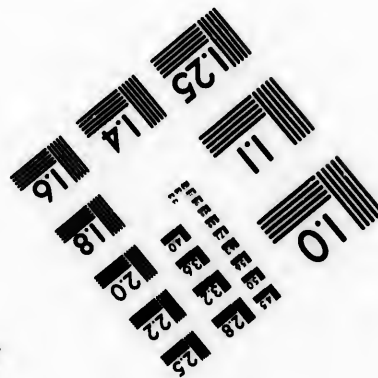
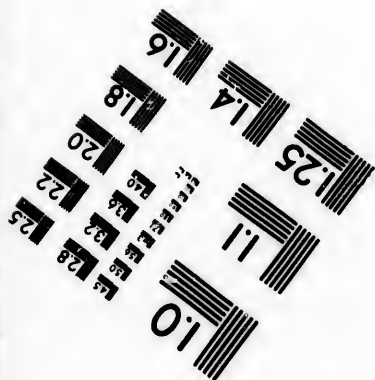
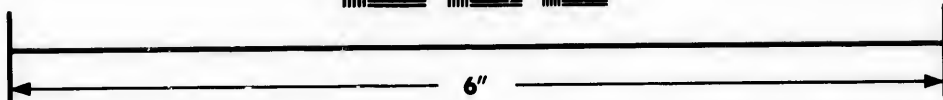
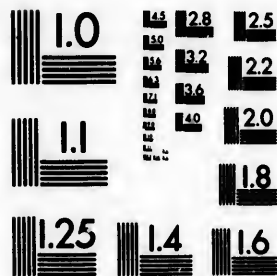


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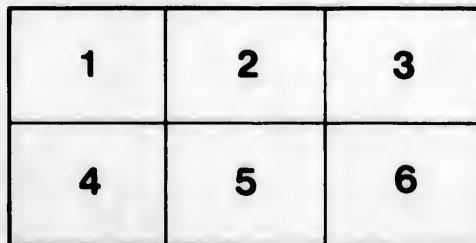
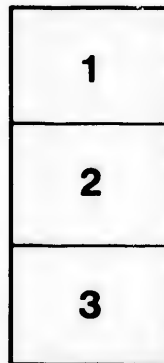
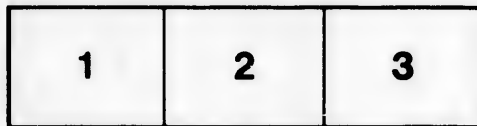
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A. Harp  
March 1880

in forty could ha' had the grit and the perseverance to do what she done, and hold her tongue about it too. I know I couldn't for one."

"She shouldn't ha' let her good be evil spoken of," said Mrs. Morse, with an air of authority.

"I dono as anybody had oughter have spoken evil of her good," was Miss Beers's dry answer, and Mrs. Morse said no more.

But such a warm and generous vindication touched many a feminine heart, which could appreciate Miss Beulah's self-sacrifice better than the deacons could. There was an immediato clustering and chattering among the good women, who, if they did love a bit of gossip, were none the less kindly and well-meaning, and presently a spokeswoman approached Miss Beers with the proposition that if she would make Miss Beulah a handsome bonnet, a dozen or more had volunteered to buy the materials.

"Well," said Miss Mary Jane, wiping her spectacles, "this is real kind; and I make no doubt but what Beulah'd think the same, though she's a master-hand to be independent, and some folks say proud—mabbe she is; but I know she couldn't not take it kind of friends and neighbors to feel for her. However, there ain't no need on't. It seems that Sary's husband ain't very forehanded, and she's got a dreadful taste for the millinery business; so she's gone to work in one of the fust shops there, and is gettin' great wages, for her; and only yesterday there come a box by express for Miss Beulah with the tastiest bunnit in it I ever see in my life—good black velvet, with black satin kinder puffed into the brim, and a dark green wing to one side of the band, and a big bow in under a jet buckle behind. I tell you it was everlastin' pretty. Sary she sent a note to say she hoped Aunt Beulah'd give her the pleasure to accept it, for she'd knowed all along how that she was the cause of her goin' without a bunnit all summer (I expect her ma had writ to her), and she felt real bad about it. You'd better b'lieve Beulah was pleased."

