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## SUBJUGATION OF THE SOUTH.

This term is made use of by the leaders of the Southern revolution to arouse the masses of the people to take up arms against the Federal government. Thinking men cannot be deceived by such a cry as this, however much it may influence the baser passions of the ignorant. The simple explanation of this whole matter is that the United States government, whether headed by Abraham Lincoln, John C. Breckinridge or Stephen A. Douglas, exercises, by virtue of the constitution, supreme authority over every State and Territory; and every Governor of every State, and every Federal and State Judge, when about to enter upon the duties of office, are required to support and uphold, under oath, the constitution of the United States. The very organization of the Federal government was based upon this idea, and all State governments, and all State courts, are held in subordination to this supreme power. Were this not so, a State at any time could arrest the execution of the Federal laws, and the government would be completely at the mercy of a State convention or a State legislature. If, on the theory of secession, a State may withdraw at pleasure, then there could be no possibility of making and faithfully carrying out treaties with foreign powers, protecting citizens in foreign lands, borrowing money for any purpose, and exercising those functions that alone belong to a general government. No; it was the intention of the States, when the constitution was adopted, to form a *perfect Union*; and, furthermore, to clothe the government with power to execute the laws of Congress against all violators. This is all that the Federal government is now trying to do. It says to the Southern people, "Obey the laws, and you shall have, as heretofore, all the protection to life and property that you desire." The government could do no less; it seeks to do no more; and all this talk about subjugation is mere claptrap. If South Carolina will but obey the laws, as the great States of New York and Pennsylvania are now doing, not a single right belonging to her people would be withheld. She will have a Governor of her own choice, two Senators in Congress, and her proper quota of Representatives. Federal judges will execute the laws, the mails will be carried as usual, her slave property respected, and insurrection suppressed, if need be, by the Federal government. Could anything be more reasonable? Could a reasonable people ask for anything more? Is not the Federal government just as good as the government of the Confederate States? What advantages does that government possess over the one we now have? We cannot discover the slightest gain, but we do see clearly that the moment a State secedes, that moment confidence in her future good behaviour ceases; peaceful citizens feeling a sense of insecurity, either flee or rush to arms, business stops, property of all kinds sinks in value, the State bonds become almost worthless, anarchy and confusion prevail, and a permanent injury is inflicted upon all the interests of the State. In short, secession is ruin; and we venture the assertion that no seceded State can ever enjoy the same amount of prosperity and security under any attempted new government; besides, the very theory upon which the Confederate States have organized a provisional government is destructive of every principle of stability and permanence, and to maintain themselves as a power to be respected at home and abroad, the people

must undertake to support a civil, military and naval power capable of commanding respect from powerful nations. This will necessarily entail a heavy system of taxation, and instead of feeling relieved by reason of secession, the burdens of the people will be augmented, and their abilities to resist oppression will, in a great measure, be swallowed up.

## WAR AND INVENTIONS.

Times of war have generally been times of great mental activity; fruitful in novel ideas and inventions. During the fierce intellectual ferment that introduced and accompanied the first French revolution, more important inventions were made by the French than that nation had produced in centuries. It was then that those two paper manufacturers—the brothers Montgolfier—invented balloons, by which, for the first time, the ponderous bodies of men were lifted up into the air above the clouds. In 1794 Barrère made his report in favor of Chapppe's plan for transmitting ideas rapidly to a great distance by means of posts with arms upon them to be placed in different positions to express various signs. Though the populace of Paris pulled down the first apparatus that was erected, suspecting that it was a device of the "aristocrats" to convey intelligence to the enemy, the tough inventor persevered, and the TELEGRAPH took its place among human affairs. It was a member of the National Assembly, the benevolent Dr. Guillotin, who contrived the plan for beheading criminals instantaneously in order to save them from the sufferings attendant upon the ordinary modes of execution. In his speech, advocating the adoption of his plan, he remarked, "We will cut off your heads, Messieurs, without hurting you in the least," which caused a general laugh; the members little thinking that nearly all of their heads would in fact be sheared off by the doctor's sliding knife. To Guillotin's lasting grief, his own name was given to the bloody implement, with which it must be associated through all subsequent time. It was during this same period of bold and active thought that was perfected that admirable system of weights and measures, the adoption of which in this country we have long advocated; a reform that we hope to see accomplished before the conclusion of the present war.

