

LITTLE WAS NEW

War with Spain Was Along the Old Lines.

WERE NO GREAT INNOVATIONS

Tried Rules Were Followed—No Experiments—The Rifles—Figuring on Powder for Future.

(Lieut. G. L. Carden, U. S. A., in Washington Star.)

The Spanish-American war has taught the great majority of Americans that it is safe in time of war to place reliance only on weapons of tried value.

As late as a year ago a general belief pervaded the country that an Edison or a Tesla could in twenty-four hours' time devise a scheme whereby the navies of the world, if need be, would be swept off the face of the ocean. The war came and passed away without the single addition of a new weapon. From beginning to end actions were fought out on the good old line of powder and ball. Rifles were used the same as in the revolutionary period, only in this last war it was a case of guns capable of muzzle velocity of 2,400 foot seconds as compared with the 900 foot seconds velocity of earlier day weapons.

The artillery of to-day differed from former pieces only in detail. Breech-loaders were employed possessing the power of imparting extraordinarily high velocities to shells, while the carriages and appurtenances generally were more lightly constructed, and capable of withstanding heavier strains. On board ship the artillery employed was mounted on the same principles which held good one hundred years ago.

The guns of today are merely a development of earlier pieces. They are able to develop in their shells a greater energy of impact at the end of a flight, and the range possibilities have been extended, but underlying all are the same rules of service and of mounting that were in vogue in Nelson's time.

The great danger feared by many leading officers of the army and navy is the possible belief which may seize the people that since the last war was easily won, almost any kind of material will suffice. Under an autocratic government, it is possible, so long as money is available, to accumulate great quantities of munitions of war of all sorts, and embracing the latest developed patterns. In the United States the army and navy authorities are absolutely dependent upon Congress. Money is appropriated for a specific purpose, and if Congress does not see fit to appropriate funds for the development of war material, the country suffers for it when an emergency arises.

The Spanish war found the United States in anything but a well-prepared condition. There was a general lack of supplies all along the line. It was not sufficient that \$50,000,000 be appropriated. It takes time to manufacture powder, to fabricate guns, to build ships, to turn out armor, and to forge projectiles. Time cannot be purchased when a powerful enemy is hammering at one's door. The smokeless powder supply for the small regular army was so low last April that the powder establishments were taxed to their utmost to meet the demands. This accounts for the inability to supply smokeless powder to the regiments armed with the Springfield rifle. There was not sufficient time available. In the heat for all the rush for weapons of tried value the ordnance officials were overrun with inventors of all sorts. The most chimerical schemes were presented for the destruction of the enemy's ships. Had a particular invention ever been tested? Never. It was supposed that the government would drop all other preparations, pick up the new idea and, in a commercial sense, exploit it. Ever since there was any record, especially in modern warfare, cranks have pestered war officials. The experience of trained fighters counted for naught in the eyes of these inventive individuals. Tell a country boy accustomed to hunt quail with a first-class shotgun that the proper weapon to employ is a rifle, and he will probably laugh in the face of the proposer. Experience has taught him that the shotgun is the more effective weapon of the two for that particular work.

The only real test of efficiency for weapons of war is war, and in a time of great national emergency it is the tried weapons that are sought after. New devices succeed in creeping into the army and navy in time of peace. Not infrequently powerful influences assist a promoter, and a new engine of war of doubtful service and value is seen among the armaments. The first

shock of battle proves the value or weakness of the device—generally the latter.

Submarine boats, balloons, pneumatic dynamite guns, electric range-finders, machine guns, torpedoes of the automobile and divisible types, shells filled with high explosives and various other contrivances were either in existence in the armaments of the United States service at the outbreak of the war or were available. Nearly all of the above weapons and aids of warfare were, at least in their present form, productions of the past two decades. And what do we find? The submarine boat, despite all that was claimed for it, was not used. Two fleets were destroyed and a nation was conquered without having to call it into play. The balloon before Santiago! Well, ask the troops who suffered from the fire it drew upon them what they thought of it. Santiago certainly did not fall because of any service rendered by balloons. The pneumatic dynamite gun accomplished nothing. It created a great fuss, but mounted as the three pieces were on board the Vesuvius (a vessel with a bottom as round as a barrel and a most unsteady platform), they are unable to fire with any degree of accuracy. The Spaniards did not yield a jot of ground by reason of any work of the dynamite guns.