And Miss Beulah was pleased again when the women from the village began to call on her even more frequently than before, and express cordial and friendly interest in a way that surprised her, all unaware as she was of Miss Beers's enthusiastic vindication of her character before the sewing circle. Yet, poor, dear, silly

old woman—only a woman, after all—nothing so thrilled and touched her late-awakened heart as little Janey's soft caresses and dimpled patting hands on that sallow old face, when she climbed into her lap the next Sunday, and surveying Miss Beulah's new bonnet, exclaimed, with her silvery baby voice, "Pitty, pitty bonnet!"

Jack did not say anything about it, nor did the congregation, though on more than one female face beamed a furtive congratulatory smile, and Deacon Flint looked at Deacon Morse across the aisle.

If there is any moral to this story—as no doubt there should be—it lies in the fact that Mrs. Blake never again sat down in a chair without first lifting the cushion.

TRANSPORTATION BY RAILWAY AND SHIP-CANALS.

HALF a century since, the chief outlets of our West were the Ohio and Mississippi, the Missouri and Arkansas rivers. Cereals and other productions often perished, on their way to the great marts of the East, under sultry climates. Then came the Erie Canal, then canals around the falls of the Niagara and St. Lawrence, then the enlargement of the Erie, and at length the railway; and soon we are to have ship-canal around the falls of the St. Lawrence of size sufficient for steamers six times as large as the boats of the Erie Canal, and competent to cross the ocean. Under the influence of her canal, New York outstripped the rival cities of the Atlantic; but for five months of the year ice closed navigation, and railways came in to meet the exigency, and now the question is, which shall have the supremacy—the railway, open summer and winter, daily improving its powers, or the ship-canal, converting the sea-ports of our lakes into sea-ports of the ocean? Shall it be the railway, which perforates the mountains, replaces iron with steel, which "mobilitate viget, viresque acquirit eundo," or the gigantic canal, which opens a continuous highway through rivers and lakes, and across continents and oceans? The progress of the railway in this country has been gradual but constant. It soon diverted the passengers, then the mails and express freight, then became a substitute for the canal when ice and snow prevailed in winter. As steel took the place of iron, and mechanism improved, the railway has competed successfully for freight both

with canal and river, and reduced the toll of the canal to rates barely sufficing for its maintenance.

A few years since, the audacious men who ventured to hope that a ton of freight might be carried on long routes for two cents a ton per mile were pointed out as radicals and enthusiasts, but such has been the progress of art that these radicals, or philosophers, as the case may be, are left far in the rear. Steel clashes with steel, and from day to day the journals have announced that the cereals of the West are transported by rail from Chicago and St. Louis to Boston for less than one-third of a cent per ton a mile, or for one-sixth of a cent per ton a mile, and scientific men assure us that this covers the cost when the traffic of the line exceeds (as it often does) a million of tons per annum; for this year more than eight millions of tons of cereals are moving eastward from the ports of our lakes alone. "Tempora mutantur, et nos mutamur in illis."

A few weeks since, Mr. Fink, a gentleman of great experience, testified before the State Committee of New York that, after a certain amount had been sent over a long line of good railway, in a country where fuel is accessible, the additional through freight may be carried at a cost of less than four mills per ton a mile. To accomplish this, however, the traffic must be sufficient to furnish an average of about two hundred tons per train, equivalent in most parts of New England to three hundred and thirty tons east and one-fifth of the amount back, in trains of thirty cars.

The railways of America commenced their career in great weakness and trepidation. On the Boston and Worcester Railway, a part of the Boston and Albany line, which now carries several millions of tons yearly, for many months the freight daily transported averaged twelve tons down and twenty-four tons back, and the only freight-house of the line at Boston could hold but two freight-cars. Indeed, it was once proposed at a meeting of its directors to let the entire freight business of the road at fifteen thousand dollars per year. Its business was indeed insignificant.