Periods of war in other nations have not been less marked by fecundity in inventions than those of France. The twenty years in which England was fighting against the French revolution produced more inventions in England than twenty centuries had before. The activity of mind which resulted from the furious contests of the Italian republics of the Middle Ages, not only gave the world the barometer, the pendulum and the telescope, but it also discovered the Western hemisphere, and demonstrated the real movements of the solar system. Going further back in history, we find that many of the inventions which came from the fertile intellect of Archimedes, related to the production or the improvement of military engines.

It is, however, to be remarked that the inventions resulting from the intellectual activity which generally accompanies a period of war are not confined at all to warlike implements, but are found in every department of science and art. The great war which has been inaugurated in our midst will doubtless produce many wonderful developments, and it will be very interesting to observe, whether, among these, will be a greater degree of activity on the part of inventors even than that which has marked our past periods of peace.

## DERANGEMENT AND ADJUSTMENT OF SHIPS' COMPASSES.

This is a most important question, and the article which appeared on page 249 of the present volume of the SCIENTIFIC AMERICAN was designed to attract more public attention to it than it has hitherto received.

Captain R. B. Forbes, of Boston, a man well qualified to speak and write upon the subject, has addressed us a communication, in which he states that "compass deviations, the result of local attraction, is a subject relating to the safety of navy steamers and sailing vessels, which, while it has attracted the attention of learned men in Europe, and particularly in England, is still a matter of debate and uncertainty. The Admiralty ignore all magnetic compass correc-

tions, and depend entirely upon daily observations for the accuracy of their courses, which is all very well in fine weather." He refers us to an article of his on this subject published in the Boston *Commercial Bulletin*, in which we find a considerable amount of useful information.

It is stated that the derangement of ships' compasses has puzzled the wisest minds, as local attraction exists in all vessels where there are large masses of hammered iron, and more in propellers than paddle wheel steamers. The most scientific men in England—Faraday, Barlow, Airey Scoresby, Gray, and others—have failed to provide a sure remedy for the deviation of ships' compasses. He says:—

They have devised certain expedients by which a ship may be guided with considerable safety, the most common and most reliable of which is to elevate the compass so far as to place it out of the way of the local attraction. This expedient renders the compass subject to variations and to accidents almost as inconvenient as a compass that has a variable error, such as the vibration of the machinery, and the difficulty sometimes of seeing the card. Indeed, the difficulties, especially in iron ships, are so great that no dependence can be placed on the course steered, unless it be verified daily by azimuths, amplitudes, celestial observations, noting the bearing of the sun when on the meridian, &c., all of which means are subject to errors, and are not always attainable by reason of thick weather and rough seas.

Airey condemns as dangerous the usual method of correcting the course steered by a compass in error from local attraction, namely, by a table of errors; and it must be obvious to every intelligent navigator that where a correction is applied, differing in amount for almost every point of the compass, serious errors will be likely to arise endangering the ship in close navigation by night, when buoys, landmarks, &c., cannot be seen, and where the compass and the lead are the only guides.

He also states that there are several persons in England who profess to have overcome the worst effects of a local attraction in a high northern latitude by placing magnets and soft iron in the vicinity of the compass, so that it is nearly right on the cardinal points, and for the points where it is not right, they make a table showing when it is out. These errors are variable, and on getting into a high south latitude they are so much so that the compass is entirely useless unless corrected daily by celestial and other observations. It also happens frequently that, although a compass is correct when the vessel is heading in one direction, it will be in error when the ship heads in another direction.

