



THE NECESSITY AND OBJECTS OF A  
NAVAL WAR COLLEGE.

ADDRESS BY CAPTAIN A. T. MAHAN,  
U. S. Navy,

AT THE OPENING OF THE FOURTH ANNUAL SESSION OF THE U. S. NAVAL  
WAR COLLEGE, AUGUST 6, 1888.

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ADDRESS OF CAPTAIN A. T. MAHAN, U. S. NAVY,

*President of the U. S. Naval War College,*

AT THE OPENING OF THE FOURTH ANNUAL SESSION OF THE  
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*Ladies and Gentlemen:*—It has been the custom, during the few years in which the Naval War College has been in existence, to begin each session by an opening address, intended mainly to explain the objects and methods of the institution, concerning which there has been and still continues a certain amount of misapprehension. In the natural course of things, this custom must at last come to an end with the reason that has occasioned it; but it is perhaps too much to assume that the necessity has as yet altogether passed away for a few words of explanation, partaking partly of the character of defense, by showing the necessity for this undertaking, and partly of the character of limitations, defining what is not, as well as what is, proposed.

Before entering upon this duty of explanation, mention may properly be made of the growing favor of the College in the mind of the Navy at large, as testified by the words and actions of many officers, as well as of certain difficulties and discouragements through which it, in common with most human enterprises, has had to pass—is still passing. Last year, as is generally known, Congress refused

to make any appropriation for it, and the work has been pursued during the last twelvemonth and more under the apprehension that similar action would be taken in the present session, and so compel the abandonment of the work. This fear has happily been removed; and that it has, is chiefly to be ascribed to the change of sentiment in the Navy itself as the objects of the College have come to be really understood; as the officers who have attended the course have gone back to their duties and to their brother officers with a report that has compelled approval, and changed an attitude of doubt, or even opposition, into one of conviction and support. Such professional opinion cannot but be felt, however insensible the method of its action. It will be an evil day for the country when it ceases to have weight; for such impotence could proceed only from degeneracy of officers themselves, or from an unwillingness on the part of the outside public to listen to those most competent to appreciate the wants of the Navy; both contingencies fatal to the efficiency of the service.

Besides the doubt as to the action of Congress, involving the whole question as to whether our really arduous work would be wholly thrown away, there have been other drawbacks and disappointments which, as they affect the course, must be mentioned. The explanation is due to those who attend it, that they may understand why they receive less than might justly be expected; and it is due to the College that it should not suffer in reputation from such disappointment, by a failure to appreciate the obstacles which have been met, and which could neither be avoided nor wholly overcome. Chief among these has been the difficulty in finding officers at once willing and free to devote their abilities to the service of the College and to the development of the course which has to be built up. Few realize, until they are forced to do so, to what an extent the brains and energies of the service are mortgaged in advance by the numerous activities and specialties that have developed of late years. In consequence of these, it has been found that not only are officers otherwise desirable already employed on other shore duty, but those actually at sea, and who may be expected to return in one, two or three years, have engaged themselves for duty at other stations. Doubtless the War College will by degrees gather to itself the small body of instructors which will be needed, and who will readily seek a duty that I venture to predict will be found both interesting and pleasant, as well as most valuable professionally; but as yet it has

not had time to do so, the search of its president has been met with a general result of "already engaged," and dependence has had to be upon the voluntary assistance of officers on other duty who have consented to aid the College by treating one and another of the topics that fall within its scope. I cannot too heartily thank those who have thus, at much trouble to themselves, undertaken work which could bring no reward beyond the satisfaction which good work always carries in itself, and the appreciation of their small audience here. The assistance thus given has been invaluable, and the results most important; but it is easy to see that when other duties have the first claim upon the attention of the individual, it will not be possible to realize as much as when the College course has no rival, and that he will often find himself prevented from accomplishing even as much as he expected. Several instances of such involuntary and unblamable shortcoming have occurred within the past year; and to these was added a misfortune, which at the time of its happening was wholly unexpected, in the sudden detachment of Lieut. Bliss of the Army. This accomplished officer, who to very considerable acquirements added a facility for teaching and a lucidity in explanation, which, combined with untiring readiness to undertake any amount of labor, made him an admirable lecturer on Military Science, had not been quite three years at the College. I was therefore confident, despite occasional misgivings, that he would remain through the next term; and his detachment, wholly without warning, was a painful surprise. The uncertainty of the future did not permit an application for an officer to take his place in time to lecture during the present session. Finally, it was hoped that this opening address would have been given either by the Admiral of the Navy, or by General Sherman, both of whom were requested to do so; but these distinguished officers, who have extended their cordial approval and sympathy to the College and its objects, did not feel able to undertake the task.

