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Why Boilers Burst.

Mr. Editor:—The recent explosion of the locomotive, Fort Hill, on the Greenville and Columbia Railroad, produced at the time considerable discussion with severe strictures on the Superintendent of that road, and although the judicial investigation entirely exonerated the officers in charge, yet as the accident resulted in the death of an old and faithful employe, it is well enough to ponder a little upon the subject, and consider the causes of such explosions and their remedies. More frequent examinations of rolling stock should be made, great care taken not to overload and strain old and worn machinery, and the most stringent rules given to runners to look more closely after their locomotives. We send you an article from *Appleton's Journal*, of Feb., 1873, which may turn attention to this subject.

There is an impression among intelligent persons that steam explosions are often due to mysterious if not unpreventable causes. An account in a weekly journal of some recent experiments upon this subject declared that, "to the accomplishment of the experimenters" certain boilers used in the investigation blew up "under a very low pressure of steam." The causes of such explosions are, indeed, not generally known. But to readers who live in a country where steam explosions are a subject of such serious importance to the public as they are with us, a brief and concise explanation of the main causes of these explosions can hardly fail to be of interest. Such an account, freed from technicalities, we propose to give in the present paper. Among other forms of explosion, we shall show how, on the one hand, an open pan of boiling water may explode fatally; and how, on the other, a boiler without a single drop of water in it may be shattered to fragments by the action of heat alone.

1. The first and simplest cause of boiler explosions, frequent though it is, need not long detain us. It is the gradual increase of steam pressure—as in the case of raising steamboats, with the traditional negro seated upon the safety valve—to a point beyond the power of the boiler to resist. In a well-made boiler, such explosions require an enormous force, one that is much greater than that under which the boiler is designed to work. Mr. Fairbairn concluded, from his experiments, that one of the low-pressure boilers which he burst could not have given way at a pressure of less than three hundred and fifty pounds to the square inch. Explosions of this kind are more than any other, due to inevitable carelessness, in not "wantonness" in talking risks, as in the case that we have mentioned.

2. Unequal expansion in the boiler, caused by low water, or by the accumulation of mineral scale or sediment upon parts of its inner surface, is a fertile cause of explosion. Under such conditions, there may be a difference of two hundred degrees or more Fahrenheit between the temperature of the flues, and of the boiler shell; and the unequal expansion of the metal thus caused is enough to rupture the weakest iron. As already stated, this may happen without the pressure of steam to aid it. Near Grand Rapids, Michigan, a boiler twenty feet long was opened for the purpose of cleaning the flues. The man intrusted with this duty inserted an armful of shavings in either end of each of the two flues, and set them on fire, hoping to loosen the incrustations upon them in this manner. But presently, by the expansion of the flues, the whole head of the boiler was "blown" off, and driven through the walls of the building into the adjoining field. An American engineer, Mr. Ward, claims to have devised a method of keeping every part of a boiler at the same temperature, and so of avoiding all explosions from unequal expansion; but we must not stop here to explain it.

3. Explosions caused by the "repulsion of the water" are of special interest because they form one class of the so-called mysterious explosions. In these cases no excessive pressure of steam or heat of fire is apparent; the gauges stand at their usual level; and yet, while there is no sign of danger, a frightful explosion may occur, as if some new and irresistible energy were liberated within the fasted boiler. Such is, indeed, the case, though it is no new explosive compound, generated by the presence of oil or other impurities in the water, as some engineers have argued, that does the mischief. In these cases, some part of the boiler below the water-level has become heated to a higher degree than the water above it. The result is, that the water is repelled from the metal, and a thin film of steam intervenes between the two bodies. In this condition, which is known as the "spheroidal state," the iron may become intensely hot, while the water remains comparatively cool. But now let any cause—as a strong circulation of the water in the boiler, where it lashes around under the fierce heat and pressure like a tortured animal, force it into contact with the hot metal. An immense volume of steam is instantly generated; it "blows" the water above it with the energy of bullets; and the force of this tremendous steam-hammer is sufficient to shatter the top of the strongest boiler in use. These terrible explosions are apt to occur at the moment of starting a locomotive, and the pressure is suddenly increased. To prevent them; it is necessary to make sure that the fires are of uniform heat throughout their whole extent, so as to avoid excessive heating in any part of the boiler; and also to avoid any too sudden increase (even though it be a slight one) of the pressure in the boiler.

