

# THE RECORD

OF THE

## UNITED STATES NAVAL INSTITUTE.

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### NAVAL EDUCATION.

BY COMMANDER A. T. MAHAN, U. S. NAVY.

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“ *Essays.* ”

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In considering the question of Naval Education for officers and men it is necessary to put clearly before us two things—1st, the material upon which we shall have to begin ; 2d, what it is that we wish to make out of that material.

#### I. OFFICERS.

In the case of officers the material will probably continue to be lads of from fourteen to seventeen years of age. The attainments of those lads at the time they come into the hands of their Naval educators will vary greatly. I am myself in favor of what is called a low standard for admission to the naval course, for two reasons. First, I think there is rough, substantial justice in the view that where Government provides an education out of the money of the whole people, the entrance upon that education should be, as far as possible, open to all parts of the country ; as well to youths coming from less favored sections as to those whose homes are within reach of the best educational facilities. It may seem that the same argument would apply to a reduction of the final standard, or that of the whole course ; but, independently of the fact that no argument can be pushed to an extreme, I apprehend experience will show that, once admitted, the effect of force of character and perseverance will be generally equal to overcoming the previous disadvantages. Perhaps in the long run the ease with which more educated boys would master the early part of the course, would tend to slacken their own energies and put them yet more on an equality with their less favored rivals.

A second and stronger reason for a low standard is greater facility of moulding. Remember that we have here before us no mere question of a general education, or carrying on to perfection, in a higher institution, the work already well begun in a lower. The Naval educator has, in any event, to begin at the beginning and fashion, for a special and singular purpose, crude material into a highly tempered weapon fitted for a life and actions which, in their ideal, call for the highest qualities of vigor, endurance and intelligence; (I don't say knowledge.) Under such circumstances it is an advantage that the character and mind should have received as little previous bent as may be.

For these reasons I should prefer that the requirements for admission should be confined to such knowledge as is not easily acquired after childhood, or, if so acquired, requires a very disproportionate time. Reading; writing a good hand; spelling; facility in the operations of arithmetic up to and through decimal fractions; such will indicate, if not the whole, at least the level of attainment that I would require of the candidate. For the same reason, i. e. facility of moulding and shaping character, a matter quite as important as mere brain development in the question before us, I would distinctly prefer lowering the maximum age of admission, (now 18 years).

The lad coming thus into the hands of his trainers, it is necessary, as I have said, before considering the course of education, to consider what sort of man you wish him to be when he enters the service; and what possibilities of future development he should be prepared for. This involves the question of what the ideal naval officer of the present day should be; a question that must be dealt with here, to bring out clearly my idea.

I am persuaded that in our theory of education we have failed in this country to recognize that the progress of the mechanical sciences, and the vast change thereby made in naval vessels and their armaments, as well as in other means of warfare, have made necessary the organization of corps of specialists. Recognizing and dazzled by the stupendous nature of the changes made, and the wonderful things accomplished by the labors of science, those who have had the direction of our naval education, or who have exerted influence upon that direction, seem to run away with the idea that every naval officer, having to use these engines of offence or defence which the student or mechanic has put in his hands, should therefore be able to follow out the long train of laborious thought, be familiar with all the practical processes, by which each of these mighty engines has been conceived and pro-

duced. Singularly enough, in the only case in which an education distinctly special has been laid down, that for the present Engineer corps, the same confusion in adapting means to ends prevails; and the country is now laboriously educating to a very considerable point of attainment a number of men whose duties for many years, and till middle life, cannot rise beyond those discharged competently, all over the land, by men wholly uneducated, in the usual sense.

It is necessary, then, to look forward to the end, and consider really what you should require a sea officer of the Navy to be. We have actually gotten in the Navy, by constantly adding here a little, there a little, to a pass in which we think that each military sea officer, or to use the technical term, each line officer, should present in his own person a compendium of mathematics including its highest branches, its applications to numerous recondite physical problems, considerable knowledge of the physical and mechanical sciences, and an intimate acquaintance with the arts of the manufacturer; all in addition to a command of his own profession proper. Failing this, so many say, he must descend from the high position occupied by him and his predecessors for these centuries past and become the simple drudge of others whose minds have received a more rigorous and deeper, though often narrower, culture. Nor is this a mere thought; only the mental impossibility of cramming more study into a four years' course prevents an attempt to carry the theory into effect.

Let me then try to state clearly what qualities, in my opinion, you should especially wish in the line officer of the Navy. I scarcely think I can err in assigning to the foremost place moral power; strength to control self and others; fearlessness in responsibility and in danger; self reliance; promptitude in action; readiness of resource; calmness amid excitement. No amount of mental calibre, far less any mere knowledge, can compensate for a deficiency in moral force in our profession. I wish carefully to guard myself from implying that knowledge does not increase many of these powers, as it increases for example the resources, or enables accurately to measure danger. My point is this: will those habits of the student, the constant, strenuous application, the amount of confinement and closet work involved, tend to make a man more fit or less fit for the storm or the battle? I believe they tend to impede the growth of the class of moral powers needed at sea; to promote caution unduly; to substitute calculation for judgment; to create trust in formulas rather than in one's self. In truth the matter may be shortly stated thus, that a man does best that which he

constantly does ; moves more easily and better in scenes to which he is accustomed ; and that it is given to few men to be equally at home on the deck and in the closet, in action and in meditation. Yet this is what our Navy seems to aim at.

Next to moral power follows, in my opinion, physical vigor. Few probably will dispute the necessity of the latter, or the effect which it exercises upon the faculties of the soul. It is most impressive to read of the triumph of spirit over matter, as in the case of the typical naval hero Nelson ; yet even Nelson had to yield in the body, though his will remained unconquered and good ; though lesser men, would have been brought down long before. Although however I fancy I see injury that has been done to bodily health by over study among officers, I do not think it is as dangerous to the physique as to the morale.

I come last to what very many put first, i. e. the intellectual equipment ; the acquired knowledge, I mean, as well as the natural ability. I must here save myself from being misunderstood, by saying that I put knowledge last, not because I undervalue that, or would accept less than a very respectable amount of a kind I will mention later, but simply in comparison with bodily and moral power in a naval officer. No one would be supposed to undervalue physical courage because he said a clear head and legal knowledge were of more value to a consulting lawyer.

The knowledge that is necessary to a naval line officer is simply and solely that which enables him to discharge his many duties intelligently and thoroughly. Any information that goes beyond this point is after all simply culture, which, however desirable in itself, must not be confounded with essentials. This is true although the special culture may be of a kind very closely akin to his profession. For instance the manufacture of ordnance, the intricate questions connected with explosives, have a very close connection with the military part of his business. Yet to say that an exhaustive and exact knowledge of the various processes by which the finished gun and the proved powder are furnished to his hand and of the rapid though gradual advance made in each, is *necessary*, is to occupy ground that is not tenable. Similarly on the sailor side of the profession, it may certainly be said that an accomplished seaman should understand enough of the principles which govern naval architecture and determine the qualities of a vessel, to guide him to some conclusions, above the level of a guess, as to the causes of unsatisfactory behavior in any circumstances ; but it is going a long way further to claim that he must be prepared to enter into an

elaborate explanation of the method by which those principles are derived and formulated. Yet the statement that the two branches of scientific research and effort named above are, and must continue to be, the work of two classes of specialists, to me a most simple and evident fact, is practically not recognized as yet by our naval educators.

