CHAPTER VIII.

ESTIMATES OF THE COST OF THE CANAL—NO. II.

THE so-called "International Technical Commission," which M. de Lesseps took with him to the isthmus, decided that the whole work could be done in eight years instead of twelve, as estimated by the Congress, and made the following calculation of the work itself and its cost :—

Excavation.

		Cubic metres.
1. Under water:	Soft soil	12,105,000
	Hard soil	300,000
	Hard rock	6,786,000
2. Above water:	Soft soil	27,350,000
	Hard soil	825,000
	Hard rock	27,734,000
	Total	75,100,000

Cost.

	Francs.
1. Excavations	570,000,000
2. Damming the Chagres	100,000,000
3. Canalization of rivers	75,000,000
4. Tide lock	12,000,000
5. Breakwater in Aspinwall	10,000,000
	767,000,000
10 per cent. for contingencies	76,700,000
Total cost	843,700,000

That sum is equivalent to £33,748,000.

Now in this estimate no provision whatever was made—(1) for banking expenses nor for administration expenses during the supposed eight years of construction; (2) for interest on capital during the same period; (3) for rebate in the issue of obligations, nor for the preliminary expenses, price of the concession to be paid to the *Société Civile*, and cash to be handed over to the Colombian Government.

M. Wyse, the author of the project, had calculated the cost, excluding the above items, at 427,000,000f., which was, it will be seen, almost *precisely one-half* of the price estimated by the "technical commission" got together by the transferee of M. Wyse's concession.

The International Congress, as we showed in the previous article, fixed the expenses at 1,044,000,000f., including interest during construction and administrative expenses, and in this connection it is interesting to see how the two estimates—those of the congress and of the commission—differed. It is enough to present side by side the figures, as we do below:—

	Congress.	Commission.
Total cubic metres . . .	46,150,000	75,000,000
Total ditto soft soil . . .	17,300,000	39,455,000
„ „ hard soil . . .	5,650,000	1,025,000
„ „ solid rock . . .	23,200,000	34,520,000
Cost of excavations—f. . .	506,300,000	570,000,000
Damming the Chagres—f.	25,000,000	100,000,000
Rectifying rivers—f. . . .	17,000,000	75,000,000
Tide locks and improvements in Panama—f.	23,000,000	12,000,000
Contingencies	25 per cent.	10 per cent.
Total expenses, without interest, administration, banking, &c.—f. . .	765,375,000	843,700,000
Basis for prices per c. m.—f.	2.50, 5, 7, 13, 18	same.

Now, this comparison is most interesting. M. Dauzats, a blind unreasoning follower of M. de Lesseps, burst forth in indignation at the Congress against the "omissions and exaggerations" of the technical committee, which had prepared the estimates (*Compte Rendu*, page 321). He scolded the committee for exaggerating the cubic contents of the cuttings to be made in the hard-rock section, and went so far as to say that the committee did not know enough to allow for the unevenness of the Culebra's summit (*ibid.* page 323). Our readers will now be interested in learning that this same Dauzats was one of the master-minds that signed the report of the technical commission which in a few days found at the isthmus that there were 75,000,000 metres instead of 46,000,000 to excavate, and that of hard rock alone the technical committee of the Congress, *taking Wyse's estimate* (and not its own), had put down 23,200,000 cubic metres, while Dauzats' own commission found not less than 34,520,000 cubic metres.