4. In the last class of explosions to be considered there is the same shattering of the upper part of the shell of the boiler as in those that we have just described. But they are in fact still more mysterious than those, for in their occurrence can be found that part of the boiler has been at all overheated; and to make the surprise still greater, they occur at a low temperature of the water, and a corresponding low pressure of steam, while yet they are of the most frightful violence.

from a temperature above that which is due to the pressure." Mr. J. R. Robinson, a competent engineer, says, in a little book upon steam-boiler explosions, that all violent explosions occurring when the fire is moderate and the steam low may be ascribed to this cause. In these cases the water is thrown much in the same way as in the explosion last described; and to such a degree, that the top of the boiler shall be shattered by the first blow. That the water is raised to a very high temperature in these explosions, is shown by the fact that it sometimes flashes instantly and entirely into steam, leaving no trace of water near the exploded boiler. Mr. Pender, of Dublin, experimenting upon this subject, erected a fence of boards about the place where the boiler was allowed to burst; but, on going to the spot immediately afterward, "no traces of water could be seen."

This class of explosions may be prevented by the proper use of safety-plugs, and by other means, which we cannot now describe. We shall be content if in this paper we have made clear the causes of the four chief kinds of steam explosions, and so helped the great public which reads *Appleton's Journal* to a strengthened conviction, that all explosions are preventable.

T. M. COAN.

The Great Northwest.

The rapid strides in wealth and prosperity of the great Northwest have been a subject of wonder to all, particularly to us in the South. A residence of three years in that section has made me conversant to some extent with the people and the secret of their success. With bleak, long, dreary and changeable winters, rain, hail, snow, and the cold, sweeping winds from the great lakes almost continually prevailing, short, hot summers, no spring or fall, a traveler getting off at a railroad depot asks himself the question, "Why this way station—in such a desolate country—has grown in the last few years to the size of a large town, lighting fair to even become a city?" The superficial answer is, "The enormous immigration," and then the thought arises, what induced this influx from far distant lands to the neglect of more favored sections, and the correct answer must be, "the absorbing passion of the people to build factories," "to start shops," as they express it, testifying the labor they had. Commencing the "shop" in a small way, the foundation was laid which now commands both labor and capital. After a year or two of comparative prosperity and rigid economy, the citizens of a small village call a meeting—dry goods men, grocers, shoemakers, adjacent farmers, butchers—all classes are represented. The result of their deliberation is the starting of a new shop or factory; something arises from that meeting in the dingy grocery store to employ men and boys to add to the population. "Nine out of ten of these enterprises succeed to the extent of their capacity, and then the capitalist from the East steps forward, the works are enlarged, more labor is required; the German, the Swede, the Dane, the Pole, and the Belgian write home for their brothers, their cousins, all their poor relations, a place in the shop is waiting for the immigrant; the immigrant is not asked to come and wait for the erection of the factory. The success of the venture being assured beyond a reasonable doubt, the sensitive, nervous organization of money can grasp something tangible; the lubricating oil of greenbacks is applied, outside capital is not called upon to create but to expand, and the child factory grows larger and waxes strong. The town meeting, in that corner grocery store, representing \$25,000, raised an interest which now gives employment to five hundred men, and within the space of ten years. The idea that so much skilled labor is required is erroneous. The great improvement in machinery has done away with that necessity. Some brain is requisite in each department, but the labor of the South is at least as intelligent as that of the Northwest, and can learn as readily to manage a labor-saving machine as the foreign labor employed there, to whom the country's language and the machinery are all new. We can soon have sufficient experts in all branches. Another idea entertained generally here is that water power is necessary to the successful prosecution of manufacturing. It has been demonstrated to the satisfaction of most of the large manufacturers that steam is cheaper and more certain, and many large factories within a mile of fine water power are erected on the line of the railroads, the saving in drayage, repairing dams, loss of time caused by frosts, ice and droughts, more than paying the cost of fuel. The people of the Northwest, not content with furnishing that slumbering giant, the Southwest, with wagons, woolen goods, axes, soap, furniture, wind mills, sewing machines, paper, castings, in fact, almost everything, are now turning their attention to the erection of cotton mills, and I venture the idea that in a few years, the Northwest will hold the same advantage over the Southwest as to capital, population, &c., as the Northeast now holds to the Southeast, and there will be the same sickly cry of an under concentration of capital, while the South have fritted away their savings and energies in vain efforts to legislate capital out of the pockets of the rich manufacturer to a locality barren of manufacture, or to force immigration where they have but one industry at which they can employ the immigrant, when it is well known that a large portion of the immigration is from the crowded cities of Europe, and all do not wish to pick cotton or hoe corn; while the South have been doing this, the Northwest utilized the labor and capital at their command, and that both have increased as natural as that water will find its level. The immigrant desires a home in, or within market reach of towns, with their factories, schools and churches. These towns in the West were started by the restless energies of Americans, the foreigners but followed in their wake, and they will follow here.—*Wilmington Star*.

