RULES

FOR

THE JANE NAVAL WAR GAME

A SEA KRIEGSPIEL SIMULATING ALL THE MOVEMENTS AND EVOLUTIONS OF EVERY INDIVIDUAL TYPE OF MODERN WARSHIP, AND THE PROPORTIONATE EFFECT OF EVERY SORT OF GUN AND PROJECTILE

PART I. TACTICAL PART II. STRATEGICAL

INVENTED BY

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INTRODUCTORY NOTE

The aim of this Naval War Game is to provide a thorough sea equivalent to the Army War Game. The essential idea has been to produce something by which any problems can be worked out with the greatest possible simulation of actuality, especially such as least easily lend themselves to solution on paper. In particular, the game is designed for use in all such interesting problems as those connected with 'discriminating fire', and to that end not only each individual type of ship, but also every individual gun and projectile, method of protection, thickness, and quality of armour is allowed for. In some of these things a certain amount of approximation has, for simplicity, been necessary, but for practical purposes the differentiation will be found sufficiently ample.

The majority of the rules do not call for special comment; all represent attempts to simulate the real thing as closely as possible; all are framed with a view to avoiding any *unnecessary* complications. Comparatively few of them are needed for any one game. For such as are most frequently required summaries are provided, either upon loose sheets, or upon the pieces; there is, consequently, no necessity to learn the game. It can be played by any naval officer after five minutes study.[1]

All the shooting targets are drawn upon the same scale, with particular attention to certain essential minutiae, consequently a gun muzzle or a sighting hood has approximately its actual chance of being hit. The particular form of striker, for localising hits, has been adopted after considerable trial with various systems. It will be found that this device affords some sort of equivalent for the moral effect on the *personnel* caused by damage to the *matériel*. It is rare to find a player shooting well after his ship has sustained heavy damage; very little is needed to make the aim wild. I must admit that this result is incidental rather than designed, the adoption of this device having been due to a desire to embody something that made direction easier than elevation, and did away with *certainty*.

[1] *Hints on Playing the Jane Naval War Game (1901) - Preface.* - No matter how much may be supplied in the way of printed directions there are always apt to be points in moving and umpiring that tend to be a little obscure on paper, but are at once picked up in actual practice with accomplished players. The ideal of the game, and one that is fairly reached, is that any naval officer is able, without any knowledge of the game's workings, to direct the evolutions of a fleet, and habitude at playing in no way assists towards success. That is to say, the game is the antithesis of chess, billiards, etc., in that mere proficiency at moving and so on does not entail victory, which depends only upon the skilful handling of fleets. But captains of pieces must know the moves, etc., enough to realise this - that the close simulation to real warfare is the sole objective of the game, while umpires must be thoroughly *au fait* with everything.

No tactical problem can be worked out on a basis of certainty in hitting. The accuracy obtainable is, perhaps, considerably higher than may reasonably be hoped for in action;[2] the necessity of keeping a game from taking too long to play compels that, but as a general rule, accuracy is sufficiently difficult not to interfere with any evolution. If, however, a nearer approximation to battle conditions is desired, it is obtainable by reducing the rate of fire, or countering every two guns as one. It is, however, open to the objection that the chance element and the lucky shot get thereby a possibly undue value in a game that general presupposes a *comparative* equality in gunnery on both sides, though it must be borne in mind that the game allows great scope for neutralising superior gunnery by superior evolutions.

A word is necessary about the gunnery rules. It is exceedingly difficult to make a general allowance for shell. Against armour, they are very likely to break without bursting in the act of perforation, but the pieces carried through are likely to cause considerable damage; consequently, all shell, and also shot which would carry fragments through medium armour, are given one general effect against medium armour. Another difficult problem is the behaviour of very thick Harveyised plates. There is reason to believe that if 6 inch Harvey may be considered equal to 12 inches of iron, 9 may be barely equal to 18, and 18 not equal to 36 inches of iron. There are also innumerable side issues. This is mentioned in order to draw attention to the fact that in the letter notation, an attempt is made at an *approximately general* allowance.

The turning and other manoeuvring qualities of ships are allowed for upon a convention. With a pair of dividers and a certain amount of patience, it is of course possible to give any vessel its exact circle, but this is avoided as an unnecessary complication. In an attempt to ram, with ships of equal or nearly equal speed, it is just possible that the use of such circles might be of utility, but in such cases an umpire's decision is a simple substitute. The circle selected for general use is practically the average. In the case of ships whose circle is considerably beyond the average, a perhaps somewhat unduly larger circle is given, while very handy ships have a slight undue advantage. The approximation will, however, be found satisfactory for all ordinary purposes.

Speed is also subject to arbitrary convention much as the circles are. Slight individual differences of speed do not appear to be of prime importance where the evolutions of fleets are in question; where a slighter better speed would affect results, allowance is made (*see* Strategical Rules).

2 From certain experiments made, at target practice on board the Takasago, there is, however, reason to believe that, unless the excitement of action largely affects results, the accuracy obtainable by game methods is not much too high for modern guns.

Scoring tables - plan and elevation with all details as to armour, etc. - of any particular ship not given with the game can be procured from the publishers, and if necessary the corresponding shooting targets and model ships.

None of the shooting targets are named. The reasons for this will be found under the heading

GENERAL NOTES.

My best thanks are due to Captain H.I.H. Grand Duke Alexander Mihailovitch of Russia, Imperial Russian Navy; Captain H.J. May, C.B. and Captain H.S.H. Prince Louis of Battenberg, K.C.B., Royal British Navy; and Lieutenant Kawashima, Imperial Japanese Navy, for looking over proofs of the rules, and for all the kind interest they have taken in the game. I must express my gratitude to Commander H. Russell Robinson, Commander H.H. Campbell, Lieutenant Barry, and Mr. H.W. Metcalfe, all of the Royal Navy; to Mr. Kondo, of the Imperial Japanese Navy; and generally to the wardroom officers of HMS *Majestic*, HMS *Trafalgar*, HMS *St. George* (1894-98 commission), HMS *Royal Yacht*, HMS *Mars*, HMS *Alexandra*, and HMS *Australia*, and of HIJMS *Takasago*, for their kindness in connection with many experimental games played on board their ships.

In conclusion, it should be stated that all important ships of new type will be added to the game from time to time as they may be completed for sea, and for any new invention provision will at once be made in the rules. Any such changes will be announced in the *Army and Navy Gazette*, *Le Yacht*, and one or two other papers; but, so far as possible, notice will also be sent to any ship known to be in possession of the game.

Any suggestions in the way of increased realism and simplicity, sent to me, c/o Sampson Low, Marston & Co., Ltd., Publishers, London, will be thankfully received and acknowledged. Any notes upon interesting actions will also be very welcome.

Portsmouth, June 1898

FRED T. JANE

PART I
TACTICAL GAME

GENERAL RULE (to which all others are subject)

NOTHING may be done contrary to what could or would be done in actual war.

UMPIRES

If the fleets are large there should, if possible, be an umpire to each side to supervise the scoring. It is in addition advisable to have a chief umpire or referee.[3]

ADMIRALS

'Admirals' may issue any general orders they see fit before the action, but all communication during action must be by signal. In actions in which many ships are engaged, it is better that the admirals should not fight the pieces in which they fly their flags. Should any flagship receive a heavy fire where the admiral is stationed, even chances should be thrown as to whether he is placed *hors de combat*. If so, he must relinquish the command *immediately*. Unless any other position is specified the admiral will always be assumed to be in or near the forward conning tower.

