

Intellect in Brutes.

During my residence in Cornwall, says a correspondent of *Nature*, I had a most intelligent and faithful dog for fifteen years. I had him when a month old. His mother was a beautiful liver-colored spaniel, rather large; his father a black Newfoundland; my dog took after him in color and shape.

In 1843 a young and self-taught artist asked me to allow him to paint my likeness in oil colors, and I consented. His studio was in the next town, three miles distant, and as often as required I went over; I, however, did not take my dog with me. It was done in Kit-Cat size; and he succeeded so well in the likeness and artistic work, that when exhibited at the annual meeting of the Polytechnic Society at Falmouth, a medal was awarded to it, and, as well, it was "highly commended." Not only this, it brought him into notice and gained him lots of employment. The artist was so grateful for my attention that he presented me with the painting, and I still have it. When it was brought to my house, my old dog was present with the family at the "unveiling;" nothing was said to him nor invitation given him to notice it. We saw that his gaze was steadily fixed on it, and he soon became excited, and whined, and tried to lick and scratch it, and was so much taken up with it that we—although so well knowing his intelligence—were all quite surprised; in fact, could scarcely believe that he should know it was my likeness. We, however, had sufficient proof after it was hung up in our parlor; the room was rather low, and under the picture stood a chair; the door was left open without any thought about the dog; he, however, soon found it out, when a low whining and scratching was heard by the family, and on search being made, he was in the chair trying to get at the picture. After this I put it up higher, so as to prevent it being injured by him. This did not prevent him from paying attention to it, for whenever I was away from home, whether for a short or long time—sometimes for several days—he spent most of his time gazing on it, and as it appeared to give him comfort the door was always left open for him. When I was long away he made a low whining, as if to draw attention to it. This lasted for years, in fact as long as he lived, and was able to see it. I have never kept a dog since he died, I dare not—his loss so much affected me. I might tell of many of his wonderful actions; he could do most of such things as are related of other dogs. I am now only anxious to notice this recognition of my likeness, from never having heard of another such fact being recorded of any other dog.

Another correspondent says: During the recent severe winter a friend was in the habit of throwing crumbs for birds outside his bedroom window. The family have a fine black cat, which, seeing that the crumbs brought birds, would occasionally hide herself behind some shrubs, and when the birds came for their breakfast, would pounce out upon them with varying success. The crumbs had been laid out as usual, one afternoon, but left untouched, and during the night a slight fall of snow occurred. On looking out next morning my friend observed puss busily engaged scratching away the snow. Curious to learn what she sought, he waited, and saw her take the crumbs up from the cleared space and lay them one after another on the snow. After doing this she retired behind the shrubs to wait further developments. This was repeated on two other occasions, until finally they were obliged to give up putting out crumbs, as Puss showed herself such a fatal enemy to the birds.

Immunity of Rodents to Solanaceous Poisons.

According to the *Lancet*, Prof. Haeckel, of Marseilles, has investigated the action of the alkaloids of solanaceous plants upon the rodents, with a view of ascertaining the conditions which determine the remarkable immunity to the poisonous effects of such alkaloids presented by these animals. The fact of the immunity has long been known in the case of the rabbit and guinea-pig, especially with regard to belladonna, and Prof. Haeckel has shown that it is also possessed by several species of rats, and exists not only for belladonna, but also for the alkaloids of black and white hellebore, and of stramonium. The results which he has obtained show that the rabbit and guinea-pig may be fed for a long time with the leaves, and even with the roots, of the poisonous solanaceæ without detriment, and that the rat bears very well the addition of these plants to its ordinary food. The immunity of the rabbit and guinea-pig is so great that Prof. Haeckel was able to bring up several generations on this food, giving them, during the summer, the leaves exclusively, and during the winter mixing dried powdered leaves and roots with equal parts of other food. He adopts the views of Bouchardat, enunciated long ago by Chatin with respect to arsenic, that the effect of the poisons lessens in proportion as animals recede in organization from man. He believes, from further experiments, that the alkaloids of these poisons are destroyed as fast as they enter the blood. M. Colin, in the discussion on the report, was inclined to attribute the immunity of the rodents rather to the small solubility of the vegetable alkaloids, which need, for absorption, transformation into a soluble compound by the action of the gastric juice. In these animals the food rests a very short time in the stomach, and passes with great rapidity into the intestine, and the alkaloids pass away by the bowel almost unchanged. M. Chatin, however, doubted this explanation, on the ground that the alkaloids of the vegetables, although in themselves insoluble, are commonly so combined in the plant that they will dissolve readily. He believed that the

immunity of the rodents to these poisons depends on their peculiar organization, and suggested, as an important subject for investigation, the precise point in the animal series at which the immunity exists.

Traveling Rocks.

