

environs of the city; about half of the supply reaches Kogawa, where its power is used for weaving and spinning mills. The water thus used serves afterward to irrigate rice fields toward the west of the city. The rate for water when used as power is \$10.25 per horse power per year. For irrigation it is \$95 per cubic foot per second per year from the high level canal and \$12 from the low level canal.

The Conway Expedition to Spitzbergen.

The London Times recently published an account of a conversation which Mr. Trevor-Battye, on his return from his recent journey in Spitzbergen, had with a representative of Reuter's Agency. To this report we are indebted for the following particulars. As will be remembered, Mr. Trevor-Battye was a member of Sir Martin Conway's expedition, and, as arranged, left Sir Martin Conway, Dr. Gregory, and Mr. Garwood, in company with Mr. Conway, the artist, and Pedersen, of Tromsø, near Advent Bay, for the purpose of exploring some of the northern parts of the island. The first object was to explore Dickson Bay, the most northerly bay in Ice Fjord, the northern part of which had never been mapped. In this work the explorers seem to have met with very considerable difficulties from flowing ice and the remains of the old winter pack. However, they landed at a place on the western shore, and spent the night. In the morning, the ice having opened a little, Mr. Trevor-Battye and Pedersen crossed to the other side, being anxious to find out something of the character of the country which separates Ice Fjord from the sea lying to the north. At the north end they found the tide was out, and great stretches of mud of a very tenacious character were to be seen. In the distance running northwest appeared what seemed to be a valley; but, at a nearer view, it proved not to be a valley at all, but an enormous glacier, the front of which was masked by an immense and intricate moraine. The glacier, in striking contrast to the majority of glaciers, is a retreating one, and is slowly dying back. On reaching it, the explorers found it a mile and a half wide, and many miles in length. Pedersen, being anxious about his boat, returned to her at this stage, and Mr. Trevor-Battye went on alone, and presently climbed the snout of a rounded glacier, by which he hoped to be able to effect a crossing. It was, however, badly crevassed, the crevasses becoming wider and more formidable at every step. In his own words: "I had not expected to find ice, and so was not prepared, not even having a stick or a gun with me. I wanted to push on, however, although aware of the fact that the undertaking was rash, and one which, under the circumstances, no Alpine guide would have attempted. I went some distance further, but, sinking to my knees on a snow bridge half spanning a crevasse, I had to reach the other side by flinging myself forward. Later, while standing at the edge of another crevasse, a large body of solid ice, which was jammed between its walls, fell with a roar as I was going to walk across it. A little ahead I could see the col, from which I knew I should have sight of the sea; but I found it impossible to proceed without proper ice tools, for the crevasses between me and that point were masked by deep snow, and I felt any further attempts to be quite unjustifiable. I had now reached a height of 1,800 feet—not of mountain, but a gradual rise of ice river from the sea. The return journey I found more difficult, as the crevasses had to be met down hill, and a slip upon their rounded edges would have been fatal. Finally, I rejoined Pedersen after a walk of twenty-two hours. We then returned to Cape Wörn, and explored the western bay of Ice Fjord. According to Nordenskiöld's map, on which our Admiralty chart is based, a large island occupies the center of this bay; but after cruising about for two days, we found, to our surprise, that it no longer existed as an island. The glacier—which, by the way, we named 'Splendid Glacier'—had encroached to such an extent, and so rapidly, that it had entirely filled up one neck of the bay, and had also covered two-thirds of the island. In a few years' time the head of the bay will be completely obliterated."—Nature.

Heat Resisting Qualities of Wired Glass.

A recent issue of the Journal of the Franklin Institute gives particulars of some tests recently made to determine the fire resisting qualities of wired glass, i. e., glass containing in its texture woven wire netting, as manufactured by the Mississippi Glass Company, of St. Louis. The information is given in a report to the Philadelphia Fire Underwriters' Association, and the results of the trials showed that glass of this kind is capable of withstanding a high temperature, very much higher than ordinary glass, without melting or losing its continuity, even when suddenly drenched in a heated state in cold water.