Should an admiral desire to shift his flag in action, full time must be allowed for it, as directed by umpire.

CAPTAINS

It is an essential condition of the tactical game that no player should have more than one piece.

[3] *Hints on Playing the Jane Naval War Game (1901).* – All these rules and sub-rules may to a hasty glance appear intricate. Examination, however, will show that they only concern umpires, and chiefly consist of generally accepted probabilities reduced to mathematics. It must always be borne in mind that the sole object of the game is to simulate real warfare as closely as possible. Before anything else this must be borne in mind. The rules have been framed to, so far as possible, prevent any successes being secured by juggling with the letter of them. Cases are bound to arise in which the letter and spirit may differ; in all such the umpire is to follow the spirit and use his discretion.

PERSONNEL

If it is desired to reckon in *personnel*, five men can be assumed *hors de combat* for every gun (big or small) disabled. It is not *necessary* to make this allowance in the tactical game, but in the strategical game, where such questions as landing parties, prize crews, etc., are almost bound to come in, the rule must be enforced.

In all cases a gun should be assumed to need five men at the gun and five below, etc., getting up ammunition. If this number cannot be kept up the rate of fire must be reduced.

Inferior gunnery can be represented if necessary by causing the inferior to use targets for 1000 yards greater distance than the actual.

PIECES

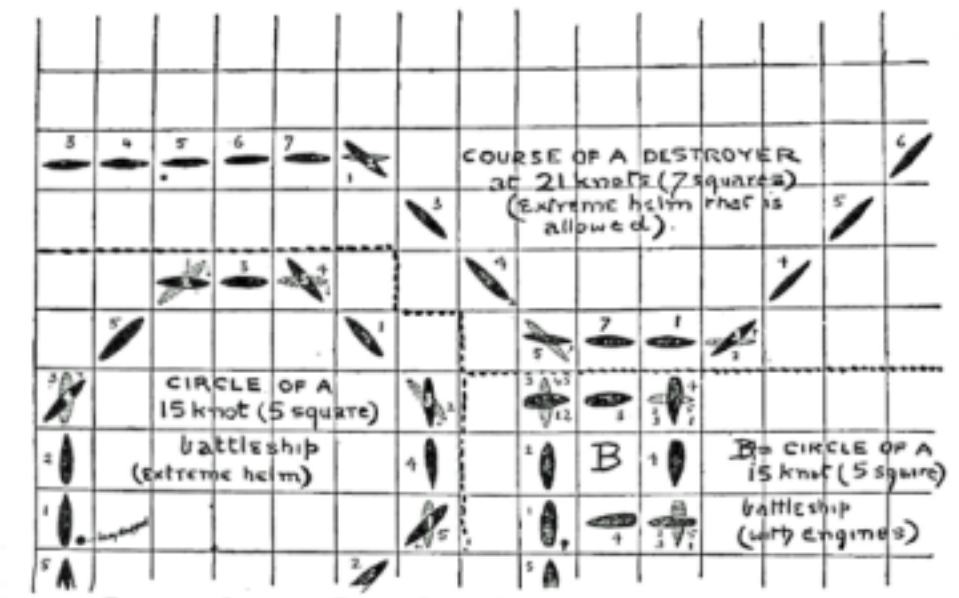

Diagram to Illustrate Turning Circles Showing Loss of Squares for Turning.
The figures indicate the order in which squares are covered during each move.

The pieces supplied are on scale with the squares as regards *size*, and bear a recognizable resemblance to the ships that they represent. Typical vessels only are supplied, but any particular ship or ships can be obtained, together with the necessary scoring tables and 'shooting targets', though any agent for the sale of the game.

MOVING

1. Each square represents 100 yards long by 100 yards wide.
2. Each move represents one minute, and should not occupy more than that period of time:-
3. Speeds are in 3 knot units:-

A speed of -

3 knots = 1 square per move
6 = 2
9 = 3
12 = 4
15 = 5
18 = 6
21 = 7
24 = 8
27 = 9
30 = 10

A 1 1/2 knot unit or any lesser unit can be introduced by using a measure, but for all practical purposes the 3 knot unit suffices.

TURNING

1. *With helm only*. - A piece desirous of turning must drop a red or green buoy according to whether it desires to turn to port or starboard. On the *second* square after that on which the buoy was dropped it may turn four points, *the turn counting as a square moved* (*see* diagram). If it desires to continue on that course the buoy must be picked up, but so long as the buoy is down the ship must continue turning on every other square.
2. *With one engine reversed*. - On the second square the piece may make a turn of eight points (90 degrees), but loses *four* squares for so doing.
3. A few ships have greater circles. All circles are noted upon the individual pieces. *Optional*. - As a rule the fact that the diagonal of a square is greater than its length does not make much practical difference in the game, advantages under this head usually counterbalancing, and the gain by use of diagonal affords some sort of approximation to such circumstances as fluctuating engine room efficiency, etc. But wherever tactical problems are to be seriously worked, diagonal moves should be by measure.

It may sometimes be necessary for the moves to be made in simultaneous fractions. In such cases moves *must be by* measure, and are always reckoned from the ship's bows. The black buoy must always be dropped on such occasions to indicate the spot the piece left.

REGULATION OF SPEED

1. As a general rule, first class battleships should be allowed 15 knots, second class 12 knots, certain older vessels 9 knots; cruisers 18 knots - a few first class ones 21 knots; armoured cruisers 18 knots and 15 knots; fast battleships, like the *Sardegna*, should be allowed 18 knot speed; catchers 18 and 15 knots; destroyers 24 and 27 knots; torpedo boats 21 and 18 knots. In any sea way the speeds of these last two should be at once reduced.
2. A ship can stop (reversing engines) in one complete move. Thus a ship going 15 knots stops dead on the fifth square after reversing engines - which should be indicated by dropping both port and starboard buoys. The next move, if engines are still reversed, she can go one square astern; two the next again, then three, and so on.
3. A ship stopped dead or going astern can gather way one square the first move, two the second, and so on.
4. A ship under way can increase its speed one square every move up to its maximum speed.
5. Ships going astern may steer, but with two extra squares for each four points turned; thus, a ship that turned every other square going ahead would turn every fourth instead.

ARMOUR

Armour is classed as follows:-

aaaa = proof against everything except at very close range
aaa = 30 inches of iron or its equivalent
aa = 24 inches of iron or its equivalent
a = 18
b = 15
c = 12
d = 9
e = 6
f = thin armour

The slopes of protective deck are valued at double their thickness in order to compare with vertical armour, the flat portions at four times their thickness. Coal protection is always calculated as improving armour one grade. When the belt of a ship consists of vertical armour, coal protection and belt, the thickness given on the scoring sheets as 'protection of vitals' includes all these things.

Guns are classed as follows:-

The 10 inch M.L. and all non Quick Firing 6 inch or 4.7 inch fire every two moves.

	Gun.	Rate of fire.	Penetration with A. P. shot.				
			1000 yds.	2000 yds.	3000 yds.	4000 yds.	5000 yds.
A	16-in. (110 ton)	Every 5 moves.	a a a	a a	a a	a a	a
	13·5-in.	3	a a	a a	a a	a	b
	12-in.	2	a a	a a	a	a	b
	11-in. (long)	4	a a	a	a	b	c
	16-in. M.L.						
B	11-in. (short)	2	a	b	b	c	c
	10-in., 10·2 in.						
	9·2 (40 calibres)						
	Old 12-in. (45 ton)	3					
C	Older 9·2-in.	2					
	8-in.	1	c	c	c	d	d
	8-in. Q.-F.						
	12-in. M.L.						
D	6-in. Q.-F., old 8-in., 10-in. M.L.	1	d	d	d	e	e
	Older 6-in. (converted Q.-F.), 5·5-in., etc.		d	e	e	f	
E	5-in., 4·7-in.	1	e	e	f		
	4-in.		e	f			
F	3·4-in., 3-in..		f				

With Palliser, Armour Piercing shell, penetrations are two grades less with A, B, C guns, with D guns one grade less. With High Explosive, or Common shell, four grades less for A guns, three less for B, two less for C and D, one less for E.