Lord Dunraven, in an interesting article in the *Nineteenth Century* about Canada, and his experiences in moose hunting, relates the following:

A strange scene, which came within my observation last year, says his Lordship, completely puzzled me at the time, and has done so ever since. I was in Nova Scotia in the fall, when one day my Indian told me that in a lake close by all the rocks were moving out of the water—a circumstance which I thought not a little strange. However, I went to look at the unheard-of spectacle, and, sure enough, there were the rocks apparently all moving out of the water on to dry land. The lake is of considerable extent, but shallow and full of great masses of rock. Many of these masses appear to have traveled right out of the lake, and are now high and dry some fifteen yards above the margin of the water. They have plowed deep and regularly defined channels for themselves. You may see them of all sizes, from blocks of, say, roughly speaking, six or eight feet in diameter, down to stones which a man could lift. Moreover, you find them in various stages of progress, some a hundred yards or more from shore and apparently just beginning to move; others, half-way to their destination, and others again, as I have said, high and dry above the water. In all cases there is a distinct groove or furrow, which the rock has clearly plowed for itself. I noticed one particularly good specimen, an enormous block which lay some yards above high-water mark. The earth and stones were heaped up in front of it to a height of three or four feet. There was a deep furrow, the exact breadth of the block, leading down directly from it into the lake, and extending till it was hidden from my sight by the depth of the water. Loose stones and pebbles were piled up on each side of this groove in a regular, clearly defined line. I thought at first that from some cause or other the smaller stones, pebbles, and sand had been dragged down from above, and consequently had piled themselves up in front of all the large rocks too heavy to be removed, and had left a vacant space or furrow behind the rocks. But if that had been the case the drift of moving material would of course have joined together again in the space of a few yards behind the fixed rocks. On the contrary, these grooves or furrows remained the same width throughout their entire length, and, have, I think, undoubtedly been caused by the rock forcing its way up through the loose shingle and stones which compose the bed of the lake. What power has set these rocks in motion it is difficult to decide. The action of ice is the only thing that might explain it; but how ice could exert itself in that special manner, and why, if ice is the cause of it, it does not manifest that tendency in every portion of the world, I do not pretend to comprehend.

My attention having been once directed to this, I noticed it in various other lakes. Unfortunately my Indian only mentioned it to me a day or two before I left the woods. I had not time, therefore, to make any investigation into the subject. Possibly some of my readers may be able to account for this, to me, extraordinary phenomenon.

[Any one familiar with ice action in our northern lakes and rivers, will have no great difficulty in accounting for the rock movement described. It takes place in various ways, depending on the depth of water, the breadth of the pond or river, the force of the wind and waves, variations in water level, and other conditions. Just which of these causes, alone or combined, operated in Lord Dunraven's Nova Scotia lake it is impossible to say from the description he gives. Probably the last named, and the wedging of the ice-masses against the larger rocks, when rising and falling with the water, had most to do in moving the boulders on shore.—Ed.]

Machine-made Hammered Horsenails.

According to the *Ironmonger*, another of our labor-saving machines is about to be adopted in England. The Stirchley Company will now, the writer says, become the sole manufacturers in England of the Sheridan horsenails. These are the product of a recent American device of indubitable merit. They are hammered hot from head to point by a succession of blows similar to those made by hand. To manufacture the nail in America a joint-stock company was recently started at Cleveland, Ohio, with a capital of \$50,000, and having Mr. Henry B. Sheridan, C. E., the inventor of the machine, for its managing director, or president. The machines are capable of turning out an average of 500 lb. a day, and any pattern which may be required can be shaped. Two forging machines have been brought over from Cleveland, and under Mr. Sheridan's personal supervision they have been erected at the Stirchley Works, where I have just seen one of them in operation. It was served by an American nailer, who, taking his Swedish iron rods hot from a small portable furnace and thrusting them two at a time into the machine, which weighs about 1½ tons, and runs at 1,000 revolutions a minute, quickly shows them dropping out in the blank, properly bent, and shaped in a style surpassing any hand-made horsenail I ever saw. From the forging machine the blanks are taken, when cold, to the finishing machine, which draws the blank out, compresses it, and points the nail ready to drive. This machine weighs about 18 cwt., and finishes, with two boys to feed it, 500 lb. a day.

MISCELLANEOUS INVENTIONS.

Messrs. Charles Holzner and John Winstandley, of Louisville, Ky., have patented an improvement in coal-hods, which consists in forming the lower edge of the body portion of the hod with an outwardly-flared flange, and fastening the hoop, foot, or base-ring thereto by contracting it upon said flange and riveting the ends of the hoop together in such contracted position upon the flange. It also consists in combining with the flanged body portion and baser-ring a wooden bottom having a metal lining and a tapering or beveled edge, which bottom is forced inside the base-ring up into the lower edge of the hod, and clamps the flange at the bottom of the body portion between its beveled edge and the base-ring to make a compact and secure connection. We call attention to an advertisement in another column relating to the invention.

An adjustable "scoop-board," adapted for attachment to the tail of the wagon, for use in husking or hauling corn, and for other purposes, has been patented by Messrs. Thos. F. McGuire and John Ditto, of Oxford, Ia. It consists in the combination, with the hinged scoop-board, of a semi-circle-brace, having apertures for a clamping pin or screw, that passes through a keeper.

