

THE FORTIFICATIONS OF OLD MANILA.

BY OUR MANILA CORRESPONDENT.

Perhaps the first and most abiding impression upon entering old Manila is that of the strange commingling of the old and the new. As one approaches the massive walls, and before a near enough view can be obtained to distinguish the strangely assorted artillery that points threateningly over parapet or through embrasure, the impression is altogether picturesque and romantic. One conjures up the days of doublet and hose, hauberk and halberd, and half expects to find the doughty Spaniard of the age of Philip and "good Queen Bess," keeping guard upon the broad stretch of the ramparts, or doing sentinel duty at the entrance gates. For those frowning walls have looked out upon river and bay for thrice one hundred years, and in the age when they were being laboriously constructed the monks of the eastern hemisphere were yet busy putting the finishing touches to the glorious cathedrals of the old world. And right well did they build these old walls of Manila; for it is certain that masonry which stood up so well against the terrific impact of our nineteenth century projectiles must have been more than impregnable against the feeble assaults of medieval artillery.

On a near approach, however, the pleasing illusion is dispelled; for the sight of modern high powered weapons from the famous Krupp factory, and the wicked gleam of machine and rapid-fire guns, bring one rudely back from the romance of medieval times to the stern realities of our nineteenth century civilization.

Old and new Manila are separated by the Pasig River. The old town is entirely surrounded by a wall of masonry which is everywhere from 20 to 25 feet in height and of extraordinary thickness, varying, in fact, from 30 to 100 feet. On the side of the town facing the bay the wall extends parallel with the shore for nearly a mile. At the mouth of the Pasig River it turns sharply inshore, following the course of the river for about half a mile. It then turns and swings back to a junction with the walls on the water-front, this intervening section between the river and the bay being in the form of a semi-octagon, and serving to protect the town from attack by land. The whole circuit of the wall is thus seen to be about three miles.

Entrance to the town is had through a series of massive and extremely interesting old gates, some of which are still complete with drawbridge, chains, and hoisting machinery. They are eight in number, and while they have a general similarity, each has its own points of interest for the antiquary. Between the bay and the seaward stretch of the walls runs the Metelle—a boulevard of considerable note. Leading out to the Metelle are two gates, Puerta Portigo, located near the river, and close down to the great arsenal now occupied by our troops, and Puerta Sta. Lucia, farther to the west. These gates both date back to the middle of the last century, and both have drawbridges and encompassing moats.

On the land side, looking out toward the old Spanish barracks, is Puerta Real and farther toward the Pasig is Puerta del Parian. These two gates are almost facsimiles of each other. Each has outer gates and outer moats and fortifications. While both of them date back to early in the eighteenth century, they have been remodeled and rededicated at a much more recent date. The Del Parian gate contains some fine sculpture and bears the date of 1783, while the Puerta Real was remodeled and dedicated anew three years earlier. Both structures front on the Cascada Aquada, the fine highway which skirts the fortifications from the river to the bay. Beyond the Puerta de Espana this highway is known as the Avenue de la Magallanes, and it runs parallel with the Pasig to a point where the walls extend to the water's edge.

The walls of the old city are in perfect condition, despite their great age. They are, perhaps, the stronger on the bay side, and there the guns are thickly planted. Overlooking the entrance to the Pasig the old walls are also very formidable, and on the land side there are many outer walls and defenses. They are constructed of solid masonry, and, unless they should be torn down, they will undoubtedly remain for centuries to come. The ancient moats, gates, and drawbridges, the parapets, ramparts, and gabionades, the portcullises and other constructions known to the military engineer of the days of Alva and Cortez, may be studied here in their full completeness.

Within the old walls is a succession of magazines and prisons. Here is located the prison of the famous inquisition, that horror of horrors, the "Dark Hole of Manila," where thousands of unfortunates have met their doom, or have been confined only to be led out to execution in the presence of the applauding thousands; out beyond the walls on the bloody La Lunetta.