Hindrances and disappointments are, however, only incidents in the infancy and life of any undertaking, and are from the first destined to be overcome if the institution has its origin in a felt necessity, and has been wisely planned. It remains, therefore, to show that the War College has sprung from and represents a real want of the service and the country, and that the general lines upon which it has so far been conducted are such as promise to fulfill the actual want, without duplicating work adequately provided for elsewhere in the

Navy. In making this explanation I shall be traversing ground very familiar to myself, and shall have to use arguments threadbare, to me, from frequent use. To some extent they have appeared in print; but while, on the one hand, I cannot hope that they have attracted the attention of all this audience, so, on the other, the opportunity cannot be foregone of bringing them before you, now that by coming here you have put yourselves at the mercy of the speaker.

It will probably clear away embarrassing misapprehensions to state first, to some extent, what the College does *not* propose to do. The term "post-graduate," which has been frequently and not unnaturally applied, which was indeed used by the original board that recommended the establishment of the College, has been unfortunate; suggesting as it does the continuance here, on a higher and broader scale, of the studies pursued by the graduates of Annapolis while cadets at the Academy. If the course here is really post-graduate, it must be in direct sequence of the course at the only institution from which all naval officers are graduated; and the inference naturally follows that the professors and instructors there, who have so long and ably directed the student before graduation, are best fitted to continue his guidance in the higher developments of which also they are masters. To this undoubtedly was due, and not improperly, a certain amount of opposition that was at one time manifested from the Naval Academy; it was perfectly true that there were both the men and the plant by which could best be furthered a strictly "post-graduate" course, and to carry such elsewhere was to waste Government money, and cast an undeserved slight upon the well-proved teachers of an admirable institution. But if, on the contrary, the line of professional study proposed here was in no strict sense a sequence of any one branch, or any number of branches, followed at Annapolis—if it demanded neither the specialties nor the appliances to be found there—if it were "post"—after—only in the sense of subsequent time, and not of consecutive development—the objection falls to the ground. It will, I think, be granted, when we pass from the negative explanation of what the College is *not*, to the positive statement of what it *is*, that this course is "post-graduate" only in the same sense that the special professional training of a man follows after and presupposes the instruction of the home, of the school and of the college, where youths having widely different futures pursue for a time common studies. In a way the term "post-graduate" has its uses; it is understood, or what is much the same thing, people

think they understand it; it appeals to the mania for increase of teaching that pervades our time, and so attracts support; but it was most unfortunate for the infancy of the War College, when submitted to clear-headed men more concerned for the honor of their own alma-mater than to foster a new and possibly rival institution. "Post-graduate! a further development of the Annapolis course! where can this be better done than at Annapolis?" The cry went through the service; and if the premise were conceded, it was difficult to resist the conclusion.

I pass now to another negative qualification, in making which considerable care is needed, on the part of both speaker and hearers, to avoid misunderstanding. It is important that, in excluding from the purposes of the College any professional interest, there should not be a seeming disposition to undervalue it. It is to be said, then, that the War College does not propose to devote its energies to the question of the material and mechanical development of the Navy, except in a secondary and incidental manner; except, that is, so far as may be necessary for the furtherance of its main objects. These objects by themselves will require all the time for which officers can be spared by the Department from other professional demands. *Methods* of construction designed to increase the speed, strength, manœuvring power, stability, invulnerability of ships; *methods* of gun-building, by which the power and accuracy of the gun is developed, or the strains upon the gun decreased; improvements in engines, by which increase of speed and economy of fuel and space are hoped to be effected; the *details* of advance made in explosives, or in torpedoes,—with none of these are we concerned immediately and chiefly, but only incidentally; and that if for but one reason, which will be recognized as soon as stated, namely, that all these matters are already in the hands of a sufficient number of accomplished officers. They—ships, guns, engines, explosives—are now receiving all the attention that the Government owes them. Let me not, however, be misunderstood; the concern of the College with all these matters is nevertheless very close, but it is with the *results* obtained, not with the *methods* followed. How fast a ship will go and for how long; within what space she will turn and how quickly; what resistance she presents to injuries, and what effect certain injuries will have on her safety, speed, or handiness; in regard to guns and torpedoes, their range, accuracy, the rapidity with which they can be fired and the injury they can produce; with engines, the important considerations of speed and coal

