Chiriqui Improvement Company.

REPORT

OF

CHARLES S. RICHARDSON,

CONSULTING ENGINEER.

CHIRIQUI IMPROVEMENT COMPANY.

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NEW YORK:

R. C. ROOT, ANTHONY AND CO., 16 NASSAU STREET.

1857.

CHIRIQUI IMPROVEMENT COMPANY,

NEW GRANADA, S. A.

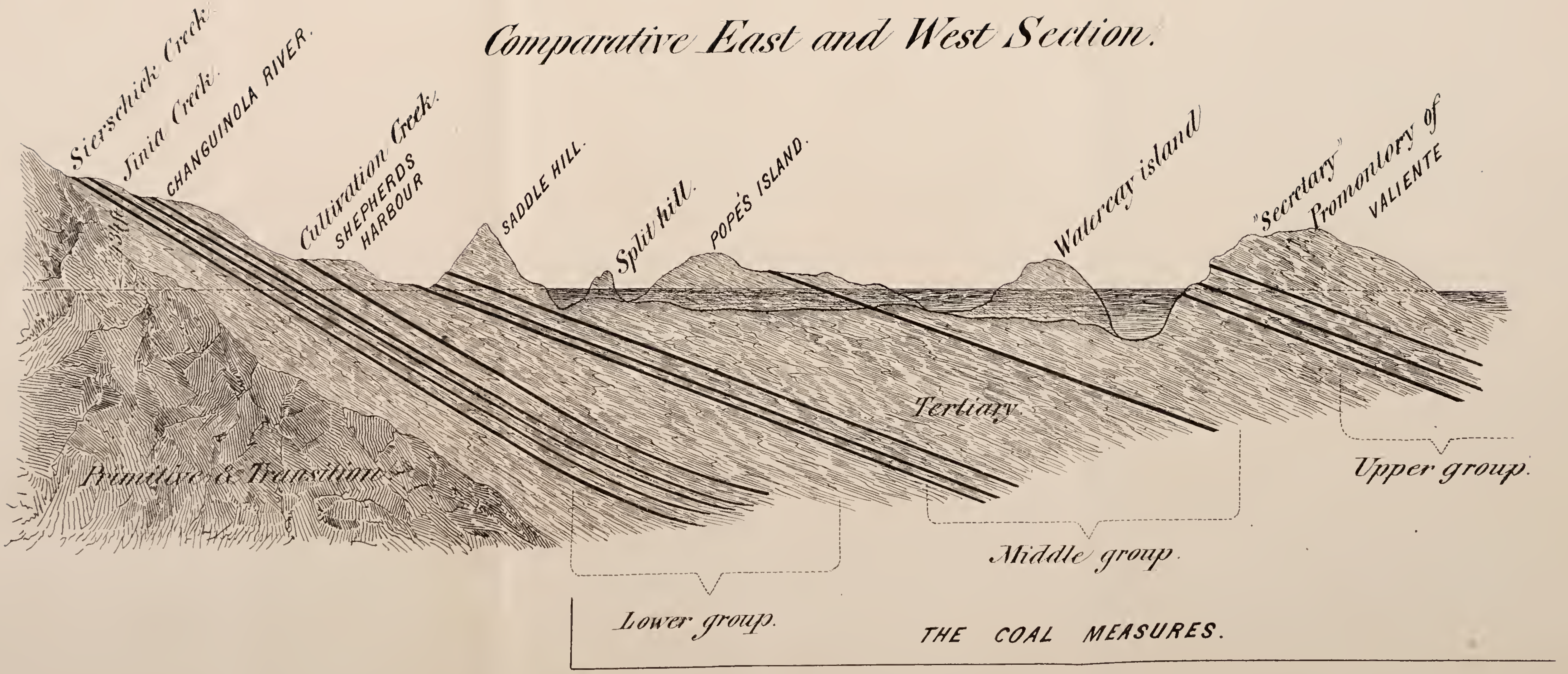
President and Directors—Gentlemen :—

In reply to the question submitted by some of the members of your honorable Board—What is likely to be the opinion of practical English engineers on the merits of your undertaking ?—as one of that body I respectfully beg to say : That if the facts are borne out as given in the Reports, Maps, and other documents laid before me, they must be unanimous in its favor. The specimens of coal sent for examination are very positive in their nature, they admit of very little doubt as to the quality and productiveness of the seams from whence they were taken ; if you could furnish me with a descriptive vertical section of the strata, and approximate the position of the "Faults," Slides, Dykes, Troubles, &c., peculiar to this formation, so that I might arrive at some definite conclusion as to the cause and probable effect on the measures by these disturbing phenomena, I should be able to decide with greater certainty on their relative value, but in the absence of such information I will proceed to give you my views as deduced from the Report of Professor Manross, your Geologist.

The system, no doubt, is the early Tertiary, from its fossil index; at all events the upper part of it is. The course of the measures, as delineated on the map before me, is in a north-west direction. Twelve seams of coal are represented in them, commencing at the eastern end of the Lagoon and terminating in the Sierschick Creek on the Changuinola river in the West, a distance of about fifty miles. These seams mostly dip at an angle of 20 degrees to the north-east or under the sea See Fig.1. On the west they are 10 or 12 miles wide before they reach the sea, in other parts not more than 2 to 5 miles wide. I shall denominate them as three groups of coal seams, and class them as the Upper, Middle, and Lower series; the superficial area cannot be defined, as the line of junction of the primitive with the secondary formation is not delineated on the map. This is much to be regretted, inasmuch as it would identify the local position of the lower seams, and thereby in all probability enlarge the present supposed dimensions of this magnificent coal field. But, take it as it is, you will find quite sufficient coal to meet the requirements of five millions inhabitants for the next 400 years, for as near as I can estimate there must be at least 300 square miles or 192,000 acres of surface underlaid by coal, and each acre, at the very lowest computation, will produce 10,000 tons.

