Correspondence.

"Fibered Cement" or Reinforced Concrete?

To the Editor of the Scientific American:

Would not "fibered cement" be a more fitting name to give to this new building material combination than "reinforced cement"? To the uninitiated this means a cement strengthened by the admixture of some other substance of like nature; one would hardly think that iron rods were used, and as these really form a fiber running through the cement, "fibered cement" would seem to be more appropriate, beside being easier to speak and write. In fact, would it not be as correct to say "reinforced iron" as "reinforced cement," as each substance strengthens the other about equally?

In this connection I want to suggest the use of bamboo, either the whole cane or split into strips. It is cheap, light, strong, and durable, and, I believe, does not swell when subjected to moisture, consequently there are many cases where it could be used in place of iron. Charles J. Sands.

Pasadena, Cal., August 7, 1906.

Dr. Wiley on the Pure Food Law.

To the Editor of the Scientific American:

It is only fair to your readers that many misstatements contained in the article on "Adulterated Food" in your issue of August 18 should be corrected.

I suppose that not one of your readers would be deceived in regard to the law by what was said respecting the action of the Senate, inasmuch as a law requires the concurrent action of the Senate, House of Representatives, and the President. Mr. Landon says in this article: "When the pure food law is enforced, it will compel the manufacturers of food stuffs to label their products." This is quite an erroneous statement, since the pure food law does not require anybody to label his products. It simply requires that products when labeled shall be correctly labeled, that compounds, imitations, and blends shall be so marked.

Mr. Langdon writes a great deal of covering for the kernel of his article, which is to induce the people to think that borax and boric acid are permitted preservatives, but this is not the case, as is shown by the recent regulations for the enforcement of the meat inspection act, in which all preservatives, with the exception of sugar, salt, spices, vinegar, wood smoke, and, pending further investigation, saltpeter, are prohibited. It is not likely that the regulations for the enforcement of the pure food law will contradict the meat inspection regulations. I may say, for the further information of your readers, the pure food law does not mention borax. It does permit the application of preservatives externally to food products when preparing for shipment, but if any of these preservatives should enter the substance itself, it could not be used under this provision. The same clause also requires that directions for removing the preservative before the food product is eaten shall accompany each package, thus specifically recognizing their harmfulness. Borax and boric acid, which, as stated by your correspondent, are allowed by the United States Senate to be used on meats, fish, and fowl, if used at all can only be used at the time of packing, only externally, and only when they are necessarily removed, and only when directions for such removal accompany each package. This does not seem to be in harmony with Mr. Langdon's statements.

Mr. Langdon is a very prolific writer on this subject and in every one of his communications the sole object in view is to secure the recognition of the use of borax and boric acid in foods. The latest work on this subject, namely, "Diet in Health and Disease," by Dr. Julius Friedenwald and Dr. Ruhräh, of the College of Physicians and Surgeons, Baltimore, Md., says:

"Borax and boric acid as preservatives are the subject of numerous conflicting opinions. It is possible that some of the favorable opinions have been issued by those who draw their salaries and their opinions from the same source. While it is stated by many that the use of these chemicals is not injurious, there are instances on record where they have caused severe symptoms and even death." H. W. Wiley.

Washington, August 23, 1906.

The Moth and the Flame.

To the Editor of the Scientific American:

The March 10 number of the Scientific American has an article on "The Moth and the Flame," which tempts me to recount some observations and experiments in this matter.

I will begin with the mosquito, which is a night flier, and yet pays no attention to the flame. In ill-lighted Chinese houses it will steal up for a bite any time of day; but in our dwellings it prefers a warm evening after lamps are lighted. One morning I smudged my study with some insect powder placed over a lamp, and I killed mosquitoes by the score as they danced around on the panes of the sunlit windows just as crazily as ever did a moth around a lamp. The same experiment also brought to the windows a dozen or more clothes moths, that usually avoid the light, and lurk in folds of garments or in chests and boxes; but the smudge made them want to get out, and they flew to the windows, and settled down on the panes just as flies do when they try to go through a window and are stopped by the glass.

