CANAL COMMISSION REPORT

Nicaragua Route Is the Best and Cheapest.

ABOUT \$189,864,062.

By the Panama Route the Cost Is Estimated at \$353,374,858, and in Addition the Canal Concession Would Cost the United States \$109,141,000.

The Interoceanic Canal Commission's report is in favor of the Nicaragua route and it will be submitted to Congress before the holiddays, Here is the report in full:

Is the report in full:

The investigations of this commission have shown that the selection of "the most feasible and practicable route" for an isthmian canal must be made between the Nicaragua and Panama locations. Furthermore, the complete problem involves both the sea level plan of caval and that with locks. The Panama route alone is feasible for a sea level canal, although both are entirely practicable and feasible for a canal with locks. The time required to complete a sea level canal on the Panama route, probably more than twice that needed to build a canal with locks, excludes it from favorable consideration, aside from other serious features of its comstruction. It is the conclusion of this commission, therefore, that a plan of canal with locks should be adopted. A comparison of the principal physical features, both natural and artificial, of the two routes, reveals some points of similarity. Both routes cross the continental divide less than ten miles from the Pacific Ocean, the Panama summit being about double the height of that in Nicaragua.

Both Routes Require Costly Dams.

For more than half its length the location of each route on the Atlantic side is governed by the course of a river, the flow from whose drainage basin is the only source of water supply for the proposed canal; and the summit levels, differing about twenty feet in elevation—Panama being the lower—are formed by lakes, natural in the one case and artificial in the other, requiring costly dams and water ways for their regulation and for the impounding of surplus waters to reduce the effect of floods and meet operating demands during low water seasons. The investigations made in connection with the regulations of Lake Nicaragua have demonstrated that the lake affords an inexhaustible water supply for the canal by that route. The initial proposition, on the other hand, for the Panama route, is to form Lake Bohio so as to yield a water supply for a traffic of 19,00,000 tons, which can be supplemented when needed by an ambunt sufficient for more than four times that traffic by means of the Alhajuela reservoir. For all practical purposes this may be considered an unlimited supply for the Panama route. So far as the practical operation of a ship canal is concerned, therefore, the water supply features on both lines are satisfactory. The difficulties disclosed and likely to be encountered in the construction of the dams are less at Conchuda, on the Nicaragua line, than at Bohio, on the Panama route. Both dams, however, are practicable, but the cost of that at Bohio is one-half more than that at Conchuda.

Commission Desires a Parfact Structure. For more than half its length the loca-

Commission Desires a Perfect Structure.

Commission Desires a Perfect Structure.

A less expensive dam at Bohlo has been proposed, but through a portion of its length it would be underlaid by a deposit of sand and gravel, pervious to water. The scepage might not prove damgerous, but the security of the canal is directly dependent upon this dam, and the policy of the commission has been to select the more perfect structure, even at a somewhat greater cost. The waterways at both locations present no serious difficulties. The advantages in the design and construction of the dams are in favor of the Nicaragus route. The system of regulation at Lake Bohlo consists of the discharge of water over the creat of a weir, as the lake level rises under the influence of floods in the Chargres River. The plan of regulating the level of Lake Nicaragua is less simple, though perfectly practicable. It involves the operation of movable gates at the level of Lake Nicaragua is loss simple, though perfectly practicable. It involves the operation of movable gates at such times and to such extent as the rainfall on the lake basin may require. The experience and judgment of the operator are essential elements to effective regulation of this lake. The regulation of Lake Bohio is automatic. The only means of transportation now found on the Nicaragua route are the narrow gauge Silice Lake Raifroad, about six miles in length, and the limited navigation of San Juan River and lake; but the Nicaraguan Government is new building a raifroad along the beach from Greytown to Monkey Point, about forty-five miles to the northward, where it proposes to establish a commercial port. By means of a pier in the area protected by the point goods and material for canal purposes can readily be landed and transported by rail to Greytown. Such piers are in constant use on our Pacific coast. This railroad and port would be of great value during the period of preparation and harbor construction, and should materially shorten that period.

Paname Has Railroad in Operation.

Panama Has Rallroad in Operation.

A well equipped railroad is in operation.

