Correspondence.

Climate of San Diego.

To the Editor of the Scientific American:

On June 13 and 14, when New York City people were sweltering in a temperature of 90 to 96 degrees amid abnormal humidity records, residents of San Diego, at the southern extremity of Southern California, were enjoying life in a maximum temperature of only 65 degrees on the dates indicated, with the relative humidity at 70. The maximum July temperature here as recorded by the government is 79 degrees. Average relative humidity throughout the year is 70. Cases of sunstroke or prostration by heat are unknown, as is hydrophobia in dogs or other animals. With one of the most picturesque harbors in the world, a magnificent ocean beach, fine hotels, and attractions of the first class for pleasure and cool-air seekers, San Diego offers summer wayfarers things unobtainable anywhere in the East. M. Y. BEACH.

San Diego, Cal., June 16, 1892.

The Chloride of Silver Dry Cell Battery.

The introduction of this form of constant current electric battery for use by practitioners is in our opinion one of the most desirable advances of recent years. While the specialist may find his stationary office batteries all that need be desired, the general practitioner will welcome the invention of a battery which may be conveniently carried about either in the buggy or by hand.

The chloride of silver battery is furnished in such compact form that one of fifty cells can be easily carried in the hand.

It is claimed that this fifty-cell galvanic battery will furnish a current as strong as is needed for ordinary purposes. It is always dry and clean, having no liquid to spill over its case or over the carriage floor. Another virtue which it possesses is that it is always ready to do its work on a moment's notice, without any manipulations except the attachment of the electrodes.

Our experience with it is limited to electrolytic work upon the skin, to the treatment of neuralgias and myalgias, and to the cataphoretic application of drugs. In such service we have found the battery always ready to do its work promptly, evenly and efficiently. For the destruction of hairs, warts, etc., a current of ten or twelve cells is sufficient—provided the sponge electrodes be kept free from grease by occasionally washing them with soap and water.

In the treatment of spinal paralyses or the destruction of large tumors we have as yet not tested it.

As might be expected, the chloride of silver cell is especially well suited for the generation of the primary current of a faradic battery. Such batteries are in the market. The insertion of a metal pin sets them at once to running. The quality of work done by the faradic battery depends of course on the excellence of the coil rather than on the cell which generates the primary current.

Although the cost of these batteries is high, they do not get out of order, and the expense of refilling the cells is not great. For ordinary uses the cells will last several years without any expense in repairing or refilling.—*Maryland Medical Journal.*

A Brilliant Light.

The New York *Herald* says: Captain T. K. Bingham, United States military *attaché* at Berlin, has recently brought to the attention of the Lighthouse Board an important discovery in flash lights, the invention of Professor Schevin, of Berlin. The apparatus is only two meters high by thirty-five centimeters in diameter. On the inside is a bellows through which benzine gas is passed, while air is forced through pumice stone strongly impregnated with benzine. This benzine gas is then passed through very finely powdered magnesium and saturated therewith, thence it passes out of an upright pipe through a small flame, by which it is lighted, and here it develops a luminosity of 400,000 candles. The activity of the apparatus is regulated by clockwork.

Economy is an important feature of the new invention, but its greatest advantage is its ability to penetrate an almost opaque atmosphere to a greater extent than any other light hitherto produced. With the use of ten centigrammes of the magnesium powder it is shown by the official documents presented by Captain Bingham that a flash of 400,000 candle power can be produced, and the flash can be seen on a clear, sunshiny day at a distance of six miles. The lighthouse officials are so well impressed with the new light that they have already ordered an apparatus to be used in experiments at Staten Island.

FROM Helsingfors comes an account of an extraordinary archæological find, consisting of a chest containing a quantity of ironwork and a parchment giving a Latin treatise on steam as a force. The pieces of iron form a rudimentary steam engine, which must date from the first half of the twelfth century.

Ship Building at Newport News.

The following are some of the principal dimensions of the establishment of the Newport News Shipbuilding and Dry Dock Company at Newport News, Va.:

Ship yard contains	75 acres of land.
Frontage on the water	2,600 feet.
Buildings cover	7 acres.

DIMENSIONS OF DRY DOCK.