Prof. Manross says there is great uniformity in the character of the rocks that line the coast, consisting

Comparative East and West Section.



of sand and limestones, but their dip or inclination is not regular. Now this must naturally be expected, being in the vicinity of volcanic mountains, although upheavals are not always an index of those plutonic phenomena; he considers the variety of inclination to be the result of intruding ridges of trap. I presume he means Trap or Elvan dykes, unless they are Trap Ranges, like those at Paterson, New Jersey, and Mount Holyoke in Massachusetts, which repose *on the* sandstone formation; if like these they will in no way materially break the continuity of the seams, but if caused by protruding dykes they will produce "faults."

In setting out your colliery operations care must be taken to ascertain the locality, dip, and bearing of these dykes; this once known, a great deal of difficulty to the miner may be avoided; the works may be prosecuted with more certainty, progress with greater speed, and arrive at a successful issue at less than one half the usual cost. I have examined three specimens of coal; two of them are what we term semi-bituminous, and known in South Wales as Cardiff Steam Coal; one specimen is of a ligneous nature; its relative position, in situ, may be readily identified, it may justly be called a wood coal; its fossiliferous properties are very distinct, it is the newest or upper one of the series; I think this is from "Secretary" top seam. No. 2 specimen taken from Popes Island and Saddle Hill, is strongly bitumenized; it belongs to the middle group; I think it will coke when mined from a depth of 20 or 30 fathoms. This specimen as an outcrop coal is most excellent: I never should desire a better: it gives all the indications of belonging to or coming from a rich seam. Outcrop coals, on account of their long exposure to water and atmospheric action, lose by evaporation a great portion of their most valuable properties, hence very little reliance is to be placed on their value by analysis. It is a very common error in persons having the idea that the real value of a coal field can be determined by samples of the outcrop; in the present instance the specific gravity given is only 1.270. I presume this is calculated from some of the poorest specimens, for among some that I have tried there is one as high as 1.375. The average of the analyses given in your reports is as follows:

Volatile parts, - - - -	35,705
Carbon " - - - -	57,955
Waste and ash, - - - -	6,340
	100,000

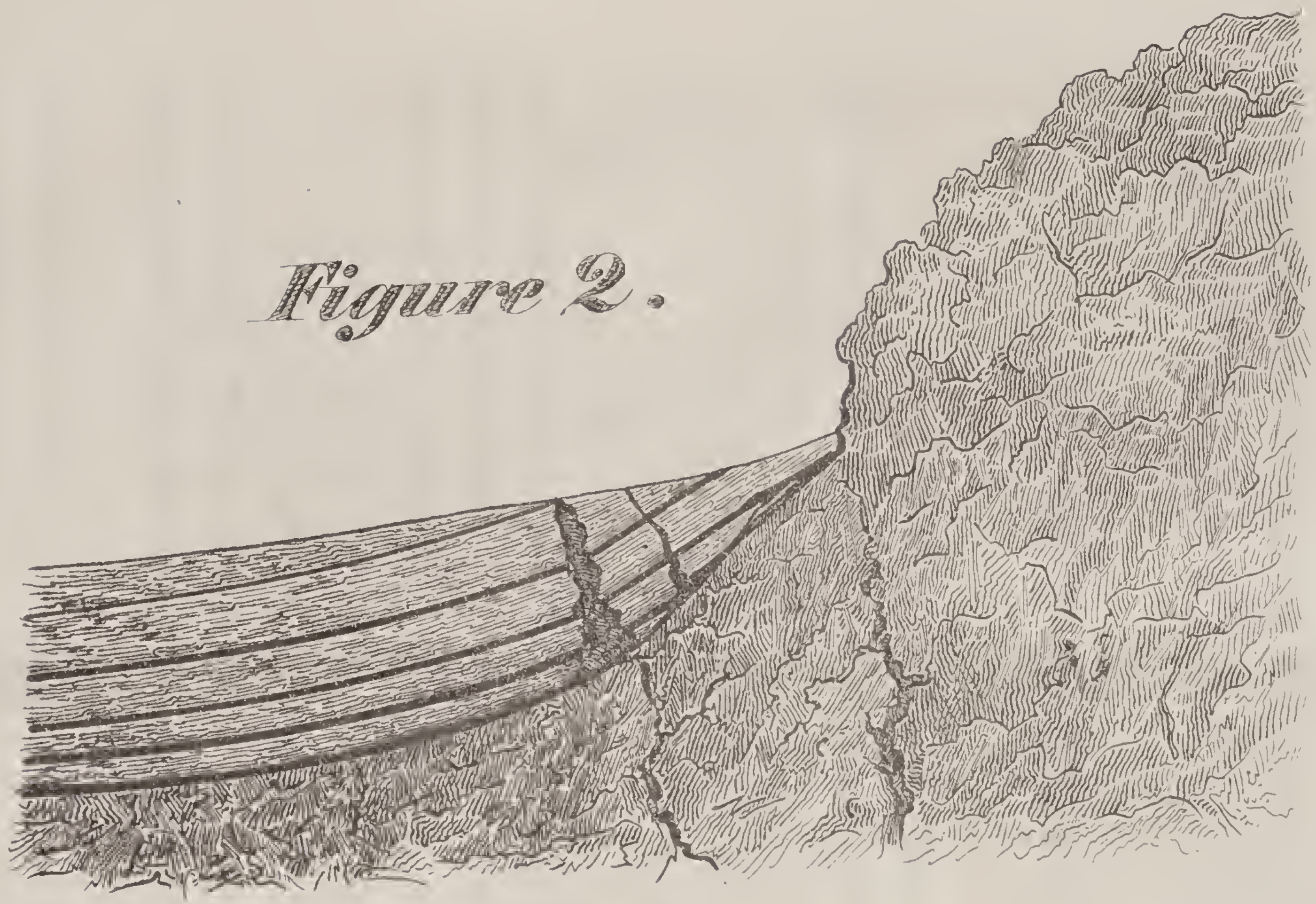
In publishing the results of this assay, you do not give justice to even the outcrop Coal you have in your possession. I know of a surface seam in the Taff valley, South Wales, similar to this, it is a little below New Bridge: it is again cut at Pont-y-prid 30 fathoms deep, where it produces some of the finest upper seam, steam coal that is now sent into the Port of Cardiff. It may perhaps be considered premature, and I may err in my predictions: but I do say—and say it too, without *any fear* of contradiction—that the produce of the Seams of the middle series will give an equivalent to 75 per cent. of Carbon. No. 3, or lower group—are opened on in the Sierschick and Jinia creeks, on the Changuinola river; about 10 or 12 miles inland from the coast, there are 4 distinct Seams, the upper one of which is cut in Cultivation creek on the south shores of Shepherds' harbor. These are the richest specimens, and fully decide the character of the coal that will be found in the lower seams of these measures, and I have no hesitation in saying they will very nearly, if not quite, equal the Welsh Steam Coal. I have not time to spare just now to make an analysis of all the samples, but at some convenient period I will do so; for I think a perfect knowledge of the real properties of these Coal Seams very interesting, not only as in application to, or for your own particular advantage—but on public grounds, for they must eventually become of immense value to the Steam marine of all the Eastern and Western nations: their geographical position is all that is desirable. They are in fact, to use a trite phrase—"the right coals in the right place." The quantity of merchantable coal that may be produced from these three series of seams can be computed with sufficient accuracy from the data given by Prof. Manross, the result of which is as follows:—