These penetrations are all for hits within 30 degrees or so of direct of impact. If the target is obviously at a greater angle than 30 degrees, the penetrations are one grade less against the side. If the angle is over 60 degrees, three grades less. The obliquity of turrets, etc., is allowed for by hits not in the centre requiring a grade extra penetration.

At close range (well *under* 1,000 yards) all guns (*with direct impact*) can do one grade better with solid *shot*. A guns at 700 yards go through everything. Sheets are provided with all the normal penetrations printed on them, as well as the amount of damage; there is therefore no occasion to learn the figures here given.

The number of lateral unarmoured sections destroyed by the various shell, etc., are as follows:-

Fire from the smaller guns represents continuous fire for one minute, not individual shells as with big guns.

Guns.	A. P. Shell.	Common.	H. E.
16-in.	4	8	10
13·5-in.	3	6	7
12-in.	2	4	5
11-in.	1½	3	4
10-in.	1	2	3
9·2 or 9-in., or 8-in. Q.-F.	1	1½	2
8-in., 6-in. Q.-F., *Two* 4·7-in. Q.-F., *Three* 4-in. Q.-F., Eight 3-in. Q.-F.	½	1	1½

FIRING

Every ship is allowed an amount of shot and shell - the proportion determinable by choice beforehand. The various sorts of these are marked on the tickets supplied, together with notes as to the damage they do. A player wishing to fire drops one of these for every A, B, or C gun fired, while he is moving, and on the particular square he fires from, at the same time indicating the ship fired at.

The ticket should be in readiness *at least one move beforehand*, and *no change of projectile may be made without allowing time for reloading*. When the move is completed the firer used the 'shooting target' of the ship fired at, as directed.

SHOOTING TARGETS

1. At the end of each move, big guns are to be fired in the order in which players have dropped their 'firing tickets', any torpedoes that may have been fired taking turn. No gun disabled may score a return fire. In the same way if a ship wished to fire a torpedo, but received a fire first which sank or water logged that ship, the torpedo could not be scored.
2. To fire, a player strikes at a shooting target of the ship fired at, with one of the strikers provided, using target according to range. For each big gun separate shots may be made. Quick Firing guns should be struck in rapid succession without stopping to see result.

When a ship is at an angle of forty-five degrees, all hits to count must be on the half nearest to the enemy, and hits beyond count as misses. At sixty degrees, one quarter of the target is used.

SCORING[4]

1. Each ship is divided vertically into sections of 25 feet in length. These are always numbered from the bow, and correspond with the 'shooting targets'. 2. Laterally, ships are divided into 'decks' which, save in certain specified cases, limit damage.

3. A bulkhead or armour is the only limit to damage along a deck. Where the damage of a big shell is thus limited, the balance is to be scored on the decks immediately above and below; but a protective deck itself cannot be injured by a shell on the deck above.

4. Damage is scored by scribbling over the area affected; the centre of the damage being always the point hit on the shooting target (*see* diagram).

Optional. - Ships doing less than 6 knots speed, or turning with engines, are to be fired at as though 1,000 yards nearer. Ships *passing* at a combined speed of 30 knots or over will both fire at each other with the target for 1,000 yards greater than the actual. When a ship is turning, if the rate of change in the hearing of the enemy is thereby materially increased or diminished, the umpire may direct that ship to be fired at as if 1,000 yards farther from or nearer than the actual. When weather is included, any ship getting between the enemy and the sun (when the sun is low), or firing to leeward in a moderate sea, is to be fired at as though 1,000 yards more distant than that ship really is.

EFFECTS OF GUN-FIRE ON GUNS

One penetration disables a turret, barbette, or casemate.

The umpire must decide about shot or shell that jamb a turret.

Shot that penetrate below a turret do no harm unless they hit the hoist, when they halve the rate of fire. Unless marked, the hoist is presumed to be directly under centre of gun position.

Any gun actually hit is totally disabled.

Against *unarmoured* parts and also *against the armour that they can just penetrate* solid shot do *half* the damage of Armour Piercing shell. Against any thinner armour they do the same damage as Armour Piercing shell.

All shell score as Armour Piercing shell against armour that they penetrate. Common and Armour Piercing Shell score their damage on the far side of the battery.

[4] *Hints on Playing the Jane Naval War Game (1901).* - The umpire should always remember that he is empowered to use his own discretion fully, and that so long as the system of scoring is uniform for both sides considerable latitude should be allowed to the umpire. This is particularly the case with big, high explosive shell, on the probable effects of which opinions vary greatly.

High Explosive Shell (Lyddite, Melinite, etc.) score on the side hit. Any barbette, turret, or casemate under which shell doing three or more sections' damage burst, is out of action for five moves (any further shell bring it down if the base is unarmoured).

Every gun within the area of a common or Armour Piercing shell explosion is disabled. With High Explosive shell it is out of action for five moves, and at the end of that time it may fire again, using targets for 1,000 yards greater distance than the actual. A second explosion silences the gun.

All guns in a closed battery in which a shell or shells burst simultaneously, doing three or more sections' damage, are out of action for five moves, even though not within the area of explosion, the battery being presumably full smoke and fumes.

For unarmoured parts, in which no guns are carried, only the elevation of one side is given. It suffices to score here without regard to the side hit (*see* scoring diagram).

EFFECTS OF GUN-FIRE ON SPEED, ENGINES, ETC.

Ships lose speed as follows:-

3 knots, loss of sections one quarter total length at waterline in the bow. Thus, a 300 foot long ship, which is divided into twelve sections, would lose 3 knots speed for destruction of the first three; a 400 foot long ship should lose first 4, and so on.

3 knots if all funnels are brought down.

3 knots for damage to all the uptakes between decks by shell.

3 knots if a mast is brought down, until wreck is cleared (three moves, or if Quick Firing guns play on wreckage, the time may be increased).

Half all remaining speed for one shot in engines or boilers

All speed for a second shot, or a single shell in engines or boilers.

Note:- The vitals of most modern ships, what with belt, coal protection, and deck, cannot be penetrated except by a shot that hits low on waterline at very close range. Chances of reaching the boilers or machinery one in six to two in six, according to whether 'protection to vitals' is two or one grade better than penetration at 1,000 yards. If total protection equals penetration, chances are even.

EFFECTS OF GUN-FIRE ON STEERING

1. When the bow waterline sections have been destroyed sufficiently to affect speed, an extra square must be taken for turning. If the after ones are also destroyed then two extra squares are necessary to turn.
2. If conning tower is hit and penetrated the ship may not steer for three moves. If hit by a big *shell* that fails to penetrate, the same result obtains.
3. If the protective deck right aft is penetrated, the ship may not steer for

three moves, *except with engines*.