A well equipped railroad is in operation along the entire length of the Panama route, and existing conditions there afford immediate accommodation for a large force of laborers. The Nicaragua route has no natural harbor at either end. At both the Atlantic and Pacific terminal, however, satisfactory harbors may be created by the removal of material at low prices and by the construction of protective works of well established design. An excellent roadstead, protected by islands, already exists at Panama, and no work need be done there for either harbor construction or main-Panama, and no work need be done there for either harbor construction or maintenance. At Coion, the Atlantic terminus of the Panama route, a serviceable harbor aiready exists. It has afforded harbor accommodations for many years, but is open to northers, which a few times in each year are liable to damage ships or force them to put to sea. Considerable work must be done there to create a suitable harbor at the entrance of the canal, which can be easily entered and will give complete protection to shipping lying within.

Excavation Work Compared.

Exercation Work Compared.

The completion of the harbors, as planned for both routes, would yield but little advantage to either, but the balance of advantages, including those of maintenance and operation, is probably in favor of the Panama route. The existence of a harbor at each terminus of the Panama route and a line of railroad across the isthmus will make it practicable to commence work there, after the concessions are acquired, as soon as the necessary plant can be collected and put in place and the working force organised. This period of preparation is estimated at one year. In Nicaragua this period is estimated at two years, so as to include also the construction of working harbors and terminal and railroad facilities.

The work of excavation on the Nicaragua route is distributed; it is heaviest near Conchuda, at Tamberoito and in the divide west of the lake. On the Panama route it is largely concentrated in the Culebra and Emperador cuts, which are

practically one. As a rule, distributed work affords a greater number of available points of attack, contributing a quick w completion, but in either of these cases such difficulties as may exist can be successfully met with suitable organization and efficient appliances.

Labor Scarce There.

The time required for constructing the Ficaragua Canal will depend largely on the promptness with which the requisite force of laborers can be brought to Nicaragua, housed and organized with the locations of heaviest work slong the route. The cut through the divide west of the lake probably will require the longest time of any single feature of construction. It contains 18,00,000 cubic yards of earth and rock execration, or a little less than 10 per cent of the total work of all classes included. With adequate force and plant this commission estimates that it can be completed in four years. This indicates, under reasonable allowance for critinary delays, if force and plant enough were obtainable, to secure a practically concurrent execution of all portions of work on the route the completion of the entire work might be executed within six years after its being started, exclusive of the two years estimated for the period of preparation. The securing and organizing of the great force of laborers needed, largely foreigners, so as to adjust the execution of the various portions of the work to such a definite program of close fitting parts in a practically unpopulated tropical country involves unusual difficulties and would prolong the time required for completion. The greatest single feature of work on the Panama route is the excavation in the Culebra section, amounting to about 45,00,000 cubic yards of hard clay, much of which is classed as soft rock, nearly 45 per cent of all classes of material to be removed.

Eight Years Required. Labor Scarce There.

Eight Years Required.

Eight Years Required.

It is estimated that this cut can be completed in eight years, with allowance for ordinary delays, but exclusive of a two-year period for preparation and for unforeseen delays, and that the remainder of the work can be finished within the same period. The great concentration of work on this route and its less amount will require a smaller force of laborers than on the Nicaragua route, Hence the difficulties and delays involved in securing them will be correspondingly diminished. The total length of the Nicaragua route, from sea to sen, is 183.06 miles, while the total length of the Panama route is 43.09 miles. The length in standard canal section, and on the harbors and entrances, is 73.78 miles for the Panama route. The length of sailing line in Lake Nicaragua is 70.51 miles, while that in Lake Bohio is 12.68 miles. That portion of the Nicaragua route in the canalized San Juan is 39.37 miles. The preceding physical features of the two lines measure the magnitude of the work to be done in the construction of waterways along the two routes. The estimated cost of construction the canal on the Nicaragua route is 14.630.704 more to be done in the construction of water-ways along the two routes. The estimated cost of constructing the canal on the Nicaragua route is \$46,530,704 more than that of completing the Panama Canal, omitting the cost of acquiring the latter property. This sum measures the difference in the magnitude of the obstacles to be overcome in the actual construction of the two canals and covers all physical considerations, such as the greater or less height of dams, the greater or less height of dams, the greater or less depth of cuts, the presence or absence of natural harbors, the presence or absence of a railroad, and the amount of work remaining to be done. The estimated annual cost of maintaining and operating the Nicaragua Canal is \$1,550,000 greater than the corresponding charges for the Panama Canal.

