Improvement in Railway Engines and Carriages.

The following is the substance of a specification of a patent granted lately in England to Thomas Waterhouse, cotton manufacturer, county of Chester.

The first part of this invention is intended to facilitate the passage of railway engines, tenders and carriages around curves, by allowing each wheel to move independent of its fellow. This is effected by forming each pair of wheels with a long nave, or boss (the patentee recommends that its length should be equal to one half the diameter of the wheels to which it is applied,) which is bored to fit the axle, and works against a shoulder on the same—it being kept in contact with the shoulder by a moveable collar, or washer, secured to the axle, outside the nave of the wheel, by a key ; the other wheel is fixed to the opposite end of the axle. Another mode of carrying out this part of the invention, consists in dividing the axle at the centre into two parts, and fixing additional bearings to the lower framing of the carriage, for the purpose of supporting the inner ends of the two parts of the axle, by which means the wheels are permitted to rotate perfectly independent of each other.

The second part of this invention consists in the application to railway engines, carriages and tenders, of an apparatus for sounding signals, by means of compressed air. The apparatus consists of a force pump, for compressing air into a receiver, or receivers, beneath the carriage, from which it can be admitted by the guard, or railway attendant into a railway whistle, or other suitable instrument for sounding signals. The pump is worked by a lever, or levers, acted upon by hand or by the motion of an excentric fixed on one of the axles of the carriage, or by any suitable mechanical contrivance for communicating motion from the axle ; and the apparatus is so constructed, that when the air is compressed to the required degree, the pump will cease working until the pressure upon it is reduced.

The patentee claims, firstly, giving a revolving action to one wheel on each axle of a railway engine or tender, or of railway carriages of various kinds, wholly independent of the action of the opposite wheel on the same axle, in one case without interfering with the rotation of the axle itself ; and in the other case by dividing the axle into two parts—so that, in either case, the first mentioned wheel may travel at any speed, faster or slower, than the opposite wheel, suited to the curved line of rails which it may have to pass over or along, or to other circumstances, rendering such variation of speed between two opposite wheels desirable. Secondly, an improved apparatus for sounding a signal-whistle, to be applied to railway engines and tenders, and to railway carriages of various kinds, in order to cause the whistle to be acted upon by condensed air, obtained by the motion of the carriages travelling along the line, or otherwise, instead of by steam ; and which whistle being, therefore, wholly independent of the steam of the engine for its action, may be applied to any convenient part of any engine, or tender, or railway carriage, or any number of carriages, and thus furnish a signal by which the guards may communicate with each other or with the engine driver, from any carriage of a train, however distant it may be from any other carriage, or from the engine.

Improved Method of Making Rail Road Iron.

By the Hartford Courier we learn Mr. Horatio Ames, of Falls Village, Conn., has recently perfected a highly important improvement, destined to produce highly important results in the manufacture of iron for railroads. Mr. Ames, in the progress of his business. which is mainly devoted to the manufacture of iron for the axles and tires of railroad wheels, observed that the tires often split or separate in lines parallel with the plane of the wheel ; that is, in a direction of the length of the bar of which they are formed. He also observed that the rails of railroads often split lengthwise, and that the upper surface and the inner edge, under the action of the wheels and their flanches, exfoliate : that is, split off in lamina or scales.

As an experienced iron master, he knew that bar iron consists of fibres that lie parallel to one another, and running in the direction of the length of the bar ; that those fibres and their parallelisms are due to the gradual elongation of the crystals of cast iron, when changed into wrought iron in the process of hammering and rolling, by which the crystals are gradually elongated, and that in the same direction, and that the attraction of cohesion between the particles constituting each fibre is greater than between the different fibres, as it is well known that bar iron has much more tenacity in the direction of the fibres than across them.

From any consideration of these well known facts he concluded that the splitting and exfoliation were due to the want of sufficient adhesion between the various fibres constituting the bar, and that the only remedy would be to change the direction of the fibres by twisting the bar in the process of rolling ; so that the fibres should be twisted like the fibres of hempen rope, thus substituting the tenacity of the fibres for the force which binds them together. In this way, it will be observed that to split or exfoliate a bar of iron, it would be necessary to cut the fibres, as the bar acquires in its cross section the strength or tenacity which, on the old plan, it possessed in a longitudinal direction. This twisting of the fibres is effected in the operation of rolling, by making the rolling-mill of two sets of rollers, the first set to turn on their axis in opposite directions, to draw the bar of iron between them in the usual manner, and to pass it to the second set which, in addition to their rotation on their axis for drawing the bar, rotate together about the axis of the bar, and thus twist the fibres as the bar is drawn through and elongated : thus causing the fibres to assume a spiral or hellicle direction around the central line or axis of the bar. In this way it can be seen that the bar will not split in straight lines without breaking the fibres, and that therefore the only wear of railroad bars and tires thus made will be due to attention alone.

