

Power Derived From Victoria Falls Will Work the Rand Gold Mines

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VICTORIA FALLS.—(Special Correspondence of The Bee.)—The financial arrangements for harnessing the Niagara of the Zambesi have been completed. Within the past few months a London syndicate has been formed, with a paid-up capital of \$15,000,000, and surveys are now making for the installation of one of the greatest electrical plants of the world. The various power companies of the Rand have been purchased, and the new syndicate practically controls the power possibilities of South Africa. The works which it has in operation about Johannesburg and in the gold mines will pay something like \$400,000 a year above their operating expenses, and it is planned to transmit the enormous force of Victoria Falls by wire, not only to the Transvaal, but everywhere within a radius of 600 miles from this point.

Five Times as Great as Niagara.
I have already written of the beauty and grandeur of Victoria Falls. They surpass Niagara in their scenic effects, and the engineers claim that they surpass it also in the mighty force with which the millions of tons of water drop upon the rocks. They fall with a thunder like that of artillery. The noise can be heard ten miles away, and the spray on a bright day goes up to a height of 1,300 feet in clouds or pillars of mist which are visible for fifty miles around.

As to the exact force of the falls, this is a matter of scientific calculation. The engineers claim that they have a possibility of 3,500,000 horsepower. The possibilities at Niagara are put at 7,000,000; and if these figures are correct the Victoria Falls as a working force are five times as great as our own. Not only the falls themselves, but the descent of the river through forty miles of gorges may possibly be utilized. At any rate there is no doubt that they have here a force greater than all the demands that can be created for many years to come, and that it may be used for the building up of an industrial empire which will affect the whole of this part of the continent.

Thirty-five Million Horsepower.
Have you any conception as to what 35,000,000 horsepower means? If the total fall of Niagara could be used it would equal the latent power of 20,000 tons of coal every day. This power here, at the same rate, would daily equal the force of 1,000,000 tons of coal, so that, figuratively speaking, 1,000,000 tons of black diamonds are dropping down in this gorge every twenty-four hours. In other words, the Victoria falls every two weeks supply an energy equal to that of the yearly coal output of the state of Alabama; and in one year, if their volume were the same from season to season, they would almost equal the force contained in all the coal mined in the United States in that year. Our total product of coal is now 215,000,000 tons per annum.

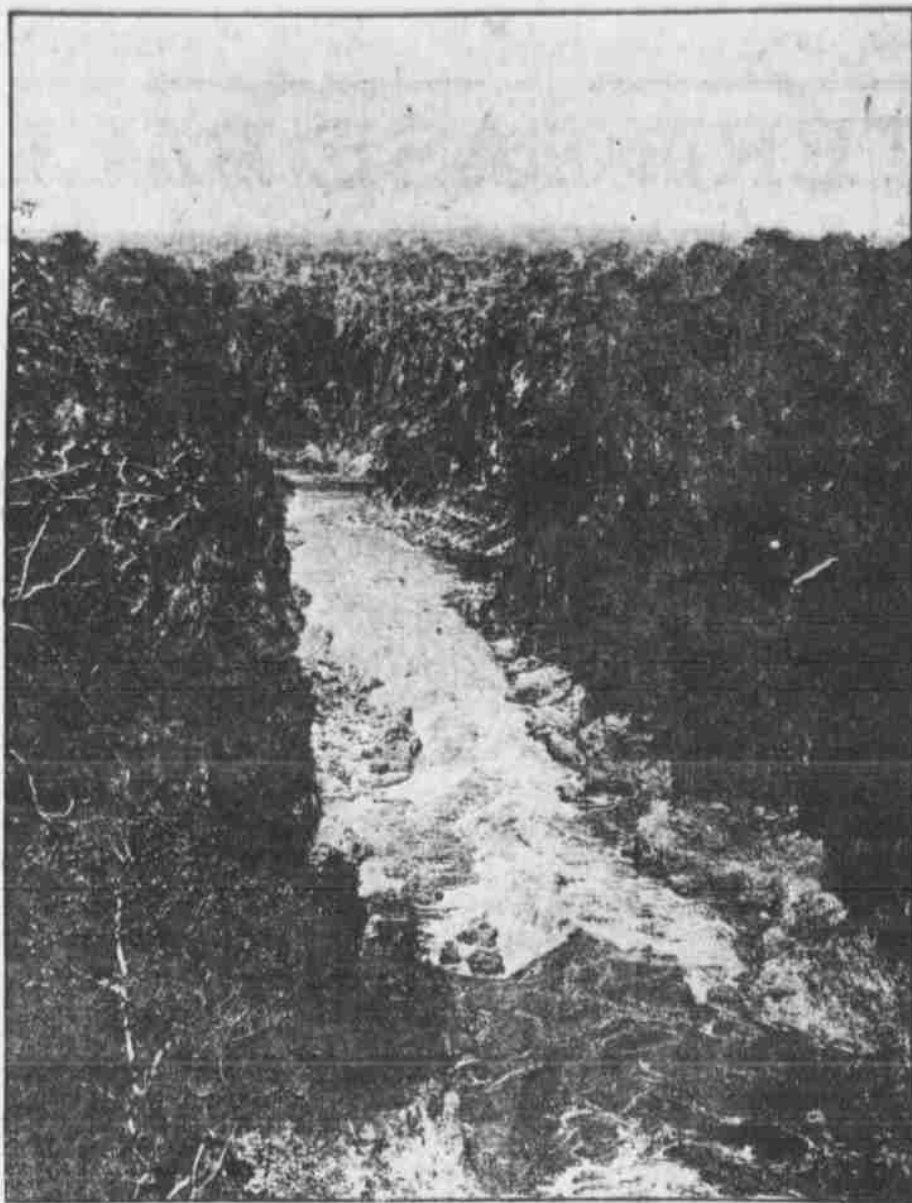
Whether these enormous figures are correct or not is of little matter. The possibilities are beyond any demand. The horsepower now in use in the Transvaal is less than 300,000, and all that we have developed at Niagara is not quite two-thirds as large. This present syndicate plans to start out with 50,000 horsepower, and it will have a 250,000 horsepower within not many years.

