Correspondence.

Tide and Wave Drainage.

To the Editor of the SCIENTIFIC AMERICAN:

Whatever relates to the prevention of yellow fever in Cuba is of interest not only to Cubans but to the people of the United States, for there is the prolific hotbed from which the seeds of the disease come to spread devastation among us.

Much can be done by attention to ordinary sanitary precautions, but this alone, without purification of the foul water of those harbors in that tropical climate, will be insufficient.

The curious combination of an inclosed lake and a long, narrow inlet connecting it with the ocean is the characteristic of the harbors of Cuba where yellow fever prevails in its more deadly form.

This formation would not be so conducive to impurity in the inclosed water if it were not for the low range of tide which prevails there, the difference between high and low water usually being about a foot only. The sea water which enters at high tide pushes the foul water back, and as the tide falls the pure water runs out again, leaving the bulk of the foul unchanged.

As a means of correcting this evil we beg leave to propose the following plan. To provide for somewhat similar conditions, there has been in operation for years, at Virginia Beach and other places on our coast, a device which, with some amplification, would accomplish the desired object in Cuba. It consists of an inclined plane of stout timber erected on the margin of the ocean where waves strike in full force. The foot of this slope is placed at a suitable height to catch the waves, which are carried by their own momentum into a canal in rear, through which the water is then conducted to any point desired.

Along the coast near the mouth of a harbor a sufficient length of these inclined planes might be constructed, and from them the pure sea water would flow into, and around, the harbor to its head, in volumes only limited by the size of the plant. The flow would be constant, excepting when the sea was becalmed, and it would drive out before it every particle of foul water in the harbor.

The cost of this canal, in comparison with one of equal size whose banks were to be subjected to hydrostatic pressure, would be light, for the elevation of the water need be only what was required to produce a current. The height of the embankment between the canal and harbor need be but little greater than ordinary high tide storm; tides might be allowed to overflow it. No puddling would be required; a simple bank thrown up from the excavation would be sufficient.

Considering its utility, the first cost of this plant would be moderate, and that of its subsequent maintenance very small indeed. The losses of the people of the United States by one yellow fever epidemic would build a hundred of them. WM. W. BLACKFORD.

Lynnhaven, Va., May 15, 1899.

Proposed Cable to Iceland and Greenland.

The following, dated Copenhagen, April 27, 1899, has been received from Vice and Deputy Consul Blom: The meteorologists in Europe have for many years desired a telegraphic connection with Iceland, Faroe Islands, and Greenland. Daily telegraphic reports from Iceland would be of the utmost importance to the weather service, as well as to the large fishing interests in the North Atlantic. I understand that the British fishing interests have recently petitioned the government to grant a yearly subvention to the proposed cable. The Danish government looks favorably upon the plan, but is of the opinion that it should be realized by private individuals. The Great Northern Telegraphic Company, Limited, of Copenhagen, is willing to lay and work the cable, provided it is guaranteed a certain sum from the various governments and other parties interested. The royal Danish meteorological office, in Copenhagen, has issued circulars to kindred institutions throughout the world, requesting them to subscribe to daily weather bulletins from Iceland and Faroe Islands; the matter is also being seriously considered by other bodies, especially in Great Britain, and the prospects for a realization of the enterprise are promising.

Adaptation of Leaves to the Intensity of Light.

The term "photometric" is proposed by Prof. J. Wiesner for those leaves which assume a definite position in light, either in order to obtain as much illumination as possible or to screen themselves from too much light; those which do not possess this property being "aphotometric." Photometric leaves, again, may be "euphotometric" or "panphotometric," according as they adapt themselves only to the maximum of diffused light or to both direct and diffused sunlight. The former are characterized by assuming a fixed position, at right angles to the direction of the strongest diffused light, while the latter have no such fixed position. The vegetation of forests and those plants which grow in deep shade present the most frequent and clearest examples of "euphotometric" leaves.—Biologisches Centralblatt.

Miscellaneous Notes and Receipts.