endurance—such are the factors that are needed for the investigations of the College, and you will notice that they denote the accomplished results, they characterize the finished weapons which are put into the hands of the military seaman to go forth to battle, to wage war. If his ship will make a certain speed, she may, for all he cares, be driven by a tallow-candle; if his gun will do so much work, it may, so far as he is concerned, be made of paste-board. The strategic and tactical capabilities in which the labors of the designer and builder have resulted, are those with which the admiral and captain, in their properest sphere, are alone concerned; and the antecedent methods by which those results are reached are of secondary importance to the artist in war. Doubtless this argument may be pushed to extreme by an unbalanced mind; the proverbial difficulty of drawing the line will be felt at times, and the line perhaps drawn too much on one side or the other by this or that person responsible for the direction of the College course; but, speaking broadly, it may be said that the true aim is to promote, not the *creation* of naval material, but the knowledge how to *use* that material to the best advantage in the conduct of war.

A very strong argument for thus withdrawing, and, so to speak, protecting, the study of the art of war from too close contact with that mechanical and material advance upon which its modifications depend, is to be found in the spirit of our age, and the effect of that spirit upon our naval officers. For, is not the study of material phenomena, and the bending of the forces of nature to the service and comfort of man, one of the leading interests of our generation? And is not this tendency reflected in the Navy by the almost exclusive attention paid by administrations and officers to the development of the material of the service? Who, and how many, are studying how best to use that material when war has broken out? If you ask for authorities on guns, on powder, on steel, on questions connected with navigation, on steam, on mathematics, almost any one of us can name them; but who are our authorities on the art of war? Look at the Navy Register; how many are the officers who are working at the art of war? Consult the index of the publications of our Naval Institute; what proportion do articles on waging war bear to those on mechanical or physical progress in naval material? Is there then no reason for separating and *nursing* the study of this art for a while from too close contact with these related subjects? I will venture to say that if questions of development of material be

admitted to an equal share of the College's attention in its early years, it will be but a short time before the art of war will be swamped by them and disappear from the course.

And what wonder then, gentlemen of the Navy, that we find our noble calling undervalued in this day? Have we not ourselves much to blame for it in this exclusive devotion to mechanical matters? Do we not hear, within and without, the scornful cry of disparagement that everything is done by machinery in these days, and that *we* are waxing old and decaying, ready to vanish away? Everything done by machinery! as if the subtlest and most comprehensive mind that ever wrought on this planet could devise a machine to meet the innumerable incidents of the sea and of naval war. The blind forces that work on ever in the same routine, in storm or calm, buried deep in the bowels of the ship, that would drive her with equal serenity against friend or foe, through the open sea or against a rock-bound coast, do *everything!* The watchful eye, the trained courage, the ready skill that watches storm and foe through the countless phases of the sea and of battle, that plan, that execute, do *nothing!* The steed is all; the rider naught! Machinery revolves the turret, disposes the heavy gun to receive its charge, brings the charge from below, enters it into the gun, brings the gun into action—therefore machinery does everything! The quick eye that seizes the fleeting moment, the calm mind that prepares and watches its opportunity, the cool temper, instinct with life in the face of death, that can suffer and knows its danger, yet is master alike of itself and of the unconscious force it guides, does nothing! Have we not all heard these sayings, with unpleasant deductions from them? But let us ask, are not we ourselves to blame for them? Have not we, by too exclusive attention to mechanical advance, and too scanty attention to the noble art of war, which is the chief business of those to whom the military movements of the Navy are entrusted, contributed to the reproach which has overtaken both us and it?

Having laid down these negative lines of limitation, the need of which has been shown by the history of the College in its early struggle for existence, we now come to such definition of its position and aims, and demonstration of its necessity at the present time, as a decent regard to the endurance of an audience will allow.

The general reply to the question, "What is the object of the War College?" will have been anticipated by you from what has already been said. It is the study and development, in a systematic, orderly



manner, of the art of war as applied to the sea, or such parts of the land as can be reached from ships. Taking the ships and weapons that the science of our age supplies, and formulating their powers and limitations as developed by experience, we have the *means* placed in naval hands by which to compass the great *ends* of war. How best to adapt these means to the end under the various circumstances and in the various fields where ships and fleets are called to act, is the problem proposed. Could we find a perfect solution, we should have a perfect theory of the way to wage war; and, it may be added, the art of war would be a far simpler matter, and its successful conduct a much less noble achievement of man's faculties, than they actually are. Could the course of the warrior, given certain circumstances, be reduced to a rigorous demonstration, to a mathematical certainty, it would approach more closely to the mechanical, unvarying action of those blind forces of nature, in chaining which our age is fain to see its greatest glory; but in so approaching, it would part with those rarer qualities—intuition, sagacity, judgment, daring, inspiration—which place great captains among creators, and war itself among the fine arts; and the warrior himself would descend from the artist to the mechanic.