On the walls of old Manila there are guns of all ages, patterns, and calibers, from the old sixteenth century brass gun to the modern machine and rapid-fire gun. In front of the walls and covering the bay are the great Krupp guns, which could have done considerable damage to our fleet at the time of the bombardment of

the city, but which all along maintained a discreet silence. These great guns are four in number, and back on the walls, below the Puerta Sta. Lucia, are two more of the same type but of a smaller caliber. Every gate of the old city was protected by guns of a modern pattern, assisted by others of a doubtful age. Along the bay there are dozens of muzzle loaders of all shapes and sizes, and the river was commanded by strong batteries. Many of the modern guns have been dismantled and are now stored away in the great arsenal; but the old guns still poke their noses from the walls and try to look dangerous. They are indeed an interesting study, and here one can get an idea of the great advances along the line of artillery made during the last three centuries.

The great arsenal located within the walls and close to the point is a most interesting place. Here are extensive magazines in which are stored hundreds of tons of powder and great quantities of munitions of war: for it must be remembered that the Spanish garrison of Manila were in no danger of an exhaustion of military stores. One sees dismantled guns by the dozens and many thousand stands of small arms. One of the most interesting things to be seen here is a modern machine gun, the invention of a Spanish artillery officer, which was constructed in the arsenal shops. It was used to pump projectiles into our lines at Malate, and it proved a model of its kind. Our experts are now studying its mechanism, which involves some novel ideas, and as a result we may have a new terror of warfare. Long lines of projectiles line the yards of the arsenal. Our artisans are now at work here turning out supplies for our army and navy. Old Manila itself is a curious old place built on a strictly Asiatic plan. Besides the fortifications and churches and public buildings, which form the principal part of the old city, there are queer Asiatic houses, with the upper stories projecting out over the narrow streets. The latter, be it said, are so narrow that they would not make decent alleys in an American city. While new Manila, just across the Pasig, is making rapid strides in adopting our American ways, the parent city, which has stood sentinel so long between the Pasig and the bay, has seen no change. It is still the same curious, sleepy old town, and it bids fair to remain the same for centuries to come.

Since that eventful morning of the first of May, on which the guns of an American fleet woke the echoes of this far-away spot, Manila has been the stage on which many and diverse peoples have played their parts. Our group of illustrations on the front page of this issue tells its own story. Here we see the work of our shells by sea and by land. The first illustration shows two of the Spanish gunboats undergoing repairs upon the slip at Cavite. Two other views show the work of shells and conflagration upon the decks of the Spanish fleet in front of Cavite. The guns are of the 4-7-inch type with which most of Montojo's ships were armed. Equally suggestive are the gaping holes torn in the old fort at Malate. The view of an insurgent battery is specially interesting, for it gives us a near glimpse of the uniform, accoutrements, and artillery of a native race which we may possibly be called upon to beat into submission to our authority. Let us hope we may be spared the necessity of imparting civilization to the Filipinos "by hypodermic injections with 12-inch guns."

As our readers look at the little cut of an insurgent gun and learn that it consists of an inner length of gas-pipe, inclosed with staves of wood which are clamped upon it with bands of iron, $3\frac{1}{2}$ inches wide by $2\frac{1}{2}$ inches thick, they will agree that necessity is still the mother of invention.

The Food and Endurance of Arabian Porters.

Arab carriers bear great loads upon their backs, and go at a trotting pace from 6 A. M. to 6 P. M. During the month of Ramadan, the Koran forbids the taking of food between sunrise and sunset, and this law is said to be held sacred and rarely violated. Not only do these porters continue their arduous physical exertion during the twelve laboring hours of the day without taking any food during that period, but the French inspectors who are in charge of the gangs told our informant that they could work better during the month of the fast than at any other time of the year, because their energy was not needed for digestion. At eventide, these Arabs have a moderate meal of wheatmeal porridge, mixed with large proportions of butter (it is to be had cheap) or olive-oil. Their expenditure for food is not more than six or seven cents a day, and the only luxury which they permit themselves is a cup of very strong black coffee and a cigarette. The idler exists on one cent's worth of bread with a little olive-oil, which he buys for an additional five cents.—The Vegetarian Messenger.

