

different nation. Little by little the great wall of Chinese prejudice is falling in pieces. As it falls Christianity enters."

Rev. Isaac Pierson, of the Pao-ting-fu station, who spent some weeks at Tientsin, writes at a later date: "A commission was sent (by Li-hung-chang) to Dr. Mackenzie, appointing him, in company with Dr. Irwin, physician to the yamen—the latter practicing medicine for a calling, being made the recipient of a salary which will equal five hundred dollars a year. Dr. Mackenzie was appointed, or commissioned, 'to heal the sick,' of the city, and a large yard with ample buildings was forthwith set apart to his use. This is part of the great temple of the city recently built by the same Viceroy—the temple in which he received and did honor to General Grant. Miss Howard has been promised a similar commission to treat the women, and is to have another court and buildings at the temple for her dispensary. The Viceroy promises to pay all the expenses of this dispensary work.

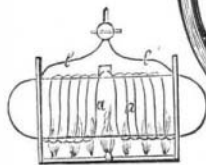
"For nearly three weeks the dispensary has been opened, and Dr. Mackenzie, assisted by our vice consul, Mr. Pethick, who has been indefatigable in his labor of love, has daily given treatment to eighty or ninety patients, in addition to an average of forty or fifty opium takers, who with medical help are trying to break off the habit of using opium. Many interesting surgical operations are performed. Four days ago the number of hare lips cured had reached eleven. There is a general of the army at the dispensary whose leg is being reset for an old fracture. Many other surgical operations have been successfully performed. In all this the Viceroy is intensely interested."

This feature of surgical operations, performed with the approval of the Viceroy, strikes one acquainted with the former prejudice of the Chinese against the use of the knife on the human body, as the most remarkable thing in this whole movement. In past years foreign physicians have not dared to let it be known that they had such a thing as a human skeleton in their house, and a few years ago, when Dr. Dudgeon was lecturing to the students in the Peking University on the anatomy of the human body, he dissected a sheep in their presence, as the dissection of a human body would not for a moment have been allowed. Mr. Pierson further says: "It has been said by some that a medical work could not be carried on here, but here is one already started, upon a basis superior in many respects to any in China, and with the strong presumption of its being a permanent one."

From these letters it will be seen how rare is the opportunity for medical missionary labor in North China. Preaching missionaries are already offering themselves to go and strengthen the hands of their brethren in that interesting field. No grander opportunity could be offered to the consecrated ambition of a Christian physician than that now offered. Urgent appeals are being made for physicians from the stations of Pao-ting-fu, Kalgan, and Tung-cho. Shall not the hearts of the brethren at the front be soon cheered with the glad intelligence that men are on the way to enter upon the work of ministering to men's bodies, and thus assist in the great work of ministering the bread of life to the famishing myriads of the heathen?

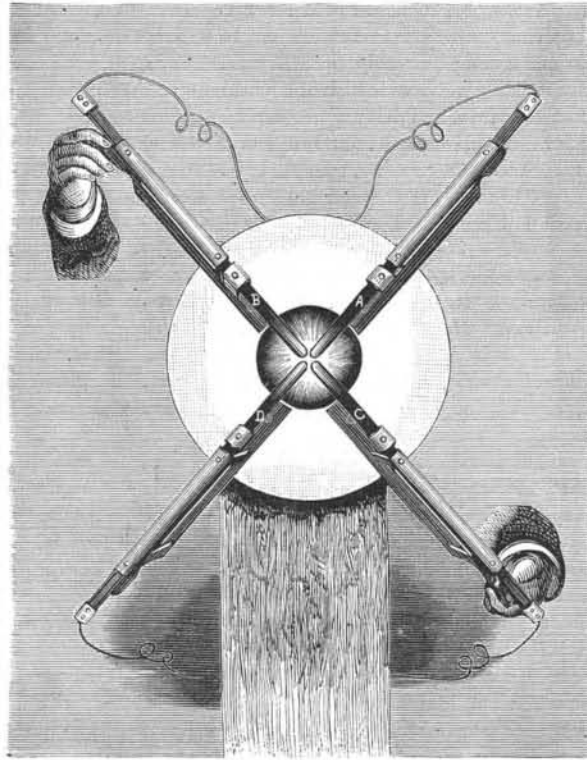
THE STEAM VELOCIPEDE.