I confess to a feeling of mingled impatience and bitterness when I hear the noble duties and requirements of a naval officer's career ignored, and an attempt made to substitute for them the wholly different aims and faculties of the servant of science. The comparatively small scale on which those duties are now performed, the fancied impossibility of a great war, the pitiful condition of efficiency into which the material of the navy has been allowed to fall, have all helped to blind our eyes to the magnificence of the war seaman's career. At the same time science has been, and still is, achieving her magnificent conquests; and men, as always, in the presence of the achievements of the moment forget the triumphs of the past. No wonder the line officers of the navy are themselves carried away by an amazed humility which falsely dwarfs their own profession. Yet history does not countenance the idea that an untroubled assurance of peace is a guarantee that war will not come; in the little things of the naval profession of our day and country may be even now the preparation for events as great as those in which a naval captain changed the career of Napoleon. Let us then, in estimating the ideal for which we are to train the raw lad placed in our hands, turn our eyes from the things we too often know to be, the wretched character of most of our ships, the aversion to sea duty, the amount of time passed slothfully in port. Let us forget for a moment the mortification and lack of interest which follows from these, and which are common to all military service in time of peace, and let us look at those duties which are involved in keeping the sea in time of war. For those duties our youth must be trained, and any study that tends to unfit for them should be discontinued.

The officers who, whether in command or in subordinate military position, are to handle and fight a modern ship of war, must have a thorough acquaintance with the general construction of vessels, and with the peculiarities, if there be any of the particular ship. Equally they should all know how to handle familiarly the apparatus for controlling and directing her movements, including in these both sails and engines, the latter a point heretofore sadly neglected. It will be their business to find out speedily how the ship will act under various circumstances of wind, weather, trim, speed, &c., so that they may be

able to know what they can expect her to do in any case; indeed it would be well if that familiarity with her movements became so great as to dispense ordinarily with conscious thought or calculation. A similar close knowledge of the armament and all other equipments is necessary.

For this portion of the requisite knowledge, how great an amount of scientific power is required? Naval construction is involved, naval architecture scarcely at all. Some acquaintance with the mechanical powers and the modes of their applications, but scarcely enough to dignify by the name of science. That the knowledge sufficient to run and care for marine steam engines can be acquired by men of very little education is a matter of daily experience; although the naval system of our country has continued to surround a simple enough practical matter, very different from the designing and building of machinery, with a glamour of science and difficulty which does not exist. Some knowledge of electricity will be needed, if the torpedo form a part of the ship's offensive equipment. In all this my contention is not only that science, beyond some simple elementary knowledge of principles which can be applied practically with the resources of the ship, is unnecessary, but also that the attempt to carry it farther involves the loss of time that had better be applied to practical uses; further that the habit of the student in the laboratory, or over formulas, is as a rule an injury to qualities and habits of mind more necessary to a seaman and a military man.

There is, however, one branch of knowledge, intimately connected with the duties of the sea officer, to which I hesitate to apply a limit of strict necessity. I mean the subjects generally embraced by us under the head of Navigation, with its handmaid Surveying. The importance to an officer of familiarity with all the means by which a ship's position may be determined, and course laid with accuracy, such knowledge as in intricate navigation will insure the most perfect adjustment of carefulness and boldness, is apparent at a glance. The problems relating to the deviations of the compass, especially if iron-clads and iron ships are to continue in the navy, make it desirable that the various causes which lead to or modify these errors should be thoroughly understood in theory, and not merely by rule of thumb. The knowledge should be such as to keep an officer wide awake to any chance of new errors creeping in unawares. Again scientific surveying, it seems to me, falls naturally into the province of the officer whose career is to belong primarily to the sea and to the ship, and not to those classes of spec-

ialists with whom, as I shall afterwards indicate, the seafaring part of the naval career is to be of secondary importance. If our Government should ever determine, as it is to be hoped it will, to use its navy in times of peace for the making much needed surveys in distant parts of the world, it is evidently much to be desired that the officers who will have to go in charge of the ships should be fully qualified to do all the work of the survey proper. At this particular place I may say that so much knowledge of botany, mineralogy and kindred topics as would enable a reconnoissance of the natural capabilities of remote countries to accompany the report of a survey, would increase the power of usefulness in a line officer. I do not advocate making them compulsory, but would make provision for imparting, and offer inducements for acquiring, such knowledge after graduation. This agrees fully with the principle which I hope to show underlies my whole argument, viz: that in the corps of line officers, whose business is to handle, navigate, discipline and fight the ships, should be found all the acquirements necessary to discharge the other duties, save only the surgeon's; or if the statement in those terms seem objectionable, let us say that the other corps should so far acquire the specialties of the line as to be able to bear their share in performing the duties.

I have so far written, not thoroughly nor in detail, but in a general manner and sufficiently for the purpose of such an essay as this, upon the three great heads of Seamanship, Gunnery and Navigation under which the qualifications of a naval officer fall: being careful to say distinctly that under the first head I include such a practical knowledge of the steam engine as will enable him to take charge of the engines of the ship, and render unnecessary the maintenance of a special corps of engineer officers for that exceedingly simple office. There is worthier work for a suitable corps of naval engineers.

And having thus discussed them, I again turn and ask; why this mighty cry for science, in the modern limited sense of the term; limited yet further in our use to the mechanical and physical sciences, as an indispensable part of the mental equipment of a war seaman? Granted, as every one must grant, that such science has its necessary place somewhere in naval administration, what is there in it that the seaman cannot handle and fight his ship, I don't merely say without it, but just as well without it as with it. Yet handling and fighting his ship is his business; and if so, in his education no time should be given to any pursuit which does not lead directly up to those two things, if such pursuit be at the expense of occupations which do lead up to them.

Yet just this, under the delusive cry of science, we are more and more doing.

There are yet three other heads under which the mental acquirements of a naval officer fall: the English studies, Naval Tactics and Foreign Languages. Although none of these are dignified by the name of science, few will find fault with the extent to which they are now carried at Annapolis. About Naval Tactics I shall here say nothing. If I be asked, in my own words, how the English studies or the acquirements of Foreign Languages help a man to handle and fight his ship, I will reply that a taste for these two pursuits tends to give breadth of thought and loftiness of spirit; the English directly, the Foreign Languages by opening their literature. The ennobling effect of such pursuits upon the sentiment and intellect of the seaman helps, I think, to develop a generous pride, a devotion to lofty ideals, which cannot fail to have a beneficial effect upon a profession which possesses, and in its past history has illustrated in a high degree, many of the elements of heroism and grandeur. The necessarily materialistic character of mechanical science tends rather to narrowness and low ideals.

I here mention International and Prize Law as necessary to the mental furniture of a line officer, but only lest I may be thought to intentionally omit them. I do not care to urge their importance, as none will be found to question it.

Do I then undervalue science? Do I ignore the great changes it has made in the appliances and system of naval warfare, or deny the necessity to the service of men thoroughly imbued with its spirit and acquainted with its truths? Not at all, I simply say that while the processes, by which the results of scientific research are obtained, are laborious and difficult, the results themselves, for naval purposes, are instruments easy of comprehension and intelligent use; while the practical use of them, under the varied and often exciting conditions of sea and battle service, calls for other and very different qualities and experience than those of the student or the mechanic. Consequently devotion to science and the production of the instruments of warfare, from the ship itself downwards, should be the portion of certain, relatively small, classes of specialists.