The New York Electrical Exhibition.

During the month of May, 1899, there will be an electrical show in Madison Square Garden. The show will be under the auspices of and in connection with the twenty-second annual convention of the National Electric Light Association.

Correspondence.

On the Freaks of Lightning.

To the Editor of the SCIENTIFIC AMERICAN:

In the issue of the SCIENTIFIC AMERICAN of January 21 your correspondent, I. E. Buford, asks for an explanation of a freak of lightning in which two horses were killed and the rider escaped without serious injury. I beg to submit the following, as in a measure explaining the phenomenon: (1) Electricity passes along the lines of least resistance, and, it being summer, the wet, briny skins of the horses offered a better conducting medium than the clothing of the negro. (2) As was demonstrated during the investigation of the subject of electric execution in New York some years ago, the horse is less resistant to electric discharges than man.

BERNARD WOLFF, M.D.

January 21, 1899.

[Our esteemed correspondent would be correct if it were true that a static discharge always takes the line of least resistance. Hertz showed that a discharge of a Leyden jar would jump an air gap instead of following a wire around to the other side of the gap. The air had an enormous resistance, the wire only a fraction of an ohm. In the case of the negro riding a horse, the path of least resistance is not air, horse, earth, but air, negro, horse, earth; since 4 feet of negro's body has less resistance than 4 feet of air through which the lightning passed on its way to the horse. There is no question of the relative resistance of horse and man, since the alternative path to earth was not man or horse, but man and horse or air and horse, and it chose the latter.

Benjamin Franklin, nearly 150 years ago, observed that lightning would leave a heavy rod and take to a fine wire which had many times the resistance. It has also been known to leave a good metallic path and tear around generally through a house, over the gilt of wall paper, even through feather beds, instead of taking the path of least resistance. The more facts one accumulates on this subject, the less one thinks resistance has to do with it and the more one is inclined to say "Don't know" to queries like the above.—ED.]

Kissing the Book.

It is a curious survival of an old custom that witnesses are required to kiss the Bible or Testament when an oath is being administered to them in court. There does not seem to be any reason why a witness should not be allowed to take the oath by laying his hand upon the sacred volume, and learned judges have permitted this to be done. On one occasion, when a woman was subpoenaed as a witness, she produced her own copy of the Gospels to be sworn upon, and her forethought and good sense is to be commended. The custom of kissing the Bible should not be continued, in view of the astonishing amount of evidence which bacteriologists have at their disposal. At a recent meeting of the Board of Magistrates, in New York city, the question of discontinuing the practice of requiring witnesses in police courts to kiss the Bible was discussed, and one of their number had, prior to this time, abolished it in the court where he presides. While the subject was not formally discussed, a number of magistrates spoke upon the matter, and the general opinion seemed to be in favor of doing away with the custom. Magistrate Kudlich said that he would like to see the practice of kissing the Bible altogether abolished, because of the indiscriminate use of the Bible by all sorts of persons, which was very liable to communicate disease by means of the delicate membranes of the lips.

Magistrate Kudlich continued; "I have advised witnesses not to kiss the court Bible since an incident occurred some two years ago. During the examination of the witness it was found that he was suffering from a loathsome, contagious disease and that his lips were ulcerated. I forbade the next witness to kiss the infected book and ordered it to be destroyed."

Magistrate Meade said that educated people usually affirm or kiss their own hands when they hold up the book, which is quite true; but, as far as the people were concerned, he was of the opinion that more truth could be gotten out of them if they kissed the Bible, as they have a terror of future punishment if they give false testimony when so sworn. Magistrate Deuel said that kissing the Bible made no difference with witnesses. Magistrate Simms thought that taking the oath with uplifted hand was far more impressive and solemn. Magistrate Olmstead said that, when the Bible was very dirty, he warned the witness against kissing it. Magistrate Pool has abolished the kissing of the Bible in his court, and is really responsible for the discussion which was raised by his act.