The conclusions drawn from the tests, and given in the report, are as follows:

1. Wired glass can safely be used in skylights, and in such situations will stand a severe fire, and not give way when water is thrown on it. A wooden framing for skylight, covered with tin, all seams lock jointed and concealed nailed, is superior in fire resisting quality to iron framing.

2. Wired glass in wooden sash, covered with tin, all seams lock jointed and concealed nailed, can safely be used for windows toward an external exposure.

3. Wired glass can safely be used in fire doors to elevator shafts and stairway towers, where it is necessary to light said shafts.

4. In office buildings, hotels, etc., where it is undesirable to have elevator shafts entirely inclosed and dark, wired glass permanently built into a brick or terra cotta shaft, or arranged in a wood metal-covered frame, can safely be used.

5. Wired glass plates, securely fastened in standard fire shutters, can safely be used toward an external exposure. In this case, the fact that a possible fire in a building, all windows of which are protected by fire shutters, can much more readily be detected from the outside through the wired glass, is of importance.

The capability of the wired glass to withstand a temperature beyond the melting point of glass appears to be attributable to the fact that the network of wire in the glass acts as a good conductor of heat, and thereby prevents the accumulation of sufficient heat to melt the glass; and although it may thereby be softened and rendered pliable, the network of wire prevents the glass from giving way by reason of its own weight when softened by the heat.

AN IMPROVEMENT IN STRINGED INSTRUMENTS.

The illustration represents an instrument adapted to

be played with a double pick, and provided with a raised portion forming a stop to limit the movement of the pick. The invention has been patented by Francisco Barrientos, of San Juan Bautista, Tabasco, Mexico, and communications relative thereto may also be addressed to Faustino Avila, V, of the same place. Fig. 1 shows the application of the improvement and Fig. 2 is a cross section on the line of the raised stop. The double pick consists of a handle with downwardly projecting points or teeth, and when the performer strikes the strings with the pick simultaneously, both above and below the bridge, different notes are produced, one of which is two octaves higher than the other. The performer may also, instead of striking the strings simultaneously above and below the bridge, play the octaves in succession, producing a somewhat different effect, the instrument then sounding as if the performer were playing on two instruments of different pitch.

BARRIENTOS' MUSICAL INSTRUMENT. The Utility of Inventions.

It is no doubt true that when a new invention is introduced which revolutionizes some particular art or branch of business, it at first decreases the number of persons employed in that particular line; but that is only temporary, for in a short time the result is a cheapening of the product, a greatly increased demand for it, because of this cheapening, and then necessarily an increased demand for laborers in that line, and almost universally at increased wages. The statistics show this to be true beyond the possibility of a question. The records of the Labor Bureau of the United States show that, from 1860 to 1880, the most prolific period of inventions, and the most intensified in all directions of their introduction, the population increased 59.51 per cent, while in the same period the number of persons employed in all occupations—manufacturing, agriculture, domestic service and everything—increased 109.87 per cent, and in the decade from 1870 to 1880 the population increased 30.08 per cent, while the number of persons employed increased 30 per cent. As shown by the investigation of a committee of the United States Senate, wages have increased 61 per cent in the United States since 1860. And, as we all know, during the same period the cost to the people of nearly all manufactured articles has been decreased in as great, if not a greater, ratio.—Canadian Journal of Fabrics.

M. Moissan in America.

M. Henri Moissan, of the Institute of France and of the Académie des Sciences, who came to this country for the Sesqui-Centennial of Princeton University, lectured at the College of Physicians and Surgeons, New York City, on October 27. His subject was the uses of the electric furnace and was most interesting. He made an artificial diamond, to the great delight of the audience.

Science Notes.

The Russian Geographical Society has been asked by the governor-general of Turkestan to send some men of science to Shignan and Roshan next summer, for the purpose of making a thorough exploration of those regions.