Here I must revert again to my assertion of the pre-eminent importance to the sea officer of that which for want of a better word, I call moral force. When his ship is equipped and his knowledge of her powers complete, the most important part of the line officer's work is

yet before him. I might almost say all his real work is before him ; that which has been done is only preparation.

The organizing and disciplining of the crew, the management under all circumstances of the great machine which a ship is, call for a very high order of character, whether natural or acquired ; capacity for governing men, for dealing with conflicting tempers and interests jarring in a most artificial mode of life ; self possession and habit of command in danger, in sudden emergencies, in the tumult and probable horrors of a modern naval action ; sound judgment which can take risks calmly, yet risk no more than is absolutely necessary ; sagacity to divine the probable movements of an enemy, to provide against future wants, to avoid or compel action as may be wished ; moral courage, to be shown in fearlessness of responsibility, in readiness to either act or not act, regardless of censure whether from above or below ; quickness of eye and mind, the intuitive perception of danger or advantage, the ready instinct which seizes the proper means in either case : all these are faculties not born in every man, not perfected in any man save by the long training of habit—a fact to which the early history of all naval wars bears witness. Now this training can only be acquired by an active pursuit of the profession, and not in the closet ; while on the other hand the achievements of the student and the man of science cannot as a rule be wrought in the cabin of the seaman. The studious and scientific intellect is not that which most readily attaches itself to a naval life, or if forced into it attains eminence therein ; and the attempt to combine the two has upon the whole been a failure, except where it has succeeded in reducing both to mediocrity in the individual.

The record of the Naval Academy may be pretty confidently searched to prove that distinguished academical standing conveys no necessary promise of professional excellence ; while on the other hand very admirable naval aptitude is shown in many cases by men, intelligent indeed, but not students. The fact is obscured somewhat by the worthlessness, in a professional point of view, of the tail end of many classes ; which however only proves the common experience that there are many irremediable blockheads in the world, as well as many men who are fit for no profession, utterly idle and good for nothing. On the other hand a conscientious student and able man can attain respectability in almost any line. I apprehend, however, that the memory of most who know the service will supply enough instances in either direction to substantiate the main statement ; and the annals of the service at large bear

the same record of men of patient research, scientific habit of mind and constant study, who have as such rendered invaluable benefit to the navy, but who yet did not command its confidence as sea officers.

Moreover, when the care of instructors and the conscientious pains of the student have turned out a man well equipped to begin a scientific career, with distinct reference to the navy, what use is made of him? After the maiden cruise, which, if not too long, would be a positive benefit as a relaxation from study, and means of acquiring sympathy with naval habits of thought, and knowledge of naval necessities, the young man, presumed to have a turn for study and science, begins a career of alternate sea service and shore duty which renders connected application to any one pursuit impossible. Take, for instance, one who would make ordnance and its kindred subjects a speciality. For three years he may be in circumstances which enable him to see and learn, and he advances rapidly; then he is caught up and sent to sea, out of the way of every thing. He has neither access to the periodical or other literature which he cannot afford for himself, nor opportunity to see and keep up his acquaintance with the practical processes chronicled by those periodicals. The atmosphere around him virtually precludes study; for while we may deny that it is impossible to study aboard ship, on the general ground that where there's a will there's a way, it is none the less true that few actively pursue study, as distinct from reading, under the conditions of ship and mess life. The temptations to pleasure, the novelty of many scenes, the constant distractions, the close and heavy air of the sleeping apartments, all tend to compel men to social out door life, and to deter from strong mental effort.

I have wished, so far, to make the point that not only does the habit of life of the student unfit for the life of the deck, but also that the life of the ship interferes vitally with the habits of the student. The result is sometimes seen in the eagerness with which students escape, or enter other branches of the profession, when they can. I would provide, at least partially, a place for such in the navy.

There is yet another reason which I think strengthens my argument in favor of corps of specialists. There are physical causes which unfit men for the active life of the sea officer, but which leave their minds as clear as ever. Physical infirmities, the inroads of age, do undoubtedly often impair the efficiency of the seamen, and of the nerve force, while leaving the intellect untouched. This truth is recognized by the retiring schemes of most great military services, which compel officers to leave the active line of the profession at a fixed age—as well as for cause at

any age. Recognize clearly, however, certain classes of men in the service, whose particular capacity lies in brain work or aptitude for the mechanical science, and those men will not need to be retired for causes which do not affect their efficiency; though they may that of the seaman.

Assuming the principle of specialties is granted, I come next to consider how many classes of such specialists I would have in the service.

Premising that all graduates of the Academy should be line officers, there would, under that general head, be three such specialties: Construction, Engineering, and Ordnance officers. I do not feel sure but incline to believe that Construction and Engineering would ultimately come under one head on the Navy Register; the Senior officer of the Corps knowing and using properly the particular capacities of each officer. I shall hereafter in this paper consider the two classes as one, under the name of Engineer officers.

In addition to the above there would be yet another class of officers, requiring different, but less highly intellectual qualities, who would form the Pay Corps of the navy. It has never seemed to me reasonable to assign line officers indiscriminately, and for a cruise only, to duty as paymasters; but on the other hand I have never seen any reason to doubt that one man could perform the duties both of watch officer and paymaster, particularly if spared divisional work. Hence I would select from the graduates of each year such man or men to be assigned to the pay corps as the wants of that body may demand; he, like the others, to retain his position and lineal rank as a line officer, to do duty and have all the consideration and responsibility of a line officer, while at the same time assuming charge of the pay department in his particular ship.

The officers of the Engineer and Ordnance Corps would also retain their position and rank as established by graduation; but it would be understood that sea service was to be with them the exception and not the rule, and that the main occupation of their life should be the study, development, and oversight of the material of the service. After the first cruise, a term of one year of sea service to every five of shore duty would, in my judgment, be sufficient, up to the grade of Lieut.-Commander, after which no rule need be laid down. The amount of sea service indicated would tend to keep them from losing sight of the practical exigencies of a ship, a fault which has often been found with the present naval constructors. Whenever so ordered to

sea they should take the rank and duties to which their lineal rank assigns them, but sea service should cease when the grade of Commander is reached.

The officers of the pay Corps, on the contrary, should go to sea exactly as the line officers who belong to no special corps, up to the age at which he would, by seniority, be executive officer of any ship to which he would be ordered. The two duties of executive and paymaster would be too onerous when joined ; so at this period of his career I would give the pay officer the choice of remaining in the pay corps with the advantage of less sea service, or of casting in his lot with the sea corps, with the advantage of command. During the remainder of this paper I shall speak of those now called line officers and of the pay corps under the one title of the "Sea Corps."

In these details I will seem to depart from my subject ; independently however, of the fact that the word education must not be too closely restricted to direct teaching by others, but rather extended to all influences by which the desired results or qualities are educed, I feel myself under the necessity of defending the system I propose by pointing out briefly the ultimate results at which that system aims. As far as I know there is a good deal of novelty in the general scheme, and novelty's charms are, in naval eyes, doubtful.

My aim, then, is this : To recognize and provide for the existing and perfecting of a small body of specialists, but at the same time to provide that every commissioned officer attached to a ship, save the surgeons, should be capable, some more, some less, but each capable of every military and sea duty suitable to his lineal rank. That they should all be charged with the execution of the same, and should all be in one line of rank ; the distinction of corps being internal to that line.

