

Correspondence.

A Suggestion from the Philippines.

To the Editor of the SCIENTIFIC AMERICAN:

Your issue of February 23 speaks of the closing year of the nineteenth century being remarkable for inventions and the inventive ability displayed. I want your paper to bring before the public and inventors, and even the United States government, the urgent necessity for a machine that will separate the pulp from the hemp fiber. I give you a few statistics to show the immense importance to the States and the world of such a machine. The exports of hemp from the Philippine Islands in the following years were: 1895, 1,664,590 piculs (a picul being here 137 pounds), valued at \$13,317,700, Mexican; 1896, 1,531,786 piculs, valued at \$11,200,000, Mexican; 1897, 1,804,756 piculs, valued at \$13,340,000, Mexican; 1898, 1,585,212 piculs, valued at \$15,587,316, Mexican; 1899, 1,201,476 piculs, valued at \$7,589,600, making a total for five years of 7,787,820 piculs, valued at \$61,033,916, Mexican. All this hemp was cleaned by a crude hand method, which is simply placing a bolo or strong blade 18 inches long parallel with a piece of wood or bamboo, sharp side down, and drawing a piece of the male banana plant through it. One good man can clean about forty pounds a day. This product then has to be dried in the sun, so that the hemp grower is playing against blind luck right through. With a good hemp-cleaning machine would come naturally a drying machine of the centrifugal type, and with economical methods of cleaning and drying would come greater production and a cheaper dressed article, namely, a good rope, and this would be an economic factor in many other industries. The man who invents this machine will make a large fortune rapidly, as well as enrich the islands and the States. Inventions of this kind will be industrial factors in the islands, and consequently will make for peace and prosperity. Let the United States government offer a prize of, say, \$25,000 gold for the required machine. It will pay the country handsomely and better than treating with or buying gugus.

FRANK J. DUNLEAVY.

Battobato, Island Mindanao, P. I., April 18, 1901.

Automobile News.

Consul-General Guenther, of Frankfort, March 22, 1901, says that a Berlin engineer has constructed a trolley automobile line similar to that exhibited at the Paris Exposition, at Eberswalde, a small city near the German capital. In this system, continues the consul-general, the automobile receives its motive power from an overhead wire by means of a trolley, which is connected with the automobile by a movable cable. This allows the vehicle to turn out at any place on the road. The consul-general adds that the line has been favorably inspected by experts, and that the system is expected to meet with general favor in Germany.

The Count de Chasseloup-Laubat made a successful trip from Tunis to Biskra and return during the latter part of March. Starting on the morning of the 27th from Biskra, he reached Tunis and returned on the following day, the total distance being 264 miles. The voyage across the sand-dunes was a fine one, and the 12 horse power machine made a good performance, overcoming the various difficulties of the route. The Arabs of the desert gave him a warm welcome, and the *cadi* of Tuggurt did him the honor of a special reception. The return from Tunis was made in 11 hours, in spite of a violent *sirocco*. This is the first appearance of the automobile in this part of the Sahara. A good horse takes two or three days to cover the same route, and the caravans eight days.

The progress of military automobilism in Germany is indicated by the fact that the Minister of War has lately ordered a series of machines which will carry two small Maxim guns, protected by nickel steel plates. He has also ordered a series of automobile breaks which will be provided with tables. These breaks are to be used by the *Etat Major*, and the officers may thus consult their maps or papers *en route*, spreading them upon the tables. A series of light vehicles, or *voiturettes*, is also to be constructed, to be used on the firing grounds for ascertaining the results of the cannon-shot. In Austria-Hungary, the Minister of War is having a series of automobiles constructed; these are of a new type, and will be used for the rapid transportation of troops in time of war. By the use of these machines it is hoped that the use of temporary campaign railroads may be done away with. This series of automobiles is to be tried during the grand maneuvers which will shortly be held.