"SECRETARY"—upper group—3 seams opened on —respectively 4 feet, 6 feet and $2\frac{1}{2}$ feet thick—$12\frac{1}{2}$ feet soft, open coal, say 75 lb. to the cubic foot, making $3\frac{766}{1000}$ tons aggregate per superficial yard of seam: allow 25 per cent. for waste in working, and it gives a net produce of 13,672 tons to the acre; it is reasonable, however, to suppose these seams will become more contracted in depth on account of compression, but then the coal will have an increased density which will equalize the difference between weight and bulk.

Popes Island and Saddle Hill—middle group—6 distinct seams, from 2 to 5 feet thick—average 20 ft. aggregate—specific gravity said to be 1.27 = 79.37 lb.—say, fractions omitted, 80 lb. per cubic foot; now as some of these seams appear to be "Thin Coal," one third must be allowed for waste in working, which at 80 lb. gives $6\frac{428}{1000}$ tons to the superficial yard of seam, less $\frac{1}{3}$ equals 20,740 tons to the acre.

Changuinola—lower group—from the description given, there appears to be a greater depression in the strata here than at any other point: the angle of dip being over 30 degrees. These seams are thinned out at the edges; by this, it would appear to be the selvage of the measures. I think it very probable, as the upheaval of the primitive base, which without doubt is constant in its action, although imperceptible to our visual senses, would first fracture the edges of the coal formation and tilt up its strata. See fig. 2. There have been 9 seams found here, ranging from 1 to 3 feet in thickness. I will, however, reduce them, to approximate their value, to three; and set their aggregate thickness at 10 feet. This is the finest coal yet seen, particularly the specimens from Cultivation creek on the

Figure 2.



shores of Shepherds' harbor, which is one of this group; it is very compact and will weigh 82 lb. to the foot: in its broken or merchantable form 54 lb. to the foot—bulk in stowage 38 feet cube to the ton; allowing again one third for waste in working and pillar, the net product will be 10,630 tons of salable coal to the acre.

How near the Saddle Hill group will approach the above, can only be ascertained by an instrumental survey, but I entertain an opinion that many more seams intervene between the lower and middle series. There will also be found in "Robalo" river the same seams as are opened on at Sierschick, unless this part of the formation has been entirely denuded by the action of the sea. Now if we may judge by analogy, there ought to be under the middle group one or two seams of a much greater thickness than any yet seen; and I would advise you to direct your engineers' attention to this important feature, as it will materially improve the value of the entire property.

MINING OPERATIONS.