If, however, absolute certainty in this field is not attainable by thought; if the conduct of war is controlled, not by cast-iron rules of invariable application, immutable as the laws of nature, but by general principles, in adapting which to ever-shifting circumstances the skill of the warrior is shown—are study and reflection therefore useless? Must we trust our decision in every case to the inspiration of the moment, unguided by any precedents, uninformed by any experience? Surely not. No two, perhaps, of the myriad battles of history have been exactly alike, either in the ground contested or in their tactical combinations; no theatre of war, great or small, on land or sea, is without features that differentiate it from every other, in the apprehension of the strategist; but still among them all are marked resemblances, common general characteristics, which admit of statement and classification, and which, when recognized and familiar to the mind, develop that aptitude, that quickness to seize the decisive features of a situation and to apply at once the proper remedy, which the French call *coup d'œil*, a phrase for which I know no English equivalent. This faculty may be, probably is, inborn; but none is more susceptible of development by training, either in the school of actual war, or, when that experience cannot be had, by study and

well-considered practice. Thus, a French naval author says: "The infinite number of conditions which go to make up all the possible positions in which a fleet, a squadron, or single ships may be found, causes that an officer will very rarely find himself in a position precisely similar to any one of those he has tried to foresee. Whence it follows that all suppositions as to the movements of fleets should be conformed to certain *general principles*, fruitful in consequences, the application of which to all possible positions should train the mind and fix the ideas of officers, in order that they may be early accustomed to seek out and combine all those movements, familiarity with which is absolutely necessary to them."

There have long been two conflicting opinions as to the best way to fit naval officers, and indeed all men called to active pursuits, for the discharge of their duties. The one, of the so-called practical man, would find in early beginning and constant remaining afloat *all* that is requisite; the other will find the best result in study, in elaborate mental preparation. I have no hesitation in avowing that personally I think that the United States Navy is erring on the latter side; but be that as it may, there seems little doubt that the mental activity which exists so widely is not directed toward the management of ships in battle, to the planning of naval campaigns, to the study of strategic and tactical problems, nor even to the secondary matters connected with the maintenance of warlike operations at sea. Now we have had the results of the two opinions as to the training of naval officers pretty well tested by the experience of two great maritime nations, France and England, each of which, not so much by formulated purpose as by national bias, committed itself unduly to the one or the other. The results were manifested in our Revolution, which gave rise to the only well-contested, wide-spread maritime war between nearly equal forces that modern history records. There remains in my own mind no doubt, after reading the naval history on both sides, that the English brought to this struggle much superior seamanship, learned by the constant practice of shipboard; while the French officers, most of whom had been debarred from similar experience by the decadence of their navy in the middle of the century, had devoted themselves to the careful study of their profession. In short, what are commonly called the practical and the theoretical man were pitted against each other, and the result showed how mischievous is any plan which neglects either theory or practice, or which ignores the fact that correct theoretical ideas are

essential to successful practical work. The practical seamanship and experience of the English were continually foiled by the want of correct tactical conceptions on the part of their own chiefs, and the superior science, acquired mainly by study, of the French. It is true that the latter were guided by a false policy on the part of their government and a false professional tradition; the navy, by its mobility, is pre-eminently fitted for offensive war, and the French deliberately and constantly subordinated it to defensive action. But, though the system was faulty, they had a system; they had ideas; they had plans familiar to their officers, while the English usually had none—and a poor system is better than none at all.

This decisive advantage, gained by scientific military theory over mere practical ship-handling, is the more remarkable because the French art of naval war was itself of slender proportions, and but little diffused throughout their navy. It prevailed, because the English had none until Rodney appeared. Thus, La Serre, an officer of that war, wrote: "We have several works which treat of the manœuvres of ships and the evolutions of squadrons, but we have none treating the *attack and defense* of fleets. It is possible that the circumstances in which two squadrons may meet are so varied that a regular treatise upon them cannot be made. This reason would render more interesting a work which should contain detailed and critical accounts of sea-fights which have actually occurred. Theory has already done much to teach the seaman the art of combating the elements, and every day it is adding to this sort of knowledge, but there is too great neglect to consider ships *when engaged in battle*. The infinite number of incidents which can occur during an action should not be a reason for putting aside this study. By it only can we successfully estimate what will be the effect of movements which we contemplate, and what must be done to counteract the designs of the enemy. So long as these ideas are *not familiar* to officers, the fear of compromising themselves by manœuvres will lead them to limit naval actions to simple cannonades, which will end by leaving the rival squadrons in the same respective conditions in which they were before fighting."

