

Scientific American.

ESTABLISHED 1845

MUNN & CO., - - - EDITORS AND PROPRIETORS.

PUBLISHED WEEKLY AT

No. 361 BROADWAY, - - NEW YORK.

TERMS TO SUBSCRIBERS

One copy, one year, for the United States, Canada, or Mexico \$3.00
 One copy, one year, to any foreign country, postage prepaid, 20 lbs. 3d. 4.00

THE SCIENTIFIC AMERICAN PUBLICATIONS.

Scientific American (Established 1845) \$3.00 a year.
 Scientific American Supplement (Established 1876) 3.00
 Scientific American Building Edition (Established 1885) 2.50
 Scientific American Export Edition (Established 1875) 3.00

The combined subscription rates and rates to foreign countries will be furnished upon application.
 Remit by postal or express money order, or by bank draft or check.

MUNN & CO., 361 Broadway, corner Franklin Street, New York.

NEW YORK, SATURDAY, OCTOBER 7, 1899.

KRUPP ARMOR AND CONGRESS.

It will be remembered that at the close of the last Congress it was decided that the contract for the new battleships and armored cruisers should not be let, unless their armor could be secured at or under the price of \$400 a ton. It is well understood that the undoubted superiority of the Krupp armor over that manufactured by the Harvey process will render its adoption for future warships a positive necessity, unless, indeed, we are prepared to be left far behind other nations in the defensive qualities of our ships. Those who have any professional knowledge of the question have been at a loss to understand the exact grounds on which the small clique who are responsible for this disastrous deadlock in our naval construction arrived at their arbitrary figures, but anyone who has even a general knowledge of the state of the art knows that any firm that should undertake to produce and sell the new Krupp armor at \$400 a ton would soon find itself reduced to insolvency.

It is probable that by this time the United States government is in possession of a complete statement of the facts of the case, prepared by Krupp, the great inventor and manufacturer, in which he deals with the question of price, and proves that the high cost of his armor is amply justified by the consideration of the costly plant and methods involved in its manufacture. We understand that the statement contains detailed information as to the armor plate factory at Essen, in which it is shown that the total cost of the installation up to date has been no less than \$5,000,000. On the other hand, the great length of time necessary for the process of cementation, not to mention the slow machining of the armor plate, brings down the annual production to a maximum of 6,000 tons. It is stated by Krupp that if the same amount of capital had been invested in a rail plant, the output would have been considerably over 100,000 tons. From this he draws the conclusion that for capital charges the price for armor plate ought to be vastly greater per ton. Another and equally weighty consideration is that the improvements in the manufacture of armor plate follow each other with such rapidity, and are often of such a radical nature, that the period during which any new and costly plant may be worked at a profit is liable to be of very short duration. For instance, it may be mentioned that it is only seven years since the Harvey process, which is now practically obsolete, was tested on European proving grounds; and while it is true that the Krupp process is essentially a development of Harvey's process, there is always the possibility of the introduction of a new system that will render the existing plant partially, if not altogether, obsolete.

We sincerely trust that when Congress meets again and takes this matter under consideration, the members who have hitherto busied themselves with this question will endeavor to look upon it from a broad and patriotic standpoint. In the first place, the price asked by Krupp is not excessive, and is being willingly paid by the European makers. But even if it be excessive, we had better bear the comparatively slight increase of cost rather than "hold up" indefinitely the work of constructing our new navy. To do this is to be guilty of the stultification which is well described in the old adage which speaks of the folly of "cutting off one's nose to spite one's face."

We have, indeed, heard it whispered that the \$400 per ton restriction was imposed with the clear knowledge of the facts that we have stated above, and that it was done for the express purpose of delaying the battleship and armored cruiser construction at a time when some of our shipbuilding firms were not prepared or did not wish to take up any new naval construction. We prefer charitably to hope that the members who were responsible for this "hold-up" were the victims of shortsightedness or lack of information. That any member of Congress could be guilty of such a culpable act as that of imperiling the safety of the country in the interests of a particular industry is too shocking a thought to be entertained without the most positive proof.

