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## WILLIAM MILNOR ROBERTS, CIVIL ENGINEER.

From the Engineering News, Jan. 11, 1879.

This eminent engineer, having been invited by the Government of Brazil to take charge of the improvement of the rivers of that country, sailed on Saturday, Jan. 4, with his family, for Rio, to assume the duties of his important office.

His recent election to the presidency of the American Society of Civil Engineers, together with his departure for a prolonged absence, has seemed to us as offering a fitting opportunity for presenting the readers of *Engineering News* with a brief sketch of a long and eminently successful professional career—a career which embraces the history of the public works of this country, and which has been personally connected with the inception and execution of many of the most important of them.

W. M. Roberts, of Quaker descent, was born in the city of Philadelphia, Feb. 27, 1840. He received his education in the best private schools of that city, completing two mathematical terms under the eminent mathematician, Joseph Roberts. He was taught architectural drawing (in the first school established by the Franklin Institute), by John Haviland, the distinguished architect. During the first years of his engineering life, he attended French and mathematical schools during the winter months, paying therefor out of his moderate summer earnings. It was owing to his aptitude for figures and investigation that his father's friend, Samuel Mifflin, then President of the Union Canal Company of Pennsylvania, urged his selection of the engineering profession when in his sixteenth year. He received his first appointment from Canvass White, the celebrated canal engineer, in the spring of 1855, as a chairman, on the Union canal, in the party of which Mr. Sylvester Welch was the head. At the age of eighteen he was promoted by Mr. White to the charge of the most difficult division of the Lehigh canal, extending from Mauch Chunk down, sixteen miles. In 1859 his description of the Lehigh canal was published in *Hazard's Register*.

We learn from Mr. Roberts that, in the early days of engineering in the United States, assistant engineers in charge of divisions were obliged to do all the drafting for their respective divisions (at night, and during rainy days), lay out and superintend all the works, and survey and map the lines themselves, the luxury of office draughtsmen being very sparingly allowed for some years. Railroad engineering began, in a crude way, in the United States in 1826, at the Quincy Granite Quarry. It was at first a tramway, of three or four miles in length for the transportation of stone from the quarry to the water. The first regular railroad of consequence in the United States was the Mauch Chunk gravity road, nine miles in length, between the summit of Broad Top mountain and the head of the inclined plane at Mauch Chunk, for the transportation of anthracite coal and passengers. The first passenger car, in the United States was put upon the Mauch Chunk railroad, in the early summer of 1827, and Mr. Roberts was one of the passengers on its first trip down the road. So that he saw the inception of the railroad system of our country in his youth, and he has grown with its growth. In 1835-36 he planned and built the first combined railroad and common road bridge, with the railroad on top, and the wagon roadway below. It crossed the Susquehanna river at Harrisburg. Some years afterward the superstructure was destroyed by fire, and a third superstructure, which is still in use, was built upon the same piers.

In 1830, Mr. Roberts was appointed Resident Engineer in charge of the Union Railroad road and Union Canal feeder, Pennsylvania; in 1831, '32, '33, and '34, he was Senior principal assistant engineer on the Allegheny Portage Railroad, having also charge of piers (after the great flood of 1832) of the Western Division of the Pennsylvania State canal—from Johnstown to Pittsburgh, and the running and management of the inclined planes. In 1835, at the age of 26, he received his first appointment as a chief engineer, being called to fill that position on the Harrisburg & Lancaster Railroad, for

which he was obliged to decline the same office on the Upper Lehigh Navigation; during the same year he accepted the chief engineership of the Cumberland Valley Railroad, which he held during 1836 and a part of 1837, being also employed in 1836 to make a survey and report on the Harrisburg water-power and water-works.

