

Correspondence.

A Correction—Eugenol or Sodium Fluoride.

To the Editor of the Scientific American:

In your paper of April 19 you quote from the *Dental Cosmos* an article on "Sodium Silico-Fluoride." Where do you get your authority for saying eugenol or sodium silico fluoride?

J. D. M.

[ANS.—The use of the term eugenol in the connection stated was our error, not the *Cosmos*.—Eds. S. A.]

Paint Preservations for Iron.

Mr. L. Matern, of Bloomington, Ill., writes as follows in the *Painters' Magazine* concerning an article in the *SCIENTIFIC AMERICAN*, February 22, 1890, by Prof. Lewis:

He quotes boiled linseed oil as unfit for painting iron, because lead is used in boiling and purifying it, but does not seem aware of the fact that through boiling, oil loses its binding quality for forming chemical combinations with strong base pigments, as red lead, litharge, umber, oxides of manganese, etc., which are of the highest order for preserving iron, wood, etc. Raw linseed oil is deprived of its best binding qualities by boiling, when it loses its gelatinous acid. By extracting linseed oil from linseed meal with benzine (percolation), where the fatty matter of the oil is only obtained, the remainder being left in the meal. By driers, which combine with the oleo acid and separate, leaving again the fatty matter to become resinous by exposure to the oxygens of the air. Oil in that condition is chemically neutral, and forms only a mixture with the base pigments. When iron is coated with tar or asphalt it must undergo heat (impracticable most of the time) so as to drive off all except the coal contained in it; otherwise it gives no protection.

Iron ore, a faint base, has but little affinity to linseed oil, and communicates part of its oxygen in a damp place to the metal iron it is to protect from rusting, thereby causing the iron to rust. This paint is a good "red wash" for wood, as can be noticed on barns painted with it, where any one can observe that the nail heads painted with iron ore paint rust all the same. The chief good of iron ore paint is that it costs little.

Again, the man who can cleanly scrape off rust from iron without resorting to filing, grinding, fire, or acids, is still unborn. The least trace of rust left will start anew corroding it in a damp place in spite of all paint. Iron painted while hot, as the professor will have it, is liable to destroy the quality of the oil when heated above 150° F., and adds nothing for its protection. Where durability of paint is required to protect iron, it should have a strong base of a pigment of poisonous quality—a strong base to unite with linseed oil in a chemical combination not soluble in water, and a poison to ward off all animal and plant life. Also the pigment must be such that it does not impart or conduct oxygen to the iron. In all my years of experience nothing has proved better to preserve iron than pure red lead (not white lead) ground in raw, one year old, cold-pressed linseed oil, applied fresh from the mill to unrusted iron. Proofs of this have lain for years in a wagonmaker's yard, deep in the ground, which when dug up were rusted through except where protected by red lead paint.

An Old Indian Fort.

A thorough examination has recently been made of Fort Ancient, the old Indian remains in Warren County, near Cincinnati, Ohio. This work has been conducted by Mr. Warren R. Moorehead, who has published a book on the subject. The ruins are very extensive, the whole fort being included within embankments that are 18,712 feet in length. The extreme distance between the outer embankment of the old and new fort is 5,000 feet. The average height of same is 12½ feet, while in places it reaches a height of 22 feet. Mr. Moorehead states that the fort was a defensive earthwork which in time of danger was used as a place of refuge by some large tribe of Indians, and at certain periods a large village was situated within its walls. He believes that the structure was raised by some tribe as a fortification against some hostile nation, and that the natives residing within a large adjacent district were allied and held this structure in common, and fled to it in time of trouble, while in peace the fortification was kept in repair by a certain number who were detailed for that purpose. Over two hundred skeletons were exhumed in the excavations. There were two modes of burial; one in a grave of stone, while the more simple mode consisted in simply piling stones over the remains of the dead. Pieces of pottery and other relics were discovered.

THE chicken business is a matter of wonderful importance to the table comfort and the financial outlook of the American farmer. Government statistics show that the annual expenditure in this line is \$560,000,000; and despite the immense production of eggs, several million dollars' worth are annually imported to meet the deficiency of the home supply.