A monument has been erected at Boulogne in honor of L'Hoste, the French aeronaut, who first crossed from France to England in a balloon. He crossed three times successfully, but was drowned in the fourth attempt.

That well known geographer, Prof. Egli, died recently at Zurich in his seventy-third year. He edited the "Nomina Geographica," a work which gives the pronunciation and definition of no fewer than 42,000 geographical names in all parts of the globe.

The mortality from the plague in China is 95 per cent of all cases. According to a letter to the French Academy of Medicine, Dr. Yersin has discovered a new serum remedy for the plague, which reverses the figures, leading to about 95 per cent of recoveries.

An untamed swallow, which had its nest in a farm near Chetwynd, in Shropshire, was caught and taken in a cage to London, where it was released. It returned to its nest in eighty minutes, having accomplished a distance of 145 miles at the rate of nearly two miles a minute.

According to Engineering, some recent researches by Captain Abney show that the light of the starry sky is to that of the full moon about as 1:44,000. The latter is usually considered to be about as 1:600,000 to that of the sun at noon, so that we receive over 13,000,000 million times as much light as from the stars, taking both hemispheres into consideration.

M. Moissan states in the Annales de Chimie et de Physique that the most stable compounds known to science disappear in the electric furnace. The only exceptions are the perfectly crystallized borides, silicides, and carbides discovered by him. These, he thinks probable, are original constituents of the globe and must still exist in some of the stars.

An effort is to be made to induce the Prince of Wales to place himself at the head of the movement for celebrating at Bristol, in June next year, the four hundredth anniversary of the discovery of North America by John and Sebastian Cabot, who sailed from Bristol. It is hoped that the foundation stone of the memorial will be laid by the Prince of Wales simultaneously with one laid in Canada.

A Hamburg young man has just had his sanity proved by the Roentgen rays. He declared ten years ago that he had a bullet in his head which he had fired into it in trying to commit suicide. He complained of the pain and, as he attacked his keepers, and the doctors could find no trace of a wound, was locked up as a dangerous lunatic. The Roentgen rays have now shown the exact place of the bullet.

The total number attending the meeting of the British Association was 3,181, of whom 713 were old members. The sum of £1,355 was divided in grants. The recommendation that a national physical laboratory should be established was adopted, and so was one urging upon the government the necessity of establishing a bureau of ethnology for Great Britain, as such an institution would be of immense value, not only to science, but to the government itself.

The American trans-continental arc, as surveyed by the United States Coast and Geodetic Survey, has been completed. It lies along the thirty-ninth parallel, north latitude, and extends from a point near Cape May, on the Atlantic, to a point above San Francisco, on the Pacific coast. According to the measurements made the distance, reduced to sea level, is 2,625.8 miles; and from these measurements the radius of the thirty-ninth parallel is yet to be determined. While this survey has cost about \$1,000,000 in the aggregate, the longest base line heretofore run is that across India, about 1,000 miles long. As compared with the radius of the thirty-ninth parallel, as given by Bessel of Germany, this arc as measured is 111 feet in error; and according to the figures of Andrew Clarke, of Glasgow University, it is 98½ feet in error. But the bureau claims that these variations are due to errors in previously established standards.

M. Francois Felix Tisserand, a well known astronomer and member of the Institute, died from apoplexy October 20, in Paris, at the age of fifty-one years. He entered the Normal School in the Section of Sciences in 1863, and later became assistant astronomer at the observatory. At the organization of the astronomical service, in 1873, he was appointed director of the observatory at Toulouse and professor of astronomy of the Faculty of Sciences of that city. He was subsequently appointed professor of rational mechanics of the Faculty of Sciences of Paris, and was transferred to the chair of mathematical astronomy in 1883. He was appointed director of the Paris Observatory in 1892, in place of Admiral Mouchez, deceased. In 1874 he was assistant to M. Janssen on the voyage to Japan to observe the transit of Venus. In 1878 he was appointed a member of the Bureau of Longitude. He was author of a number of works pertaining to his profession.