CANDIDATES, KISSING AND MEASLES.—We are told by a high authority that next to green parasites for their wives, at seven-and-six-pence apiece, there's nothing that so charms and wins hesitating voters as the kissing of their respective infants by the anxious candidates for office. Gloomy and fearful as the ordeal may be, many an unselfish patriot has nobly borne it, animated by a glowing consideration of his country's interests. Mud pie could not deter him, nor molasses scare. But if we may believe an Englishman who has long been a candidate, an Englishman who has entered into this performance which prizes several and distinct times more than three caught the measles through his fearfulness and determined kissing the babies of electors. The most resolute canvasser may well pause at this intelligence and ask himself whether it be worth while to dare measles for the sake of office.

—A prisoner in a petty court was asked by the judge if he had any counsel. "Yes," he said, "I had engaged an old bald-headed fellow to defend me, but I don't see him round, and I rather guess he's out for a drink."

Grange Secrets Revealed—How Initiations are Conducted.

On being brought into the ante-room of the lodge (Greengrocer Temple, No. 10), I was told that I had been balloted for and accepted. My informant, who was securely masked by what I afterwards learned was a large burdock leaf perforated with holes for the eyes, told me that if I valued my life it would be necessary for me to strip. As I did consider that considerable worth to me, and as he italicized his wishes by carelessly playing with a seven-shooter, I withdrew from my garments with eagerness. My masked friend then furnished me with the regalia of the first degree, called "The Festive Ploughboy," which consisted merely of one large cabbage leaf attached to a waist-band of potato vines. In this airy costume I was conducted to the door, where my companion gave three distinct raps. (I was securely blind-folded by binding a slice of rutabagas over each eye.) A sepulchral voice from within asked: "Who comes?"

My guide answered: "A youthful agriculturist who desires to become a granger." Sepulchral Voice—Have you looked him carefully over? Guide—I have, noble gate-keeper. S. V.—Do you find any agricultural marks about his person? Guide—I do. S. V.—What are they? Guide—The candidate has carrot hair, reddish whiskers and a turn-up nose.

S. V.—Tis well. Why do you desire to become a granger? Guide (answering for candidate)—That I may be thereby the better enabled to harrow up the feelings of the rascally politicians. S. V.—You will bring in the candidate. My worthy stripling, as you cannot see, I will cause you to feel that you are received at the door on the three points of a pitchfork, piercing the region of the stomach, which is to teach you the three great virtues—faith, hope and charity. Faith in yourself, hope for cheaper farm machinery, and charity for the lightning-rod peddler. You will now be hardening and in representation of the horse Pegasus, will be tested as to endurance and wind.

The candidate is here attached to a small imitation plow by means of a hempen harness. A dried pumpkin is put in his mouth for a bit and bridle; he is made to get down upon all fours, the guide seizes the bridle, and urged on by a granger armed with a Canada thistle, the candidate is galloped three times around the room. While making the circuit, the members arise and sing:

Get up and dust, you bully boy—
If the thistle's prick don't cause you joy,
To feeling you must be estranged, eh!