Promotion would go on in that line and not by corps.

Having thus developed my aim and the reasonings which have led me to it, I now proceed to consider the course through which I would carry the successful candidate for admission to a naval career ; I may as well say the candidate for admission to the Naval Academy, as I base the training I advocate upon that pursued there.

The number of cadet midshipmen now allowed in the service is determined by the number of Congressional districts ; one being allowed to each district, and the appointment vesting in its Representative. I have no change to advocate here. The majority will probably owe their appointment to political or personal interest ; but however objectionable this motive, we are not likely to find many members of Con-

gress with the inclination or time to determine the appointment by other reasons than favor. As there have been some, however, who have shown a desire to select the most worthy applicant, I should like to see the navy department, when notifying a representative that a vacancy exists in his district, add some advice to this general effect: That in the opinion of the Navy Department a simple educational test was of no great value in discriminating between applicants; and that good health, wholeness and vigor of body, and, where they could be ascertained, indications of pluck, perseverance, taking the lead in a manly, not a vicious way, among equals in age, were of more worth than intellectual forwardness, as showing the stuff of which a good officer could be made.

Probably the most rigorous sifting by the course I shall propose would yet graduate fully as many as would be needed to fill the yearly vacancies in all the different corps; and it must not be forgotten that a certain number of appointments, technically styled "at large" are allowed to the President. As the system I propose will only permit a limited number to be graduated, it might be just, or at least kind, to faithful officers of the government to increase the number of the Presidential appointees, so as to allow the sons of such officers to compete for the prize of graduation and a commission. Opposed as I am to a high standard of admission, and proposing, as I have above, that every graduate shall possess adequate knowledge to superintend the running, care, and all ordinary repairs of a steam engine, I would of course do away with the cadet engineers of the present system, who are appointed by a competitive examination before the Academic Board. The corps of Engineer Officers which I propose would necessarily possess the power of running an engine, but their proper duties would be of the far higher order which embraces the designing and construction of ships and engines. The Navy needs a first rate, but comparatively very small, body of such men.

The appointees from the districts, who shall pass the required physical and educational tests, would all form one body under the title of "cadets," "naval cadets," or "midshipmen," whichever may be preferred, I shall throughout speak of them as midshipmen. The existing course, being based upon the plan of having cadet midshipmen and cadet engineers from the start, will need considerable modification.

At first the officers and professors will be wholly ignorant of the capacities of the youths. The first years' course therefore must be the same for all, and yet so designed as to oppose no hindrance to following

up immediately either course, as soon as the specialties have been determined.

For the first year, then, I propose the following studies :

- 1 Mathematics,
- 2 English,
- 3 Mechanical Drawing.

This omits the Modern Languages from the present first year's course. I think I shall have the support of the instructors in French in deprecating, as waste of time, teaching that language before the mixed multitude that forms an ordinary fourth class has been sifted. The time gained from the languages should be devoted to Mathematics and English, more particularly to the former, with a view to completing the course earlier in the second, (or third class,\*) year than is now the case.

By the middle of the first year it will be clearly seen in most cases how men will stand. The class should then be divided into two sections, and the higher section should not be kept back by the less able men, many of whom, under this system, will not enter the service at all.

The duties of the officers charged with the drills and discipline will, as it does now, lead them to note the bearing and capacities of each man. I would not have these taken into account in the first year, but in the second I shall most distinctly advocate this, as yet unknown, feature in the tests.

Mechanical is preferred to free hand drawing, as the knowledge of it will be essential to those selected for the Engineer and Ordnance corps.

At the end of the year midshipmen who fail to attain a certain standard of merit will be dropped from the Academy, or else turned back into the succeeding class, according to the decision of the Academic Board in the special case.

For the second year the course would embrace the following branches, for all midshipmen.

- Mathematics,
- English,
- Modern Languages,
- Drawing,
- Steam,
- Mechanics.

\* It may be well here to explain the peculiar and rather awkward system of naming the classes which obtains at Annapolis. The students in the first year of their course belong to the fourth class, in the final year to the first class.

This omits from the present course Physics and Chemistry as taught in that year. The time thereby gained I would allot first to Drawing, second to Modern Languages, third to Steam.

It is my hope and belief that, without materially diminishing the present Mathematical course, the time gained in the first (fourth class) year, and the superior ability of the upper sections, would permit of finishing the course in time to take up and complete a very simple course of Mechanics. This last should not extend beyond that necessary for an intelligent charge of a sea officer's duty, and will not necessitate a knowledge of mathematics beyond algebra, geometry and trigonometry. If, however, this cannot be done, then Steam must yield to Mechanics and wait for the third year.

Additional time is here allotted to Modern Languages beyond that now given; this will partially compensate the loss in the first year, and being devoted to the better part of the now reduced class, will perhaps in the end go as far as that at present assigned. The same remark applies to drawing, which gains considerably; being carried through the second half of the year.

In this year the drill and executive officers should note and mark the midshipmen, as to bearing and attention to duty. The effect on class standing should as yet be small, for it will not be possible to give to the third class the same scrutiny of individuals as to the upper classes. Marked excellency or defect can however be noted; and a concurrent unfavorable opinion on the part of the drill officers should ensure failure to pass on to the higher classes. Let us not forget that the aim is to make officers, and let us no more see the practical absurdity of a worthless man's passing into the service, merely because he can stand an examination in books. No observer of the Academy is unaware that men of high class standing are too frequently indifferent to their conduct as officers.

At the end of the two years I would put into operation a plan suggested by a distinguished Superintendent of the Academy, which is as follows. The probable number of annual vacancies in the grade of Ensign, for all Corps, due to deaths, retirements, or other causes, should be estimated by some expert in such calculations, and only that number should be allowed to continue the course with a view to entering the navy. Such number would as a rule be the head men of the class, and that class standing would be determined almost entirely by mental proficiency. I would put upon it a check to which I have alluded above, namely, that if the preponderating opinion of the whole body of

executive and drill officers should be adverse to any man's fitness for the service, that opinion should exclude him, and the next man in class standing should have the vacancy. It will be observed that this check is very different from a power given to the executive officers to choose out men, who fail to attain adequate class standing, to take the place of such as have that standing but who, in the opinion of the officers, have less aptitude for the service. I do not think, that in the first two years and among the large number of midshipmen in the lower classes, officers can distinguish with nice precision relative aptitude; the time given to drills and other duties is very small compared to that given to studies, and the check I advocate would be rarely exercised and then in pronounced instances. It would deal also mainly with those cases of general inaptitude, so easy to recognize, so hard to define, and not with special offences, which are sufficiently provided for by the general discipline of the school supervised by the Navy Department.

The word "sad" is scarcely too strong when applied to the sight of the number of youths yearly turned into the service from the Naval Academy so greatly in excess of the demand. Granting, (which cannot be granted), that no large portion of them are undesirable additions to the Navy, it is sad to think of the hopeless future before them; sad to think of merit weighed down by a mass of demerit above; sad to think of the country depending upon a profession which demands above all buoyant energy and hope, but whose prizes under the present system cannot be reached, till all the buoyancy, energy and hope have been sickened out by weary waiting. Some relation between demand and supply would be established by the system advocated; and the country, whose interest in the Navy is commensurate with its interest in the capacity of its officers, should see such a relation fixed.