Since then he has filled the office of Chief Engineer of the following works: In 1837, '38, '39, '40 and '41, of the Improvement of the Monongahela river; the construction of the Pennsylvania State canal; the Erie canal; and the Improvement of the Ohio river to Lake Erie; in 1841-42, he was a contractor on the Welland canal enlargement; in 1843-44 he was Chief Engineer for the Erie Canal Company; in 1845-46-47, he was Chief Engineer and Agent for Trustees of the Sandy and Beaver Canal Company of Ohio; in 1847, he declined the Chief Engineership of the Ohio & Pennsylvania railroad; in 1848, he was appointed by name by the Legislature of Pennsylvania to make a survey to avoid if possible the Philadelphia Schuylkill Inclined Plane; in 1849, he declined the appointment of Chief Engineer for the first proposed South America railroad to take that of the Bellefontaine & Indiana railroad of Ohio, which office he held till 1851, during which year he also acted as Consulting Engineer for the Pittsburgh & Steubenville railroad; in 1852-53-54, he was Chief Engineer of the Allegheny Valley railroad; Consulting Engineer for the Atlantic & Mississippi railroad; Contractor for the whole of the Iron Mountain railroad of Missouri; and Chairman of a commission of three appointed by the Pennsylvania Legislature, to examine and report upon routes, etc., for avoiding the old Allegheny Portage Railroad inclined planes, and was in 1853 obliged to decline the Chief Engineership of the Virginia Central railroad on account of his other engagements. In 1855-56-57, Mr. Roberts was contractor for the entire Keokuk, Des Moines & Minnesota railroad, Consulting Engineer for the Pittsburgh & Erie and Terre Haute, Vandalia & St. Louis railroads, and Chief Engineer of the Keokuk, Mt. Pleasant & Muscatine railroad.

In December, 1857, Mr. Roberts sailed for Brazil to examine the route of the Dom Pedro Segundo railroad, with a view to bidding for its construction. In 1858, as senior partner of an American firm of contractors, he returned to the United States and concluded the formal contract to build the said road with the Brazilian Minister, Senhor Carvalho de Borges; returning to Brazil in the following year, he took active charge of the construction of the above railway, and remained to the completion of the contract in 1864. During 1864-65, he devoted some time to the examination of other railroads in Brazil, visiting also for examination of its public improvements, especially railroads, Uruguay and the Argentine Confederation, and returning in the fall of 1864 to the United States, after an absence of about seven years.

After a couple of months of rest Mr. Roberts again took the field for the surveys of the Atlantic & Great Western railroad, which he completed in April, 1866, when he was appointed to make examinations and reports upon the proposed "Southwest Pacific," the "North Missouri" and the "Iron Mountain" railroads of Missouri, and of the Western Maryland railroad. In the same year, he was appointed by Edwin M. Stanton, Secretary of War, U. S. Civil Engineer-in-Charge of the "Ohio River Improvement," which office he held till 1870, when he resigned to accept the Chief Engineership of the Northern Pacific Railroad. In 1868 and 1869, he filled the position of Associate Chief Engineer of the great St. Louis Bridge, which he resigned also in 1870 for the same reason as above given. The Chief Engineership of the Northern Pacific railroad Mr. Roberts has held to his departure for Brazil and still holds, and as late as the present season conducted in person special surveys of the Cascade Mountains, on the Pacific Coast, for the company, and up to the day of leaving, was constantly in attendance at the office of the company to assist in letting the recent contract for building 100 miles of road west of Bismarck, and in arranging other business of

the company prior to his leaving the country for his long absence.

While acting as Chief Engineer for the Northern Pacific Railroad Company, Mr. Roberts in 1873, examined and reported upon the Marquette & Mackinac railroad in the peninsula of Michigan, and also upon the Minneapolis & St. Louis railroad; in 1874, he made a report upon the Newburgh water-works, and in 1875 he was one of a commission to examine and report upon the Philadelphia water supply. In 1874, also, he was appointed by the President of the United States one of the Commission of Military and Civil Engineers to examine and report upon the best plan for improving the mouth of the Mississippi River, and for this purpose he visited Europe with the commission, and after visiting the delta of the Mississippi on his return, reported to the Secretary of War. In 1876, as Vice-President of the American Society of Civil Engineers, he devoted a considerable portion of his time in the interests of the profession, at the Centennial Exhibition at Philadelphia; in 1877, he located the Nictaux & Atlantic railroad in Nova Scotia, and upon his return from Oregon, only a few months ago, he accepted the invitation of the Brazilian Government to take charge of the water-ways of the Empire, at a salary of \$20,000 per year, for three years, upon the duties of which office he has already entered. At the recent annual meeting of the American Society of Civil Engineers, in this city, Mr. Roberts was elected President, and in leaving the United States for a temporary (as we trust) absence in a foreign country, he carries with him the highest hopes that are obtainable in his profession in this country. Mr. Roberts has now, after a very busy life, attained almost to the extreme age allotted to man, yet, as his associates and friends, who meet him in the daily routine of business, or as the ruling spirit of society meetings and excursions can abundantly testify, his step is still of the firmest, and all his faculties the clearest, so that, unless some unforeseen accident befall him, Mr. Roberts has still the promise of many years of active labor in the highest fields of his profession before him.