Captain Forbes states that a method of arranging compasses has been discovered by Captain G. Morris, whereby the compass will correct itself without any table of errors, and in all latitudes. Captain Morris has adjusted compasses in three ships of the American navy, and in quite a number of merchant steamers, several of which have iron hulls. We understand that Captain Morris now resides in this city, and that he has applied his method of compass adjustment to most of our river and sound steamers, such as the *Bay State*, *Empire State*, *Metropolis*, &c. His method of obviating derangement of the compass is not by correcting the compass itself, but by neutralizing local attraction within the ship or boat within a certain distance of the compass. Every improvement which tends to insure the safety of our steamships deserves general and prompt attention.

## ALLEGIANCE.

The question comes up, do we owe our allegiance first to the State in which we reside or to the Federal government? We answer unhesitatingly that our first political duty is to the government. Henry Clay declared in the Senate, in 1850, that "If Kentucky to-morrow unfurls the banner of resistance, I never will fight under that banner. I owe a paramount allegiance to the whole Union—a subordinate one to my own State."

The gallant General Harney, of Missouri, has lately addressed a noble and patriotic letter to the people of that State, in which he declares that: "As an officer of the army and citizen of the United States, I consider my primary allegiance to be due to the Federal government, and subordinate to that is my allegiance to the State. This, as you are aware, has been the concurring opinion of the most eminent jurists of this country. It was the judgment of the Court of Appeals of South Carolina, in the case of Hunt, where the subject was discussed with matchless ability. In that case, the highest court in South Carolina deliberately declared that the soldier's and citizen's primary duty of allegiance is due to the United States government, and not to the government of his State."

General Scott has, for the third time, taken the

oath of allegiance to the United States, and the officers of his staff have followed his example. He first took the oath when he entered the service, and the second occasion was when he assumed command of Fort Moultrie, in nullification times.

#### THE PEOPLE GOVERN.

It is frequently alleged that ours is a government of the people; and when the people don't like it, they will no longer submit. True; and it is no less so of all governments. When the people will the overthrow of the British throne, it will be hurled into the dust; but whenever a minority seeks to overturn that throne because they happen not to like the sovereign, the strong arm of the government will be wielded to make them obey the constituted authority.

It must be plain to all that if factions can control the government, and bid defiance to it at will, then there can be no security or stability for either life or property. General Washington, the revered Father of his country, said:—

If any have just cause to complain of grievances, we should redress them; but if complaints are inconsistent with the principles of freedom and constitutional liberty, we should show them that there is no remedy, and use the powers of the government to suppress any passionate manifestations of their dissatisfaction, in violations of the public peace and constitutional law.

And, again:—

If the laws are to be trampled on with impunity, and a minority, a small one, too, is to dictate to the majority, there is an end put, at one stroke, to republican government.

This is the doctrine of the Fathers, and is the only one upon which a sound and stable government can rest. Jefferson Davis, however, in his late address to the Confederate Congress, scorns this doctrine, as follows:—

So utterly have the principles of the constitution been corrupted in the Northern mind, that in the Inaugural Address delivered by President Lincoln in March last, he asserts as an axiom, which he plainly deems to be undeniable, that the theory of the constitution requires that in all cases the majority shall govern.

Not only are the people of the North corrupted, on this theory of Mr. Davis, but thousands of true-hearted men at the South to-day are affected in like manner; and are actually willing to redress all grievances at the ballot box and in a legal manner.

#### GENERAL JAMES' PROJECTILE.

In our editorial comments upon cannon shooting, published on page 297 of the present volume of our paper, we referred to the fact that objection had been raised to the Armstrong projectile, and also to that of General James, from the "leaden bands flying obliquely from the shot," thus endangering the soldiers of the army by whom the gun is used. Our attention has since been called to the official report of Captains Maynadier, Thornton and Anderson, of the trial at Watch Hill, in November last. Upon this point, they use the following language:—

It has been urged as an objection to this kind of projectile, that the packing separates from it on its leaving the bore, and scatters fragments which may prove hurtful to men in front or near the guns. The observations of the Board on this point lead them to the conclusion that there is no more force in this objection than will apply, for the same reason, to the sabots of fixed ammunition or the junk wads of heavy cannon.