Leaving aside M. Dauzats' criticism, and rather praising him for having the manliness to sign a report by which the cost of the Panama Canal (deducting interest, &c.) is *higher* than the estimate against which he had warmly protested but a few months before, we will call attention to the following remarks:—

1. The Panama route was selected in view of the *imaginary* surveys of Messrs. Wyse and Reclus, which are at once found to be totally inaccurate. In the canal scheme there were two main things to be considered (once admitted the feasibility of a sea-level canal)—viz., the cube to be excavated and the possibility of solving the Chagres problem, and the expense connected with it. Now, in both those essential things M. Wyse's plan was worthless and baseless. He estimated 46,000,000 cubic

metres; his own Congress, with no technical data sufficiently comprehensive, was obliged to take the same number; but a few months later the more than friendly commission of his own men found 75,000,000. As to the Chagres, the commission found, "after the special studies of M. Dauzats," that the stemming of that torrent was to be done by the construction of a dam and subsidiary channels. What the opinion of Dauzats is worth we have already seen; but as to the price of these works of diverting the Chagres and regulating its flow, while the Congress had estimated it at 42,000,000f., the commission now put it down at 175,000,000f. M. de Lesseps' own commission therefore found—(a) *that there was 63 per cent. more excavation to be made than M. Wyse had calculated;* (b) *that the Chagres would cost 400 per cent. more than was estimated by the Congress.*

2. The second observation which we wish to make regards the estimate of contingent expenses. The Congress had put down 25 per cent. for *contingencies;* but the commission, which had just now more than quadrupled the price of the Chagres improvement as estimated before, was content with a meagre 10 per cent. The United States technical committee, appointed by the Government to revise the estimates for the different schemes of an interoceanic canal, added 100 per cent. to all for contingencies and expenses not foreseen. The friendly Congress selected by M. de Lesseps added only 25 per cent. for that purpose on the estimates; and now M. de Lesseps' commission, while finding that the Congress had greatly underestimated the cube of the excavations to be made, as well as the expense with the Chagres, put down only 10 per cent. This tells its own story as to the utter partiality, incompetence, and carelessness of such a commission.

But we will now revise the Congress estimate of the total cost of the canal *according to the commission's own findings*, such as they were:—

	Francs.
Prime cost, without unforeseen expenses, as per commission	767,000,000
To be added:—	
1. Unforeseen expenses, same low percentage adopted by M. de Lesseps' Congress—viz., 25 per cent . .	191,150,000
	958,150,000
2. For expenses of banking and administration, same as adopted by M. de Lesseps' Congress—viz., 5 per cent.	47,907,500
	1,006,057,500
3. Interest during construction (twelve years, as adopted by M. de Lesseps' Congress), 30 per cent. for the twelve years, as also adopted	301,817,200
	1,307,874,700

That is the estimate, not our own, but which the Congress of 1879 *would have made* if M. de Lesseps had presented it with the results of even some commission like his own, which in 1880 spent forty days at the isthmus. Every one can see why it did not occur to him to send such a commission *before the assembling of the Congress*, in order that the Congress, which was to *decide* that his own route was the best, might at least estimate on a somewhat more approximate number of cubic

metres, and with a clearer idea of the tremendous unsolved problem of the Chagres. Forty days run fast enough, and M. de Lesseps, if he wanted to find out the *real truth* about the Panama Canal, would have done what any careful contractor does everywhere: he would have sent his own reliable engineers to see whether he could honestly give his name to the enterprise. If a contractor gives his time and prestige to any raw scheme such as the Wyse-Reclus, it is because his own profits are secured beforehand, or it is because his own excessive vanity is engaged in it, without regard to the success of the enterprise and to the losses of the multitude who contribute their savings to what they suppose to be a perfectly legitimate undertaking.

The Congress, while estimating the cost at 1,044,000,000f., stated that it had had no sufficient information on the matter. We therefore blame the Congress for having given an estimate at all. However, in justice to its sub-technical committee, we should not forget that it declared in the most solemn manner that *it had not data enough* on which to base a reliable estimate.

But we repeat, if the Congress had had before it *at least* the more than perfunctory figures of M. de Lesseps' own commission, representing the 75,000,000 instead of the 46,000,000 cubic metres which it was obliged to *assume* from Wyse's report, the Congress would have had to estimate the cost of the Panama Canal at 1,307,874,000f.

Now we shall proceed to show that this total is *altogether inadequate*, and such an estimate too low—too friendly to the promoters of the Congress and of the Panama scheme. Let us take up each item.

