Early Stage of Inebriety.

There are found in all parts of the country men and women who use alcohol regularly and in limited quantities. To the casual observer they go on for years in this state and are apparently no worse, and finally die at last of some common disease, leaving the reputation of having lived what the inebriate would call an "ideal life" of moderate drinking. Why they drink is not clear. If they have any reasons, it is always sustained by their unbounded faith in the capacity to abstain at any time at will. These cases are inebriates in every respect, except in the prominence and intensity of the symptoms. There is no difference between the chronic case of the lowest type and the highly respectable, moderate drinker, except one of degree.

Both are suffering from a positive physical disease. In one case the disorder is developed, in the other it is in the incipient stage. In the latter, from some obscure reason, the case never goes on to full development, but is always on the "border land," awaiting the action of some exciting cause, which may or may not be applied. A repelling power exists, which builds up and neutralizes the injuries received from alcohol to a certain extent. It is not will power which makes the difference between the inebriate and moderate drinker. It is physiological and pathological conditions of the brain and nervous system, which the possessor ascribes to will power. Alcohol cannot be used in moderation without grave injuries to the nerve centers.

The moderate drinker is always diseased, although to the non-expert there are no clear symptoms or coarse lesions that can be seen. A careful study will reveal physically an irritable condition of the heart, with stomach and digestive troubles, also changing and disordered functional activity of all the organs, at times. Psychically the disposition, habits, temper, and mental state slowly and gradually degenerate and become more unstable. The higher mental forces drop down or give place to lower motives and ambitions. No matter what his position of life may be, or his objects or plans, the moderate use of alcohol will alter and break down both physical and psychical energy and precipitate destruction. Moderate users of alcohol always die from diseases provoked and stimulated by this drug. They always transmit a legacy of defective cell energy and exhaustion, which most readily finds relief in any alcohol or narcotic.

But only a small per cent of moderate drinkers remain so until death. The disease goes on to full development in inebriety, in a vast majority of cases. The boasted will power to stop at all times is powerless before its peculiar exciting cause. Those who never go beyond this moderate use have simply never been exposed to this peculiar exciting cause. The moderate use of spirits for a lifetime is a mere accident in the order of nature, and the ability to stop, resting in the will power, is a popular fallacy. A certain number of cases have signs of incipient phthisis, which may never burst out into the full disease.

A small number of cases exposed to small pox, or any infectious disease, never take it; but these are the rare exceptions, whose causes are unknown, from which no deductions can be drawn. Moderate drinking that does not go on to inebriety is also the exception. The chain of exciting causes that bring on these extreme stages may or may not be understood, but they always break out sooner or later in the history of the case. Practically the study of this early stage of inebriety is of the utmost value in the treatment. Here remedial measures can be made of the greatest avail in checking and preventing any farther progress of the disease. When inebriety is fully recognized as a diseased condition, requiring study and medical care, this prodromic period of moderate drinking will receive the attention it deserves.

In the mean time, as scientific men, we must continue to call attention to this early beginning of inebriety, so full of indications and hints of the march of disease, whose progress and termination can often be predicted with positive certainty.—*Journal of Inebriety.*

Heathen Chinee Telegraphs.

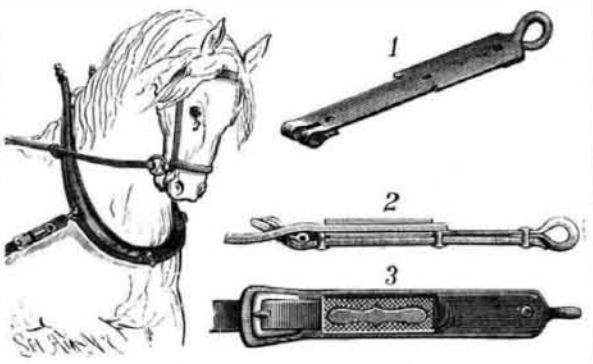
Owing to the peculiarity of the Chinese characters, each of which represents a word, not a letter, as in our Western tongues, the Danish Telegraph Company (the Great Northern) working the new Chinese lines have adopted the following device. There are from five to six thousand characters or words in ordinary Chinese language, and the company have provided a wooden block or type for each of these. On one end of this block the character is cut or stamped out, and on the other end is a number representing the character. The clerk receives a message in numbers, and takes the block of each number transmitted and stamps with the opposite end the proper Chinese character on the message form. Thus a Chinese message sent in figures is translated into Chinese characters again and forwarded to its destination. The sending clerk, of course, requires to know the numerical equivalent of the characters or have them found for him.