Electric range finders which, under nominal conditions were able to determine a range with a degree of inaccuracy of only one-half of one per cent., were of little or no use in the war. The range was generally picked up in the good old-fashioned way, and by the method our seniors in the civil war employed, namely, firing a gun and observing the fall of the projectile. As to the machine guns, they are already disappearing. The light, automatic guns are no longer being installed. The automatic weapons which feed their cartridges by means of a belt were ideal in action so long as they worked well, but no one could tell when a jam might be expected, and a jam meant a gun out of action. No more automatic guns, it is announced, will be purchased. As to torpedoes, the opportunity did not present itself during the war to employ them, but a good deal was learned concerning the places where they should not be carried. In the action of July 3 a shell supposed to have been fired by the Texas struck the torpedo located in the bow tube of the Viscaya, and on exploding in turn exploded the torpedo. The effect was to tear out about fourteen feet of the stern of the Spanish cruiser. It taught the ordnance experts of the United States that in future torpedoes, if carried at all by the large ships-of-war, should be placed below the water line and out

of the reach of hostile shell. The dirigible torpedo—the weapon that could be directed from shore—found no place in the last war.

While foreign vessels have largely introduced shells filled with high explosive charges, such as emmenite, joveite, lyddite, etc., the ships of the American navy have adhered to good old black powder. The result was that when the American shells burst between the decks of the Spanish ships everything in the shape of woodwork was set on fire. At first glance it seemed incredible that a shell explosion could produce the terrible conflagrations that generally ensued. It would appear, though, that when a shell exploded all of the grains of powder were not burnt outright, and that these powder grains in being driven like small pellets into the surrounding woodwork, carried their own oxygen and burned with all the intensity of a blast furnace. It was found that any combustible material in the vicinity of a shell explosion was sure to catch on fire.

As a consequence of the fine results obtained from shells filled with black powder, the naval authorities, it is announced, will adhere to the use of black powder in preference to high-explosive charges. A high-explosive charge, on exploding, produces a very destructive effect in the immediate vicinity of the explosion, but does not set combustible material on fire. Powder was used in the shells on the British ships-of-war which were directed against the American position on Breed's Hill, and now, even at this late date, with all the experiences of the last summer still fresh in mind, the results warrant the continuance of the same black powder.

The war taught the all-important lesson, however, that the powder for the future must be smokeless in character. Black non-smokeless powder will continue to be used in shells. The non-smokeless quality is, when used in this connection, a positive advantage. The gunners can observe, by noting the location of the explosion, whether the shell fell short or beyond the advantage of the Americans in the employment of smokeless powder. A Spanish battery serving smokeless powder could with difficulty be made out. Smokeless powder is now being turned out in large quantities for the United States service. An order of something like 2,000,000 pounds is being executed for the navy alone. There is no difficulty in making a smokeless powder. A new grade of smokeless powder can be evolved every day in the year, but the trouble is to obtain a powder that will stand climate changes. To be serviceable, a smokeless powder must, first of all, possess good

keeping powers. It must be able to withstand sudden changes of temperature without undergoing a chemical change, and, when nitro-glycerine is the basis, as it is in most smokeless nitrates, there must be no exudation.

THE NEW POWDER

The new smokeless powder of the Army is made by a bureau of ordnance formula from soluble nitrocellulose dissolved in ether alcohol. The form of a grain is that of a cylinder. Each grain has seven longitudinal perforations, and the grains differ only in the thickness of their walls. It has been found necessary to manufacture a distinct grain of powder for each caliber of gun. The powder as presented used in the British navy is known as cordite. The new American powder, besides being smokeless in character, is able to impart enormous velocities to its projectiles. The present six-inch gun, when using brown powder, gives to its 100-pound shell a velocity of a little less than 2,000 feet per second. The same gun using the new smokeless powder is able to impart to its projectile a velocity of 3,000 feet per second. At the same time the higher velocities, when using smokeless powder, are obtained on chamber pressure not greatly in excess of those arising when brown powder is employed. The standard chamber pressure for navy guns is fifteen tons to the square inch. It is possible that the pressure will rise to sixteen tons when using smokeless powder. The standard pressure used in the army coast defence rifles is sixteen tons to the square inch.

