Live Fences.

MESSRS. EDITORS—In your really scientific paper of Juue 27, I find an article ou the above subject which points in the right direction; but I consider the European hawthorn a very hardy shrub, and one which will bear the severity of a very cold winter. I have chanced to meet with an American hawthorn bearing the seed, a specimen of which I send you with this letter. The following is the method in which the hawthorn is cultivated in Europe:—

The berries are collected, when ripe, and buried a few feet below the surface of the earth, and allowed to remain there during the space of eighteen months. They are then taken up and sown in beds in the month of April. When the plants are one year old, they should be transplanted into nursery beds, and allowed to remain until they are three years old. They will then have attained hardihood enough to withstand the severity of the winter frosts of any climate.

Wooden fences are good, so far as a fence is concerned; but what is more beautiful and picturesque than a live fence. It is cheering as well as profitable. The hawthorn blossom emits a fragrance far superior to the bean or apple, and is one of the first blossoms of spring.

New York, July, 1857. J. HANNA.

MESSRS. EDITORS—On my father's farm in Oxford township, Pa., there is an osage orange fence, planted about five years ago in the usual manner. That fence has flourished, and not a single plant has died, notwithstanding the severity of last winter and the winter before. The winter of 1855-6 was, I think, as severe a season as we commonly have, but the plants lived, and were completely uninjured. The hedge runs in a line about east and west. The plants were set as an experiment, and have succeeded to our complete satisfaction. Another fact which I think is not generally known, is this: if, when the fence is trimmed, the "clippings" are stuck into the ground, at least eight out of every ten will grow, which does away with the expense of either rearing or buying the young plants. A farmer may thus provide himself with a durable and ornamental fence with but the labor of pushing the clippings into the ground wherever he may want his fence.

Philadelphia, Pa., July, 1857. J. D.

Four Rainbows seen at one Time.

MESSRS. EDITORS—A very beautiful and singular phenomenon was observed at Ashwood, Maury county, Tenn., on July 3d, at 5 o'clock, P. M. A gorgeous rainbow spanned the heavens with its magnificent colors; immediately beneath it were two others, but little inferior in brightness, while above the principal one, and at some distance from it, was a fourth, equally bright with the two lesser. The arches were perfect in them all, and were seen about seven or eight minutes.

C. F. W.

Learning without a Teacher.

A forthcoming number of Wiessenborn's *Engineering Illustrated*, presents the following valuable suggestions, which we hope to see extensively diffused throughout the whole army of young mechanics and workmen throughout the country:

First in practical importance, let, if possible, two or three unite, or rather pursue a study cotemporaneously. Let them discuss the principal points during the intervals of labor; and, although it will generally follow that one is so much in advance of his neighbor, as to become a teacher rather than a fellow student, yet the exercise of comparing notes, even in this manner, will be profitable to both. It will certainly benefit the indolent man, and will refresh the memory and confirm the opinions of the more advanced. Do not attempt to unite more than three, as the chances of confusion and final abandonment of the enterprise are increased by the addition of each new member. But all this depends, after all, on the force of the student. There is a quality, so termed, almost or quite as important in real life as intellectual development. If you will look abroad among your acquaintances, particularly those filling, with credit, important and responsible situations, a close analysis will show you that they derive their best qualities as much from force as from sense. If you have force enough, when fully summoned, to propel alone, spend no time in soliciting companions. There are always those who will be pupils, if no labor is required. Explain to such occasionally some prominent point in your newly acquired knowledge. If it does not benefit the listeners it is no fault of yours. The improvement of the lecturer is the main point, and you will frequently find much truth in the very obstinacy with which they will object to the propositions advanced.

Every text book is, or should be, adapted to a certain progress in the learner. There are generally several books on the same subject, some very simple, and others very deep. You will very likely—procuring your books by accident or chance—find points difficult to master. Overcome this by procuring, if possible, two or three different text books. Whether the subject be mathematics or chemistry, electricity or law, hydraulics or book-keeping, two or three authorities will settle every difficulty. The explanations of one writer will cover the "joints" left by the other. And if one book is very old and musty, both covers eaten off by mice, and the whole stained as if fresh from the slop pail, skim through what it has to say, after you have faithfully studied a section of the more modern one. Two books are sufficient—four are too many.