Length on top	600 feet.
Width on top	130 "
Width on bottom	50 "
Width at entrance	93 "
Draught of water over sill	25 "
Time required for pumping water out of dock	1 h. 30 m.

DIMENSIONS OF BUILDINGS.

Office building, 3 stories, brick	40 x 200 feet.
Pattern and joiner shop, 3 stories, brick	60 x 300 "
Machine shop, iron and brick	100 x 300 "
Boiler shop, iron and brick	100 x 300 "
Blacksmith shop, brick	100 x 300 "
Bending shed, iron and brick	60 x 127 "
Ship fitters' shop, iron and brick	60 x 320 "
Ship blacksmith shop, frame	120 x 208 "
Pipe fitters' shop, frame	50 x 208 "
Power house, brick	40 x 130 "
Lumber shed, 2 stories, frame	40 x 300 "
Pump house, brick	43 x 60 "
Paint shop, brick	50 x 160 "
Fitting-up shop, brick	50 x 175 "
Stable, 2 stories, brick	40 x 60 "
Timekeeper's house, frame	50 x 40 "

PIERS.

No. 1	60 x 900 feet.
" 2	60 x 850 "
" 3	80 x 350 "
" 4	60 x 550 "
Outfitting basin	900 x 500 "

SHIP WAYS.

No. 1	400 feet long.
" 2	400 " "
" 3	450 " "
" 4	450 " "
" 5, 6, 7, and 8, each	500 " "

The various shops are fitted with machinery of the latest pattern, and are capable of handling the largest work known in shipbuilding.

The machine and boiler shops are supplied with power-traveling cranes of 40 tons capacity, and the appliances throughout the yard for handling material are of novel design, enabling work to be done with dispatch and in an economical manner.

The Great Bridge at Memphis.

On the 12th of May last, at noon, with impressive ceremonies, the great steel bridge across the Mississippi River at Memphis was formally declared open for traffic. The *Manufacturer* gives the following description:

The crowd of visitors to the city was estimated at 30,000, including many prominent men. The wholesale business of the city made the day a holiday, and the freight departments of all railroads were closed for business, excepting for the delivery of perishable freight. The man-of war Concord, gayly bedecked from stem to stern, formed part of the procession on the river.

The bridge, with all its approaches, is about a mile and a half long. The eastern end rests upon a high bluff, the same bluff and within a few hundred yards of the identical spot, as reputed, upon which De Soto, the discoverer of the Mississippi River, centuries ago, first stood and looked down upon the mighty stream—the bluff upon which the red men in times past met in council, thus giving it the name that it still bears, the Chickasaw Bluff. From this eminence the bridge starts and stretches far across the river to the Arkansas side, where it continues on through the forest in the form of a viaduct, high above the ground, which at this point is low and swampy, and in the spring subject to overflows, which characterize much of the land contiguous to the unbridled Mississippi. There are only two truss bridges in the world having larger spans than this, the Forth and the Sukkin bridges, the latter in India. The longest trussed spans now in existence or building are these:

Forth, two spans each	1,710 feet.
Forth, two spans each	690 "
Lansdowne (Sukkin, India), one span	820 "
Memphis, one span	790 "
Memphis, one span	621 "
Colorado River (Red Rock) span	660 "

There are five spans and six piers in the Memphis bridge, including the anchorage pier. The bridge proper is exactly 2,597·12 feet long. The structure is extended west of the main bridge over the river by an iron viaduct 2,500 feet in length, followed by a 3,100 foot timber trestle and nearly a mile of embankment to a junction with the existing track of the Kansas City, Fort Scott, and Memphis Railway, a few hundred feet west of Sibley, Ark. This makes the total length of the entire structure 7,997·12 feet, or over a mile and a half. On the Tennessee side the track is finished to connect with the Kansas City, Fort Scott and Memphis Railway and the St. Louis, Iron Mountain and Southern Railway in Memphis.