We are not to understand from this that the knowledge of the art of war was absolutely non-existent, but that, not having yet been written down, it existed only in the minds of a few choice spirits. Thus, Ramatuelle, another officer of that day, wrote (about 1802): "The art of war is carried to a great degree of perfection on land, but

is far from being so at sea. It is the object of all naval tactics; but it is scarcely known among us, except as a tradition. Many authors have written on the subject of naval tactics, but they have confined themselves to the manner of forming orders or passing from one order to another; they have entirely neglected to establish the principles for regulating conduct in the face of the enemy; for attacking or refusing action; for pursuit and retreat; according to position, *i. e.*, to windward or to leeward; or according to the relative strength of the opposing forces." In a word, the management of ships in battle was a matter dependent upon oral tradition, not upon recognized authority; upon the zeal of the individual officer for professional improvement, not upon governmental instruction.

These two independent witnesses—for, though brought up in the same service, one went into exile with the royalists, while the other dedicated his work to Bonaparte—agree also as to the necessity of governmental action to promote general professional improvement. Thus, La Serre says: "The instruction of a corps of officers should be directed by the Government, for if it should be abandoned to itself in this matter, some individual members might become accomplished, but the mass would remain ignorant; and the reverse happens when the Government interests itself in the matter." And Ramatuelle says: "The naval art has made, in the century which is just finished, progress which requires from officers deep and serious study. No one more than myself pays sincere homage to the knowledge and talents of those who have shed lustre upon the French navy—above all, in the war of 1778; but instruction relative to grand manœuvres was concentrated in far too few men; it was propagated only by tradition. This means was often wanting to the officer, who might have been most capable of profiting if chance had only brought him in contact with able men. It may be remarked that Du Pavillon, who had been chief of staff to Admiral D'Orvilliers, who showed superior talents in all circumstances, who is considered to have brought naval tactics out of chaos, belonged to the department of Rochefort; and that Buord, Vaugiraud, Léguille, who have exercised with the utmost distinction the post of chief of staff in the principal squadrons, belonged to the same department. It is to be presumed that the other departments would also have furnished a proportionate contingent, if they had had a Du Pavillon who might have constantly communicated to them his ideas and his knowledge." To provide for the study and dissemination of knowledge on these very matters is the object of the War Collège.

To return now to the positive definition of the objects of the College:

The heads under which this study of the art of war may be subdivided and grouped are numerous, and there are also certain collateral subjects, which will appear in the programme of the course, whose immediate bearing upon the effective conduct of war will not be at once apparent, and will therefore require some words of explanation in their turn. I propose, however, first to speak of those divisions whose importance is obvious and will be at once recognized, but concerning which there are some remarks to be made in the nature of closer definition, and also enlargement beyond the scope usually associated with them.

The two principal heads of division are of course Strategy and Grand Tactics. The meanings of each of these two terms may be assumed to be apprehended, with some accuracy and clearness, by such an audience as the present. There is, however, a certain radical distinction in the conditions by which each of these divisions of the great subject are modified, which I wish to enforce.

"Strategy," says Jomini, speaking of the art of war on land, "is the art of making war upon the map, and comprehends the whole theatre of warlike operations. Grand tactics is the art of posting troops upon the battle-field, according to the accidents of the ground; of bringing them into action; and the art of fighting upon the ground in contradistinction to planning upon a map. Its operations may extend over a field of ten or twelve miles in extent. Strategy decides where to act; Grand Tactics decides the manner of execution and the employment of troops," when, by the combinations of strategy, they have been assembled at the point of action.

It follows, if these definitions are accurate, that strategy, having to do with a class of military movements executed beyond the reach of the adversary's weapons, does not depend in its main principles upon the character of the weapons at any particular age. When the weapons begin to enter as a factor, and blows are about to be exchanged, strategy gives place to grand tactics. Hence it follows, with easy clearness, that "in great strategic operations, victory will now, as ever, result from the application of the principles which have led to the success of great generals in all ages, of Alexander and Caesar, as well as of Frederick and Napoleon." The greatest master of the art of war, the first Napoleon, has in like manner laid down the principle that, to become a great captain, the soldier must study

the campaigns of Hannibal, Caesar, and Alexander, as well as those of Turenne, Prince Eugene, Frederick, and other great modern leaders. In short, the great warrior must study history.