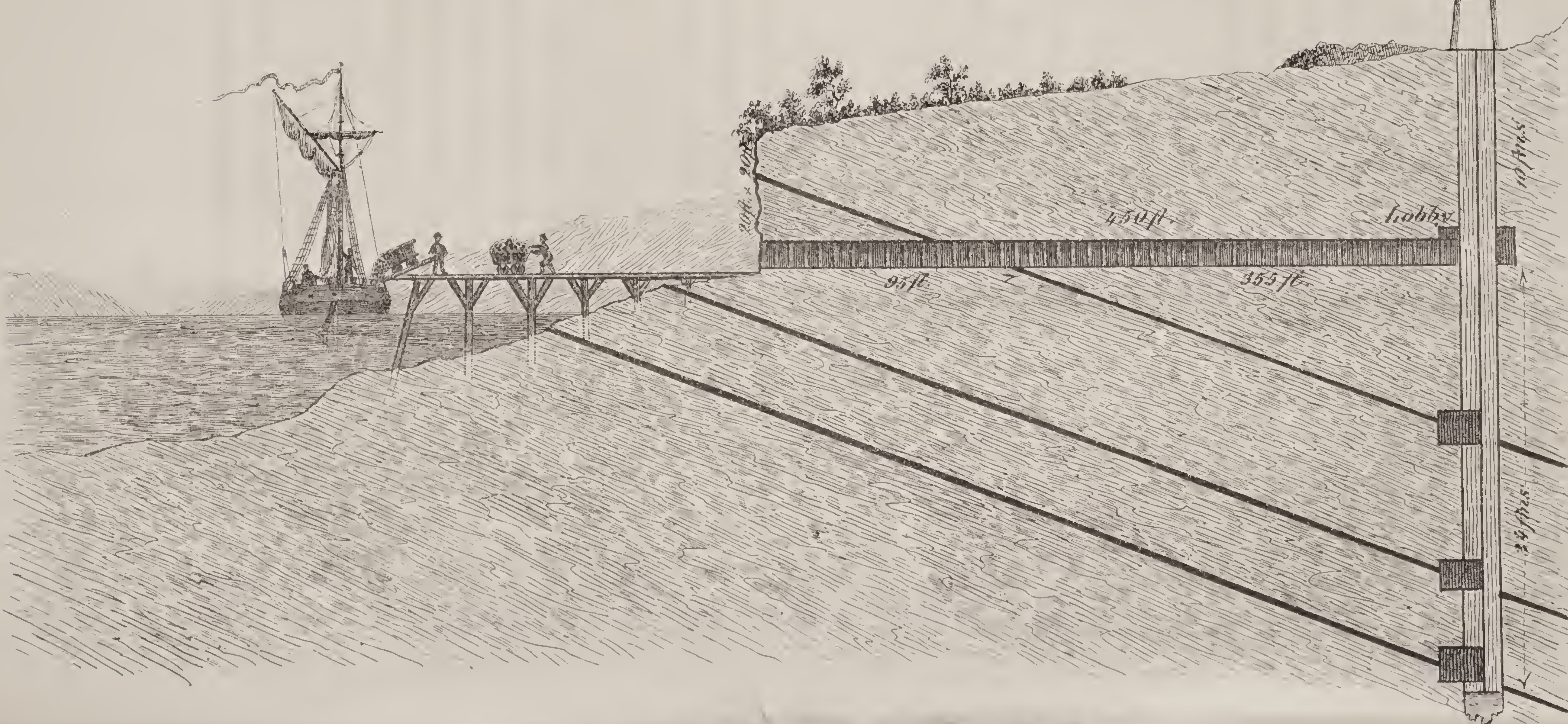
I shall not be able to give you a very good outline of the cost of this part of the works, as the description you have sent me of the formation is so curtailed and vague, as scarcely to allow me scope enough to form an opinion, but to illustrate the matter, I will adopt an imaginary case.

At "Secretary" the cliff is said to be about 40 feet high above the beach; midway up, or 20 feet from its base, a seam of coal is seen outcropping, there is another on the beach a little way below the cliff, and another some few feet under water; let us suppose the distance between the upper and lower seams is 40 feet; a cross section of the strata through the cliff would present the seams as shown in the following sketch. Fig. 3.

At the first commencement of your mining operations there must be some exploring drifts run in, to prove the dip and range of the seams—one of those, if properly located, may form the future adit, or main drift of a considerable work: it must be kept up high enough above high water mark to avoid the heavy swell of the ground sea, during the prevalence of the "Northers." The seams dip at an angle of 20 degrees; you will perceive this level intersects the upper seam at 95 feet from its entrance, all the others lie below. You may commence taking away coal from this point, if you like; it may do very well for domestic use, and may be mined at a profit perhaps. But if you take my advice, you will not offer any of it for sale, for the generation of steam on board the Atlantic steamers; if you do, a risk is incurred of having a bad name given to your coal at the onset. I can furnish you, if desirable, some lamentable instances of errors of this kind. This main exploring drift becomes the future level course; the main intake and wagon road; it should be 12 feet wide, and driven across the strata for 150 yards; in its course it will intersect in all probability other seams, but whether it does or does not, this

Figure 3.

Comparative Section.



will be far enough for the commencement of a small colliery. You now commence at the surface, and sink a shaft of sufficient size to become the future upcast shaft of the entire mine, say 16×9 within the timbers; this is divided by bratticing into two equal parts, half of which is for the pump and uptake, or ventilating shaft, and the other for the winding-shaft. A large plat or lobby is cut at the end of main drift, wherein is built a ventilating furnace, and securely walled off air tight from the intake; or if a Shaft-fan, Steam-jet, Radiating grate, Disk pump, or other modern contrivances are introduced, the furnace may be dispensed with altogether. But whatever mode of ventilating the mine is to be adopted, a strong steady current of air at the rate of 5 feet per second, or 20,000 cubic feet per minute, must be kept up, and constantly coursing itself through all the workings. I must here remind you that this is a very important matter, and one on which the success and profit of your future mining operations will greatly depend. Your workings, you may perceive, are all on the rise, gases will accumulate here in the goaf unless the current is pretty strong; you have at the very onset to make provisions for working a fiery seam—the coal is of a nature to promise this any how. The only way to avoid accidents, is to be prepared for them; the saving of five dollars in the shafts and drifts at the beginning, will cost the company \$95 when the first man gets killed by fire damp. Look for instance at the dreadful explosion a few months ago at "Aberdare Colliery," South Wales.

