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THE ATLANTIC MONTHLY, VOLUME 02, NO. 13, NOVEMBER, 1858

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The Atlantic Monthly, Volume 02, No. 13, November, 1858

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The Atlantic Monthly, Volume 02, No. 13, November, 1858 / Various — «Public Domain»,

Содержание

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The Atlantic Monthly, Volume 02, No. 13, November, 1858 / A Magazine of Literature, Art, and Politics

RAILWAY-ENGINEERING IN THE UNITED STATES.[1]

Though our country can boast of no Watt, Brindley, Smeaton, Rennie, Telford, Brunel, Stephenson, or Fairbairn, and lacks such experimenters as Tredgold, Barlow, Hodgkinson, and Clark, yet we have our Evans and Fulton, our Whistler, Latrobe, Roebling, Haupt, Ellet, Adams, and Morris, —engineers who yield to none in professional skill, and whose work will bear comparison with the best of that of Great Britain or the Continent; and if America does not show a Thames Tunnel, a Conway or Menai Tubular Bridge, or a monster steamer, yet she has a railroad-bridge of eight hundred feet clear span, hung two hundred and fifty feet above one of the wildest rivers in the world, —locomotive engines climbing the Alleghanies at an ascent of five hundred feet per mile,—and twenty-five thousand miles of railroad, employing upwards of five thousand locomotives and eighty thousand cars, costing over a thousand millions of dollars, and transporting annually one hundred and thirty millions of passengers and thirty million tons of freight,—and all this in a manner peculiarly adapted to our country, both financially and mechanically.

In England the amount of money bears a high proportion to the amount of territory; in America the reverse is the case; and the engineers of the two countries quickly recognized the fact: for we find our railroads costing from thirty thousand to forty thousand dollars per mile,—while in England, to surmount much easier natural obstacles, the cost varies from seventy-five to one hundred thousand dollars per mile.

The cost of railroad transport will probably never be so low as carriage by water,—that is, natural water-communication; because the river or ocean is given to man complete and ready for use, needing no repairs, and with no interest to pay upon construction capital. Indeed, it is just beginning to be seen all over the country that the public have both expected and received too much accommodation from the companies. Men are perfectly willing to pay five dollars for riding a hundred miles in a stage-coach; but give them a nicely warmed, ventilated, cushioned, and furnished car, and carry them four or five times faster, with double the comfort, and they expect to pay only half-price,—as a friend of the writer once remarked, "Why, of course we ought not to pay so much when we a'n't half so long going,"—as if, when they paid their fare, they not only bargained for transport from one place to another, but for the luxury of sitting in a crowded coach a certain number of hours. It would be hard to show a satisfactory basis for such an establishment of tolls. We need not wonder at the unprofitableness of many of our roads when we consider that the relative cost of transport is,—

By Stage, one cent,
By Railroad, two and seven-twelfths;

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[1] *Handbook of Railroad Construction*, for the Use of American Engineers. By GEORGE L. VOSE, Civil Engineer. Boston and Cambridge: James Munroe & Company. 1857.*Baltimore and Ohio Railroad Reports*, from 1830 to 1850. BENJAMIN H. LATROBE, Chief Engineer.*Railways and their Management*, being a Pamphlet written by JAMES M. WHITON, ESQ., late of the Boston, Concord, and Montreal Railroad. 1856.*Report of the President, Treasurer, and General Superintendent of the New York and Erie Railroad Company to the Stockholders.* March, 1856.*Final Report of* JOHN A. ROEBLING, *Civil Engineer on the Niagara Railway Suspension-Bridge*, May, 1855.

and the relative charge,—

By Stage, five cents,
By Railroad, three cents;

and the comparative profit, as five less one to three less two and seven-twelfths, or as *four* to *five-twelfths*, or as *nine and six-tenths to one*.

America has, it is true, a grander system of natural water-communication than any other land except Brazil; but, for all that, there is really but a small part of the area, either of the Alleghany coal and iron fields, or of the granaries of the Mississippi valley, reached even by our matchless rivers. A certain strip or band of country, bordering the water-courses, is served by them both as regards export and import; just as much is served wherever we build a railroad. In fact, whenever we lay a road across a State, whether it connects the West directly with the East, or only with some central commercial point in the West, just so often do we open to market a band of country as long as the road, and thirty, forty, or fifty miles wide,—the width depending very much upon the cost of transport over such road; and as the charge is much less upon a railroad than upon a common road, the distance from the road from which produce may be brought is much greater with the former than with the latter. The actual determination of the width of the band is a simple problem, when the commercial nature of the country is known.

The people of the great valley have not been slow, where Nature has denied them the natural, to make for themselves artificial rivers of iron. These railroads are more completely adapted to the physical character of the Western States than would be any other mode of communication. The work of construction is oftentimes very light, little more being necessary for a railway across the prairies of the West (generally) than a couple of ditches twenty or thirty feet apart, the material taken therefrom being thrown into the intermediate space, thus forming the surface which supports the crossties, the sills or sleepers, and the rails. Indeed, the double operation of ditching and embanking is in some cases performed by a single machine, (a nondescript affair, in appearance half-way between a threshing-machine and a hundred-and-twenty-pound field-piece,) drawn by six, eight, or ten pairs of oxen.

It is even probable that in a great many cases the common road would cost more than the railway in the great central basin of America; as the rich alluvial soil, when wet in spring or fall, is almost impassable, and lack of stone and timber prevents the construction of artificial roads.

The influence of the railroad upon the Western farm-lands is quickly seen by the following figures, extracted from a lately published work on railroad construction.

Table showing the Effect of Railroad Transport upon the Value of Grain in the Market of Chicago, Illinois.

	WHEAT		**CORN**	
	Carried by railroad	**Carried by wagon**	**Carried by railroad**	**Carried by wagon**
At market	$49.50	49.50	25.60	25.60
Carried 10 m.	49.25	48.00	24.25	23.26
do. 50 m.	48.75	42.00	24.00	17.25

do. 100 m. 48.00 34.50 23.25 9.75
do. 150 m. 47.25 27.00 22.50 2.25
do. 200 m. 46.50 19.50 21.75 0.00
do. 300 m. 45.00 4.50 20.25 0.00
do. 330 m. 44.55 0.00 19.80 0.00

Thus a ton of corn carried two hundred miles costs by wagon transport more than it brings at market,—while, moved by railroad, it is worth $21.75. Also wheat will not bear wagon transport of 330 miles,—while, moved that distance by railroad it is worth $44.55 per ton.

The social effect of railroads is seen and felt by those who live in the neighborhood of large cities. The unhealthy density of population is prevented, by enabling men to live five, ten, or fifteen miles away from the city and yet do business therein. The extent of this diffusion is as the square of the speed of transport. To illustrate. If a person walks four miles an hour, and is allowed one hour for passing from his home to his place of business, he can live four miles from his work; the area, therefore, which may be lived in is the circle of which the radius is four miles, the diameter eight miles, and the area 501/4 square miles. If by horse he can go eight miles an hour, the diameter of the circle becomes sixteen miles, and the area 201 square miles. Finally, if by railroad he goes thirty miles an hour, the diameter becomes sixty miles, and the area 2,827 square miles.

In the case of railroads, as of other labor-saving (and labor-producing) contrivances, the innovation has been loudly decried; but though it does render some classes of labor useless, and throw out of employment some persons, it creates new labor for more than the old, and gives much more than it takes away.

Twenty years of experience show that the diminished cost of transport by railroad invariably augments the amount of commerce transacted, and in a much larger ratio than the reduction of cost. It is estimated by Dr. Lardner that three hundred thousand horses, working daily in stages, would be required to perform the passenger-traffic alone which took place in England during the year 1848.

Regarding the safety of railroad-travelling, though the papers teem with awful calamities from collisions and other causes, yet so great is the number of persons who use the new mode of transport, that travelling by railroad is really about one hundred times safer than by stage. The mortality upon English roads was for one year observed: —one person killed for each sixty-five million transported; in America, for the same time, one in forty-one million.

If we should try to reason from the rate of past railway-growth as to what the future is to be, we should soon be lost in figures. Thus, in the United States,—

In 1829 there were 3 miles.
In 1830 41 miles.
In 1840 2167 miles.
In 1850 7355 miles.
In 1856 23,242 miles.

Thus from 1830 to 1840, the rate is as 2167/41 or 53 nearly; from 1840 to 1850, 7355/2167, or 3 nearly; and from 1850 to 1856, 23242/ 7355 or 3 nearly; and from 1850 to 1860 we may suppose the rate will be about 4. The rate is probably now at its permanent maximum, taking the whole country together,—the increase in New England having nearly ceased, while west of the Mississippi it has not reached its average.

Among the larger and more important roads and connected systems in our country may be named the New York and Erie Railroad,—connecting the city of New York with Lake Erie at Dunkirk, (and, by the road's diverging from its western terminus, with "all places West and South," as the bills say,)—crossing the Shawangunk Mountains through the valley of the Neversink, up the Delaware, down the Susquehanna, and through the rich West of the Empire State.

The Pennsylvania Central Road: from Philadelphia through Lancaster to Harrisburg, on the Susquehanna, up the Juniata and down the western slope of the Alleghanies, through rock-cut galleries and over numberless bridges, reaching at last the bluffs where smoky Pittsburg sees the Ohio start on its noble course.

The Baltimore and Ohio Railroad: from Baltimore, in Maryland, to Wheeling and Parkersburg, on the Ohio;—crossing the lowlands to the Washington Junction, thence up the Patapsco, down the Monocacy, to the Potomac; up to Harper's Ferry, where the Potomac and the Shenandoah chafe the rocky base of the romantic little town perched high above; winding up the North Branch to Cumberland,—the terminus of the Chesapeake and Ohio Canal, and of the great national turnpike to the West, for which Wills' Creek opened so grand a gate at the narrows,—to Piedmont the foot and Altamont the summit, through Savage Valley and Crabtree Gorge, across the glades, from which the water flows east to the Chesapeake Bay and west to the Gulf of Mexico; down Saltlick Creek, and up the slopes of Cheat River and Laurel Hill, till rivers dwindle to creeks, creeks to rills, and rills lose themselves on the flanks of mountains which bar the passage of everything except the railroad; thence, through tunnels of rock and tunnels of iron, descending Tygart's Valley to the Monongahela, and thence through a varied but less rugged country to Moundsville, twelve miles below Wheeling, on the Ohio River.

These are our three great roads where engineering skill has triumphed over natural obstacles. We have another class of great lines to which the obstacles were not so much mechanical as financial,—the physical difficulties being quite secondary. Such are the trunk lines from the East to the West,—through Buffalo, Erie, and Cleveland, to Toledo and Detroit, and from Detroit to Chicago, Rock Island, Burlington, Quincy, and St. Louis; from Pittsburg, Wheeling, and Parkersburg, on the Ohio, to Cleveland, Columbus, Cincinnati, Indianapolis, Louisville, and St. Louis; and from Cleveland, through Columbus, to Cincinnati, and from Cincinnati to the Northwest.

In progress also may be noticed roads running west from St. Louis, Hannibal, and Burlington, on the Mississippi, all tending towards some point in Kansas, from which the great Pacific Road, the crowning effort of American railway-engineering, may be supposed to take its departure for California and Oregon.

The chief point of difference between the English and the American engineer is, that the former defies all opposition from river and mountain, maintains his line straight and level, fights Nature at every point, cares neither for height nor depth, rock nor torrent, builds his matchless roads through the snowy woods of Canada or over the sandy plains of Egypt with as much unconcern as among the pleasant fields of Hertford or Surrey, and spans with equal ease the Thames, the Severn, the St. Lawrence, and the Nile. The words "fail," "impossible," "can't be done," he knows not; and when all other means of finding a firm base whereon to build his bridges and viaducts fail, he puts in a foundation of golden guineas and silver dollars, which always gives success.