But the honey bee will fly the hardest at a window pane by day or a lamp by night. It gathers honey in the brighest sunlight; but deposits it in a dark hive, in which lightward always means outward—exit—while darkward means inward. This has been their unchanging experience for untold generations. Bees frequently come into the house, and as the windows are the best-lighted parts of the walls, they try to go out through these instead of the door at which they came in.

One such bee began so late in the day that the twilight found it still vigorous; but as the window grew darker it gradually relaxed its efforts, and finally left the glass for the white jamb, still buzzing occasionally. After supper I set a shaded lamp on the window sill, and the bee flew at the lamp chimney several times, but each time it instantly recoiled from the heat. Once, however, it flew up against the bright nickel-plated base of the burner, and buzzed against it for a number of seconds, just the same as it had buzzed against the window pane by daylight.

Once, when I opened the window to let out a buzzing bee, a partly-closed blind prevented the light of the crack between sash and casing from reaching the bee; but there was a line of light on the jamb opposite the crack. The bee continued to buzz against the pane till I covered it up, and then it flew to the streak of light on the jamb, and tried to go through that; and then it turned and flew out through the crack. Next day I found a moth on the window, and when the window opened, it went through the same motions as the bee had, clinging to the pane till this was covered, then flying to the streak of light, and then at last going out through the crack.

Thus we see that under like conditions moth and bee behave alike; but a part of the moth's "craziness" is due simply to its zigzag manner of flight. In not a few cases where I have seen a moth fly into the flame of my clock lamp, it has been due to its zigzagging while circling around the blaze. There is also one potent element in the situation at night which is wanting in the daytime. Set a lamp in an open window at night, and note how black it makes the darkness appear. It is such a blackness as would ordinarily indicate a solid obstacle; and so when a night flier comes within the range of the light, the darkness seems to it to become a solid wall inclosing it on every side, with no outlet except toward the light. Hence it is that on a warm evening, with windows and blinds wide open, moths begin to come in; but they rarely go straight to the lamp. Many of them go first to the white wall, and afterward come nearer and nearer to the lamp; but most of them settle down at last on the walls, and remain there motionless the rest of the evening. In a dingy Chinese house the lamp attracts more directly to itself than it does in our white-walled houses.

One evening I found in my bedroom a young sparrow, which instead of flying at the window panes as it would have done in the daytime, flew at the white jambs and at the white walls. When I cornered it with a shaded lamp in my hand, it flew up against the chimney and fluttered around inside the shade. Then it perched on one of the brass arms of the shade; and when I reached in my hand to take it, it fluttered to the floor, where I grabbed it, and taking it to an open window set it on the window sill. There it squatted till I, in turning away, threw my shadow on it; and then in an instant it fluttered out into the darkness.

Shaowu, China, June 1, 1906. J. E. Walker.

Production of an Electrically Conductive Glass.

Experiments have from time to time been made, both in England and abroad, to ascertain what ingredients are best for the purpose of producing glasses of very high electrical resistance.

The utility of a vitreous substance which would conduct electricity comparatively well does not appear, however, to have so far claimed any consideration.

Attention should be directed to a glass which has recently been made in my laboratory. Its chief feature is that it really conducts electricity.

For the windows or cases of electroscopes and all high-tension apparatus requiring a transparent cover capable of screening off external electrical fields, this material offers many advantages. A conducting varnish is no longer required for glass which conducts electricity itself. In addition to these practical considerations, there arises the interesting question as to the process by which electricity passes through this substance—whether it is electrolytic. Its resistance varies very markedly with temperature changes. The basis of the glass is sodium silicate.—Charles E. S. Phillips in Nature.

A Mosquito Brief.

