

Correspondence.

A Suggestion for Balloonists.

To the Editor of the SCIENTIFIC AMERICAN:

The failure thus far to construct a balloon which will not allow gas to escape through the envelope, and thus prevent a long-continued flight, leads me to relate an experience of my own in making a protection against atmospheric humidity. Several years ago there was put upon the market an apparatus for lighting gas jets, oil lamps, and lanterns by means of a strip of paper or cloth carrying pellets, which were ignited by friction, when fed under the proper pointed spring, designed for the purpose. These came out in the autumn, and before winter had passed, many were sold and considerable capital was invested in their manufacture. When the humid weather of August arrived, every one failed. The pellets, composed largely of chlorate of potash, would draw sufficient moisture entirely to put them out of commission. India-rubber varnish, copal, and shellac, all failed. Either the varnish destroyed them, or the dampness penetrated through it. Although some preparations would bear a short immersion in water, nothing withstood atmospheric humidity more than a few hours. When the makers brought the problem to me, I forthwith repeated the experiments of those who had failed before me. At last I became sure that metal alone would protect them. It required weeks of study and many failures before I succeeded. The metal must be thin and weak enough not to interfere with the explosion, and without pin-holes, like those seen in common light tinfoil. At a tinfoil factory they made for me, with little trouble, just what I needed, scarcely heavier than paper, and perfectly free from holes. To attach it to paper, I made a cement of boiled linseed oil and copal varnish in about equal parts, and to this added a very small part of a non-drying oil. Castor oil served best. The office of this non-drying oil was to prevent the cement's becoming brittle when dry. After sizing the paper, to prevent absorption, I gave it an even coat of cement, and let it dry until it "tacked," but would not flow. The tinfoil was laid upon this and rubbed or pressed until it adhered. For the purpose I was working for the pellets were printed on the tinfoil, then another sheet of foil was laid over them, in like manner. For a balloon, however, it would only be necessary to give the tinfoil a coat of cement, and when at the proper point, spread the silk, paper, or cloth, whichever was used, and rub it with a brush until it adhered firmly. After this it could be strengthened in any way that seemed best. There may be a better metal than tin for the foil, and as many as two or three layers used, for the weight is trifling. I do not believe a gas-proof bag will be made until metal is used. And this is a practicable way. Anyone who has used rubber tubing for a lamp or gas stove knows that rubber, while probably the best of the gums, is soon penetrated by gas, whatever its thickness may be. As for the durability of my product, I can only say that I have many of the strips, made eight and ten years ago, and that they are as flexible and perfect as they were when new, although no means was used to protect them from moisture or changes of temperature. I hope someone will try this way. I hold myself ready to give any further information, gathered by several years of work in this field.

DEWEY AUSTIN COBB.

Avalon, N. J., August 2, 1906.

Blowing Wells.

To the Editor of the SCIENTIFIC AMERICAN:

In your issue of July 7, 1906, page 4, you publish a short article on "The Vagaries of Wells." In Water-Supply and Irrigation Papers of the U. S. Geological Survey, No. 29, Wells and Windmills in Nebraska, Washington, 1899, our State Geologist, E. H. Barbour, describes certain wells, in substance, as follows: One class of wells found throughout a large part of the State, especially south of the Platte, deserves particular notice. These wells are known as "blowing," "roaring," "breathing," "singing," or "weather" wells. These wells are held in doubt elsewhere, but the fact of their existence is established. In some communities such wells are distinguished at a distance because of the mound of earth heaped up to check the wind. The attention of the writer was first called to this matter by inquiries for explanation of and remedy for the freezing of pipes in wells at a depth of 30, 50, 60, 80, and even 120 feet below the surface. Reports have come in from about twenty counties. The information is derived from land owners, farmers, well diggers, ministers, principals of schools, civil engineers, and students whose fathers own such wells. These accounts agree with personal observations. There are periods when these wells blow out for consecutive days, and an equal period when they are reversed. This is tested with the flames of candles and by dropping paper, chaff, feathers, etc., into the casing to see it blown out by some force, or drawn in. It is further stated that blowing often indicates high or low condi-