On the other hand, the American engineer, always respectful (though none the less determined) in the presence of natural obstacles to his progress, bows politely to the opposing mountain-range, and, bowing, passes around the base, saying, as he looks back, "You see, friend, we need have no hard feelings,—the world is large enough for thee and me." To the broad-sweeping river he gently hints, "Nearer your source you are not so big, and, as I turned out for the mountain, why should I not for the river?" till mountain and river, alike aghast at the bold pigmy, look in silent wonder at the thundering train which shoulders aside granite hills and tramples rivers beneath its feet. But if Nature corners him between rocks heavenward piled on the one hand and roaring torrents on the other, whether to pass is required a bridge or a tunnel, we find either or both designed and built in a manner which cannot be bettered. He is well aware that the directors like rather to see short columns of figures on their treasurer's books than to read records of great mechanical triumphs in their engineer's reports.

Of the whole expense of building a railroad, where the country is to any considerable degree broken, the reduction of the natural surface to the required form for the road, that is, the earthwork,

or, otherwise, the excavation and embankment, amounts to from thirty to seventy per cent. of the whole cost. Here, then, is certainly an important element on which the engineer is to show his ability; let us look a little at it, even at the risk of being dry.

It is by no means necessary to reduce the natural surface of the country to a level or horizontal line; if it were so, there would be an end to all railroads, except on some of the Western prairies. This was not, however, at first known; indeed, those who were second to understand the matter denied the possibility of moving a locomotive even on a level by applying power to the wheels, because, it was said, the wheels would slip round on the smooth iron rail and the engine remain at rest. But lo! when the experiment was tried, it was found that the wheel not only had sufficient bite or adhesion upon the rail to prevent slipping and give a forward motion to the engine, but that a number of cars might be attached and also moved.

This point gained, the objectors advanced a step, but again came to a stand, and said, "If you can move a train on a level, that is all, —you can't go up hill." But trial proved that easy inclines (called grades) could be surmounted,—say, rising ten feet for each mile in length.

The objectors take another step, but again put down their heavy square-toed foot, and say, "There! aren't you satisfied? you can go over grades of twenty feet per mile, but no more,—so don't try." And here English engineers stop,—twenty feet being considered a pretty stiff grade. Meanwhile, the American engineers Whistler and Latrobe, the one dealing with the Berkshire mountains in Massachusetts, the other with the Alleghanies in Virginia, find that not only are grades of ten and of twenty feet admissible, but, where Nature requires it, inclines of forty, sixty, eighty, and even one hundred feet per mile,—it being only remembered, the while, that just as the steepness of the grade is augmented, the power must be increased. This discovery, when properly used, is of immense advantage; but in the hands of those who do not understand the nice relation which exists between the mechanical and the financial elements of the question, as governed by the speed and weight of trains, and by the funds at the company's disposal, is very liable to be a great injury to the prospects of a road, or even its ruin.

It was urged at one time, that the best road would have the grades undulating from one end to the other,—so that the momentum acquired in one descent would carry the train almost over the succeeding ascent; and that very little steam-power would be needed. This idea would have place, at least to a certain extent, if the whole momentum was allowed to accumulate during the descent; but even supposing there would be no danger from acquiring so great a speed, a mechanical difficulty was brought to light at once, namely, that the resistance of the atmosphere to the motion of the train increased nearly, if not quite, as the square of the speed; so that after the train on the descent acquired a certain speed, a regular motion was obtained by the balance of momentum and resistance, —whence a fall great enough to produce this regular speed would be advantageous, but no more. On the other hand, the extra power required to draw the train up the grades much overbalances the gain by gravity in going down.

Here, then, we have the two extremes: first, spending more money than the expected traffic will warrant, to cut down hills and fill up valleys; and second, introducing grades so steep that the amount of traffic does not authorize the use of engines heavy enough to work them.

The direction of the traffic, to a certain extent, determines the rate and direction of the inclines. Thus, the Reading Railroad, from Philadelphia up the Schuylkill to Reading, and thence to Pottsville, is employed entirely in the transport of coal from the Lehigh coal-fields to tide-water in Philadelphia; and it is a very economically operated road, considering the large amount of ascent encountered, because the load goes down hill, and the weight of the train is limited only by the number of empty cars that the engine can take back.

This adoption of steep inclines may be considered as an American idea entirely, and to it many of our large roads owe their success. The Western Railroad of Massachusetts ascends from Springfield to Pittsfield, for a part of the way, at 83 feet per mile. The New York and Erie Railroad has grades

of 60 feet per mile. The Baltimore and Ohio climbs the Alleghanies on inclines of 116 feet per mile. The Virginia Central Road crosses the Blue Ridge by grades of 250 and 295 feet per mile; and the ridge through which the Kingwood Tunnel is bored, upon the Baltimore and Ohio Railroad, was surmounted temporarily by grades of 500 feet per mile, up which each single car was drawn by a powerful locomotive.

Another element, of which American engineers have freely availed themselves, is curvature. More power is required to draw a train of cars around a curved track than upon a straight line. In England the radius of curvature is limited to half a mile, or thereabouts. The English railway-carriage is placed on three axles, all of which are fixed to the body of the vehicle; the passage of curves, of even a large diameter, is thus attended by considerable wear and strain; but in America, the cars, which are much longer than those upon English roads, are placed upon a pintle or pin at each end, which pin is borne upon the centre of a four-wheeled truck,—by which arrangement the wheels may conform to the line of the rails, while the body of the car is unaffected. This simple contrivance permits the use of curves which would otherwise be entirely impracticable. Thus we find curves of one thousand feet radius upon our roads, over which the trains are run at very considerable speed; while in one remarkable instance (on the Virginia Central Railroad, before named) we find the extreme minimum of 234 feet. Such a track does not admit of high speeds, and its very use implies the existence of natural obstacles which prevent the acquirement of great velocities.

In fine, the use which the engineer makes of grades and curves, when the physical nature of the country and the nature and amount of the traffic expected are known, may be taken as a pretty sure index of his real professional standing, and sometimes as an index of the moral man; as when, for example, he steepens his grades to suit the contractor's ideas of mechanics,—in other words, to save work.

Not less in the construction of bridges and viaducts, than in the preparation of the road-bed proper, does the American engineering faculty display itself. Timber, of the best quality, may be found in almost every part of the country, and nowhere in the world has the design and building of wooden bridges been carried to such perfection and such extent as in the United States. We speak here of structures built by such engineers as Haupt, Adams, and Latrobe, —and not of those works, wretched alike in design and execution, which so often become the cause of what are called terrible catastrophes and lamentable accidents, but which are, in reality, the just criticisms of natural mechanical laws upon the ignorance of pretended engineers.

Among the finest specimens of timberwork in America are the Cascade Bridge upon the New York and Erie Railroad, designed and built by Mr. Adams, consisting of one immense timber-arch, having natural abutments in the rocky shores of the creek;—the second edition of the bridges generally upon the same road, by Mr. McCallum, which replaced those originally built during the construction of the road, —these hardly needing to be taken down by other exertion than their own; —the bridges from one end to the other of the Pennsylvania Central Road, by Mr. Haupt;—the Baltimore and Ohio "arch-brace" bridges, by Mr. Latrobe;—and the Genessee "high bridge," (not a bridge, by the way, but a trestle,) near Portageville, by Mr. Seymour, which is eight hundred feet long, and carries the road two hundred and thirty feet above the river, having wooden trestles (post and brickwork) one hundred and ninety feet high, seventy-five feet wide at base, and twenty-five feet at top, and carrying above all a bridge fourteen feet high; containing the timber of two hundred and fifty acres of land, and sixty tons of iron bolts, costing only $140,000, and built in the short time of eighteen months. This structure, if replaced by an earth embankment, would cost half a million of dollars, and could not be built in less than five years by the ordinary mode of proceeding.[2]

[2] Lest these statements should sound extravagant, the reader will please reckon up the amounts for himself. A bank twenty-five feet wide on top, eight hundred feet long, and two hundred and thirty feet high, would contain two million cubic yards of earth; which, at twenty-five cents per yard, would cost half a million of dollars, exclusive of a culvert to pass the river, of sixty, eighty, or one hundred feet span and seven hundred feet long. Twenty trains per day, of thirty cars each, one car holding two yards, would be twelve hundred

Further, the interest, for so long a time, on the large amount of money required to build the embankment, at the high rate of railroad interest, would nearly, if not quite, suffice to build the wooden structure.

Again, our wooden bridges of the average span cost about thirty-five dollars per lineal foot. Let us compare this with the cost of iron bridges, on the English tubular plan, the spans being the same, and the piers, therefore, left out of the comparison.

Suppose that a road has in all one mile in length of bridges. Making due allowance for the difference in value of labor in England and America, the cost per lineal foot of the iron tubular bridges could not be less (for the average span of 150 feet) than three hundred dollars.

5280 feet by $35 is $184,800.00
5280 feet by 300 is $1,584,000.00
The six per cent. interest on the first is $11,088.00
The six per cent. interest on the second is $95,040.00
And the difference is $83,952.00

or nearly enough to rebuild the wooden bridges once in two years; and ten years is the shortest time that a good wooden bridge should last.

The reader may wonder why such structures as the bridge over the Susquehanna at Columbia, which consists of twenty-nine arches, each two hundred feet span, the whole water-way being a mile long, and many other bridges spanning large rivers, and having an imposing appearance, are not referred to in this place. The reason is this: *large* bridges are by no means always *great* bridges; nor do they require, as some seem to think, skill proportioned to their length. There are many structures of this kind in America, of twenty, twenty-five, or thirty spans, where the same mechanical blunders are repeated over and over again in each span; so that the longer they are and the more they cost, the worse they are. It does not follow, because newspapers say, "magnificent bridge," "two million feet of timber," "eighty or one hundred tons of iron," "cost half a million," that there is any merit about either the bridge or its builder; as one span is, so is the whole; and a bridge fifty feet long, and costing only a few hundreds, may show more engineering skill than the largest and most costly viaducts in America. Few bridges require more knowledge of mechanics and of materials than Mr. Haupt's little "trussed girders" on the Pennsylvania Central Road,—consisting of a single piece of timber, trussed with a single rod, under each rail of the track.

Again, as regards American iron bridges, the same result is found to a great extent. Thus, Mr. Roebling's Niagara Railroad Suspension-Bridge cost four hundred thousand dollars, while a boiler-plate iron bridge upon the tubular system would cost for the same span about four million dollars, even if it were practicable to raise a tubular bridge in one piece over Niagara River at the site of the Suspension Bridge. Strength and durability, *with the utmost economy*, seem to have been attained by Mr. Wendel Bollman, superintendent of the road-department of the Baltimore and Ohio Railroad,—the minute details of construction being so skilfully arranged, that changes of temperature, oftentimes so fatal to bridges of metal, have no hurtful effect whatever. And here, again, is seen the distinctive American feature of adaptation or accommodation, even in the smallest detail. Mr. Bollman does not get savage and say, "Messieurs Heat and Cold, I can get iron enough out of the Alleghanies to resist all the power you can bring against me!" —but only observes, "Go on, Heat and Cold! I am not going to deal directly with you, but indirectly, by means of an agent which will render harmless your most violent efforts!"—or, in other words, he interposes a short link of iron between the principal members of his bridge, which absorbs entirely all undue strains.

It is not to be supposed from what has preceded, that the American engineer does not know how to spend money, because he gets along with so little, and accomplishes so much; when occasion

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yards per day; two million, divided by twelve hundred, gives 1,666 days.

requires, he is lavish of his dollars, and sees no longer expense, but only the object to be accomplished. Witness, for example, the Kingwood Tunnel, on the Baltimore and Ohio Railroad, where for a great distance the lining or protecting arching inside is of heavy ribs of cast iron, —making the cost of that mile of road embracing the tunnel about a million of dollars. Nor will the traveller who observes the construction of the New York and Erie Railroad up the Delaware Valley, of the Pennsylvania Central down the west slopes of the Alleghanies, or of the Baltimore and Ohio down the slopes of Cheat River, think for a moment that the American engineer grudges money where it is really needed.