Mr. Samuel T. Harrison, of San José, Cal., has patented an improvement in magazine fire-arms, which consists of a carrier having an intermittent vertical movement controlled by a lever connected with a finger on the guard, which receives the cartridge from the magazine, carries it to the breech of the piece, and when it is ejected into the breech, returns and locks the breech-block in place behind it. Also, a breech-block, in which is sheathed the needle, connected by a link with the finger of the guard, from which it receives an intermittent reciprocatory movement, serving to drive the cartridge from the carrier into the breech.

A paper bag, provided with a tie-cord secured within a fold on that edge of the blank which forms one of the seam-laps, has been patented by Mr. Charles Newman, of Alton, Ill.

Mr. Edwin D. Finch, of Stanton, Mich., has devised an improved mechanical telephone, in which the vibrations of a diaphragm are transmitted by a cord or wire to a receiving-diaphragm at a distance; and the invention consists in novel features, whereby the vibrations are concentrated upon the line, and false vibrations prevented; also, in means for adjusting the tension of the line and diaphragms, and relieving the diaphragms of tension when not in use.

Mr. Robert MacKellar, of Peekskill, N. Y., has invented an improvement in fire-grates for burning soft and hard coal. It is so constructed that the coal can be easily stirred and kept loose and free from ashes, so as to burn freely. It consists in the combination of the screw with a grate having a slot formed through its center, the screw forming the middle portion of the grate.

A hanger, having arms or yokes formed of spiral springs, united by a central piece of wire formed into a loop, by which it is hung from a hook, has been patented by Mr. Frederick H. Zahn, of Springfield, Ill.

An improvement in apparatus for disintegrating grain and distilling spirits, patented by Mr. Edward Fox, of Brooklyn, N. Y., consists in combining, with the mash-tub and still, a steam-pipe, injector, mash-pipe, and pan, and in combining with the still a dome having a pipe leading to condenser, perforated trays, and gutters.

A lock adapted for securing both the upper and lower sash of the same window has been patented by Mr. George F. Knight, of Carroll, O. It consists in the combination of a detachable key having a nib, and a pivoted spring-actuated angular lever, having a lug to engage with a window-sash, and the apertured case inclosing the lever, so that when the key is turned in a certain position its nib will catch over the edge of the free end of the lever, and traction on the key will then tilt the lever, but when turned into another position will release the lever.

An improvement in that class of coffee-pots which are provided with an inner receptacle or strainer, has been patented by Mr. Thomas Keys, of Jacksonville, Ill. It consists in providing the inner receptacle or strainer of a coffee-pot with an inwardly-projecting flange or lip near its top.

Mr. David Smith, of Boston, Mass., has patented an improvement in urine-guards for water-closet seats. The guard is preferably made of glass or glazed earthenware, or other material which will not absorb moisture.

The Manufacture of Damascus Steel.

In a series of articles on mining and metallurgy at the Paris Exhibition is promulgated the following interesting data on the method of making Damascus steel sword blades at Zlatoust, in the Ural: The pig iron used in making the latter is a spiegel, with 8 per cent of manganese, which is partly converted into puddled steel and partly refined. The cast-steel ingots of about five pounds weight are made from selected qualities of puddled steel, 61 per cent of the crucible charge being hard, 23 per cent medium steel, 10.37 per cent refined pig iron, and 3.71 per cent magnetic ore. The tilted bars are twice piled for pure steel, a layer of sulphide of antimony being placed between the different bars. The final pile is made of four square bars, about one-eighth of an inch in the side.

THE way to convert modern pottery into the antique is to boil the former in oil and bury it in wood ashes. One will be astonished to find how quickly the new article will become in appearance a veritable antique.

After Graduating—What?

The season of college commencements has just closed, and hundreds of young graduates, with their sheepskins in hand, are pondering, undecided, what profession to pursue.

Whither are all these talented and accomplished young gentlemen going? inquires the *Christian at Work*. What will they do? Where and how strike for success?

Although the professions of law, medicine, civil engineering—and, some may cynically add, the ministry also—are overcrowded already, and are driving multitudes at the point of starvation out of their ranks, yet the vast majority of these inexperienced and ambitious sheepskin carriers are persuaded that “there is always room at the top,” and that each for himself is exactly the individual fitted by his Maker—and his Alma Mater, of course—to climb there, and with immense applause. Now it is well for society and mankind that there are so many ardent natures who thus challenge a trial in coveting the best gifts and highest places. Their aim is not to be ridiculed or despised. It is in the main noble and generous. Very rarely does the deliberate acquisition of mere “filthy lucre,” or of the means of low and selfish gratification, consciously and avowedly enter into it. One says: “As a physician my object shall be unequalled skill in baffling disease and saving life;” another: “As a lawyer, I will work for the largest knowledge of legal principles and the attainment of commanding ability in settling differences between contentious dispositions;” and so each in turn is largely influenced, let it be granted, by the purest motives which can be marshaled at the threshold of his future calling, and which beckon him with winning voices to enter therein.