Improvements in Acetylene Burners.—In order to prevent the danger of an explosion in acetylene burners, it has been proposed to lead the gas on its way to the end of the burner through a few small chambers filled with glass wool (spun glass). Owing to the fact that spun glass acts like a filter, the acetylene is, before burning, freed from all impurities which might have been carried along. Besides, these spun wool filters also serve the purpose of preventing a falling back of the flame and rendering it harmless even in case an explosion should occur through some cause or other.—Neueste Erfindungen und Erfahrungen.

Blackening Ornaments of Iron.—To give iron ornaments a black-brown to black color, proceed in the following manner: The articles are treated with corrosives, cleaned of all adhering grease and placed in a 10 per cent solution of potassium bichromate, dried in the air and finally held over an open, well-glowing, non-sooting fire for 2 minutes. The first coloring is usually black brown, but if this process is repeated several times, a pure black shade is obtained. Special attention has to be paid to removing all grease, otherwise the greasy spots will not be touched by the liquid, and the coloring produced will become irregular. Benzine is employed for that purpose and the articles must not be touched with the fingers afterward.—Chemiker Zeitung.

Hygienic Value of Paints.—Regarding the effect of various paints upon bacteria, Dr. Heimes has recently delivered a notable lecture before the Greifswald Medical Society. It does not appear to be an unimportant matter for the sanitary conditions in a building with what kind of paint the walls are covered. Heimes conducted the following experiments: He took equally large pieces of oak, poplar and pine wood, and of iron and cement plates, and covered each piece with oil paint, size paint, lime paint or enamel paint, as well as with a few proprietary compositions. After the paint had dried perfectly, the plates were coated with cultures of various disease-inciting bacteria. In this condition the plates were laid in an incubator, in which an ordinary room temperature was maintained. From time to time a little was scraped off from the surface of the plates in order to examine them as to the amount of live bacteria present. The result was that upon oil paint coatings the bacteria were found to die off quicker than on articles coated with other pigments. On enamel paint the bacteria die more slowly, and still slower on lime and size paint. This heterogeneous behavior is probably not due to the chemical properties of the paints, but to the different physical qualities, especially to the fact that the liquids containing bacteria dry more slowly or quickly upon the various paints. Prof. Loeffler, who attended the lecture, attached considerable practical importance to the result, and recommended the use only of oil paint in hospitals, schools, barracks and other buildings.—Farben Zeitung.

Treatment of Driving Belts.—The Werkmeister Zeitung gives directions on the best treatment of driving belts, whose faultless working is of great importance in every factory. The good drawing of a belt increases with the friction between belt and pulley. Hence it is obvious that the belt must surround as large a portion of the pulley as possible. For this reason crossed belts always pull better than open ones. If in any way practicable, open belts should cover at least almost half the pulley. If the circumference of one pulley be very small in proportion to the other, thus allowing the belt to cover only a small portion of the smaller pulley, a sliding of the belt frequently takes place, especially if the distance between the two pulleys be slight. It is plain, continues the Werkmeister Zeitung, that a slow running of the engine makes a strong stretching of the belts necessary. For this reason, a tightening-pulley is frequently placed midway between the two pulleys, so as to avoid a repeated resewing. If a large power is to be transmitted at little velocity, a broader belt should be employed than would be necessary with greater velocity, or else two belts are made to run on top of each other.

If one does not care to tighten the belts still more or use one of the many belt lubricants, the best makeshift is to cover the pulley with sail cloth. This is done by cutting the sail cloth so exactly that it is difficult to get it on the pulley. By thoroughly moistening the sail cloth on the pulley with warm water it clings more closely to the pulley, as the water causes it to shrink. It is still more practical in the long run to fix instead of the canvas a leather strip of corresponding breadth on the middle of the pulley, by having a few holes bored into the rim of the pulley which are tightly filled up with wooden wedges, in order to be able to nail the strip of leather on it. This process is said to have proved useful with ordinary proportions of the size of the belt to the effect of power to be transmitted. If all is unavailing, the belt is too weak, and must be replaced by a broader or double belt. Of great advantage in such cases are the wooden belt-pulleys, which increase the driving power.