EFFECTS OF GUN-FIRE ON FLOTATION

1. If bow waterline sections, enough to reduce speed 3 knots, are destroyed, all the forward part of the ship must be considered submerged one 'deck', and the after-part correspondingly raised. If the after-part is also destroyed, the whole ship is to be considered submerged one 'deck'; in other words, the lower deck will become the waterline.
2. Two *penetrations* of armoured deck, belt, etc., per thousand tons of displacement, shall be considered sufficient to sink a ship. Thus, 20 penetrations will sink a 10,000 ton ship; 12 penetrations will sink a 6,000 ton ship, etc. 3. But in case where ships have become submerged a deck, through destruction of the ends, then penetrations of the remaining sections, equal in number to half of those sections, shall be considered enough to capsize the ship; thus, if eight sections remained, four penetrations would capsize.

EFFECT OF GUN-FIRE ON MASTS, FUNNELS, GUNS, TORPEDO TUBES, ETC.

1. Only High Explosive shell can burst inside a funnel. One big High Explosive shell, one minute's Quick Firing, High Explosive fire, will bring down a funnel; otherwise, it must be hit five times by shot or shell.
2. One A, B, or C projectile hitting a mast fair and square will bring it down. Two D or E have the same effect. The blocking of guns by wreckage and consequent limitation in training, etc., must be at the umpire's discretion.

RAKING

Common and Armour Piercing shell count double. Shot damage every section all along unless stopped by a bulkhead. High Explosive shell nothing extra. At 45 degree angle, common and Armour Piercing shell half as much again as usual, shot three times the usual, High Explosive shell nothing extra.

FALSE MOVES, MISTAKES, ETC.

BREAKDOWNS

1. If the wrong shooting target is used, it is to count as a miss.
2. Any mistakes in a player's own favour are to count as engine room breakdowns. As such mistakes are unavoidable now and again, and vary in seriousness, they form an easily adjustable scale of breakdowns at option of umpire.

RAMMING

1. The umpire must supervise all attempts to ram, also take note of accidental rams when station has been lost.
2. Any rammed ship is sunk. If ships ram bow to bow both are sunk. 3. Damage to the rammer must be settled by umpire; the case of the player who omits to reverse engines being especially considered.
4. Full time must be allowed for going astern after a ram, and this evolution properly moved. The fall of damaged masts must be taken into account.

5. As a general rule, it may be laid down at least 6 knot superiority of speed is needed to ram.
6. Torpedoes fired at a ramming ship coming end-on do not stop that ship (*see* rule 7 under TORPEDO (SHIP)).

BOARDING

Is liable to be claimed. It can only be decided by the umpire after a calculation of the number of men available in both ships.

TORPEDO (SHIP)

1. If above water, tubes are loaded, the fact must be duly noted on the scoring sheet, and the chances of an explosion thrown with a dice every time the section containing the tube is hit: one in six for shot, three in six for shell, four in six for High Explosive shell. In any case the tube is destroyed if *shell* burst in that section (see also effect of Armour Piercing shot against medium armour). If the torpedo is exploded, damage as for a 16 inch High Explosive shell is to be scored, half on the deck hit, half on the deck below. A protective deck can be thus destroyed completely.
2. To load or unload any tube shall be considered to take three moves, but *a torpedo in the second move of either of these operations must be considered exploded if a shell bursts near it*.
3. The firing of torpedoes is on a scale of chances, in which everything is allowed for.

At 500 yards one in six
400 yards two in six
300 yards three in six
Under 300 yards five in six

With British submerged tubes, the chances are the same.
The tubes *must* be bearing, of course.
Foreign submerged tube one in six to 400 yards, two in six to 300 yards, even chances below that range.

New Elswick tube one in six to 400 yards, three in six 300 yards, four in six under that range.

4. Torpedoes fired from boats and destroyers same chances. The tubes must be bearing. Unless otherwise noted, the forward tube or tubes are assumed as bearing 45 degrees before the beam to port, the after, 45 degrees before the beam to starboard.

5. Any ship under 5,000 tons is sunk when torpedoed, waterlogged if over 5,000 tons, and submerged one deck. No torpedoed ship may fire big guns after being hit, but after five minutes Quick Firing guns may be fired.

6. Waterlogged ships may not discharge torpedoes

7. No torpedo can be scored against a ship, bow or stern on, in motion if doing more than six knots.

FIRING AT TORPEDO CRAFT

1. A single hit from an E or greater shell will sink a destroyer or catcher. Three 12 pounders, five 6 pounders, or eight 3 pounders same result. A torpedo boat is sunk by one 6 pounder, or over two 3 pounders. A single hit from anything in engine room or boilers will disable. The boat, however, should be allowed a certain number of squares drift for the way on her.

2. Torpedo boats and destroyers may be fired at with shooting targets - one strike for each 12 pounder, for every three 6 pounders, or five 3 pounders. 3. A very interesting game is to be made with an action between destroyers at full speed. The rules are on the targets.

4. For 1 pounders, Maxims, etc., an extra strike may be allowed, but the damage is to *personnel* only.

SIGNALLING IN ACTION

These rules can of course be omitted if desired, but it is better that they should be included in their entirety and strictly adhered to.

1. Any general orders may be issued verbally beforehand, but none are allowed after the pieces begin to move.

2. A code of signals should be prepared beforehand (either service or special code) and acted upon, thus: The admiral or senior captain calls out the signal any time *during a move* (not in the intervals). Thus he may call, '8 S.P.', which may stand for, 'Alter course in succession 8 points to port.' Each other player may reply, 'Yes', for the answering pennant, or, if necessary, 'Not understood'. The admiral may call out, 'Act on signal', any time afterwards that he sees fit *during a move*; or he may cry, 'Annul previous signal', etc.

3. If any verbal directions are given, other than by signal code, they are to

be known at once by any enemy within signalling distance.
4. The maximum signalling distance is 10,000 yards; it may be much less, according to the weather. The umpires must settle such questions.
5. Ships that have lost their masts or received enough fire to destroy all halliards, may not signal in any way (unless, of course, near enough for hand signalling), and should any do so, it is to count as an engine room breakdown (*see* MISTAKES)

COAL PROTECTION

Two bunkers are presumed to occupy one section, and damage limited accordingly. It must not be forgotten that coal does not keep out water.

STEERING WAY

Ships must be doing quarter speed or over, destroyers and torpedo boats half speed or more, to be able to steer normally.

GENERAL NOTES

1. When ships are much mixed up, the umpire should note whether any other vessel is in or near the line of fire. If the former, it must be counted as fired at, if the latter, a toss up [coin toss] with even chances is to decide.
2. Should any player fire with guns that would not bear, such fire is to count as a miss.
3. Quick fire guns are presumed to be firing the whole of a move, and no tickets need be dropped for them. Should any other ship pass between the vessel firing and the target, she must receive a proportion of the fire unless the player of the firing ship calls a 'cease fire', in which case the damage done must be proportionately less.
4. Particulars as to ammunition allowance will be found in 'Strategical Game Rules'.
5. The umpire should always note or indicate the number of each move. In cases of temporarily disabled guns, etc., players should always note upon their scoring tables the move when those guns may fire again.
6. *Sinking Ships*. - From five to fifteen minutes, according to size, should be allowed for the sinking of a ship. A sinking ship should be indicated by laying the piece on its side. 7. The 'shooting targets' are not named: recognition of a ship is left to the enemy's knowledge. Shields or signal masts may be removed by any player, and any feasible disguise adopted, provided it be marked on the shooting target. 8. For armed liners, the *Powerful*'s shooting target can be used; for colliers, any ship about 300 feet (12 sections) long. It must be borne in mind that engines occupy the lower deck amidships, so that hits there will be vital.