We have this briefly sketched, from such information as we could obtain, the professional life of one of America's most talented civil engineers. We have no doubt, that in those busy years, a multitude of other engagements have been filled—how carefully, ably and thoroughly, all the important trusts committed to his care have been discharged, is attested by the latest honors that have been added to his well-earned laurels.

### THE BANCO NACIONAL FAILURE

At a meeting held on the 1st instant for further inquiry into the causes that led to the bankruptcy of the "Banco Nacional" for the purpose of arriving at a final decision as to whether the failure resulted merely from natural causes, or whether it should be attributed to fraud or culpable negligence on the part of the managers and directors, Counselor Arraripé, after a few introductory remarks proceeded to lay before the meeting the following statement of the bank's operations which led to its bankruptcy being declared on June 7th, 1878.

In order to place the state of the legal process clearly before the meeting His Excellency indicated the causes under the following heads:

- 1st. The phases of the case.
- 2nd. The facts which require qualification.
- 3rd. Whether the managers were culpably negligent.
- 4th. Who were the managers of the bank.

Regarding the phases of the case His Excellency said the failure of the bank was occasioned by the petition of one of the creditors on June 6th, 1878, and by another on the following day, leading to the declaration of bankruptcy issued by the managers on the 7th of the same month.

The declaration in question bears the signatures of the directors or managers, Themistocles Patrocínio, and João Ferreira de Abreu;—the president of the board, Counselor Cassiano de Sinimbu, having retired from the directory on January 5th, 1878.

His Excellency called to mind that on May 13, 1876, the managers of the bank petitioned and obtained a *moratoria* (extension of time for closing up affairs), the terms of which not having been fulfilled gave rise to the declaration of bankruptcy above mentioned—the petition being signed by João Luis Vieira Causungo de Sinimbu, Themistocles Patrocínio, and Manoel Teixeira do Valle.

As to what facts led to the qualification of bankruptcy His Excellency said, (A) that the bank on March 7th, 1875 (occasion of the *moratoria*) was possessor of bonds valued at 1,064,400,000, and held as securities against advances, government bonds and shares of various companies amounting to Rs. 10,153,000,000 as shown in the statement of auditors and in the balance sheet attached to the *moratoria*.

At the time of the declaration of bankruptcy June 7th, 1878, the bank possessed in shares of other banks and companies Rs. 1,260,360,000 and held as security for advances about 3,000,000,000 also in shares of various banks and companies as shown in their balance sheet.

From this it manifest the large transactions effected by the bank on the basis of public and private securities amounting to thousands of contos of reis while its realized capital was only Rs. 2,996,100,000, as was seen from the balance sheets, although the nominal capital was 10,000,000,000, of which only the sum above mentioned had been paid in.

From the declarations made at different periods by the directors it will be observed that the shares of the various companies dealt in and held by the bank suffered a depreciation of more than 50 per cent. of their nominal value, the greater part being, at the same time, unsalable and valueless as realizable security. From this resulted such losses and embarrassments to the bank as precluded them from meeting their obligations.

The bank having entered into liquidation during the *moratoria* suffered a loss of more than Rs. 36,000,000 on realizing the bonds held by them, and on realizing the securities (shares of various companies) deposited as guarantees by six of the bank's debtors, the bank suffered a further loss of Rs. 1,208,963,5 as shown by their balance sheets, statements of profit and loss, and by various documents of the case. These heavy losses, of themselves, absorbed nearly half the realized capital of the bank, without taking into consideration the further losses due to the depreciation of shares belonging to the bank or held as securities.

The fiscal auditors expressly state in their report that the "Banco Nacional" lent large sums to private parties, on stock securities, and, deposits having ceased, being obliged to realize on those securities, was forced to suspend payments and ask for the *moratoria*.

From this it will be seen that the same causes occasioned the petitions for *moratoria*, and for bankruptcy, *ad hoc* losses arising from negotiations in bank and other stocks.

(B) The indebtedness of the bank—more than 21,000,000 according to the last balance-sheet Dec. 31st, 1878, was more than the double of the capital whether realized (2,996,100) or nominal (10,000,000).

