

Correspondence.

Notes from Washington, D. C.

To the Editor of the Scientific American:

On Sunday morning, August 16, intelligence reached this city of the death by drowning of Ex-Commissioner S. S. Fisher and his son, during a pleasure excursion (in the Rob-Roy style) upon our inland waters. Last month, Mr. Fisher left Cincinnati, with his son Robbie (who was about twelve years of age), in a fine metallic boat, built at Cleveland, which was well stocked with provisions and camp equipment; and a few days afterward they arrived at the beautiful Canandaigua Lake, lying in Central New York, where they launched their boat and immediately proceeded to make a tour of the long chain of inland waters which grace the interior of the Empire State, and thence *via* the Erie canal to Elmira. From Elmira they went to Towanda, Pa., where the boat was again launched in the picturesque Susquehanna, down which they were passing when the terrible accident occurred which deprived both of life. On Friday morning the little party left Harrisburg at 7 o'clock. At 11 o'clock the boat and occupants were seen just above the falls. At 1 o'clock the boat, with oars, papers, and baggage, was found floating down the stream; unguided and alone, below the rapids. The Colonel's body was found near York Haven late in the afternoon of the same day, about twenty miles below the rapids where the accident is supposed to have happened; but his son's remains were not recovered until the following Monday, some five miles further down the river. The bodies were embalmed and sent to Cincinnati for interment, which takes place to day.

As a curious incident in connection with his death, it is stated that, on the Sabbath before leaving home, he described to a Sunday School the supposed feelings of Pharaoh and his hosts when they were swallowed up in the Red Sea, drawing a vivid and terrible picture of the feelings of drowning men: little thinking that he would so soon experience that which he so graphically illustrated.

The following order was issued yesterday by Commissioner Leggett:

"UNITED STATES PATENT OFFICE,
WASHINGTON, D. C., August 18, 1874.

The news of the sudden death of Hon. S. S. Fisher, late Commissioner of Patents, has cast a pall of sadness over all connected with the Patent Office. We remember him as an affable, genial, generous friend and companion—a kind, courteous, just, and laborious officer—a high-toned Christian gentleman, always commanding the love and respect of all who came in contact with him.

Colonel Fisher's administration of the Patent Office was the beginning of a new era in its history. He did more to adapt the organization to the increased business of the Office, more to establish uniformity in the practice and decisions of the Office, and more to make such decisions and practice attainable and intelligible to the public than had been done before. He ably discussed and satisfactorily settled many questions which had long vexed and harassed the Office. The impress of his clear head and strong will are discernible everywhere, and his administration will ever be regarded as an epoch in the history of our patent system.

In memory of his personal and official integrity, of his great ability as Commissioner, and of his eminent virtues as a good citizen and a Christian gentleman, the Office will be closed on August 20, the day of his funeral.

M. D. LEGGETT,
Commissioner of Patents."

The surviving family of the deceased consists of a wife and two children, who are probably well provided for, as his practice was very lucrative, his last year's income being estimated at \$45,000. In addition to this, his life was insured for \$10,000 in the Traveller's Accident Insurance Company of Hartford, and in the Connecticut Mutual for the same amount.

Washington, D. C.

OCCASIONAL.

Hardening and Tempering Tools.

To the Editor of the Scientific American:

Your correspondents, "Tools" and Mr. Juan Pattison, seem to have great objections to the words "film of oxide," used by me, as though they expressed something of an occult nature and beyond the comprehension of the mechanic or artisan; and I judge from the tenor of their communications that they have somehow imbibed the idea that my original letter is the work of a mere theorist, without practical experience. It may, perhaps, be a relief to them to know that, notwithstanding the gist of my letter was taken from a lecture to the engineers at the Naval Academy, the principal points referred to therein were discovered and largely experimented upon by the writer during over fifteen years of shop experience of the very best kind, ten of which were passed in one of the first and largest establishments in this city, that of Messrs. R. Hoe & Co.

I have a more elevated opinion of the American mechanic, from my long association with him, than to believe, when he is told that the colors appearing upon the surface of a tool which he is tempering are caused by the union of the oxygen of the air with the metal, that if the time be unduly prolonged in producing it, or that, if in the operation he excludes the air from it, his results will be valueless unless these conditions are taken into account, that he will regard so simple, so plain, so very practical a proposition as something too deep for him, but rather that he will set himself at once to apply the test of a trial for himself.

