

Up to July 31st, I learned our official losses amounted to 2,006 men.

There has been much said about the inadequacy of the hospital and commissary departments, and many opinions ventilated, and could half of the remedial suggestions be put into execution they would shine as a model for the world in their way. Yet I believe that the best was done that circumstances and conditions would permit, as only those there knew. One disadvantage we certainly labored under, and that was the absence of smokeless powder, while the Spaniards were properly supplied with it, we simply had it for our Krag-Jorgensens, not even our artillery being supplied with it, and very few of the militia having Krag-Jorgensen rifles.

Cuba, with all the sickness that lurks behind its beauty at certain seasons of the year to catch the unwary stranger, is still a beautiful and picturesque country and possesses many natural resources, but has fell into a deplorable and dilapidated condition owing to the protracted wars and is no more noticeable than in any around the city of Santiago perhaps. The public squares and principal streets showing signs of former grandeur, and the amphitheater where beauty and chivalry gathered to witness their favorite pastime "the bullfight," and see the latest craze in the matadore line, perhaps plunge his barbs into the fiery bull, and all this when the dons held sway, and here a disused whirlingig or roundabout as a sad reminder of the happier days of the humbler class. Occasionally you get a glimpse of an interior through the barred windows or doors of some plain appearing exterior to find an elegantly furnished interior opening upon a beautiful courtyard with palms and fountains and the like, the female portion of the household attired perhaps in brilliant yellow silk shawls and wraps. But now the city is all bustle, the fine large open warehouses are amply stocked with Uncle Sam's provisions and guarded by U. S. soldiers. It is quite a sight to see the natives line up for rations or clamoring for work in the early morning unloading the vessels. I noticed several old guns half buried in the earth near the shore, relics of wars probably a hundred years ago.

All is life and excitement there now; Spanish soldiers awaiting embarkation, Cubans and United States soldiers and native police in their grey uniforms all intermingling; hundreds of little stalls where can be had anything, from a cup of coffee or wine to a mango, and vendors of all kinds of trinkets.

Leaving the city of Santiago in the early evening of August 1st on the S. S. Louisiana, in company with a few others, we passed down the beautiful channel that has created such a page in history, passing the cottage-bedecked hills and shores, pass the sunken Merrimac, now lying parallel with the main channel and across an inner channel, her smokestacks and two masts standing a few feet out of the water; passing also the sunken Spanish gunboat, the Reina Mercedes, sunk by Sampson, lying on her side with her starboard guns pointing upward and showing evidence of great and swift destruction; pass Morro fort on our left over which now floats the Stars and Stripes and the troops who garrison it are Uncle Sam's own. We arrive in New York the following Saturday with nothing of further interest happening than a very pleasant voyage. After a being inspected by the medical officer and our clothes fumigated and returned steaming hot, and the Red Cross society

kindly furnished all those who required them with under clothing, shoes and hats, we were, Monday morning, towed into dock and landed, realizing how dear is home.

Before I close I would like to mention an incident which occurred to me in N. Y. city as partly removing the black-eye all large cities possess more or less, and also of showing the honesty and aptitude of at least one of her officials. Being sent to the offices of the B. and O. railroad, situated on Broadway, with the understanding that I was entitled to a half fare rate to my home, I was informed upon investigation there that that privilege only extended to Omaha, the rest of the road not being in the scheme. I thought I was fortunate anyway, bought my ticket and thought no more about it. Later in the day having occasion to pass down Broadway, I was accosted by a young man in shirt-sleeves who informed me Mr. —, the ticket agent would like to see me as he had some money to give me, having made a mistake in a ticket I had bought earlier in the day—visions of confidence men and bunco steers appeared before me, but soon recognizing my friends, the clerk, I had seen in the morning, I accompanied him, when Mr. —, the ticket agent told me he had since discovered that the half fare rate extended to Ogden, Utah—made we out a new ticket and refunded me \$18.45, to me the great kindness and obligation and although no personal loser himself, still exists.

THOMAS J. BEECHING.

SCIENTIFIC MISCELLANY.