(C) The bank after entering into liquidation received from some of its creditors the bank's own bills, or acceptances, constituting thus a class of special creditors who were thus paid in full (as shown by the various accounts closed by this method) while the remaining creditors of the bank, who were not at the same time debtors to the bank or who did not buy the bank's acceptances (already greatly depreciated) with which to meet their liabilities to the bank, will receive only the amount determined by the final liquidation. Thus a debtor to the bank in one account being at the same time a creditor in another account, could pay Rs. 10,000,000, for instance, to the bank in its own acceptances purchased in the mar-

ket at less than half that amount—while another creditor of the bank of Rs. 10,000,000 who had not succeeded in making the same operation, would finally receive at most one or two contos of reis from the liquidation, without taking into consideration loss of interest, etc.

For the further enlightenment of the Tribunal His Excellency laid before them the following list of the so-called special creditors, or *credores devedores*:

Luiz A. Tassara de Padua	7,771,800
Antonio Ferreira Butler	35,800,000
Maximiano Eppora Borges	41,600,000
Coelho & Irmaes	47,151,000
José Gonçalves Pereira	113,351,000
José Xavier Ferreira	2,616,000
Lara Tipper	21,588,000
Jenonymo Moreira	16,884,000
F. H. Tross	30,164,000
Bernardo Camary	22,377,000
C. D'Orlan	12,069,000
Theodoro L. Ferreira	9,309,000
Antônio Gomes	2,238,000
Santos Bastos & Irmaes	26,361,000
Eduardo Tavares	31,342,000
Joaquim Rocha Leão	57,733,000
Antonio José da Silva	7,703,000
Balthazar de Carvalho	10,402,000
Eduardo Braga	11,070,000
Joaquim Pereira de Faria	50,203,000
Joaquim Ribeiro Gomes	5,636,000
Domíngos Molitinho	121,631,000
Vianna Drummond	18,091,000
Themistocles Patrocínio	108,257,000
Miranda Azevedo & C.	6,400,000
Dr. Souza Carvalho	42,090,000
Calogeras & Irmaes	52,080,000
Antonio Joaquim Coelho	1,400,000
Comp. F. C. de Porto-Alegre	92,989,000
Silva Caminha	8,697,000
Gustavo Joppert	4,558,000
Mello Barreto	12,494,000
Companhia Architectonica	23,380,000
Companhia de S. Paulo	33,317,000
1,244,000,000, to the prejudice of those creditors who were not at the same time debtors.	

(D) In the various balance sheets that served as a base for the *moratoria*, and afterwards in those presented in the course of the liquidation, the securities held by the bank were entered at their nominal value.

In the balance sheets of the liquidation the bank presents available assets to the amount of 18,915,075, and investments to an equal amount, but in reality it is seen that 7,003,900 were lacking to complete the capital stock.

It is also seen that, calculating the depreciation of the securities held by the bank at 50%, only there was a depreciation of more than 2,000,000,000 from the nominal value which added to the 7,003,900 gives a depreciation of more than 9,000,000,000 at the time of failure so that, instead of more than 18,000,000,000 of available assets, there was in reality less than 9,000,000,000 not including bad debts and the depreciation of other values. Thus the balances of the bank presented the institution as solvent when in reality it was not, and depositors confiding in the values given in the balance sheets continued to make their deposits.

The following are the quotations of various stocks on the 30th of September, 1878:

Companhia Brasileira de Navegação	193,800
Companhia Paranaense (not quoted)	
Transportes Maritimos (not quoted)	
Carris P. Niteroiense	4,800
Carris P. Montevideense (not quoted)	
Carris P. Porto-Alegrense	58,000
Carris P. S. Paulo (not quoted)	
Carris P. do Maranhão	2,800
Carris P. de Pernambuco (not quoted)	
Companhia Macaé de Campos	12,000
Brazil Industrial	5,800
Companhia Architectonica (not quoted)	
Docas de Pedro H.	3,800
Banco do Brazil	292,800
Banco Predial	15,800
Banque Brésilienne-Française (not quoted)	









BRAZILIAN FINANCE.