The Yellowstone Geysers.

The London *Times* says "that at the first glimpse it is uncertain whether the scene around the Yellowstone geysers resembles more a factory or visions of the Inferno. The roads are toilsome and perilous. The alkali, lime, and sulphur dust is knee deep. The hotels are gypsy encampments with the prices of Saratoga palaces, and without their civility. Anything like a picnic in this seared and scarred land appears equally out of place with a picnic by the Dead Sea."

HAME TUG.

The hame tug clip, Fig. 1, is folded at its forward end to form the eye in which the ring of the hame of the harness is placed. At its rear end the clip is folded under and slotted for receiving the buckle that holds the draught tug, as shown in Fig. 3. The rear part of the clip is made narrower than the fore part, for the purpose of enabling the offsets to be formed at the edges of the clip in order to prevent the box loop from forward movement when in place upon the hame clip. The box loop is prevented from backward movement upon the hame clip by coming against the folded part. The leather lining of the hame clip is secured by rivets which hold the folded end of the clip. The lining is cut away at its rear end to form an opening, through which the draught tug passes to the buckle, which is supported by the lining so that it will not come in contact with the tug, to wear and cover it with rust. The tug is easily and quickly made, and no skill is required in putting it together. Fig. 2 is a longitudical section of the hame tug.

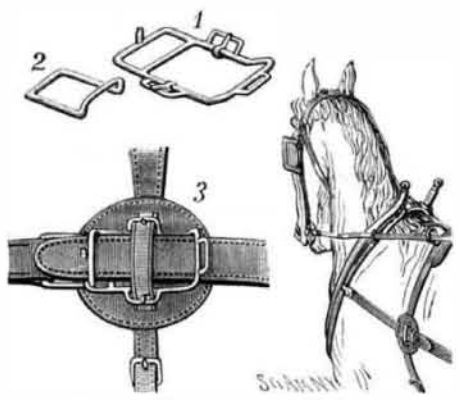


LELIE'S HAME TUG.

This invention has been patented by Mr. E. C. Lelie, of St. Genevieve, Missouri.

TRACE BUCKLE.

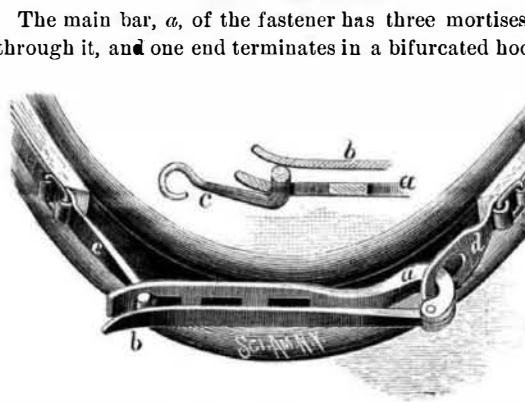
This buckle is adapted to hold the trace and the front trace strap, and also the back strap and belly band. The buckle is formed of a frame having buckles secured to its upper and lower sides, for holding the back strap, which passes through both buckles over the trace and has the belly band attached to it. At its forward end the frame is formed with a stud, as shown in Fig. 1, which holds the trace, the bent loop, Fig. 2, of the front trace strap serving as the keeper, as will be understood from Fig. 3. The rear end of the frame of the buckle is formed with a loop for receiving the side straps of the harness. Behind the buckle is a chafe leather held by the back strap and belly band to protect the body of the animal from being rubbed. This invention has been patented by Mr. D. T. Harbison, of Duncanville, Illinois, who should be addressed for further information.