1. The prime cost, as given by the commission in

which Dauzats was a brilliant light, comprehends only 75,000,000 cubic metres, of which 34,500,000 were in solid rock. Now, at the last annual meeting of the company, in July 1884, M. de Lesseps admitted that there was *at that date* 120,000,000 cubic metres of excavations to be made, including the work of deviating the Chagres, and the company had already, in May 1884, taken away, according to the same report, 5,243,302 cubic metres. If therefore we take 125,000,000 of cubic metres, we shall not err on the side of any attempt to exaggerate the total number. On the contrary, if M. de Lesseps, having first accepted 46,000,000, then 75,000,000, now accepts 125,000,000 as the correct figure when the real work is barely commenced, we may take as *most certain* that we shall soon see the last sum *considerably raised*.

What, then, we assert firstly is, that if the technical committee had had before it the scanty facts even at this moment collected, it would have had to base its estimate on 125,000,000 instead of 46,000,000 or 75,000,000 cubic metres. To the above estimate let us therefore add the difference between the cost of 75,000,000 and 125,000,000; that is to say, let us add *two-thirds* to the cost of excavation, assuming that the material to be excavated is kept up in the same proportion of soft and hard soil and hard rock. The commission of 1880 estimated the cost of 75,000,000,000 at 570,000,000f. This total should in our corrected estimate read 570 plus two-thirds—equal to 950,000,000f.

2. We have now the item of *unforeseen expenses*. The Lesseps Congress fixed the percentage at 25 per cent.; the Lesseps commission, nine months later, fixed it at 10 per cent.; M. de Lesseps himself, a few days after the latter estimate, reduced it to 5 per cent. By and bye, if we wait long enough, we shall see the item disappear-

ing, and *per contra* we shall have a gradual cropping up of something like *unforeseen gains*. We need not say that all this way of handling figures, to the manifest disadvantage of the public, is in keeping with the spirit which has presided over this scheme of the Panama Canal.

The celebrated commission, as we have seen, had to *more than quadruple* the estimated price of the works of the River Chagres; it found that 75,000,000 metres instead of 46,000,000 had to be excavated, and yet the commission reduces the *item* of unforeseen and contingent expenses from 25 to 10 per cent.! "Yes," it may be said, "but *now* that the ground had been carefully looked over, there were fewer contingencies to expect." But this we emphatically deny. The commission was a humbug. It was pledged beforehand to M. de Lesseps, who owned the concession, and who had been unsuccessful in launching his company on the ground that the line had not been sufficiently studied. Besides, except as regards two of its members, the commission was thoroughly unreliable, as the French ought to know by looking over the names of the young men who composed it.

But, as if that unjustifiable reduction were not enough, M. de Lesseps, by an *ukase* of his pen, decided that even 10 per cent. was too much, and made it 5 per cent. Our readers will not be astonished to hear that even to this day the great financial diplomatist affirms that the canal will cost only the original sum that he made up soon after the so-called report of his "commission" was presented to him. That is to say, he is still putting down 5 per cent. for unforeseen expenses, while, instead of 46,000,000 and 75,000,000 cubic metres, he admits that there are 125,000,000!

The 25 per cent. allowed by the Congress seems to us

to be hardly sufficient. The Suez Canal, comparatively easy of construction, and properly surveyed, cost 457,000,000f. instead of the estimated 200,000,000f. Here there was an increase of 128½ per cent. over and beyond the original estimate.

The United States Government Committee, who examined and revised the isthmus explorations and estimates, made (be it remembered) by the most competent officers, some of whom spent *years* in the isthmus, added 100 per cent. to all estimates. This is what a careful contractor should do in dealing with a work of such magnitude in such an inhospitable country, so far from Europe, and having to deal with problems, such as the damming of the Chagres, which have never been properly studied.