If the mechanic of today is really so obtuse, he must have retrograded not a little in the past ten or 15 years. I believe, however, that this is exactly the reverse of the truth, and I have long ago become convinced that the known superiority of the American mechanic over the average European is mostly due to the fact that he always seeks for the why and the wherefore; he wants a reason for the faith which is

in him; he is not satisfied to work, like his European brother, by the rule of thumb.

Already I am in receipt of communications thanking me for a little light let in on difficulties experienced for years in tempering tools, and for which the communicants could not, till now, account. Mr. Rose, Mr. Pattison, and "Tools" may as well think the matter over a little more carefully; if they will, I must believe that they will not be willing to ignore two of the most essential readings of what I have called "our color thermometer."

I have noticed frequently, in discussions of this kind, that on the part of many there appears to be an impression that there is some kind of a natural antagonism between what is called theory and practice; but there is no such antagonism. Correct theory makes good practice. Practice without theory is the rule of thumb; and but for theorizers and their theories, the productions of our factories would be today what they were two hundred years ago.

The eminently and thoroughly practical man was very happily described in your issue of August 8, in him who borrowed your journal from his neighbor in the cars, and who "never learned nuthin' from books in his life." But I am glad to believe that there are, at this day, few such remaining, that the American mechanic is capable of reasoning and being reasoned with, and that he is always the better for a little good sound theory wherewith to improve his practice.

JOHN T. HAWKINS.

62 Cannon street, New York city.

To the Editor of the Scientific American.

Your correspondent, J. T. Hawkins, insists on the value of the fact that the color on steel is caused by a film of oxide. Is this true? The hardness and temper of a piece of steel vary as the carbon contained therein; and why an oxidized surface should be cited as an indication, I do not know.

Nobili asserts that these colored films are the results of a carbonizing treatment, and that this accounts for the non-rusting of steel covered with such coatings. If the fibers were oxidations, the rusting would be largely accelerated by them.

J. T. N.

New York city.

Honey, Strained or in the Comb.

To the Editor of the Scientific American:

The public are apt to believe that all honey which is out of the comb is impure, and that all comb honey is pure. There are several bee keepers in this neighborhood who produce a great deal of honey for market, and who extract it by a machine. There are a few about here who feed their bees with sugar sirup, and their bees put it into combs, and it is then sold to persons who believe that none but comb honey is pure. We, however, know that what we extract by our machines is just what the bees themselves bring in without any inducement or compulsion. By the use of the extractor, the yield of honey is increased perhaps five fold; but, on account of the unfounded prejudice in favor of comb honey, our producers of extracted honey have some difficulty in introducing it.

On account of the prejudice against extracted honey, and also on account of the ease of putting manufactured honey into the combs, the only way for producers of pure honey to succeed is to be honest, and gradually establish a reputation for honest dealing, which will sell their products at best rates. The idea that honey in the comb is, on that account, pure is totally wrong, and should be abandoned. Extracted honey (not strained, but extracted by a centrifugal machine), properly settled and drawn off into bottles, of which we have in this neighborhood not less than ten thousand pounds this season, is as pure as any in the comb, and purer than much of it. The purchaser gets it perfectly free from wax, and is not obliged to press it out by the use of his teeth.

I send you, with this, a bottle of honey from each of two of our producers, so that you may judge not only of its quality, but also of the means they are employing to introduce a pure article in such a manner as to inspire and confirm confidence. I send you also a communication received from one of our apiarians, in which he shows his product to be 79+ lbs. from each hive. This is a large yield, although this has not been a good season here. Last year, this same apiary produced about 150 lbs. per swarm, another 135 lbs., and still another about 150 lbs.

H. W. S.

Cincinnati, O.

Performance of Small Engines.

To the Editor of the Scientific American:

I have made a small engine, with a 4 inch cylinder, a 2 inch crank, and a 16 inch pulley, with a 5 inch face. The fly wheel is 26 inches in diameter, weighing 125 lbs. It runs at 240 turns per minute, with from 30 to 40 lbs. of steam. With this engine I am running 40 feet of 2 inch shafting, and 40 feet of 1-7/8 inch shafting, 2 engine lathes, 2 speed lathes (one for turning wood, and the other for drilling iron), 1 bucking lathe (swing 30 inches), 2 grindstones, 1 upright drill, and a pump for pumping water into the boiler; and I have power to spare. I have made with this engine one of 16 horse power, and I am now making one of 25 horse power, besides doing other work.

My boiler is a six horse upright tubular, with thirty tubes 1 1/2 inches diameter. It is not covered in any way, but stands perfectly naked; and I am pumping cold water into the same. I am running this engine and doing this work at a cost for fuel of 50 to 60 cents per day of 10 hours. I cannot tell you the amount of water evaporated, as I have made no note of it.