But, as we have advanced, commerce has expanded; the rail, useful both in summer and winter, became most attractive. Freight has moved with more regularity, and in larger masses. Railway tracks and mechanism have been con-

stantly progressive. The iron has touched the land with electric force. In the words of our Railway Commission, in their last report, "it has enabled the farmers of this country to undersell all others, and in so doing reversed the course of exchanges and restored the specie basis." The reductions of railways have changed the balance of trade. The low cost of our through traffic is no standard for the cost of the local business. It is due to the size and regularity of the trains. Instead of being marshalled for ten miles, and then laden or unladen, they are made up for points possibly a thousand miles away, and are run undisturbed the entire distance. The cost is by no means proportionate to distance; while in long runs the cost may be but three mills, for short runs it may be twenty times that amount, and the cost can not be determined by percentages. As well might you compare the charges and profits per ton of the wholesale merchant with those of the apothecary, who divides the ton into ounces. The one with five per cent. profits may accumulate faster than the other selling at more than cent. per cent.

The railway, in competition with the Erie Canal, has achieved a triumph. The latter has been obliged to relinquish most of its tolls, and to carry free many leading articles. In place of a revenue of five millions, it now, after widening and deepening, realizes little more than a single million—barely sufficient, if it does suffice, to keep its banks and boats in repair. It has, however, subserved one purpose of the State. By its rivalry with the railway it has kept down the latter's charges more than half the year. Tolls have been kept down not only by this competition, but also by the rivalry of railways with each other, and in their rivalry there have been some amusing features. A continuous line through Canada, which adds ten or fifteen per cent. to the distance from Boston to the West, has insisted that it should be allowed to charge less for the distance than the shorter lines to counterbalance its length, while the Baltimore and Ohio makes a like claim for its saving in distance. To such competition and differing views, and the intense rivalry of our sea-ports, we must ascribe the low rates for fourth-class freight, which at times fall below the cost of transportation.

We must, however, remember that while the charges for fourth-class freight are sometimes reduced below three mills per ton a mile, the other classes of freight range from five to fifteen mills per mile, and usually bring the average return to six or eight mills per ton a mile on through freight, which may remunerate a well-conducted railway.

The Commissioners of Massachusetts Railways, however, suggest, in the report cited, that "in consequence of intense rivalry the business [on our railways] is done in a way which hardly admits of improvement." Is this a safe assumption? Have we not for nearly fifty years been improving? And if to-day our great railways can carry the excess over a million of tons for three or four mills per ton a mile, are we to admit further progress impossible?

For some years past we have bought our steel rails at prices gradually falling to forty-five dollars per ton. They have, however, cost us on the average more than sixty dollars per ton. We have produced iron rails at thirty-five dollars per ton. To-day steel rails are made in England for less than the cost of iron rails—indeed, for twenty-five dollars per ton—although made from ore imported from Spain and Africa. We have abundance of ore from which the steel rail can be made with one-half the labor and fuel used to produce iron. We have made our rails nearly as cheap as those of England, and our converters are superior to hers. May we not reasonably expect to bring down the price of the steel rail to one-half the rate we have paid, and thus save in the future more than half the cost of our tracks and repairs? Are not our steel-works coining money?

Again, may we not profit materially by substituting steel for iron, and by the adoption of uniform bearings, as proposed by our engineers? A good steel rail will outlast fifteen of iron. How is it with our freight-cars? To-day they carry, on an average, but ten or eleven tons; but has it not been demonstrated by successful roads that with slight changes in construction and slight addition to weight they may be made to average fifteen, and the dead-weight be thus reduced? May we not expect from such steps as these further reduction and a further gain from the use of the Bessemer steel for wheels and boilers? Whatever may be the cost to-day, is it not

safe to predict that the cost of transportation may be diminished at least a fourth in the future—a diminution which will be felt still more in the wheat-producing countries of Europe by increased importations of American grain? If to-day American wheat has reduced one-third the rent of English farms, may not a further fall be expected?

To-day the steam-ship which leaves the pier at Boston with live stock and bread-stuffs has arrived here in ballast, and has added her inward to her outward freight, thus keeping down the pro rata share of the railway. Now that we have mastered our war debt, may we not admit at least some of the raw materials of Europe as imports, and thus ameliorate the condition of our railways?

Let us refer again to the report of our Commissioners. It alleges that our through freight "touches remotely the vast manufacturing interest of this State, and not to help therein. Low rates on through, imply high on local business." But is this warranted by facts? Do not the low rates on through freights bring to us vast supplies of cereals, provisions, and dairy products to sustain our operatives and cheapen their manufactures? and do not return cars take manufactures to the consumer, and thus stimulate consumption? And if the railway realizes a portion of its profits from through freight, will not what it draws from this source, which it can not command at higher rates, enable it to carry local freight more cheaply? "Low rates do [not] imply high rates on local business," but the reverse, for most of our trunk roads have of late years reduced the rates they were charging before they acquired any through traffic.

