A VERY interesting lecture on "Ancient Naval Tactics," has been delivered by the Rev. EDMUND WARRE, M.A., of Eton College, before the Royal United Service Institution, the reprint of which, copied from *Broad Arrow* of 8th April, will be found below.

The Rev. lecturer gives merely the intro duction to his subject, confining himself to what has been a mechanical puzzle hitherto, namely—the construction of Ancient Ships which he has illustrated in the clearest and most comprehensive manner.

Not only clearly showing the mode of con struction, rigging, steering and manoeuvring, but also what has been a great problem the mode of propulsion. We shall await the remainder of his lecturer on Tactics, which must be very interesting.

"On the 7th April the Reverend Edmund Warre, M. A., of Eton College, read an insteresting paper on the subject of "Ancient Naval Tactics." Admiral T. A. B. Spratt, C. B., F.R.S., was in the chair. After a few prefaratory remarks, the lecturer said:—The subject before us is that of Ancient Naval Tactics; but, having regard to its vastness and complexity, it would be as well at once to introduce some limitations, so that we may not attempt an impossible task in sixty minutes. By ancient, therefore, we will understand Greek and Roman—dismissing altogether those interesting questions concerning the Assyrian, Phœnician, Egyptian, and Carthaginian navies, which might well form the subject of a separate discourse. Of the Greeks and Romans we shall find ourselves compelled to give most attention; to the former, not only as presenting us with the best information, but as being in virtue of their seafaring habits, their constructive skill, and their tactical intelligence, *facile principes* in the naval art. With these limitations, the consideration of ancient naval tactics will, in the first place, involve an inquiry into the character of the principal tactical units of which an ancient fleet was composed, their gradual development, their construction, and propulsion. Secondly, we shall find ourselves called to notice the weapons of offence with which these tactical units were armed, and especially the ram, which has, owing to recent developments, a peculiar claim upon our attention. Thirdly, we shall come to tactics proper, minor tactics, as exhibited in the handling of a single vessel, and grand tactics, as illustrated by such instances as we have of the disposition and manoeuvring of fleets. Lastly, we may draw a comparison between the fleets of ancient and modern times, their tonnage, their power of propulsion, and the number of men employed. Of these divisions of the subject, the first will more than occupy our time to day; but I trust, through the kindness of the Council, that I may have an opportunity of dealing with the remainder at no very distant date. The subject of ancient galleys is one which, as is well known, has a literature of its own. A mere enumeration of the names of the authors who have expended their toil and their acumen upon it would cost us too long. The honor of having solved many, if not most of the difficulties which have perplexed so many eminent men, must be given to the illustrious German scholar Boeckh, and his pupil Dr. Graser, who in an exhaustive treaties 'de re Navali' has elucidated satisfactorily the most knotty points of this ancient problem. The discovery at Athens in the year 1834 of a number of inscriptions which proved to be the inventories of galleys and their gear, belonging to the dockyard in the Piræus, dating from a period not long subsequent to the close of the Peloponnesian war, was an event of the utmost importance in the history of our subject. These authentic documents of the Athenian admiralty, when elucidated by the vast erudition and great critical ability of the author of the 'Public Economy of Athens,' and by the practical sagacity and genuine enthusiasm of his learned pupil Graser, have shed a flood of light upon the whole question of the construction of ancient ships of war. It is important to observe that the ancient ship of war was an improvement on the pirate vessel, just as the piratical craft itself was an improvement on the original merchant galley, and made with a view to superior speed and handiness. The trader, built to carry goods, was broad of beam and slow of speed, and gradually, as heavier weights were to be transported, ceased to depend upon oars, and trusted to sails for locomotion. The predatory instincts of mankind were not slow to equip themselves with craft fitted so as to be speedy enough to overtake the sluggish trader, and at the same time roomy enough to stow away their ill-gotten gains. Not that in early times such gains were looked upon as ill gotten. The Robin Hoods of the sea, whom we should deem cut throat villains, were merry *gentlemen* in their own estimation, and in that of their neighbours, bold buccaneers, who were not ashamed of their profession. But the fact that they were enemies of civilisation was also patent, and the necessity of putting them down became more manifest as the advantages of commerce and free maritime intecourse were more generally appreciated. The mythelogical elevation to the judicial bench in the infernal regions of Minos, King of Crete, had, if we may venture a conjecture on such a subject, its origin in the stern justice with which that monarch repressed piracy, and the sense of the benefit that resulted to mankind from his efforts. He is mentioned by Thucydides as the first possessor of a fleet in Greek waters, and to have used it in establishing his thalasso matassocracy, or maritime dominion, by putting down the pirates. To this end, and thus early was the Greek ship of war elaborated. It is easy to see that the point in which it would be made to excel its pirate foes would be swiftness, and that this swiftness would be attained by construction, with a view to carrying nothing but the crew and the necessay provisions and armamant. Hence the ship of war was known as the 'long ship' *par excellence.