HARBISON'S TRACE BUCKLE.

HAME FASTENER.

The main bar, *a*, of the fastener has three mortises made through it, and one end terminates in a bifurcated hook between the members of which the hook lever, *b*, is pivoted by a rivet or bolt. The bar, *d*, is formed with a mortise and hook as shown, the hook being intended to pass through and be secured to the link at the bottom of the ordinary iron, or wood bound, hame. The hook may be lengthened and twisted, or turned at a right angle to the mortise, and made so as to pass through the holes in a common wooden or plow hame. At *c* is represented a bar formed with a toggle at one end and a hook at the other, the hook serving the same purpose as the hook on the bar, *d*. The toggle is used to connect the bar, *c*, with the main bar, *a*, and for bringing the hames nearer together at the bottom by passing it through one or the other of the mortises. Both the bars, *d* and *c*, may be made of folded and bent round wire. To use the fastener the hooks of both bars are passed through the links at the bottom of the hames, the toggle is placed in one of the mortises, and then the lever, *b*, is passed through the mortise in the bar, *d*, and brought down against the main bar, drawing the hames together.



JONES' HAME FASTENER.

This invention has been patented by Mr. B. F. Jones, of Beauregard, Miss.

"Can Human Blood be told from that of the Dog?"

BY C. H. STOWELL.

In a recent case on trial at Wellsboro, Pa., Dr. Thad. S. Up de Graff, of Elmira, N. Y., swore very positively on this point. The newspapers give Dr. Up de Graff the credit of convicting the prisoner. It is not the proper place here to determine whether the prisoner was guilty or not; it is in the precincts of this journal, however, to determine whether the expert testimony was according to facts. Dr. Up de Graff was given some of the stained clothing to examine, and by processes entirely unknown to the writer (according to all accounts seen), by decantations, washings, etc., some corpuscles were procured and measured. Dr. Up de Graff positively testified that this was human blood and not dog's blood. When asked if he was the only one who could tell this, he replied that "there were but *four* men in the world who could tell human blood from dog's blood;" and of course he was one of them. When asked why he could do so much better than others, the reply was, "On account of the superior character of his glasses, and that his microscope cost sixteen hundred dollars." The testimony of Dr. Up de Graff makes him give a positive size to the human red blood corpuscle. What do standard writers say on this subject?

Gulliver says they are the $\frac{1}{3200}$ of an inch.
Flint says they are the $\frac{1}{3500}$ of an inch.
Dalton says they are the $\frac{1}{3731}$ to $\frac{1}{3050}$ of an inch.
Richardson says they are the $\frac{1}{3378}$ of an inch.
Woodward says they are the $\frac{1}{3092}$ of an inch.
Frey says they are the $\frac{1}{2840}$ to $\frac{1}{4630}$ of an inch.
Welcker says they are the $\frac{1}{3230}$ of an inch.

Where is the exact size to judge by? The red corpuscles are also subject to change in size by the varying changes in the blood and by many drugs. Wagner, in his General Pathology, gives a long list of remedies that when administered change the size of this corpuscle. How delicate is it, also, to the various reagents used in microscopical work! I have seen red corpuscles as small as the $\frac{1}{5000}$ of an inch, and as large as the $\frac{1}{2800}$ of an inch. I have never measured red blood corpuscles in lots of fifty each and had any two exactly alike, although using a delicate cobweb eye piece micrometer and a one-fiftieth objective.

Listen to what Mr. Woodward, of Washington, says: "The average of all the measurements of human blood I have made is rather larger than the average of all the measurements of dog's blood. But it is also true that it is not rare to find specimens of dog's blood in which the corpuscles range so large that their average size is larger than that of many samples of human blood."