Against such allurements it may seem as ungracious as it will possibly prove vain to put two stern and needful inquiries.

First, admitting that the hero of commencement honors is not expected to be an angel acting with absolute unselfishness and unworldliness in the choice of his life-sphere, and admitting, therefore, that he has a certain right to calculate the chances of the success and the advancement of which, veil it as we will, *self* is the center and mainspring; it is nevertheless proper that he be required to make his calculation of chances with a cool head, with a rigid and unflinching investigation of his defective traits. The trick of translating a Latin ode, or of demonstrating that the three angles of a triangle are equal to two right angles, or of showing that Leibnitz is the author of the theory of unconscious mental activities in metaphysics—all this is not an immaculate sign of fitness to argue a case before the Supreme Court, or to diagnose the ills to which humanity is heir. Let the young graduate be cautious, be wise, be deliberate in his decision, remembering that it carries with it the gravest issues of time, and that it binds him to hardest toil and manifold self-denials.

Secondly, we must not fail to remind the new-born graduate that conscience should be appealed to as the highest arbiter in this sovereign self-election to a life-work. As a rational and accountable being every man is under obligation to his moral powers and to his God to ask: Where can I be the most useful? How can I accomplish the most good? Possibly he may conclude—and we suspect that just here lies room for the exercise of good sense and wisdom—that to be useful and happy it is not necessary to be a professional man at all. The farm makes its cry—and it is a loud and emphatic cry, too—for educated and noble-minded occupants. The bane of American society to-day is the silly, nay, the wicked idea that whoever has been through the schools must sport a title to his name, or descend to the disgraceful position of a nobody. This idea is heresy against manhood, and will prove the utter curse of its proud victim.

What Ismail Pasha did for Egypt.

In a long and intelligent letter suggested by the downfall of the late Khedive of Egypt, Charles Dudley Warner pointedly sums up the great works of improvement begun and largely carried out by the bankrupt monarch. After trying to show that the unfortunate Khedive only paid the penalty of all men who get ahead of their time and have not power enough to quite break with it or to compel circumstances to their will, Mr. Warner says:

Ismail Pasha has done more or attempted more for the good of Egypt than any ruler since the great Pharaohs. He has done more to put it in the line of modern progress than any ruler since the Conquest. The achievements of the man are something amazing, as all readers on Egyptian affairs know. The Suez Canal is his work in a very large sense. The modernization of parts of Cairo and Alexandria is due to him. The building of railways, telegraph lines, and numerous canals is his work. The creation of a trained army, and of schools and bureaus of technical education in connection with it, is his work, aided by foreign military talent (much of it American) which he has called in—an army the common soldiers of which were taught to read and write, and the brightest minds of which had an opportunity for superior education. He has put steamers on the river, on the Mediterranean, and on the Red Sea. He has developed a large trade with Central Africa. He has been not only friendly but zealous in the support of schools, of science, of investigations and explorations for the benefit of Egypt. His organized expeditions into the south have been more for exploration and for scientific purposes than for conquest; and he has loyally co-operated with England in the suppression of the slave trade. He has made expensive and almost desperate attempts to interest the Egyptians in improved

agriculture and in manufactures. It is in these great public attempts that he has become bankrupt—his private extravagances (not to be apologized for) never would have reduced him to this condition.

The Action of Sewer Gas on Lead and Zinc.

We take the following, says our excellent contemporary, the *Plumber and Sanitary Engineer*, from the report by Mr. T. Kinnear, sanitary inspector of Dundee, Scotland, for 1878:

It is impossible to determine otherwise than by experience and observation how long an ordinary lead soil pipe or trap will resist the action of sewer gas before perforation takes place, but it is certain that a thick one will do so much longer than a thin one, and it is equally true that one efficiently ventilated will serve nearly double the time of one continuously air-bound. I have paid particular attention to the action of sewer gas on zinc rhones on eaves of buildings where it was striking on the under part, and found in the course of a couple of years or so pretty large holes eaten completely through, showing that that material could not long withstand the effect of the gas. Lead is, of course, more durable than zinc, but the difference is only a question of degree, as shown by the fact that, in not a few of the water closets repaired by the officers of the department during the year, small apertures were found in the main vertical lead pipe, and in the cross or horizontal one leading from it to the trap of the closet various perforations were found on the top, indicating clearly the operation of foul air from the drain. Lead traps and soil pipes from water closets, baths, and fixed basins, are all subject to tear and wear, but the traps, being burdened with the additional strain of barring the passage of sewer gas, do their work less efficiently and for a much shorter period than they are generally credited with, hence the necessity for proper ventilation and occasional inspection. There is often considerable indifference shown by many plumbers when sent by their masters to examine into complaints of smell supposed to be coming from lavatory appliances. They usually look for a fluid leakage; and when that is not perceptible they leave, declaring to the complainer that the pipes are all right, when probably a little longer time spent in making a more complete examination would have revealed that such was not the case. They seem to imagine that it is the liquid only which wears holes, and do not even dream that the gas from the drain is the most powerful agent of the two as an element of mischief. This is another fruitful means by which sorrow is brought to many a home. It is indisputable that drain air accelerates decay in lead fittings, and these and their drain connections ought to be periodically examined. To facilitate this they should be placed in a position of easy access, with their covering left to open freely, and not hidden in an out-of-the-way corner as they usually are.