PART II
STRATEGICAL GAME

Note. - It is quite possible, on the system here given, to play out a war between any two countries with a considerable approximation to every possible factor. Since, however, this needs many players and a great expenditure of time, some campaigns which are simple and easily played are instead suggested on page 25 [original pagination].

The particular and characteristic feature of the game is that allowance is made for the *cost* of everything - cost being a dominant factor in all modern warfare. Thus, for instance, the very vital question of commerce attack and defence in a naval war is governed by the question of cost; or to take a simple case, the bombardment of unfortified towns always presents the problem whether the cost of ammunition plus the risk equals the damage done to the enemy. Consequently this 'strategical game' is so arranged that there are the belligerent governments who have to arrange cost, supplies, ways and means, the 'admirals' concerned with the purely military strategy, and the 'captains' whose duties are tactical only.

In a large mess, where plenty of players are available, it will be found that a campaign on the lines suggested is not only productive of interest, but likely also to produce tactical problems that might not otherwise be thought of.

GENERAL RULES

1. The players representing the belligerent governments should if possible not fight ships, but merely direct operations.
2. A player should be appointed to every warship, who should fight that ship and that ship only.
3. Command of ships is to be always by seniority

4. Each side should have one player who sees to all colliers, merchantmen, and transports.
5. To each side should be assigned a total number of points from which *all* expenses must be paid, and to be increased only by commerce.

These points provide:-

(1) Ships in commission
(2) Ships in reserve
(3) Docks, bases, coal stores, magazines, etc.
(4) Soldiers, etc. (for combined operations)

The following is a simple scale of costs that answers all practical purposes:

		Points
Every round of A ammunition		5
Every round of B ammunition		4
Every round of C ammunition		3
Every one minute's fire of:	D ammunition	2
	E or its equivalent	1
Spare guns A		50
Spare guns B		40
Spare guns C		30
Spare guns D		20
Spare guns E or its equivalent		10
Mines of any sort sufficient to cover one square		15
Every Brennan or other torpedo		5
Every day's supply of coal, irrespective of size of ship		1
Every section of a ship repaired		3
Every section of a ship repaired if with f armour		6
Every section of a ship repaired if with e armour		9
Every section of a ship repaired if with d armour		12
(No armour thicker than d may be replaced)		
Every fort		200
Pneumatic guns		50
Shell for pneumatic guns, per round		50
Submarine boats, each		50
Colliers, merchantmen etc. (able to carry 10 points freight, or 20 days coal, or 250 troops, speed 12 knots)		50
Liners (able to carry 1,000 troops, or 20 points freight, or 40 days coal, speed 18 knots)		200
Liners, if 21 knots speed		250

In addition to the total points from which the cost of things enumerated above must be deducted, each territory should possess sea coast towns, usually worth 50 points each, a few worth 100, and one worth 200, which number of points will be lost if those towns are bombarded.

Full details of each of these things will be found following under their respective heads.

Record of points, other than those expended on ships' guns, forts, etc., is best kept by counters worth 1, 3, 5, 10, 50, 200, respectively.

If there are separate envelopes for each ship engaged, in which are kept that ship's ammunition tickets and coal points, and separate envelopes for each store at the base, no difficulty will be experienced in keeping due tally of everything. Each ship needing coal or ammunition will apply to its home port for these things, and in the case of outlying stations it will be one of the problems of the 'government' to keep these supplied.

The exhaustion of reserve points on either side thus makes a defeat of that side.

MOVES

1. A sketch map is provided. Each captain (or admiral) should have one of these, on which he marks his course, general in six hour runs. Each 'government' should also have one on which are marked all moves ordered. On this chart anything known of the enemy's moves may also be marked.

2. The umpire should have access to all charts and mark all moves upon a private chart of his own. He can thus at once determine when hostile vessels meet. 3. For convenience, the sketch maps are divided into 100 mile squares, 125 miles each on the diagonal.

4. Any captain moving his ship too far must score a breakdown, the nature of which will be communicated to him by the umpire, but must not be known to any other players, except to such as he may communicate it by signal. The government is not to know of it till the news reaches them by coastguard or despatch vessel.

5. In day time, ships within ten miles or so shall be presumed to sight each other; at night it must depend upon the weather (see WEATHER), and be at the umpire's discretion.

6. When ships are within sighting distance a black buoy should be put for each upon the game squares. Each square is then to be considered 1,000 yards. Moves, made by the admirals only, will be in squares, as the ordinary moves (ie. five for 15 knots speed, six for 18 knots speed, etc.), and each will represent 10 minutes of time. Half a square should be lost

for a turn of eight points or over. It must be borne in mind always here, that three squares diagonally are equal to four straight - in other words, a diagonal = 1 1/4 squares straight.

9 knots = 3 straight = 2 1/4 diagonally

12 knots = 4 straight = 3 diagonally
15 knots = 5 straight = 3 3/4 diagonally
18 knots = 6 straight = 4 1/2 diagonally
21 knots = 7 straight = 5 1/4 diagonally
24 knots = 8 straight = 6 diagonally
27 knots = 9 straight = 6 3/4 diagonally

7. Moves must be simultaneous.
8. All ships within sighting distance must be in proper station.
9. When combatants approach near enough to make out details, they can demand to be shown the hostile piece or pieces, but the name is not to be told them. 10. So soon as the leading ships are 5,000 yards off each other, the board must be set up with the proper pieces, and the tactical game played with the squares representing 100 yards. An action should be played out, and after the battle the 1,000 yard squares used again so long as ships are in touch.
11. It is important that coal, ammunition, etc., should be carefully reckoned. When the game is played with portions of the British Isles or other small area, the coal endurance of ships should be artificially limited. Ammunition supply should also be fairly low: from ten to twenty rounds per gun, according to tonnage of ship and number of guns, will be ample.
12. Ships that have used three quarters of their coal supply will lose one grade of armour protection at waterline.

TIME FOR VARIOUS OPERATIONS

A 12 knot ship takes eight hours twenty minutes to run 100 miles, ten hours twenty five minutes to run 125 miles (a diagonal).
A 15 knot ship takes six hours forty minutes to run 100 miles, eight hours twenty minutes to run 125 miles (a diagonal).
A 18 knot ship takes five hours thirty five minutes to run 100 miles, six hours fifty seven minutes to run 125 miles (a diagonal).
A 21 knot ship takes four hours forty five minutes to run 100 miles, six hours to run 125 miles.
No destroyer may cruise at over 21 knots, and at that speed only for a very limited time.
To take or discharge ammunition, wounded, stores, fresh ratings, or

anything else not otherwise specified, six hours.
To take in one day's coal, six hours.
Each additional day's coal, one hour.
To bombard an unfortified town of 50 points, three hours.
To bombard an unfortified town of 100 points, five hours.
To bombard an unfortified town of 200 points, seven hours.
To embark or disembark landing parties or troops, per 1,000 men, ten hours. To destroy coal or other stores, six hours.

To destroy docks, etc., twelve hours.
To capture or destroy merchantmen, etc. (includes sending prize crew on board), six hours.
To take possession of warship captured in action, to take in tow, etc., at umpire's discretion.
To move troops or landing parties three miles (not more than fifteen miles per day may be covered), one hour.
To dock or undock a ship, six hours.
Going in or out of harbour - minimum, one hour.
To destroy coastguard station, six hours.
To cut cables - minimum, twelve hours.
To lay electro-contact mines, one square per ship, six hours.
To lay observation mines, one square per ship, twenty-four hours. To countermine or creep (not under gun fire), twelve hours.
To repair damages after action by ship's company, per section per 100 men available, twelve hours.
Communication by boat, to get boat out or in, one minute.
Pulling boat, per 100 yards travelled, one minute.
To repair ship in dockyard (see REPAIRS).