That the magistrates of New York are so kindly disposed toward sanitary reform in the police courts is gratifying, and it is to be hoped that the subject will not be allowed to rest, but will be discussed by the judges of the higher courts.

A RESIDENT of a Minnesota town died recently of obesity. He weighed, at his death, 438 pounds.

SCIENTIFIC AMERICAN

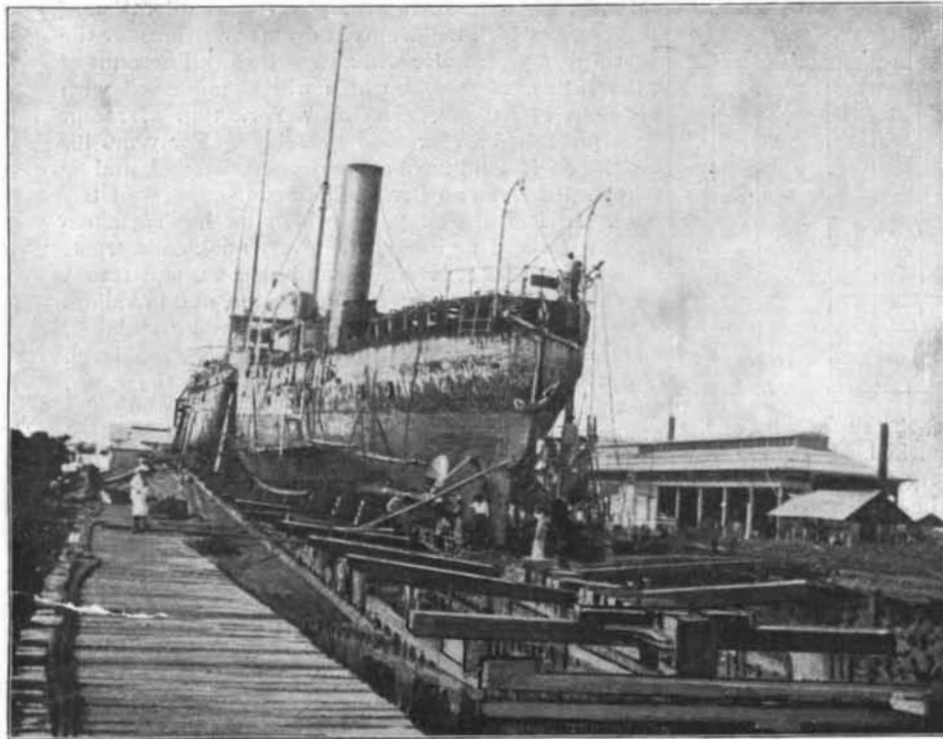
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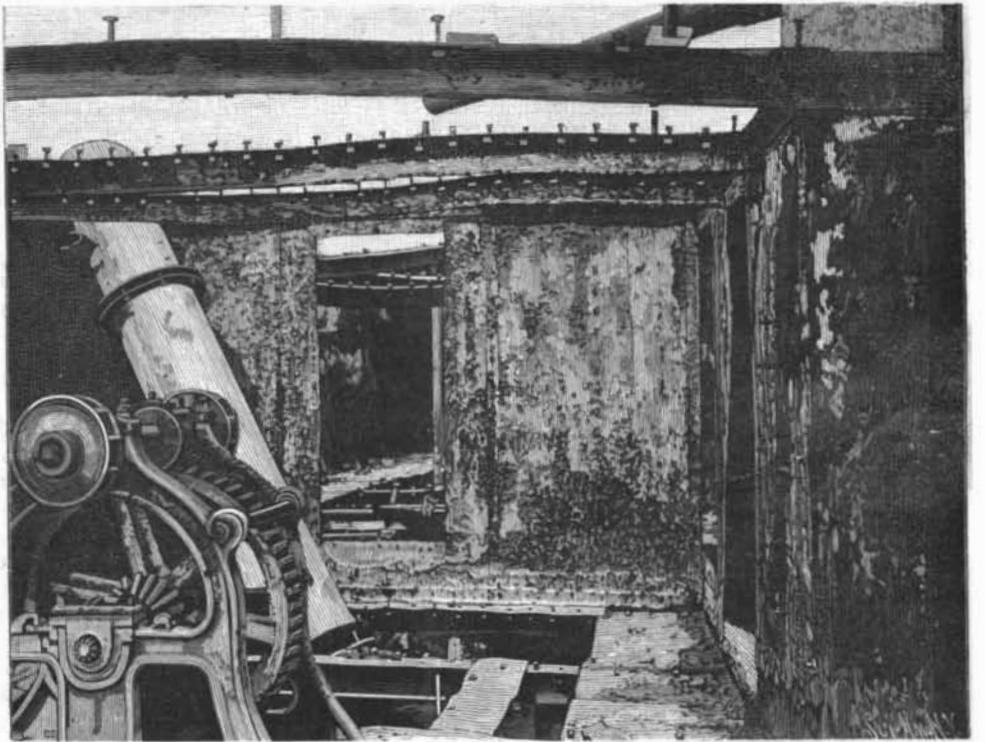
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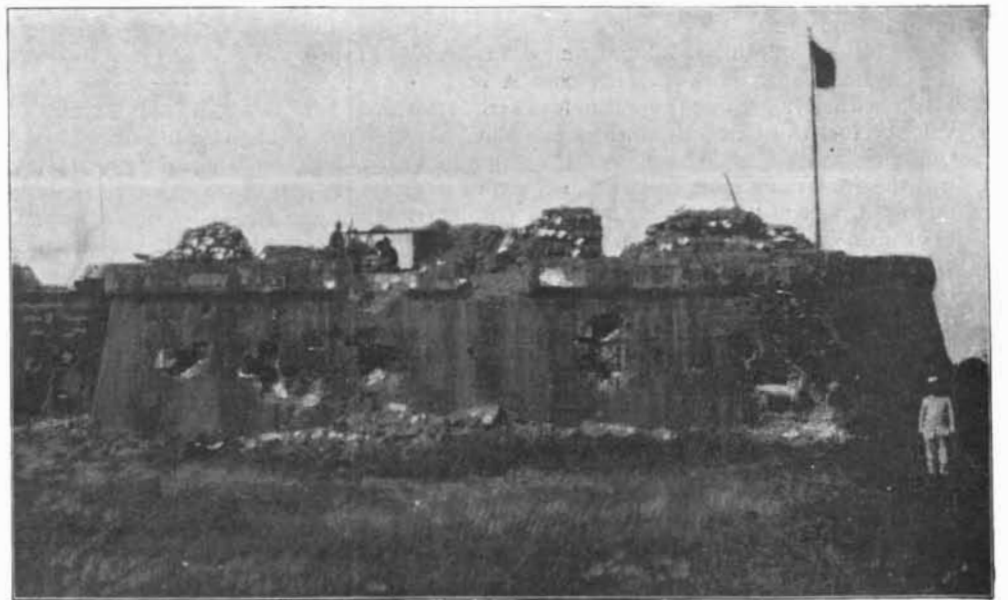
Captured Gunboats Being Repaired on the Slip at Cavite.