* Centuries, however, were necessary to perfect its construction. In the simpler early vessel an increase in the number of oars necessitated an increase in the length of the ship, till at last a limit was reached, when a loss of handiness in turning outweighed the possible advantage of increased speed. Hence the invention of banks of oars; an invention by which the necessary distance of the 'interscalmium,' or space between the rowers' benches could be subdivided and utilised in such a manner that the oars might be doubled or trebled in numbers within the same horizontal pace, and yet not clash together when worked in time. In order to comprehend better the principle upon which this improvement was effected it must be understood from the first that, so far as we know, the ancients, at any rate, until late Roman times, never double banked their oars. We find first among ancient ships single banked galleys of 20, 30, 50, and up to 100 oars each, in which the usual interscalmium of two cubits gives us a conjectural ground for estimating their length. These are all embraced under the term of 'moneres,' or 'monocrota,' as striking the water with one beat. The first improvement upon this was the construction of the bireme which if we are to believe Pliny, is due to the Erythræans, Ionian colonists of Asia Minor, from which probably if anything is to be inferred, it is that the first step in the improvement of the construction of galleys came from the eastern and not the western side of the Ægean, and in all probability was of Phœnician origin. At this point we may proceed, taking Graser as our authority, to describe the principles of construction and propulsion in the case of the trireme and quinquireme, so that we may have some definite idea of the character of the vessels employed when we proceed to consider the naval tactics of the Greeks and Romans. Two classes of vessels appear to have been employed, distinguished by the name of 'aphract' or 'cataphract,' according as the towers of the upper tier were protected or exposed. Both classes were decked and floored, but the 'aphract' class carried their decks and flooring lower than the 'cataphract,' so that in them the rowers of the upper tier were visible above the side of the vessel; this is distinctly seen in the bireme and trireme, given by Montfaucon from the Column of Trajan. The rowers of the upper tier were called, from the elevated bench on which they sat, *thranitæ*, those of the middle tiers *zygitæ*, from the zyga or benches, which in the aphract class of vessels, traversed the whole breadth of the ship and bore the deck; those of the lower tier *thalamitæ*, from the thalamus or chamber in which (below the zyga in the aphract class) they plied their oar. These names remained the same for the upper, middle, and lower tiers, even when the invention of cataphract ships with high decks and more banks of oars than three had altered the conditions of construction. The aphract ships had their flooring one foot below the water line and the deck five feet above it. After the battle of Actium, which was won by the use of the light Liburnian biremes, which were aphract, the Romans seem to have built most of their vessels after what was then considered the new, but was in reality the old fashion. Previous to that date; from the time of their invention by the Thasians, all the larger vessels of war used by both Greeks and Romans were cataphrat. In the cataphrat trireme, the space allowed for each oarsman was, according to Graser, eight square feet per man, and this proportion was observed in the larger vessels up to the octireme. In vessels with ten or more banks of oars the proportion allowed seems to have been reduced to seven square feet per man. We know from a passage in Cicero that the space was so completely filled and so densely crowded, that there was not room for an additional man. The rowers in all classes of banked vessels sat in the same vertical plane, the seats ascending obliquely inclined towards the stern of the vessel. Thus in the trireme, the thranite was nearest to the stern of the set of three to which he belonged. Next behind and somewhat below him sat his zygite, and behind and below the zygite the thalamite. The vertical distance between the seats belonging to the same set was 2 feet, the horizontal distance 1 foot. The seat itself was from 9 to 12 inches broad. The lowest rank used the shortest oars, and the difference of the length of the oar in board was provided for by the outward curvature of the ship's side. The oar ports were vertically 1 foot 3 inches below the handle of the oar when the blade was just touching the water. The lowest or thalamite oar ports were 3 feet above the water. Each oar port