Stone bridges so rarely occur upon the roads of America, that they hardly need remark. The Starucca Viaduct, by Mr. Adams, upon the New York and Erie Railroad, and the viaduct over the Patapsco, near the junction of the Washington branch with the main stem of the Baltimore and Ohio Railroad, show that our engineers are not at all behind those of Europe in this branch of engineering. From the civil let us pass to the mechanical department of railroad engineering. This latter embraces all the machinery, both fixed and rolling; locomotives and cars coming under the latter,—and the shop-machines, lathes, planers, and boring-machines, forging, cutting, punching, rolling, and shearing engines, pumps and pumping-engines for the water-stations, turn-tables, and the like, under the former. Of this branch, little, except the design and working of the locomotive power, needs to be mentioned as affecting the prosperity of the road. Machine-shops, engine-houses, and such apparatus, differ but slightly upon different roads; but the form and dimensions of the locomotive engines should depend upon the nature of the traffic, and upon the physical character of the road, and that most intimately, —so much, indeed, that the adjustment of the grades and curvatures must determine the power, form, and whole construction of the engine. This is a fact but little appreciated by the managers of our roads; when the engineer has completed the road-bed proper, including the bridging and masonry, he is considered as done with; and as the succeeding superintendent of machinery is not at that time generally appointed, the duty of obtaining the necessary locomotive power devolves upon the president or contractor, or some other person who knows nothing whatever of the requirements of the road; and as he generally goes to some particular friend, perhaps even an associate, he of course takes such a pattern of engine as the latter builds, —and the consequence is that not one out of fifty of our roads has steam-power in any way adapted to the duty it is called upon to perform.

There is no nicer problem connected with the establishment of a railroad, than, having given the grades, the nature of the traffic, and the fuel to be used, to obtain therefrom by pure mechanical and chemical laws the dimensions complete for the locomotives which shall effect the transport of trains in the most economical manner; and there is no problem that, until quite lately, has been more totally neglected.[3]

Of the whole cost of working a railroad about one third is chargeable to the locomotive department; from which it is plain that the most proper adaptation is well worth the careful attention of the engineer. Though it is generally considered that the proper person to select the locomotive power can be none other than a practical machinist, and though he would doubtless select the best workmanship, yet, if not acquainted with the general principles of locomotion, and aware of the character of the road and of the expected traffic, and able to judge, (not by so-called experience, but by real knowledge,) he may get machinery totally unfit for the work required of it. Indeed, American

[3] The most careless observer has doubtless noticed that the front part of a locomotive rests upon the centre of a track, having four small wheels; the back and middle part, he will also remember, is borne upon large spoke wheels,—which are connected with the machinery; upon the size of these last depend the power and speed of the engine. The larger the wheels, the less the power, and the higher the velocity which may be got; again, the wheel remaining of the same size, by enlarging the dimensions of the cylinders the power is increased; and the wheels and cylinders remaining the same, by enlarging the boiler we can make stronger steam and thus increase the power. There may be seen upon the road from Boston to Springfield engines with wheels nearly seven feet in diameter, used for drawing light express-trains; while upon the roads ascending the Alleghanies may be seen wheels of only three and a half feet diameter, which are employed in drawing trains up the steep grades. Increase of steepness of grades acts upon the locomotive in the same manner as increase of actual load; as upon a level the natural tendency of the engine is to stand still, while on an incline the tendency is to roll backwards down-hill.

civil engineers ought to qualify themselves to equip the roads they build; for none others are so well acquainted with the road as those who from a thorough knowledge of the matter have established the grades and the curvatures.

The difference between adaptation and non-adaptation will plainly be seen by the comparison below. The railway from Boston to Albany may be divided into four sections, of which the several lengths and corresponding maximum grades are as tabulated.

Length in miles. Steepest grade

Boston to Worcester, 44 30
Worcester to Springfield, 541/2 50
Springfield to Pittsfield, 52 83
Pittsfield to Albany, 431/2 45

A load of five hundred tons upon a grade of thirty feet per mile requires of the locomotive a drawing-power of 11,500 lbs.

Upon a 50 feet grade 15,500 lbs.
Upon an 83 feet grade 22,500 lbs.
Upon a 45 feet grade 14,500 lbs.

Now, if the engines are all alike, (as they are very nearly,) and each is able to exert a drawing-power of five thousand pounds to move a load of five hundred tons from Boston to Albany, we need as follows:

B. to W.—11500/5000 or 2 engines.
W. to S.—15500/5000 or 3 engines.
S. to P.—22500/5000 or 5 engines.
P. to A.—14500/5000 or 3 engines.

From which the whole number of miles run by engines for one whole trip would be,—

B. to W. 44 miles by 2 engines, or 88
W. to S. 541/2 miles by 3 engines, or 1631/2
S. to P. 52 miles by 5 engines, or 260
P. to A. 491/2 miles by 3 engines, or 1481/2

_____
And the sum, 660

Now suppose, that, by making the engines for the several divisions strong in proportion to the resistance encountered upon these divisions, one engine only is employed upon each; our mileage becomes,

B. to W. 44 by 1 or 44
W. to S. 541/2 by 1 or 541/2
S. to P. 52 by 1 or 52
P. to A. 49 by 1 or 491/2

_____
And the sum, 200 miles.

And the saving of miles run is therefore 660 less 200, or 460; and if 500 tons pass over the road daily, the annual saving of mileage becomes 460 by 313, or 143,980, or 70 per cent. of the whole. The actual cost for freight-locomotives per ton, per mile run, during the year ending Sept. 30, 1855, was 384/1000 of a cent; and the above 143,980 miles saved, multiplied by this fraction, amounts to $55,288 per annum. The actual expense of working the power will not of course show the whole 70

per cent. of saving, as heavy and strong engines cost more at first, and cost more to operate, than lighter ones; but the figures show the effect of correct adaptation. If we call the saving 50 per cent. only of the mileage, we have then (as the locomotive power consumes 30/100 of the whole cost of operating) 50/100 of 30/100, or 15/100, of the whole cost of working the road, and this by simply knowing how to adapt the machinery to the requirement.

So very slight are the points of difference between a good and a bad engine, that they often escape the eye of those whose business it is to deal with such works. It is not the brass and steel and bright metal and elaborate painting that make the really good and serviceable engine,—but the length, breadth, and depth of its furnace, the knowledge of proportion shown in its design, and the mechanical skill exhibited in the fitting of its parts. The apparently complex portions are really very simple in action, while the apparently simple parts are those where the greatest knowledge is required. Any man of ordinary mechanical acquirements can design and arrange the general form,—the whole mass of cranks, pistons, connecting-rods, pumps, and the various levers for working the engine; but to find the correct dimensions of the inner parts of the boiler, and of the valve-gearing, by which the movements of the steam are governed, requires a very considerable knowledge of the chemistry of combustion, of practical geometry, and of the physical properties of steam. So nice, indeed, is the valve-adjustment of the locomotive, as depending upon the work it has to do, whether fast or slow, light or heavy, that a single eighth of an inch too much or too little will so affect its power as to entirely unfit it for doing its duty with any degree of economy.

When a single man takes the general charge of five hundred miles of railroad, upon which the annual pay-roll is a million of dollars, and which employs over two hundred locomotives and three thousand cars, earning five million dollars a year,—a road which cost thirty-three million, has five miles in length of bridges, and over four hundred buildings,—it is plain that the system of operation must be somewhat elaborate. And so it is. Indeed, so complete is the organization and management of *employées* upon the New York and Erie Railroad, that the General Superintendent at his office can at any moment tell within a mile where each car or engine is, what it is doing, the contents of the car, the consignor and consignee, the time at which it arrives and leaves each station, (the *actual* time, not the time when it *should* arrive,) and is thus able to correct all errors almost at the moment of commission, and in reality to completely control the road.

The great regulator upon long lines of railroad is the electric telegraph, which connects all parts of the road, and enables one person to keep, as it were, his eye on the whole road at once.

A single-track railroad, says Mr. McCallum, may be rendered more safe and efficient by a proper use of the telegraph than a double-track railroad without,—as the double-tracks commonly obviate collisions which occur between trains moving in *opposite* directions, whilst the telegraph may be used effectually in preventing them between trains moving either in *opposite* directions or in the *same* direction; and it is a well-established fact, deduced from the history of railroads both in Europe and in this country, that collisions from trains moving in the *same* direction have proved by far the most fatal and disastrous, and should be the most carefully guarded against.

From the admirable report of Mr. McCallum, above referred to, we take the following: —Collisions between fast and slow trains moving in the same direction are prevented by the following rule: 'The conductor of a slow train will report himself to the Superintendent of Division immediately on arrival at a station where, by the time-table, he should be overtaken by a faster train; and he shall not leave that station until the fast train passes, without special orders from the Superintendent of Division.' A slow train, under such circumstances, may, at the discretion of the Division Superintendent, be directed to proceed; he, being fully apprised of the position of the delayed train, can readily form an opinion as to the propriety of doing so; and thus, while the delayed train is permitted to run without regard to the slow one, the latter can be kept entirely out of its way.

"The passing-place for trains is fixed and determined, with orders positive and defined that neither shall proceed beyond that point until after the arrival of the other; whereas, in the absence

of the telegraph, conductors are governed by general rules, and their individual understanding of the same,—which rules are generally to the effect, that, in case of detention, the train arriving first at the regular passing-place shall, after waiting a few moments, *proceed cautiously* (expecting to meet the other train, which is generally running as much faster, to make up lost time, as the cautious train is slower) until they have met and passed; the one failing to reach the half-way point between stations being required to back,—a dangerous expedient always,—an example of which operation was furnished at the disaster on the Camden and Amboy Railroad near Burlington; the delayed train further being subjected to the same rule in regard to all other trains of the same class it may meet, thus pursuing its hazardous and uncertain progress during the entire trip."

The following table shows the rate and direction of subordination for a first-class railroad:—

General Superintendent

Superintendent Roadmaster. Section men.
of road. Roadmaster. Section men.
Roadmaster. Section men.

Foreman of machine-shop. Machinists.
Foreman of blacksmith's shop Blacksmiths.
Superintendent Foreman of carpenter's shop. Carpenters.
of Machinery. Foreman of paint-shop Painters.
Engineers (not on trains). Firemen.
Car-masters. Oilers and cleaners.
Brakemen.

Conductors. Engineers (on trains).
Ticket-collectors.
General passenger-agent. Mail agents.
Station agents. Hackmen.
Switchmen.

Express agents.
Police.
Conductors. Brakemen.
Engineers (on trains).

General freight-agent. Station agents.
Weighers and gaugers.
Yard masters.

Supply agent. Clerks and teamsters furnishing supplies.
Fuel agent. All men employed about wood-sheds.

All subordinates should be accountable to and directed by *their immediate superiors only*. Each officer must have authority, with the approval of the general superintendent, to appoint all *employees* for whose acts he is responsible, and to dismiss any one, when, in his judgment, the interests of the company demand it.

Fast travelling is one of the most dangerous as well as one of the most expensive luxuries connected with the railroad system. Few companies in America have any idea what their express-trains cost them. Indeed, the proper means of obtaining quick transport are not at all understood. It is not by forcing the train at an excessively high speed, but by reducing the number of stops. A train running four hundred miles, and stopping once in fifty minutes,—each stop, including coming to rest and starting, being five minutes,—to pass over the whole distance in eight hours, must run fifty-five miles per hour; stopping once in twenty minutes, sixty-three miles per hour; and stopping once in ten minutes, eighty-six miles per hour.

The proportions in which the working expenses are distributed under the several heads are nearly as follows:—

Management 7
Road-repairs 16
Locomotives 35
Cars 38
Sundries 4

____
In all 100

And the percentage of increase due to fast travelling, to be applied to the several items of expense, with the resulting increase in total expense, this:—

Management 7 increased by 0 per cent. is 0.0
Road-repairs 16 do. 27 do. 4.3
Locomotives 35 do. 30 do. 10.5
Cars 38 do. 10 do. 3.8
Sundries 4 do. 0 do. 0.0

____ ____
100 And the whole increase 18.6

The causes of accident beyond the control of passengers are,—

Collision by opposition,
Collision by overtaking,
Derailment by switches misplaced,
Derailment by obstacles on the track,
Breakage of machinery,
Failure of bridges,
Fire,
Explosion.