In some of our sea-ports we meet with "laudatores temporis acti," who recur to the days when our piers were lined with brigs, barks, and schooners, owned by our merchants, which paid wharfage, purchased stores and outfits, and contrast them with those leviathans owned in Europe, which carry masses of freight from the West to Europe, passing our sea-board cities in transitu.

Do they reflect that one of these steamships—the *Hooper*, for instance—takes for her cargo sufficient to load fifty such vessels; that it fills its lower hold with hams and lard from our packing-houses, then covers them with grain, and fills up between-decks with cotton, and then takes

deck-loads of sheep and cattle; that nearly all of these steam-ships take their supplies of provisions and breadstuffs from this side of the ocean?

The Massachusetts Commission, in the report we have cited, concede that we can not give up the through business, for it would be done by others, and would carry with it all other business activity. This is not a logical deduction from the premises of the Commission, but is undoubtedly correct. That business must be useful to the local traffic which can not be detached from it without its loss. In the past, New York has kept pace in its growth with the growth of its through business by the Erie Canal. It still clings to that canal, and is willing to sink the interest on its cost for the preservation of its business. It has lavished on that canal three times the amount advanced by Massachusetts for its tunnel; and if New York can afford to abandon all revenue, and reduce the tolls on its canal to a point barely sufficient for its maintenance, *a fortiori* Massachusetts can afford to do the same with the tunnel, which has cost less than one-third the outlay on the Erie Canal. In the intense rivalry which now animates our seaboard cities and the lines that connect them with the West, it is the policy of each to study and countenance improvement, whatever shape it may assume, whether it be in opening new branches of commerce, in the substitution of steel for iron, in the models, mechanism, or materials, or in the selection of powerful engines, and loading trains to their full capacity in both directions. We should waste no funds in constructing lines planned by idle contractors or engineers. Let good sense, sagacity, and frugality rule the hour, and guide the action of our railways.

At this moment there is a tendency to extend our railways, and combine fragmentary parts into long and important lines, and these are countenanced by our great exporting cities. Doubtless they are on the right track. To the north the Dominion of Canada is making a great line from the Straits of Canso to the mines of Pictou, and thence along the Bay of Chaleurs and River St. Lawrence to Quebec and Ottawa, thence through the trackless wilderness to the borders of Alaska.

The railways of Canada are rather

strategic than commercial, designed by Great Britain to hold her provinces in subjection. They pass for nearly three thousand miles for most part through a wilderness, and can realize but little revenue for a long series of years. They will double the present debt of Canada, which now, under its costly government, exceeds one hundred and seventy millions. Besides this, she now pays a portion of our interest on national debt. Her debt *per capita* already exceeds our own, is becoming oppressive, and must eventually be assumed by England, for whose benefit it has been contracted. It will be many years before the chief railways of Canada compete successfully with our own. Her Great Western and Grand Trunk depend, to a great extent, upon the trade they can divert from our lines to the West by a circuitous competition, which has doubtless, to some extent, contributed to the reduction of rates.

There is another great enterprise, more commercial in its character, on which Canada is now engaged, expressly designed to compete not only with the Erie Canal and her own lines of railway, but also directly or indirectly with all our trunk lines from the sea-board to the West. This undertaking is fast advancing to completion. It is the enlargement of the Welland Canal and the canals of the St. Lawrence to admit steamships of twelve hundred tons.

Canada is desirous to supersede New York, and it must be conceded that her temptation is a strong one, as our lake ports annually receive ten million tons of cereals, in addition to vast amounts of live stock and provisions. New York and Boston now hold Montreal in check by the Erie Canal and Central Railway. In a few weeks Boston will gain some points by the tunnel, and its new route to the coal mines, Cincinnati, and St. Louis. Upon the completion of the canals on the Niagara and St. Lawrence, New York will be obliged to make strenuous efforts to hold its own. Should it fail, it will doubtless be its policy to open a ship-canal from the St. Lawrence into Lake Champlain, and possibly thence to the head of navigation on the Hudson, in the benefits of which Boston will participate, and to which it may lend its aid.