Now take a piece of their upper seam coal, and your middle group coal, put these two together, I should like to see the man who could distinguish the difference. If Aberdare coal produces the explosive gas, "called carburetted hydrogen," why should not yours? I say it now—before you have sunk a fathom on any of the seams, that at 40 fathoms deep you will have fire damp to contend with, but this does not depreciate the value of your mines. All good coal gives off gas. You have only to lay out your works in a proper manner at the onset to meet these contingencies; to the practical engineer they are very plain and simple, to the uninitiated very complex. There are many hundreds of colliery owners, who have had to pay dearly for winning coal without having paid due regard to ventilation; and to all new beginners in this most valuable branch of mining enterprise I would say: consider well the old adage, from the "faults of others learn to correct your own failings." When the winnings are first made by the shaft intersecting the seams, a headway course is driven out right and left at a gently ascending grade; bords or stalls may then be commenced as fast as the headways progress. Coal is now ready for hauling; it is sent up by a skip, or by the wagon and cradle, the latter in all cases preferable; landing on the lobby it is run out by the main drift on the pier or platforms on the beach, screened and put on shipboard. The shaft, from the adit upwards, is only used for ventilation, and hauling such coal as may be required for the use of the steam engine. The quantity of coal that may be returned, will depend on the extent of the workings; within twelve months after the first seam is won, from 80 to 120 tons per day may very easily be raised. This, I consider will be quite extensive enough for a commencement. Other collieries may be opened out as fast as the trade increases or the requirements of the company want them to be brought into play. To open this mine, and put it into a good state of working for permanency and safety, will amount to about the following cost :—

160 yards Main Drift, ...	$15 00	$2400
300 " Headway Drift 1st Seam, / 300 " " " 2nd " / 300 " " " 3rd "	3 00	3600
800 " Stallway course, - - - -	2 50	2000
Lobby, - - - - - - - - - -	2 50	200
10 fathoms Shaft down to adit, - -	1 20	1200
34 " " to 3rd Seam, - -	1 50	5100
1600 yards Stall tramway, - - - -	1 50	2400
150 " Main drift or adit, do. - -	2 50	375
34 fathoms pit work complete, - -	75 00	2550
20 Horse Power Steam Engine, - - - -		4500
Wagons, Mules, and Harness, - - - - - - -		1000
Pit-head, Drums, Ropes, Cradles, - - - -		1000
Engine house, Ventilating Furnace, - - - -		1000
Buildings, Cottages, Screens, &c., - - - -		6500
The Pier or Jetty, timber-framed, - - - -		700
Freight of materials, - - - - - - - - - -		1500
Engineering, Contingencies, and Miscellaneous Expenses, - - - - - - - - - - - - -		3975
		$38,000

In the absence of any accurate knowledge of the ground through which the sinkings and drivings are to be conducted, the preceding estimate is not to be considered positively reliable, yet with ordinary good luck in their execution they may be near enough for you to form a calculation of required capital.

"WORKING COST,"

if reduced to the simple ton, will be about as follows, although I may say it is a very vague and uncertain way of making an estimate:

Cutters (Miners), - - - - - - - - - -		$0 60
*Trammers to shaft, - - - - - - - - - -		04
Hauling by the Engine, - - - - - - - -		08
*Tramming to the Ship, - - - - - - - - -		05
*Screening and shipping, - - - - - - - -		03
Timberman, overman, furnacemen, &c., - -		10
Proportion in shafts, drifts, and dead work, -		10
Accidents, breakages, delays, wear and tear, renewals, &c., &c., - - - - - - - -		10
Royalties or Government dues, -	$0 10	20
Management, - - - - - - - -	10	
Cost per ton, - - - - - -		$1 30

These calculations are based on the assumption that 100 tons a day at least are returned. Native labor is cheap and plentiful, and although the people know

* Native labor from 30 to 50 cents per day.

as yet nothing about mining operations, they can very soon be taught under the instruction of a party of steady miners, who will very soon drill them into useful mine laborers.

With an outlay of from $38,000 to $40,000, you will have a neat, well arranged, and safe little colliery, increasing in value with its progressive development, creditable to its directors, and profitable to all interested.

There are other places on your property that may be opened at a less cost; but if you want good coals and wish to have the public reputation of being able to supply such, you must go down after them. A colliery once opened in the manner that I advise would last for 25 years. Many persons in this country have a notion that, because coal seams crop out at the surface, companies can go and work them with a nominal outlay, and make immediate profits; ask Pennsylvania, Ohio, Maryland, and Illinois the question—the answer will be, it's a perfect absurdity.

THE GOLD DEPOSITS OF CATABELLA.

From the explorations made by Captain Bonner and Prof. Manross, very little doubt can be entertained but that all the streams rising in the ravines and gorges of the Boquete will be found more or less auriferous. The strata also of those mountains are congenial for the production of Gold-bearing quartz veins, but the precedent we have of quartz mining in California and Virginia, shows by its unfortunate results how very precarious are the chances of gain, and that this class of property, however alluring, is in itself of very little intrinsic value. Nevertheless, the streaming or diggings in the alluvial of this placer may attract the attention and stimulate a spirit of adventure among the erratic miners of San Francisco, and if it affords no other good, it will at least assist immigration; apart from this feature, I consider the gold fields totally unworthy of the attention or notice of the company.

THE NEW ROAD.