Those causes which are aggravated by fast travelling are the first, second, fifth, and sixth. The effects of all are worse at high than at low velocities.

The proportion of accidents due to each of these causes, taken at random from one hundred cases on English roads, (American reports do not detail such information with accuracy,) were,—

Collision 56 56
Breakage of machinery 18 18
Failure of road 14 14
Misplaced switches 5
Obstacles on rails 6
Boiler explosions 1

— ——

88 100

Eighty-eight per cent. being from those causes which are aggravated by increase of speed; and if we suppose the amount of aggravation to augment as the speed, the danger of travelling is eighty-eight per cent. greater by a fast than by a slow train.

These are the direct evils of high speeds; there are also indirect evils, which are full as bad.

All trains in motion at the same time, within a certain distance of the express, must be kept waiting, with steam up, or driven at extra velocities to keep out of the way.

Where the time-table is so arranged as to call for speed nearly equal to the full capacity of the engine, it is very obvious that the risks of failure in "making time" must be much greater than at reduced rates; and when they do occur, the efforts made to gain the time must be correspondingly greater and uncertain. A single example will be sufficient to show this.

A train, whose prescribed rate of speed is thirty miles per hour, having lost five minutes of time, and being required to gain it in order to meet and pass an opposing train at a station ten miles distant, must necessarily increase its speed to forty miles per hour; and a train, whose prescribed rate of speed is forty miles per hour, under similar circumstances, must increase its speed to sixty miles per hour. In the former case it would probably be accomplished, whilst in the latter it would more probably result in failure,—or, if successful, it would be so at fearful risk of accident.

However true it may be that many of our large roads are well, some of them admirably, managed, it is none the less a fact that the greater portion are directed in a manner far from satisfactory,—many, indeed, being subjected to the combined influence of ignorance and recklessness.

Many people wonder at the bad financial state of the American railroads; the wonder is, to those who understand the way in which they are managed, that they should be worth anything at all. It is useless to disguise the fact, says a writer in one of our railroad-papers, that the great body of our railroad-directors are entirely unfit for their position. They are, personally, a very respectable class of men, (Schuylerisms and Tuckermanisms excepted,) —men who, after having passed through their active business-lives successfully, and after retirement, are, in the minds of some, eminently fitted to adorn a director's chair. Never was there a greater mistake. What is wanted for a railway-director is an active, clear-headed man, who has not outlived his term of activity. We want railway-directors who know how to reduce the operating-expenses per mile, and not men who oppose their bigoted ignorance to everything like change or improvement, who can see no difference between science and abstract ideas. It would seem that the only question to be asked with regard to the fitness of a man for being a director is—Is he rich and respectable? If he has these qualities, and is pretty stupid withal, he is in a fair line for election. We tell our railway-readers, that, if they desire to make their property valuable, and rescue it from becoming a byword and a reproach, they have got to elect men of an entirely different stamp,—men of practical experience, in the best sense of the term, who have intelligence enough to know and apply all those vital reforms upon which depends the future success of their undertakings,—the men of the workshop, the track, and the locomotive. And we shall yet see the more intelligent of them taking the place, at the directors' board, of the retired merchants, physicians, and other respectable gentlemen, who now lend only the names of their respectability to perpetuate a system of folly that has reduced our railroad-management below contempt. As at present constituted, our boards are a very showy, but very useless piece of mechanism. The members attend at meetings when they feel just like it, and sign their names to documents and statements which have been prepared for them by others, without much knowledge of what the contents are; their other duties consisting chiefly in riding over their own and connecting roads, free of charge.

Why should railway-directors work for nothing for the stockholders? Ah, Messrs. Stockholders, you little know in reality how fat a salary your directors make to themselves, by nice little commissions, by patronizing their favorite builders of locomotives and cars, and by buying the thousand and one patents that are so urgently recommended! Do you carry your broken watch to

a blacksmith or to a stone-mason to be mended? Neither, we think. Why, then, do you leave the management of a work which engineers, machinists, carpenters, masons, and men of almost every trade, have spent time and care upon to build, to the respectable merchant, lawyer, or banker, who thinks the best road that which has the softest cushions and the most comfortable seats on which to ride?

Railroad-building, remarks a late writer, (Mr. Whiton,) may be divided into three periods,—the first, the *introductory*, in which roads were a sort of experimental enterprise, where the men who labored expected to be paid for their time or money, and were willing to wait a reasonable time for the expected profit. Second, the *speculative* period, when men were possessed with an unhealthy desire for fortune-making, and, not content to wait the natural harvest of the seed sown, departed from the sound and honest principles of construction and management; trying, at first, by all sorts of pretence and misrepresentation, to conceal, and last by legislation to counterbalance, the results of their ignorance and of their insane desires. Railroads were compared, as an investment, to banks; and it was even supposed that the more they cost the more they would divide; and tunnels, rock-cuts, and viaducts were then as much sought after as they are now avoided. Shrewd and intelligent business-men, who had made for themselves fortunes, embraced these ridiculous opinions, and seemed at once, upon taking hold of railroad-enterprises, to lose whatever of common sense they before might have possessed; and even at the present day these same men have not the manly honesty to acknowledge their errors, but endeavor to cover them up with greater.—The third period is that of *reaction*, which embraces the present time. To a person unacquainted with the management of railroads, to see a body of men, no one of whom has ever before had anything to do with mechanical operations, assembled to decide upon the relative merits of the different plans of bridges or of locomotives or cars, upon the best means of reducing the working-expenses of a machine of whose component parts they have not the slightest idea, of the most complicated and elaborate piece of mechanism that men have ever designed, might at first seem absurd; but custom has made it right. It is generally supposed that the moment a man, be he lawyer, doctor, or merchant, is chosen director in a railroad enterprise, immediately he becomes possessed of all knowledge of mechanics, finance, and commerce; but, judging from past experience, it appears in reality that he leaves behind at such time whatever common sense he perchance possessed before; otherwise why does he not follow the same correct business-rules, when managing the property of others, as when he accumulated his own? A man who should show as much carelessness and ignorance, when operating for himself, as railway-directors do when operating for others, would be considered as a fit subject for an insane asylum.

When railroads are built where they are needed, at the time they are wanted, in a country able to support them, by permanent investors, and not by speculators, and are well made by good engineers, and well managed by competent men, whose interest is really connected with the success of the enterprise, then they will pay, and be railroads indeed. But so long as money is obtained on false pretences, to be played for by State and Wall Street gamblers on the one hand, and ravenous contractors on the other hand, they will be what they are,—worthless monuments of extravagance and folly.

"Experience keeps a dear school," says poor Richard, "but fools will learn in no other."

Let not the reader think for a single moment that we have no appreciation of the labors of a De Witt Clinton, or of a Livingston, —that we at all underrate the services of the Eastern capitalists who render available the public-land grants of the West, whether to build ship-canals or railroads. We have the highest respect for that talent without which our Western lands would still be left to the buffalo and the deer, and the gold and silver of Europe would remain on the other side of the Atlantic. These capitalists are the mainsprings of the system; but we should no more apply their energy and skill to the detailed operation of so mechanical a structure as a railroad, than we should attach the mainspring of a watch to the hands directly, without the intermediate connecting chains and wheels.

Not less incompetent for the construction of railways, than are the directors for the management of the completed roads, are at least one half of the so-called engineers in America. Obliged to complete no course of education, to pass no examination, they are at once let loose upon the country whenever they feel like it, to build what go by the names of railroads and bridges, but are in reality traps in which to lose both life and money. Indeed, any man (in the United States) who has carried a rod or chain is called an engineer; while the correct definition is, a man who has, first, a thorough knowledge of mechanics, mathematics, and chemistry,—second, the knowledge necessary for applying these sciences to the arts,—and last, the knowledge requisite to the correct adaptation of such arts to the wants of man, but more than all, that experience which is got only from continual practice. We have such a class of engineers, and to them we owe what of fame we have in the engineering world. Second, comes another grade, men who, commencing as subordinates, without any preparatory knowledge, but with natural genius, and an intuitive knowledge of mechanics, need only to have their ideas generalized to see the bearing of their special knowledge upon the whole, in order to rank high in the profession. Third, a class who lack both natural and acquired knowledge, and whose only recommendation is that they are always for sale to the highest bidder, whether he be president, director, or contractor; sometimes working nominally for the company, but really for the contractor,—or in some cases, so debased is this class of persons, for both contractor and company openly. Of late years this prostitution of mongrel engineers has had place to an alarming extent. Let us hope that the old professional pride, and, better still, a love of truth and honesty for their own sake, may yet triumph, and place real engineers high above the dead level to which ignorance and pretence and venality have degraded the profession.

* * * * *

HER GRACE, THE DRUMMER'S DAUGHTER

[Concluded.]

The girl whose suggestion had brought about this change in her father's household, introducing anxiety and tears and pain where these were almost strangers, was not exceeding joyous in view of what she had done. But she was resolved and calm. It was everything to her, that night when she lay down to rest, to know that the same roof that covered her was also spread above the prisoner, and all the joys of youth passed into forgetfulness as she thought and vowed to herself concerning the future.

It seemed, perhaps, a state of things involving no consequences, this sympathy that Elizabeth had shared with the gardener Sandy, when the prisoner's eyes gazed on them from his window, or turned towards them while he walked in the garden; but Sandy said to himself, when she told him that they were to have Laval's place in the prison, "*It took her*!"—neither did it seem incredible to him when she assured him that the new house was like home. He honestly believed that with the child—child he considered her—all things were possible.

What he had lacked and missed so long that the restoration had a charm of novelty about it, added to its own excellency, was now the prisoner's portion. Good manners, kind and courteous voices, greeted eyes and ears once more. As in the days of Joan Laval, a woman was now sometimes in attendance on the prisoner. But in not one particular did Pauline Montier resemble Joan Laval. She called herself a soldier's wife, and was exact and brave accordingly. She was thoughtful of her husband's charge, and when she paused in her efforts for his comfort and content, it was because she had exhausted the means within her reach, but not her wit in devising.

The effect was soon manifest. The prisoner received this care and sympathy as he might have received the ministration of angels. The attendance was almost entirely confined to Montier and his wife, but now and then Elizabeth also could serve him. She served him with her heart, with unobtrusive zeal that was exhaustless as the zeal of love. Unobserved, she watched, as well as waited on him; and oh, how jealous and impatient of time and authority did she become! Her pity knew no limit; it beamed from her eyes, spoke through her voice, was unceasing in activity. He was to her a romance terrible and sweet, a romance that had more abundant fascination than the world could show beside.

She went up to his room one morning, carrying his breakfast. Her father had been ordered to the barracks, and her mother was not well; the service therefore fell upon her.

The prisoner did not seem to heed her when she entered; at least, he gave no sign, until she approached him, and even then was not the first to speak. Going to the window, her eyes followed his to the garden below.

"It looks well this morning," she said, pleasantly.

"Yes,—but I have seen prettier," he answered.

"Where?" she asked, so quickly that Manuel almost smiled as he looked at her before he answered. He knew why she spoke thus, and was not offended by the compassion of her sympathy.

"In my own home, Elizabeth," he answered.

"Aren't you *ever* going back to it, Sir?" she asked, hurriedly.

He did not reply.

"Won't you ever see it again?" she persisted.

"Banishment,—a prisoner for life," said he, for the first time explaining to any person his dread sentence.

Elizabeth Montier quietly pondered the words thus spoken.

"If you had your freedom," said she, "would you go back to your own country?—Your breakfast is cooling, Sir."

Manuel looked at her,—she bore his scrutiny with composure,—then he came to the table, sat down, and broke his bread, before he answered this bold speaking.

"Yes," said he, at length. "An honorable man is bound to keep his honor clean. Mine has been blackened by some false accusation. I owe it to all who ever believed in me to clear it, if I can."