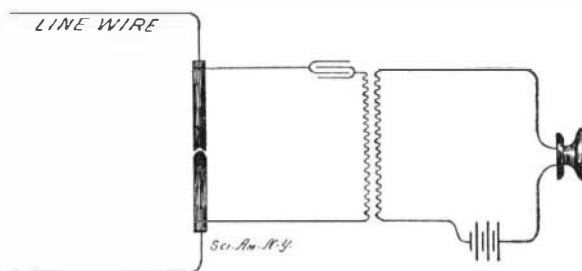
The competitive test of carburants, organized by the Automobile Club of France, promises to be of considerable interest. Now that the use of alcohol, more or less combined with gasoline, is coming to the front, the tests will be of value in finding out the comparative efficiencies of these two combustibles. The question of alcohol has been the subject of some controversy of late, and its value for motors, which

strongly upheld by some authorities, has been disputed by others. The tests will be held at the laboratory of the club near Paris, beginning May 1. According to the rules which have been published the standard of comparison is to be gasoline of the kind used for automobiles, of density 700 degrees at the temperature of 15 deg. C. The trials are to be made with three different types of motors: high speed motors with small stroke, 3.2 by 3.2 inches and 1,300 to 1,600 revolutions; those of mean speed and small stroke, 3.2 by 4.8 inches and 850 revolutions; and those of slow speed and long stroke, 4.4 by 6.4 inches with 650 revolutions. Two principal points will be taken into account in the tests. First, the consumption of combustible per horse power hour, measured on the shaft of the differential at different speeds of the motor. To this end a series of curves representing consumption and speed will be made for the standard gasoline and for the carburant under test, this to be carried out under the best conditions of carburation, ignition, cooling, lubrication, etc. Second, as to the condition of the different parts of the motor after a 10 hours' continuous run and a night of rest, without cleaning. In case a type of carbureter has been designed which is especially adapted for a certain carburant liquid, these may be tested together with the different motors. The selling price of the carburant is to be indicated, as well as the percentage of alcohol it may contain. A commission of experts has been appointed to carry out the tests, and a detailed report of the results will be published. Medals and certificates are to be awarded for satisfactory products or apparatus.

A WHISTLING ARC.

BY FRANK C. DANIEL.

Some very interesting experiments have been recently performed at Dickinson College by Mr. Charles C. Dunning on the effect of rapid variations in the current of a direct current arc. In December last it was demonstrated by Mr. W. Duddell before the Institute of Electrical Engineers that when the current of an arc varied a contraction or expansion of the vapor column resulted. When the variations were



THE WHISTLING ARC CIRCUIT.

sufficiently rapid musical notes and articulate speech could be produced.

To demonstrate this interesting phenomenon Mr. Dunning used an ordinary arc lamp furnished with a current of ten amperes. The arc was shunted through a one-third M. F. condenser and the secondary coil of a telephone transmitter. The primary coil was placed in circuit with a transmitter and a storage battery of two cells.

The above diagram will show the connections. The transmitter was placed in a distant part of the building.

When the arc was lighted and a tuning-fork was held in front of the transmitter, the note was reproduced by the arc. The best results were obtained by whistling into the transmitter. By this means the arc was made to whistle a tune, which it did perfectly, reproducing every note loud enough to be heard at a distance of twenty or thirty feet. When the transmitter was spoken into, sounds were produced by the arc, but it was difficult to distinguish any words. The experiment is easily performed and is very well adapted to the lecture table.

Lead Pencils in Germany.

Under date of March 15, 1901, Consul Hughes, of Coburg, writes: The lead-pencil industry in Germany is at present suffering from American competition. It is alleged that our success in this branch of industry is mostly due to the perfection of the machinery. Another important point is the fact that we have the best cedar wood, which is particularly suitable for the manufacture of lead pencils; while the Germans are compelled to import it and cannot get it in such good quality. Numerous trials have been made to find another material which could take the place of wood in the manufacture of lead pencils; metal tubes, coverings made from rolled, compressed paper, etc., have been used, but none has met with success.

The alumni of Cooper Union recently unveiled a tablet in the main hall of the building in commemoration of the hundredth anniversary of the birth of the founder of the institution. Although the centenary of the natal day of Peter Cooper was February 12, 1891, the tablet was completed only this year.

Engineering Notes.