Energy and Mind.

Energy is everything. How mean a thing is man with little motive power ! All the abilities nature has given him lie useless, like a great and mighty machine, ready at every point for useful action, but not a wheel turns for want of a starting power ? A great man, is like a great machine.—He has a great power to set in motion the various and immense projects which he has in his hand ; little motives can neither start nor stop him, they may set in motion the powers of an ordinary man, and render him a respectable, nay, even a beautiful piece of mechanism, but never a magnificent one.

Yet there is one thing which renders man supremely above the machine. By the working of his own mind he can improve and exalt himself ; by directing his eye to what is great and good, he may become so. If, then, we can become what we wish to be, what high objects should we aim at, and what resolute and energetic efforts should we be ever making to attain them ?

Memory.

The great point in cultivating the memory is to gain command of the attention. A habit of continued, unrelaxed attention, especially if acquired in early years, is the foundation of a good memory. A habit of very attentive thought is better than all the artificial memories ever contrived. To the formation of such a habit sufficient efforts have not often been directed. Therefore it is that we hear many persons complaining of the want of a good memory. They cannot remember the lectures, sermons, and addresses which they hear, nor the books which they read. All of it seems to run through their mind like water through a seive. They were entertained and even edified, they would say, but ask them to state what it was that entertained and instructed them, they cannot tell. Close attention, or rather persevering effort to give close attention, will help even such a memory. The too common practice is to attempt to fill the store-house of the memory before the foundation is laid, or a habit of attention or thought is formed.

For the Scientific American,

Time and Longitude.

Mr. Editor :—

In your paper of the 11th inst , M. Kelly has propounded four questions ; desiring some of your readers to answer them. I shall, at present, endeavor to comply with his request in relation to No. 4, viz. " If the A. D. 1847 commenced 15 degrees east of New York one hour *before* it did in New York, where it commenced one hour before it did 15 degrees west of that city—I wish to know where it FIRST commenced ?

If the writer of the above be an astronomer he must be aware of the various modes that have been adopted, for the computation of time, by the ancient and modern nations. He must also be aware that meridians are imaginary circles, not tangible, and also that all circles are divided into 360 degrees.

The equator contains 360°. This number divided by 15 gives 24, being one day. Now, at right angles with the equator draw other circles that shall concentrate to the poles ; these will constitute longitude. Circles collateral with the equator will give latitude.— Let those be 15 degrees apart, if you please.

To have a beginning in the circumference of a circle, we must suppose a given point — Well, on the equator set up firmly, a right angle triangle, the base of which must run due north. When the shadow of the perpendicular falls, in a straight line upon the base, the sun is at his greatest altitude for the day— called mid-day. The places west of this point would have west longitude and those east would have east longitude. We have a mechanical invention of the measure of time.

Again : Suppose there are 24 persons equally distributed 15° apart upon the equator, with the same kind of machinery. They each of them will vary one hour in the calculation of noon day and the same difference would exist in relation to the commencement and ending of the year ; therefore there are 24 beginnings and 24 endings, and as many more as you please, according to the division of the equator.

Again : Rig a wheel of 24 spokes horizontally—let 24 persons stand in a circle, each one opposite to one of the spokes—give the wheel one revolution and the same spoke will come opposite the same person—call this one day : give it 365 revolutions—calls this one year : for leap year give it an extra turn.

Now ask each person how many times the wheels revolved—what was its starting, and they will say 1 for the day, and 365 for the year, and 366 for leap year, and although they calculate from 24 different points, still they are all correct, and the number of revolutions will be the same to the 24 persons. Thus began A. D. 1837, and thus it will end.

Will Mr. Kelly be kind enough to answer the following questions, viz.