Science Notes.

It is said that the construction of the dam across the Nile at Assouan, Egypt, will not submerge the temple at Philæ. The actual level of the water behind the dam will be a little above the present high-water mark, so that the floor of the temple will still be dry.

It is said that some 9,000,000 acres of land in Italy, the cultivation of which has been abandoned because of malaria, are to be developed by the aid of American capital. Land of this nature can be reclaimed by drainage and proper attention to sanitary laws.

An English railway company has recently completed a train for the use of the royal family, the cost of which was $40,000. There are five cars, and each is lighted by electricity, the dynamo being axle-driven and supplemented by a storage battery in the baggage compartment.

It has been decided that the Fisheries and Forestry exhibit of the United States at the Paris Exposition shall be utilitarian only. An exhibit of natural fish will be avoided, but tinned, preserved and dried fish and fishing tackle will make the Department of Forestry and Fisheries one of the most attractive sections in the United States Division at the Exposition.

At last the Electrolytic Salts Company have received a report on the "process" of extracting gold from sea water. The professor whom the directors employed reports that the process was fraudulent. The directors are said to have recovered a considerable sum from the originator of the swindle, which, together with the sale of the machinery, etc., has realized enough to pay 20 per cent dividend to the stockholders.

It is said that automobile vehicles are to be used by the Pittsburg Express Company, in connection with its trolley express cars. This company will do business on all the traction lines in the vicinity of Pittsburg. It expects to operate eleven baggage cars and a large number of automobile delivery wagons. The baggage cars will have six-foot sliding doors on either side. The baggage can be taken up at any point along the line.

M. Berthelot has examined many classical specimens of ancient mirrors in different localities. They seem to have been made by blowing a thin-walled bulb of glass and pouring melted lead into a watch glass shaped portion of the thin bulb and manipulating it so as to spread the metal into a lining layer about one-tenth of a millimeter thick. The glass had to be made very thin, so as not to crack on contact with the melted lead.

Fifty acres of Adirondack burnt lands have been replanted this spring with white pine and other conifers by the New York State College of Forestry of Cornell University. Wood choppers were turned into expert tree planters, and at the same time a nursery has been established, with enough seed to furnish 3,000,000 seedlings, which when two years old will be set out and will be sufficient to cover 2,500 acres. It is expected that the college will plant at least 500 acres each year.

Brigadier-General Greely, Chief of the United States Signal Corps, has invited proposals for furnishing the army with three electric horseless carriages, and experiments will be carried out with them near Washington. Gen. Greely thinks it will be possible for these carriages to pay out wire promptly between two points so that telegraphic and telephonic communications can be readily opened. If the experiment is successful, carriages will be used for other purposes by the Signal Service.

Prof. Dewar has recently devised a new method of testing the contamination of air. A short time ago he exhibited before the Royal Institution two samples of liquid air in glass tubes; one was made from air which had been washed to purify it from dust, soot, carbonic acid and other impurities. This when condensed was a pale blue liquid; the other sample was made by condensing the air of the lecture room in which the audience was assembled and was an opaque, blackish fluid, resembling soup in appearance. It would appear as if condensed samples of air might afford an easy means for comparing different kinds of contamination. The American Architect suggests that it would not be difficult to provide a novel but a highly efficient kind of ventilation in military hospitals and other places where the natural air-supply is bad and the necessity for a better one very pressing. As the process would also cool and dry the air, it might serve an additional purpose in tropical countries. The paper goes on to state that it would not be "wholly impracticable to ship to yellow fever hospitals in Havana, supplies of New Hampshire air bottled, so to speak, on the spot, and delivered cool and fresh to the patients." This can never be accomplished, however, until some means have been provided for transporting liquid air to considerable distances without enormous losses, caused by its return to its former state. At present Mr. Tripler has not, we believe, carried liquid air more than six or seven hours' journey from New York. It has, we believe, been successfully carried to Boston and Washington from Mr. Tripler's laboratory in New York.