"And besides, your home is there."

"Yes."

"Oh, if you would only tell me about it! I don't want to know for anybody else,—only for you. Did you leave many behind, that—that loved you, Mr. Manuel?"

"Yes," said the prisoner,—but he said no more.

This answer was sufficient; with it Elizabeth walked away from the table where he sat, and took her stand by the window. By-and-by she said, speaking low, but with firm accent,—

"I am sorry I asked you anything about it; but I will never speak of it again. I heard it was for religion; but I know you could not hurt the Truth. They said you fought against the Church. Then I believe the Church was wrong. I am not afraid to say it. I want you to understand. Of course I cannot do anything for you; only I was so in hopes that I could! You must not be angry with me, Sir, for hoping that."

The integrity of nature that spoke in these words came to the hearer's heart with wondrous power and freshness. He looked at Elizabeth; she was gazing full on him, and lofty was the bearing of the girl; she had set her own fears and all danger and suspicion at defiance in these words. Partly he saw and understood, and he answered,—

"I am not angry. You surprised me. I know you are not curious on your own account. But you can do nothing for me. I did fight against the Church, but not any Church that you know. I fought against an intolerant organization, boundless superstition, shameful idolatry, because it was making a slave and a criminal of the world.—You can do nothing for me."

"Nothing?"

"No, dear child, nothing."

"Is it because you think I am a child that you say so?" asked Elizabeth. "I am not a child. I knew you must be innocent. I will do anything for you that any one can do. Try me."

The prisoner looked again at the pleader. Truly, she was not a child.

It is not in childhood to be nerved by such courage and such longing as were in her speech, as that speech was endorsed by her bearing.

His thought toward her seemed to change in this look.

"Can you write, Elizabeth?" asked he.

"I can write," she answered, proudly, standing forward like a young brave eager for orders. "I can write. My father taught me."

"You might write"—

"A letter?" she asked, breathless.

"Yes." He paused and considered, then continued,—"You might write to—you might write to my friend, and tell her about the garden, and how I am now allowed to walk in it,—and about your father and your mother,—about yourself, too; anything that will make this place seem pleasant to her. You know the pleasant side of Foray, —give her that."

"Yes. Is she your mother?"

"No."

"Your sister, Sir?"

"No, Elizabeth. She and I were to have been married."

"Oh, Sir,—and you in Foray,—in a prison,—so far away!"

"Wide apart as death could put us. And shall I let you write to her?

Yes! we will triumph over this death and this grave!"

"By me!—yes,—I will tell her,—it shall surely be by me," said Elizabeth, in a low voice.

"Then tell her;—you will be able, I know, to think of a great deal that is comforting. I should not remember it, I'm afraid, if I could write the letter. Tell her what fine music I have. You can say something, too, about the garden, as I said. You can speak of the view from this window. See! it is very fine. You can tell her—yes, you can tell her now, that I am well, Elizabeth."

"Oh, Sir, can I tell her you are well?"

"Yes,—yes,—say so. Besides, it is true. But you must add that I have no hope now of our meeting in this world. She can bear it, for she is strong, like you. She, too, is a soldier's daughter. If you will say those things, I will tell you her name. That shall be our secret." In this speech his tone was altogether that of one who takes the place of a comforter.

"Yes," said Elizabeth, calm and attentive. It was quite impossible that she should so mistake as to allow the knowledge that was quickening her perception into pain to appear.

"You must tell her about yourself," said he, again.

"What shall I say? There is nothing about myself to tell, Mr. Manuel."

"Is there not? That would be strange. Tell her what music you like best to hear your father play. She will understand you by that. Tell her anything,—she will not call it a trifle. What if she answers you in the same mood? Should we call it foolish, if she told us her thoughts, and the events that take place daily in her quiet life? You can tell her what songs you love to sing. And if she does not know them, she will learn them, Elizabeth. Tell her how much it comforts me to hear you sing. Tell her, that, if she has prayed some light might shine on me from Heaven, her prayer is answered. For it is true. You serve me like an angel, and I see it all. Tell her she must love you for my sake,—though there is no need to tell her.—Do you see?"

"I see."

"Tell her I remember"—There he faltered; he could say no more.

"Yes," said Elizabeth, "I will,—I will tell her everything, Mr. Manuel,—everything that it would comfort her to hear."

She had written letters now and then. Great pride Montier and Pauline took in their daughter's skilful use of pen and ink, and pencil,—for Elizabeth could sketch as well as write. There was nothing new or strange, therefore, in her addressing this conversation to a spirit. But, also, there was nothing easy in this task, though she had the mighty theme of faithful love to dwell upon, and love's wondrous inspiration to enlighten her labor.

The description to be given of island scenery was such as she had given more than once, in writing to her distant, unknown relatives. She need vary only slightly from what she had written before, when she gave report of her own daily life. She was always eloquent when talking about the flowers or her father's music.

But this she had undertaken was not a repetition of what she had done before. With painful anxiety she scrutinized her words, her thoughts, her feelings. The work was a labor of love; the loving best know what anguish their labor sometimes costs them. The pain of this letter was not fairly understood by her who endured it,—it could not be shared.

Why was she so cautious? why in her caution lurked so much of fear? Perhaps she might have answered, if questioned by one she trusted, that further intrusion of herself than should serve as a veil for the really important information she had to convey would be cruel intrusion. But there was a very different reason; it had to do with the sudden revelation made to herself when her father wept at the prisoner's hard fate,—a revelation that terrified her, and influenced every succeeding movement; it had to do with the illumination that came when Manuel told her the sad secret of his heart,—with that moment when she stood up stronger in love than in fear, stronger in devotion than in pride, strong for self-sacrifice, like one who bears a charmed life pierced to the heart, and never so capable as then.

More than once did Elizabeth rewrite that letter. More than once in the progress to its completion did she break away from the strange task, that had evidence of strangeness or of labor, to seek in the garden, or with her needle, or in the society of father or mother, deliverance from the

trouble that disturbed her. In the toils of many an argument with her heart and conscience was she caught; but even through her doubting of the work she had engaged to perform, she persevered in its continuance, till the letter was ready for address.

It was surely right to aid, and comfort by such aid, one so unfortunate as this prisoner; yet her parents must not be implicated by such transaction. Therefore they must be kept in ignorance, that, if blame fell anywhere, it might not fall on them. So she satisfied her conscience;—love will not calculate coldly. But it was less easy to satisfy her heart.

She had lived but sixteen years; she looked to her youth as to a protector, while it rebuked her. She leaned upon it, while daily she took to herself the part of womanhood, its duties and its dignity. He had called her a child; she called herself a child. She was careful to let this estimate of herself appear in that letter; and in what she undertook she was entirely successful; Madeline Desperiers would be sure to read it as the letter of a child.

When all was done Elizabeth repeated to Manuel the substance of this letter. He praised it. Jealous scrutiny would find it difficult to lay its finger on a passage, and condemn the writer for evading the law concerning the prisoner. When she signed and sealed the letter, addressed it, and carried it away with her to mail, he was satisfied; his praise was sweet to the girl who had earned it.

No sooner was this work off her hands than another engaged her. With a purpose prompted may-be by her angel, certainly by no human word, and unshared by any human intelligence, Elizabeth began to make a sketch of the island as seen from Manuel's prison-window. She made the sketch from memory, correcting it by observation when occasion called her to the prisoner's room.

At length she brought the sheet of paper, on which this sketch was drawn, to Manuel, and laid it before him. She did this without any accompanying word of explanation. In the foreground was the garden, stretching up the slope of the hill towards the top, where the fort-wall began; beyond, fort, barracks, settlement,—and still beyond, the sea. The island of Foray, as thus represented, appeared like many other views on paper, very pleasing and attractive. Nature is not responsible for sin and suffering, that she should veil her glory wherever these may choose to pitch their tent.

The prisoner took the drawing from the table where she had laid it, and scanned it closely.

"You have left out my house," said he.

"There was no room for it," she answered.

"True!" He understood her. "Do you know whom this is for, Mr. Manuel?

"Whom is it for, Elizabeth?"

"For Madeline; is it a pretty view?"

"Really for her, Elizabeth?"

"Surely. Her eyes shall look on the same view as yours."

"The fort, flag, sea-wall, burial-ground, ocean, barracks, garden; —it is well done.—Now I will tell you of the place where it will find her."

He paused a moment ere he began that description. He looked at the quiet figure of the child for whom he dared recall the past. She stood with folded hands, so fair, so young, the sight was a refreshment, and a strange assurance always, to his weary eyes and weary heart. Never did she look so lovely to him as now when he was about to speak again to her of his life's love for another.

"It was once a magnificent estate," he began.

"Oh, is she a grand lady?" broke from Elizabeth.

"Yes, a grand lady. You speak well," replied Manuel, with a smile. "The estate was once ten times as large as this island. Towns and villages are built over the land now, but the old house stands as it has stood through ten generations. There she lives. If she stands by the library-window today, she can see the church built by her great-grandfather, and the little town of Desperiers, which had in his day a population of tenantry. She can see the ponds and the park, and a garden where there are hothouses, and graperies, and conservatories, and winding walks where you might walk all day and find something new to surprise and delight you at every turn. There is a tower that commands

a view of fifty miles in one direction. The old house is full of treasure. She is mistress of all,—the only representative of a long line of noble men and beautiful women who have dispensed magnificent hospitality there. The last time I saw her, Elizabeth, she was standing in the library, a woman so beautiful and so strong you would not have thought that trouble could approach her. It came through me. I opened those ancient gates for the black train, —I, who loved no mortal as I loved her! But I lost her in my fight for Truth. Shall I complain? Her heart was with mine in that struggle. Cannot Truth comfort her?"

"She is not lost to you. Sir,—you are not lost to her," cried Elizabeth, in a voice as strong as breaks sometimes through dying agony.

"I know," said he, more gently. His thought was not the same as hers; he was taking refuge in that future which remains to the loving when this life wholly fails in hope.

"You shall go back to that old place, Sir! You shall—you two—shall forget all this!"

The prisoner smiled to hear her,—a sad smile, yet a sweet smile too. He did not despise the comfort she would give him, nor resent her presumptuous speech.

"As when I dream sometimes," said he, gently,—"or in some pleasant vision. Yes, that is true, Elizabeth. I have been back, and I shall go again."

Vehemently now she broke forth. It was love defying the whole universe, if the whole universe opposed itself to the sovereign rights of love, the divine strength and the divine courage of love. —"You shall go on board some vessel, a passenger; you shall see with your own eyes; your hands shall be free to gather the sweetest rose that—ever blossomed in the world for you. Mr. Manuel, do not look so doubting,—do not smile so! Am I not in earnest? Do you not hear me? As God lives, and as I live, I will do what I promise. Why, what do you think I am here for?"

Wondering, doubting if he heard aright, Manuel looked at Elizabeth. The painful, kindly smile, the incredulity, had disappeared from his face; the power and confidence of her words seemed to persuade him that at least she purposed seriously and was not uttering mere wishes. It might be the enthusiasm and generosity of a child that inspired her speech, but its determination and gravity of utterance demanded at least a respectful hearing.

"What do you mean, Elizabeth?" he asked.

"I mean that I will go home and explain, and you shall be set free."

He shook his head. "There is nothing to be explained," said he. "I am not here by mistake. I am very clearly guilty, if there is guilt in doing what I am accused of. The hearts of those who condemned me must be changed, and their eyes opened, or I shall never be set free."

"God chooses humble agents," she said, humbly. "David slew Goliath, and he was but a lad. He will open the way for me, and by me change the hearts of those who condemned, and by me open their eyes. Therefore I shall go,—I shall surely go. Ah, Mr. Manuel, give me the picture! It is all that you shall have of the island of Foray, please Almighty God, when these doors are all open for you, and your hands are free, Sir, and we tell you to come, for the vessel is waiting!"