The material of the main bridge is steel, largely from Pennsylvania. Some idea of the immensity of the steel parts used may be obtained by knowing that the main posts are 80 feet high and weigh 28 tons. Many of the pieces weigh 10, 12, and 16 tons. The main pin of the cantilever truss is 14 inches in diameter and weighs 2,200 pounds. The material in the superstructure weighs 9,500 tons, and one of the remarkable features of engineering skill, as well as an indication of the expertness of Pennsylvania's steel men, is that every one of the myriad of minute pieces was made in advance to fit the place for which it was intended. The Pennsylvania steel came from Pittsburg, Pencoyd, and Pottstown. Some of the steel work is unusual. One of the plates resting on the first pier from the Memphis side and coming out at the top is the largest steel plate ever made in the United States. This plate reaches from the supports under the bridge to the extreme top, and from side to side, being open through the center, and through this aperture traffic passes.

The plans of the bridge were prepared in 1888 by George S. Morrison, the engineer. The difficult work of placing the caissons in the river preparatory to sinking the pier was begun in December, 1889, and the coping of the last pier was laid on May 15, 1891. The two sides were joined and the complete chain formed between Arkansas and Tennessee on Wednesday, April 6, 1892.

The river piers are sunk to depths varying from 78 to 131 feet below high-water mark. All were sunk by the pneumatic caisson process, and are of masonry from the caissons to the bridge seat. The stone that shows above low-water mark is granite from the quarries near Atlanta, Ga. Below water and the interior of the piers is limestone from Bedford, Ind. The heights of the caissons vary from 40 to 80 feet, and the piers from 93 to 158 feet.

For the purpose of comparison the following statement regarding some of the greatest bridges of the world is given:

Location.	Material.	Character.	Total length. Feet.	Largest span. Feet.
Brooklyn, N. Y.	Steel.	Suspension.	5,989	1,595
Poughkeepsie, N. Y.	Iron.	Truss.	4,595	525
Omaha, Neb.	Iron.	Post truss.	2,750	250
Cincinnati, O.	Iron.	Suspension.	2,220	1,057
St. Louis, Mo.	Steel.	Segmental arch.	1,550	500
Pittsburg, Pa.	Iron.	Suspension.	1,245	800
Leavenworth, Kan.	Iron.	Post truss.	1,000	340
New Niagara, N. Y.	Iron.	Suspension.	....	1,229
Menai Strait, Wales.	Iron.	Tubular.	1,378	459
Montreal, Can.	Iron.	Tubular.	6,538	330
Freyburg, Switzerland	Iron.	Suspension.	....	889
Waterloo, London	Stone.	Elliptical arch.	....	120

The bridge is located near the spot where Ferdinand de Soto crossed the Mississippi in 1541, and in excavating for the short pier on the Tennessee side some Spanish halberds, supposed to have been used by him, were found.

To Give Flowers an Artificial Color.

William Brockbank, in the *Gardeners' Chronicle*, suggests the following for the artificial coloring of flowers: Place the cut flowers in solutions of anilin and similar dyes. Anilin scarlet, dissolved in water to about the transparency of claret, has a very rapid action on flowers, coloring them pink and scarlet. Indigo carmine produces beautiful blue tints. The two combined dye various shades of purple, with curious mottled effects, some parts of the flowers becoming pink and other parts blue and purple. Greens are produced by using the blue dye with yellow. Indigo and cochineal are not very satisfactory. Among some of the effects produced are the following: Lily of the valley flowers become beautifully tinged with pink or blue in six hours, narcissi are changed from pure white to deep scarlet in twelve hours, and delicate shades of pink are imparted to them in a very short time. Yellow daffodils are beautifully striped with dark scarlet in twelve hours, the edges of the corona also become deeply tinged, and the veining of the perianth becomes very strongly marked. It is well to note that it is by the passage of the colored solutions through the vascular tissue of the flowers that the effect is produced, and the result is beautifully seen in white tulips, which in a few hours become prettily marked with pink, blue, or whatever the color of the solution may be. So also with other familiar flowers. Forced leaves of the Swedish turnip, grown in the dark, are very susceptible to color.

Test for Bridges.

The *Centralblatt der Bauverwaltung* does not believe in the value of load tests for bridges. It considers that far too much importance is attached to it, and that, accordingly, erroneous deductions as to the safety of bridges tested by applying loads and noting the resulting deflections are abundant. The case is cited of an iron bridge in which a recent careful inspection revealed alarming local corrosion. Still, a test load, applied only a few days before, had produced a deflection well within permissible limits, and the railway company owning the bridge was therefore satisfied as to its safe condition,