Human blood cannot be told from dog's blood, except under favorable conditions, and not invariably then. For the sake of microscopy it is a pleasure to know that only *four* men are ready to make such statements. There are a score of men in this country with glasses equal, at least, to Dr. Up de Graff's, who would testify directly opposite to him on this point. If Dr. Up de Graff is ready to receive a number of pieces of cloth, labeled and stained, respectively, with human and dog's blood, under favorable and unfavorable circumstances, this journal will see to it that said cloths are prepared with accuracy by competent parties. If he succeeds, he shall receive all the glory these columns can sound forth, but if he fails he will be referred gently to his Wellsboro testimony.—*The Microscope.*

Photography of Moving Objects.

The dry plate process and special arrangements of the camera, by which exceedingly brief exposures are possible, have enabled the photographer to take views of rapidly moving objects. With particularly sensitive plates some startling results may be obtained, and not only can moving animals and vessels be photographed, but the spokes of the wheel and the fast trotter can be shown with sharp and distinct outlines. Even views from the windows of a quick train can be obtained. The necessary time of exposure has been reduced to such a small fraction of a second that absolute steadiness of the camera itself no longer enters into the problem. The dry plates are gradually driving out the wet ones in the galleries, and those who pose in uncomfortable positions are no longer in danger of being tired out. The artist no longer finds it essential to tell his patrons to "look pleasant," but he aims to tell them something interesting, when the natural expression comes over the face and is instantly caught by the camera. The taking of the baby's picture is no longer accompanied by dread. Much of the best work done with the dry plate process has been by amateurs.

Sulpho-Carbolate of Soda for Bee Stings.

Dr. Thomas Edwards, in the *Lancet*, September 22, 1883, says that in a case of great swelling of the face from the sting of a bee he gave fifteen grains of this drug in an ounce of water every four hours, with most gratifying results.

Sleeplessness.

Nothing lowers the vital forces more than sleeplessness, which may generally be traced to one of four causations: (1) Mental worry; (2) a disordered stomach; (3) excessive muscular exertion; (4) functional or organic disease. Loss of sleep is, when rightly understood, one of Nature's premonitory warnings that some of her physical laws have been violated. When we are troubled with sleeplessness, it becomes requisite to discover the primary cause, and then to adopt suitable means for its removal. When insomnia, or sleeplessness, arises from mental worry, it is indeed most difficult to remove. The best and perhaps only effectual plan under such circumstances, says a writer in *Chambers's Journal*, is a spare diet, combined with plenty of outdoor exercise, thus to draw the blood from the brain; for it is as impossible for the brain to continue active without a due circulation of blood, as it is for an engine to move without steam.

When suffering from mental distress, a hot soap bath before retiring to rest is an invaluable agent for obtaining sleep, as by its means a more equable blood pressure becomes established, promoting a decrease of the heart's action and relaxation of the blood vessels. Many a sleepless night owes its origin to the body's temperature being unequal. In mental worry, the head is often hot and the feet cold, the blood being driven to the brain. The whole body should be well washed over with carbolic soap and sponged with *very* hot water. The blood then becomes diverted from the brain, owing to an adequate diffusion of circulation. Tea and coffee should not be taken of an evening when persons suffer from insomnia, as they directly induce sleeplessness, being nervine stimulants. A sharp walk of about twenty minutes is also very serviceable before going to bed.

Sleeplessness is sometimes engendered by a disordered stomach. Whenever this organ is overloaded, its powers are disordered, and wakefulness or a restless night is its usual accompaniment. Dr. C. J. B. Williams, F.R.S., remarks that no food should be taken at least within one hour of bedtime. It cannot be too generally realized that the presence of undigested food in the stomach is one of the most prevailing causes of sleeplessness.