We certainly had no intention of doing any injustice to the value of General James' invention, but our information was obtained from one who was present at the trial. What we want to get at, and as speedily as possible, is which projectile is most efficient for all the purposes of war. We care not whether it be James', Armstrong's, Hotchkiss', or any other less humble man. Give us the best, by all means.

#### True Honor.

Some apprehension is expressed at the South lest the banks in the free States may dishonestly refuse to honor drafts on the balances left in their drawers. The following dispatch has been addressed by the president of one of our leading banks here to a firm in New Orleans:—

New York, May 4, 1861.

MESSEURS.—Gentlemen: I have yours of ——. I telegraph you to-day (according to your request) as follows:—Under no possible circumstances will balances due you be confiscated here.

You say in your letter you know nothing of our political sentiments. On that subject, it is perhaps only necessary to say we have not forsaken our principles, our country, or our God. Yours, with respect.

#### FORTRESS MONROE.

At the present time the following description of Fortress Monroe, which we find in the *Norfolk Day Book*, will interest many readers:—

Fortress Monroe is a strong fortified garrison situated on that point of land formed by the extreme western bank of the Chesapeake, and the extreme eastern bank of Hampton Roads, and at the junction of the two waters. It was discovered, during the war of 1813-14, that Chesapeake Bay was the key of all the waters of Virginia and Maryland, and all who are at all familiar with the history of the country, will remember that British vessels came into Hampton Roads, and not only took the town of Hampton but threatened to apply the torch to Norfolk, that, phoenix-like, had sprung from the ashes of a former war with that power. Peace was declared in 1815, and when the next Congress met they took into consideration the subject of coast and harbor defenses; accordingly a Board of engineers was appointed, and an appropriation made for the prosecution of such plans as might be decided upon.

About this time the grand army of Napoleon was quiet, and several of his principal officers made our republican country their home; among them was General Bernard, an experienced soldier, and one of the most skillful engineers then existing. He was accordingly invited to assist in the work of arranging our system of coast and harbor defense, and in 1816, in company with several American officers, projected Fortress Monroe and Fort Calhoun, more generally known as the "Rip Raps." The work was laid off and both forts commenced in 1819. From that time up to this there has been more or less work going on at Fort Monroe, and while that work is sufficiently advanced to be placed in a state of defense, it is far from being finished. The extent of the work may be judged from the fact that it is over a mile around the ramparts; the wall covers a space of twenty or twenty five acres, and there are about fifteen acres inside of the garrison.

The casemates commence in the vicinity of the postern, behind the water battery, and extend, with little intermission, to the arched doorway. On either side of that entrance are casemates, which are used as quarters for the officer of the day, guard house, and barracks for the guard. Those nearest the portcullis have embrasures, which are intended to protect that point from attack. Indeed all the casemates are supplied with embrasures, behind which are mounted forty-two pounders.

On the ramparts, at those points where there are no casemates, are mounted guns upon wooden carriages, whose saucy-looking muzzles are plainly to be seen above the green turf that caps the fortification. At the extreme southern bastion floats the Stars and Stripes, while just below it, on the inside of the garrison, is a neat little Episcopal church, where the chaplain, Mr. Cheevers, still continues to offer up his prayers for the Union and the President. A deep moat surrounds the whole work; this moat is supplied with water from Mill creek, and while the gates are open ebbs and flows with the tide.

The water battery, like all the masonry on this fort, is a beautiful piece of work; it is built of stone, and is sufficiently thick to withstand any shot that may be projected against it from the bay beyond. It is finished with casemates, the arches of which are turned with brick and rest upon granite columns in the rear. This battery has forty-two embrasures, and is supplied with a like number of forty-two pounders, which, like all the rest of the guns in the garrison, are fully mounted and ready for action. It covers all that face of the garrison that fronts upon the channel of the bay, and is only intended as a means of offense and defense when attacked by a force on the water.