The American Mosquito Extermination Society has recently published a brief on the subject of mosquitoes which is worth repeating on account of the practical condensed information given. The card is illustrated with the various phases of the generation of the mosquito as well as of the common and fever-communicating species. It states:

1. There are over one hundred species of mosquitoes in the United States.

2. Mosquitoes breed only in water. They may breed in any kind of quiet water unstocked with destroying fish.

3. Mosquitoes generally require from one to three weeks to develop from eggs to winged insects in warm weather; longer in cold weather. Some female mosquitoes three days old lay eggs; the average is greater. Some species lay as many as three or four hundred eggs at once, some lay them singly. Mosquitoes may live several months (as shown by hibernation and otherwise), but probably few live over a month.

4. Mosquitoes do not breed in grass, but rank growths of weeds or grass may conceal small breeding puddles, and form a favorite harboring place for adults. The pitcher plant holds sufficient water to breed a rare and small species.

5. Different species of mosquitoes have as well defined habits as different kinds of birds, flies, etc. Some are domestic, some wild, some migratory.

6. Most domestic mosquitoes breed in fresh water, fly short distances, and habitually enter houses.

7. Most migratory mosquitoes breed in salt and brackish marsh areas, and fly long distances. They are not conveyors of malaria.

8. Rigid tests, both direct and eliminative, have proved that certain species of mosquitoes are the only known natural means of transmitting malaria and yellow fever. Some other diseases are known to be conveyed by mosquitoes.

9. Of the domestic varieties, the dangerous malarial mosquitoes (several species of the genus *Anopheles*) are among the most generally distributed. They seem never to travel far, only a few hundred yards.

10. A most common and dangerous domestic mosquito in the South and the tropics is *Stegomyia fasciata*, which is the natural conveyor of yellow fever.

11. Mosquitoes are known to bite more than once, as can be seen by observation and is proved by the transmission of disease from an infected person to a new subject.

12. Mosquitoes are a needless and dangerous pest. Their propagation can be largely prevented by such methods of drainage or filling of wet areas, removal, emptying, or screening of water receptacles, spraying standing water with oil where other remedies are impracticable. Attention should be paid to cisterns, house vases, cesspools, road basins, sewers, watering troughs, roof gutters, old tin cans, holes in trees, marshes, swamps, and puddles. As malarial mosquitoes may be bred in clear springs the edges of such places should be kept clean, and they should be stocked with small fish. The breeding and protection of insectiverous birds, such as swallows and martins, should be encouraged. Thorough screening of houses and cisterns is necessary to prevent the spread of malaria or yellow fever. The continued breeding of any kind of mosquitoes, with the attendant menace to public health and to the life and comfort of man and beast, is therefore the result of ignorance or neglect.

The Current Supplement.

As a valuable example of modern bridge construction the Thebes (Illinois) railway bridge deserves more than passing attention. In the opening article of the current Supplement, No. 1600, Mr. Charles Alma Byers discusses the structure. Good illustrations accompany his text. Some valuable statistics are published on the production, imports, and exports of iron and steel. Two new processes in color photography have been developed in Germany, which are known respectively as pinachromy and pinatype. They are not only of interest to the student of chemistry and physics, but are distinct and important advances in the reproduction of objects in their natural colors. These processes are ably described by Mr. H. A. Metz. Another curious photographic process is that which is known as the ozobrome. In this process a bromide may be combined with a carbon print with permanent and valuable results. Mr. F. R. Coles writes entertainingly on candlesticks of other days. Prof. Ray Lankaster's presidential address delivered to the British Association is continued. In this installment he concludes his discussion of radium and radio-activity and gives a general review of progress in chemistry, astronomy, geology, and animal and vegetable morphography. Some remedies and preventives against house flies are published. Felix Erber writes on the mysterious planet Saturn. An instructive article is that on the nutritive value of cereal breakfast foods. Emil LeLong gives a very good illustrated explanation of chain-making machinery.