The announced policy of the officials, at present, is to develop the ordnance of the country on established lines, and by accumulating liberal supplies of munitions of tried character, enable the country to be prepared at any moment for whatever emergency may arise. This policy is the only safe one to be pursued.

GNATS CARRY FEVER

Experiments at Rome have shown that the notorious Roman fever, the malaria of the Campagna, is spread by a particular species of gnats. Experiments on animals failed, but a patient in the hospital volunteered to have the experiment tried on himself. He was exposed to the gnats, developed the fever, his blood showing malaria bacilli, and was then treated with quinine. This supports Dr. Koch's view that the plague in India is propagated by mosquitoes.

Read the Hawaiian Gazette (Semi-Weekly).

Another Victim Cured.

What a Honolulu Lady Has to Say of Doan's Backache and Kidney Pills.

Many people are skeptical about taking so-called patent medicines, but a few testimonials as given below ought to convince the most skeptical that all remedies are not without merit.

Home testimonials certainly must be accepted as being first class and positive proof of the curative features of a remedy. Watch this space for a series of testimonials of people well and favorably known.

Mrs. Grace Dodd, 524 Young street, says: "I was troubled with enlargement of the liver; suffered severe pains in my right side and lame back for two years. After consulting a local physician and taking medicines of all kinds and failing to get relief I purchased a box of Doan's Kidney Pills and soon was relieved of the severe pains, could enjoy a good sleep and am satisfied the Pills cured me."

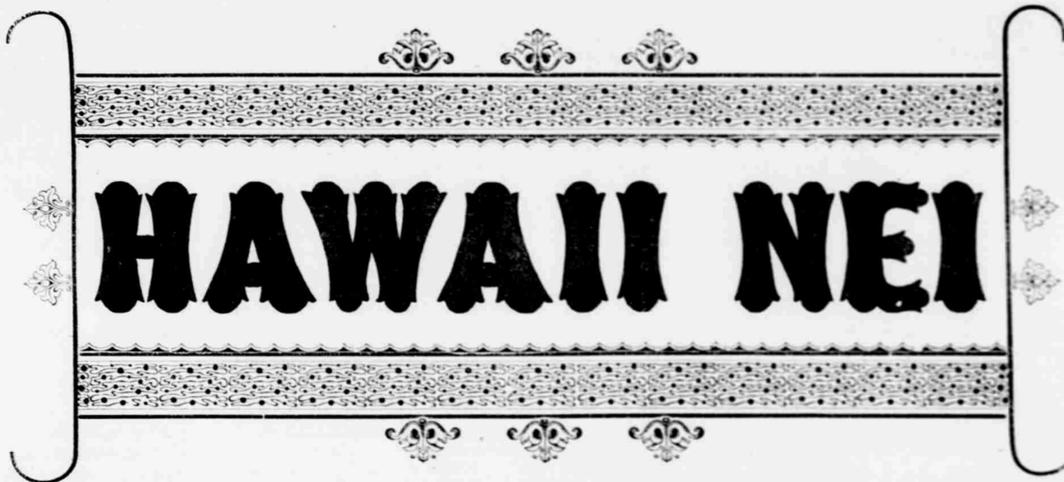
Doan's Kidney and Backache Pills can be obtained at the Hollister Drug Co., Ltd., Fort Street, at 50c a box.

PRINTING REVOLUTION.

NEW YORK, Jan. 19.—Dr. Frederick Strange Kollie contributes to the Electrical Engineer a description of a new process by him which overcomes the cost and labor of composition and presswork, reduces the time necessary to reproduce copies, and is of such a nature that the operator may be kept in complete ignorance of the contents of the document. This might make the process valuable in the diplomatic and secret services of the Governments. An opaque fluid ink is used for written documents and a semi-fluid mixture for typewritten. The copy is clamped down over the sensitized paper in blocks of 100 sheets, called senso-blocks, and is exposed to the rays. Then the sheets are developed as needed. Kollie says that twenty senso-blocks may be exposed around each tube simultaneously. This would make it possible to print 6000 copies a minute for each tube used. He says that ten men, working eight hours a day, could print 7,500,000 copies and develop, fix, wash and dry them.

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