tions of barometer, and that some wells blow most audibly when the wind is from the northwest, whereupon water rises to a higher level in the well than before; but when conditions are reversed, air is drawn in. Many observers notice a reverse of the current according as it is morning or evening, and according as the temperature is high or low. During the progress of a low-barometer area over one of these regions, the wind is expelled with a noise audible for several rods. Upon the following of a high-barometer area, the current is reversed. Steam rises from the curbing, melting the snow. After the current is reversed, the thawed circle freezes again. The pipes are often thawed out when the well blows. The periods of most pronounced exhalation or inhalation are coincident with exceptionally low and exceptionally high barometer areas.

He then explains the geology of the country, and draws the same conclusion as did M. Grosseteste, and continues: "The wind may be the cause in some places. At times the friction of the wind is sufficient to drive the water of the Platte across its bed, leaving the north side dry while the south side is flooded. Equilibrium is disturbed. There must be readjustment. In the vicinity water rises in wells, at a distance there is a wave of transmitted energy which can but affect every portion of the underflow of the Platte. This may show itself in a rise of water and displacement of air, and a rise over a wide area might expel a large volume of air."

I have condensed his article considerably. Almost the same article appears in Nebraska Geological Survey, vol. i., 1903. I know of several such wells near here.

RAY G. HULBURT.

Taylor, Neb., July 25, 1906.

Adulterated Food.

To the Editor of the SCIENTIFIC AMERICAN:

I read with interest an article in your esteemed issue of June 16, "The Need of a Pure Food Bill," by Charles Richards Dodge.

It is certainly gratifying to know that the pure food bill has passed the House and Senate, which proves it was neither lost, strayed, nor stolen.

The new pure food law, however, will not be of much value to the community at large unless the State laws are amended so as to conform with it. When this is done, and the law is enforced, and the public educated to the value of pure food, we will have accomplished what has long been desired.

The report made by Messrs. Reynolds and Neill no doubt hastened the passage of this most important of all subjects, the pure food bill.

According to the recent reports of the conditions in the packing houses, man is getting more than the peck of dirt it is said he is entitled to. That there is room for vast improvement in the packing houses cannot be denied, but the sensational reports should be taken with a grain of common sense.

Sensational articles claiming that hundreds and thousands of men, women, and children are dying sudden, horrible, agonizing deaths on account of eating meats that have been colored or preserved are preposterous.

There is a great deal written about tainted and embalmed meats. There could be no chemicals, however, as powerful as embalming fluids, used to preserve meat so that it would be edible. The most common preservatives that are used to preserve meats are sugar, salt, smoke, borax, and boric acid.

The United States Senate investigated the preservative question thoroughly, and after careful consideration it accepted an amendment which will allow borax and boric acid on meats, fish, fowl, etc. This I consider was a wise amendment, as by the judicious use of these mild preservatives, they will prevent meat from becoming tainted. It is the tainted meat that is in condition for the propagation of toxic germs, which are so dangerous to human health, especially during summer months.

Articles that are preserved with a mild, innocuous preservative should not be deemed adulterated. It is not the custom to adulterate food by adding something to it that will better its condition. Adulterated food is invariably mixed with some inferior substance, which reduces the food value. A preservative would enhance the food value.

When the pure food law is enforced, it will compel the manufacturers of food stuffs to label their products. The label, however, will be of no value unless the consumer peruses it and is benefited thereby. The labels will be of great benefit to those who are careful with their diet. The masses of mankind, however, are peculiar creatures. They have educated their palates to crave pickles, candies, and highly-seasoned foods, which are not conducive to aid digestion.

When the public learn the value of simple food and the value of balancing their rations, masticating their food thoroughly, breathing deeply, exercising every day, and sleeping seven or eight hours, they will have less cares and troubles and enjoy life as normal persons should.

