

## Correspondence.

**The Export Edition of the Scientific American in Europe.**

To the Editor of the SCIENTIFIC AMERICAN:

I write to thank you for the numbers of the monthly SCIENTIFIC AMERICAN which you have kindly and with such regularity sent to this office.

It is a splendid publication, and is destined to aid in great measure the inevitable development of the export trade of the United States, to accomplish which the Consular Corps is using all its best efforts.

For my own part I may say that having brought your last numbers to the attention of persons inquiring here, and having translated certain details for them, more than thirty inquiries for catalogues and prices have been sent from here in the past few days.

HAROLD S. VAN BUREN, Consul.

Office of U. S. Consul, Nice, France, July 17, 1901.

To the Editor of the SCIENTIFIC AMERICAN:

While in the United States before coming out here I used to read with deep interest the SCIENTIFIC AMERICAN, and occasionally I see it in Syria. But the Export Edition I have not had occasion to examine until now. It certainly deserves high praise. My experience tells me at once it will prove a great help to us in our endeavors to promote trade with the United States. The Prices Current it carries strikes me as a most valuable feature. While French as yet is the leading commercial language in the Levant, local commission men will, I know, find your export journal most useful. We shall esteem it a great favor if you will place this Consulate permanently on your mailing list. You may rely on us doing all in our power to assist you in your good work.

G. BIE RAVNDAL, Consul.

Consular Service, U. S. A., Beirut, Syria, June 12, 1901.

**Automobile News.**

The German army, in the next grand maneuvers, is to make a thorough series of tests upon different types of military automobiles, which will complete the tests commenced two years ago, and whose results were excellent. For this year's trials the Reichstag has voted about \$35,000; one of the main questions will be the transportation of gasoline and petroleum so as to avoid accidents, and another question is that of following the troops with the machines over sandy or otherwise bad roads. It is considered that the automobile will be especially useful in modern engagements, where the line of battle will be greatly extended, as it will allow the general to remain in rapid communication with the troops. It is also proposed to use the automobile for the service of campaign hospitals, for aerostatic parks, for luminous signals and for the transportation of troops and baggage.

Since last year the Paris Fire Department has been experimenting with different types of electric automobiles, such as fire pumps, hook-and-ladders, hose-carriages, etc., and these have proved very successful in general. They present a decided advantage over the old forms in allowing a quicker start from the station and an immediate putting in use when on the ground. The value of this increase of speed is apparent, where the gain of a few minutes may be of vital importance. The first machine to be tried was a "fourgon," or wagon carrying six men, hose, ladders and fire-extinguishers. The motor, of the Bouquet, Garcin & Schivre type, is of 4,000 watts capacity and the accumulators, which give 200 ampere hours, weigh 1,500 pounds. This vehicle measures about 6 by 10 feet and weighs 4,840 pounds, or 6,820 pounds when in running order. The electric fire pump was the next to be tried. It carries a pump worked by an electric motor and fed by a water-reservoir containing 150 gallons; this water supply (or other fire-extinguishing liquid) is utilized until the hose can be connected directly to a fire-plug. The same motor is used to drive the vehicle and, when on the spot, to work the pump. In this way it starts almost instantly and upon arriving at the fire sets immediately to work. It has a front seat with the steering devices and in the center is the battery-box, suspended below the vehicle; above it is the motor, of the same type as the first vehicle, which drives the rear wheels. The reservoir is in the rear and above it is the hose-reel, the water being taken to the hose through the hollow axle. The pump, back of the reservoir, has three vertical cylinders, and delivers 20 gallons per minute at a pressure of 4 atmospheres. The vehicle has an electric brake, besides a cord-brake; it weighs 5,060 pounds, or 6,380 pounds when fully equipped, including 3 men and 100 gallons of water. The motor gives 4,000 watts and the accumulators 180 ampere hours. An arrangement is provided for using part of the current for lighting the scene of disaster by incandescent lamps, or even by arc lamps. These two machines have been repeatedly tried in actual service and have proved quite successful. A newer machine is the hook and ladder, which is rather in the experimental stage.

**Engineering Notes.**

It is probable that Pittsburg will have a system of elevated roads in the near future.

Russia now occupies a very important place in the world as an iron producer, coming between Germany and France.

Philadelphia's City Hall, which was begun in 1871, has cost \$24,313,455. The largest single item of expenditure was for marble, \$5,467,503.

Civil engineers consider that the dome of St. Paul's, in London, is unsafe, owing to cracks which have appeared in the walls, and the Dean of the Cathedral has decided to have an expert inspection.

There is a considerable use of gas as a motive power in the cities of Denmark. Most of the gas engines are manufactured in Denmark, although there is some importation of German and American machines. The prices are 15 to 20 per cent higher than in the United States.

James E. Mills, of San Fernando, Mexico, died July 25. Mr. Mills was a prominent mining engineer and geologist, and was at one time an assistant to the late Louis Agassiz. Mr. Mills made the first geological maps of the northern section of the Sierra Nevada Mountains.

By 1906 France will have a fleet of 68 submarine boats when the present programme is fulfilled. Twenty submarine boats have been laid down this year, and owing to this large number none will be laid down in 1902. Five will be begun in 1903, and in 1904 26 more will be undertaken. Three will be ready next year, and 17 more in 1903.

An immense oil tank holding 1,260,000 gallons has been built in San Francisco for the Street Railway Company for storing oil fuel for use in the power house, as a substitute for coal. The oil can be bought and delivered at an expense not exceeding 72 cents per barrel. From this tank the oil will be distributed to the various power houses by tank wagons.

Musical instrument makers of France and Germany put imitation graphophones on the market in the expectation that they could manufacture them more cheaply than the American makers. The rival articles were distinctly inferior, and instead of there being a price-war the quality of the American product was insisted upon, and the result is that at the present time the imitations are practically driven from the field.

