Correspondence.

Exhaust Fans for Slate Dust.

To the Editor of the Scientific American:

Exhaust fans are now used to carry off the dust made in turning grindstones at the Cleveland Stone Company's quarries, preserving the operators harmless, where formerly the loads of dust rendered death sure, from continuous inhaling, within four years. Why not apply the same remedy to draw off the dust from the hundreds of slate pickers at the anthracite coal breakers? FARRELLY ALDEN.

Pittsburg, Pa., June 1, 1887.

How Snakes Climb Trees.

To the Editor of the Scientific American:

In your valuable journal of 14th May, you quote from an article which suggests that young men most liberally educated may be ignorant of many facts and practical matters, such, among many others mentioned, as "how steel is made, or how a snake can climb a tree." I have seen a snake climb a tree, and while his may not have been the orthodox method, nor in accord with the usages of the best ophidian society, it was to me a most interesting sight, and the account may be of some interest to others. A few years since I was walking along a broad road in Richmond County, Georgia, when from the opposite side of the road coming directly toward me I saw a "coachwhip," a snake much like the common black snake in form, but in color a very dark brown some two thirds of its length, the other third to the tip of the tail being a light brown, in appearance, from the peculiar markings, much like the lash of a whip. Having nothing with which to kill the snake, I thought to amuse myself by preventing his getting to cover in the "thick" just beyond me; but to turn back would leave him exposed for quite a distance, so, not being in a fighting humor, he made a rush for a water oak which grew just beyond me but not on a direct line with me, the long branches of which came down to within four or five feet of the ground; then rising until he seemed almost to stand on the end of his tail, he shot up like an arrow through the branches, getting his grip entirely by lateral pressure and not by coiling around the branches as I thought he would do. WM. L. WAKELEE.

Savannah, Ga.

Noises to Promote Sleep.

To the Editor of the Scientific American:

A sleep preserver such as suggested in one of your recent issues would be a full size blessing to thousands of mothers, and would save the lives of many infants and invalids, especially in cities, where we are at the mercy of forty different kinds of discordant sounds.

No special instrument is necessary. Any monotonous continuous sound is a lullaby. "The sweetest and soundest sleep is promoted by sound." We now have frog farms and ostrich ranges; who'll be first to inaugurate a new American industry, by establishing a bumble-bee ranch, and selling bees trained to buzz a man to sleep? Days when the bee is not needed at home, the owner can take him to the office, and whenever a chronic bore drops in, the bee can be let loose to out-buzz him.

But there is no better sleep guard than machinery. A person having a spring or electric or water motor to run her sewing machine need only remove the needle, place the machine near the patient, and let it run. The infant or invalid would soon become accustomed to it, and perhaps, as the castoria man says, "cry for it." Thus will the sewing machine sew or knit up "the raveled sleeve of care"—one stroke more than its manufacturers have hitherto claimed for it; and the coming mother will perhaps sing:

"Rock-a-by, baby; Grover and B,
Melodious music shall murmur to thee," etc.

S. N. STEWART.

Philadelphia.

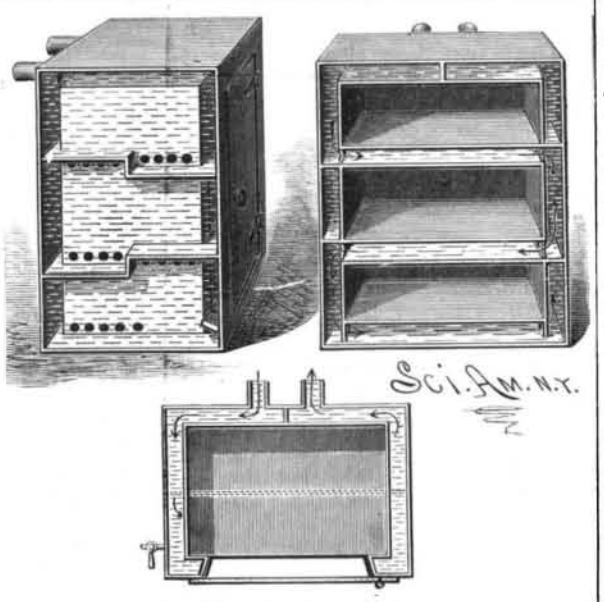
The Advantage of Thinking.