Panama Route Shorter.

The Panama route would be 134.57 miles shorter, from sea to sea, than the Nicaragua route. It would have less summit elevation, fewer locks, and 66.44 miles less curvature. The estimated time for a deep draft vessel to pass through is about twelve hours for Panama and thirty-three hours for Nicaragua. These periods are practically the measure of the relative advantages of the two canals as water ways connecting the two oceans, but not entirely, because the risks to vessels and the dangers of delay are greater in a canal than in the open sea. Except for the items of risk and delays the time required to pass through the canals need be taken into account only as an element in the time required by vessels to make their voyage between terminal ports. Compared ou this basis, the Nicaragua route is the more advantageous for all transisthmian commerce except that originating or ending on the west coast of South America. For the commerce in which the United States is most interested, that between our Pacific ports and Atlantic ports, European and America, the Nicaraguan route is short-Panama Route Shorter. ports and Atlantic ports, European and American, the Nicaraguan route is short-er by one day. The same advantage ex-ists between our Atlantic ports and the Orient. For our gulf ports the advan-tage of the Nicaragua route is nearly two days. For commerce between North Atlantic ports and the west coast of Atlantic ports and the west coast of South America the Panama route is shorter by about two days. Between guif ports and the west coast of South America the saving is about one day. America the saving is about one day. The Nicaraguan route would be the more favorable one for sailing vessels, because of the uncertain winds in the Bay of Panama. This is not, however, a material matter, as sailing ships are rapidly being displaced by steamships. A canal by the Panama route will be simply a means of communication between the two oceans. The route has been a highway of commerce for more than 300 years, and a railroad has been in operation there for nearly fifty years; but this has affected industrial changes but little, and the natural features of the ation there for nearly fifty years; but this has affected industrial changes but little, and the natural features of the country through which the route passes are such that no considerable development is likely to occur as a result of the construction and operation of a canal. In addition to its use as a means of communication between the two oceans, a canal by the Nicaragua route would bring Nicaragua and a large portion of Costa Rica and other Central American states into close and easy communication with the United States and with Europe. The intimate business relations that would be established with the people of the United States during the period of construction by the expenditure of vast sums of money in these states, and the use of American products and manufactures would be likely to continue after the completion of the work, to the benefit of our manufacturing, agricultural and other interests.

Nicaragua the Healthler.

Nicaragua the Healthler.

Nicaragua the Healthter.

The Nicaragua route lies in a region of sparse population and not in a pathway of much trade or movement of people. Conditions productive of much sickness do not exist. On the other hand, a considerable population has long existed on the Fanama route and it lies on a pathway of comparatively large trade, along which currents of moving people from infected places sometimes converge, thus creating conditions favorable to epidemics. Existing conditions indicate hygienic advantages for the Nicaragua route, although it is probable that no less effective sanitary measures must be taken during construction in the one case than in the other. The cost of constructing a canat by the Nicaragua route and of completing the Fanama Canal, without including the Fanama Canal, without including the cost of acquiring the concessions from the different governments, is estimated as follows:

Panama 144,233,358

For a proper comparison there must be added to the latter the cost of acquir-ing the rights and property of the New Panama Canal Company. This commis-sion has estimated the value of these in the project recommended by it at \$40,000,000. In order to exercise the rights

Steel Roofs.

A new patent steel roofing will shortly be placed on the market, and it is asse and that this product will completely displace galvanized iron for roofing purposes. The system of manufacture consists of steel strips bent tubular rafters. Works for the manu-Ireland is stated to be the best experi- scale are being constructed at Darlington, England.

BEFORE THE **PUBLIC EYE**

THE ARKANSAS SENATORSHIP.

necessary for the construction of the

Colombia Not Free.