Dangerous Havana.

Havana's dangerous attitude to commerce is shown by the following communication in the *Sanitarian*:

As the season approaches when the increasing heat produces a corresponding fear of disease, and the time is at hand when health and municipal authorities take special precautions against the outbreak or spread of infectious or contagious diseases, it may not be uninteresting to note down some aspects of the sanitary situation of the cities of the Southern States and of those countries lying adjacent to our southern line. It seems to be fully agreed that from one point comes the greatest danger to the South and the seaboard cities of the United States—that from Cuba, and especially from Havana, those diseases which are most to be dreaded during the heated term are most easily imported.

The inspection of the steamers plying between Havana and the ports of the United States is so close and searching, and the penalties for infraction so severe, that the great body of the traveling public are fully protected against a possible infection.

The steamers of the Plant line arrive at this port at 6 o'clock in the morning. They lie in the harbor, moored to a floating buoy, not anchoring directly until 1 o'clock the same day, when they sail for Key West. The five or six hours are spent in discharging by lighters the passengers, their luggage, and the limited amount of cargo, and receiving a like amount on board. The ships *Mascotte* and *Olivette* are as clean as constant work and untiring vigilance can make them. It speaks well for the care taken by Dr. Burgess, the representative of the United States Marine Hospital Service, and the officers of the line, when it is asserted that for 300 trips of the steamer *Mascotte* no case of contagious or infectious disease has been found aboard on arrival, nor has any person not complying with the regulations ever been permitted to land in the United States.

Havana should be a healthful city, and it would be but for the uncleanly habits of the citizens and the total neglect of sanitary laws, which make the name a synonym for the dreaded fever. Swept daily in three directions by the strong winds, and with a natural surface sloping to the water for all drainage, there is no natural condition why any infectious disease should obtain a foothold in a locality so highly favored; yet the daily health reports show the presence of from five to thirteen cases of yellow fever, besides the usual number of contagious diseases incident to a population of this size.

The reasons for this endemic character of the yellow fever are perfectly clear. Most of the sewers are badly built and serve to collect and retain the sewage rather than discharge it. Some few of the later ones, built under the Spanish engineer officers, are good specimens of the art and are serviceable, but the irregularities in plan, the worthlessness of material, and, above all, the rascality in construction of those built prior to recent regulations for new ones, make them death traps and worse. The fumes from almost all the manholes and catch basins in the older part of the city are as deadly as carbonic acid gas; and as it is now five months since rain has fallen, and there is no provision for flushing the sewers, the poison which flows steadily forth can be easily imagined. The outfall of these sewers is into the harbor, nearly all inside the line from Moro Castle across to the Casa Blanca.

This harbor is like a bottle, the neck or narrowest part being about five hundred feet wide and expanding into an area one by one mile and one half. There is no flow of tide of any consequence, the average rise being but two feet.

The sewage outflow falls directly into the still water under the wharves and there accumulates, and the harbor is gradually filling up with the concentrated extract of filth, which is death to disturb and sure disease to be in smell of. Vessels lying at the wharves lose their crews, and even when hauled into the stream carry with them the seeds of fever, to be propagated on board other craft which have had no communication with the shore. There are many singular examples of communicated contagion by air and wind related by the health officer of the Marine Hospital Service stationed here.

Another hardly less deadly source of disease is the filthy condition of the streets. The wind seems to be the only scavenger. In a residence of two weeks I have seen no attempt at cleaning the streets, and the condition of those about the markets surpasses belief. Under this hot sun vegetable matter begins to decay the instant it is cut. The supplies appear to be brought in from the country in the crude form, with no attempt to prune away the surplus and useless stalks, and the result is a mountain of rotten refuse thrown out at the nearest door or window.

The sanitary organization of the city is incomplete and inefficient. There appears to be no chief head or responsible authority with power to make and enforce necessary regulations.