A Story of Pluck and Industry.

We have heard a good deal about hard times of late years, and more, perhaps, about the “insurmountable difficulties” attending the career of a young man, particularly a working man, who has neither influence nor capital to back him. A very pretty commentary on that sort of cant is furnished by the experience of two German boys who landed at Castle Garden, strangers and without money, about a dozen years ago. The story—more or less closely paralleled in the experience of thousands—is worth telling, both as an encouragement to the young and as an index of the chances which American life offers to the plucky and persevering. It comes out in connection with a recent festival celebrating the tenth anniversary of the founding of a novel industry, and the completion of some extensive factory buildings in the little village of Brockett's Bridge, N. Y. The story, as told by a *World* correspondent, runs in this wise.

Thirteen years ago—or, to be precise, on the 11th day of July, 1866—Alfred and Bruno Dolge, boys of seventeen and nineteen, landed at Castle Garden as emigrants from the city of Leipsic. Their worldly means were less than one dollar. But they immediately sought and found work, one at his trade as piano maker at \$4 a week, the other as an engraver. For three years Alfred Dolge, the younger of the two, worked steadily with Messrs. Steinway as a journeyman, and then he determined to go into business on his own account as a dealer in piano materials. He had little capital and was not twenty-one years old. But he had pluck and industry. Understanding the business, he concluded to manufacture piano feltings instead of importing, and he opened a small workshop in Brooklyn, associating his elder brother with him. Success followed, and he has seen his feltings take the first prize at the World's Fairs in Vienna, Paris, and Philadelphia. The feltings are made chiefly from Silesian wool, though certain brands of Australian and Cape Town are used, and such is the demand for them that the agents in New York have ceased to solicit orders. Of course this has not been easy of accomplishment, for, even in this country, there was a feeling that nothing but European goods were fit for use; but now the best pianomakers of London, Paris, and Leipsic (in which the three other felt manufacturing factories are located) send to Brockett's Bridge for their supplies.

When the Exposition was held at Vienna Mr. Dolge arrived there in July only to find that, through the incapacity of the United States officials, his boxes were still unpacked. The jury in piano materials had already made their award, but Mr. Dolge, undaunted, challenged their attention, brought his goods before them, and by practical experiments demonstrated their superiority. Finally the gold medal was

unanimously awarded him, though there was not an American on the jury. Triumphs at Paris and Philadelphia followed as a matter of course.

Up to 1875 piano-makers manufactured their own sounding boards. But at that time Mr. Dolge began their construction, and now supplies all the leading piano-makers of the United States, and exports these sounding boards to England, Germany, Italy, Norway, etc. A thousand were shipped to London, July 5, and the foreign agents have received directions to take no more orders until March, 1880. A large portion of the new building will be devoted to this branch, the spruce logs being sawed into planks in the basement and thence carried through every process until ready for shipment. In conjunction with this the manufacture of piano mouldings will be carried on, the facilities for carving being greater than in any other factory in the United States.

Perhaps the thought which most often occurred to the visitors recently was that all this had been accomplished during the four years of severest depression that the country has ever known. It was in 1875 that Mr. Dolge made his purchase of the old tannery at Brockett's Bridge, with its immense water privilege (600 horse power), and determined to launch his little bark on larger waters. His best friends tried to persuade him from the venture, but as he expressed it, he “had faith in the country and its future.” Now the buildings have a frontage of 440 feet, with a height of three and four stories. Mr. Dolge has \$230,000 invested in the property and gives employment to 150 laborers, nearly all of whom are American, and all of whom are of the highest type of intelligent working people. The success of these new industries has transformed a once deserted village into a prosperous hamlet, and though the village is eight miles distant from the railway station at Little Falls, it is attracting many visitors. The Brockett's Bridge people point to their work with pride as a living proof that even in the hardest times pluck and brains can force their way to fortune.

Formerly the makers of English pianos shipped the spruce lumber from this country to make their own sounding boards, each dealer constructing his own. When it was first proposed to send them the completed sounding boards the Englishmen laughed at the idea, and when Mr. Bruno Dolge arrived in London, three years ago, he found his agents overwhelmed by this ridicule and so discouraged that they had not taken a single order. It looked dark, so bitter was the prejudice against this Yankee idea. “Why, it's all nonsense,” said one leading London manufacturer; “you might as well send us our pianos from America all ready made, you know.” But Mr. Dolge stuck to his man, got him to see the boards and test them, and finally took his order for 500 sounding boards, and then every prominent dealer in London followed suit. American ingenuity had saved them time, trouble, and expense, and the success that has crowned these industries will follow others if our capitalists will only make the venture. At least this was the moral of the celebration and speeches.

Lemon Verbena.