Persons suffering from either functional or organic disease are peculiarly liable to sleeplessness. When inability to sleep persistently occurs, and cannot be traced to any perverted mode of life or nutrition, there is good reason for surmising that some *latent* malady gives rise to so truly a distressing condition. Under these circumstances, instead of making bad worse, by swallowing deadly sleeping drugs, a scientific physician should be without delay consulted. Functional disorders of the stomach, liver, and heart are often the primary source of otherwise unaccountable wakefulness.

Recently, the dangerous and lamentable habit of promiscuously taking sleeping draughts has unfortunately become very prevalent, entailing misery and ill health to a terrible degree. Most persons addicted to this destructive practice erroneously think that it is better to take a sleeping draught than lie awake. A greater mistake could hardly exist. All opiates more or less occasion mischief, and even the state of stupefaction they induce utterly fails to bring about that revitalization resulting from natural sleep. The physiological effect of hypnotics, or sleeping draughts, upon the system is briefly as follows: (1) They paralyze the nerve centers and disorder the stomach, rendering it unfit for its duties; witness the sickness and loss of appetite consequent upon a debauch. Chloral, chloroform, opium, etc., act upon the system much in the same way as inebriation. (2) One and all anæsthetics introduced into the body have *life* destroying properties in a low degree—proved by an overdose being fatal. (3) The condition they produce is not sleep, but a counterfeit state of unconsciousness. (4) They directly poison the blood, consequent upon its carbonization, resulting from their action. While speaking of sedatives, we cannot omit drawing special attention to chloral. This powerful drug is popularly supposed to give a quiet night's rest, without any of the after effects (headache, etc.) produced by various preparations of morphia. Now, chloral is what is termed cumulative in its action, which implies that even the same dose persisted in for a certain length of time may cause death. Of all hypnotics, chloral is by far the most deadly, and should never, under any circumstances, be taken except under medical supervision.

To epitomize what has already been said regarding sleeplessness: its rational cure should be arrived at in each individual case by seeking out *the cause*, and then removing the morbid action, of which it is but a natural sequence.

Lastly, sleeplessness under no circumstances should be neglected, as it acts disastrously both on the mental and physical forces.

Another contributor in *Chambers's Journal* relates the following, which is appropriate to the subject of this article:

When the health is in a satisfactory state, and there is freedom from care and annoyance, sound and refreshing sleep may be expected. Under such favorable circumstances, I usually sleep well, but have always found it difficult, when retiring to rest, to close my bedroom door on the cares and troubles of the day, and seek my pillow with thoughts of sleep alone. Whatever may have worried or caused recent annoyance is sure to intrude itself and be present in my thoughts when I endeavor to go to sleep; the brain is therefore kept active when it should be at rest, and consequently sleep is for a long time impossible. Toward morning, when the mind as well as the body has become wearied, some sleep may be obtained; but as the brain is not even then composed, it is generally unsound and unrefreshing.

Among the remedies that have been recommended for sleeplessness are—the repeating of poetry, counting up to a hundred several times, etc. I have never heard, however, that such remedies were at all useful, and the reason is, I think, obvious: they keep the brain engaged when it should be at rest. For a long time, therefore, I was anxious to discover some plan by which the tendency to mental activity would be lessened and a favorable condition for sleep secured.

I had frequently noticed that when engaged in deep thought, particularly at night, there seemed to be something like a compression of the eyelids, the upper one especially, and the eyes themselves were apparently turned upward, as if looking in that direction. This invariably occurred; and the moment that, by an effort, I arrested the course of thought, and freed the mind from the subject with which it was engaged, the eyes resumed their normal position, and the compression of the lids ceased. Now, it occurred to me one night that I would not allow the eyes to turn upward, but keep them determinedly in the opposite position, as if looking down; and having done so for a short time, I found that the mind did not revert to the thoughts with which it had been occupied, and I soon fell asleep. I tried the plan again with the same result; and after an experience of two years, I can truly say that, unless when something specially annoying and worrying occurred, I have always been able to go to sleep very shortly after retiring to rest. There may occasionally be some difficulty in keeping the eyes in the position I have described; but a determined effort to do so is all that is required, and I am certain that if kept in the down looking position, it will be found that composure and sleep will be the result.