With the entrance of this chosen body of midshipmen upon their third year the separation between the sea and the other Corps must be made, and the difficulty of determining the course of instruction is greatly increased. The separate courses now laid down for cadet midshipmen and cadet engineers must be combined, and as I do not propose to lengthen the Academic term of four years, the difficulty of this combination is apparent. There are, however, certain considerations which tend to diminish this trouble. The mass of the class, intended for sea service principally, will not need Calculus, nor Mechanics beyond the elementary course of the first two years. The time thus gained, which will be seen by a reference to the present course to be considerable, (10 hours a week) can be given to steam, English and Modern Lan-

guages. I speak of these in their order of importance from my point of view. The greater portion, say six hours, should be given to steam, of which the sea officer is to have a thorough practical knowledge. Two hours additional to the present allowance, will be given to both English and Modern Languages; with the proviso that if further instruction is considered necessary in drawing, and I think it likely, then Modern languages must give up this additional period to Drawing for one or both terms of the year.

So much for the Sea Corps. For the midshipmen intended for the Corps of Engineering and Ordnance the difficulty is greater, but I think not insuperable. Mechanics for them cannot be disregarded; but it is to be remembered that while they are to have such a knowledge of seamanship as to be *safe* deck officers, yet the sea is not to be their chief aim, nor will they command at sea. Time therefore can be gained from book seamanship, both in this year and the next. The same remark, I think, applies to Astronomy, a subject which will have little place in their future pursuits. The sea officer, who is to be navigator and surveyor, needs, as a good foundation, knowledge of the motions of the heavenly bodies; not so one whose life is to be mainly spent on shore in pursuit of science of a different kind. From Astronomy and Seamanship, then, I think to gain the time for Steam which the Sea Corps gains from Mechanics.

Additional time for English and for Modern Languages, gained by the Sea Corps, would not be so much needed by the Engineer and Ordnance Corps, for two reasons: First, the time for English is assigned to make up for that which I have to take from the first class course of the Sea Corps, but do not propose to take from the other corps in that year. Second, it is to be remembered that the most intellectual men of the class will have been chosen for these corps; and it is probable that in the knowledge of French, save accent, they will be well abreast the rest of their class, under an arrangement of sections according to proficiency.

This same greater capacity leads me to think that the loss of Physics and Chemistry, dropped from the third class year, can be very largely made up to the midshipmen chosen for the Engineer and Ordnance Corps. It must be remembered that you have, in place of a large class of unequal capacity, a very few picked men, probably not over four or five, not tied down to a low average rate of advance, and to whom the teacher can give a degree of personal attention now unattainable. For the Sea Corps I would make no attempt to take up Physics and

Chemistry, but would leave the subjects to be pursued in connection with a post-graduate course, after the first cruise, in the manufacture and handling of torpedoes.

Before tabulating the course for the second class year, it is desirable to say a word upon the study of Modern Languages, which ends with this year. The French language is of importance not only colloquially, but also as giving the key to a large scientific literature. As such it is useful to both the sea and the more scientific Corps. With Spanish the case is different. A knowledge of it is useful, because it is the language of many maritime countries, and particularly of several republics, large and small, in whose welfare it is the policy of our government to manifest a friendly interest; but scientifically it is of small value. I have therefore dropped Modern Languages from the second term of this year for the Scientific Corps, retaining it for the Sea Corps. I do not however specify which language is to be pursued. It is well known that many youths do not now attain a good knowledge of French; such should continue French, and only those sufficiently advanced should take up Spanish at all. Of course they would be allowed extra credit for the course.

For the third (or second class) year then the course proposed would be as follows:

### FIRST TERM.

ENGINEER AND ORDNANCE CORPS.		SEA CORPS.	
Seamanship	1 period*	Seamanship	2 periods
Ordnance & Gunnery	1 "	Ordnance & Gunnery	1 "
Astronomy	1 "	Astronomy	3 "
Mechanics (Calculus)	5 "	Steam	3 "
Steam	3 "	English Studies	1 & 1 period per. month.
English Studies	1 " <i>per mo.</i>	Modern Languages	4 periods.
Modern Languages	4 "		leaving 1 period to be given to Mod. Languages or Drawing as may seem best.

### SECOND TERM.

Seamanship	1 period	Seamanship	3 periods
Naval Tactics	1 "	Naval Tactics	1 "
Ordnance	1 "	Ordnance, &c.,	1 "

\* The period is two hours; there are fifteen periods in one week; three in one day.

Steam	4	“	Steam	4	“
Mechanics	5	“	English Studies	1 & 1	period per month.
Physics	3	“	Modern Languages	3	periods per month.
English	1	period per mo.	Drawing	2	“

It is probable that to give proper instruction in Seamanship and Astronomy to the Engineer and Ordnance Corps, with the limited time allowed by this programme, a very carefully considered compendium, in the shape of a new text book, would have to be drawn up for each subject. I think there is no impossibility in the way of doing this.

With the beginning of the final year I should adopt a new system with the Sea Corps. The theoretical instruction in Seamanship and Steam should now be followed up by constant practical exercises, through the ships that should be attached to the school. In order to this I would give up the third period, or afternoon of each day to such practical work; to which should be added the drill time, in all three or four hours a day.

To gain this afternoon time, in all ten hours, or “five periods,” to use the terminology of the school, I would give up the subjects of Heat and Light in the Department of Physics, Spanish in Modern Languages, and one period each from Seamanship and Steam.

To defend a step which will probably provoke much adverse comment I must say, what we all know to be the case, that no dependence can be placed upon cruising after graduation to supply this necessary practice. The exigencies of the service, the fancies or indifference of individual admirals or captains, keep ships often idle for long periods in ports. Some captains interest themselves in seeing that their young officers acquire practical experience in their profession; others do not. No certain reliance can be placed upon opportunities after graduation.

To obtain these I would unhesitatingly make the sacrifice of study hours and of the branches named for the Sea Corps.

As the lower classes would not take part in these exercises, the necessary force must come from the general service; and nowhere, I believe, would a hundred good seamen and twenty-five or thirty firemen be more fruitfully bestowed than for such purpose at the Naval school.

Nor, though the drill time is to be used for these exercises, does it follow that the first class are to have none of the usual drills. Let us imagine a class of twenty-five destined for the Sea Corps, and a favorable day for exercises of every kind.

- 1 drills a company of infantry.
- 2 “ batteries of light artillery.
- 1 “ a squadron of boats.
- 10 go to steamer to run engines.
- 4 “ “ to be manœuvred under steam and sail, to take deck and forecandle alternately.
- 6 to go to sailing sloop where they will take deck or forecandle.

It is not necessary to elaborate, though one is tempted to do so ; the combinations of drills that can be made will be innumerable. Those that are to take charge of the three drills first named, in which midshipmen of the lower classes are to be engaged after 4 P. M., need not lose the previous time. They can join any of the latter three exercises and be sent ashore by one of the Academy steam launches, after taking their share, in time for the ordinary drills. Nor is a young mind distressed by thus going from one occupation to another, as older ones sometimes are.

Two things are evident :

1st. Every first classman will thus have abundant opportunity of bearing a principal part many times in every kind of drill and practical exercise.

2nd. The duties of subordinate officers, lieutenants of companies, in charge of single boats, &c., will be devolved on second classmen, who now rarely fill any more important function than high private.