The well-known fragrant, sweet-scented, or lemon verbena (*Lippia citriodora*) is regarded among the Spanish people as a fine stomachic and cordial. It is either used in the form of a cold decoction, sweetened, or five or six leaves are put into a tea-cup, and hot tea poured upon them. The author of a recent work, “Among the Spanish People,” says that the flavor of the tea thus prepared “is simply delicious, and no one who has drunk his Pekoe with it will ever again drink it without a sprig of lemon verbena.” And he further makes a statement, more important than all the rest, if true, that is, that if this decoction be used one need “never suffer from flatulence, never be made nervous or old-maidish, never have cholera, diarrhoea, or loss of appetite.”

ONE MILLION BUSHELS OF WHEAT.—The transactions in wheat at Chicago, on Saturday, July 19th, the newspapers of that city state, exceeded one million bushels.

Rocky Mountain Railways.

In a letter from Colorado a correspondent of the *New York Tribune* says that there is no more striking evidence of the prosperity and enterprise of Colorado than the rapidity with which narrow gauge railroads are built into the Rocky Mountains. “The Denver, South Park and Pacific road zigzags up the South Platte cañon and over the pass into the South Park on grades that no engineer could have dared to suggest ten years ago. Scarcely less daring has been the engineering of the Denver and Rio Grande road over the La Veta Pass of the Sangre de Christo range into the valley of the Rio Grande River. More wonderful than either in its conception and execution has been the construction of the Arkansas Valley Railroad from this place through the Royal Gorge, a cañon almost as grand in its proportions and more inaccessible than that of the Colorado. I have not passed through the gorge, and shall not undertake the impossible task of describing it at second-hand, but I did observe with great interest the progress of the work above the gorge. The grading is nearly completed to Grainett, more than a hundred miles from Cañon City, and the bridging and track laying can be pushed forward with almost any desired rapidity, unless the quarrel between the Denver and Rio Grande and the Atchison, Topeka and Santa Fé companies causes delay. Much of the grading above the gorge has been difficult and expensive, and the grades are very heavy, but the work seems to have been well done.

“I met in this city, to-day, an engineer of the Santa Fé

road who told me that if his company retained control of the Arkansas Valley line, and the Gunnison country should develop into a rich mining region, a line across the great range would probably be built next season. I expressed surprise and doubt that it would be possible to cross that range with a railroad track. He assured me that it was not only possible, but very probable. It used to be supposed, he said, that the only way in which it was possible to build a railroad over a great elevation was to distribute the grade over as much space as possible. This made the road bed very expensive. Railroad engineers in Colorado, he said, now work on a different theory. They follow the natural contour of the ground as nearly as possible, and "bunch" the heavy grades together as much as possible. It is much cheaper, he continued, to use locomotives heavy enough to take the rains over the steep places than to spend so much money in bringing the road to an average grade over a considerable portion of its line. With the completion of the railroads now in progress of construction much of the wildest and grandest scenery in Colorado will be easily reached, and the Rocky Mountains will yearly become more popular as a summer resort."

Jelly and Jam.

Raspberry jam is an essential element in the construction of Washington pie, and as this pie is a Boston institution which is not frequently met with outside of a circle whose circumference is fifteen miles distant from the Massachusetts State House, it is not surprising that the greater portion of the raspberry jam consumed in the United States is made here.

The manufacture of the article has been increasing of late, and there are now some eight firms engaged to a greater or less extent in its production, and making an aggregate of nearly 500 tons per annum. As their product sells for 18 cents per pound, its total value is therefore \$180,000. The dried raspberries of which the jam is made costs 85 cents a pound, and are bought by the jam manufacturers either of farmers and country storekeepers, or of Boston commission merchants.

The manufacture of jelly is a less prominent industry here, though several parties make more or less of that article for bakers' use. Few Boston concerns have had the temerity to attempt to compete with Baltimore manufacturers of cheap "jellies," such as are being wholesaled all over the country at the present time at 70 cents a dozen, or less than 6 cents each. As the glasses which contain those jellies can hardly cost less than 2 cents apiece, and as the labels, covers, etc., are not made for nothing, the price received for the "jelly" itself is evidently not much above 3 cents per glass. Although the demand for this "jelly" has become large, of late, it is pretty well understood that it is principally an animal instead of a vegetable product, being composed mostly of gelatine, variously colored and flavored.

A story was current once that the consumption of cattle hides in the manufacture of jelly in London was so great as to cause a sharp advance in the hide market. Such an effect could hardly be produced at the present time, however, since merchantable hides can be made to yield a good deal more money in the form of leather than in jelly.

The jelly that is manufactured in Boston is nearly all made of apples, and sells at about 14 cents per lb. Apple now forms the base of an endless number of jellies, such as currant, raspberry, peach, pineapple, etc., which are made by simply adding extracts to flavor the apple jelly; and so perfect is the imposition that the great majority of consumers are deceived by it, or, in other words, cannot tell it from the jelly made from the fruit with which this is only flavored. It comes much cheaper than the real article. Real current jelly, for instance, costs somewhere about 28 cents per lb. The latter is made to some extent, and is sold by grocers who cater to the highest class of family and hotel trade.—*Near England Grocer.*

Activity not Energy.