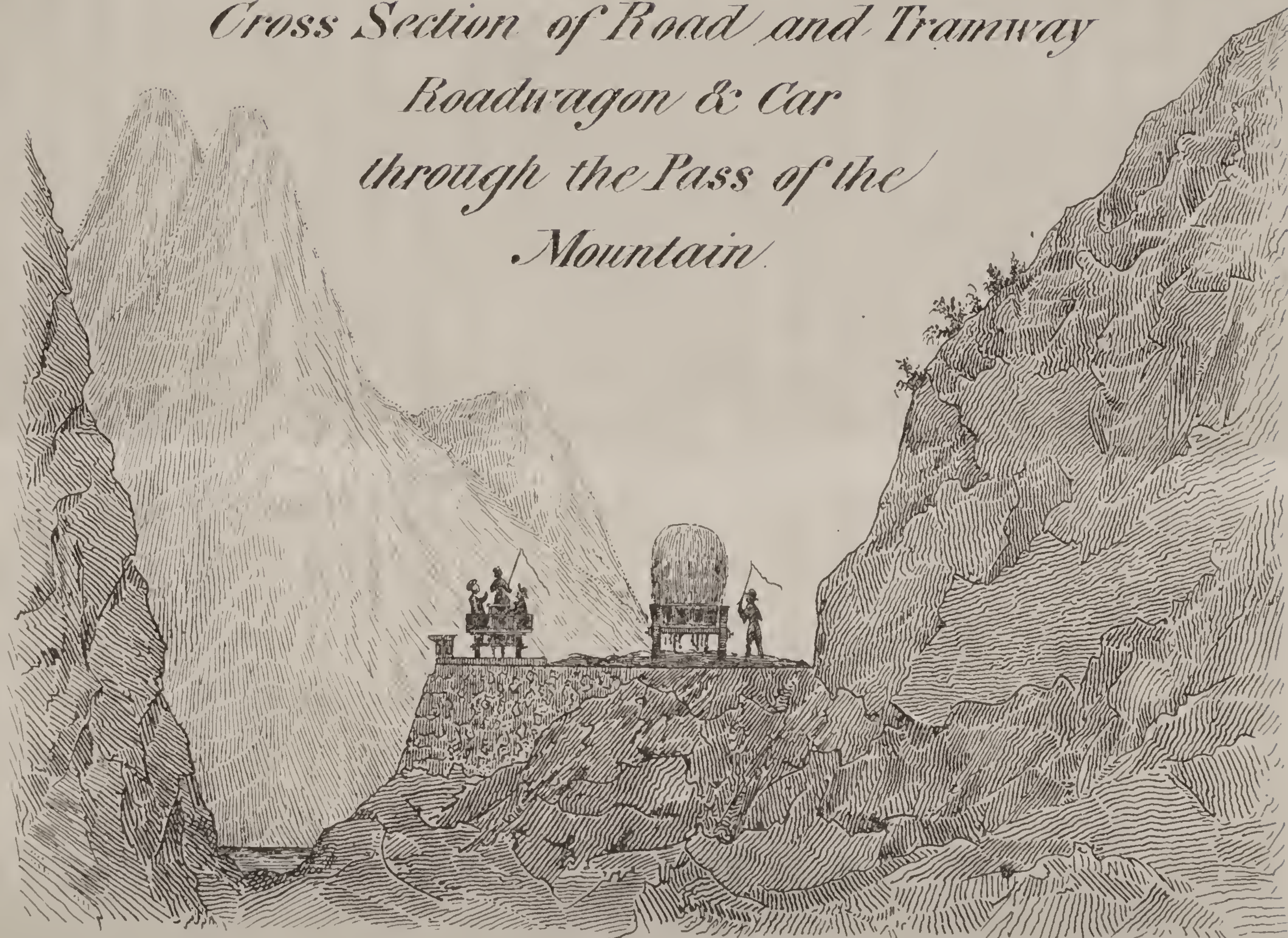
The construction of a macadamized turnpike road appears to be a very simple matter, and so it is when made for the mere purpose of connecting the towns of an Inland State. The world has spoken with wonder and admiration, of the celebrated military road from Shrewsbury through North Wales, across the Menai Straits spanned by "Telford's" stupendous Suspension Bridge, and on through the Isle of Anglesea to Holyhead, in England. Certain parts of this structure were at one time looked upon as one of the seven wonders of the world: it had its day, it was a masterpiece of civil engineering. Thirty years have passed—"Stephenson's" gigantic Britannia Tubular Bridge now stands side by side with the old suspension bridge. Here is a theme for the speculator on the progress of science. I feel a pride in the reminiscence of the achievements of my countrymen. But all those works, in point of utility, sink into comparative insignificance when viewed in juxtaposition with the projected new Road across the Isthmus from Chiriqui lagoon on the Atlantic to the City of David, or to Golfo Dulce on the Pacific. The before named works were exclusively applied to the uses of the people of one country, while the latter becomes the great highway of nations. In their relative values, the one may be said to be individual, while the other is universal.

We have been accustomed to imagine the Cordilleras an impassable barrier except for packhorses or the muleteer; but the reports furnished by Messrs. J. B. Cook & Co., your engineers, Prof. Manross and J. E. Flandin, Esq., Dr. McDowall, and others who have made themselves well acquainted with the geography of the country from ocean to ocean, show there are no engineering difficulties whatever to be encountered in the construction of a turnpike road entirely across. Its average grade does not exceed that of many roads in Virginia and Pennsylvania. The greatest altitude does not appear to be over 2000 feet—the distance from David to the lagoon is 55 miles. From the Pacific side 25 miles reaches the entrance of the pass—this would be only 90 feet to the mile. The next 15 miles are through the passes of the mountain, and if we assume this to be nearly level, which of course it is not, there remain only 15 miles to reach the Atlantic coast at a down grade of 111 feet to the mile. The greatest inequalities of the grades are not more than 1 in 50, to 1 in 65, and these of short duration. I know of several railways in England where some of the gradients are as sharp as this—for instance: On the Southeastern line from London to Brighton and Dover—at the incline at New Cross—again on the great Western from Exeter to Plymouth. In the forest of Dean one of the inclines has a gradient of one in fifty. A powerful eight wheeled locomotive has recently been built to traverse this road with heavy freight trains loaded with coals.