Not wishing, however, to be taxed as exaggerating any estimate that should have been made by any set of careful engineers, we will put down as *unforeseen and contingent expenses* 25 per cent. only. The Chagres problem is still unsolved. Nobody knows what is to become of the work that may be done if there should be two heavy freshets during the construction of the proposed dam. Nobody knows what is to become of the canal between Aspinwall and Gatun if (as is assumed by all competent authorities) the swampy land will again flow into the canal. There are thousands of contingencies in such immense undertakings; 25 per cent. is *less than one-fifth of the percentage of unforeseen expenses that befell the Suez Canal.* We, in short, will correct the estimate of the commission by writing 25 per cent. instead of 10 per cent.

3. The Congress allowed 5 per cent. for banking and administrative expenses. That was meant to cover administration in France and Panama, and banking com-

missions, which include the discount offered on securities of the company. Such sum amounted in the Congress estimate to a little over 38,000,000f. Now, that sum was *wholly inadequate*, and there is no difficulty in proving it to be so.

Looking over the *inventaire général* of the year ending June 30, 1883, and furnished to the shareholders at their last general meeting, on June 19, 1884 (these *inventaires*, or balance-sheets, are always produced twelve months after the expiration of each fiscal year of the company), we find the following items:—

	Francs.
Administration in France and Panama .	6,182,707
Comité Américain	1,500,000
Various expenses for the service of the securities of the company	8,089,103
A total in these items of	15,771,810

Now, it must be remembered that the company has only *begun* to get money for its needs. But even if that amount of 15,000,000f. per annum should not be exceeded for ten or twelve years, it is clear that the sum fixed upon by the Congress is ridiculously small, for it would not cover the expenses for three years.

The Panama Canal Company at its very start spent £904,000 before it ordered a pickaxe. That sum comprehended the following expenses:—

(*a*) The first issue of 1879, which was unsuccessful.

(*b*) The cost of M. de Lesseps' travels to the isthmus, with his "commission," and the fees and percentages given to the "propagateurs," or promoters, in France and abroad.

These two items amounted alone to 10,801,577·59 or say £432,000.

Besides that, the company paid 11,800,000f. as (we translate from the official report) "a remuneration stipulated to be delivered to the members of the International Syndicate which had advanced the necessary funds before the constitution of the company." That is equivalent to £472,000; making altogether, as we have stated, £904,000, or 22,600,000f., of which 2,000,000f. were paid to M. de Lesseps and the other *fondateurs*. That does not include, however, the 5,000,000f. in cash nor the 5,000,000f. in paid-up shares which were handed over to M. Wyse and his *société civile* as part of the price of the concession.

So that the company started with an outlay of 32,600,000f., or £1,304,000. But that is not all. M. de Lesseps, in order to stifle opposition in the United States, created in New York a huge fund, and placed at the head of it an ex-Minister of the Navy, Mr. Thompson, thereby compromising the company to the extent of 12,000,000f., payable thus: 3,100,000f. at once, 1,400,000f. one year after the formation of the company, and 1,500,000f. for each of the five following years. These 12,000,000f., together with the 32,600,000f., make 44,600,000f., or £1,784,000—not a small liability to start with. According to the balance-sheet for June 1881—*only four months* after the formation of the company—the sum of 40,444,000f. had been spent, of which only 1,032,900f. in "work." The administration in France and Panama had already cost 1,306,972f., or £52,240.

But as if all those expenses with syndicates, promoters, and administration were not enough, the rebate on the company's securities that have been issued forms a tremendous liability.

The Panama Canal Company has made the following issues:—

Sept. 1882	.	125,000,000f.	discount .	16,425,000f.
Oct. 1883	.	300,000,000f.	,, .	120,000,000f.
Sept. 1884	.	193,692,500f.	,, .	64,693,295f.
Total capital		618,692,500f.	,,	201,118,295f.