If, however, the railways on the shores of the lakes, St. Lawrence, and the Hudson compete successfully with the lakes



and rivers, and continue to improve, their future is bright before them; while the lake steamers of light draught carry their grain across the sea, the railway, resorting to more capacious steamers, some of which transport six thousand tons, may lay down their cargoes at less cost in the sea-ports of Europe.

#### THE NORTHERN PACIFIC.

We have glanced at the great line of Canada slowly progressing through the Hudson Bay territory. Let us now glance at three other lines making rapid progress, and destined within two years to reach the waters of the Pacific, which have already been touched by our Central Pacific Railway.

First, there is our Northern Pacific, which extends from Duluth, at the head of Lake Superior, to the Upper Missouri, and is destined to cross the Yellowstone within a twelvemonth. Having converted its bonds into stock, and found a quick market for its land, toward which the tide of emigration is setting, it is rapidly approaching Montana, both from the east and from the west, and will there make a connection with the combined river, canal, and railway improvements of Oregon, soon to give place to a continuous railway. Large bodies of settlers attend its march, eager to plant themselves in the rich wheat fields of Dakota, or pleasant pastures or prolific mines of Montana, or looking still further west to the green meadows or wheat fields of Oregon. We may look to Oregon for new lines of steamers to China and Japan.

Then we have a long line of railway from Ogden to the Park of the Yellowstone, aiming at the confluence of the Willamette with the Columbia, making a third line to the Pacific. This will give the Union Pacific a new route from the Atlantic to the Pacific, independent of the Central line.

#### THE SOUTHERN PACIFIC RAILWAY.

The public has long kept its eyes on the Union Pacific and Northern Pacific railways through all their vicissitudes of fortune, but while its attention has been concentrated on them and a Texan line across the Llano Estacado, which seems to be repelled by the treeless plains and wastes before it, another enterprise, the Atchinson, Topeka, and Santa Fe line, begun in great weakness, but conducted with much

sagacity, has quietly followed the caravan route from Kansas to Mexico, traversed the fertile plains, interchanging the cereals of Kansas for the ores of Colorado, has pierced the Raton Mountains, and in one year more will reach the border of Mexico. In another season, under charters already conceded, it will enter Mexico, and reach Guaymas, the chief sea-port of Northern Mexico; extending a branch into Arizona, it will unite with the Southern and Central Pacific Railroad. It will also reach an American port at San Diego, and another at San Francisco, thus making two new routes to the Pacific.

A slight extension will carry this line to El Paso, on the northern frontier of Mexico, more than half way from St. Louis to the city of Mexico. Having reached the table-land, it will command the commerce of the States of Sonora and Chihuahua, and probably of the northern half of Mexico.

The only connection that city now has by railway with the sea is the Mexican railway which connects Vera Cruz with the capital. This has fallen into the hands of the Jews. It has cost more than ten millions of dollars for three hundred miles of railway, although it has received large subsidies from the government. It is deeply in debt, maintains a high rate of charges, and draws out a sickly existence.

As the States of Chihuahua and Sonora are distant from the capital, are not populous, but contain much valuable land with rich silver mines, it would be politic for our government to purchase them, with the understanding that a large percentage of the money be applied, through the medium of bonds, to extend the line to the city of Mexico. An appropriation of fifteen millions, to be invested in bonds, would carry the line from El Paso to the capital across the table-land of Mexico, and the bonds might be used to repay the debt of Mexico.

We may well anticipate such a result, and the ultimate extension of the Santa Fe line from Kansas City to the city of Mexico, thus connecting it with the chief sea-board and inland cities.

While this great work is progressing, New Orleans is recovering from the effects of the war, and is now accessible to the largest steamboats, for a channel has been provided at the mouth of the Mississippi with twenty-five feet of water, and

the Illinois Central Railroad Company, one of our strongest railroads, has purchased a controlling interest in the direct line from Cairo to New Orleans, and has nearly finished its conversion into a steel-clad railway, so level and so direct that within a year a passenger may traverse the distance from Cairo to New Orleans in fourteen hours, or in twenty-four hours from the Gulf to Lake Michigan, and in one day reach by such railways waters flowing into Hudson Bay, and the cotton and sugar may take a northern route to Atlantic cities.