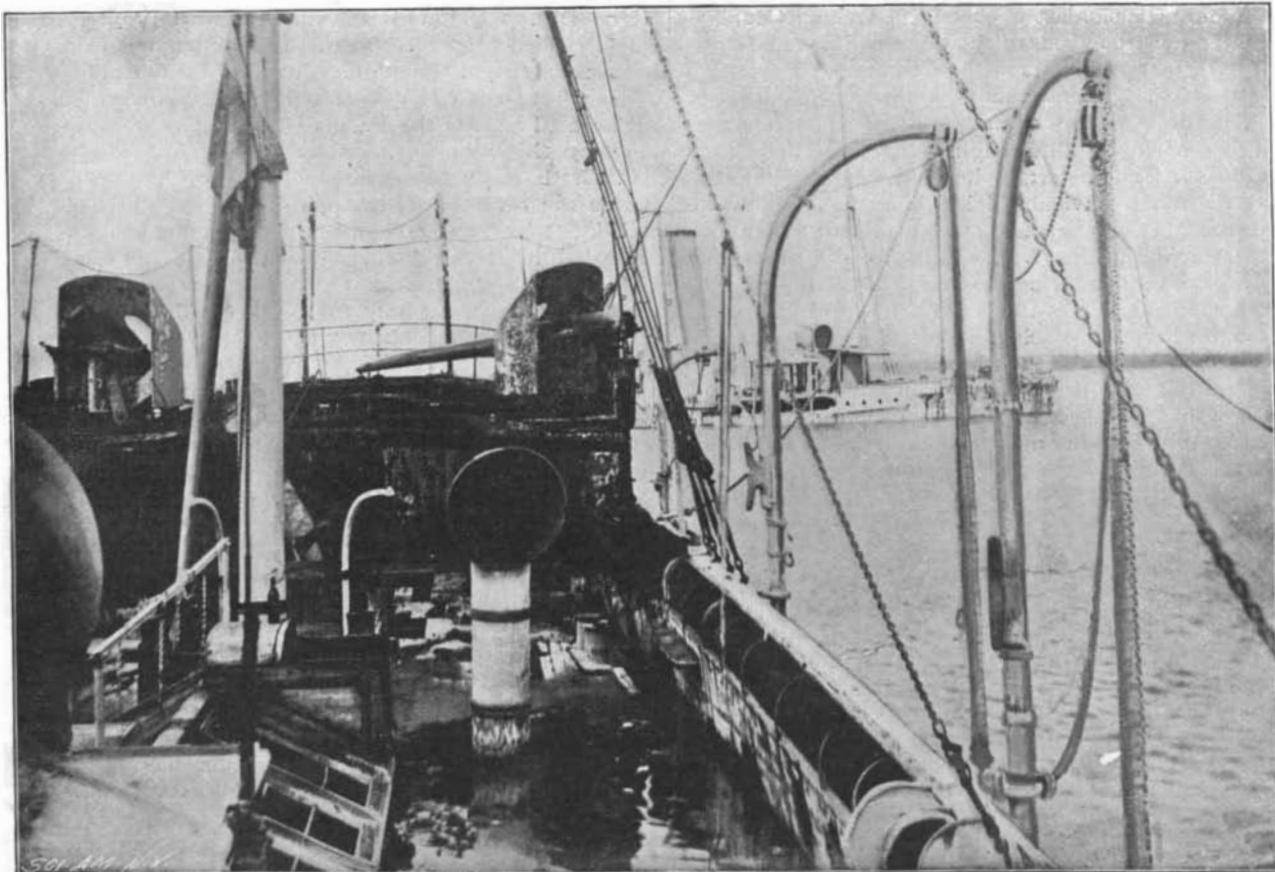
The "Isle de Luzon" Burnt and Sunk at Manila—View Under the Poop.



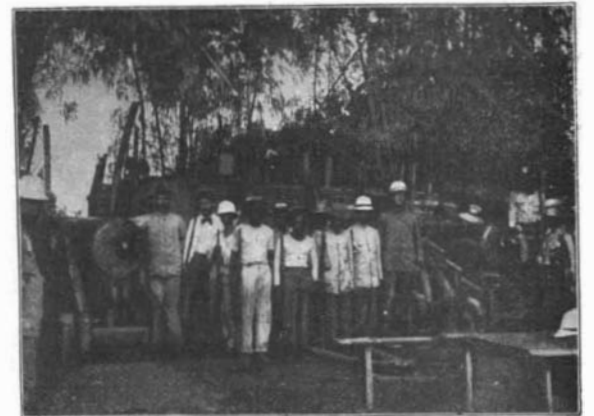
Spanish Arms Surrendered in the Old City.



San Antonio Battery, at Malate, where the First Flag was Raised Over Manila.



The "Isle de Luzon"—View Looking Aft, Showing 4.7-inch Gun on Poop.



Insurgent Battery Before Malate.



An Insurgent Gun.

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