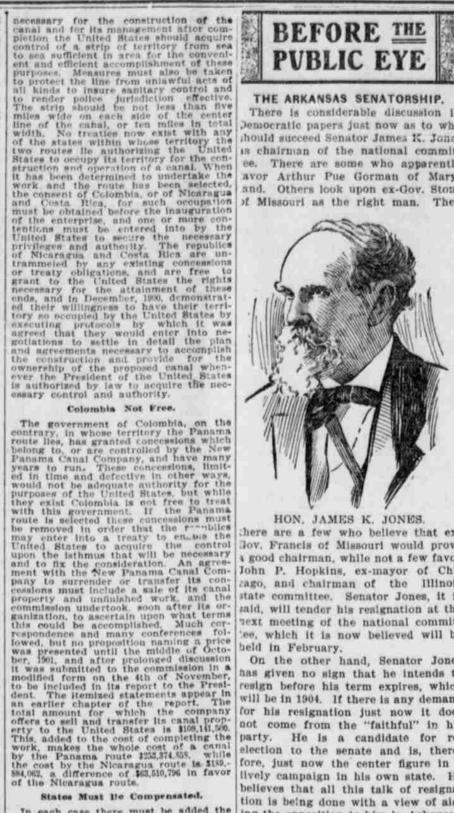
States Must De Compensated.

THE MINORITY REPORT.

sion Favors Panama Route.

Nicaragua route.

There is considerable discussion in hould succeed Senator James K. Jones is chairman of the national commitee. There are some who apparently avor Arthur Pue Gorman of Maryand. Others look upon ex-Gov. Stone of Missouri as the right man. Then



HON, JAMES K. JONES. here are a few who believe that ex-

Gov. Francis of Missouri would prove a good chairman, while not a few favor John P. Hopkins, ex-mayor of Chieago, and chairman of the Illinois state committee. Senator Jones, it is said, will tender his resignation at the next meeting of the national commitee, which it is now believed will be held in February.

On the other hand, Senator Jones has given no sign that he intends to There is nothing comparable to it in resign before his term expires, which will be in 1904. If there is any demand for his resignation just now it does not come from the "faithful" in his party. He is a candidate for reelection to the senate and is, therefore, just now the center figure in a lively campaign in his own state. He

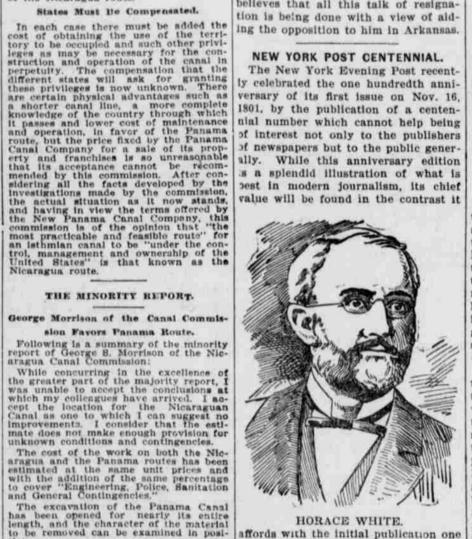
believes that all this talk of resigna-

tion is being done with a view of aid-

ing the opposition to him in Arkansas. NEW YORK POST CENTENNIAL. The New York Evening Post recenty celebrated the one hundredth anniversary of its first issue on Nov. 16, 1801, by the publication of a centennial number which cannot help being of interest not only to the publishers of newspapers but to the public generally. While this anniversary edition

s a splendid illustration of what is

pest in modern journalism, its chief



HORACE WHITE.

affords with the initial publication one hundred years ago. Its historical features embrace a condensed history of the first fifty years of The Evening Post by its late editor, William Cullen Bryant, while the story of the second half century of its existence is told by Parke Goodwin, John Bigelow, Carl Schurz and its present editor, Horace White.

American and European Music,

In the matter of the American invasion of Europe and the alarm it has occasioned it is of interest to note that one of the leading Berlin musical critics recently delivered a lecture in that city in which he said that within twenty years the United States would be teaching music to Europe. He was of opinion that America is on "the threshold of a great musical career" and that native composition, while only "emerging from its infancy, still affords rich promise." He also is of opinion that German, Italian, and French influence is waning, that the time is near when Americans will not have to leave home to get a musical education, and that "Sousa's stirring works will live."

The New Projectile.