In the present unfortunate financial condition of Brazil, every intelligent discussion of causes and remedies must necessarily command a careful and widespread consideration. Whatever may be the conclusions and theories of the financiers and legislators of the government, and they are without number, it is evident that the carefully-considered opinions of business men, whose pursuits have made them thoroughly familiar with this and kindred subjects, must be entitled to more than passing notice. In an article recently published in the Anglo-Brazilian Times, Mr. Robert C. Wright, one of the oldest and best known merchants of this city, enters into a very candid and thorough discussion of the excessive issue of paper money in Brazil, and of its effects upon the credit and prosperity of the country. The following is an abstract of the article which our space does not permit us to republish entire:

In maintaining the standard of value, or in restoring it if temporarily disturbed, lies the whole duty of government in connection with the currency of a country. With the limited fluctuations of Exchange the government should have no concern, as they simply indicate the varying relations of the "balance of payments" in the foreign commerce of a country. These fluctuations are the trade-barometers of the merchant and statesman and should be left as free as the ebb and flow of the tide.

The standard of value in this country being a legal valuation of the *milrea* at 45000 which is equivalent to 108 pence of British standard gold, is par of exchange between Brazil and Great Britain is 27 pence per milrea. Exchange between these two countries now stands at 20 1/2 pence or some 25% below par, thus establishing the fact of a great depression in the standard of value.

Paper money never has been and never can be capital. It is simply the representative of capital and is only useful so long as the sum of its value in circulation corresponds with the value of the metal which it displaces. Sane writers, forgetting that principles have neither latitude nor longitude, have maintained that Brazil, being a young and vigorous country and full of resources, could afford to issue as much paper as it pleased, and that the country might be flooded with an unlimited amount of paper circulation to her great advantage. They might now think otherwise and see that the capital which Brazil wants, can not be obtained from a paper currency.

One of the worst features of an excessive currency, having a reasonable guarantee of future redemption, is that it maintains a false and phenomenal relation to gold thus inducing exaggerated gold prices of the products of a country and ultimately prejudicing the interests of producers through the competition which it is sure to provoke. Our planters are realizing the truth of this by the low prices at which they are now compelled to sell their products which, in part, due to the foreign competition occasioned by the high prices long prevailing in Brazil. This illegitimate exaggeration of prices applies as well to imported merchandise as to the products of the country, and, as a consequence, has a tendency to depress the export while encouraging the import trade, and thus acts as a permanent element of disturbance in the trade relations of the country.

In 1850, according to the able reply of Mr. J. C. Mayrink to the circular of the Minister of Finance, the currency of Brazil consisted of:

Table with 2 columns: Description and Amount. Includes Government paper (40,000,000), Notes of the Commercial Bank of Bahia (1,000,000), Estimated gold, silver and copper (5,000,000), and Total (52,000,000).

As exchange on London was then 28 3/8 pence about five per centum above par, it may be assumed that there was a deficiency in the circulating medium. It is our opinion that this premium was due to a favorable balance of trade and not to a deficient circulation, but admitting the latter the addition of five per centum to the existing currency would give us only about 55,000,000.

Taking the increase of population in the United States, about 33 1/3 per cent. per decade, as a basis for estimating the increased wants of Brazil we find that the country requires to-day a currency of about 125,000,000. The actual circulation of government and bank paper, however, is some 208,000,000. This represents a phenomenal value of about 156,000,000 gold, while, upon the basis of legitimate prices, it should not exceed 125,000,000. This leaves an excess of 31,000,000 in our present circulation, which, in order to restore the standard of value to a normal basis, should be withdrawn.

and would not only arrest the flight of foreign capital from this country but would most probably turn its current again this way. If there be national or other susceptibilities involved in the sale of the Dom Pedro II. bond then it, either alone or in conjunction with the monetary properties, might serve as a basis for the issue of debentures through which the same purpose could be accomplished as by a sale. No attempt should be made to bolster up exchange by any of those devices which have so signally failed in times past. Both here and abroad, when resorted to, they have over-stimulated trade, encouraged speculation, and resulted in disaster. Temporary expedients and palliatives are not the remedy for this disease; it demands heroic treatment.

REPORT OF THE BUDGET COMMITTEE.

The report of the Committee of the Budget, composed of the deputies Buarque de Macedo, Cesar Zama, Prado Pinheiro, Fabio Reis, Viriato de Medeiros and Souza Carvalho, was presented to the Chamber of Deputies, March 29, and ordered to be printed.

It was to be expected that the summary of the financial condition of the Empire and the means proposed by the government to meet the deficit.