After this violent exercise, he is rubbed dry with corn-cobs, bees-waxed where thieved, and brought standing up before the great chief—the Most Worshipful Pumpkin Head.

M. W. P. H.—Why do you desire to be a granger? Candidate, (answering for himself)—That I may learn to extinguish sewing-machine agents. M. W. P. H.—Have your hands been hardened with toil? Candidate—Not extensively, but then I am not running for office. M. W. P. H.—Tis well, for our lodges contain several who are supposed to be ready to sacrifice themselves for the good of their constituents. M. W. P. H. (savagely)—Give me a chew of tobacco! Candidate, searching himself thoroughly, but as there is no place about him to stick a pocket, tries to explain, but the Most Worshipful Pumpkin Head interrupts him with— "Never mind, my dear young friend. I am well aware that in your present condition you can no more furnish your friends with the weed than Adam could be comfortable in a plug-hat and eight boots. It is merely to teach you the great lesson of economy—doing to others as you'd like to have them do to you. You will now be conducted to the Most Eminent Squash Producer, who will teach you the grand hailing sign of distress. The sign, my worthy brother, will insure you against most of the ills of the agriculturist—amongst others, against droughts and being bit by the ferocious grass-hopper."

The candidate is now conducted to the Most Eminent Squash Producer, who thus says: "My worthy brother, I will now invest you with the order of the Festive Ploughboy, which you have well won by your heroic achievement with harness; may you ever wear it with pleasure to yourself, and may it be a means of terror to your enemies." (The M. E. S. P. then proceeds to invest the candidate with the regalia of the Festive Ploughboy, which consists of a long tomato neck-lace.)

"The grand hailing sign of distress is made by gently closing the left eye, laying the right fore-finger alongside the nose, and violently wagging the ears. It requires practice, but the advantages are intense. It also has an important signification, which you will do well to heed. The closing of the eye signifies that in all your dealings with mankind, you are bound to have an eye to business. Laying the finger alongside the nose is emblematical of wisdom, and places you at once among the 'knowing ones.' This is extremely handy in prognosticating new weather, and saves the wear and tear of almanacs. Wagging the ears signifies sublimity of purpose, and is thought to be emblematical of childhood's happy hours. It is also supposed by some profound scholars to have a distinct reference to apple-dumplings, but this fact is somewhat obscure by the dust of ages. In token that you are one of us, you will now be branded. When one granger desires to ascertain 'for sure' if there is another of the order in the room, he raises himself gently by the slack of his unmentionables, scratches his off thigh with his rear hoof, and remarks, in a voice of thunder: 'Are there any grangers about?' The answer is: 'Jesse-wax!'"

I was here interrupted, Mr. Editor, by a volley fired into the open window, evidently intended for me. Fortunately I escaped without a scratch, and which is of more consequence, succeeded in fetching off my precious manuscript. This is about all there is in the ceremony of any importance. I must leave the country at once—armed men are at my heels. They know that I am writing to expose them. You may hear from me again, if I should find it best to expose the other degrees. Until then, adieu. From your sacred friend, B. POLE.

NOTICE.—This ceremony of initiation is used during the absence of the lady members. Their initiatory ceremonies are entirely different, being much simplified, as they should be.

—An inebriated Irishman, on being kindly questioned in a very narrow lane, across which he was leaning, as to the length of the road he had traveled, replied: "Faith, it's not so much the length of it as the breadth of it that tired me."

Catching Cold.

Catching cold is "as easy as lying," but to explain the pathology thereof is by no means so readily done. In fact, until the recent researches of Dr. Rosenthal, whose work on the subject is attracting much notice in Europe, almost nothing was known about it, except the mere fact that the ailments popularly ascribed to "cold" are liable to occur after the body, or some part of it, has been suddenly chilled—that is, cooled below the normal temperature. There are two factors concerned in this chilling process; the nature of the external medium—such as air or water—in contact with the body; and the condition of the bloody vessels.