How the Falls Will Be Used.
During my stay here I have gone with the officials of the British South Africa company to the proposed power station, and to the northern bank of the river above the falls, where the canal will be dug which will take the water and drop it into the turbines. At some distance above the falls the Zambesi is two miles wide. It narrows to a gorge into which it reaches the great gorge into which it goes in one mighty drop of 400 feet. The falls are as wide as from the treasury to the capitol in Washington, and the water jumps straight down for a distance of 600 feet. By means of the canal now projected the drop will be only 350 feet, and the water will pour into ten great turbines, each of which will generate 5,000 horsepower, making 50,000 horsepower at the first installation. The machinery used is to be just the same as is now employed at Niagara, and one of the chief engineers connected with the construction is a man who has put up works at Niagara. This is Mr. Ralph D. Merahon of New York, a well known authority on the transmission of electricity at high tension. Mr. Merahon has said that there is no doubt that this power can be carried for a distance of 600 miles, and he speaks of the scheme as practical and profitable.

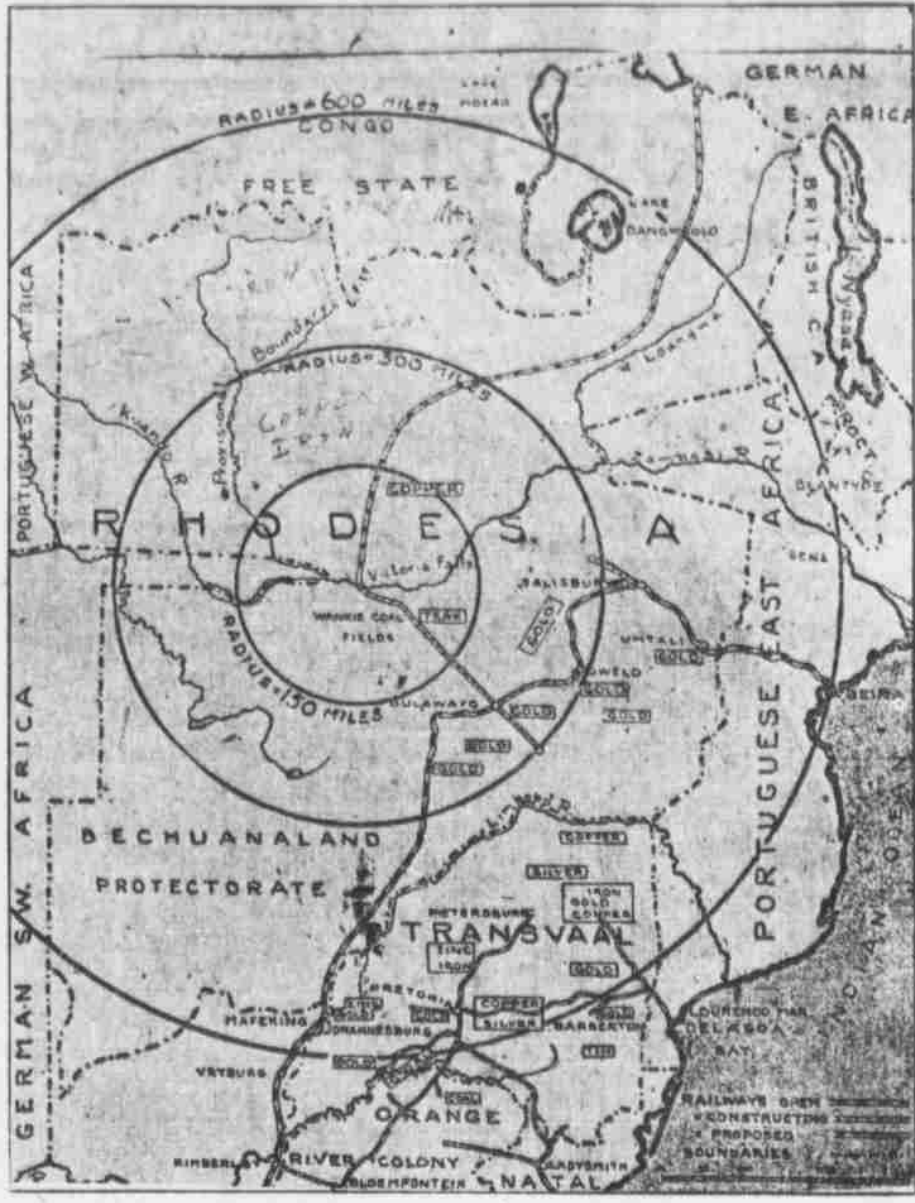
Among the other European authorities who have investigated it are Prof. Blondel of Paris, Dr. Tsiest of Berlin, and Prof. Klingenberg of Berlin. I am told that Lord Kelvin made a careful investigation of it and that the chief German electrical works are interested, and that they will supply some of the machinery.

Carrying Electricity 600 Miles.
The scheme involves the carrying of the juice, or electrical current, for a distance of 600 miles, and it is proposed to construct a line that long from here to the gold mines of the Transvaal for the first installation. This is much farther than power has yet been carried in any other country. We are working plants more than half that far in California. There are tramways in Oakland which get their electricity from water powers 140 miles away, and there are certain stations served by the California Gas and Electric company at a distance of 20 miles. If this plant succeeds it will result in the power of Niagara Falls being carried to far beyond Chicago, and to its utilization in New York, Boston, Washington, Cincinnati, Indianapolis and throughout the mighty industrial beehive which is inclosed within a 600-mile radius of Buffalo.

