SCIENCE

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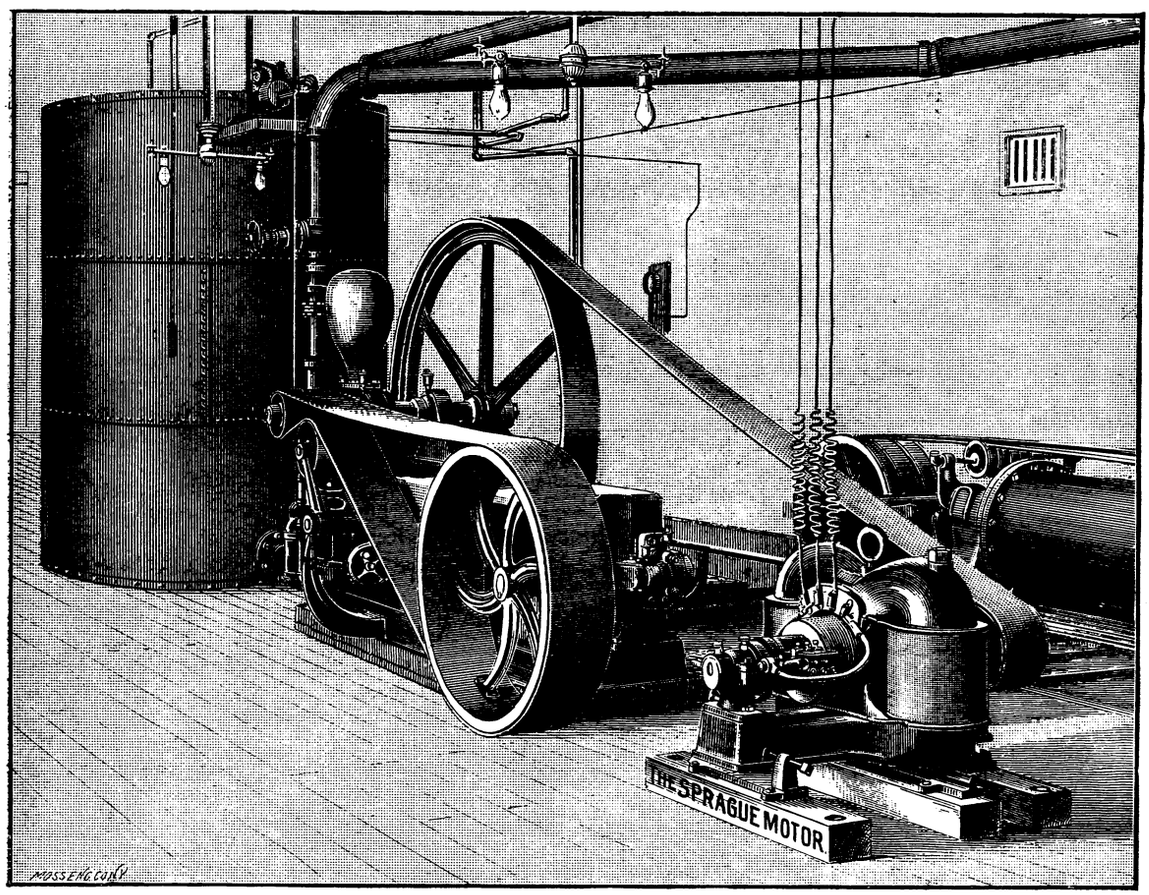
MODEL ELECTRIC ELEVATOR INSTALLATION.

WE present in this issue a view of a recent model hydraulic elevator installation made at the building of the United Security, Trust, and Safe Deposit Company of Philadelphia by the Otis Elevator Company of Yonkers, N.Y., and Chadbourne, Hazleton, & Co. of Philadelphia, agents in Pennsylvania for the Sprague Electric Railway and Motor Company.

One of the first things which strikes an observer is the minimum of space required for every part of the installation. The pump was manufactured by the Otis Elevator Company specially for this plant, and the arrangement for reduction of speed between the armature-shaft and the pump is made in the compact manner shown in the illustration. The motor operates the pump against a pressure in the tank, there being no overflow; and when the maximum pressure is reached, the motor runs empty, automatically cutting down the amount of electric current taken from the line, so that only sufficient current is used to supply enough energy to keep the motor in revolution.

Before the installation of the electric motor at this place, a gas-engine was used to supply the necessary power; but gas never proved satisfactory in this capacity, and the Sprague motor was substituted.