She went out from the room while these words took solemn possession of the place. She locked the door behind her;—no requirement of law was to be neglected or withstood; she made him a prisoner whom she would set free;—and from this interview she went away, not to solitude, and the formation of secret plans, but, as became the daughter of Adolphus and Pauline Montier, she went quietly, with that repose of manner which distinguished her through almost every event, back to her mother's chamber.

There stood Adolphus Montier, drummer to the regiment, jailer to the prisoner, father of Elizabeth,—loving man, whichever way you looked at him. He had his French horn in his hands, and was about to raise it to his lips; in a moment more a blast would have rung through the house, for Adolphus was in one of his tempestuously happy moods.

But his daughter's entrance arrested his purpose. Say, rather, the expression of her face performed that feat. He saw, likewise, the paper which she carried, the pencilled sketch,—and he

followed her with his eyes when she crossed the room and placed it on the mantel under the engraving of the city of Fatherland. This act took the parents to the fireplace, for discussion and criticism of their daughter's work, and of the two homes now brought into contrasted connection.

"But you have left out the prison," was the comment of Adolphus.

"I am glad of that," said Pauline.

"But it is part of the island."

"It ought to be left out, though," maintained his wife.

"Where would you keep *him*, then?" asked Adolphus, a broad smile spreading over his face. He knew well enough what the answer would be.

"I'd set him adrift," was Pauline's reply, spoken without the least pretence of caution.

"Hush!" said her husband; but that was because he was the jailer. He laughed outright close on this admonition, and asked Elizabeth if she expected him to make a frame for this picture to hang opposite Chalons.

"No," she answered, "I am going to take it with me."

"Where now?" asked the parents in one breath.

"Oh, home,—Chalons."

This reply seemed to merit some consideration, by the way the eyes of Adolphus and Pauline regarded their child. They did not understand her;—her meaning was deeper than her utterance.

"To Chalons?" repeated Adolphus, quietly.

"Home?" said Pauline;—it was almost the sweetest word she knew, almost the easiest of utterance.

"You have promised me a hundred times that I should go. Did you mean it? May I go? You wish me to see the old place and the old people. But the old place is changing, and the old people are dying. Soon, if I go to Chalons, it will not be your Chalons I shall see."

Dumb with wonder, Adolphus and Pauline looked at one another. To be sure, they had done their best in order to excite in the breast of Elizabeth such love of country as was worthy of their child, and such curiosity about locality as would constrain her to cherish some reverent regard for the place of their birth, the home of their youthful love; but *never* had they imagined the possibility of her projecting a pilgrimage in that direction, except under their guidance. They could hardly imagine it now. Often they had talked over every step of that journey they would one day make together; the progress was as familiar to Elizabeth as it could be made by the description of another; but that they had succeeded in so awaking the feeling of their child, that she should seriously propose making the pilgrimage alone, passed their comprehension.

"You know," said Adolphus, with a shrug, "your father is an officer, and he cannot now leave his post. Are you going to take your mother along with you?"

He said these words at a venture, not certain of his ground. He was not kept in suspense long.

"My mother must not leave you," answered Elizabeth, greatly agitated, and yet speaking strongly, as one whose will exceeded her emotion.

"Then you go alone?" asked Adolphus, shortly. He could not understand her, and was thoroughly vexed that he could not; mysteries were not for him. "What is the matter? is it the prison? Wife!" he turned to Pauline, but, as he looked at her, his perplexity seemed to increase, as did his impatience also.

Wife and daughter evidently were not in league against him; she, the mother of his child, shared his anxiety and doubt. Tears were in her eyes, and he had only been impatient!—she had passed so quickly to an apprehension that was grievous, Adolphus stood the image of dismay. Those three, so entirely one, seemed to have been thrust apart by a resistless evil Fate who had some malignant purpose to serve.

Not now for the first time did Pauline see that the young face before her was pale, and grave with a gravity once unknown to it. It might be, that, for the first time, she was asking herself outright

if this prison-life was to serve Elizabeth as it had served the wife of Laval,—but not for the first time was she now visited by a foreboding that pointed to this fear.

"It is the prison," said she.

"Elizabeth, is it so? Is this house going to be the death of you?" asked Montier, abruptly,—referring the point with stern authority, to the last person who would be likely to acknowledge the danger of which he spoke.

"If you think *so*, papa and mamma, I must give up the voyage, just to prove that you are mistaken," answered she.

"Look at her, Adolphus!" said Pauline; "remember what she was a year ago! She's not the same now. I can see it. Strange if I could not! Young people are different from old. I thought this place would never seem like home to me, but I found out my mistake."

"I knew you would," said Adolphus, quickly.

"Of course it is the place for me, on the prisoner's account. I hate the prison just the same, though. But if I was mistaken, so was Elizabeth. She thought it would seem like home to her;—it never has; it never will. But I do not think there is a chance of our being kept here long by poor Mr. Manuel. Adolphus, I am for Elizabeth's going home."

"Colonel Farel and his lady are getting ready to go in the next vessel," said Adolphus, as if in a sleep, or as though his power of speech opposed and defied him in its activity,—so bewildered did he look at his wife and daughter.

"Oh, then, may I go? It is only out and back. I will not be long away.

Then we shall all go some day together, and never, never return."

"That is my wish," said Pauline; "isn't it yours, Adolphus?"

"Yes!" And this answer was given by a man who was neither asleep nor bewildered, but by one who had put himself out of sight, and was thinking only of others.

Adolphus had not been as blind as Pauline must have supposed him when she bade him remember what their daughter was a year ago. He, too, had seen that the bloom was fading from her face, and by many a device he had striven to divert the gravity, descending upon her, from taking possession of her. Pauline's words revived every fear, every anxiety he had felt for their child. Generous as impetuous, he saw now only one thing to be done, one result to be accomplished. Elizabeth must sail in the next vessel, and he was not the man to know another quiet moment till that vessel hove in sight. That was his way; why hesitate a twelvemonth, when a moment sufficed for a decision, and the good and happiness of others were concerned in the deciding? And it was not merely his way, as has been made sufficiently apparent,—it was his wife's way, and his daughter's.

Yet fain would Pauline have entered now upon a discussion of what remained to be done; she could have gone on from this point at which they suddenly found themselves standing so wistfully; she would have made, in advance, every needful preparation and arrangement for Elizabeth, up to the time of her return. But Adolphus was in no mood for this. He must go and see Colonel Farel, he said, by way of excuse, —and he must see the doctor. It would have been a dangerous experiment, had Pauline persisted in the endeavor to discover how much he could endure. Montier felt that he was not fit for family deliberation now, and wisely made his escape from it.

"I know," said Pauline, when she and her child were left together, "I know why it is the best thing in the world for you to go on this voyage,—but—I do not know how you came by the sudden wish to go, —or if it is sudden, Elizabeth."

No demand,—no confidence required,—not a request, even, to enter into any secret counsel with her child. But that child saw the relation in which she stood to the loving woman by her side, whose eyes were gazing into her eyes, whose love was seeking to fathom her heart, and she answered humbly, and with confidence,—

"I am going to your old home, my mother,—and to see if it is true that Manuel is to die here in this abhorred prison. It is my secret, —it is my errand. I trust you, for you love me; oh, love me,

my mother, and trust me! I dare not live, I cannot endure my freedom, while he is wearing out his life in a prison. Am I ill? Has it worn me to see him, this year past, dying by inches? I am glad of it,—I am proud of it! Now I will see if there is any pity or justice among rulers."

Pauline Montier was confounded by this outbreak. She had expected no such word as this she heard. It terrified her, for she was a loving woman, and she thought she heard in the voice of her daughter the voice of a woman who loved,—the impassioned, daring voice of one whom love incited to action such as sober reason never would attempt. She repented already the words she had spoken to her husband. She had no power then, could not prevail then, or the misgivings which sent Adolphus weeping into the wood, and not in search of doctor or colonel, would have drawn him back to her side, and against their love and their authority this girl had not prevailed. A question trembled on her lips. But how should she ask it of her child? She could not ask it of her child,—but as woman of woman. The simplest and the shortest speech was best; and far away were curiosity and authority.

"Elizabeth, do you love this prisoner?"

The answer did not linger.

"He is dying,—a noble man perishing unrighteously! Oh, my mother, in that land there is a lady waiting to know why the arm of the Lord so long delays! He shall not die a prisoner! She loves him,—*he loves her*. I will give them to each other. Only keep him alive till I come."

"My child!"

"Why do you weep?"—but Elizabeth, so speaking, bowed to the floor by her mother's side, and wept with her, and the tender arms maternal clasped her close; and the girl did not see when her mother's eyes looked upward, nor did she hear when her mother's voice said, with a saint's entreaty, and a lover's faith, "O Saviour!"

That night Elizabeth went for the tray which her father had left in the prisoner's room when he carried him his supper. No danger that Adolphus would stand to gossip now with any man, for a moment. His heart was sore at the prospect of his daughter's departure, at the prospect of actual separation, every feature of which state of being he distinctly anticipated; and yet he would have scorned himself, had he thrown in the way anything like the shadow of an impediment to her departure from Foray. So far from that, he was already doing everything, in act and thought, by which that going might be made more certain and immediate.

Elizabeth found the prisoner sitting before his untasted supper. She went up the room at a rapid pace.

"Strength does not come of fasting," said she, as she glanced at the table.

"Appetite does not come of torpor," was the reply, spoken almost as quickly; he seemed to be echoing her tone. She looked at him surprised; so much energy of speech she had not expected of him, and never before had heard.

"I must wait for the tray," said she; and she took her usual stand by the window. "Eat something to please my mother,—she will be so troubled."

At this he took his spoon and tasted the porridge, which had grown cold in the dish before him.

Now, as she stood there waiting, a curious state of mind was that through which Elizabeth passed. When he answered her greeting, it was with less apparent weariness, less exhibition of sad indifference to all things, than usual,—with some animation, indeed; not at all as one speaks who is dead to every hope. And with this utterance, which on any other day would have lightened the burden Elizabeth bore, a new darkening of the spirit of heaviness seemed to fall upon her. She knew that by her he must have come to—whatever hopefulness he had; and she would give him freedom that she might see his face no more!

"There is no crucifixion without pain." It is never with a light heart that man or woman attends his or her own immolation. There is awful terror in the triumphs of the divine human nature. If, indeed, *Suttee* is noiseless, superstition and force have stifled the voice of the widow.

And therefore the words which Elizabeth only by an effort restrained, as she crossed the prison-threshold, could come from her now by effort only. If she had found him drooping, despairing, utterly cast down,—no hinderance then to a full utterance of the heroic purpose which death alone could dampen or defeat! But now some strength seemed in himself—and liberty would give him to others, of whom he could not think as quietly as he could think of her. Could she, then, better afford to weep than to rejoice with him?

Before he had pushed away the table and its contents, before time constrained her to speak, she said,—

"I promised you something, Mr. Manuel. You remember what. I may go tomorrow. So tell me, —how shall I serve you best? Tell me now; something may happen; and I wish my work to be clear."

The prisoner started from the table at these words. He hastily approached the quiet speaker, his face brightened not more by hope than by wondering admiration.

"What do you mean?—tomorrow? I am waiting, Elizabeth."

"Colonel Farel and his lady are going home. He has leave of absence. I have spoken to my father and mother. I have told my mother everything. She knows that I am going to visit your relations as well as hers. Tell me how I shall find them. Tell me what I must do. You shall have freedom, if woman can ask or man can give it."

She had advanced a single step towards him, in thus speaking. She stood now with hands folded, quiet, waiting his answer.

"Noble girl!" he began; then he paused. Full of reverence was his gaze.

"Do not praise,—direct me," she said, hurriedly. "I know what I shall say. But to whom shall I say it?—Yes, I will find her whom you love. I will carry balm across the sea to heal her breaking heart. *I* will join together whom,"—here for an instant she hesitated, then began again,—"whom God has joined, whom man dared separate. Direct me, Sir."