Therefore, if in the corrected estimate, as it should have read at the time, we place 30 per cent. of the cost for preliminary expenses, including the concession for syndicates, for the New York Corruption Fund, for rebates on issues of bonds, for administration in Paris, for hospital and administration in Panama, we shall not have exaggerated the true facts.

4. We have now to consider the *interest during* construction. Let us admit the hypothesis, that no insuperable difficulties had been anticipated at the time of making a proper estimate, and that the company had been thought capable of executing nothing less than 20,000,000 cubic metres of excavation each year, against 7,600,000, which is all that it did from June 1884 to May 1885; as the total amount excavated to May was about 12,500,000, there are still left to be excavated 112,500,000 cubic metres, according to M. de Lesseps' own statements, in which we place no confidence, for, we once more repeat, he first mentioned 46,000,000, then 75,000,000, and now 125,000,000 cubic metres. But even the 112,500,000 cubic metres will take say six years from last April, which is just ten years from the establishment of the company. The *best possible* showing would have been to reckon the interest during construction for ten years at the average rate of 4 per cent. on sums spent. In fact, the company is paying 30,497,740f. a year on the sum of 768,693,500f. that has been raised, which is about 4 per cent. Adding a half per cent. more for amortization, we shall have 4½ per cent. to charge.

On the sums already raised the Panama Canal Company will have paid in 1891 about 300,000,000f. of interest and sinking fund. The present estimate of the total cost of the canal works comes to 2,364,000,000f., more than 200 per cent. beyond what has already been raised. Even supposing that the company should raise the remaining 1,600,000,000f. so as to pay the 4½ per cent. charge only for the average of three years on the whole sum, we should have to add 216,000,000f. to the item of interest and amortization during construction, making altogether 516,000,000f., or, if we deduct counter-interest on dormant capital, say 500,000,000f.

Let it be borne in mind that we have not taken into account the compound interest on the money raised to pay interest with, which involves a tremendous outlay.

Now that we have collated all the elements for our calculation, we will present here, *not our own estimate*, but the estimate that the Paris Congress should have made if it had even the scanty facts arrived at after a few months' study by M. de Lesseps.

Estimate of cost of the Panama Canal, such as should have been made by the Congress of 1879.

	Francs.
1. Excavation, 125,000,000 cubic metres (number admitted by the company)	950,000,000
2. Damming the Chagres and canalizing the river (according to M. de Lesseps' Technical Commission of 1880)	175,000,000
3. Tide lock in Panama end (ditto) . .	12,000,000
4. Breakwater in Aspinwall (ditto) . .	10,000,000
Carry forward	1,147,000,000

	Francs.
Brought forward	1,147,000,000
5. Unforeseen expenses, 25 per cent. (The Lesseps Congress in 1879 fixed 25 per cent., the Commission of 1880 only 10 per cent.; the United States Government Commission fixed for the different projects 100 per cent. The Suez Canal cost 128½ per cent. more than estimated.) We leave for Panama 25 per cent., or	286,750,000
	1,433,750,000
6. Administration, banking, cost of concession, preliminary expenses, discount on bonds, &c., 30 per cent, say	430,250,000
	1,864,000,000
7. Interest and sinking fund during construction	500,000,000
Total	2,364,000,000

Such should have been the estimate of the cost of the Panama Canal, taking for granted that—

1. It might be completed in ten years from the commencement of the company;

2. That there were only 125,000,000 cubic metres of excavations as the basis of the present calculation;

3. That the "unknown" problem of the Chagres can be dealt with properly—a problem which is as unsolved at this day as it was when the sub-committee of the Congress of 1879 stated that nothing was known about it.

If, then, that Congress had known that there were

the 125,000,000 cubic metres at present admitted, and if it had taken into proper consideration the expenses with price of concession, administration, banking, financing and interest during construction,—it would have estimated the cost of the canal, not at 1,044,000,000f. but 2,364,000,000f., or £94,560,000, instead of £41,760,000. We will show hereafter that even that sum is inadequate, to judge from facts as ascertained at present.