The revenue for the financial year 1870-1880, is estimated, on the basis of the revenue of the three preceding years, at 101,000,000,000.

The appropriations proposed in the Budget including both ordinary and extraordinary expenses amount to 145,000,000,000. The ordinary deficit is therefore 44,000,000,000. The extraordinary deficit is therefore 44,000,000,000.

In the second discussion of the Budget a few additions and numerous reductions were made and others will probably be made in the third discussion, which the committee calculate will economize in the ordinary expenses the sum of 3,000,000,000 and in the extraordinary expenses 12,000,000,000, making a total economy in the Budget as first proposed of 15,000,000,000.

The committee propose measures by which it is calculated that the revenue will be increased by 15,000,000,000 which with the economies above mentioned will reduce the deficit to, in round numbers, 29,000,000,000 to be covered by credit operations. Of this sum 2,000,000,000 pertain to the ordinary expenses and the remaining 15,000,000,000 to the extraordinary expenses for which special credits are opened.

The deficit between the revenue and the ordinary expenses, including in these the burdens due to the required credit operations, may thus be reduced to 2,500,000,000 of which 1,500,000,000 will probably only be expended in the succeeding fiscal year.

In discussing the means to be adopted for restoring the balance between revenue and expenditure, the committee is of the opinion that no further reductions can be made without seriously embarrassing the operations of the government; that it would be unsafe in the face of a deficit to undertake any sweeping financial reforms; that a loan to defray the deficit is, in the present circumstances, the only expedient which offers the most certain and permanent relief; and that therefore an increase of impost must be resorted to but by better management of the finances, and by economy, zeal and morality in the employment of the public money, the present amount of the deficit, which is at best only a transitory, shall have passed.

The custom house being the chief source of revenue, attention is naturally first directed to that. The proposed revision of the tariff will equalize and simplify the duty rather than increase the revenue. By a law of 1877 the additional duty of 45% on imports was raised to 50% and the administration tax of 1/2% on articles admitted free of duty, to 5%. From this measure a considerable increase may be expected. An addition to the duty on foreign tobacco, from 80% to 100% and on the free list by which at least 3,000,000,000 are lost to the Treasury, is recommended, as well as an increased tax on storage. Export duties are to remain as at present until the necessities of the country will permit their reduction or abolition.

By these measures an increase of 1,000,000,000 in the customs-house receipts is expected. To obtain revenue from the light-house tax the committee recommend that the light-house tax be doubled or subintended by an anchorage tax, which it replaced, and the dock tax revised; that the stamp tax, fixed or proportional on business papers, titles of nobility, scientific and diplomatic, etc., as well as the enrollment tax, be also doubled and that the titles of qualification of voters and electors be also included under the stamp tax, the first part of a tax of 8000 and the second 4000; that the impost on the capital of lotteries be raised from 20% to 30% and on the premiums from 15% to 20%; that an income tax be levied on all salaries, pensions and gratifications derived from municipal, provincial or general government, of 2% on all sums less than 1,000,000 from the general, and less than 400,000 from the provincial and municipal governments, 5% on sums less than 10,000,000 and greater than 1,000,000 from the general and more than 400,000 from provincial and municipal governments.

By these measures an increase of 30% to 40% on the salaries of members of the legislature; that a similar tax be levied on all incomes superior to 400,000—income derived from government bonds to be exempt from this tax; that the tax dividends be increased from 1/2 to 5%; that the stamp tax be revised so as to apply to unaccepted houses; that a water tax of 2% be imposed in the city of Rio de Janeiro as soon as the regulations of the law for the new supply of water to the city can be enforced, that the tax on capital be revised and a tax of 200,000 in the capital and of 100,000 in the capitals of the provinces be levied on tobacco taxes.

COFFEE CROP OF 1879

Concerning the approaching harvest of coffee a recent letter from the interior says: All probabilities of an average crop this year are lost. It seems to us that in the valley of the Parana, the coffee crop of 1879 will scarcely be a third of that of the preceding year.

Various causes have led to this result. The decay of the plantations in some localities from age, in other points, disease of the roots and leaves, and in general the utter lack of effort toward a more methodic and scientific cultivation.

In the districts of Rezendé, Barra-Mansa, Pirahy, Vassouras, Valença, Mar de Heipantim, etc., there is a tendency to the suspension of the coffee harvests until utter extinction. We except in these districts those zones in which the forests have been destroyed in a lesser degree and in which some of the plantations are still new.