And there she stood, waiting. Who sighing beholds her? No pusillanimity there; but on the very heights of danger, which none other than the bravest could have gained, dauntless and safe, let her stand and fight her battle. So strong, yet so defenceless, so conspicuous for purpose and position there, the arrows rain upon her, —yet not one is poisoned to the power of hurting her sacred life. Listen, Elizabeth, while he speaks of *her*! Deeply can his voice grave every word of direction; not one wilt thou lose! Chosen of the few from among the many called, go, woman to love, and hero to endure, —yea, if thou must, as gentle and dauntless martyr, to die before the stronghold thou wouldst summon to surrender!

Later in the day the prisoner heard Elizabeth singing, as not rarely he heard her,—for, knowing that the sound of her voice was pleasant to him, and that its cheerfulness cheered him, she had the habit of frequenting with her songs that part of the house in which his room was. The prisoner heard her singing later in the day, and thanked her for the grace, but did not catch the words whose sound swept past him. It was an ancient hymn she sang,—one that she often sang; and that she sang it this day of all days, I copy here the first verse:—

"Sing, my tongue, the glorious battle,
  With completed victory rife,
And above the Cross's trophy
  Tell the triumph of the strife,
How the world's Redeemer conquered
  By surrendering of his life."

* * * * *

The Drummer's Daughter has crossed the sea,—has landed on the shores of Fatherland. She has even parted from her fellow-voyagers at the station whence the coach shall take her on to Chalons, that venerable town and well-beloved, where the lives whence her own sprung were born and blended. She is in the land of wonders, of meadows, vineyards, gardens, lakes, and rivers, and of cattle feeding on a thousand hills,—among the graves of millions of men, among the works of heroes and of martyrs, in the land of mighty towns, of palaces, of masters, and of slaves, where a great king is building the great palace which shall witness, centuries hence, the dire humiliation of his race.

Of all the crowds and companies that hurry to and fro from one end of the land to the other, Elizabeth seeks only two persons. It is not to her father's native town that she is drawn by the superior attraction. She passes Chalons in the moonlight. When the coach stops at the inn-door for a change of horses, she keeps her place, —she acts not with the quicker beating of her heart. She looks about her as they drive through the silent streets,—out on the moonlit landscape when they have passed the borders of the town; she sees the church-towers, and the old buildings, and the river whose windings she has heard described so often by the voices that once talked of love all along its borders. Chalons is dear to her; she looks back with tearful longing when the driver hurries on his horses as they pass into the open country. But she has no right to wait on her own pleasure,—to verify her parents' calculations when they talk together, by the fireside in Foray, of her journeying through Fatherland.

No,—each sunrise appoints him one more day of imprisonment and exile! Every sunset leaves him to one more night of cruel dreams which morning shall deride! And while this can be said, what has Chalons, or any other spot on earth, that it should lure her into rest?

The higher powers sometimes convey their messages and do their work after a prosaic fashion. It was no uncommon thing for a young girl in neat raiment to stand waiting admittance before the door of the Château Desperiers. Hospitality was called upon in those days not so often, perhaps, as benevolence; and for its charity the chateau had a reputation far and wide; the expectation of the poor perished only in fruition there.

Into the library of this ancient mansion Elizabeth Montier was ushered by the old gray servant. There she might wait the return of his mistress; at what hour the return should be anticipated he could not undertake to say. His counsel to the stranger was, that she had better return at a later hour; but when Elizabeth said it was impossible, that she had come from a great distance to see the lady of the place, and must await her return *there*, he led her without further parley to the library, and left her.

And from its lofty windows, at her leisure, she might now look down upon the prospect Prisoner Manuel had described. When she crossed the threshold of that room, she knew where she was; left alone, she looked around her. There he once had stood; there he had parted from Madeline Desperiers; from that last interview he had gone forth to long captivity! She stood by the lofty, narrow windows, to see what he had seen when standing before them,—that town the ancient Desperiers laid out for his tenants in the ancient days,—the church, the pond, the park,—the garden, so vast, and so astonishing for beauty, the gazer scarce believed her eyes. And she remembered beds of flowers under a prison-wall, and who that day looked on them.

He had said that the mistress of this grand domain was a soldier's daughter. He had said that she was a grand lady. A soldier's daughter had come here to hold an interview with her! A drummer's daughter, a girl from out the barracks and the prison of Foray, was here!—A strange light, so strange that it seemed not natural, broke from these reflections of Elizabeth, and illuminated the library. It fell on the great bookcases that were filled from floor to ceiling with books which cost a fortune, on the great easy-chairs black with age, on picture and on bust, on the old writing-stand, the more modern centre-table piled with newspapers and pamphlets, on the curious clock that told the hours with a

"silverey voice." It fell, too, on a portrait that did not often greet the gaze even of such as found access into that room,—a portrait of him for whose sake she was here, having compassed land and sea.

When she first saw the picture, she was sitting in one of the chairs beside the table,—her eyes had taken cognizance of everything but that,—and of that became aware so strangely that she could not at first persuade herself of the nature of the mystery that took such hold of her and possessed her so wholly. A proud and glorious vision, it rose up before her, emerging from the shadows of the alcove where it stood. This was not Manuel, not the wan prisoner of Foray,—but her heart needed none to tell her it was the hero who had loved the lady of this château in the splendor of his manhood. She saw it, and saw nothing more,—the prescience of her soul was satisfied. As he was, she beheld him now;—was it safe for her to sit there gazing at that likeness?

The old servant, who now and then walked up and down the hall, perceiving that the stranger was sitting quiet, with her eyes generally in one direction, was satisfied that she should prove so patient with this long delay in his mistress's return. He knew not what occupied her eyes or thoughts, —fancied, may-be, that she was numbering the books of the library, or engaged in some equally diverting occupation.

At last came Madeline.

Learning from the servant in the hall that a young person waited her return, and had waited half the day, with a patience that was evidently proof against time, the lady proceeded at once to the library.

Elizabeth, who heard the arrival, and the approach, arose and stood, waiting the meeting. In her hand she held a paper scroll, the drawing of Foray, which she had brought to aid her in this interview.

It was, indeed, a royal person upon whom the eyes of the Drummer's Daughter fell,—a person whose dignity and grace held at a distance even those whom they attracted. Nothing short of reverence could have dictated the movement of any noble mind that had to do with her. She was the Sister of Mercy, whom the whole country round about knew for the most righteous Desperiers of them all. The noble line was ending nobly in her pure and lofty and most gracious womanhood. She was the star of society, if the "sweet influences" might only be bound,—no comet, no fiery splendor of intellect or passion, but a pure light that would still shine through all paling, and enter with its own distinct ray into the last absorption.

She approached to meet her guest with a kind and frank expression of regret that she should have been kept waiting so long.

Beholding her, remembering him, strong even through her sense of impotence, Elizabeth unrolled the pencilling of Foray. The moment during which she was thus occupied passed in silence; then she looked up and spoke, with the coldness in which her embarrassment and emotion sought disguise.

"I came here with a message,—on an errand," said she; "and I have come so far, that, finding myself really in this house, I did not like to leave it again till I had seen the lady I sought. I knew that it would give you pain, if you could know the whole."

"Tell me the whole," was the reply, spoken with evident and encouraging approval of the stranger's mode of address; and the lady sat down in the great chair on one side of the table. "Be seated; tell me your wish."

"It is to serve you," said Elizabeth, a little proudly. "I have not come to ask favor for myself or mine. I came across the sea for you and him."

She spoke now with vehemence, and as she spoke glanced at the portrait in the alcove. Quickly the eyes of Madeline Desperiers followed hers. How had this stranger managed to discover what was so securely hidden from the observation of ordinary eyes? She did not even suspect the light which had illumined that dim recess, and made it brighter to the gazer than the bright garden even.

"This is Foray," said Elizabeth, exposing now the token that would instantly make all plain and equal between them. "I should have sent it to you, Madam, when I wrote; but there was more to be done,—and so I came. I am Elizabeth Montier. I am a soldier's daughter; so, he said, are you."

The lady's answer was not at first by speech. She arose, swiftly as light moves she moved, and brought her guest up to the window of the shadowy room. Well she scanned the face of Elizabeth.

"Truth," she murmured. "It was you that wrote. You are Truth. You speak it. Blessings on you! Blessings descend upon you from all the saints and heroes who have moved and suffered here! Do you come from him,—Stephen Cordier?"

How proudly and how tenderly she spoke that name! To hear her soothed the heart of Elizabeth Montier,—soothed her, and made her strong.

"Is that his name?" she asked, pointing to the portrait. "We call him Manuel." She paused a moment, but not for an answer. Before Madeline could speak, she went on,—

"If you can hear me, I will tell you of him, and why I am here."

"Tell me all. I can bear to hear anything that you can endure to tell.

You are his friend. I claim you for mine, too. You came to find me.

Speak."

This was the utterance of a calm self-knowledge. By what she had endured, the woman knew what she could yet endure.

Without pause Elizabeth now spoke. Without interruption the lady listened,—listened while this young stranger told the life of the past months, in which he was concerned,—of the garden where she worked and he walked,—of her father, the musician,—of their old home near the barracks, and the new home in the prison,—of the day when he first told her of his country and his love,—how for him she had written the letter, repeating oftentimes in the narration the very words he had used,—of his gestures, his looks;—she was thoughtful of all.

How strangely intelligent in all her communication! Ah, if it was eager love that hearkened, it was thoughtful love that spoke!

The story, as she told it, was brief; but the voice never faltered in telling the tale, and the eyes of Elizabeth, with constant scrutiny, were upon her listener. She was satisfied, when, having said all, she paused, and had now no further fear for her own heart's integrity or of the listener's constancy.

A long silence followed her speech. At length said Mlle. Desperiers,—

"I see it all. You are God's messenger from that other world. I have believed too little. You are truer and wiser than I. Lead me, dear child! Shall we go to Foray? I will sail with you tomorrow, if you say so. Better a prison, with him, than all this freedom, so alone."

"He must be set free, first," said Elizabeth. The manner of her speaking, her look as well as her tone, might almost have been taken for a rebuke. Madeline might pardon that.

"I have said so," she answered, mildly. "I have tried to move heaven and earth. I was but a feeble woman. Still it is a consolation to know that I have done everything my wit or my love could devise, and not stopped at what looked like extravagance or indelicacy. What further, Elizabeth? The man who is now in power, and through whom alone the king can be reached, will grant him liberty"—

"*He will*?"

"At a price that would take away its value from him."

"What is that price?"

"My life. He wants me for his wife,—a purchase, you perceive."

Elizabeth Montier did not heed the scorn and bitterness of these words, as Mlle. Desperiers spoke them. The blood in her veins seemed turning to fire,—it swept through her body and brain like the flood of a volcano,—and she thought, she who knew the prisoner's life, and all that captivity was to him,—

"Coward and selfish, that will not instantly give up her life for his!"

A very dismal satisfaction, that the woman he loved best should so prove unworthy of him! The horror of that satisfaction, its humiliation and its pain, sufficiently attested to the poor girl who endured it that her soul's integrity remained secure. As if for a personal conflict with an enemy, she started to her feet.

"It must not be!" she exclaimed.

And, far from suspecting to whom the words were addressed, to what the speaker closed her eyes, rebuking her pure heart, the lady answered,—

"Then, unless he outlives this tyranny of power, he will die a prisoner, Elizabeth. I will go with you to him. I can die with him. God, certainly, does not require me to stay here longer, for He has sent you to me."

"He has sent me for *him!*" exclaimed Elizabeth. "I am here to make him free." She did not add, "If I were you, my life for his!" but again, in spite of her, she thought it, and a terrible strength of pride possessed her at that moment.

"Speak on," was the eager, tremulous response. "You are here to set him free, God knows; but at least I believe wholly in you. What will you do, Elizabeth?"

"Go to the officer tomorrow. Tell him everything that is to be told.

If he is human"—

"That is what I doubt. He knows what petitions I presented and caused to be presented to his predecessor."

"You?"