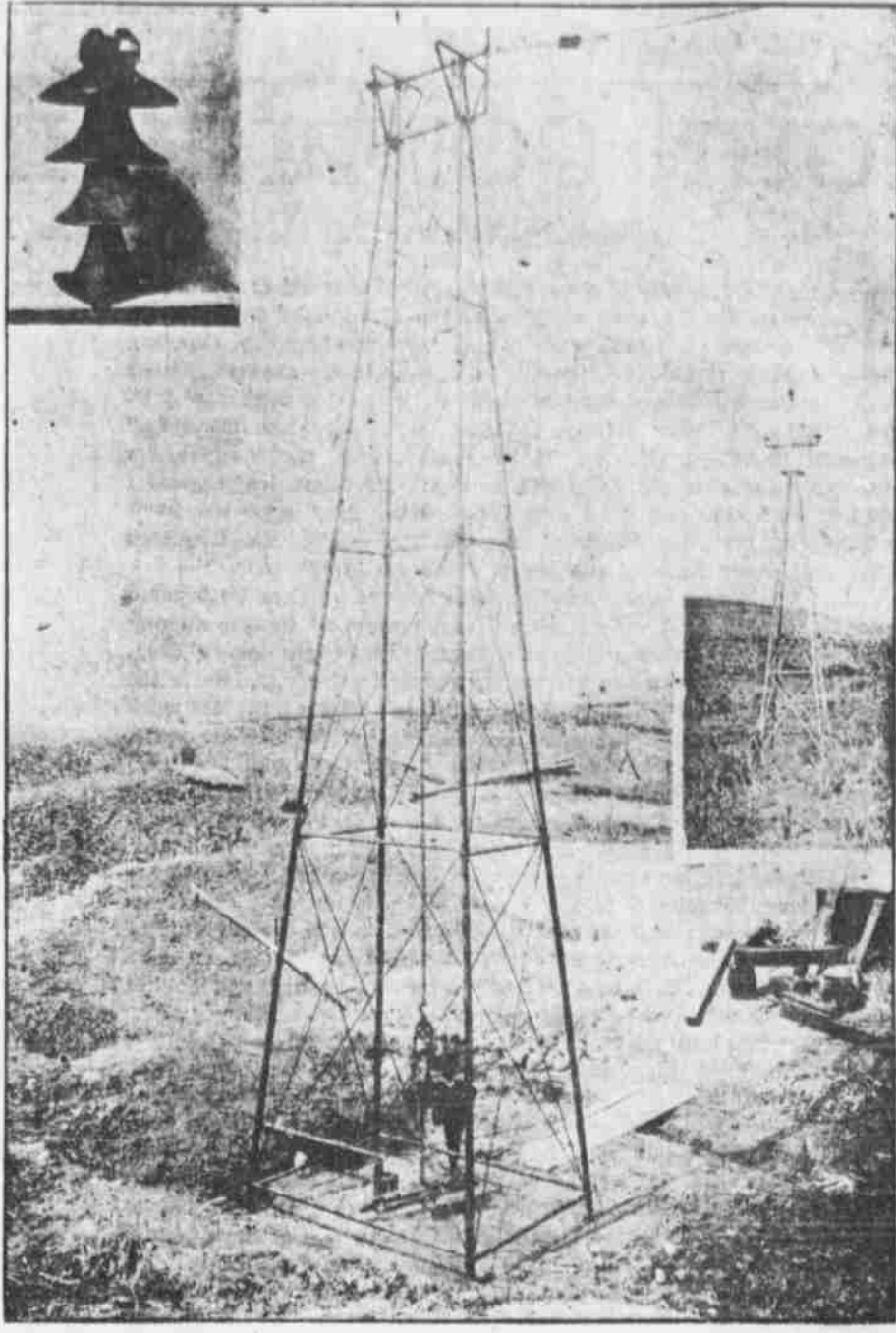
Aluminum Wires and Steel Towers.
As is now planned, the power will be carried through aluminum cables as big around as a man's wrist, and these will be supported by great steel towers sixty feet high. Each tower will weigh in the neighborhood of 1,000 pounds. It will be heeled in a cement foundation and will be made about six times as strong as the weight of the cables and insulators seems to demand. An experimental tower was recently made in Scotland and tested. This tower is much like some which are now used in the United States. It looks like those used for windmills, and is sixty feet high. Each tower will probably carry several cables. The insulators will be of porcelain and will weigh from fifty to seventy-five pounds each. The cables will be made of aluminum wire, with a large number of strands to each cable. The towers will be erected 1,000 feet apart, and it will take in the neighborhood of 2,000 of them to reach from here to the Transvaal. It is probable that there will be a much less loss of power on account of the wires being so high in the air, and the scientists claim that the percentage of waste during the transmission will be exceedingly small. They say that they can probably send the electricity at a pressure of 150,000 volts, which is much greater, as I understand it, than has yet been attained by any working



GORGE OF THE ZAMBEZI BELOW VICTORIA FALLS.



MAP OF TERRITORY TO BE SERVED WITH POWER FROM THE ZAMBEZI.



ONE OF THE TOWERS CARRYING THE WIRES.

plant in the United States. The current is sent at a voltage of 60,000, and this is two and one-half times that.