It may be said that as the continued effort to keep the eyeballs in a certain position so diverts the attention as to free the mind from the disagreeable subject with which it had been engaged, sleep will follow as a natural consequence. It is not improbable that this is to some extent correct; and if so, it is well that by means so simple and so easily adopted, such a desirable result can be secured. But I think this is not the only nor the principal reason. The position in which the eyes should be kept is the natural one; they are *at ease* in it; and when there is no compression of the lids or knitting of the brows, the muscles connected with and surrounding the eyes are relaxed. This condition is certainly much more favorable for sleep than for mental activity or deep thought.

Phosphorus Manganese-Tin-Copper Alloy.

Messrs. Cockshott & Jowett, of Thornton Road, Bradford, England, have, after a long series of experiments, succeeded in alloying manganese with phosphorus and tin and copper, producing a metal which, for tensile strength and durability, they think will be found superior to any alloy in the market. This phosphor-manganese tin may be used exactly in the same manner, and in similar proportions, as phosphor tin—though it is better to cast at a little higher temperature—but the result will be found much superior both as regards hardness and tensile strength. Phosphor-manganese tin will be found a very convenient form in which to have the combination of manganese and phosphorus, as it will enable the brass founder to produce the bronze of a quality exactly suitable to the purpose for which it is required by adding a greater or less proportion of copper, etc., according as the bronze is required to be tougher or harder. This phosphor-manganese bronze is made in two qualities, No. 1 and No. 2, both the same price. The former is very tough and suitable for purposes where the castings are required to withstand a great strain. Mr. Kirkaldy, of London, has found this alloy to withstand the enormous strain of 34,754 pounds per square inch. The latter is for bearings and wearing parts of machinery, and is exceedingly hard, but at the same time very tough, the tensile strength being, according to Mr. Kirkaldy, 29,979 pounds per square inch.

Injurious Properties of Vanilla Beans.

A distinguished professor of the Faculty of Medicine of Bordeaux, Dr. Layet, has, says the *Lancet*, just read an interesting communication on certain injurious properties of vanilla, of which a satisfactory explanation has up to the present been wanting. The affections have been studied at a warehouse in Bordeaux, where on an average 25,000 to 30,000 kilogrammes of vanilla arrive every year. In these storehouses the pods are cleaned, sorted, and classed according to their quality. These manipulations seem to cause certain symptoms among the workmen and women. At first an itching of the face and hands associated with a powerful smarting sensation is experienced, and the skin becomes covered by a pruriginous eruption, swells, reddens, and desquamates at the end of some days. At other times there is a feeling of malaise with dullness, stiffness, and muscular pains, which oblige the worker to give up this kind of labor. The cutaneous malady seems to be due to an acarus which appears as a small, white, rounded body occupying generally the ends of the pod. This insect does not penetrate the skin like the *Acarus scabiei*, but determines the affection by its mere contact. Probably the parasite is aided in its irritant effects by the presence of "givre" in the form of pale acicular crystals. The nervous symptoms M. Layet is inclined to put down to the manipulation of inferior pods of vanilla containing much oily juice enveloping the seeds in the interior of the siliquæ.

Slate Making in Pennsylvania.

The Chapmansville quarries, in Northampton County, were opened in 1850, the first one being worked on a small scale in 1864. Here are located, states the Easton correspondent of the New York *Sun*, the Chapman and New York Slate Manufacturing Company, the Fischer Slate Company, and the Edelman Quarry. The quarry of the Chapman Company is a hole over 1,000 feet long, 300 feet wide, and 225 feet deep. It is called a flat rock quarry—the split of the slate inclining to the south at an angle of about ten degrees. The removal of the top is an item of considerable expense, varying with the location. When the top has been taken away a natural joint in the slate is sought, and if not readily found a hole is drilled and a blast made. The slate rock is split into blocks which are hoisted by means of derricks to the surface, when they are landed on trucks and moved along a track to the shanties where they are split.