Meanwhile Cincinnati, to extend her valuable commerce, has issued bonds for twenty millions of dollars, and nearly completed her great Southern Railway across Kentucky and Tennessee to Chattanooga, opening a vast pastoral region almost inaccessible during the war, and connecting her with the rising city of Atlanta, and the cotton ports of South Carolina, Georgia, and Alabama, thus benefiting her own commerce, and promoting the great interests of the Union.

Among the earliest railways of the West was the Illinois Central. Congress had granted to the State of Illinois a large amount of fertile land in the centre of the State, but accessible by no river, and consequently of little value. Mr. Rantoul and other enterprising men of Massachusetts offered to build a railway through it for the alternate sections, and to pay the State a yearly percentage on its receipts. The land was granted, the road was built, emigrants were attracted, the land rose to five prices, and has become the great corn field of the West. The rise enriched the railway, the settlers, and both State and nation. This great line has been wisely administered; for some time past it has earned eight and divided six per cent., has thrown out an arm to Sioux City, on the Upper Missouri, and obtained good connection with Manitoba; recently it has purchased a controlling interest in the great Southern line of 530 miles from Cairo to New Orleans, and is rebuilding its bridges and replacing its rails with steel. In a few months more it will bring the mouth of the Ohio within fourteen hours of New Orleans, and ere long St. Louis, Chicago, and St. Paul within one or two days of the Gulf of Mexico. Already it has become a route for the sugar, cotton, and tobacco of the South on its way to Northern marts, and

one of the chief feeders of the Illinois Central, forming a route of national importance.

But there is another great enterprise now on the *tapis*, still more gigantic, which will soon become a direct or indirect rival to our continental lines, viz., a ship-canal from ocean to ocean, either across the Isthmus or through Central America, the latter of which is preferable to the former, as it makes the route from our Atlantic coast to California and Oregon several hundred miles shorter than that by the Isthmus. It was once, before the era of railways, when in a state of nature, the leading route from New York to San Francisco.

At the recent Congress in Paris, Mr. Lesseps by his intrepidity and address carried a vote in favor of a canal across the Isthmus near the Chagres River, where a rampart of mountains impedes the way, and where more than ten miles of tunnel must be made, eighty feet wide and 130 feet high, or open cuts through the mountains of 360 feet in depth. Modern science may possibly achieve this in ten or fifteen years, but the estimates for the work and its accumulating interest will probably exceed \$200,000,000, while the route by Central America presents a lake and river already navigable by steamers. Here a ship-canal may be made for our largest steamships at a cost greatly below the cost across the Isthmus, and in one-half the time—a canal which will be remunerative at half the toll of three dollars per ton demanded by Mr. Lesseps. This gentleman has now a European reputation from the Suez Canal through Arabian sands, near the route where Herodotus found a canal 2000 years ago, and has done this by bending to his will the Khedive of Egypt and the autocrat of France, but has dealt with no mountain barrier or gigantic tunnel unprecedented in modern engineering. He would enter a new field, and rival Hannibal, who "disjecit saxa et montes rupit aceto," but must be careful not to alienate the friends of the enterprise by the untimely use of his acids. This enterprise is most important to our own country, as it will unite its fronts on two oceans, and produce a wholesome rivalry with its land route. It is all-important that no mistake be made, that the route be chosen which can be most rapidly perfected, which shall shorten distances, and permit the most reasonable tolls.

## CANAL ACROSS CENTRAL AMERICA TO THE PACIFIC.

The success of the Suez Canal insures the construction of another ship-canal most important to the United States—one which will form a new route for its coast-wise commerce, which now passes around Cape Horn to the Pacific. It will reduce a voyage of 18,000 miles to less than one-third of that distance, and diminish the time required on the way to one-fifth of the time now taken, replacing the vessel under sail with the steam-ship of steel. The Pacific railways are adapted to the transportation of mails, travellers, and express freight. They are important also for local traffic; but in no respect suited to our chief coasting trade—the conveyance of grain, provisions, timber, coal, fish, and metals between the Atlantic and Pacific. When a ship-canal is finished, it will cheapen all our routes to the Pacific, and it is safe to predict that it will reduce the rates of freight between the Atlantic and Pacific below six dollars per ton *vis* the canal, and we may easily foresee what will be the future course of commerce. The routes across the Isthmus and Central America have been explored and surveyed by both England and the United States, and the estimates for one of them are below the cost of the Suez Canal, while the prospects for business are far more encouraging. The Suez Canal commands the trade between India and Europe, but can not control the commerce of China and Japan with the United States, or more than half of that between the same countries and Europe, while a ship-canal between the Gulf of Mexico and the Pacific will eventually command twice the tonnage that now passes through the Suez Canal.