The *Christian Union* thus defines the difference between activity and energy, and suggests wherein a large class of industrious people lack that element which produces success.

There are some men whose failure to succeed in life is a problem to others as well as to themselves. They are industrious, prudent, and economical; yet, after a long life of striving, old age finds them still poor. They complain of ill luck. They say that fate is always against them. But the fact is that they miscarry, because they have mistaken mere activity for energy. Confounding two things essentially different, they have supposed that if they were always busy they would be certain to be advancing their fortunes. They have forgotten that misdirected labor is but waste of activity. The person who would succeed is like a marksman firing at a target: if his shots miss the mark they are a waste of powder. So in the great game of life, what a man does must be made to count, or might almost as well have been left undone. Everybody knows some one in his circle of friends who, though always active, has this want of energy. The distemper, if we may call it such, exhibits itself in various ways. In some cases the man has merely an executive capacity when he should have a directive one—in other language, he makes a capital clerk of himself when he ought to do the thinking of the business. In other cases, what is done is not done either at the right time or in the right way. Energy, correctly understood, is activity proportioned to the end.

American Competition with Sheffield.

The Mayor of Sheffield, England, recently presided over a meeting of business men, held in that city, to discuss the situation of their manufactures, and hear a paper read on Free Trade, by a Mr. Fletcher. At the conclusion of the discussion, Mr. Ward, the Mayor, said that one gentleman had remarked that in his opinion the competition between America and England would cease as regarded manufactures, because American goods were not so good in quality as the English. He was in a position to contradict a statement like that, because, having a connection with Australia, he found that American goods were being preferred in that market to those manufactured in Sheffield. When he went up to London he found that merchants who had hitherto sold large quantities of Sheffield goods, had indents for American ones, which were cheaper and better in quality. He could not for a moment conceive how the American manufacturers were to suffer in the race of competition. It was of the utmost importance that those in this country should put aside that feeling of lethargy that had come like a cloud over it, and bestir themselves once more. He could remember that in his younger days it was nothing unusual for him to work 14 or 15 hours a day, but nowadays, if they went to a merchant's office at ten o'clock in the morning, they found often that he had not "come down" to it, and if they went at four o'clock in the afternoon, he had "gone to his country seat." They were luxurious now, but the Americans were painstaking and persevering. They worked from early morn to late at night. Some time ago, when he was in America, he found the working-classes laboring in the grinding-wheels and shops at seven o'clock in the morning, and there they would remain until seven o'clock in the evening. He believed the Americans were working 15 or 20 hours a week more than they were in Sheffield. Then they saw restrictions put on by the English Government. By the Factory Acts, the manufacturer now must not allow his factory hands to work more than 53 hours a week. If they went to the continent they would find them there working 72 hours a week—according to law. Seeing that the machinery on the continent was working equally as rapidly as in England, it followed that in the 72 hours they got through a far greater proportion of work than could be done in the 53 hours. He concluded that such restrictions tended to retard progress in England.

Utilization of Waste Lands.

The utilization of waste lands in Great Britain is one of the questions of the day, and an example of what can be done in this direction by spirited private enterprise, and which is being rewarded by capital results, is the reclaiming of some 750 acres of land which once was Pagham Harbor on the Sussex coast. The first step taken was to make an embankment or sea wall, to get the soil drains into an open bed in the center of the harbor, the outlet at which is controlled by a sluice which is automatically closed at high water. Next came the process of cultivation. This was first attempted with horses, but the soil of a great part of the reclaimed land is close and muddy, and one of the essentials of its successful culture is to loosen and lighten the top soil so as to admit the air and rays of the sun. Plowing with horses did not satisfactorily effect this, because after plowing and harrowing a shower of rain caused it to run together again. It was then decided to apply steam power to the work, and the result has been remarkably successful, lifting up and thoroughly loosening the soil to a depth of 10 inches. The land thus treated keeps light, and does not run together again, and the condition of the corn sown on lands thus treated by steam power is remarkably superior to that on the same class of land worked by horse power. Of course, from the soft, muddy character of the soil, it would be impossible to travel engines over it, and, benefiting by the experience of a somewhat similar operation carried out at Barth, on the Welsh coast, a few years ago, the proprietor resolved to adopt the same system as that adopted at Barth, namely, that of Howard. The engine is placed on a road which has been made alongside the reclaimed lands, the ropes being passed round the piece to be cultivated, two traveling anchors taking the place of two men. During the past season a large number of acres were plowed and cultivated in this way, and, at the present moment, the corn sown there is fast ripening for the sickle.

The Writing Telegraph.