There are too many officials. Each ward has its own alcalde or mayor, with a board of councilmen and staff equipment. All these are subject to the captain-general, but the endless circumlocution and detail of official

redtape defeat any attempt to grasp the subject as a whole. There are many highly educated and advanced thinkers in all departments of science and the professions, men who keep abreast of the advance of sanitary progress in theory, but none who seem confident and competent enough to put theory into action. Hence the special branches which these men devote themselves to flourish, while the general health and education retrograde.

The real reason for the low standard of public health is said to be that the Spanish government is in constant financial straits, and has not the money for the sanitation of the city. The city is practically bankrupt. The paper money in circulation is worth only two and one-half dollars for one of gold, and the people are taxed to the utmost limit to maintain life. But this question of finance is aside from my purpose and cannot be here discussed. The facts are simply these: Here is a city situated in one of the most healthful localities in the world, a hotbed of infectious diseases and a plague spot for all its neighbors! Of this the people of the United States have repeatedly had sad experience, and as recently as only two years ago. It remains for us to so protect ourselves, if possible, that by no chance shall it ever again happen that we shall go through a like experience.

FRANCIS.

Havana, Cuba, April 1, 1890.

Nitro-Glycerine in Doses.

The other day a representative of the *Star* newspaper met Dr. H. H. Burchard, one of the clever and famous physicians of Philadelphia. In speaking of the progress of medical science in these later years he said: "Have you any idea of how far high explosives are used in medicine? You cannot get your knowledge from books unless you ransack five hundred volumes and pick up the scattered items here and there. It may surprise you to know that they are in daily use, and of the greatest value in all sorts of diseases and injuries.

"There is, for example, guncotton, or, as we call it, pyroxylin. It is twice as powerful as gunpowder, but very much inferior to dynamite or nitro-glycerine. Dissolved in ether, it makes that wonderful compound we call collodion. In this shape it is employed to protect raw or injured surfaces. It dries rapidly—in fact, almost as fast as it is employed—and leaves behind a fine, elastic artificial skin, which is air and water proof against microbes and disease germs. Mixed with cantharides, collodion makes the best blistering plaster known to science. Mixed with tannin or tannic acid, it makes a wonderful remedy for stopping the flow of blood from wounds. In cases of scalding and burning, collodion enables the profession to cover the exposed flesh in a manner never before possible. No secretion of the human body affects it, nor, on the other hand, does it exert any unpleasant or objectionable influence upon the system.

"But of even greater value is nitro-glycerine. When used in medicine it is largely diluted, one part being mixed with one hundred parts of alcohol, and one drop of the resultant mixture is a dose. In this form it is an admirable antidote in cases of neuralgia of the heart and many cases of nervous disturbances of the human body. Thus it has been used and given wonderful relief in nervous asthma, hiccoughs, headaches, and similar disorders. It has repeatedly cut short an attack of the chills and fever, and so eminent an authority as Dr. Robert Bartholow recommends it in certain forms of Bright's disease, and also for that most miserable of earthly ailments, sea sickness.

"Thus far we have only begun to know the medical virtues of guncotton, nitro-glycerine, and amyl-nitride. Beyond these there are over six high explosives of which we know little or nothing as to their real character, and nothing at all regarding their action upon the physical organization. It does seem curious, however, that substances which in large quantities are destructive of life and property, should, in small ones, be beneficial to the sick and injured. The guncotton which blows a man up enables the physician to destroy the pain of his raw members and to heal them in less time than was ever before possible with other remedies."

Varnish for Confectionery.

Take half a pound or more of gum benzoine, put it into a bottle and cover it with fourth proof alcohol, cork up tightly and let it digest for at least two weeks, shaking up once or twice a day. After which time you may pour gently off any quantity you may require for present use. It should be the thickness of thin sirup; if used too thick, it is apt to appear in streaks on the work when dry; if too thick, dilute it with alcohol. This varnish is perfectly harmless and very fragrant, resembling somewhat the odor of vanilla. It will also keep for years, growing better with age. It is a nice varnish for all kinds of chocolate work and candies; pulled and clear. It forms, when dry, a thin, glossy film or skin over them, which prevents the access of the moisture of the surrounding atmosphere, and tends to keep them from becoming sticky for a much longer period of time.—*British Confectioner*.