"The splitter, with his mallet and broad steel chisels, sits on a block, and, taking, a slab of slate between his legs, drives in his chisel a little way at one end. He moves it a little with a firm, gentle pressure, and you can see the split begin to start as straight as a die. He repeats the operation at the other end. Then he drives his chisel in the middle and easily pries the slab in halves. The split pieces are split and split again until they are of the required thickness. As fast as they are split a man who stands by the splitter takes the slates and runs them through the dressing machine. This is a cast iron form set on five legs, with a steel extension piece or arm about four feet long. Suspended over this is a steel knife which is attached to a spiral steel spring and worked by the foot of the dresser. A gauge board guides his eye and he puts his slate against it, presses his foot on the treadle, and down comes the knife, cutting the edge clean and straight. He makes the four edges straight, and lays the slate in piles according to size. Just as fast as his foot can work, a good dresser keeps his machine going. The splitter and dresser work together, and are paid according to the quantity they turn out."

Diamond saws having a reciprocating motion and making 140 strokes per minute are also used. They cut only one way, being lifted by a cam for the return stroke. A constant stream of water clears the teeth of slate dust. The planers are similar to those used for planing iron, the polishing bed being of cast iron, 14 feet in diameter, and making 30 revolutions per minute.

A curious feature about the place is that the factory, engine house, smokestack, and many of the houses are built of slate blocks. There is a great demand for all kinds of labor in the whole region. Ordinary day laborers earn from $1 to $1.35 per day, and often more, according to the exigencies of the occasion. Carpenters earn $2.25 to $3.25. Bricklayers find work, but most new buildings are frame. Machinists are sought after daily, and make good terms, because practical men to work at the opening of new quarries and the erection of machinery are scarce. Slaters (splitters and dressers) earn from $2.50 to $4 and $4.50 per day by the piece. Quarrymen can always find employment.

The Westinghouse Brake.

Among other interesting cases recently recorded of the good services rendered by the Westinghouse brake, two in particular may be mentioned. On the 11th inst. an express train from Hull to Leeds, on the Northeastern Railway, when running over fifty miles an hour was turned off the main line into a branch at Crossgates, near Leeds, by a blundering signalman. The brake was at once applied, and the train was coming to a stand, when in taking another pair of points it was thrown off the line, and separated into two or three portions; but, thanks to the automatic nature of the brake, each was separately stopped and no one was injured. The other case was in the United States, and happened on the Baltimore and Ohio Railway. The Chicago *Tribune* says: "Yesterday morning at the dawn of day, when the express which is due in Chicago at 5:40 A.M. was about thirty odd miles from the city, and running at great speed, the engineer noticed smoke in front of him, and feeling a presentiment of danger, instantly applied the air brakes and stopped the train, loaded with its sleeping freight, just in time to keep it from plunging into the Little Calumet River. The bridge was burnt, and not over 30 ft. separated the locomotive of the train from the yawning abyss." The simplicity claimed for certain brakes would prove but a poor substitute for the quickness and certainty of the automatic brake in such cases as the above.

Work of the United States Mints.

The annual report of the Director of the Mint shows that the total amount of gold and silver received and worked during the year was $87,758,154, of which $49,145,559 was gold and $38,612,595 was silver. The coinage consisted of 98,666,624 pieces, worth $66,200,705. Of this amount $28,111,119 was in standard silver dollars. The total amount of fractional silver in the country is $235,000,000. The earnings of the mints during the year were $5,215,509, and the expenses $1,726,285. The total value of the gold and silver wasted at the four coinage mints was $30,084. while there was a gain from surplus bullion recovered amounting to $62,658. The director estimates the total coin circulation of the United States, on July 1, 1883, at $765,000,000, of which $537,000,000 was gold and $228,000,000 silver. The estimate on October 1, 1883, was $544,512,699 of gold, and $235,291,628 silver.