The practical exercises of Saturday will remain for the advantage of the Engineer and Ordnance Midshipmen ; it will be remembered that the special practical work of these, viz., the designing, construction and care of material, must come after graduation,

To gain the required time for exercises in the second term, I would omit English studies (Public Law) from the present programme having already provided for it in the second class course.

For the Engineer and Ordnance Corps I would leave the course very nearly as it now stands in the Academy programme. Spanish, for reasons already given, would disappear, and the time be assigned to Gunnery and Ordnance.

The very great amount of time now given to steam should be distributed, according to the Corps to which the midshipman is destined, to Naval Architecture, designing and construction of machinery, or the more advanced study of ordnance problems. For, as these two classes of midshipmen have been before together separated from the mass of

the students, the time has come with the closing year to divide them one from the other.

The tabulated result would be the following weekly programme of studies for the First Class of Midshipmen.

### FIRST TERM.

SEA CORPS.		ENGINEER AND ORDNANCE.	
Naval Construction	2 periods.	Naval Construction	3 periods
Ordnance	2 "	{ Ordnance, Naval Archi- tecture and Steam	7 "
Steam	2 "		
Navigation	4 "	Physics	2 "
		Mechanics	3 "

### SECOND TERM.

Seamanship	2 periods	Seamanship	1 period
Ordnance	2 "	{ Naval Architecture, Ordnance or Steam	6 "
Steam	2 "		
Navigation & Survey'g	4 "	Physics	1 "
		Mechanics	1 "
		English (Public Law)	2 "
		Navigation	2 "

During the last two years the conduct of Midshipmen at drills, exercises, and on daily duty should be carefully scrutinized by the executive and drill officers. The opinion of each officer for each month should be expressed in a mark, and the combined marks of the different officers should establish a final annual figure, representing the aptitude of the midshipman for the military and practical duties of the profession. In the last year a high value should be assigned to this question of aptitude in determining class standing. I consider it a very grave defect in the present system that the fact of a midshipman's displaying in a marked degree the qualities of a "good officer," attention, alertness and force, has no effect upon his standing. On the contrary, inertness, indifference, or failure to control those under him, do not in the least damage him.

I have thus traced the course, both of studies and practical exercises, which would constitute the education of a midshipman up to the time of his graduation from the Academy. It is not desirable, in an essay of this kind, to go largely into details, nor to defend such details as may have been laid down; nor is it to be expected that any one man will be likely to deal satisfactorily with so complicated a subject as the

details. I therefore here leave the Academic course with the following résumé of my general plan.

1. A low standard of acquirement for admission.
2. All admitted to form one Corps of Midshipmen.
3. The course for the first two years to be as far as possible simplified and to be common to all.

5. At the end of two years, retention only of so many as are yearly required to fill vacancies in the grade of Ensign, and the separation of those who remain into three Corps; Engineers, Ordnance and Sea Corps. The education of each corps to be as thorough as possible in its own specialties; Seamanship, Practical Gunnery, Navigation, Astronomy and Surveying being the specialties of the Sea Corps; Ordnance in all its branches of the Ordnance; Naval Architecture and Marine Steam Engine building of the Engineer Corps. At the same time each corps is to receive such instruction in the specialties of the others as may be necessary and possible.

5. The last year of the Sea Corps to be wholly given to professional, and largely to practical work.

6. Aptitude for service and officerlike bearing to have an effect upon class standing, i. e., upon future rank.

7. The pay Corps to come from the Sea Corps.

After graduation the midshipmen should have the usual leave, and then be ordered to sea-going ships for one or two years' sea service; during this period to be called midshipmen. I would have the Navy Department direct that during this first cruise, the commanding officer should assign each to duty as watch, navigation and engineer officers in turn, and for such periods as may be deemed best; and on leaving the ship should, in the usual letter, state what opportunities have thus been given him to continue the education begun at the school.

At the expiration of the cruise, the examination now customary to be held before a mixed board, taken from the Service at large and the Board of the Academy. I do not approve of the present system, by which these examinations are held by the Academic Board alone. The result of this examination, combined with the class standing at graduation, should finally determine lineal rank; unless in one contingency yet to be mentioned. A failure to pass should, as now, cause the midshipman to be dropped to the following class.

A serious difficulty will before this be seen by the reader of this paper. How is class standing in one class to be determined among men whose studies are different?

There is but one answer. When the studies are common to each, though pursued in different degrees, as Seamanship and Steam, the common value will obtain in each case. When the studies are peculiar to one Corps, give them value as an elective course, or perhaps more justly let them serve only to determine standing between men of the same corps.

After the final examination the officers of the Engineer and Ordnance Corps would not be expected to go to sea for some years. I would have them here take a post-graduate course of eight or nine months, wholly devoted to the mechanical and physical sciences as bearing upon their life work. In this they would of course be required to attend instruction, but not to recite. An examination would be held at the end of the course, which, if satisfactory, would involve no change of rank; but failure should be followed by dropping to the following class.

The Sea Corps should similarly have a post-graduate course in the manufacture and handling of torpedoes, with such preliminary instruction in Chemistry and Electricity as may be necessary.

Having successfully passed these last named examinations the education, as far as it depends upon direct external pressure, will be finished; the rest remains with the man himself.

Their commissions as Ensigns would now be issued, and dated back to the time of the vacancies filled; provided such date should not be earlier than two years after date of graduation.

It may perhaps be not out of place to mention two advantages, not directly educational, which I hope for from this scheme.

I. Economy to the Government.

1. The total number of Midshipmen is reduced from that now existing by the number of Cadet Engineers i. e. nearly one hundred.

2. The number of officers on board ship will be diminished through all being eligible for military service. Take for example the number of officers other than surgeons, above the grade of Ensign, necessary for a ship having two divisions of guns.

PRESENT SYSTEM.

1 Captain,  
 1 Executive,  
 1 Navigator,  
 4 Watch (and Division) officers,  
 1 Paymaster,  
 1 Engineer,  
 ———  
 9

PROPOSED SYSTEM.

1 Captain (Sea Corps)  
 1 Executive (Sea, Eng. or Ord.)  
 1 Navigator (Sea Corps).  
 2 Watch & Div. (Sea, Eng. or Ord.)  
 1 Watch and Paymaster (Sea Corps)  
 1 Watch & Eng. (Sea, Eng. or Ord.)  
 ———  
 7

In addition to which it will be remembered that in case of accident to the Engineer, who by the proposed system is an officer of the Sea Corps, his place can be filled by any one of the others. Under the existing system, the line officers not being considered capable of assuming charge of the engines, two engineers, at least, would probably be found on board a vessel of this class.

II. There would, among the officers graduated, be but one line of rank, in which each man's place would be indisputable. From whatever Corps they came they would, in joining the ship, take the quarters, duties and privileges to which their lineal rank entitled them. All would be seamen and all military men in the strict sense of the word, capable of training and commanding armed men. All would be likewise capable of assuming charge of an engine. Under these circumstances there would be good reason to hope that disputes about the right to give, or the obligation to take, orders, would largely disappear; and corps jealousies, if they still existed, would assume a form less injurious to discipline.