At the recent Industrial Exhibition at the Champs Elysées, Paris, M. Perreaux, of Orne, exhibited a steam velocipede, which is illustrated herewith. The generator, the fireplace, and the motor are arranged behind the saddle of the velocipede, after the manner of the portmanteau of a horseman. Chains or belts transmit motion from the engine to the wheels. All the parts are small, well put together, and very compact. The small tubular boiler is cylindrical and has a capacity of about three quarts; and at the sides there are two receptacles containing a sufficient supply of water to last during a journey of two to three hours. The piston of the engine is about one inch in diameter and has a three inch stroke. The whole engine is a mere plaything, and yet, with a pressure of three and a half atmospheres, it has sufficient power to drive the velocipede at a speed of from fifteen to eighteen miles per hour. The fireplace which heats the boiler is an ingenious novelty, and consists of a small gasometer fed by wood spirit. The vapor of the alcohol issues through holes, and gives a flame endowed with great calorific power. The fire is lighted at will, and in a few minutes steam is up. A method is provided for regulating the escape of the alcohol vapor, and consequently the intensity of the heat. Externally the boiler is furnished with two tubes rolled in the form of a spiral, so that the steam which is produced circulates through these continuously, and is exposed directly to the fire before entering the motor. The steam being superheated, no water is carried over with it. With a speed of eighteen miles an hour, the cost of alcohol consumed is from forty to sixty cents (this calculation, of course, for France). This is certainly not very economical, but it is very pleasant to have a horse under control which eats only when he works.



THE ELECTRIC SUN.

At the recent Industrial Exhibition at the Champs Elysées Paris, M. Lontin exhibited an apparatus with which a very interesting experiment may be tried. This device, which the inventor calls the "electric sun," is composed of four carbons radiating from the same center, but not touching each other. Four currents are passed through these carbons in the following manner: The first current enters at A and issues out through the carbon B. The second leaves through this same carbon and enters through the carbon C. The third current enters through the carbon C, and leaves through the carbon D. The fourth enters through A, and

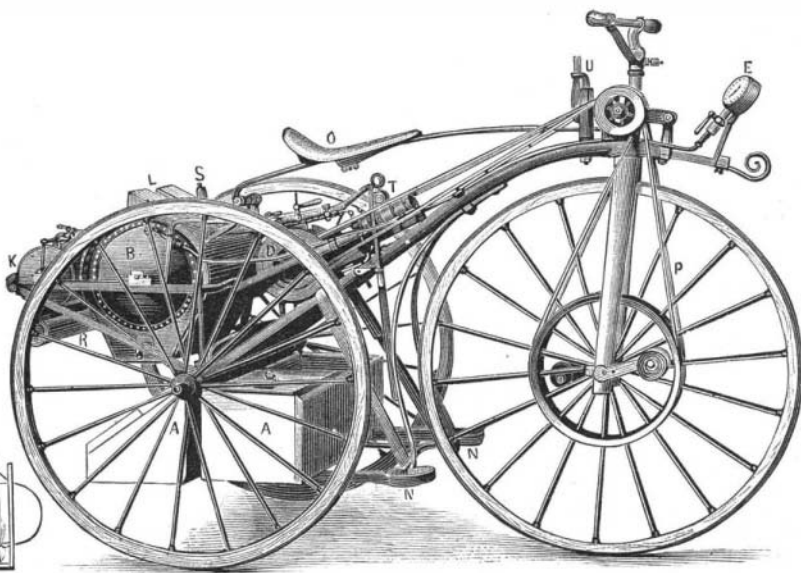


THE ELECTRIC SUN.

leaves through the carbon D, the result being a complete circle of light, which is due to the formation of four lateral voltaic arcs. The light obtained is exceedingly intense. This experiment proves that by this means foci of light of indefinite power may be obtained. When the carbons are further separated from each other flames are produced, not as they are under ordinary circumstances—with a diminution of light—but, on the contrary, with a considerable increase of it; and these flames sometimes attain a length of six inches, and quite often assume a forked shape. From whence comes this anomaly of a flame, augmenting the luminous intensity of the voltaic arc, and that too so strongly?

MISCELLANEOUS INVENTIONS

Mr. Harry L. St. Clair, of Winneconne, Wis., has patented an improved ironing table having pairs of legs which are hinged and jointed together in such manner as to adapt them to fold closely against the top.



STEAM VELOCIPEDE.

Edwin T. Greenfield, of New York city, has patented an improvement in automatic electric switches for telephones. The object of this invention is to provide for an automatic switch a movable electric or magnetic conductor that by its own gravity shall make or break magnetic and electric connection.