I need not particularize the peculiar features of the route, as it is given you in detail, most likely, by your engineer; but I would say you have not even the shadow of a difficulty to encounter for a turnpike road; and I believe very little for a Railroad. In laying out this main track I would advise your making it wide enough to lay a Tram road by its side. Now at a grade of 150 feet in the mile, a good horse or mule can easily haul on a tram road, a wagon or car carrying one ton at the rate of three miles per hour. With such beautiful hard wood timber as you have, and water power available close to or in the forests, for the Saw Mills, an excellent tramway may be laid for $2,500 a mile. Now as the grade of the country on either side of the mountain chain is flatter than ordinary country roads, the road will be constructed very cheap, and very quickly. You now have only 15 miles that may be considered any way rugged, which is through the pass. This should be laid with a Tramway by the side of the turnpike road. Passengers and all light goods can be transported from the Roadwagons into the Tramroad cars, and run along at the rate of 6 miles per hour to the next

Figure 4.

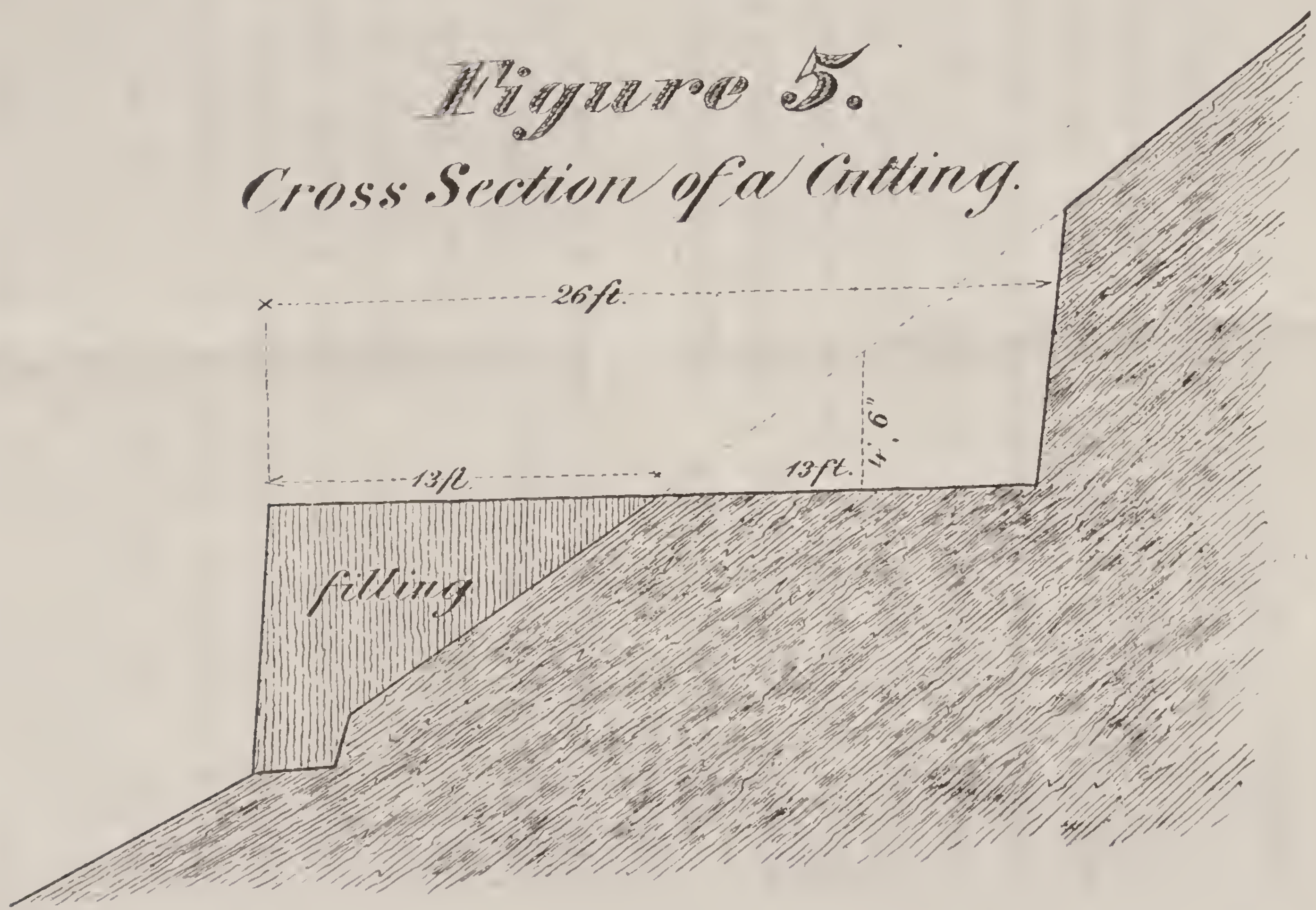
Cross Section of Road and Tramway Roadwagon & Car through the Pass of the Mountain