In conclusion of this part of my subject: It is now over a quarter of a century since the United States Naval School was founded, with a view of providing officers with better instruction than the circumstances of a ship afford; but still always with the object of making them simply better officers. Instruction, naturally and properly, has fallen into the hands of men who devote to it their whole time; or at least so large a portion of their time as to become identified with the school. This is right and necessary, for instruction is best imparted by men who thus give themselves to the business. Nevertheless, the instructor, like other men, tends to magnify his office and to mistake mental acquirements, which are simply a means, for an end. This may be bad anywhere, but, from my point of view, it is certainly and specially bad in training for a profession like the Navy, in which mere knowledge is the least of an officer's needs. Such a mistake has been gradually growing in our Naval school, and many of the younger officers of the service, under the name of science, are maintaining the idea that an extensive knowledge of mechanical processes, and an acquaintance with the elaborate mathematical reasonings involved in the investigation of problems connected with the materials placed in our hands, notably ships and ordnance, are essential to every future naval seaman. This is as unreasonable as the objections of older officers to any systematic instruction on shore. It is even worse, for it tends to substitute for a seaman's training a habit of mind and life entirely

alien to it, and probably in most cases destructive of it. It is time for a reconsideration of the whole matter, and I believe that the solution is to be found in a cordial recognition of special corps, all in the line of the service, complementary of each other and not, as now, tending to mutual destruction.

## II. MEN.

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The education of seamen must be governed by the same ultimate considerations as that of officers, viz.: What do you want to make out of the material placed in your hands?

There are two principal qualifications which are desired in every naval seaman: That he should be a seaman, and that he should be, to some degree, a gunner. In addition to these are those habits of neatness, regularity, discipline and respect for law, which we look for, but do not always find, in a man-o'-war's man.

If we are to undertake a regular system of training or education, and depend upon that for the whole, or for a chosen part, of the crews of our naval vessels, some degree of mental cultivation is necessary. It is easy, however, to exaggerate the amount desirable.

It seems evident, on the one hand, that the long periods of comparative idleness in port or even at sea, which are now too often the parents of discontent; which lead to desertion, gambling, quarrelling, rum drinking, might be made less tedious if the seaman had acquired a taste for reading books connected with his profession, with the countries he visits, or any other healthful and interesting subjects.

On the other hand it seems plain that if the Government devotes the time of the naval apprentice to acquiring knowledge above the position he is to occupy, more particularly should so use that time as to fit him for the position of an officer of a merchant vessel, it is assuring itself the disappointment of seeing its trained men leave its service for other occupations.

It is, however, neither as seamen nor as artillerists that we principally see the need of training for naval seamen. It is their moral tone that most specially calls for education and elevation.

This failure of moral tone is seen most markedly in two things. As a rule they attach no idea of moral wrong to the violation of a contract, hence desertion. Equally they have no sense of their simple dignity as men, nor of the beauty of self control, hence drunkenness unaccompanied by any sense of shame. In these two cardinal points,

the two greatest evils of the Navy, they acknowledge no duty; to themselves in the last case, to others in the first.

Now I do not hope for a sudden change of sentiment and morale in a large class of men. Doubtless we must wait here for time to do its work in raising the tone of this community as it has that of others; but still the work may be hastened by persistent judicious effort to instil a sense of right and of self respect, especially if we begin with boys. The experience of more than a century has pretty well settled that severity and punishment will not stop desertion nor drunkenness. There are some who seem to think that petting will do it, while others have faith in preaching; but naval officers know pretty well that it is not necessarily the severe man who fails to gain the confidence and willing obedience of seamen, nor the indulgent coxer that necessarily wins their good will and respect. The cause of the cheerful obedience, which one receives and another never elicits, is doubtless in that secret sympathy which the heart is quick to recognize, and which can neither be counterfeited by fair, nor concealed by harsh words. If we are to have a system of training for naval seamen, no officer should be entrusted with a share of it who is known to be one of those who "can't get work out of men," however indulgent or kind tempered he may be.

The calling and duties of a seaman are essentially of the nature of a handicraft. Quickness of eye and manual dexterity, seconded by activity and strength of the whole body, are involved in everything that he does; and very little else except native intelligence is required for making an excellent sailor. This is sufficiently shown by the admirable class of seamen of the old school, than whom no more efficient men could be found. They were intelligent doubtless—a fool will never make a sailor; but their great skill was acquired simply by practice without any pretence at education; picked up as we say. Now there can be no doubt that systematic training will produce a given result more quickly and in a greater proportionate number of instances; I am, therefore, strongly in favor of it as a means, the more so as along with the seaman's skill can be conveyed that of the artillerist, in which the men-of-war's men were inferior, as well as the development of the moral and intellectual powers which will tend to make the man more trustworthy, and more capable of rational happiness, than the typical seaman of old. Still we must, as with the officer so with the man, steer clear of the mistake that each accumulation of knowledge will give the Government a better servant; which is our true end.

From what I have said, the general course I would follow can, I

hope, be inferred. An apprentice system is desirable, because the lads can be more readily moulded, can more readily be attached to the service at an early age. It is not to be hoped that they can become better seamen than those of former days, but the requisite knowledge can be more quickly acquired. Ordnance is a much more complicated subject than it was; with the peculiarities and liabilities to derangement of the weapons they will have to use they should be thoroughly acquainted. As marksmen they should be as excellent as possible, though it is obvious that a man otherwise good should not be rejected for a defect here. Habits of personal cleanliness, handiness in making and caring for their own clothes, a knowledge of cooking such as will ensure both good quality and all practicable variety in the food, dancing, music, a knowledge of games, and, if there is any other thing which will tend to make ship life more enjoyable, all these should form part of their education. The radical difficulty with seamen, and above all with naval seamen, is that the life is unnatural; this must never be forgotten in considering this question of education. The difficulty is a moral one. The seaman lives without the constant solace and restraint of family life. This want, perhaps, can never be wholly supplied, but everything that tends to make up for it is a means of education to the individual and to the entire class. Combined with such provisions as the above for bodily and social enjoyment, I would provide means for healthfully occupying the mind. As all who pass through any system of apprenticeship will be taught to read. I would direct their reading as far as possible, so as to form a taste that should be not only healthy, but should coincide with the circumstances of their calling. As they will be much in foreign lands, lead them to such knowledge that they will no longer find the grog shop and the low dance house the most interesting features in a great city. Arithmetic enough to keep their accounts is good; but beyond that, time were better spent in learning languages, reading books of travel, of natural history, in short, acquiring knowledge that will enable them to enter naturally, intelligently and with interest into the life they may find around them. Devoted to a noble profession, they may find not only interest but a source of high aims and enthusiasm in naval biography and history. Novels they will read of course; but may it not be possible, in part, at least, to save their taste from falling into the yellow covered pit they now affect. In sketching this outline I don't undertake to say that all this can be done; I only claim that in the way of intellectual culture it is preferable to much that may at first glance seem more

akin to our aims, as for example navigation; and I also claim that it will all tend to increase that reliability and sense of responsibility, to nourish which is, far beyond professional dexterity, the difficulty of the naval trainer. It will do this by raising the man's standard of right, and by helping to fill the void which, we must confess, a man's heart and brain do now find in the daily life of a common seaman.