It will be a candidate for the vast export of wheat and other grain from our Pacific coast to Europe. The annual production of wheat on our Pacific coast exceeds a million of tons, and will soon require a million of tons of shipping to convey it to Europe. The ships would pass twice through the canal, and give it two millions of tonnage. The vast coasting trade of the United States between the Atlantic front and California, Oregon and Alaska would pass through this canal both going and returning, and the varied products of the Pacific coast, in shape of timber, fish, copper ore, and return cargoes, would, to-

gether, add another million to its tonnage. The commerce of the United States alone through this canal will supply a tonnage equal to that which pays six millions of dollars each year to the Suez Canal. It will be a candidate for ships on their voyages from Europe for tea to China and Japan, and on their return, and will take nearly the whole tonnage passing between the Atlantic States, China, Japan, and the Philippine Islands, and between Europe and the Russian Possessions, and best accommodate the ships engaged in the whale-fisheries of the Pacific. Tea, to the extent of two hundred millions of pounds, and occupying one hundred thousand tons of shipping, forms one item of this commerce, which will annually send through the canal nearly a quarter of a million tons of shipping. Then we have the trade between Australia and Europe, one item of which, wool, amounts yearly to three hundred millions of pounds. We may safely calculate that the Australian ships, out and back, will patronize this canal to the extent of three hundred thousand tons.

Peru, with its guano amounting to three or four hundred thousand tons sent annually to Europe, Chili, with its copper and nitrates and return cargoes, with Guatemala, Mexico, and Central America, must furnish at least another million of tons. Then we have the growth of this commerce while the work progresses, together with that due to new facilities, so that the aggregate must reach between five and six millions of tons—nearly twice the tonnage which passes yearly through the Suez Canal. This estimate is not a high one. Ten years since, before the grain trade of California had attained to any importance, the tonnage that would seek the canal was set at 3,300,000 tons by Admiral Davis, of our navy, and the annual saving in the cost of freight, interest, and insurance on the property to be transported by this canal was set by him at ninety-nine millions of dollars.

The estimate seems to be a high one, for it exceeds the computed cost of the canal itself; but the saving must be immense, as this trade is fast increasing, and the cost of transportation may be lessened two-thirds by a ship-canal. California has become the chief granary of Great Britain, which now requires annually from other nations two hundred millions of bushels of grain; she prefers the wheat

of California to grind with her own moist wheat, and there is no country but California where one man can successfully cultivate five hundred acres of wheat unaided by either man or fertilizer.

With this canal completed, the grain of San Francisco, which is now more than four months on its way to Boston or Liverpool, could be landed there in less than three weeks. The vessel transporting it, instead of making one trip yearly, would accomplish many trips, by the aid of steam, now prohibited by the length of the voyage.

To the United States the canal will be most useful in developing the products of the Pacific coast, and exchanging them for our manufactures. To the British Isles it is even more important, as they draw one-fifth of the wheat they consume from California and Oregon, and by means of this canal may save annually a million sterling in the freight.

To France it is important for the diffusion of her manufactures over the isles and coasts of the Pacific, while the whole continent of Europe and most of South America are deeply interested in this enterprise.

#### IS A SHIP-CANAL FEASIBLE?

Both England and the United States have made diligent inquiry for a shortcut across the Isthmus free from lockage and tunnels.

The Isthmus has been carefully surveyed, but no route for a canal has been discovered which would not require deep rock-cutting and a vast expenditure. The only route to the Pacific free from such embarrassments is one across Central America, by the San Juan River and the Lake of Nicaragua, from the port of San Juan to the port of Brito, on the Pacific—a distance of 190 miles. On this route 140 miles will be open river and lake navigation, and fifty miles ship-canal. The San Juan route was carefully examined in 1851 by Child, an American engineer, whose report was indorsed by Colonel Abert, an eminent officer of the Engineer Corps of the United States.

