

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.