Cowper's writing telegraph has been placed on the London and Southwestern Railway, and has been working most successfully, says the *Engineer*, from Woking to Waterloo, a distance of 26½ miles, writing off the messages in ink, one after the other, in a perfectly legible manner, whether regular line messages or messages made up in order to give the instrument more work to do. On some days more resistance coils of wire have been introduced into the two line wires, in order to represent greater distances, and thus 62½ miles and 99½ miles have been worked through in a most satisfactory manner, it only being necessary in such cases to add a few more cells of the battery, which in no case was as powerful as is very often used on the same line. The effect of the currents through the multitude of other line wires, in close proximity to the two in use for the writing telegraph, was closely observed, and the effect of induction was so exceedingly small as only to produce occasionally a slight roughness in a straight line, when the pencil of the operator was quite stationary, but such effect was hardly

ever perceptible in the writing itself, and never to affect its legibility.

We understand improved instruments are now being constructed, and will shortly be at work. The fact of this instrument requiring no clerk to receive the message, translate, and write it down, seems to be much appreciated, as a half-dozen such instruments may be telegraphing their yards of messages into one office without the least assistance from the clerk, who may from time to time cut off and send out the ready-written messages; so that not only is the time of "calling" (as with ordinary instruments) saved, but the time of waiting till the clerk can attend at the other end of the line to receive the signals, which very often amounts to a much longer interval than is required for the whole message to be transmitted, especially in offices fitted with many instruments.

There is also a great advantage in having an absolute record of what has been sent by the writing telegraph at the transmitting station. Another very important feature is the facility with which all that it is necessary to learn to use the instrument may be found out in five minutes. Every operation is exceedingly simple, and there are practically no fine adjustments anywhere. Variation in the power of the battery is of no importance, as its effect may be overcome by simply pushing the levers, carrying the springs against which the needles pull a little further in or out, as may be necessary. The pen, which is a very small glass capillary siphon tube, is, though of glass, very strong—it may fall several feet on to a bare floor without breaking—and is very easily adjusted.

The writing telegraph presents facilities and advantages which, we believe, will make its adoption rapid and extensive.

RECENT MECHANICAL INVENTIONS.

Mr. John F. Secord, of North Greenwich, Conn., has devised an improved chain pump bucket, consisting of a rubber knob moulded solid upon an iron link.

Messrs. James M. Johnson and Charles E. Burns, of Lancaster, N. H., have invented an improved machine for making spool blanks. In this machine the blocks are cut out and bored simultaneously.

Mr. Thomas J. Torrans, of Mobile, Ala., has patented an improved device for making bale band ties, formed of the lower or stationary part, an upper or movable, a nicking chisel, made with a rounded edge, and a cutting chisel, made with a rounded edge and concaved sides. These parts are combined with a shear plate, and the whole is arranged so that a complete tie is delivered at each operation.

An improved brake for wagons and carriages, which is so constructed that the brake will be applied by the action of the horses in holding back, and with a force exactly proportioned to the forward pressure of the load, which will allow the brake to be locked in position when off, so that the wagon can be backed without applying the brake, has been patented by Messrs. Lycourous L. Johnson and William E. Johnson, of Alanthus Grove, Mo.

Mr. Lorenzo D. Hurd, of Wellsville, N. Y., has patented an improved running gear for wagons, in which each wheel may rise in passing over an obstruction independent of the others, and without changing the level of the wagon body, and in such a way as to bring the wagon more perfectly under the control of the team.

A device for clipping horses and shearing sheep, to be operated by steam or compressed air, has been patented by Mr. Ernest W. Noyes, of Bay City, Mich. The several parts are arranged so that the speed of the clipping knife will be fully under the control of the hand holding the implement, and the exhaust steam or air will be carried away from the animal.

An improved millstone driver has been patented by Mr. William J. Blackwell, of Waynesborough, Va. It consists in forming the inner ends of both sections of the driver with an eye that encircles the spindle, and in connecting the lapped ends of such sections by lugs and recesses which cause the two sections to act in unison.

An improved apparatus for separating coal from slate, and for separating other substances of different specific gravities, has been patented by Mr. David Clark, of Hazleton, Pa. It consists in the combination of the perforated inclined chutes and adjustable slides with the perforated stationary bottom and the tank, and other devices which cannot be clearly described without an engraving.

An improvement in the class of door latches known as "thumb" or "drop" latches, has been patented by Mr. Joseph R. Payson, of Chicago, Ill. It consists in extending the inner end of the lever through an orifice in the latch piece, the lever having a fulcrum in the rose, with a preponderance of its weight upon the inner or latch side.

A simple, cheap, and efficient fastener for plow colters has been patented by Mr. P. A. Bagwell, of Oakland, Ky. This arrangement of brace and fastener reduces the leverage or strain, when working, upon the colter and beam at their point of contact, and it holds the colter so that it cannot become loose, as it ordinarily does when used in plowing heavy sods or among roots.

An improvement in needle bars for sewing machines of that class in which two needles are attached to and operated by the needle bar, so as to sew two seams at once, has been patented by Mr. Nathan Hayden, of Chicago, Ill. The invention consists in the combination of a slitted needle bar, two needles, and a single clamp and screw adapted to compress and retain both needles with equal security.