This portion of the work, like the ramparts, is covered with a green turf, and presents a beautiful and pleasant promenade in the summer afternoons.

At the upper or northern extremity of this battery commences a redoubt or breastwork which extends around to the point of the bastion where the magazine is situated; in the middle of this redoubt is a sally-port or postern that leads out to an outer work (not yet finished) that is intended to protect the fort on the land side. From the water battery to the magazine is decidedly the weakest portion of this fortress, and a well-organized force of one thousand men could readily carry the fortifications at this

point. Besides the fact that there are no casemate guns on these two faces, the gates that supply the moat with water are on this side, and at low tide might be closed, to prevent the water from coming in on the change of the tide, and thus could a land force reduce the draft of water to such an extent as to enable them to wade across and scale the walls, which, of course, could only be done under a murderous fire. The gun from only one shoulder could be brought to bear upon the scaling party, and that one, or even two, would be so depressed as to render their effect doubtful. Besides this, a storming party could reduce the garrison to submission in a short time, unless the elements conspired to furnish them with water, for there is not a spring, or a well, or a pump on the works, but, like the good people of Norfolk, the soldiers at Old Point have to depend on the clouds for their drink.

We were led to the above remarks because of the fact that Fortress Monroe is considered impregnable, but such is not the fact; it lacks much of it as it now stands, and even if it was completed, we give our idea of the work when we remind our readers that Sevastopol and Gibraltar fell before a resolute enemy.

#### Cavalry Grapnel.

This is a newly-invented weapon of warfare, and is designed to render cavalry vastly superior to infantry. It is an admitted fact in the science of war that infantry formed into a square, or in mass, and standing firm and unbroken, can defeat an equal number of cavalry, each being armed with the ordinary weapons. This fact being fully demonstrated upon many a well-fought field in the last half century, the most notable of which was the battle of Waterloo, where the French cavalry repeatedly charged the squares of English infantry, and were uniformly repulsed, the squares standing firm and unbroken. This firm stand of the infantry and the uniform repulse of the cavalry were doubtless the main cause of the defeat of the French at that celebrated battle, contested between the best cavalry and infantry of any age, and commanded by the greatest generals of the world. A man and horse, acting as one, have the strength and speed of several men, and ought, if properly armed, to be competent to the defeat of several men. The cavalry grapnel is a new weapon adapted to this superior strength and speed, and a regiment of horse armed with this destructive weapon, and well skilled in its use, can easily defeat four times their number of infantry, mowing them down like grass before a scythe. This weapon can also be used by cavalry against cavalry, and even infantry might use it against infantry with great destruction. The grapnel was invented in one of our Northern States, and 100,000 have been recently manufactured for a European government, for the arming of cavalry. The present widespread rebellion in our own country caused the inventor to offer them to our government. They were submitted to the proper department and approved of, and purchased. It is expected that the President will shortly call into the service of the United States 50,000 cavalry, to be furnished with the grapnel as an additional arm. With this destructive weapon, they will be able to cut up or annihilate 200,000 of the best infantry that ever entered a field.

[We copy the above from one of our daily papers; it appears to be going the general rounds as something wonderful for war purposes. It is something wonderfully ridiculous. A regiment of well-drilled rifle infantry could annihilate any regiment of cavalry before the latter could come up and throw their clumsy grapples among them! We recommend the lasso as a substitute for the grapnel, or, what would be equally effective, blacksmiths' tongs.—Eds.]

MAJOR ANDERSON.—This distinguished officer, whose fidelity to the old flag has been so signally displayed in his gallant defense of Fort Sumter, will, it is said, be assigned to the command of the Kentucky troops mustered into the service of the government. Major Anderson has been promoted to the rank of Colonel, and will probably be appointed Brigadier General.

GOVERNOR MORGAN has appointed Hon. John A. Dix, of this city, Major General of the State forces. General Dix is a noble man, and has the advantage of a thorough military education, being a graduate of the West Point Military Academy.