This report gave the following results, viz.: that the summit level is found in a large navigable lake, whose surface is but 110 feet above the level of the sea on either side; that this lake is twice the size of Lake Champlain, being 110 miles in length and thirty-five miles in width, and lies in a country where the rain-fall is

three times as great as the rain-fall of New York, being ninety-eight inches annually. The San Juan River flows from this lake into the Caribbean Sea—a distance of 119 miles; its average width is 600 feet, and it receives from the lake in dry seasons a supply of water equal to 800,000 cubic feet per minute, which is four times the amount required for a canal in each direction from the sea. Its descent to the sea averages but ten inches to the mile, which is less than that of the Ohio, and as there are but four rapids in it, the Castillo, Del Toro, Balus, and Machuca, which are easily overcome, it is at all times navigable for vessels drawing three feet of water, and in freshets for steamers of a much larger size. The engineer has estimated for thirteen locks upon the river and eastern canal, but there is reason to believe that a portion of them may be dispensed with, so gentle and equable is the flow of the river. We learn further from Child's report that the river, for ninety miles from the sea, may be made navigable for large ships at a moderate cost, and for twenty-nine miles more to the lake a ship-canal may be easily constructed on its bank.

The indentations of the coast are such at each terminus that good harbors may be made; the height of land between the lake and the Pacific is but nineteen feet above the lake, and the route adapted for a ship-canal. Indeed, we are led by the report to the conclusion that the rock encountered on both routes will be less than that requisite for the masonry of the canal and its harbors. The climate, although the lake is within fifteen degrees of the equator, is healthful—a point of no little importance to those who build as well as to those who shall use the canal. The report finally apprises us that a ship-canal of size sufficient to accommodate steam-ships drawing seventeen feet of water of the largest class in use in 1851 might be constructed for less than thirty-three millions of dollars. But there is ample water for a larger canal. The Suez Canal, which is of greater length than that proposed, is two hundred feet in width and twenty-five feet in depth, and we must adopt its dimensions if we expect its success. We may double the cost, and to cover contingencies and interest during construction shall find it advisable to carry the estimates up to eighty millions of dollars, which is not far from the cost of the Suez Canal.

A toll of a dollar and a half per ton on the tonnage furnished by the United States and Peru alone for their exports and imports will probably meet all charges and repairs, and also six per cent. interest on the cost of eighty millions.

The canal proposed has one decided advantage over the canal at the Isthmus. Compared with this, it will shorten nearly

700 miles our route to California, and will thus cheapen transportation. The value of such a canal can not well be overrated. Two centuries since, Patterson, who founded the Bank of England and the colony of Darien, writes thus as to a canal to unite the two oceans: "It will be the gate of the universe, and enable its proprietors to give laws to both oceans."

## THE SIFTING OF PETER.

## A FOLK-SONG.

*"Behold, Satan hath desired to have you, that he may sift you as wheat."—St. Luke, xxii. 31.*

In St. Luke's Gospel we are told  
How Peter in the days of old  
Was sifted;  
And now, though ages intervene,  
Sin is the same, while time and scene  
Are shifted.

Satan desires us, great and small,  
As wheat, to sift us, and we all  
Are tempted;  
Not one, however rich or great,  
Is by his station or estate  
Exempted.

No house so safely guarded is  
But he, by some device of his,  
Can enter;  
No heart hath armor so complete  
But he can pierce with arrows fleet  
Its centre.

For all at last the cock will crow  
Who hear the warning voice, but go  
Unheeding,  
Till thrice and more they have denied  
The Man of Sorrows, crucified  
And bleeding.

One look of that pale suffering face  
Will make us feel the deep disgrace  
Of weakness;  
We shall be sifted till the strength  
Of self-conceit be changed at length  
To meekness.

Wounds of the soul, though healed, will ache;  
The reddening scars remain, and make  
Confession;  
Lost innocence returns no more;  
We are not what we were before  
Transgression.

But noble souls, through dust and heat,  
Rise from disaster and defeat  
The stronger,  
And conscious still of the divine  
Within them, lie on earth supine  
No longer.