Morning is the best time for close, deep thinking; evening best for charging the mind. In the long days with warm mornings arise at five, and study mathematics; practice drawing from supper to dusk; then spend the remaining hour in general social enjoyment. But if you wish simply to remember an array of terms, or acquire simple word-knowledge—a matter of great importance in chemistry—read over what you wish to fix in your memory at night, just before retiring. In short, go to work every morning, full of new and strong ideas; retire at night with new words stamped in the memory. By following the suggestions we have advanced, you may, without losing an hour's wages, or diminishing your usefulness in the shop, progress about half as rapidly as you would were you at a popular school, and devoting your whole time to study.

Salt.

Common sea salt (chloride of sodium) is an article the importance of which in its action as a purifier in some chemical processes has been but recently known extensively. On our last page will be found the details of a process for purifying and rendering valuable an oily discharge from the earth in which salt will be observed to play an important part. Scores of processes affecting the preparation or rectification of various important materials involve the employment of this cheap chemical with other ingredients, under intense heat, and one of the processes for making steel, which has lately attracted considerable attention, consists in purifying scrap iron by salt and carbonizing it with the same materials used for scores of years in the simple "case-hardening" operation.

According to some of the foreign journals, the addition of salt to the materials in the smelting and the puddling furnace, has been attended with very beneficial results in the quality of the iron produced. But all these uses are at present trifling, compared to the immense quantities of this material used in the preservation and seasoning of food.

The amount of salt consumed in this country (for various uses) including the salting of hay, &c., for animals, the salt inserted between the timbers of vessels to preserve the wood, and the like, is about sixty pounds to each inhabitant. There are about twelve million bushels of salt manufactured within our limits per annum, and about fifteen million bushels imported. The salt is manufactured partly by boiling and partly by evaporating in the sun. The cost of manufacturing by these processes are about equal, and the product is of about equal value, pound for pound; but the solar salt weighs about seventy pounds to the bushel, while the boiled salt weighs about fifty-six pounds to the bushel, varying, however, according to the position of the kettles, to a weight considerably above and also considerably below the standard. Onondaga County, in this State, furnishes about half of the whole quantity manufactured in the United States. The brine for these works is obtained altogether from springs, and the salt is reduced to the crystalline form almost exclusively by boiling. The amount manufactured at the solar works of Onondaga in 1856, was about half a million bushels. The quantity manufactured in kettles in that county in the same time was five and a half millions bushels.

A recent letter from S. Hotaling, a prominent salt merchant of this city, in answer to one from a Committee of the British Parliament, on the salt trade of our country, after presenting much of the statistical information already given, describes a salt *block* at Onondaga, of the largest size, as made of brick about twelve to fifteen feet wide, four to five feet high, and forming two parallel arches, extending the whole length of the block. Over, and within the top of these arches, are placed common cast iron kettles holding about fifty to seventy gallons of brine, placed close together in two rows the whole length of the arches. A fire built in the mouth of the arches passes under each kettle into a chimney, built generally fifty to 150 feet high, averaging from fifty to seventy kettles in each block. A single block with one row of kettles is about half of this width.

Any improvement in the manufacture of salt which could cheapen its production only by a very small per centage, would be an invention of no ordinary importance; and we think the field, although the subject is occasionally dabbled in with various degrees of success, is much less the scene of competition among inventors than many others of less magnitude.

The "Secret" Cancer Cure.

Much has been written about Dr. Fell's secret, now being employed by the surgeons at the Middlesex Hospital, London, where the unfortunate American sculptor Crawford is now under treatment for this dread affliction. Dr. Fell's treatment is described in a late medical work as follows:—

"In the first instance, the skin over the tumor is removed by some liquid caustic—nitric acid. The thus exposed tumor is then covered with a layer of an ordinary caustic, chloride of zinc, spread on linen. This creates a superficial slough. This slough is then *scored to a certain depth by several incisions of the knife; into these furrows strips of linen covered with the caustic are inserted.* In this way the tumor is destroyed still deeper. The incisions are gradually extended in depth from time to time, fresh caustic being introduced into them at each dressing, till in this way the whole tumor is *seriatim* converted into one large eschar, which separates by a surface of demarcation, according to the ordinary principles of surgery."

The constitutional treatment which has been affirmed to eradicate from the system the tendency again to originate cancers, is affirmed by the same authority to consist in the internal administration of iodide of arsenic.