The automatic sale of railway tickets on Berlin local lines has proved remarkably successful last year. There were 192 automatic machines which sold over 30,000,000 tickets. More than 200,000 tickets were delivered through the slot at the Friedrich Strasse and Zoological Garden stations.

Consul Caples, of Valparaiso, January 28, 1901, reports, as an instance of the increasing trade in railway material between the United States and Chile, that within the past week the Pittsburg branch of the Carnegie Steel Company has sold 16,000 tons of steel rails to the Chilean government, to be delivered in the near future.

The longest stone arch bridge in the world is under construction at Luxembourg, over the valley of Petruffe. This arch will have a span of 277 feet and a rise of 102 feet. The total width of the available roadway is 52 feet, and this width is divided into two parts by a space 19 feet wide, covered by slabs of armored concrete and carrying the footways.

A passenger train on the Minneapolis, St. Paul and Sault Ste. Marie Railroad was recently delayed an hour by heaps of Russian thistles which had been blown upon the track by heavy winds, says The Railway Review. The thistles were caught on the wire fences along the right of way, where they collected in bunches in much the same manner in which snow drifts into railroad cuts.

It is estimated that a Pan-American railway would stretch over 10,220 miles, being the distance from New York to Buenos Ayres. It is estimated that it will cost \$200,000,000. The length of the line would be distributed among the different countries as follows: United States, 2,034 miles; Mexico, 1,644 miles; Guatemala, 169 miles; San Salvador, 220 miles; Honduras, 71 miles; Nicaragua, 209 miles; Costa Rica, 320 miles; Colombia, 1,065 miles; Ecuador, 668 miles; Peru, 1,785 miles; Bolivia, 587 miles, and Argentina, 1,050 miles.

A road made of slag cement is to be constructed at North Tonawanda, N. Y. The Tonawanda Iron and Steel Company has received permission to lay tracks on a road which is now in poor condition, provided it will slag the roadway for its full width of 66 feet. The street is about 40 feet wide. The method of laying this particular surfacing is probably novel. The molten slag is to be run in a "hot train" of iron cars over the track, and the slag poured over the surface at the proper place. The company claims that it will cool into a solid mass.

Notwithstanding the success of the new Central London Electric Railway, it does not appear to be highly remunerative to the shareholders. At the recent half-yearly meeting, for the first time since its inauguration, some authentic particulars were given regarding its passenger traffic and receipts. Throughout January the daily number of passengers carried averaged 108,000. Up to the time of the report 15,000,000 people had been carried, of which number 1,500,000 were workmen, who had been conveyed for four cents the round trip, which is half the regular fare. The receipts showed a profit of \$1.20 per mile. It is intended, if the traffic does not increase, to raise the fares.

An important addition to the defenses of the Rock of Gibraltar has been made recently, says the Daily Telegraph correspondent. Four huge reservoirs have been cut out of the side of the rock above Willis' Road, and capable of storing some 5,000,000 gallons of water, which, in any possible event of siege, would be invaluable to the garrison. Even for present use a pure supply of water is at hand, enough to fulfill the wants of the place in the driest of years, and to spare even then. Each tank, by means of wire gauze over the inlets and exits, can be made mosquito-proof, thus preventing this pest, prevalent in the hot weather, from introducing any germs of disease as supposed under the new theory.

British steel manufacturers are waking up to resist the incursions of the American Steel Trust. The leading iron and steel manufacturers are co-operating together to preserve British trade. Large tracts of rich iron ore land have been purchased in Portugal and Norway by British syndicates for obtaining the raw material. In the case of the Norwegian iron deposits, Edison's magnetic extraction process is to be utilized upon an extensive scale. The experiments have proved that the process is singularly adapted to the country. The price of iron in England has fallen considerably within the last few weeks, and the installation of the latest plants into the workshops will enable the British manufacturers to fill their contracts with greater celerity. One leading firm has installed \$10,000,000 worth of plant during the last twelve months, and guarantees to fulfill contracts in the same time that the American manufacturer can complete them. The prices are also considerably lower. In view of the increased tariff upon American machinery into Russia, the British manufacturers are straining every nerve to introduce their specialties, and their efforts are meeting with success.