THE IMPROVEMENT OF HAVANA.

As we watch the reports which are being sent in by the military governors of the islands that have recently come under our care, we must feel that "peace hath her victories no less renowned than war." If the work of such men as Gen. Wood at Santiago and Gen. Ludlow at Havana is to be taken as a test of what the future has in store for the island of Cuba, we may rest satisfied that the blood and treasure that were spent in the last war were spent to noble ends.

It was Gen. Ludlow who was selected by the government to make an examination of the Nicaragua Canal scheme at a time when a considerable section of Congress was endeavoring to commit the government to a financial indorsement of the undertaking. It was his masterly report, undoubtedly, that saved the country from being plunged prematurely into that colossal undertaking, and it is to the clear insight and courageous impartiality with which he handled the whole subject that the nation is primarily indebted for the present satisfactory relation in which it finds itself to the whole question of a canal at the Isthmus.

Gen. Ludlow's report as commanding the Department of Havana, and as military governor of the city of Havana, covers the period of our occupation up to September 5. It shows that the problem of reorganizing the government of Havana and the uplifting of the city from the state of filth and neglect in which the Spaniards left it, has been taken in hand with characteristic system, energy, and thoroughness. The physical condition of the city at the time of the Spanish exodus was simply shocking. Starvation and death were matters of every-day occurrence. Neglect of the most common sanitary precautions had raised the death rate to alarming figures, which exceeded greatly the all-too-heavy prevailing death rate of the city; and the inevitable restlessness and lawlessness following the removal of the Spanish troops were everywhere conspicuous.

It is gratifying to learn from Gen. Ludlow's own words that "in Havana the rule of law is practically complete," while the country districts are "as quiet and as orderly as the interior of New England." While much remains to be done and many problems are awaiting solution, there is just cause for congratulation from the fact that the death rate, for instance, in June, July, and August was lower than the average for the same months during the past nine years, not even excluding the two calamitous years of the war, 1897 and 1898; while the indications are that the total number of deaths for the current year will be only half the number for 1898. The deaths per month for 1898 were only 162, which is the lowest since 1890.

Gen. Ludlow puts in a plea for better school facilities for the Cuban children, whom he finds to be both bright and docile. We are informed that out of 18,000 such in the city of Havana, only about 5,000 can find accommodation in the public schools.

Such matter as is contained in this report and in others that have been returned by our military governors is excellent reading and should find its way freely into the hands of the American people. We could wish that some provision might be made for the printing and wholesale distribution of such literature. It would do much to remind the American people of the serious pledges as to our humanitarian motives which were made when we entered upon the war, and to show what earnest efforts are being made to fulfill them.

HISTORY REPEATS ITSELF.

The experiment which is being made on the Boston and Maine Railroad with the use of coke as a fuel for locomotives calls to mind the fact that this was the only fuel used for the purpose when railroading was in its infancy. If our readers should chance to come across any engravings purporting to show the early trips of such locomotives as the "Rocket" and contemporary engines, which represent these little engines with dense volumes of smoke rolling from their smokestacks, they may be sure that the pictures were not drawn upon the spot. The advantages of coke as a fuel for locomotives because of its cleanliness, splendid heating qualities, absence of clinkers and dirt, not to mention its smokelessness, rendered it an ideal fuel to meet the legislative restrictions of those early days. One of the few objections to it was that the fierce heat engendered in the fire-boxes frequently caused trouble by burning out the fire-bars.

The Boston and Maine Railroad officials have spoken in the highest terms of the behavior of coke in their locomotives, its chief recommendations being that it is smokeless, dustless and completely averts the great risk from setting fire by sparks and hot cinders. It is estimated by the management that this last advantage alone will result in the saving of about \$100,000 which has been annually paid in the way of compensation for such fires.

TRADE MARK DECISION BY THE IMPERIAL GERMAN PATENT OFFICE.