Secretary Long in his annual report just issued, says: "In order to gain greater energy guns have been inreased in weight and dimensions until it is believed that they have now eached a point beyond which it is inexpedient to go. Any further increase n their efficiency must be looked for n the use of heavier projectiles and n the development of powders possessng higher ballistic properties than those now in use."

Illinois Farm Lands

According to a dispatch from Kangakee there is some high-priced farm-\$112.50 an acre, which price, it was the exception in that locality within the last year."

Persons, Places and Things

PERILS OF THE GOOD SAMARITAN. The sad case of Frank Luzincki Democratic papers just now as to who ought to be a lesson to all other amiable persons, says the Chicago Tribune. Mr. Luzincki, at the suggestion of two strangers who met him one night recently agreed to perform the plous office of watching beside a corpse till the strangers could bring the police. Mr. Luzincki's confidence in strangers was then put to a severe test, for shortly after his lonely vigil began the corpse drew a revolver and despoiled him of his watch and his money. From this story one may get two morais. In the first place, it is well to read the criminal news in the daily papers. If Mr. Luzincki had followed this rule he would have known that only a few days ago a "sick man" played in another little incident the part which was taken this time by a 'corpse." He would then have been on his guard and might still be in possession of his valuables. The papers give the public immediate notice of every new device that is employed by the rogues of this town. If the public would carefully note the character of each of these devices the rogues would

GROWTH OF ELECTRIC LIGHT.

be obliged continually to invent new ones and would soon exhaust their stock of ideas. As it is, they are able

to play the same old games year after

year. But this is not the fault of the

papers. The second moral to which

Mr. Luzincki has given point is that

under certain circumstances one ought

to repress one's instinct to be obliging.

Beyond any question the most marvelous development of the century in the field of applied science may be seen in the electric lighting industry.



THOMAS A. EDISON.

the whole history of civilization. The average layman who sees the streets of the modern city and its stores made as light as day has little conception of the amazing growth of the industry that has arched the highways of human progress with millions upon millions of incandescent bulbs and now is invading the rural districts of the greatest nation upon which the sun shines.

(The Inventor of the Electric Light.) The electric light was exhibited for the first time in the United States at the Centennial Exposition, but those who saw it were skeptical regarding the possibility of using it upon any scale that would be of practical benefit to mankind. While arc lighting was produced upon a commercial scale in 1877, the real history of the art as regards its modern aspects dates from the opening of the Pearl street station in New York city by Thomas A. Edison on Sept. 4, 1882, in which the Edison incandescent lamp was used.

MAYOR-ELECT SCHMITZ.

The accompanying is a portrait of Mayor-elect Schmitz of San Francisco. He was chosen at the recent elections paign. All those who did not like this idea, including the Americans, supported the labor unions' candidate, Mr.



MAYOR-ELECE SCHMITZ. Schmitz, who was elected by a landalide plurality.

Forward Under Spur.

The more intelligent colored men in Alabama are not as much disturbed heel, the skirt, the impracticable bonover the franchise clause of the new constitution as the mossbacks think they ought to be. It appears that there are now about 30,000 colored voters in Alabama with qualifications to meet of evidence to the effect that in the the educational clause of the constitution, and it is believed that in three years the great majority of colored men will be able to meet the limita- in a highly idealized sense she still is tions as to education and property.

AS THE WORLD REVOLVES REVOLVES

PRINCESS HATZFELD.

Princess Hatzfeld, who has been recently entertaining in lavish fashion with the money left her by the late Collis P. Huntington, was the adopted daughter of the great railway magnate. She was Clara Huntington, and was adopted by Mr. Huntington in 1869 in New York, to which city he had removed from the west in 1864. Clara married Prince Hatzfeld in 1889, and



PRINCESS HATZFELD.

would never consent to live in this country. She wanted her father to use the Hatzfeld coat of arms after the wedding, but the sturdy old American positively refused. The princess is one of the beautiful women in Paris.

SUPERIOR TECHNICAL TRAINING.

No nation in the world except the United States has developed industrially more rapidly than Germany. The empire, organized only thirty years ago, has become a great manufacturing nation, has forced its way into European, Asiatic and South American markets against the competition of England and the United States, and is fighting resolutely for new territory. With the growth of a strong national sentiment, there has been astonishing progress in all the departments of industry where trained intelligence and skilled hands play an important part.