In the Zambesi Gorge.
One of the remarkable features of the falls here is the mighty gorge into which the floods pour. This gorge is over forty miles long, and the water within it falls so rapidly that an enormous power can be developed outside the falls themselves. Within fifteen miles there is a fall of 700 feet; and a 1,000-foot fall could be made within about twenty miles. Indeed, it is said that a canal, which would cost comparatively little to construct, could be so made that it would develop 1,000,000 horsepower. This is almost four times as much as the total horsepower now used in the Transvaal.

As to the utilization of the power to be developed by Victoria falls, it will comprise the greater part of south-central Africa. Victoria falls is just about 69 miles from Beira on the Indian ocean. It is a little more than 600 miles from Johannesburg and a like distance from the great copper mountains of the Kongo Free State. Within that radius would come more than 1,000 miles of the Cape to Cairo railroad, all of the 2,000 miles of the railroads of Rhodesia and a large portion of the mines of the Transvaal. It would comprise hundreds of small gold mines in Rhodesia and the great deposits of iron which lie between the Zambesi and the Kongo Free State. If the experiments for smelting by electricity which are now under way in this country and Europe are successful the ore from these mines may be turned into pig iron by the power from the falls. They will also be especially valuable to the great copper syndicate which has been recently organized to develop the vast deposits just above the boundary of the Kongo Free State.

As it is now, the Transvaal is said to be paying something like \$15,000,000 annually for power, and a large revenue should come to the company from the gold mines alone. The initial plant, which is to produce 50,000 horsepower, will be all used by the Rand, and other plants will speedily follow. The success of the whole undertaking will depend on whether the power can be successfully and profitably carried to a distance

is greater than South Africa can use for a century to come. As for myself, I doubt the statement that it so far surpasses Niagara, for the reason that there are times of the year when the Zambesi is low, and a waterfall of this kind can only be gauged by its minimum flow. The Zambesi can certainly furnish several million horsepower year in and year out.

Will It Injure the Falls?
One of the great questions in connection with Niagara is whether the taking away of the water for electricity will eventually destroy the falls. It is claimed that the volume of water plowing over the Ameri-

can falls is already much less and that the total diversion, when all the works now operating or under construction are carried out, will be equal to about 40 per cent of the minimum discharge of the Niagara river. At present the plants are said to have a capacity of about 50,000 cubic feet of water per second, whereas the normal discharge of Lake Erie over the falls is only a little more than 30,000 cubic feet per second. At this rate it will not be many years before the beauty of our falls as a great natural wonder will pass away.

The same fear has been expressed as to the Zambesi falls, but the British South Africa company has been careful in grant-

ing concessions which will prevent anything of this kind. The difference in the fall of the Zambesi is very great at different times of the year, and the views when the river is high cannot be impaired. The canals to be constructed are to be so arranged that neither the electrical works nor their course will be visible from the falls themselves, and every effort will be made to preserve this as one of the wonders of the world. No factories will be allowed nearby, and the enormous parks which have been laid out as a perpetuity will be kept intact.

Power for the Zambesi.
These falls will supply power for the navigation of the Zambesi and its tributaries. The Zambesi itself has about 4,000 miles of navigable waterways. It is one of the great rivers of the world and it ranks fourth on this continent. The biggest of the African rivers is the Kongo, after which come the Nile and the Niger. The Zambesi rises in Portuguese West Africa in a great plateau which is about a mile above the sea. Its springs are now far from those of the Kasal, which flows into the Kongo. The upper course of the river is over a grassy plain, which it annually inundates. As the stream reaches the boundary of Rhodesia the valley narrows and the course is broken here and there by falls and rapids. The river has dropped 2,000 feet before it arrives at this point, and it then falls about 1,000 feet within twenty miles. It is slow and sluggish just above Beira, and it looks somewhat like a great pond several miles west of where it makes its great jump of 400 feet into this mighty cavern, walled with precipitous rocks. It falls rapidly in the gorge, but after forty or fifty miles or so the water again becomes quiet and it runs onward comparatively smooth, with the exception of a few places, for a distance of 300 miles to the Kobrasassa rapids in Portuguese East Africa and thence on 800 miles further into the sea. The last 60 miles are always open to navigation, but the delta

is low and sandy and some of the channels are frequently clogged.

Business on the Zambesi.
I stopped at one of the chief mouths of the Zambesi on my way down the coast. The river divides as it nears the ocean and until recently the chief entrance to it was at Quillimane, a town on the Kwa-kwa river fourteen miles from the sea. This is now separated from the Indian ocean by a bar and the easiest approach is by the Chinde mouth. There is a bar there also, but small steamers go over it and bring the goods from the ocean vessels which anchor outside. During our stay the water was so rough that passengers had to be taken on and off in a basket.