All we have to build and sustain our body is what we eat, drink, and breathe. Consequently, it behooves each and every one of us to pay more attention to the quality of food, water, and air we consume. The better material we use to build up our bodies, the better, stronger, healthier bodies we will have.

New York, June 30, 1906. H. H. LANGDON.

Aeronautical Notes.

While the French have tired of balloons and are now experimenting with aeroplanes and dirigible airships, here in America one or two enthusiastic amateurs have just started in to try their hand at ballooning. Dr. Julian P. Thomas, of this city, has made several ascents of late, the longest of these being a night journey above Long Island Sound. The start was made from the gas works in 118th Street at 8:30 P. M. on Sunday, the 5th instant. A southwest wind carried the balloon, the "Nirvana" (of 50,000 cubic feet capacity) straight up the Sound. A landing was made in a farm yard at Noank, Conn., at 5 A. M. the next day, to procure food and water. A distance of 140 miles was covered to this point. Owing to the sun expanding the gas, the balloonists were enabled to rise to a greater altitude than before. As they soon approached the ocean, however, they were obliged to land, which they did in a marsh near Brant Rock, Mass., at noon on August 6. The total distance covered was 225 miles. Dr. Thomas was accompanied by Roy Knabenshue, of airship fame, and during the trip the aeronauts made a successful test of a new guide rope.

The French permanent aeronautic commission has clearly defined the different words used to designate apparatus employed in the new science of aerial navigation. In the first place "aéronef," or "appareil d'aviation" (aviation apparatus) means an apparatus heavier than air, of which there are several kinds, such as (1) L'Hélicoptère (helicopter), which is an aéronef which consists essentially of one or several propellers which assure sustentation and progression. (2) L'Aéroplane (aeroplane), an aéronef in which the sustentation is assured more especially by one or more flat or curved surfaces. (3) L'Orthoptère (orthopter) or mechanical bird, i.e., an aéronef sustained and propelled by beating wings. The word "aviateur," which is often improperly used, should be employed only to designate the person operating an aviation apparatus, as the word aeronaut designates a person who goes up in an "aérostat" (balloon or airship using a gas bag).

Automobile Notes.

The Automobile Club of America will this year hold its annual exhibition in the Grand Central Palace, New York city, the first week in December. The Licensed Association of Automobile Manufacturers will hold a show in Madison Square Garden in January, as heretofore.

A. Lee Guinness, a wealthy English amateur driver who purchased the 200-horse-power record-breaking Darracq racer that made a flying kilometer at Ormond last winter in 19.25 seconds, recently reduced this record 25 of a second with the same car on the beach at Ostend, Belgium. The new time is equivalent to a mile in 30.59 seconds, or a speed of 117.68 miles an hour.

The Automobile Club of France has lately published the regulations as regards the next annual Automobile Show, which is to be held at Paris. It will last from the 7th to the 23d of December. The Exposition of this year promises to be a greater success than ever, and one of the main reasons for this lies in the fact that the immense space of the Esplanade des Invalides, which lies across the Seine from the Grand Palace, is to be utilized this year to contain part of the exhibits. Last year's show, not finding enough space in the Grand Palace, made use of the adjacent Horticultural Buildings, which were quite filled with exhibits. This space is now too small to meet the demands, so that the use of the extensive grounds of the Esplanade, which give an unlimited space, was quite in order. No doubt several temporary structures will be erected here, with a large area for the stationary motors and heavy hauling cars. In connection with the show a touring event has been organized over a circuit which will run through the south of France to the coast. As regards the Show, the rules are about the same as for last year. One point to be noted is that owing to the great number of exhibits of automobile cars, it has been decided to exclude all bicycles or motor-cycles from the main exhibits of the Palace. The annex buildings outside of the Palace will contain heavy-weight cars, motors, combustibles and the aërostatic exhibits. Demands for space should be addressed before September 20 to the Commissariat General of the Exposition, at the Automobile Club's headquarters, 6 Place de la Concorde.

Cadmium gives protective coatings for iron much superior to zinc. The coat has the same aspect as zinc, but is much more adhesive, and harder.