Manufacturers of the United States, of Great Britain and of France have inquired into the causes of this rapid progress in Germany. They agree that it is largely due to superior technical education. When the empire was established in 1871, the general government found ready to its hand the technical schools that had been fostered by the several German states. Under the policy of the empire all of these were encouraged, and from them was developed a system of higher technical schools.

FASTEST LINOTYPE OPERATOR. Daniel D. Tew, the Des Moines (Ia.) operator, who has just broken the



DANIEL D. TEW.

world's record for fast typesetting on the linotype machine, is a native of Taylor county and learned the printer's trade in the office of the Decatur County Journal at Leon. He moved to Des Moines twelve years ago, and was employed as compositor on the Leader Six years ago he learned the linotype machine, and two years ago transferred his services to the Des Molnes Capital. It was in the office of that newspaper that he made the record of 3,344 nonparell type lines, representing 86,964 ems and requiring 217,400 touches of the keyboard. The work was done in eight hours, on a machine making nine revolutions per minute and operated by steam.

THE ENEMIES OF FASHION.

Between the artists and the political economists fashion has really a hard time of it. The artists declare that fashion is a fee to their profession, and while they are worshiping the Winged Victory type of a figure the modern fashionable ideal is a pinched and padded creature that might, from an artistic standpoint, be called a Whaleboned Defeat.

The political economists go even further and deciare woman's dress not only ugly but costly and impractical, and Professor Veblen in his "Theory of the Leisure Class" states: "The high net, the corset, and the general disregard of the wearer's comfort which is an obvious feature of all civilized women's apparel, are so many items modern civilized scheme of life the woman is still in theory the economic dependent of the man-that perhaps the man's chattel."

Method for Concentrating Blood.

A cheap and rapid method for concentrating the enormous quantities of blood collecting in abattoirs has been invented recently. The blood is injected into an oven-shaped chamber, open at the top, and brought into contact with a current of hot air ascending the twenty-four. from below. All the water is evaporated in this manner, and the blood powder is carried to the receiving chamber. The product thus obtained is tasteless, and contains 78.4 per cent of digestible albumen.

SCRAPS. To be vain of one's rank or place, is to show that one is below it .- Stan-

islaus. At all seasons of the year 5 o'clock in the morning is the coldest hour of

We are made ridiculous less by our defects than by the affectation of qualities which are not ours.

This year's harvest in the south of enced for a quarter of a century.

is visible at Panama.

At Panama there are fair harbors at born clus of the canal that are fully adequate for all demands during construction and connected by a railroad in high condition, the country is settled and many of the necessary secommodations for a large working force are there. Before the eastern section of the Nicaragua Canal can be begun a harbor must be created at Greytown, convenient lines of transportation which do not now exist must be provided, as must also the means of housing and caring for a large laborof housing and caring for a large labor-ing population, nearly all of which must be imported.

On the Nicaragua route the character of material has been determined by bor-ings which, though unusually complete, do not give the definite information that is visible at Panama.

The preliminary engineering has been done at Panama and the general contingencies have been reduced to a minimum. Comparing modified estimates, the cost of completing the Panama Canal would be \$67,000,000 less than the cost of building the Nicaragua Canal.

On the Panama route two concessions must be extinguished before such rights can be acquired. They are the contract of 1867, by which the Panama railroad holds its present rights, and the Wyse concessions, under which the French canal companies have been operating.

The settlement with the French must be simply an extinguishment of their rights; the authority to build the canal must be derived from a new treaty with the republic of Colombia.

The Panama route has advantages over The l'anama route has advantages over the Nicaragua route in cost of construc-tion, in cost of operation and in conven-tence when done, while its use is less likely to lead to local international com-pilications. If the United States govern-ment is to build an isthmian canal the Panama route is the best.

The French rights must first be extinguished, and whatever this government may pay for such extinguishment will be salvage to the French. If these rights cannot be extinguished. salvage to the French. If these rights cannot be extinguished the Nicaragua route is available.

GEORGE S. MORRISON.

cold in the press, the covering being ing land in that part of Illinois. Menformed of plain galvanized sheets bent ion is made of a farm near Manteno, back on the edges and locked into n Kankakee county, which sold for facture of this product on a large said, "has been the rule rather than