The Food Question.

The *Tribune* a few months ago published an article headed "What can be Done on Ten Cents a Day," in which it set forth how a poor woman lived and supported some two or three little ones on steady work at ten cents per diem. The following, however, which we find in an exchange, dissertating on the benefits of simple diet, rather throws the ten cent story in the shade. It purports to be the result of some experiments made in a prison, where it was found that ten persons gained four pounds of flesh each in two months, eating for breakfast eight ounces of oatmeal, made into porridge, with a pint of buttermilk; for dinner three pounds of boiled potatoes with salt; for supper, five ounces of oatmeal porridge with one pint of buttermilk, which cost twopence three farthings per day. Ten others gained three and a half pounds of flesh, eating six pounds of boiled potatoes daily, taking nothing with them but salt. Ten others ate the same amount of porridge and buttermilk, without the potatoes as the first ten, but for dinner had soup; they lost one and a quarter pounds of flesh each—and twenty others, who had less diminished in size likewise.

From this it would seem that potatoes were a better diet than smaller quanties of animal food, at least for persons in confinement. The meat eaters, if they had been allowed ordinary exercise, might have exhibited a very different result.

White Mountain Carriage Road.

A substantial and evenly graded road, sixteen feet wide, is being constructed to the top of Mount Washington, in New Hampshire, by a company organised for the purpose. It is a portion of the plan to have a large hotel and observatory at the summit of the mountain, 6,285 feet above the sea. The road will, when finished, be 8 1-4 miles long, and the grade will be lighter than that on many hills in the ordinary country roads. There is an almost uniform inclination from the commencement to the top, and very efficient brakes are provided to relieve the horses from the labor of holding back in descending. The road is reported to be now finished to within about one mile of the top.

The White Mountains have, for many years, been considered a most attractive point for a summer journey, and Mount Washington, the highest, is always the Mecca principally visited in these pilgrimages. The principal object of the White Mountain road is to lessen the fatigue of the ascent of Mount Washington, which, on horseback over the old bridle paths, is too severe for any but the well and robust. A large and beautiful model of the omnibuses employed was exhibited in the Crystal Palace in this city when the company was first commencing its operations in 1854. They are capable of containing twelve persons, and are so constructed that in ascending or descending the body of the vehicle is kept on a level, and the visitors can, without suffering from exposure to sun or rain, fearlessly enjoy the grand and beautiful scenery which is constantly to be seen during their ride. The last mile of the road is intended to entirely encircle the upper cone of the mountain, where the whole panorama of mountains, forests, lakes, and the distant ocean can be taken in at a glance. This ride is now to be enjoyed almost to the summit.

Gas Manufacture.

The following is the relative yield of a tun of gas coal and a cord of wood. A tun of the best English cannel coal of 2240 lbs. yields:—

1 chaldron of coke. . . .	1,494 lbs.
12 gallons of tar.	135 "
10 gallons of ammoniacal liquor.	100 "
9,500 cubic feet of gas. . . .	291 "
Loss.	220 "
Total.	2,240 lbs.

Weight of a cord of the different woods used for gasmaking—Walnut, 4400 lbs.; hickory, 3700; oak, 2500 to 3900; maple, 2400 to 2900; beach, 3000; birch, 3100; pine from 1700 to 2800. A cord of pine wood of 2700 lbs, yields:—

60 to 65 bushels charcoal. . .	640 lbs.
Vegetable tar.	85 "
Pyroligneous acid.	850 "
15,000 cubic feet of gas. . . .	450 "
Loss, by humidity of the wood, &c.	675 "
Total.	2,700 lbs.

L. R. BREISACH.

The Great Eastern—Excursion.

The *Canadian Railway Guide* says that the Great Eastern steamship will positively sail from Holyhead Harbor—her point of departure from England—for Portland, in April, next year, and that tourist tickets will be issued by her for a five weeks' trip to Quebec, Chicago, St. Louis, Baltimore, Washington, New York, Boston, and back to Portland, in time to return in her. The price of the tickets, it is now supposed, will be $500, and the time she will lie in Portland will be five weeks.

The New York and Erie Railroad Company has reduced the fare on through passengers within a few days past, and we would recommend this route as not only the cheapest, but the shortest and most pleasant.