station, when they again take the road by omnibus or wagon, and travel down hill all the way to the Port. By an arrangement of this kind, and it would not be very costly, I believe the passenger vehicles would run across the Isthmus in 8 hours. The objections that may be urged against it would be the breaking bulk twice on the road; but if any inconvenience is experienced from this, the Tram Cars can be constructed so as to take the Road wagons, freight and all, along with them. At the commencement, a single line of tramroad would suffice, making 4 trips per day: that is to say, two from each side, similar to the Nantle Vale Tram line in Carnarvon. Four relays of horses will be required to work the traffic through; each team working out and home. In Cornwall, where the country is very hilly, Road wagons make 2½ miles per hour, omnibuses 6, and coaches about 8½—each stage is about 12 miles apart. The same thing can be done on your road, and at a far less cost, while the traffic in a short time must become one of very great importance. The sketch Fig. 4 will convey an idea of the proposed plan of Road and Rail. If it could be made convenient, the road should be so graded as to become the future Locomotive Railroad line, as little would then be further required than to do the ballasting and lay the metals; as regards the present cost of construction, the route over the Savannas may be graded and covered for a dollar per linear yard; the price of labor appears to be about the same as in the country districts of England and Wales. I once cut a hill-side road around the Hindhead hills at a little less than 90 cents per yard; but where rock cuttings are required it would of course amount to a good deal more; from what I can learn there will be little or no cuttings until the road enters the pass. Having arrived at this point, I will now take an extreme view of the matter: I will assume the average of the mountain spurs to present an angle of 33 degrees throughout the entire 15 miles, a thing not very probable. The following cross section of the line of route Fig. 5 will show there are only $6\frac{1}{2}$ cubic yards of cutting to the linear yard of Road. This every body knows when put under the direction of competent "Gaugers" (Navvy foremen), can be done for 25 cents per yard. The cost will then stand thus:— $13 \times 4.50 \times 3 \div 27 = 6.5$ yards; $6\frac{1}{2}$ yards $\times 25$ cents $=$ \$1.62½ $\times 1760 =$ \$2860 per mile and \$42,900 for the 15 miles. It is not at all likely the whole distance will average such a depth of cutting as this, some sections will be heavier, but a great many much lighter; many of the spurs and slopes are generally covered by the débris of the mountains in the form of boulders and diluvial gravel, which is easily removed and levelled. There will be 10 timber bridges required of various span, and about 300 culverts throughout the whole route; the former will cost \$3C0 and the latter \$5 each. I am now supposing the strata to be composed of Mica slate, Gneiss, Hornblende and Porphyritic rock. The two first make a good building stone for retaining walls, piers, and culverts, and the latter being full of joints "rips" well

Figure 5.

Cross Section of a Cutting.



with powder and furnishes a good filling material. It must be understood I am forming this estimate without any intimate knowlege of the country; my ideas of its general contour are derived from information conveyed me by Mr. Flandin and the Report of Mr. Cook. The data, however, of the calculations are based on similar works in the mountainous districts of North Wales, with which I have been practically acquainted for many years; I think they will not run far wide of the mark one way or the other. There will be 4 Haciendas, Inns, or Ranchos required on the road—these may be set down at $1500 each; also 10 toll-gates and houses, with about 50 laborers' shanties.

The works at each terminus of the road, I do not consider necessary to take into account in this paper. They must come under a separate estimate, as they involve the cost of constructing Docks, Piers, Quays, Dams, Wharfs, and the first part of a new Town; especial surveys are required, and plans prepared before anything like a definite view can be taken thereon. You probably may have had this already prepared; if so, I can give you the cost of building from the working drawings.

SUMMARY OF THE COST OF THE ROAD.

15 Miles from the Lagoon to the pass	$1,760	$26,400
15 Miles through the pass	2,860	42,900
25 Miles down to David	1,750	44,000
Carried over		$113,300

Brought up, ...		$113,300
15 Miles single Tram-way	2,500	37,500
10 Timber-bridges	300	3,000
300 Culverts	5	1,500
4 Ranchos and furniture	1,500	6,000
10 Turnpike Toll-houses and Gates .	150	1,500
50 Laborers' Shanties	50	2,500
Rolling Stock, Horses and Mules, &c.		7,000
Manager's Dwelling-houses and Offices		2,000
Engineering and Superintendence		4,700
Casualties		1,000
		$180,000

With this outlay you will have a well graded road across the country, and which at any time may be converted into a Railroad ; as it is, it will become the nucleus of the greatest line of road, and one of the most useful, on the American continent.

The country is described as one of the most luxuriant within the tropics; every description of grain, vegetable, fruit and flower flourishes almost spontaneously; its forests produce the finest timber; its rocks are impregnated with the precious metals, and what is far richer, its precious stones—"the black diamonds" of its coal seams; its woods abound with game, its rivers and bays with fish ; its climate the most salubrious—its sanitary condition all that can be desired. No stagnant pools or fœtid deadly swamps exist to spread their pestilential miasmic vapors over the land to contaminate its pure atmosphere.

Its aborigines are a peaceful, sturdy, intelligent, frugal, and industrious race, anxious to learn, willing to be taught, and grateful for favors conferred. The power of that direful bane to colonization, the old Spanish priestcraft, has ceased to exist; a free toleration of all religious creeds or sects prevails; the local government are most liberal in their concessions, and look forward with anxiety for the development of the Company's undertaking.

The Company's property, taken collectively, is one of immense magnitude. The turnpike road is intended merely, I presume, to make a commencement of the transit route, and open up the mineral properties; but no turnpike road can meet the wants of a direct commercial transit route like this, for it must become in a very brief space of time the main line of overland travel between England and her Australian and Eastern possessions; also for England, France, and the United States to China, and the southern and northern ports of the Pacific. At each end of this road will be one of the finest harbors on the coast of either ocean, and most decidedly the best on the Isthmus; from what I have ever read or heard of the two other roads, they do not possess anything like the facilities for economy, comfort, and convenience as this one from Chiriqui. I can see not the least impediment in the way of its becoming the favorite line of travel, and more particularly now since the outbreak of hostilities in Nicaragua, which, settled as they may be in the present case, will be still subject to renewal. In conclusion, I beg to say that all practical men who will take a careful review of your undertaking, must come to the same opinion as I have: that it is one of the finest and most promising enterprises of the day; that it is destined to meet with public patronage; and if you carry it out with energy and spirit, it must redound greatly to your credit, and in a short time yield pecuniary advantages second to none of its magnitude in this or any other country.

I remain, Gentlemen,

Yours respectfully,

CHARLES SAMUEL RICHARDSON,

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