Hence, to educate a body of seamen, who should form the nucleus around which our naval organization should gather, I would receive into the service a number of boys from fourteen to sixteen years of age. I do not myself attach importance to the nationality of the lad, excepting in so far as the national temperament is or is not adapted to a naval life. Other things being equal, I would reject an Irish or French lad in favor of an English, or one of the Scandinavian race; but an objection to a foreigner as such seems to me misplaced in a country so many of whose citizens are foreigners; the more so as a seaman will commonly lose sight of home ties and attach himself to the flag under which he sails. The lads thus received should be distributed in training ships, whose officers should be chosen by that practical test of being those "for whom men will work." Yet more important, if possible, than the officers, are the seamen who will be stationed on board these ships; the leaven for the lump. To my mind it would be, as a rule, a mistake to choose these from elderly seamen, however admirable their general character. Probably there is no more outrageous conservative than the ordinary old seaman; to allow such to steep a rising generation in their prejudices is simply to start that generation some twenty years behind the point at which they should begin their race. Although the character of seamen generally has advanced slowly, as compared with the progress of the world at large, still it has advanced; and the change in the main has been for the better. Let the lads then be surrounded by the best you can get, but by young men, from whom they will imbibe the best of the spirit of the age immediately preceding their own. Above all, don't make these ships the refuge of old age, however worthy.

The regulations of the department should provide against boys of vicious character being retained, as they already do against physical disability. The life should be that of a model ship of war, yet so contrived as to work in continually the systematic training by which the necessary knowledge will be steadily imparted. I mean by this that mere training is defective, unless accompanied by the daily habit of life of a real ship of war; that a special habit of life in training, differing

materially from that to be pursued afterwards, is to be deprecated, unless necessary; and the necessity here seems to me to point the other way. A relatively large portion of time must, it is true, be passed in port, as the exigencies of the sea interfere too much with regularity; but I would pursue the ordinary routine of a ship of war, which affords sufficient time for the exercises of sails and guns, and instruction about them in their various details. The other portions of the day would be devoted to other instruction: marlinspike seamanship, cutting and making up clothes, cooking, carpentering, sailmaking, &c. Long before the period of apprenticeship has passed, special aptitudes, when existing, will have been recognized by the officers, and it will be wise to make use of such natural bent. I do not myself see why the Engine room force should not be partially recruited in this very way as well as by direct enlistment for the purpose; and it may well be that some instruction in the engine and fire room would be of advantage to those intended mainly for the deck. My principle for officers is general instruction in all branches, special knowledge of one and I would apply the same in the end to the crew; though I am not as sure with them as with officers, that the time for so doing has fully come.

As regards the cultivation of the mind, I must adhere to my first position that the seaman is above all a handicraftsman; and that such culture as may be imparted should have for its chief object the development of manly self respect, true professional pride, and a high sense of duty; after which, and barely secondary to it, is healthful occupation for the mind, and capacity for enjoying much to which, as yet, the seaman's eye is blind. Thus surely the tone of the man will be raised, and he will be more reliable than now. In giving the various kinds of instruction alluded to, an officer, whose heart is in his work, will be careful to see that the reasons for this and that are explained. Thus, the effect of cleanliness of the person and of the ship upon health, will be pointed out as each is insisted upon; so in the carpenter's gang *why* one kind of lumber is good for one purpose, another for another, why one method of working up is more advantageous than another, I do not propose to lay out a programme or routine in this paper; the general subjects of which I have spoken can, I feel sure, be worked in by a man of fair executive ability during the time the apprentices are with him.

The question of sending the youths out into the general service before their time is out is a difficult one. I incline to think it best not to

do so at any rate before nineteen ; that is. two years before the expiration of their time. Even that is over young, until the tone of the seamen in general service shall stand higher than it does now. Scruples about desertion, drunkenness, and cleauliness, beyond a certain point, would meet with too scant sympathy as yet ; and I doubt whether the majority of the lads could stand against the force of the popular estimate at an early age. On the other hand, it may be urged that it is most necessary that they should have some general service, and not remain too long in leading strings. My own recommendation is to put it off as long as possible, and then try to choose your officers and crew. The entrance upon life is everywhere a critical time ; how much more here, where home ties can scarcely bear, where temptation is strong, and the standard of equals generally too low.

When embarked in the service but still regarded as apprentices, care should be taken to stimulate their interest in the scenes amid which they pass, and to free their life as much as may be from the listless aimlessness in which too many seamen pass their days. But when the training ship is left, the power of choosing officers is greatly diminished ; and the increase of privileges for men, such as more constant access to shore, greater command of money, and such like, must be a matter of gradual growth. However greatly we desire to see such indulgences multiplied, and however superior the ideal state for which we look, we cannot shut our eyes to the fact that progress here, as well as in other things, to be healthy must be gradual ; that some officers though admirable generally, have not the knack of combining indulgence with strictness ; and so, while something may be done by system and regulation, much must be left to the tact of the Commander. An impatient tendency is sometimes seen to reach desired ends by hard and fast rules, by general regulations, which cramp unduly that free action of the commanding officer upon which the efficiency of a ship must ultimately depend. It is wiser, here and everywhere, to wait for the gradual change of opinion in officers, and rise in the character of seamen, which a patient eye can surely detect now, and which will in good time bring about all that is really desirable. In any event, whatever the rule of the ship, let that, neither more nor less, be the rule for the apprentices on board her. No indulgences because they are apprentices, no keeping them as children under special evident care. Whatever their superiors may do, let it be by quiet watchfulness, by individual caution or encouragement, just such as they would extend to an older man. In a word, if being the commander or

first lieutenant you wish to look out for them, don't let it be by making a special *class* of them, whether for care or indulgence. To do so will not only create prejudice against them among the rest of the crew, but will probably act harmfully upon themselves. The only distinction I would make would be that, being intended for seamen, they should do only seamen's duty; not messenger boy's nor berth deck cooks'.

In conclusion: It has been often said that the English speaking races find their strongest motive in the sense of duty. If it be really so, it is a high privilege which those races enjoy that they respond *instinctively* to the noblest appeal that can be made to man; and for both officers and men it will be the task of the teacher to cherish and develop that instinct, bringing it to play not only in times of danger or hardship, to dare and to bear, but also in daily life, in little things. So men shall recognize duty not only where she calls aloud, demanding life or happiness, and all hear her; but as well in those quiet daily rounds, when her voice is so low and so monotonous that men scarcely think that duty is there at all. The man who walks daily with her and obeys her voice must be the most sure not to fail when she asks for more. Yet even to the most steadfast this path of duty is often very hard, and in it they find little sympathy; men do not recognize the difficulty, which sometimes exists mainly in the man's own nature; they know so little they can make no allowance for failures, nor appreciate the actual amount of work done. Here it is hard for man to stand alone, and yet he too often finds none to stand by him. So I think any scheme of education is defective that makes no effort to teach the learner to believe in and to depend upon God; to bear constantly about him the consciousness of one perfect friend who knows just how painful it often is to *him*, just how faithfully he had worked when to men he had seemed to fail; and who, however men may judge, gives credit for all and will not let seeming failure be failure in the end. The power of such a conviction is matter of history, nor, whatever may be claimed in special cases, nor, however we may be deceived by the results of natural energy and ability, do I believe an ordinary man is at his best without it. Unfortunately too many who seek to implant this reliance cannot avoid cant, the endeavor to make up for their own lack of conviction and feeling by strained words, which themselves betray their unreality; and the result is the very general discredit of an actual power. At the end of my "Essay" upon the education of these youths I urge the necessity, even as a matter of policy,

of placing among them a chosen man or men who can instil into them that faith which will give completeness to their training. This, when in perfection, ensures that all the other education, all the courage, all the faculties of the man will be brought to bear on every duty placed before him; alike when unseen as when seen by men; alike in the steady, weary drag as under the stimulant of high action and danger.