To have learned to think, whether learned in the schools or out of them, is to have attained the most valuable of all acquirements. Hard and stubborn facts in letters, sciences, or mechanics, however desirable in themselves, cannot be of the best practical value to their possessor until he has learned to think, and so is able to adjust his information to the constantly varying conditions and necessities of his occupation.

Any system of instruction which does not teach a man to think falls very far short of the best results of instruction, and leaves him without the most vital element of success. The *Jewelers' Journal* repeats what has been often said in these columns; that is, what a mechanic most needs to-day is to know how to think. He who can do this is never at a loss for ways and means, and is ever and always equal to every occasion, and can meet any emergency without hesitancy or confusion. He finds real pleasure in conquering a difficult job, for he can always conquer it, inasmuch as he is an inventor, and can create a way where there was none. A man who has learned to think continually separates and combines, and from the scraps which he gathers as he goes he constructs. Material is ever at his hand, and whether he is on a journey, in the shop, or the factory, his eye is ever observant and his senses alert. Having learned how to acquire knowledge, the *Journal* further adds, he never finds himself anywhere that something does not appear which he wants to see, and having seen, will not sooner or later put to practical use. The setting of a lathe tool, the adjusting of a band in a machine shop, even the turning of a crank or the skillful handling of a file, is more than likely to suggest some new "kink" to him, wholly unlike anything he is observing. He finds treasures unsuspected by the man whose mind, being simply a storehouse of blank facts, moves mechanically forward, observing nothing but that which is already constructed and complete. These treasures he stores as he gathers them, and at the call of a necessary occasion or an emergency they are combined into a complete whole by a process of which he himself is quite unconscious. Having learned to think, he sends forth every moment freighted with some sort of effort. He has learned "the value of work as a means of happiness and of change of work as a means of rest," and idleness is neither necessary nor recreative. He can catch an idea on the wing, and an idea gained is a source of true happiness. Such a man does not easily weary, and it is late in life before he grows old. He goes on gaining knowledge to the end, and his knowledge assimilates and becomes wisdom as he gains it.

A WATER COOLED REFRIGERATOR.

The refrigerator herewith illustrated, which has been patented by Mr. George E. Fell, of Trenton, N. J., is arranged to provide central storage chambers in connection with the walls of an outer inclosing case, in which, a proper water connection having been established, with such pressure as is usually required to conduct water through buildings, a constant flow or current will be maintained about the interior chambers. Our views show sectional and cross-sectional elevations and the plan, the dividing walls in the outer case separating it into spaces, by which the flow of water will be directed, from its entrance, around all sides of the interior storage chambers, until it reaches the exit pipe, as partially shown by the arrows. If it is desired to reduce the temperature below what would normally be effected in this way by the ordinary water supply, an ice receptacle may be supplied, and the water made to pass through it before entering the refrigerator. In this case it may be more convenient to utilize for other wants the water so cooled than to provide a regular water cooler, and a stop cock is provided, as shown in the plan view, at one of the corners near the door of the refrigerator, by which water may be drawn as desired.



FELL'S REFRIGERATOR.

What may be Accomplished by Energy and Perseverance.

Col. H. W. Pinckney, in *Dixie*, a newspaper published at Atlanta, Georgia, relates the following incidents, which came under the writer's own observation, where success trod closely on the heel of perseverance and industry:

A man can make a living, and also make money, in hundreds of different ways in this country, and it is a mighty good thing that this is so, else over-production would be the rule, not the exception. I know a man who is getting rich out of baby swings. It's a simple, cheap thing to make, and he started in a simple and cheap way to make them, his entire outfit of tools comprising two saws, two saw benches, a draw shave, two hand planes, a brace and some bits, a rough work bench. He didn't stand around with hands in his pockets waiting for somebody with capital to come along and boost him. Not much. He thought these swings would sell, so he made one and peddled it round until he found a purchaser. Then he made another and sold that, and thus he kept on until finally people began to think his swings were a good thing to have in the family, and they began to inquire for them. He started eight years ago, and alone did all the work of making and selling them. Things with him are very different to-day. He has a shop two stories in height, and machinery for sawing, planing, boring, mortising, turning, and sandpapering the material entering into the construction of these swings. In that shop forty men find constant employment, and, as I said before, the owner is getting rich out of it. Counting the wives and children of the workmen in that shop, there is a population of nearly or quite one hundred and fifty making a living out of one man's idea that a baby swing would sell. A baby swing is not a very big thing, but it is in this case big enough to keep quite a little village busy and comfortable.

A step ladder is a mighty handy thing to have around the house. Five years ago three men, by the closest kind of scraping, twisting, and borrowing, managed to get together five hundred dollars. They bought some lumber, rigged up a circular, or buzz, rip saw, and started in to make step ladders. For two years it was a struggle of the hardest kind; sales had to be made by personal canvass, prices obtained permitted no margin of profit, and the outlook was of such a discouraging nature that their friends and neighbors pitied them first, then prophesied dead failure, and finally laughed at their folly in sticking by a losing game. Then came a change; however, a prominent house-furnishing goods firm one day wrote them for prices on five thousand ladders. The size of this possible order very nearly took them off their feet. They had sense enough, however, to understand that this big house would not give them the order unless prices were made away down, so they sat down and figured the thing over, and having decided that matter, awaited the result, which turned in their favor and they got the order. Then they went to work; each one took his coat off and pitched in; they worked sixteen hours a day until that order was filled, and it was filled on time, and each ladder was honestly made. The only expense they realized was for lumber, screws, and paint. They had done all the work themselves. This was the turning point in their business career. Within a month from the delivery of these five thousand ladders they had contracted with the same house for a monthly supply of two thousand five hundred. They were on their feet now, and began to push things. They are turning out to-day, with fifteen men, ten thousand step ladders each month, and have been doing this for more than a year. A step ladder is a little thing, but these men are making money out of them.

About fifteen years ago, in one of the big planing mills in Chicago, a strip of board catching, in some unaccountable manner, on a buzz saw, was hurled with violence against the leg of one of the workmen, breaking it and badly mangling the flesh. The injury resulted in incapacitating the man for performing the labor required of him in the mill, and he was compelled to seek other means of livelihood. A man of fine mechanical attainments, his endeavors very naturally sought outlet in that direction, so he built, after his own ideas, a scroll or fret saw, foot power, and rigged up a seat on it, as he was unable to stand for any length of time, and began sawing out and putting together articles for household ornament and utility. He regarded this as simply a temporary means of making a living. After a time he added to his scroll saw a light boring attachment and then a little turning lathe. Then he bought a cheap set of carver's tools. You see he was always looking out to save labor and to combine originality in the articles he turned out. Time ran along, and almost before he knew it, he was getting more orders than he could, alone, fill, so he hired a man to dress and prepare his materials, lay out the patterns, and put the articles together. Still his orders increased, and he hired another and still another man. To-day he has thirty men in his employment, and he does no physical labor himself. Making money? Yes, right along, but it was a very little thing that gave him his start.

Now, the point I wish to make is this: Capital, in large amounts, is not necessary in the founding of industrial enterprises. A good deal of pluck and energy, and unconquerable perseverance, are better than money, because, having these, money becomes the result, not the means, of success. Money is valuable, not as the means by which an end may be accomplished, but rather because it is the result of an accomplished end. It has power, immense power, but without energy behind it, it is powerless. Perseverance and energy can make money, but money cannot make perseverance and energy. What I would like to see in our Sunny South is more small industrial establishments. I would rather see a dozen shops employing three men each, than one shop employing three dozen men. There is more money in the three dozen, because there is greater possibility for their expansion and growth. Don't wait for the establishment of big enterprises with heavy capital, but start little ones in a modest way, and then let them grow, as the majority of them surely will.