Dry air has very little power to abstract heat, if it be still; but a slight wind from the constant contact of fresh particles of cold air on the surface of the body, soon carries off its heat. If there is much moisture in the air it greatly increases its power of abstracting heat, and when wind and moisture are combined, the chilling effect reaches its maximum. Experience has shown that it is not so much the absolute lowness of the temperature which gives rise to colds, as sudden changes from a higher to a lower. The reason of this was not understood until Dr. Rosenthal explained it. When the surface of a healthy animal is exposed to cold the cutaneous vessels contract, and by thus confining the blood to the interior of the body, prevent its cooling, and preserve the temperature of the vital organs unless the application of cold be continued for a considerable time. This is not the case, however, when the animal has been previously exposed to warmth. The cutaneous vessels become paralyzed by the heat, and remain dilated even after the cold has been applied. The blood is thus exposed over a large surface, and becomes rapidly cooled, even though the temperature of the surrounding medium is not very low. In Rosenthal's experiments, animals were kept at a temperature from about 97 deg. F. The temperature of the animals themselves quickly rose during their confinement to 111 deg. or 113 deg. After their removal it not only sank to the normal temperature, but even below, so that an animal which was from 110 deg. to 111 deg. in the warming apparatus, fell to 96.8 deg., and remained at that for several days, although the room in which it was kept was moderately warm. Confinement in a close office, hot theatre, or crowded ball-room will have a similar effect on man. From such places people pass out into the cool open air, or sometimes even purposely station themselves in a draught. The blood, which is coursing through the dilated vessels of every part of the surface, is rapidly cooled, and on its return to the internal organs, cools them much more quickly than it could have done had the person simply been exposed to cold without dilation of the vessels by previous warmth. Rosenthal lays much stress on the great effect of sudden cooling in bringing on a cold, the sudden change in the atmosphere of the blood producing an irritating effect inducing inflammation in any weak organ in a way that a gradual alteration that would not do. It would seem, however, that the alteration must be from a temperature above to one below the normal temperature of the blood, and not a mere reduction from one considerably above the normal to one at or near it. When much heated we may stand for a short time in a cool atmosphere with impunity; but if we stand long enough to produce a shiver, we run a great risk of catching cold. The fact that it is more dangerous to sit for a long time in a room in wet clothes, appears to indicate that a considerable and more gradual cooling, such as may then occur, will produce similar effects to a slight cooling suddenly effected by exposure to a cold draught, after being in a warm room. The effect of a chill in causing inflammations may be partly due to the effect of cold on the tissues themselves, and partly to the congestion which will occur in some parts when the blood is driven out of others by the contraction of their vessels. Rosenthal is inclined to ascribe the chief power to the former cause. Everybody knows the beneficial effect of cold baths, cold sponging, etc., in "hardening" persons, as it is termed, so that they are able to face almost any weather, and to endure sudden changes of temperature without injury. Rosenthal considers that the frequent application of cold water or cool air increases the tone of the cutaneous vessels, so that they do not become so much relaxed by heat as to be unable to contract with sufficient force when necessary. The power of regulating the temperature is thus preserved, and the person prevented from catching cold.

—Boston Journal of Chemistry.

Reasoning in a Hare.

The following circumstance was related by a respectable farmer as happening within his own observation, and in illustration of its truth it may be proper to remark that in the country where it happened—in Cornwall—the hills, which are steep, rise so abruptly and near to each other, that whatever passes on the side of one may be easily discerned on the other. His attention was first drawn to a hare, which he perceived running down a slope, close to the hedge in a field of turnips, and soon afterwards he perceived that in pursuit of her were a couple of dogs. As these dogs entered the field he saw that the hare stopped for a moment and lifted her ears. The pursuers pressed on, but when they had come within little more than gunshot of their hope for prey, the hare stopped and then ran back for some distance along its former track, when by a sudden spring it threw itself on one side into the midst of the turnips, and there remained crouched and still. The dogs passed onward in their course at a rapid rate; and as soon as they had passed forward on its track with another bound the hare sprang back to the place it had quitted, and ran along the course by which it had come down, with the evident intention of confounding together its upward and downward course. By this time the dogs had come to the lower extent to which the hare proceeded, and there they stopped, as not knowing what further course to take. It was thus the persecuted creature secured its own safety; and my informant was too generous to help them out of the difficulty.—*Cor. of Land and Water*.