This motor is now giving perfect satisfaction, and the plant is one of the finest elevator plants in Philadelphia. Our view is made from a photograph, and shows all the details of the installation.



A NEW ELECTRIC ELEVATOR.

THE WORLD'S MEAT CONSUMPTION, PRODUCTION, AND TRADE.

THE average consumption of meat in the world, says a recent number of the *Journal of the Society of Arts*, London, has increased; but, on the other hand, the world's commerce in meat has declined. Germany's imports of meat declined from $94,450,000 in 1878, to $73,700,000 in 1887, while the exports declined from $88,300,000 to $33,900,000. In France, between 1879 and 1887, imports diminished from $82,300,000 to $53,910,000, while exports increased from $35,950,000 to $52,600,000. In England, where exports of meat are insignificant, the imports decreased from $240,000,000 in 1880, to $215,000,000 in 1887. On the other hand, the British colonies exported largely: for example, from Canada the exports increased from $4,430,000 in 1879, to $30,000,000 in 1887.

Australia exported also large amounts. In Austria-Hungary, imports diminished from $10,950,000 in 1879, to $8,000,000 in 1887, while exports increased from $20,750,000 to $33,900,000. In the United States, imports increased from $7,100,000 in 1879, to $16,650,000 in 1887, while exports decreased from $128,800,000 to $112,600,000. Importations into Belgium decreased from $16,400,000 in 1879, to $10,400,000 in 1887; in Italy, from $21,200,000 to $14,000,000; in Russia, from $18,330,000 to $10,400,000. By adding the above figures, it is found that the entire imports of meat into the countries specified have diminished from $490,970,000 to $403,120,000, while the entire exports decreased from $278,180,000 to $244,700,000. In 1875, Germany possessed 24,400,000 neat-cattle (four small cattle, such as sheep, hogs, and goats, being reckoned as one); in 1883, only 23,500,000. Between 1881 and 1887 there was in France an increase from 19,700,000 to 20,750,000; in Great Britain, from 17,800,000 to 18,600,000; while in Austria-Hungary the figures remained the same. The increase in population in these countries during this time was as follows: in Germany, 3,500,000; France, 480,000; Great Britain, about 3,000,000; and Austria-Hungary, 2,000,000. The ratio in France on account of the small increase of population is most favorable. This country, therefore, could increase its exports, says the United States commercial agent. In Germany the ratio is very bad, the number of neat-cattle having diminished 900,000 head, and the population having increased 3,500,000. It is most remarkable in the case of the United States, where imports increased 130 per cent, and exports diminished 12½ per cent, although the number of neat-cattle increased from 56,600,000 head in 1880, to 71,200,000 in 1888, and the population increased only from 50,500,000 to 62,000,000.

STANLEY'S EXPLORATIONS.[1]

I REMEMBER, while standing on the edge of the plateau which overlooks the southern end of Lake Albert, in December, 1887, that looking across the lake to the Unyoro plateau, and running my eye along its unbroken outline from north to south, I was much struck by the gradual but steady uplift of the land to a point near the lake's end, where a wide cleft separated the plateau from the lisjointed mass and higher elevations culminating around Mount Ajif. Southward beyond Ajif we could see nothing but dark impenetrable clouds, ominous of a storm; yet underneath these night-black clouds lurked a most interesting mystery, — that of the long-lost and wandering Mountains of the Moon. Little did we imagine it, but the results of our journey from the Albert Nyanza to Unyampaka, where I turned away from the newly discovered lake in 1876, establish beyond a doubt that the snowy mountain which bears the native name of Ruwenzori or Ruwenjura is identical with what the ancients called "Mountains of the Moon."

Note what Scheaddeddim, an Arab geographer of the fifteenth century, writes: "From the Mountains of the Moon the Egyptian Nile takes its rise. It cuts horizontally the equator in its course north. Many rivers come from this mountain and unite in a great lake. From this lake comes the Nile, the most beautiful and greatest of the rivers of all the earth."

If, adopting the quaint style and brevity of the Arab writer, we would write of this matter now, we would say, "From Ruwenzori, the Snow Mountain, the western branch of the Upper Nile takes its rise. Many rivers come from this mountain, and, uniting in the Semliki River, empty into a great lake, named by its discoverer the Albert Nyanza. From this lake, which also receives the eastern branch of the Upper Nile, issues the true Nile, one of the most famous of the rivers of all the earth."