One of the later surprises of science is that we have yet so much to learn concerning the air about us. A constituent little understood, although its presence near electrical discharges was noticed a century ago, is ozone, which is pure oxygen in a condensed form, so instable that it never has been obtained as a pure gas. Its instability, giving it a powerful oxidizing action as it passes to the condition of ordinary oxygen, is its most valuable property. Among the uses suggested or attempted are the bleaching of various substances, the preparation of drying oils, and the aging of liquors, while medical attention has been directed to it on account of its efficacy in destroying germs and organic matter, and thus cleansing wounds and purifying the air of buildings. Ozone is best prepared by the action upon the air of very fine sparks multiplied into a kind of electric rain, the silent discharge of a Siemens induction tube being convenient in small experiments. M. Andreoli's new apparatus consists, for manufacturing purposes, of a serrated aluminum gird—with not less than 17,760 points—as a conductor, this being clamped to an aluminum sheet with a plate of glass between; while the medicine form comprises a vacuum tube containing a metallic rod and encircled by a spiral of aluminum armed with numerous points, the rod and the spiral being connected with a coil or step-up transformer. This apparatus is claimed to be very effective and economical.

At first sight tuberculosis in birds appears very different from that in human beings and cattle. Late researches by a French bacteriologist, M. Nocard, show that, while human tubercle and bird tubercle have different effects upon Guinea pigs and rabbits, both the lesions produced and the cultures obtained become similar after the inoculations have been passed through a series of animals. Medical men recognize two types of tuberculosis—the pulmonary and the abdominal. M. Nocard has now been

able to show that these two forms answer to the two different origins of the tubercle bacillus, the pulmonary form being set up by the bacillus of human tubercle and the abdominal form by the bird variety. Birds are not directly infected with tuberculosis from human beings or cattle, while most animals are little susceptible to bird tubercle; yet the eating of tuberculous poultry appears to be not wholly without danger.

The atmosphere ordinarily contains not only carbonic acid gas but something that produces it, if we are to accept the investigations of two French chemists. Air thoroughly freed from this gas was found soon to contain a small proportion, due, it is supposed, to the slow oxidation of some organic carbon the atmosphere must have held.

"Uranium rays" literally lighted the way to the discovery of polonium, this new element of pitchblende having attracted notice by radiations much stronger than those of uranium itself.

It is well known that water and other liquids often hold in suspension for a long time finely divided matter of much greater density than their own. The presence of salts in solution or heating the liquid, will suffice to bring about precipitation, and M. W. Spring, the Belgian physicist, has just noticed that water containing fine silica or other non-electrolytic matter begins to clarify as soon as an electric current is passed through it between platinum electrodes. This has suggested the theory that the turbidity is due to a modification of the electric state of the finely divided particles. The presence of a dissolved salt or acid renders the liquid a conductor, and the discharge of electricity causes the particles to collect in flocculent masses, while connection currents produced by warming give rise to electric currents having the same effect. M. Spring proposes to explain the fall of rain in thunderstorms on the same theory.

The expectation of some magnificent meteoric showers will cause shooting-star observations to be popular during the next two or three years. A catalogue has been prepared by Mr. W. F. Denning to show the principal radiant points—fifty in all—from which minor showers are seen to come at the six periods corresponding to the displays of Quadrantids, Lyrids, Perselids, Orionids, Leonids and Geminids.

A novel form of storage battery, the invention of Prof. N. H. Egerton, has for its principal peculiarity a plate that serves as both positive and negative electrode. The battery has been successfully put to work for lighting a town of about 3,000 inhabitants, which is supplied with 24 arc and about 600 incandescent lamps. In this case 110 lead plates, each 6x7 feet, are used, and are piled one on another to a height of 7 feet, the total weight being about 16 tons. A ¼-inch layer of litharge on the under surface of each plate except the bottom one forms the negative side; and a hollow in the upper or positive side contains a ¼-inch layer of red lead, on which is laid a sheet of asbestos. This is covered with granular oak charcoal, on which is placed a piece of muslin. The electrolyte, sulphuric acid, is siphoned in, and is absorbed by the charcoal. The battery works evenly, with a total electromotive force of about 225 volts and a capacity of 1,000 ampere hours.

The great telescope of the Paris exhibition is to have an aperture of 49