An improved attachment for vehicle wheels, to strengthen the felly joints, and at the same time keep the tires in place upon the wheels, has been patented by Mr. Charles Cremer, of Cosumne, Cal. It consists in the combination of a cap

plate, formed to fit upon the rounded inner edge and the sides of the ends of the fellys, provided with pins to enter holes in the inner edges of the felly ends, and having its side arms projecting to overlap the side edges of the tire, and perforated with countersunk holes to receive a rivet.

Mr. Carl J. Swanson, of Stockwell, Ind., has patented a pump that can be used as a force pump or as an ordinary suction pump. The invention consists in a stopper composed of an inner ring of elastic material, an outer wooden ring, and two flat metallic rings.

Mr. George Binns, Jr., of Brooklyn (E. D.), N. Y., has patented a process and mechanism for forming pipes or tubes of pulp, for use as non-conducting coverings for steam pipes, generators, hot air pipes, water pipes, and gas pipes, and for use as conductor pipes for gas, steam, sewage, water, and other liquids.

Mr. Emil R. Völkel, of New York city, has patented a new method of taping furs which is simple and effective, and produces a strong and durable fur. It consists in fastening the strips of fur to some suitable backing by means of adhesive materials.

An improvement in slop jars has been patented by Mr. Maurice Stransky, of New York city. The object of this invention is to furnish slop jars so constructed as to prevent spattering when liquids are poured into them, and to prevent odors from escaping into the room.

Mr. Emanuel J. Trum, of Brooklyn, N. Y., has patented an improved blotter which consists of a pad made of alternate sheets or layers of bibulous and non-bibulous paper, glued together at their ends in a manner to facilitate their ready separation.

An improvement in velocipede sleds has been patented by Mr. James H. Dennis, of Newark, N. J. The invention consists of a saddle, an open wheel standard carrying an end pivoted screw, a lever fulcrumed and connecting at one end with the screw and pivoted at the other end to a rod hooking on a crank shaft carrying spike wheels.

An improved game bat, patented by Mr. James O'Neil, of New York city, is composed of thin strips of wood bent double upon a form, and secured one upon the other by cement. The strips are spread at the bend to the required shape for the bat and united at their ends to form the handle. Between the layers of the strips forming the bow a strip of vulcanized or other fiber is interposed for imparting greater strength and elasticity.

An improvement in saddle-girth rings, patented by Messrs. Arnold Jehnke and John Swank, of Denver, Col., consists in constructing girth-rings with teeth or shoulders to prevent the strands of the rope or girth from being crowded together, and also in providing the girth-rings with pairs of stop rings to allow the middle part of the girth-rings to be left free from strands if desired.

Meteors.

News comes from Missouri that a man has been killed there by the downfall of a meteoric mass. It is described as about as large as a bucket, and resembling iron pyrites. It cut its way through the branches of a maple tree as clean as a cannon ball could have done, struck and killed the man, and then buried itself two feet in the ground. At first, many supposed the account to be a cleverly invented story of the great gooseberry type, but it has been confirmed, according to Mr. R. A. Proctor, in the Newcastle (England) *Weekly Chronicle*. The chance of a death occurring in any given year by meteoric downfall is small, but not so exceedingly small as many imagine. It could readily be calculated if we knew the average number of meteorites, large enough to break their way through the protecting armor of the air, which fall each year upon the earth. We may fairly assume that each human being (including all ages) presents an average surface toward the meteoric missiles of about one quarter of a square yard. (We must, of course, take into account the circumstance that meteors do not fall vertically; nor are all men all the time afoot.) Assuming the number of human beings in the world at each instant to be about 3,000,000,000, the space thus occupied by the human race as a whole would be one quarter of 3,000,000,000 of square yards. (It will presently be seen why I leave the result in this form.) Now the earth's surface contains 200,000,000 of square miles, each containing (nearly enough for such a calculation as this) 3,000,000 of square yards. Hence the surface of the earth contains 200,000

times 3,000,000,000 of square yards, whereas the human race covers but one quarter of 3,000,000,000 of square yards. So that the human race occupies but 1 800th part of the earth's surface. Therefore, if 2,000 meteorites annually reach the surface of the earth, the chances are but as 1 in 400 that one of these will kill a human being. On the average one human being would be killed in 400 years. It is worthy of notice, however, that if Professor Newton, of Yale College, is right in asserting that 400,000,000 of meteors of all orders, down to those visible only in a telescope, fall each year, the