J. HERBERT BULLARD.

Barre, Mass.

[For the Scientific American.]

POPULAR FALLACIES.

The age of war and conflict is fast passing away, and the industrial and commercial age is taking its place. Progress is the world's watchword today; and it is the boast of the nineteenth century that, since its birth, the march of discovery and invention, in all the sciences and arts most conducive to man's comfort and civilization, has been greater than in any preceding half thousand years. Science is now the measure of a nation's standing: for general scientific knowledge means education, which means refinement and religion, which means death to superstition. And in this country especially, where education and true religion are so generally diffused, Science seems to have a stronghold upon the respect and admiration of all but the most ignorant and backward minds.

In view, then, of this general diffusion of scientific knowledge, which in this country, though not in itself astonishing, is yet great when compared with that in most other lands, it does seem remarkable oft-times that so many old and long exploded fallacies should still find credence among the majority of people, and even among the well educated. It is fairly astounding to see what outrageously absurd stories will circulate through the popular press, often published in the fullest good faith, and accepted as true by simple minded readers. The scientific hoaxes perpetrated in the United States are almost innumerable; and that they continue to be published, republished, revamped, and, strangest of all, believed, and solemnly discussed in journals that ought to know better, does not speak well for the thoroughness of this scientific knowledge, on whose diffusion we so often pride ourselves.

We remember a recent example in the story, lately published in a California paper (these hoaxes generally emanate from the fertile West), concerning a magnetic cave, said to have been just discovered, possessing such powerful attraction that hatchets were drawn from the hands of the explorers and flew to the roof, remaining glued there; while unfortunates in hobnailed shoes had to leave their foot encasements behind them. This story, though laughed at by one half the community, was received with open eyes and gaping mouths by the other half, who could not comprehend that the size of the attracted body might have something to do with the force of attraction.

But it is not merely of these ingenious hoaxes that we wish to speak, but of a far more injurious state of ignorance among the common people. We refer to popular fallacies concerning the sciences of everyday life, and to the general ignorance about the great forces of Nature, and the first principles of Science in all its departments. Some of these fallacies are simply ludicrous; others are worse. What absurd blunders are made in matters of hygiene! The prosperity of quack doctors, who have medicines, each one of which will cure all the ills that man is heir to, is a forcible example of the latter case. And where we see newspapers—secular and religious—advertising their poisonous wares, we can hardly tell whether to call them stupid or wicked.

"By looking into a looking glass inclined at 45°, Mr. ———, of Northampton, obtained last night a fine view of Jupiter's satellites," says a certain Springfield paper. How Professor Snell, of Amherst, must have chuckled to read it! Mr. ———'s wonderful glass would have conferred satellites upon every star in heaven. He should have known that plain looking glass has no telescopic power, and that his "satellites" were only repeated reflections, between the quicksilver and the front surface of the glass, of the planet he was gazing at.

"Mrs. ——— was recently saved from death from a lightning stroke by her son, who dashed a pailful of cold water upon her. It is supposed that the water carried off the electricity remaining in her body, and saved her!" Such is the Boston Journal's lucid explanation of a simple cure. The poor lady, almost killed by the terrible stroke, was saved by the sudden nervous shock caused by the cold water which her son with such presence of mind threw at her. It is not the presence of electricity in a human body that endangers, nor even the discharge of that electricity, since the body can hold but a small amount; it is the passage through the body of an immense discharge, between clouds and earth, that kills and destroys.

Old maids, and young ones too, throw themselves upon a feather bed for protection from "thunder," or descend to the cellar. An iron bedstead would be safer than either of these places, because it would keep the charge away from them by receiving it through itself. Timid ladies are terrified when a boiler discharges steam through a safety valve, for fear that it will burst; when the roar of escaping steam is proof positive that it will not burst. And to crown all, some misguided victims of an insane fever, forgetful that "action and re-action are equal," and that "gain in power is loss in time, when the force is given," still labor and strive to create force out of nothing, and make what Science has, time and again, declared impossible, a perpetual motion.

Such absurdities of course will never cease, until ignorance ceases. But they are altogether too common among those that should know better, and reveal a great lack of logical reasoning and definite knowledge. Superficiality is perhaps the great fault of our common education, especially in Science, where exactness is so essential. The natural and exact sciences are, we are happy to say, taking more nearly their deserved stand in our American educational courses; and we hope the time may come, and come soon, when such nonsense as we have discussed cannot possibly be found, much less believed in, among those who have been fairly educated.

A. H.