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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 Chappé'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 somewhat 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