I have wished to bring out this point clearly, if briefly, for there is a very natural, though also very superficial, disposition in the Navy, at present, to look upon past naval history as a blank book so far as present usefulness is concerned. Yet few, if any, will maintain that the introduction of firearms did not differentiate the wars of Frederick and Napoleon from those of Hannibal and Caesar, fully as much as our modern inventions have changed the character of naval warfare. Take some of the points upon which strategy is called to decide, and see how independent they are of the particular weapons, which must be assumed as not very unequal between the two enemies; or, if they are unequal, that very neglect on the part of the one is a good historical lesson. Such points are: the selection of the theatre of war; the discussion of its decisive points, of its principal lines of communication; of the fortresses, or, in case of the sea, the military ports, regarded as a refuge for ships, or as obstacles to progress; the combinations that can be made, considering these features of the strategic field; the all-important point of the choice of the objective; the determination of the line to be followed in reaching the objective, and the maintenance of that line practically undisturbed by an enemy; such, and many other kindred matters, fall within the province of strategy, and receive illustration from history. This illustration will be fullest and most satisfactory when there is an approach to equality between the belligerents; but most valuable lessons may be derived also from the study of those wars, more numerous by far, in which the naval preponderance of one nation has exercised an immense and decisive effect upon the issues of great contests both by land and sea; in which, if I may so say, the Navy has been a most, perhaps the most, important single strategic factor in the whole wide field of a war.

It is obviously impossible in an address whose chief merit should be brevity, to follow far this line of thought; but I wish to throw whatever weight my personal opinion may carry against that easy assumption that we have nothing to learn from the naval past. During the three years that I have been attached to the College, my reading and thought have been chiefly, though not exclusively, devoted to Naval History, with an ever growing conviction of the value and the wide scope of the lessons to be drawn therefrom; and

I will sound again the note of warning against that plausible cry of the day which finds *all* progress in material advance, disregarding that noblest sphere in which the mind and heart of man, in which all that is god-like in man, reign supreme; and against that temper which looks not to the man, but to his armor. And indeed, gentlemen of the Navy, if you be called upon some day to do battle, it will be for the country to see that your weapons are fit and your force respectable; but upon your own selves, under God, must you rely to do the best with the means committed to your charge. For that discharge you will be responsible, not to the country only, but to your own conscience, which will condemn you if, in the eager curiosity to know how your weapons are manufactured, you have neglected to prepare yourself for their use in war.

To pass now from Strategy to Tactics. I wish first to impress upon you that the word tactics has, unfortunately, a double application. It means in one case those movements, more or less simple, by which military units pass from one formation to another, *e. g.*, from line to column, etc. As you know, there are various systems of evolutions by which these transformations are made. While the discussion of the merits of such systems is a proper subject for this College, the authoritative adoption of any system must rest with the Government.

The second application of the word tactics has, for the sake of distinction, received the qualifying epithet of "grand" tactics. It relates to combinations upon the battle-field, or in its immediate neighborhood; when strategy, having done or failed to do its work, gives place to the clash of arms. Since the weapons of the day enter here as great and decisive factors, it is evident that the method of applying the principles of war *on the battle-field* will differ from age to age. "Naval tactics," says Morogues, a French tactician of the last century, "is not a science founded upon principles absolutely invariable; it is based upon conditions, the chief causes of which, namely, the arms, may change; which in turn causes a change in the construction of ships, the manner of handling them, and so finally in the disposition and handling of fleets."

Is then the study of the grand tactics of the past, of history, useless? To answer this question let us consider what is the object of education, of study? Is it only to accumulate facts of immediate visible use? or does mental training count for much? Do not instructors at our naval and military academies recognize often that the trouble with this or that lad is not deficiency of brain, but lack

of the habit of application? Is there not attributed to the study of mathematics and of the classics a value for mental training quite independent of that utilitarian value which the American mind tends to regard exclusively? If so, the study of past tactics must have a value. For what is strategy, and what tactics, but the adaptation of means to ends? Such an end, so much force to achieve it, so many difficulties in the way—these are the elements of every problem of war in any age; while the adaptation of the means to the end by various leaders, whether accurate or faulty; the fertility of combination or resources displayed by them, are so many studies which, though they may cease to have use as precedents, nevertheless exercise, train and strengthen the mind which seeks to elicit from them the principles of war.