TENDER FOOTED HORSES.—An old man who has had much experience in handling and dealing in horses for more than half a century, said to me recently that he had never known a horse to get "tender footed" that was kept loose in a shed and yard, or in a box stall. That turning round and tending with their forward feet in the manure they kept them constantly moist and soft. His theory appeared reasonable to me. I have no box stalls, but I use shavings for bedding, and every morning with a large shovel I move the wet shavings under the horse forward in front of, and under his forward feet, and then the last thing at night cover these with dry shavings for him to lie on. He also remarked that he had never known a "flat footed" horse but what was a great worker.—*Journal of the Farm*.

—Fourteen Quiny fathers have signed an agreement not to permit their daughters to take music lessons until the said daughters know how to bake bread.

Typographical Errors.

Men who form their words in writing after the fashion of gridirons struck by lightning fare badly with the printer. We have been often tortured this way ourselves, and can best describe the feelings on such an occasion by quoting from the *Danbury News*, as follows:

"The sensation of an editor on first glancing over his paper and detecting errors in it are somewhat different from those experienced by the reader on making like discoveries. The latter is either amused at the blunder or indignant at the carelessness which causes it, and in both cases arrives at the conclusion that the trouble is avoidable, and that the editor is to blame for not avoiding it. He never saw an editor take his first glance over a copy of the edition. Perhaps the edition is worked off when this opportunity is afforded the weary man. He has either trusted the proofs to some one else, or read them himself, but the feeling of dread is just as great in the latter as in the former case. The proof reader may not consult the copy and so perpetuate the blunder of the compositor, and perhaps the blunder of the compositor may neglect to do the wrong he has done, although his attention is plainly called to it on the proof. When about to make this preparatory survey, the editor does not take his cigar in his mouth and elevate his heels to the desk, as is the popular tradition. Dying men don't do that way, you know, and we have come to the conclusion that an editor examining his paper feels very much like a man who is about to pass into eternity. He reads along carefully and slowly like a man feeling his way across a piece of doubtful ice. Suddenly his face becomes distorted with an awful pain. He doesn't cry out, he doesn't rant. The anguish within him is so broad, and deep, and intense, that he dares not trust it to words. He just simply reaches up and takes a handful of his own hair, and tugs at it until the tears come in his eyes. Then he picks up the paper, which he has taken the precaution to kick across the room on discovering the error, and resumes the torturing search; for after all it is but a search for errors and agony, and not an agreeable and instructive perusal. Suddenly he groans—not an expectant groan like from one who hopes for help to reach him through it, but the groan of one who is beyond the reach of hope, who feels that the warm sunshine, the kind glance of friendship, the beautiful flowers and the song of the birds are gone forever and forever from him. It is a smothered groan, accompanied by a kick out of the leg, as if the party had in that moment taken an eternal leave of all things earthly. There is still another search with aching eyes and throbbing brain, and then the paper is smashed down on the floor, and the infuriated man bounds up from his chair, and catches both hands into his hair, and dances around like a mad man. He doesn't call upon heaven and earth to witness what he is going to do, and to blight him if he should not do it. He doesn't dash into the composing room and scorch the men with his wrath. Even this slight relief is denied him. The paper is worked off, and the scrutiny that would cheerfully attack a needle in a haystack, would fall paralyzed before a search for the author of the great wrong. He doesn't say anything at all—not a single intelligible word escapes his ashen lips, as he holds his hair, and prances about in the dingy solitude and his room. And when he is done, he sits down again and groans, and afterwards puts on his hat and rushes forth into the street—rushes anywhere to get away from the face of man, to get away from himself and everything belonging to himself."

Sensation of Starving.