WEATHER

1. Weather must be included in any strategical game.
2. The umpire should prepare a list of weathers from the date of war imminent, and arrange these in periods of six hours. Before each six hour move the weather should be stated. The state of the barometer, whether rising or falling, should always be announced also.
3. Weather should be tabulated in the usual fashion from 0 to 9. An announcement, as 'wind South West, force 3; bright - glass rising', or 'wind, 0; thick fog; glass falling', is sufficient.
4. The effect of weather on speed, etc., must be allowed for, and low freeboard ships should soon lose 3 knots speed against a head sea. So too, torpedo craft must rapidly lose speed in a sea way.
5. Guns on the main deck level, or lower, must not fire against a head sea in dirty weather; if the weather grows worse, these guns should be forbidden to fire at all before the beam.

6. When the sea is enough to make ships roll, hits directly below the water level should on even chances count as penetrations below the armour belt. But also, all ships that are lively should use a target for 1,000 or 2,000 yards greater than the actual; and, if the weather is very bad the umpire may direct players to use the shooting targets with their eyes shut.
7. It is not considered advisable to tabulate rules for all the innumerable eventualities of weather, the answer to each question that may arise being better left to the umpire's decision.

8. In campaigns around a coast the umpire should note the ebb and flow of tides, and ships under way in tidal waters gain or lose an average 3 knots an hour. This rule must be included.

SIGHTING

1. In clear daylight ships may be assumed to sight at 10 miles; in squally daylight, at a lesser distance, as umpire may decide.
2. At night, with moon, about five miles may be the limit. On dark nights the sighting distance may be reduced to 1,000 yards or less.

NIGHT ACTIONS

1. The shooting targets must always be for 1,000 or 2,000 yards greater than the actual.
2. All night actions should be played with black buoys for big ships, red buoys for small cruisers, green buoys for torpedo boats and destroyers.
3. The maximum firing range should not exceed 2,000 yards.
4. Torpedo craft may be sighted at 2,500 down to 800 yards, according to the weather. It may be laid down as a general rule that:-

(1) Boats going full speed are visible at 2,500 yards on clear nights, at 1,500 yards on dark nights, or if they are coming down against the moon. (2) Boats at half speed may be visible at 2,000 yards on a clear night, down to 1,000 on a dark night. The ship is visible to the boat at the same range. (3) Both ships and boats shall always have even chances of not sighting for 500 yards nearer than the ranges mentioned.
(4) The throwing for this to be done by the umpire.
(5) The rules for firing at torpedo boats will be found on [page 14]. If a boat is under search lights, it is to be fired at with day chances.

SEARCH LIGHTS

It is only possible to make very conventional rules for search lights, since more realistic rules are too difficult and confusing to work.

1. Range of lights is 3,000 yards.
2. If the boat is sighted, the light may be considered placed on it, and hitting chances as per day actions. But any other boats approaching the ship that side will be able to approach 500 yards nearer without being sighted than they otherwise would. 3. No allowance is made for aimless searching with a light.
4. Any ship using lights must indicate the fact in some way, and is visible at any distance up to 10,000 yards. But approaching vessels can gauge its distance only on a one in six chance, and on this scale:-

A six is correctly gauged.
A five is estimated 1,000 yards farther than actual.
A four is estimated 1,000 yards nearer than actual.
A three is estimated 2,000 yards farther than actual.
A two is estimated 2,000 yards nearer than actual.
A one is estimated 3,000 yards nearer than actual.

And moves must be made on that principle.
5. Any boat passing through a fixed ray is seen, but has four in six chances of being lost afterwards.

(These rules are best avoided if possible, and torpedo attacks played without the additional complication of search lights).

REPAIRS

The length of time occupied by repairs after action is best settled by the umpire, when it is not covered by the rule under TIME FOR VARIOUS OPERATIONS.

COMMERCE ATTACK AND DEFENCE

In order to give full value to the importance of seaborne trade, an artificial value is here adopted.

1. Trade routes should be selected, which the merchantmen should more or less follow. They should be in harbour at one end or the other when war imminent is noted, so as to gain simplicity. They should be assumed to carry a certain number of points as freight (see GENERAL RULES). After reaching their foreign port, these points become doubled for every hundred miles traversed. If captured, the points thus increased go to the

enemy so soon as the prize is got into the enemy's harbour.
2. On one side, food supply should be allowed for. This is best done by making it lose a certain number of points per day; the safety of the commerce thus becomes at once a matter of the first importance, as unless the supply of points from abroad is kept up, the home supply is soon totally exhausted and the war lost.
3. For every prize crew sent out, the attacking cruiser is to be minus one gun (E or over) until she puts into a port where she could obtain fresh men. 4. If the commerce is kept to the routes, there will be no difficulty in calculating captures by an enemy on the route.
5. When one side represents England, it is essential that this commerce game shall be played; in other cases, it can of course be omitted if desired. 6. Convoy does not call for any special rules; it is easily provided for in those given.

FORTS

1. The armament of forts is at the option of players, but must not exceed 150 points worth of guns (see GENERAL RULES).
2. Every fort contains twelve sections (of 25 feet each) for every 100 yards of surface covered. It is fired at, etc., just as ships are (see SHOOTING TARGETS FOR FORTS).
3. The garrison is to be reckoned at a minimum of ten men per gun, and each gun disabled is to count as a loss of five men.
4. No fort must cover more than 100 square yards. This limitation as to power is for convenience only; any number of forts may be placed side by side, but each, of course must be paid for.
5. Unless a gun is actually hit, any silenced gun can be presumably fit for action as ever twenty-four hours after fire at it has ceased. But if the magazine is hit by a shell, then the fort is totally destroyed.
6. A fort can be captured by a landed force (see below).
7. Every fort is presumed to carry a supply of small quick-firing guns for attack on torpedo boats, and search lights as players may note (not exceeding four per fort). 8. A half fort (value 100 points, with 75 points worth of guns) can be erected if desired, or a smaller proportionate amount. A temporary half fort can be thrown up in five days if the requisite garrison is available.

COMBINED NAVAL AND MILITARY OPERATIONS

1. Each unit of 250 men shall be presumed to consist of all the necessary arms.

2. Where hostile forces meet, numbers shall always be considered to win the day. If the victors are two to one, the vanquished are to be presumed totally defeated, and to have capitulated. Losses are on the following

scale:- Troops in forts or entrenchments are to count as double numbers. Thus, 500 men, who could be forced to capitulate to 1,000 men in the open, will need 2,000 to capture them if in a fort.
3. A battle is to occupy 12 hours.
4. Troops are embarked or disembarked at the rate of 100 men per hour.
5. Troops that have experienced weather or over during transit are to have only half value for the next twenty-four hours.

BOMBARDMENTS

1. When unfortified towns are bombarded, projectiles to the value of half the town must be expended. A 50 point town is destroyed by 25 points worth of projectiles - time, three hours; a 100 point town by 50 points of projectiles - time, five hours; a 200 point town by 100 points of projectiles - time, seven hours. If less are fired, damage to be proportionately less.
2. Ransoms. - If a ransom is demanded, twelve hours must elapse. The ransom becomes the property of the enemy when it has been sent back to an enemy's port, not before. Neither belligerent is bound to adhere to the terms of the agreement. 3. Long range bombardments. - As these are likely to be attempted in war, the following rule is drafted to meet the case:-

A rough plan of the place to be bombarded should be drawn on scale upon one of the blank scale sets of squares. All docks, stores, magazines, etc., must be indicated, also hills (if any) that would give cover. Scale of map 1 inch = same distance as range, ie., at 10,000 yards 1 inch = 10,000 yards.