In northern Minas the cultivation of coffee is in a period of development notwithstanding that it has to contend with a lack of laborers. The storms have, however, caused the loss of the greater part of the fruit, but some plantations will give, for the first time, a good harvest in 1879.

Notices from São Paulo seem to indicate that the crop will be a third less than the regular harvest. It seems to us therefore that we shall not be far wrong in stating that in general the coffee gathered will equal a half of the crop of 1878. As however there still exists a portion of that crop in deposit the exportation of coffee will be regular during the whole of the current year to fall entirely in January of 1880.

Nothing can be said regarding the quality of the coffee of the approaching harvest, but as the plantations are in general new it is probable that the medium and quality will abound.

THE ROACH SUBSIDY BILL

The following is the full text of the Brazilian mail steamship subsidy clause in the Postoffice appropriation bill, as it passed the United States Senate, February 21. When the bill came up in the House of Representatives on February 28, the subsidy clause was stricken out by a vote of yeas 89, nays 157.

For ocean steamship service between the United States and Brazil, \$200,000; and the Postmaster General is authorized and directed, after due public advertisement, to contract for a time not exceeding ten years for carrying the mails once each month, commencing not later than July, 1879, from New York by way of Norfolk, Va., to Rio de Janeiro, and once each month, commencing not later than March, 1880, from New Orleans, by way of Galveston, Texas, to Rio de Janeiro and return, including appropriate intermediate ports, with the lowest bidders, being responsible owners, giving ample security of first-class American built and owned iron screw steamships of not less than three thousand tons, after the best modern models, and capable of making thirteen nautical miles an hour; such mail-carriage to be paid for at not exceeding \$30 per actual mile per annum, one way, for the distance actually traversed between the termini of each of said routes; provided however that the annual compensation for such postal service shall not exceed the sum of one hundred and fifty thousand dollars for each of said lines, the two lines to be contracted for simultaneously, and neither contract to go into effect unless both services shall be contracted for and established according to the provisions of this act; neither contract to be considered in force if the service on either line be abandoned or discontinued, and the contracts therefore to contain all provisions for securing efficient service which may be customary or required by law in such cases.

It seems that opposition to Chinese immigration is not wholly confined to the Pacific slope of the United States. At Melbourne, Australia, where the Celestials have gone into the retail trade and are contriving to sell at a lower price than the Caucasian grocer, a strong anti-Chinese feeling has sprung up. The retailers are loudly demanding that their interests shall be protected. It is thought probable that Queensland, New South Wales and Victoria will ultimately enter upon a coalition to finally exclude all Chinese immigrants. It is a high compliment to the industry and thrift of these people, though not intended as such, to admit that restriction or exclusion is the only way of competing with them in business pursuits.

The annual rice crop of North Carolina, South Carolina and Louisiana, U. S., averages 80,000,000 pounds. The Carolina rice brings one-half a cent a pound more in market than the Louisiana rice, though, it is said, there is scarcely an appreciable difference between them. A barrel of rough rice of 45 pounds finds a ready market in New Orleans from \$3.50 to \$5.00, and the cost of getting it cleaned in the mill is about one cent a pound. In Louisiana, from 20 to 30 bushels of rice—a bushel of rough rice contains 44 pounds—can be grown on an acre of high land without flooding, and much more, of course, on flooded lands. This is said to be more profitable than cotton-growing in that state.

In 1878, the total number of spindles in the United States was estimated at 10,500,000; the quantity of cotton consumed, raw not deducted, was 698,000,000 pounds gross; and the production of cloth was 586,000,000 pounds or 2,627,000 yards.

At a recent meeting of the American Fish Cultural Association in New York, Mr. G. S. Page read an essay on "Animals Destructive to Wood Under Water," in which he said that the *teredo navalis* was the most destructive animal to timber under water that is known. It is found all along the coasts of North and South America, and also on other coasts. It is in the shape of a worm, but has a head of hard shell made to resemble an auger, gouge and file in combination. It enters timber in almost instant form and quickly grows to a length of fourteen or more inches. It lives on the timber and honeycombs it throughout, destroying vast amounts of property yearly. The only thing that preserves timber against the attacks of this animal is an extract of coal tar or gas tar in which there is a large per centum of carbolic acid.

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