have been accustomed to be together, or they will fight. If one is quarrelsome, it is better to remove it at once; as, like other bad examples, it soon finds imitators. A diseased chicken should not be put up.

The food should be ground oats, and may either be put in a trough or on a flat board running along the front of the coop. It may be mixed with water or milk; the latter is better. It should be well slaked, forming a pulp as loose as can be, provided it does not run off the board. They must be well fed three or four times a day—the first time as soon after daybreak as possible or convenient, and then at intervals of four hours. Each meal should be as much and no more than they can eat up clean. When they have done feeding, the board should be wiped, and some gravel may be spread. It causes them to feed and thrive.

After a fortnight of this treatment, you will have good fat fowls. If, however, there are but four to six to be fattened, they must not have so much room as though there were twelve. Nothing is easier than to allot them the proper space; it is only necessary to have two or three pieces of wood to pass between the bars, and form a partition. This may also serve when fowls are put up at different degrees of fatness. This requires attention, or fowls will not keep fat and healthy. As soon as the fowl is sufficiently fattened it must be killed, otherwise it will still get fat, but it will lose flesh. If fowls are intended for the market, of course they are or may be all fattened at once; but if for home consumption, it is better to put them up at such intervals as will suit the time when they are required for the table. When the time arrives for killing, whether they are meant for market or otherwise, they should be fasted, without food or water, for twelve or fifteen hours. This enables them to be kept some time after being killed, even in hot weather.—*London Cottage Gardener.*

A GOOD SUBSTITUTE.—A correspondent writing from Auburn, Ind., says:—"Your paper is the most welcome visitor in my house, and I expect to do without tobacco and whiskey, and take it in." Good! we are glad to know that our friend is going to practice such remarkable self-denial for the sake of our journal.

A COLUMN OF INTERESTING VARIETIES.

It is announced, for the benefit of those persons who did not get a sight of the comet, that it will again appear before the public, for a few nights, in the autumn of 2147.....The most secure fastening of your chamber-door is a common bolt on the inside; if there is none, lock the door, turn the key so that it can be drawn partly out, and put the wash-basin under it, that any attempt to use a jemmy or put in another key will push it out and cause a racket among the crockery, which will be pretty certain to rouse the sleeper and rout the robber.....Barrow, the Chinese traveler, computes that there is more material in the great wall of China than in all the houses of England and Scotland combined..... A short time ago, a lady advertised in the London Times for a housekeeper, and received upwards of 2,000 replies, 500 of which came to hand by the first delivery..... Human hair varies from the 250th to the 600th part of an inch in thickness. The fiber of the coarsest wool is about the 500th, and that of the finest about the 1,500th part of an inch in diameter. Silk-worms' silk is about the 5,000th part of an inch thick; but the spider's line is six times finer, and a single pound of this delicate but strong substance would be sufficient to encompass the globe..... German physiologists affirm that, of 20 deaths of men between 18 and 28 years of age, 10 originate in the waste of the constitution induced by smoking..... A French surgeon has been making experiments upon sores and wounds of persons of frail constitutions, by employing the common hand-bellows to act upon the part for 15 minutes at a time, four times a day. His success is announced, on medical authority, as encouraging..... Sound is always propagated outwards in straight lines, but recoils like a ball when driven against an obstacle which, by its dimensions, is sufficient to intercept the undulation. It will pass with great velocity through glass, and timber, and massive buildings, but is beaten back by mountains and caverns. This reflection of sound produces the beautiful effect of echoes..... The engines of the large ocean steamers make about 200,000 turns in crossing the Atlantic, between Liverpool and New York.... With four weights of respectively 1 lb., 3 lbs., 9 lbs. and 27 lbs., any number of pounds, from 1 to 40, may be weighed..... The annual consumption of coal for gas-making in London is estimated at 840,000 tons, the product being 7,728,000 cubic feet of gas..... Boron was some time since crystallized by Messrs. Wohler and Deville, and the product, in brilliancy and hardness, rivaled the diamond..... The widest span yet made in a timber bridge is believed to be that of the Schuylkill bridge, at Philadelphia, the clear opening of which is 340 feet..... The highest mountain in the world is Mount Everest, in the Himalayas. Its height is 29,000 feet, or five and a half miles above the sea..... Veins of coal, having caught fire, sometimes burn for years. An anthracite coal vein, under Broad Mountain, Pa., has been burning for 22 years, and there is no prospect of its extinction whilst more coal remains to be consumed..... The friction of iron journals in brass boxes, with a film of good oil interposed, has been found, in some cases, to be as little as 1-90th of the weight. Ordinarily, it is about 1-30th of the weight; while, if the surfaces are wiped dry from oil, it is about 1-10th..... The power required to drive an 18-inch train of rail rolls, including roughing and finishing, also, one pair of cropping-shears, eight straightening presses, saws, &c., sufficient for making 900 tons of rails weekly, has been found to be 239-horse power. In this case, the rolls made 85 revolutions per minute..... The population of Rome, at the highest period of its power, has been estimated at 6,800,000. The present population of London is about 2,800,000. The entire population of Paris, including that of all its metropolitan suburbs, is about 1,500,000. That of New York, estimated in the same way, is 1,100,000..... Hydraulic mortar was first made in London, in 1796, from the septaria in the Isle of Thanet. Roman cement contains from 30 to 40 per cent. of clay, and hardens in a quarter of an hour. When clayey limestones are calcined, the theory is that the silica unites with the alumina, lime and magnesia, forming a silicate which, when mixed with water, takes up water of crystallization, like plaster of Paris, and becomes as hard as rock..... Huntsman, of Attercliffe, near Sheffield, Eng., was the first, in 1769, to make cast-steel.