The side that fires is provided with another set of squares, upon which only hills and very prominent buildings visible from that position are marked. He strikes at this with the striker as at the shooting targets. The guns do damage on the ordinary scale, each section being reckoned at twenty-five feet square. If the range is over 10,000 yards, the firer must strike with closed eyes.

If forts reply, they will strike in similar fashion at sets of squares on which the positions of ships are indicated. If the ships are below the horizon, the reply must be on a blank set of squares. If ships are hit, the damage can then be located either by dice to the number of the ships' sections, or by an ordinary shooting target. Shell will damage to the full on the two upper decks. Shot will go through to the protective deck, and will penetrate.

If there is no question of getting through with the bombardment before the enemy's ships come up, and if there is also no return fire, this system is unnecessary, the length of time necessary and ammunition expended can be calculated sufficiently nearly.

MINES AND COUNTERMINES

1. A minefield must be charted out on a set of blank squares - scale, one square = 100 yards. Admiralty charts must be used for soundings, width of fairway, etc. Firing stations and cables must be indicated.
2. Ships rushing a minefield will play on the ordinary squares. Coasts, etc., must be indicated upon them, however.
3. All squares with mines under them must be buoyed, but of course, additional and bogie buoys can be placed.
4. If the mines are observation mines, they may be exploded at will. The ship is sunk and blocks that square. If the mines are not observation mines, a ship has even chances of escape.
5. Countermining. - Allow twelve hours per square per ship. Countermining under fire can be played out if necessary, but the twelve hours may be assumed to cover silencing small batteries. Where grapnels are used, the umpire can immediately tell whether the wires have been encountered if the course of grapnel in indicated on a corresponding blank square map. Chances according to the bottom should be given. The explosion of countermines does not call for any special rules.

BRENNAN TORPEDO

1. The course must be indicated by a moving buoy. The station must be noted on a chart.
2. Speed (maximum), nine squares per move. Turn, every square, four points. But turns may only be in an onward direction.
3. If any vessel passes between the torpedo and its station, the torpedo must go onward at full speed. Even chances whether wires are cut, but if an explosive grapnel is towed astern it should be assumed a certainty.
4. The Brennan may not act in weather 4 or more.
5. Any ship hit is sunk.
6. It may not be fetched back under fire. To start a fresh one shall take three moves.
7. If the station is not in a fort, it is liable to be fired at in same chances as a destroyer or torpedo boat. If under cover of a fort, its existence depends on whether that part of the fort is hit. If hit by shell while torpedo is getting ready, the fort is destroyed.

PNEUMATIC GUNS

1. Rate of fire every four moves. Damage, as 16 inch High Explosive shell. Range, 2,000 yards.
2. For firing, the 4,000 yard shooting target must always be used. 3. The position of the gun (on shore) is not indicated in any way, but if a ship's

Hotchkiss are directed on the particular square where the gun is, it is destroyed. The attack are cognisant only of it by information from the umpire (in case of a miss) that a heavy explosion has taken place near them. An indication should be put down for this and for all subsequent shots.

SUBMARINE BOATS[5]

1. Speed, 9 knots. Turn eight points every second square. Underwater endurance, twelve hours. From harbour, twenty-four hours.
2. The player of a submarine boat marks his course on a set of blank squares; he may not see the board squares.

[5] *Hints on Playing the Jane Naval War Game (1901) - Submarines (new rules)*. All the old rules are cancelled. For purposes of the game submarines are assumed able to do all that is claimed for them. These new rules are designed to give the maximum of simplicity, while keeping the problem purely tactical, without any chance element other than miscalculation:-
1. Speed of boats 12 knots; turn every square up to ninety degrees without loss of speed. 2. Submarines are indicated by a very small pin or other minute object placed on the board. While above the surface or using the periscope (optic tube) they are moved by their player just as ships are. 3. Big ships cannot (at present) claim any fire against submarines. 4. The operation of rising, looking round, and sinking again, may be allowed to occupy one move only. It will all take place on one square.
5. A boat submerged is worked by the umpire as follows: - The player notes on a piece of paper (1) speed (2) depth proposed moving at (3) distance proposed to be travelled (4) direction. A submerged submarine is not conscious of the presence of a ship, *unless* that ship passes over the same square. In such cases the player is told; he may then fire a torpedo, or elect to rise and observe.
6. If a submarine gets within 300 yards of a ship, and is ahead of it, it may be assumed to torpedo. If off the bow, the torpedo has four chances in six of success. If off the broadside two in six. If astern no chances unless the ship is doing more than 9 knots.
Orders by wireless telegraphy may be sent to submarines on the surface.
Attack on Submarines. -
1. *By destroyers, etc., armed with spar torpedoes*. If these reach the square a boat rises on during the same move they destroy the boat. If they reach it *just* afterwards, *ie*., during the first half of the next move, they throw a dice, even chances to destroy.
2. *By time fuse torpedoes*. The firer has four chances in six of destroying the boat up to 500 yards. 3. *By time fuse High Explosive shell to burst on graze*. Only one chance in twenty-one (double ones) with two dice per ship per move is at present allowed for this.
4. *By capture*. Destroyers, picket boats, etc., coming up with a boat on the surface, or using a periscope, may capture that boat.
5. It must be borne in mind that if a boat *is* destroyed neither the attack nor defence are to know it. 6. It is unlikely that a boat could avoid being sighted by day. The use of small indicators will give a sufficient chance of the boat being overlooked by the other side. At night a boat cannot be sighted. 7. In harbours, etc., the umpire must be on the look out for boats running into mud banks, mines, and obstructions generally.

3. The players of ships are to be ignorant of his existence; the umpire must note whether he approaches squares that ships are on.
4. To come to surface, or sink, counts as a move. If the boat comes to the surface it must be there one move. If up for air, four moves for each hour of air wanted.
5. The umpire throws chances of boats on surface being detected: daytime, to detect, double sixes; night, four sixes are necessary. This for each ship within 1,000 yards.
6. When on the surface, the submarine player is told the ships and their courses within 1,000 yards, but not their distance.
7. If sighted, the boat may be fired at; one chance in six to sink it, or strikers may be used against a mark the size of a pin's head.
8. Underwater, the submarine is cognisant of a ship's whereabouts, only if directly under it or two squares directly astern of it.
9. It cannot see anything on the surface in weather above 3. If it attempts to take air in weather above 3, it is swamped. When taking air, it cannot sink in under two moves. If without air for more than twelve hours, its crew are considered dead. 10. It fires two torpedoes; same chances as British submerged tubes. But if within 100 yards of the explosion it is destroyed.
11. The depth at which a boat is must always be noted and compared with the soundings. If it grounds, it is destroyed.
12. If a mine is exploded on the square under which the submarine is located, it is destroyed.

SCOUTING

The marking of the sketch map into 100 mile areas makes every method of scouting easily played, so long as courses are clearly marked and each hour's run ticked off. Where a still greater accuracy is required, the blank squares can be utilised, each set of squares representing one square on the strategical map. In conjunction with the sighting and weather rules (see earlier), an innumerable number of problems may be tested with some considerable approximation to actuality.