Several persons have recently petitioned the Imperial German Patent Office to cancel the trade mark for an emblem consisting of a ball surmounted by a

cross and granted for the well-known Chartreuse brand of liqueurs. The petitioners declared that the representation of the ball and cross was a holy symbol, and as a trade mark for liquors wounded their religious feelings, the trade mark thus being an offense under the law.

The Patent Office decided against the petitioners and upheld the trade mark. The decision reads in the main as follows: "Even if the representation of a ball and cross appears on pictures of religious subjects and is used on church statuary as a symbol of the 'Lord's Realm,' it is in itself not to be considered as a specifically religious symbol. The fact that a number of persons object to the use of the ball and cross is not decisive, as the considerations which caused their personal feeling are not sufficient to produce a like feeling in the public at large, even if their statements are considered to be true. There is also no valid reason given that the trade mark tends to mislead the public, as the petitioners also asserted. It is not considered probable that a person would be led to the belief, as alleged, that the goods, with the trade mark in question, represent a beverage blessed by the Church, and that the buyer would believe it to be the performance of a sacred duty toward the Church, as contended by the petitioners."

LAKE CHELAN UPEHAVAL.

Lake Chelan, which is located in the northeastern part of Washington, and which is a large body of fresh water, was the scene of a most remarkable disturbance a few days ago.

About 2 o'clock in the afternoon a very peculiar upheaval was noticed about the center of the lake. At that point, the lake is several miles in width. Suddenly, and without previous warning, the waters were seen to rise to the height of 15 feet or more.

No wind was blowing, and the surface of the lake was as smooth as a mirror, just prior to the upheaval. Huge waves came rolling from the lake's center toward the shores. Persons who watched the upheaval, say the waves came shoreward just like a tidal roller, and burst with great force and fury upon the land.

One steamer, which was moored at one point of the lake, was lifted a number of feet. The lines were all suddenly snapped asunder; the boat was thrown up on a high bank, and when the water receded, the craft was capsized, and sunk.

Many small boats which were moored along the shores were either smashed to pieces by the force of the waves, or swamped. Driftwood was also thrown in great quantities high up on the lake's shore.

Succeeding waves were not so large as the first huge one which burst on the shore; but heavy waves continued to roll in for two hours. Fortunately no persons were out in boats on the lake when the upheaval came. No ordinary small boat could have lived in such waves. No lives were lost.

The disturbance seemed to have extended with more or less force all over the lake, and high waves were noticed all around the shores.

A most remarkable thing happened to Twenty-five Mile Creek, one of the largest streams which empties into Lake Chelan. For some inexplicable reason, the stream went entirely dry for about three hours. After that the waters flowed the same as ever. It was during the time of the upheaval that the stream ceased to flow. The stream flows from far back among the mountains, and the disturbance was some distance from the lake, toward the source of the creek.

The cause of the upheaval is being generally discussed by geologists and scientific men. The commonly accepted theory is that the trouble is due to volcanic origin. No other theory has been advanced yet.

Not within the memory of white men has Lake Chelan been disturbed before in such a remarkable manner. For a great many years the Indians have had traditions which claim that there has long been a volcanic crater somewhere in the vicinity of the lake. Once, so runs the tradition, there was an active volcano, but it has long since become extinct.

The outcome of the scientific investigation which is being made of the peculiar phenomenon is very problematical.

A PHOTOGRAPHIC EXHIBITION.

Preparations are in progress for the first annual exhibition of photographic apparatus and supplies, to be held in Madison Square Garden next October. The National Photographic Exposition Company has been incorporated, and it is expected to be of much benefit to photographic interests by means of an annual display. A most attractive feature of the coming exhibition will be the historical collection, much valuable material being loaned by the Smithsonian Institution, Royal Photographic Society and other societies abroad. They include some of the earliest works on photography, containing samples of forgotten processes. The British government will loan three hundred large, fine photographs of historical places in Great Britain which are among the results of the historical photographic survey of the country, begun by private associations and then passing under government direction.