And herein also is the great justification of the study of land warfare as established at this institution. When we consider only the great difference that exists between the tactical units of a modern army and a modern fleet, or between the diversified difficulties of a land theatre of war as contrasted with the comparatively plain surface of the ocean, we may be tempted to think that the study of war, as applied to one, can throw no light upon the other. But even if history had not shown that the principles of strategy have held good under circumstances so many and so various that they may be justly assumed of universal application, to sea as well as to land, there would still remain the fine mental training afforded by the successive modifications that have been introduced into the art of war by great generals. They indicate the means adopted by brilliant men, either to meet the new exigencies of their day, or by some new and unexpected combination to obtain advantages while retaining old weapons; in short, they are lessons in the use of means to attain ends in war; they bring into play and strengthen those muscles of the mind which do the work of conducting war.

Between Strategy and Grand Tactics comes logically Logistics. Strategy decides where to act; Logistics is the art of moving armies; it brings the troops to the point of action and controls questions of supply; Grand Tactics decides the methods of giving battle.

There are obvious differences of condition between armies and fleets that must modify the scope of the word logistics, which it will yet be convenient to retain. Fleets, to a great extent, carry their communications with them, in the holds of the ships; while details analogous to marching and quartering troops, and to a great extent of



supplies, are not to be found with navies. Nevertheless, the question of supplies in a distant operation will assume importance. We have at least two great needs now, over and above those of sailing ships—coal and more frequent renewal of ammunition. These introduce the question of lines of supply and their protection. If, for instance, it were necessary for us to maintain military possession of a point on the Isthmus, or to conduct any great operation there, there must be a line of communication thereto. How shall it be protected? What is the best means of guarding and distributing supply vessels? Would a line of communications be best safe-guarded by sending out a large body of colliers and supply ships, convoyed by a heavy detachment of men-of-war; or by patrolling the routes by scattered cruisers always on the wing? We shall have for this at least one historical instance in our course. Again, the coal supply of commerce-destroyers is a very important question which nobody seems to care to face. It would be amusing, were it not painful, to see our eagerness to have fast ships, and our indifference to supply them with coal. What neutral power will sell us coal when engaged in war with a more powerful maritime State, and what is a commerce-destroyer without coal?\*

Such are the leading features of our study upon which I care to enlarge to-day. Of less conspicuous subjects I will hastily explain their presence in the course. Hygiene, besides being by law a necessary part of instruction in every Government institution, has such bearing upon the efficiency of armed forces that its place in warfare cannot be denied. As to its usefulness to line officers, I will venture to quote words of my own: "The responsibility for the health of crews rests ultimately with the commanding officers; who, however they be guided ordinarily by the opinion of the surgeon, must be

\* The following quotation from the well-known French writer on naval matters, Admiral Jurien de la Gravière, has interest for those who look to commerce-destroying as the main reliance in an offensive war. Speaking of the early years of this century, he says: "The period of disasters was about to succeed the period of captures—inevitable issue of our commerce-destroying campaigns. How could it have been otherwise? All our ports were blockaded; even before Trafalgar, English fleets covered the seas. What unrelenting pursuit had not our frigates to expect, when once our great fleets were annihilated? *It would be much worse at the present day.* It would not be long before our coal-depots would be taken from us, and we would go about from neutral port to neutral port, seeking in vain the fuel which would be everywhere denied us" (*Revue des Deux Mondes*, October, 1887).

able on occasion to overrule intelligently the professional bias of the latter." A doctor's business is to save life ; the admiral's or captain's to risk it, when necessary and possible to attain a given end.

The importance of the efficiency of the units of a fleet to the efficiency of the whole, indicates the point where naval construction touches the art of war. A crippled ship affects all the tactical combinations of a fleet ; a collision between two ships has ere now led to a great battle, and the results of the battle have modified the issue of a war. With the delicately calculated constructions of the present day, a single great injury to a ship's hull may affect her tactical qualities, her speed, handling, stability, to a disastrous degree. In what way and to what extent particular local injuries may thus affect her, and how they may be partially remedied in battle, are so obviously tactical questions as to need no further comment. In accordance with what has before been said, the effort has been to direct the teaching in construction toward tactical *effects*, rather than to constructional *methods* pure and simple. The eminent ability of Mr. Gatewood, who possesses not only great knowledge, but a readiness and lucidity of explanation that I have rarely heard equalled, gives me hope, if his services are continued, that we shall reach very valuable results in the tactical management of ships and remedying of injuries.