"I?—who but I? Do you think I have been idle, or that I have left anything undone that I could think to do? Child, the sun has never risen on me since I saw him last! They say I am dead to the world. But they who say it know not how terribly true their words are. Shall I tell *you* how many times, when the weary days have come to an end, I have said, in the morning I would make that loathsome bargain with General Saterges, and in the morning God's grace, as I believe, has alone prevented me? Do you think that it is because I love myself better than him, that I have not bought his freedom at this price? It is because I know him,—because I am sure that liberty at such price would be worthless to him. I cannot torture him with the belief that I am unfaithful, nor suffer him to look on me as a sacrifice. We can endure what God allows. Trust me. You have done so bravely, you are yourself so true, believe in me. I am really no coward. I am not a selfish woman."

"Forgive me," said Elizabeth, most humbly. Her pride had left her defenceless in its flight. If there was not now the true, brave, generous woman to lift and proclaim herself from the humiliation of her mistake, alas for her!

The woman was there,—ready and true,—was there. Humbled, yet resolute, she spoke,—and in her speaking was the triumph of a spirit that should never again surrender its stronghold of peace.

"You must direct me, Madam. Show me how I shall find this minister. I will speak then as God's servants spoke of old,—trusting in Him. If the man will not hear me, then I will conduct you to Foray. You shall see Mr. Manuel. You can live—with us. My mother's heart is kind, and my father is a soldier; we shall all love to serve you. Let us take courage! They cannot prevent us here. You could endure exile for him?"

"Exile? Ah, how do you shame me! All these years I might have"—

"No," said Elizabeth, hurriedly. "Never till now. You could not. The way was not open till this day. Love, too must have its servants. I am yours and his. I trust in God. In His time he has opened His own way."

By Mlle. Desperiers's management, Elizabeth without difficulty obtained audience, the next day, of the chief ministerial power of the realm.

I shall attempt no pictorial description of that interview. The men of authority know best how often women come into their presence, burdened with prayers for the pardon of those who have justly,

or unjustly, fallen under the displeasure of the powers that be. From high station and low Love draws its noblest and most courageous witnesses, and the ears of the officials are not always deaf.

The case of Stephen Cordier was of sufficient importance to come under discussion before the governing power as often as that power underwent a change in person or policy. Twice petitions in his behalf had been presented,—once by the lady of Château Desperiers in person,—petitions that were in themselves the proudest praise of him, the greatest honor that could be conferred upon him. They had fallen powerless to the ground.

The old man, statesman and soldier, now holding office, had, before he came to this position, knowing the interest and the kind of interest taken by Madeline Desperiers in the petitions presented, volunteered his name to the last document, mentioning, though with due deference to the fashion of the world, the price at which it was to be procured,—her hand. His name had just the weight that would have made the other more honorable names successful in their pleading. What sort of success was to be expected, now that he occupied the passage to royalty? Elizabeth Montier crossed the threshold of the apartment where the old warrior and statesman sat amongst books and papers, without dismay ruling by pen and voice, as confident in himself, when he took up these weapons, as in the former time of sword and powder.

His practice was to receive all petitioners,—all should have audience. But he made short work of business. Never were affairs dispatched with more celerity, seldom with less conscience. At a glance his keen eye read, to his own satisfaction, the state of every case,—and he came to his own conclusions. His requirement was, that the petitioner should be self-possessed and brief,—which requisition, hinted by the doorkeeper, and reiterated by the General himself, had not always precisely the effect intended.

The fault was not in Mlle. Desperiers that she had proved so unsuccessful in her petitions, as has been made sufficiently clear. General Saterges had found in Stephen Cordier a powerful antagonist in action. He had moved to power through the very paths which Stephen Cordier had attempted to lay waste. He upheld the faith against which Cordier had preached a crusade. The old warrior regarded the young thinker as a personal enemy. It was hardly probable that he would very energetically strive to procure the reversal of a hard sentence in behalf of such a man.

As Adolphus Montier's daughter came into his presence, she had not the bearing common to such as appeared there with intent to plead for the life or liberty of those they loved. A sense of the sacredness of her mission was upon her. She had cried to God, and she believed that He had heard her. Where do the possibilities of such faith end? "Time would fail me to tell of Gideon, and of Barak, and of Samson, and of Jephthah, of David also, and of Samuel, and of the prophets; who through faith subdued kingdoms, wrought righteousness, obtained promises, stopped the mouths of lions, quenched the violence of fire, escaped the edge of the sword, out of weakness were made strong, waxed valiant in fight, turned to flight the armies of the aliens. Women received their dead raised to life again; and others were tortured, not accepting deliverance, that they might obtain a better resurrection; and others had trial of cruel mockings and scourgings, yea, moreover, of bonds and imprisonment; they were stoned, they were sawn asunder, were tempted, were slain with the sword; they wandered about in sheep-skins and goat-skins, being destitute, afflicted, tormented. *And these all, having obtained a good report through faith, received not the promise*."

She had considered well what she would do and say, and did not forget and was not confounded when she stood before the old man, knowing her time had come. Calm and strong, because so bent on accomplishing her purpose, and so conscious of her past secret weakness, of her suspicion and cruel judgment, as if she would here atone for it, she took stern vengeance of herself.

General Saterges recognized at one glance the evidences of a strong and determined spirit. When she had crossed the room and stood before him, he requested her to be seated,—and it was the first time that he had made such request of such visitor.

Declining the civility, Elizabeth stood, and told her errand. She had come across the ocean, she said, to plead the cause of a poor prisoner who was dying under sentence of the law. She paused a moment, having made this statement, and was answered by a nod. Prisoners often died without reprieve, he seemed to be aware. This cold civility warmed the petitioner's speech. Her mother would have been satisfied, Madeline Desperiers would have been overwhelmed with grief and horror, to have heard this young girl's testimony in regard to prison-life. The old man, as he listened, sighed unconsciously, —for not every nerve in him was strung to cruelty. To one of his restless career what image of life more dreadful could have been presented than was in this testimony? To be shut away from human society so many years, patient, resigned, receiving the few comforts yet allowed him! —to live on, pure in spirit, lofty in thought, hoping still in God and man! The old warrior in self-defence, because she brought the case too vividly, the life too forcibly before him, broke through the words she was speaking, interrupting her.

"Who is this person?" he asked.

"Stephen Cordier," was the answer. Without hesitation, even proudly, she spoke it. She had compelled him to ask the name!

"And who are you?" he asked; and if he felt displeasure, as if his sympathy, of which he was so chary, had been stolen from him, he did not allow it to appear.

"Elizabeth Montier," she replied.

"That is no answer. What is a name, if it conveys no meaning to my mind?"

"I am the daughter of Adolphus and Pauline Montier. My father is a drummer in the military band of Foray. He is also present keeper of the prison where Stephen Cordier is confined."

"Very well. Does he know your errand here?"

"He does not. He let me come to this country,—it is his native land, and my mother's,—he let me come because in his heart he has always loved his country, and he has never been able to return. We were to have come back together. But there was an opportunity for me. I dared not wait. So I am here,—and for nothing, Sir, but this man's liberty."

Those last words she spoke seemed to quicken the thought of General Saterges. He drew himself up still more erect in his chair. His eyes were on Elizabeth with the will to scan her heart of hearts. He spoke, —

"What is this man to you?"

She paused a moment. And she, too, had a thought. She could play a game for life. She looked at the old man, hesitated, answered,—

"He is everything."

"Just let me understand you," and he looked upon her as if *he* might touch her secret. "Do you love Cordier?"

"I love him," she answered, with exceeding dignity, evident truthfulness.

"Do I understand you?" he said again,—"what are you to him?"

"Everything," she again replied, with perfect confidence and faith. Was she not liberty and the joy of life to him? If liberty and joy were ever to be his portion, they must come through her. So she believed, and thus answered.

"Does he love you?"

"Yes."

"You speak with great assurance. I know the man better, I'm afraid." Then his voice and manner changed. "He is sentenced. Justice passed that sentence;—to reverse it were the work of imbecility. Speak no more. It is not in man to grant what you ask."

He was trying her in her last stronghold,—proving her in her last depth.

"Is this your answer?" she asked. And indeed, after what had just passed between them, it did seem incredible.

The old man bowed. He seemed now impassible. He was stern, and hard as rock. He believed that he had wellnigh been deceived,—and deception practised successfully on him would have disgraced him in his own eyes forever. He believed, what he would not trust his lips to utter, that this applicant was Madeline Desperiers's agent. When he bowed and did not answer, a fear came down upon Elizabeth that almost took away her power of speech; that it did not quite deprive her of that power rendered it so much the more terrible for the anguish of its emphasis.

"Do women kneel to you when they ask the pardon of those they love?" said she, with a paling face. "What shall I do to move you? What have I not done? I trusted, that, having come so far, on such an errand, it must be that God was my leader. Am I mistaken? Or dare you withstand God? Tell me,—you are an old man,—have you no pity? Have you never had a sorrow? Can you not see that I never could have come here to plead for a bad man's life? Must I go back to see him die?"

"Madam, you are standing where I cannot come to argue with you. Pity and justice have their respective duties to perform. Oftentimes pity may be exercised, and the claims of justice waived; in the case of the man you plead for, it is simply impossible."

He had risen in displeasure to pronounce these final words. When that word "impossible" smote her as a sword, he touched a spring in the table, a bell sounded, Elizabeth went forth,—the audience was over.

She went not with tears, but self-possessed, imperious in mien, strong in despair. Coming into the presence of Madeline Desperiers, it was not needful that she should speak to make known the result of her audience.

"Have you learned when the vessel sails?" was her first question. It was her reply to the lady's glance,—a glance for which there were no attendant words in all the language.

"Tomorrow, Elizabeth."

"Are you ready?"

"I will be."

"Then I will give you to him. I promised that, too. I can fulfill that, at least. You must not think the prison-walls too dreary. My mother"—

"I understand, Elizabeth."

And they sailed on the morrow. No delay for wandering among the meadows of the pleasant town, for gossip with the men and women who were in childhood playmates of her father and her mother; no strolling along lovely river-banks. Chalons had nothing for Elizabeth; only one green nook of all the world had anything for her,—an island in the sea,—a prison on that island,—and there work to do worthy of Gabriel.

But—wonder of wonders!

Paul and Silas sang songs in their prison, and the jailer heard them; then there came an earthquake.

Who was he that found his cell-doors opened suddenly, and a messenger from out the courts of heaven there to guide his steps?

History is full of marvellous records; I add this to those. The eleventh hour goes always freighted with the weightiest events.

On board the vessel that carried Elizabeth and her charge back to Foray went a messenger commissioned of the king. He took from court to prison the partial pardon of Cordier. Liberty, but banishment henceforth. Stephen Cordier should be constrained to faithfulness towards his new love. Doomed to perpetual exile, he should be tempted by no late loyalty to Madeline Desperiers. The new acts of his drama should have nought to do with her. Justice forever!

Rascal that he was, according to the word of General Saterges, it was rascality which the General could pardon. He had gained many a victory in desperate strife,—now one other, the last and most complete: the kingdom's fairest star to shine among his honors! The proclamation of Stephen

Cordier's pardon would instantly make broad the way to Château Desperiers. She came of a proud race, and he reckoned on her pride.

Let us not glory in that old man's defeat,—for he died ere his enemy received, through Elizabeth Montier, life, and the joy of life. Let us not call him by an evil name to whom the nation gave so fine a funeral,—but rather pause to listen to the music that comes forth in royal glory from the harmonious world of Adolphus,—and turn to look with loving reverence, not with doubt or wonder, and surely not with pity, on the serene face of Her Grace, the Drummer's Daughter.

WORK AND REST

What have I yet to do?
  Day weareth on,—
Flowers, that, opening new,
Smiled through the morning's dew,
  Droop in the sun.

'Neath the noon's scorching glare
  Fainting I stand;
Still is the sultry air,
Silentness everywhere
  Through the hot land.

Yet must I labor still,
  All the day through,—
Striving with earnest will
Patient my place to fill,
  My work to do.

Long though my task may be,
  Cometh the end.
God 'tis that helpeth me,
His is the work, and He
  New strength will lend.

Конец ознакомительного фрагмента.