For the first two days through which a strong and healthy man is doomed to exist upon nothing, his sufferings are perhaps more acute than in the remaining states—he feels an inordinate, unspeakable craving at the stomach, night and day. The mind runs upon beef, bread and other substantial, but still, in a great measure, the body retains its strength. On the third and fourth days, but especially on the fourth, this incessant craving gives place to a sinking and weakness of the stomach, accompanied by a nausea. The unfortunate sufferer still desires food, but with less of strength he loses that eager craving which is felt in the earlier stages. Should he chance to obtain a morsel or two of food, he swallows it with a wolfish avidity; but five minutes afterward his sufferings are more intense than ever. He feels as if he had swallowed a living lobster, which is clawing and feeding upon the very foundation of his existence. On the fifth day his cheeks suddenly appear hollow and sunken, his body attenuated, his color is ashy pale, and his eyes wild, glassy, cannibalish. The different parts of the system now war with each other. The stomach calls upon the legs to go with it in quest of food; the legs, from very weakness, refuse. The sixth day brings with it increased suffering, although the pangs of hunger are less in an overpowering languor and sickness. The head becomes giddy—the ghosts of well-remembered dinners peep in hideous processions through the mind. The seventh day comes, bringing increased lassitude and further prostration of strength. The arms hang lifelessly, the legs drag heavily. The desire for food is still less to a degree, but it must be brought, not sought. The miserable remnant of life which still hangs to the sufferer is a burden almost too grievous to be borne; yet his inherent love of existence induces a desire still to preserve it, if it can be saved without a tax upon bodily exertion. The mind wanders. At one moment he thinks his weary limbs cannot sustain him a mile, the next he is endowed with unnatural strength, and if there be a certainty of relief before him, dashes bravely and strongly forward, wondering whence proceeds his new and sudden impulse.

THE STATES AND RAILROADS.—Suit has been instituted, under the Illinois Railroad Law, against the Chicago and Alton Railroad Company, for charging more than a fair and reasonable compensation for carrying passengers and freight. This is the first case of the kind, and its course will be watched with great interest. Really the question to be determined is whether a public company, which is not, by its charter, limited to certain rates of charge, can be compelled to do business at rates fixed by commissioners under a State law. The money invested in railroads is as much the property of the stockholders as money invested in any other description of business, and we cannot see that a Legislature has any more right to decide how much a mile or a ton shall be charged by railroads than it has to fix the selling price of bread or shoe leather. Discrimination must be guarded against and oppressive monopolies every check, but a stop will be put to every new railroad enterprise in the country if it be decided that the public, and not the corporation, shall regulate the tariff of transportation. The wonderful increase in the wealth of the West is due to the extension of the railroad system. Without railroads the country would be next to nothing. Very few railroads pay any dividend to their stockholders, and we are satisfied that any arbitrary restraint placed upon them, any virtual confiscation of their property, will recoil with terrible force upon the very communities who are now advocating such laws as that under which proceedings against the Chicago and Alton Railroad have been instituted.—*News and Courier*.

WHISKEY VS. BREAD.—The *Baltimore Sun* says that if there was as much profit charged upon bread as there is upon whiskey the result would be a bread riot. No doubt of it. Men can pay a big price for whiskey, because they look upon it as a luxury, while bread is a necessity, and must be had. Still it does seem curious to the reflective mind that no matter what the price of whiskey may be its consumers never complain about it, but always find some means to get the fluid; and yet they will grumble to an amazing extent when flour goes up a dollar a barrel and don't know how to get the solid. We cannot explain the reason for this, we only know that it is so; but we sometimes question whether it would be any better for the people generally if it were otherwise. Legislative prohibition and heavy taxation have failed to accomplish an extensive or lasting effect. Bread still goes up, and whiskey goes down, men still drink and get drunk, still curse the baker and blame the whiskey distiller; and there is no change for the better. It is only by the strict enforcement of such laws as have been found to be of some good effect that the evil of intemperance can be mitigated; that the whiskey consumers be reduced in number and the bread consumers increased. Let the whiskey profits continue, we say, and there will not likely be any bread riots.—*Chronicle & Sentinel*.

GETTING TO SLEEP.—We have tried many experiments to induce sleep. The best method we have yet discovered is that of counting. Breathe deeply and slowly (without any straining effort), and with every respiration count one, two, three, etc., up to a hundred. Some persons will be asleep before they count ten, twenty, or thirty, and then forget themselves and cease counting. Very few persons can count a hundred and find themselves awake; but should this happen, repeat the dose until cured.—*Science of Health*.