On the Lancashire and Yorkshire Railway system, the engines and freight trains are graded into six classes, and schedules have been drafted showing the load which each engine is expected to haul over each section of the line. The object of the new plan is to reduce the number of trains by getting as much work out of each engine as possible, the gross load being graduated to the maximum tractive power of each locomotive.

The cruiser "Leviathan" for the British navy was recently launched on the Clyde from the shipyard of Messrs. John Brown & Company. When completed this vessel will be the heaviest cruiser afloat, even excelling those built for the Japanese navy. She is the first of what is known as the "Drake" class, and was ordered in 1899. The vessel is 500 feet in length, and displaces 14,160 tons. The engines are to develop 30,000 horse power, which will produce a speed of 23 knots. Her armor is also considerably heavier than that of any other ship of her class.

Lloyd's Register inspects marine boilers when new, again at four years, at six years, and then annually; they are, however, supposed to be inspected every three months by the chief engineer of the vessel they are in and also by the superintending engineer. In this country marine boilers have to be inspected every year by the Steamboat Inspection service, and are in addition constantly inspected by the engineers of the ship. The boilers of vessels on six-day runs or four-day runs are inspected on every trip, particularly where corrugated funnels are in use in this country.

The British Naval Department has devised an ingenious method of fighting submarine vessels, and a good test of the method was given during the recent visit of the Lords of the Admiralty to Portsmouth. The torpedo boat "Starfish" was selected for the experiment. The plates on the starboard side of the vessel were strengthened and a boom 42 feet long was attached, the upper end resting on a crutch. To represent the submarine boat a large barrel was submerged about ten feet below the surface of the water. The torpedo boat steamed by this target, and when within striking distance the boom, to which an outrigger torpedo containing a charge of 32 pounds of guncotton was attached, was dropped overboard. The forward impetus of the vessel drove the free end of the boom and the outrigger down into the water, and at the critical moment the guncotton charge was fired by electricity. The explosion that followed was most destructive in its effects. It was calculated by the experts on board that any submarine boat within a radius of twenty yards would have been totally wrecked.

**Grand Jury Makes Presentment Against the Central Tunnel.**

The grand jury of New York County has made a presentment against the New York Central tunnel in Park Avenue. The presentment in part is as follows:

Various citizens having complained to the grand jury of the conditions of the Park Avenue tunnel, and of the dangerous consequences resulting from the operation of numerous trains running through it, we have deemed it to be our duty to make a thorough and complete investigation of the tunnel, of its structural defects and of the conditions attendant upon the present method of its operation.

During this investigation the grand jury, with the able assistance of the District-Attorney, have examined not only the most available expert witnesses, but many persons who are compelled to ride through the tunnel, or who live along its line, besides several officers and employees of the railroad companies.

Estimating the amount of pure air necessary for each passenger, it appears that a coach when filled contains on entering the tunnel pure air sufficient (if uncontaminated) to last about one minute. The fumes, gases, smoke and steam emitted by the locomotive find entrance into the coaches, and further pollute the already contaminated atmosphere, and the passengers are thus compelled not only to rebreathe the vitiated air, but are also subjected to additional peril from these gases. To the discomforts and dangers thus created must be added the vitiation caused by lighted lamps and heat radiated from locomotive boilers. When the number of trains passing through the tunnel daily is considered, it is not at all surprising that the air within it is not comfortably or safely breathable. Temperatures exceeding 100 degrees are frequent with humidity at the point of saturation, and the oxygen of the air replaced by stifling gases, which are wholly unsuitable to be taken into strong lungs, and highly dangerous to weak lungs. Unless steps are taken by the company to improve these conditions the nuisance will be a continued and increasing one.

From evidence adduced before it the grand jury is convinced that in the present state of the art of electrical application to mechanical ends the progress has been so general and uniform that everything requisite for an electrical installation and its approaches is as standard at the present time as steel rails or car wheels; that to install electrical traction in these tunnels and the approaches thereto everything required can be had without difficulty, delay or great initial expense.

Evidence presented shows beyond question that bituminous coal is used in locomotives passing through the tunnel. The utilization of this fuel within the city limits is contrary to law, and we charge the Health Department of this city with the responsibility of seeking out violations thereof; we think that the Health Department has been lax heretofore, but we are satisfied that the present administration of the department will co-operate with other branches of the city government to relieve passengers on the road and residents along Park Avenue from the annoyance thus caused.

As a result of the investigation of the conditions existing in the tunnel, as above briefly summarized, the grand jury present to the court, the officers and directors of the various railroads operating within this tunnel, as maintaining a public nuisance, and recommend that vigorous and speedy action be taken to abate the same.

Further we recommend:

First—That the brick walls dividing the tunnel be promptly removed, and that steel columns and girders be substituted therefor.

Second—That passenger coaches while not in use during the day be protected from the sun by a shed.

Third—We further recommend that inasmuch as the most eminent engineers assert that there is no remedy for these existing evils so long as coal-burning locomotives are in use, that the railroad companies be compelled by and under such laws as may be provided for that purpose to change forthwith the motive power within the tunnel and its approaches to some method of propulsion as will not, as heretofore stated, endanger the public comfort and health.

The Elberfeld-Barmen monorail electric railway is operating satisfactorily. There are twenty-six cars in use at the present time and new cars are being made. The cars are running on intervals of about two and a half minutes and are occasionally overcrowded. The doors cannot be opened before the conductor has released the electro-magnetic bolt.

A railroad company that operates coal mines in Pennsylvania recently prevented its striking miners from interfering with non-union workmen, who were employed in pumping water out of the mines, by building a barbed wire fence 7 feet high about the pump-house and dynamo plant and then charging it heavily with electricity.