From Chinde one can go up the Zambesi and its tributaries by boat. There are three transportation companies, and the vessels start inland shortly after the arrival of every ocean steamer. Some of them go into the Shire river and on into Nyasaland. Chinde is, in fact, the gate to that British colony, and all goods and passengers for it are landed there. The trip inland is slow and affected somewhat by the condition of the river, and there is now talk of building a railroad which shall go to Blantyre, the capital of Nyasaland. Blantyre is an enterprising town with two banks, a chamber of commerce and social and athletic clubs. It is only one of several promising stations in the colony. Zomba, for instance, which is much farther inland, has electric lights. It gets its power from the Zomba mountain, down which a river flows with a fall of 1,500 feet. Turbines are used and the dynamo started at sunset to light the town, the power being used during the day for sawing lumber and other work. The development of these falls may furnish the power for the railroads of the coast. Indeed, a railway 166 miles long connecting Blantyre with the Shire was completed last April, and this is soon to be extended to Zomba.

FRANK G. CARPENTER.

Gossip and Stories About Noted People

An Essential Point.

RANK HITCHCOCK, the republican campaign manager, is fond of talking long walks in the country. On the occasion of a recent visit to the south he started one day for a tramp out of Nashville to a town called Parker. When he had gone some miles he encountered a man who was weeding a patch of ground near the road.

"Am I on the road to Parker?" asked Hitchcock.

"You are," answered the man, surveying Hitchcock with mild curiosity.

"Well, am I half way there?" inquired the traveler.

"Why, as to that," responded the man in the patch, "it would seem as if 'twould make a difference where you started from."—Harper's Weekly.

A Tilden Anecdote.

Nearly all of the older Wayland people remember the hermit of the woods called "Old Tilden," who for some years occupied a hut on the road now known as Buffalo street. This eccentric character made frequent visits to the village, whence he would depart late in the evening for his lonely cottage. He usually appeared with

sooty deposits of lamplack covering him from head to foot—he gained a livelihood by manufacturing this substance—and it is said that his appearance and actions while under the influence of a certain beverage purchased at a local tavern were an especial terror to the children of that day, who still recollect his wild looks and the discordant singing emanating from his hut in the woods north of here. One day, however, there alighted from an Erie train a stylishly dressed young man, who said that he was "Old Tilden's" nephew, and announced his intention of taking the old man away with him. After remaining here for a few days both the old hermit and his city nephew departed. This same young man was no less a personage than Samuel J. Tilden, who later became governor of the state, and afterward ran for the presidency of the United States.—Steeben (N. Y.) Courier.

Beecher's Umbrella.

Among the financial friends of Henry Ward Beecher was one old broker in New York, an aggressive Unitarian, which sect he often said bore "the trademark of honesty." One day he met Mr. Beecher hurrying toward Wall street ferry to avoid the downpour of a sudden rainstorm.

"Take my umbrella," said the broker. "I don't need it; the coming bus takes me to my door."

At the ferry Mr. Beecher met a lady, a prominent church worker of a sister church, who, having no umbrella, was lamenting her inability to reach her car safely. The urbane preacher forced the umbrella upon her, as he said: "I will be out your way tomorrow and will call and get it."

Two hours later, as Mr. Beecher was sitting in the old armchair in his study, the door bell rang and when he responded to the call a boy hurriedly presented him with an umbrella, together with an unsealed note, which read:

"Dear Mr. Beecher: My husband, Mr. M., demands that I return the umbrella you so kindly loaned me at once, and join him in saying that under the circumstances the pleasure of an anticipated call is unregretted. Upon opening the umbrella you will become more fully advised of our united action."

The great expounder of truth and honesty was horrified when, upon opening the umbrella, he discovered a pasted slip upon which was written in a bold round hand: "Stolen by some Presbyterian thief!"—New York Sun.

Some of the Competitors in the Olympic Games Held at the Omaha Field Club



THE ENGLISH COMPETITORS.



DANISH MAIDENS AND THEIR LEADER.



JAPAN LEADING IN THE HURDLE RACE.



COMPETITORS FROM CHINA.