But this is a matter of slight moment compared to the positive knowledge that in the least-suspected part of Africa there has shot up into view and fact a lofty range of mountains, the central portion of which is covered with perpetual snow, which supplies a lake to the south of the equator, and pours, besides, scores of sweet-water streams to the large tributary feeding the Albert Nyanza from the south.

You will remember that Samuel Baker, in 1864, reported the Albert Nyanza to stretch "illimitably" in a south-westerly direction from Vacovia; and that Gessi Pacha, who first circumnavigated that lake, and Mason Bey, who in 1877 made a more careful investigation of it, never even hinted at the existence of a snowy mountain in that neighborhood; nor did the two last travellers pay any attention to the Semliki River. I might even add that Emin Pacha, for years resident on or near Lake Albert, or Capt. Cassati, who for some months resided in Unyoro, never heard of any such remarkable object as a snowy mountain being in that region: therefore we may well call it an unsuspected part of Africa. Surely it was none of our purpose to discover it. It simply thrust itself direct in our homeward route, and, as it insisted on our following its base-line, we viewed it from all sides but the north-east. Only then could we depart from its neighborhood.

Surrounded as I am by the hourly wants of an expedition like this, I cannot command the time to write such a letter on this subject as I would wish. I must even content myself with allowing a few facts to fall into line for your leisurely consideration.

If you will draw a straight line from the debouchure of the Nile from Lake Albert, 230 geographical miles in a direction nearly south-west, magnetic, you will have measured the length of a broad line of subsidence, which is from 20 to 50 miles wide, that exists between 3° north latitude and 1° south latitude in the centre of the African continent. On the left of this great trough, looking northward of course, there is a continuous line of upland, rising from 1,000 to 3,000 feet above it. Its eastern face drops abruptly into the trough: the western side slopes gently to the Ituri and Lomva basins. To the right there is another line of upland. The most northerly section, 90 miles, rising from 1,000 to 3,000 along the trough, is the Unyoro plateau, whose western face almost precipitously falls into the trough, and whose eastern face slopes almost imperceptibly towards the Kafur. The central section, also 90 miles long, consists of Ruwenzori range, from 4,000 to 15,000 above the average level of the trough. The remaining section of upland, and the most southerly, is from 2,000 to 3,500 feet higher than the trough, and consists of the plateaus of Uhaiyana, Unyampaka, and Ankori.

The most northerly section of the line of subsidence, 90 miles in length, is occupied by the Albert Nyanza; the central section, also 90 miles, by the Semliki River valley; the southernmost portion, 50 miles long, by the plains and New Nyanza, which we have all agreed to name the Albert Edward Nyanza, in honor of the first British prince who has shown a decided interest in African geography.

You will observe, then, that the Semliki valley extends along the base of Ruwenzori range; that the northern and southern extremities or flanks of Ruwenzori have each a lake abreast of it; that the Semliki River runs from the upper to the lower lake in a zigzag course.

If you were to make a plan *in relievo* of what has been described above, the first thing that would strike you would be, that what had been taken out of that abyss or trough had been heaped up in the enormous range; and if along its slope you were to channel out sixty-two streams emptying into this trough, and let the sides of the trough slope here and there sharply towards the centre, you would be impressed with the fact that Ruwenzori was slowly being washed into the place whence it came. However, all these are matters for geologists.

For months all Europeans on this expedition, before setting out on their journey towards Zanzibar from the Albert Lake, were exercised in their minds how Sir Samuel Baker, standing on a hill near Vacovia, five or six miles from the extremity of the Nyanza, could attach "illimitability" to such a short reach of water; but after rounding the Balegga Mountains, which form a group to the south of Kavalli, we suddenly came in view of the beginning of the Semliki valley, — a sight which caused officers to ask one another, "Have you seen the Nyanza?" and the female portion of the Egyptian following to break out into rapturous "Lu-lu-lus." Yet we were only four miles away from the valley, which was nearly white with its ripe grass, and which indeed resembled strongly the disturbed waters of a shallow lake.

This part of the Semliki valley, which extends from the lake south-westerly, is very level: for 30 miles it only attains to an alti-

[1] Letter from Mr. Henry M. Stanley to the Royal Geographical Society of London and to the Royal Scottish Geographical Society, written from Camp at Kizinga Uzinya, Aug. 17, 1889.