In the matter of Coast Defense and Attack, I will only say that it is intended always to have the subject treated by both an army and naval officer, in order to bring out both sides of a large and intricate question. Very different views are held on either side ; those of extremists seem at times mutually destructive. If precise agreement cannot be reached, much may be hoped from dispassionate discussion, in getting rid of all differences that are due only to misapprehension. And where differences are fundamental, we shall learn at least to understand one another's meaning and reasons, to argue at least to the other man's point ; not beating the air, nor laboriously overthrowing men of straw. I beg of you all not to consider a difference of opinion, however radical, to be an injury or an insult. The caution may seem unnecessary, but I swear by my experience that it is not.

And now, ladies and gentlemen, I must apologize, after the manner of speakers, for having detained you so long. If the fault has been somewhat deliberate, I hope the pardon will not be refused. It remains only to thank you for your patience, and to welcome cordially, on the part of the College, the officers who are about to follow

the course. We are here as fellow-students. The art of naval war may have a big future, but it is yet in its babyhood. I, at least, know not where its authorities are to be found. Let us take, as indicating our aim, these words of Bismarck in a very recent speech: "It must not be said," urged he, "that other nations can do what we can. That is just what they cannot do. We have the material, not only for forming an enormous army, but for furnishing it with officers. We have a corps of officers such as no other Power has." The higher we head, the higher we shall fetch.

*Intended Programme of Naval War College for Session of 1888,  
beginning August 6.*

Naval History considered with reference to the effect of Naval power upon general history; indicating the strategic bearing of naval power as a particular factor in general wars, and discussing the strategic and tactical use of the naval forces on their own element, as illustrative of the principles of war.—Captain A. T. Mahan, U. S. N.

The true naval conditions during the War of 1812, at home and abroad, on the sea and on the lakes; and their bearing upon the course of the war, on both frontiers and on the ocean.—Theodore Roosevelt, Esq.

Naval Gunnery: the practical use of the gun at sea and the tactical power and limitations of the weapon.—Lieutenant J. F. Meigs, U. S. N.

Present condition of commerce and commercial sea routes between the Atlantic and Pacific, with an estimate of the effect produced upon them by a trans-isthmian canal, including a view of the military and political conditions of the Pacific Ocean, Gulf of Mexico, and the Caribbean Sea.—Lieut.-Com. C. H. Stockton, U. S. N.

Naval Strategy.—Captain A. T. Mahan, U. S. N.

Strategic features of the Pacific Ocean and Pacific Coast of the United States.—Lieut.-Com. C. H. Stockton, U. S. N.

Strategic features of the Gulf of Mexico and Caribbean Sea.—Captain A. T. Mahan, U. S. N.

Strategic Study of the Lake Frontier of the United States.—Lieut. C. C. Rogers, U. S. N.

Strategic Study (outline) of the Sea-coast of the United States, from Portland, Maine, to and including Chesapeake Bay.—Captain A. T. Mahan, U. S. N.

- Coast Defense and Attack.—Lieut. Duncan Kennedy, U. S. N.  
Defense of the Sea-coast of the United States.—General H. L. Abbot, U. S. Engineers.  
Military History, Strategy, and Tactics.—Lieut. J. P. Wisser, U. S. Artillery.  
Tactics of the Gun.—Lieut. J. F. Meigs, U. S. N.  
Tactics of the Torpedo.—Lieut. Duncan Kennedy, U. S. N.  
Tactics of the Ram.—Commander P. F. Harrington, U. S. N.  
Fleet Battle Tactics.—Captain A. T. Mahan, U. S. N.  
Naval War Game.—Lieut. McCarty Little, U. S. N.  
Naval Reserves, and the recruiting and training of men for the Navy.—Lieut. S. A. Staunton, U. S. N.  
Naval Logistics; maintenance of coal, ammunition and other supplies to a fleet acting at a distance; establishment of depots and chains of seaports.—Lieut. C. C. Rogers, U. S. N.  
General Staff; Intelligence Branch. Foreign War Colleges and Staff Academies; their relation to the General Staff. Intelligence Systems of Foreign Armies. General Consideration of Naval Intelligence Departments at home and abroad. Meaning of Naval Intelligence in detail. Strategic value of Trade Routes; their defense and attack in war. Reconnaissances. Reasons for General Staff. Essence of Intelligence work is preparation for war.—Lieut. C. C. Rogers, U. S. N.  
Preservation and Care of Iron Ships and injuries to which they are liable. The Ship considered as a Gun Platform.—Naval Constructor R. Gatewood, U. S. N.  
Naval Hygiene.—Medical Director R. C. Dean, U. S. N.  
International Law, treated with special reference to questions with which naval officers may have to do.—Professor J. R. Soley, U. S. N.