INFORMATION AS TO HOSTILE MOVES

Movements of enemy are known to the higher naval headquarters:

1. When sighted from any home coast, or outlying station that has telegraphic communication unimpaired, at once.
2. When sighted from neutral coast, twelve hours later.
3. When passing neutral coast, out of sight, but in track of fishing boats, shipping, etc., twenty four hours, or more at umpire's discretion.

Rules as to information and the sending of information must be strictly adhered to; and all information conveyed form higher naval headquarters to their admirals and captains, or between ships, must be through the umpire and at his discretion.

Fleets must cruise at, at least 1 1/2 knots less than the maximum assigned speed.

For strategical game play, speed units of 1 1/2 knots should be employed, or even smaller units.

Ships running at full speed should throw chances of breakdown for each six hours accomplished.

COAST WARFARE GAME

A game is now issued for the special study of coast warfare problems. The usual rules are to obtain throughout; most additional special ones are printed on the special diagrams with which they are concerned.

The game does not contemplate operations against first class naval ports, though of course, by putting up enough forts such can be simulated. It is intended rather to cover with as much detail as possible all those minor operations so frequent in real war. Chief amongst these may be noted:-

Attack and defence of coaling stations defended by only a few guns. Long range bombardments.
Covering landing parties, etc.
Attacks on estuaries.
Running past forts.
Operations in creeks against monitors or gunboats, etc.
(For all special targets and models are issued).

The principle general rules to obtain are as follows:-

The coastline should be carefully marked, either by chalk upon the blue squares, or (which is better) by the special coastline models which can now be procured from the publishers (Messrs. Sampson Low, Marston & Co., Limited, Fetter Lane, London). Soundings should be generally indicated by chalk lines on the blue, so far as they concern the vessels engaged.

It is desirable for various reasons to import as much realism as possible. In the first place, in the naval game it has been found considerably more satisfactory to play with the proper scale models showing guns, etc., than with something else 'representing' the ships. In the second place, for coast operations it is very desirable that the nature of the coast should be shown at a glance and obvious during all the operations. Further, the special coast and land provided is marked into

squares upon a special system that takes into account the nature of the ground, and provides automatically for difficulties of this nature. Thus, the inherent effect of the ordinary land war game is totally overcome, and the time required to reach a certain spot as difficult to calculate as in the real thing. And here it may incidentally be remarked that this coast operations game may be indefinitely extended to cover all land army operations.

The land is made in small sections that can be pieced together to copy almost any country or coast with all the exactitude really necessary. It is made in four varieties, good - moderate - poor - and bad marching country, and can always be formed into hills, valleys, etc, as desired. In addition, railroads, roads, woods, rivers, bridges, stations, houses, towns, etc., etc., are provided either for make-up as desired, or (to order) in exact scale imitation of any particular place.

The marching distance is always the same - one square - the square varying in size with the ground - the nature of which is roughly indicated by its colour (cavalry gallop, three; or trot, two squares per move). All elevations are on an exaggerated scale, but the principal of moves by squares is the same.

Ranges are found by measure, 1 1/4 inch = 100 yards (one square in the sea boards).

On the water, speeds must be assigned by the umpire to all small craft engaged, speeds being on the same scale as ships usually move at, ie. 1 1/4 inches (one square) per move (minute), being equal to 3 knots per hour.

20 (water) squares = 1 sea mile.
18 (water) squares = 1 land mile (British).
80 (water) squares = 1 geographical league
11 (water) squares = 1 verst.
11 (water) squares = 1 Swedish mile.
1 (water) square = 100 yards (British)

The British land mile is not quite exact, but the difference is negligible over the limited amount of country that would be employed. The error is only 1 water square (= 1 1/4 inches) in 2 1/2 miles.

LOCATION OF GUNS

The most important point in this coast operations game concerns the location of guns. In the ordinary way guns should not be allowed to be located till they fire, but as this must often be governed by special circumstances, the umpire's decision is the best rule. Balloons, previous reconnaissance, and so forth will always affect the question, while there is always the chance of guns not being located even after they have opened fire.

BALLOONS, AIR SHIPS, ETC.[7]

The special appliance supplied for these admits of almost every conceivable advance in this direction. The apparatus is moved on the usual scale at whatever speed may be allowed: the speed, turning qualities, and rate of rising and falling must be governed (as with ships and submarines) by the actual abilities of the craft simulated.

It must be borne in mind that the accurate dropping of explosives on a given spot is very difficult if the height is at all great or any speed is on the dropper. In the absence of satisfactory data as to the chances of success at varying altitudes and speeds the umpire must decide these matters on a scale mutually agreed to beforehand.

The same applies to aerial craft operating against each other, but in a general way results should approximate (so far as getting hits is obtained) to those that obtain with ships of the same dimensions.

FIRING IN COAST OPERATIONS

Special targets allow for practically everything likely to be wanted. The only question is the fire unit to be employed when perhaps battleships, monitors, picket boats, field pieces, and infantry are all engaged against each other.

It is best, so far as possible, to take the 12 pounder (one 6 inch = four 12 pounders) as the unit and commute all fire to this. Sometimes a smaller unit may be necessary, as for instance, when military units (companies of 100 men) are firing on picket boats, etc. For each military unit one strike per move is allowed. It damages personnel only, but may be considered to put out of action all personnel in the space equivalent to one section, such as all warship targets and scorers are divided into, the result being halved or quartered by bulletproof protection (or more according to circumstances). Against military units ships' guns may be given the power to do damage by sections just as they do against ships. For ordinary purposes, a military unit (infantry) may be assumed to occupy a front of 1 1/4 inches (one water square). If they are firing from under cover, the result of armour is obtained, ie., half damage only is done (or umpire may allow a quarter only).

If, of course, troops are caught in column or flanked, gunfire will do four times the damage, or thereabouts, according to the special circumstances.

[7] *Hints on Playing the Jane Naval War Game (1901) - Balloons.* - These, if low down (not over 400 feet up), can see submarines by day. They can claim to drop explosives on them if directly overhead. The Zeppelin airship can be used with the special apparatus; but no special rules are considered necessary as yet. Balloon claims are best decided by the umpire on their merits.

FIRE FROM FORTS

Accurately to assess the relative superior accuracy claimed for practice from forts over practice from ships is very difficult. It is best arranged by mutual decision beforehand whether it shall be done by an artificial reduction of range or by allowing each fort gun a double fire.

Disappearing Guns. - After long experience, the following has been found the best convention for these guns. In the ordinary way, fort guns are marked on the target, and a certain number selected as the real guns, the others being nothing. This is for the old targets with forts divided into twelve sections. Disappearing guns can be allowed for, either by having only two guns to the twelve sections, or else by using the special targets for such pieces. In these, no guns are shown. The player of the fort marks his guns somewhere on the lien of the fort on his scorer, the guns are not considered out of action unless this unknown spot is hit. In order to allow for the realities, the fort player may only put these guns in two places - either on the lines or in the centres between them. This gives the enemy about his real relative chances as compared to fire against other fort guns. Special targets are now issued for most kinds of forts, as well as for anything else that guns may be used on.

TORPEDO ATTACKS ON SHIPS UNDER COVER OF FORTS, ETC.

The usual rules for searchlights, etc., fully cover this. It may be noted, however, that the umpire should be shown all firing orders. The principles of such can be fairly well tested by careful games upon this system.

CONCLUSION

Finally, there may be added here the governing rule of the Naval War Game and that which opens the first Book of Rules:

Nothing may be done contrary to what could or

would be done in real war.