1. What relation is there between the sense of feeling and the sense of light ?

2. Does matter really exist in the same proportion of bulk and density as seen by man ?

3. If the eye of man were so constructed, that surrounding objects would be magnified 500 times, what would be the result, in relation to the bulk and density of matter, and how would the judgment of man be effected ?

4. Where is the beginning and end of space ?

5. Where is the beginning and end of a circle ?

6. What relation has thought to matter and immateriality ; and do the thoughts and souls of men fill any portion of space ?

LIBRA.

New York, Dec. 11, 1847,

Literature and Learning in China.

The Chinese are a reading people, and the number of their published works are very considerable. In the departments of morals, history, biography, the drama, poetry, and romance, there are no lack of writings such as they are. The Chinese Materia Medica comprises forty octavo volumes of statistical works the number is very large. Their novels are said to be excellent pictures of the national manners. China is full of books :—new authors are continually springing up : the press is active, and the traffic in books is lucrative and most honorable branch of trade. When examinations take place in the capital or the palace, the most clever students are chosen to fill the office of bookmaker. There are, however but few really new works, and all that appear are compilations and quotations ; the author never venturing an idea of his own ; and in this consists true learning, according to Chinese notions. There is one work in the Royal Library. on the topography of China, which is said to consist of 5,000 volumes :— some of the best translators that have had access to some extracts from this giant, were sadly disappointed, as it appears to be a mass of confusion, without any attempt at order or arrangement. There are numerous small treatises, similar to our tracts, gratuitously distributed by private individuals, incalculating morality and virtue. Printing is evidently cheaper in China than in Europe, when ten volumes, each containing 100 pages, can be purchased for less than a dollar. Every peasant and the poorest fisherman can read and write. Private and public schools are numerous in every province, and entirely independant of government. Occasionally an examiner visits all the schools to ascertain the qualifications of teachers.

Butter Consumed in London.

Butter was unknown to the ancient Greek and Romans in Cooking. The ancient medical writers do not mention it as an article of food though they as well as writers on agriculture have given us particular notices of milk, oil and cheese. It is very little used in Spain, Portugal, and the south of France, but in England its consumption is very great, both for food and culinary purposes. It is believed that in London, the yearly consumption, for each individual, is no less than 26 pounds ; and supposing the metropolis to contain 1,450,000 inhabitants the total consumption would be 16,730 tons. Add to this 4,000 tons for victualling ships, and we arrive a total of 21,000 tons, which at ten pence per pound would be worth $8,002,4000.

It is estimated that a good cow will produce in a year 168 pounds of butter, on which calculation, 280,000 cows would be requisite for the supply of the London market, alone, in this one article of food and luxury.

Camels in Australia.

A correspondent of the (Sydney) Australian Journal recommends strongly the extensive introduction of the camel from India : which having been successfully imported into the Mauritius might doubtless be brought safe to Port Essington (or to Swan River,) and thence be generally introduced. The best camel, he says, is of the Marwarre breed, purchased in India at 60 to 100 rupees, 6 to 10 pounds, and being a browsing rather than a grazing animal is easily sustained by the leaves or young branches gathered by itself en route, or brought to it by a careful driver, who can easily manage three of them. They travel in single file, the nose of one being attached by a rope through the cartilage to the crupper of another, carrying 500 lbs if very moderately laden up to 600 or 800 lbs. upon emergency and averaging three miles and a half an hour So that, for the purpose of an expedition or long journey in Australia, a band of 6 camels would carry 1,900 lbs. of provision and kit, and 1100 lbs. of water in mussack or skin bottles. Like a horse, the camel breeds annually, produces one at a birth, and seems just adopted to perform good service in journeying through the most sandy and scrubby wastes of Australia.

Liebig says, when one pound of lean beef, free of fat, and separated from the bones, in the finely chopped state in which is used for beef sausages, or mince meat, is uniformly mixed with its own weight of cold water, slowly heated to boiling, and the liquid, after boiling briskly for a minute or two is strained through a towel, from the coagulated albumen, and the fibrine, now becoming hard and horny, we obtain an equal weight of the aromatic soup, of such strength as cannot be obtained, even by boiling for hours, from a piece of fresh meat. When mixed with salt, and the often usual additions by means of roasted onions, or burnt sugar, it forms the very best soup which can in any way be prepared from one pound of flesh.

A French author has discovered that Women never pardon a man for losing an opportunity of loving them.