An Agricultural Education.

We hold that farming is both a science and a trade. It is a science, inasmuch as everything produced on the farm comes into being, grows, and matures upon scientific principles, or in accordance with the fixed laws of nature. It is a trade, inasmuch as its successful operation requires the hand of experience. It is more than a science and more than a trade—it is both. Hence an agricultural education is more than a collegiate education; more than can be obtained from books, laboratories, lectures, and study. Even though one has been through all these thoroughly and understandingly, he is not an educated farmer. He may be a scientific farmer, but he will lack the practice. Though he may have learned the use of farming tools, and all the handiwork practiced in farming, yet he will not be a practical farmer, but if he lacks the science of his profession he will not be an educated farmer. A truly educated farmer is one who combines an educated head with an educated hand. It is too often the case that farmers and tradesmen have only educated hands. Their heads are not educated. How much more successful and useful they would be if they possessed educated heads. To cultivate both the head and the hand requires two kinds of education—one for study and the other for practice. The more they can be combined the better. But as agricultural colleges are not plenty, scientific, practical farmers could in a measure supply their places by taking young men and giving them a good practical education based upon scientific principles. Two or three years with a scientific and practical farmer, with books, papers, and instructions, would be a permanent benefit to a young man ambitious to be a true farmer. We have a few truly scientific farmers in our country. Let them offer to take young men upon fair terms and give them a course of instruction both scientific and practical, and let it be long enough and thorough enough to make them good farmers, and it seems to us they would soon have pupils. Our cities and towns are full of young men who should embrace such opportunities, and scores of farmers have sons who sadly need such tutelage. Such a practice could not fail to elevate agriculture and place the farmer in a position above that of a mere "hewer of wood and drawer of water."—*Colman's Rural*.

—A little boy living near Kankakee, Ill., was amusing his brother and sisters by twisting a towel around his neck in imitation of hanging, when in turning around his feet slipped. He fell the length of the towel, which was firmly attached to a roller. His neck was instantly broken.

—If you intend to do a mean thing, wait till to-morrow. If you are to do a noble thing, do it now.

Social Changes and Eng's.

After all, the poor twins were no such monsters that we need go clucking and shuddering for weeks about their coffin. We're all Changs and Eng's at heart. Every man, says the old superstition, hath his double in Africa or in his own household; and every man of us knows it to be true. What else do our perpetual schoolboy friendships, our groping love affairs, our marriages, mean but the search for this "fifth," this Chang, toward whom an unseen tormenting hand draws us? Is a strip of skin more inexplicable than the power which impels Victor to choose a plain, ill-tempered, silly woman out from among a host of fair and noble maidens as his wife, and to exalt her thereafter, as anointed by some mysterious chrisim, a queen among women? And consider, beyond, that kind of ten commonplace women are thus chosen and crowned by their mates; that the bond between them, irrational, ridiculous as it may seem to others, is powerful enough to enable them to bear all hardships, pains, incongruity of temper with smiling unity; to eat thousands of meals together without jarring, while their ideas are diverse as the poles, to rear children, to go down unlike, antagonistic body and mind, yet one, to a common grave. What can the twins, going about with their abnormal girdle, furnish of wonder like that? Every body shuddered, too, at the horribleness that one of these poor creatures should die, and the other, still living be hampered by a corpse. It was of this horror, some reports state, the survivor died. But did we ever consider the spectacle of a woman carrying through life the drunken, bloated body of a husband or a son out of whom the soul had died long ago, and left only the brutalized mass of matter, incapable of feeling for her, or of any feeling or life but the mechanical appetite of a beast? With what zeal, what tenderness, she drudges for the body of this death! Tends it, battles for it, totters under it down to the grave. What binds her to it? Here is a mystery before which Chang and Eng's band of union may well pass out of sight and be entirely forgotten.

—A man who had been blind for many years, was cured of his blindness by the use of a certain medicine.

—A man who had been deaf for many years, was cured of his deafness by the use of a certain medicine.

—A man who had been dumb for many years, was cured of his dumbness by the use of a certain medicine.

—A man who had been lame for many years, was cured of his lameness by the use of a certain medicine.