

SMALL WARS MANUAL
UNITED STATES MARINE CORPS
1940

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CHAPTER X
RIVER OPERATIONS



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CHAPTER X

RIVER OPERATIONS

	Par.	Page
SECTION I. RIVER OPERATIONS IN GENERAL..	10-1 to 10-2	1-3
II. TYPES AND CHARACTERISTICS OF BOATS.....	10-3 to 10-11	5-10
III. PREPARATIONS FOR RIVER OPER- ATIONS.....	10-12 to 10-17	11-15
IV. OCCUPATION OF A RIVER.....	10-18 to 10-31	17-24

SECTION I

RIVER OPERATIONS IN GENERAL

	Par.	Page
Necessity for river operations.....	10-1	1
General characteristics of rivers.....	10-2	2

10-1. **Necessity for river operations.**—*a.* During the estimate of the situation, or after the initiation of the intervention, it may become apparent that navigable inland waterways exist within the theater of operations to such an extent that their use by the intervening force is necessary or advisable.

b. In many countries, water routes are a primary means of transportation and communication, especially if there are few and inadequate railroads, roads, or trails. In some sections of the country, they may be the only avenues of approach to areas occupied by hostile forces. So long as water routes are more economical in time and money than other available means, they will be employed by the local inhabitants and their use must be seriously considered in the plan of campaign of any force entering the country for small war operations. Such river operations as appear practicable should be coordinated with the land operations which are to be conducted simultaneously.

c. In some cases, it may be necessary or advisable to occupy a river valley in order to protect the foreign civilians, of other than United States citizenship, and property located therein against hostile depredations.

d. When offensive operations against the hostile forces interrupt the normal land routes, such forces will turn to navigable rivers as a means of supply and communication, or as an avenue of escape. Adequate and timely preparations should be undertaken by the intervening force to deny these water routes to the enemy.

e. Navigable rivers often form part or all of the boundary between the affected country and an adjacent State. If the hostile forces are receiving assistance and supplies from the neighboring country, river patrols may seriously interfere with, but never entirely suppress, such activities. Amicable agreements should be completed as soon as possible, through the Department of State, for the use of territorial waters by such patrols, and for the pursuit of hostile groups who

may use the remote districts of the friendly country as a base of operations or place of refuge.

10-2. **General characteristics of rivers.**—*a.* All navigable rivers have certain similar characteristics. Their general profile is best represented as a series of terraces, the levels of which are relatively placid stretches of water of more or less uniform depth and current, and the walls of which are impassible falls or rapids. As one proceeds upstream from the mouth of the river, the depth of water in each successive level is usually less than in the one preceding. This characteristic feature determines the distance that a boat of any given draft can travel and eventually makes the use of any type of boat impossible. The extent of each group of falls and rapids, their relative distance from the mouth of the river, and the length of the intervening stretches of smooth water will vary with every river. For example, the first obstacle in the Congo River in Africa is only a hundred miles from its mouth, although the second level of the river presents no impassable falls for over a thousand miles. The Yangtze River in China is navigable by ocean-going vessels for nearly a thousand miles from its mouth before the Yangtze Gorge is reached. The Coco River in Nicaragua can be traveled for over 200 miles before the first real falls and rapids, extending over 30 miles, are found; the second level is navigable for some 60 miles; and the third level for another 70 miles to the head of navigation.

b. These various levels are customarily the "lower," "middle," and "upper" rivers as one proceeds upstream from the mouth to the head of navigation, and as the depth of water in the succeeding levels necessitates a change in the type and draft of boat which can be used.

c. The condition of the river, the depth and length of the navigable stretches, and the obstacles presented to navigation vary with the seasons of the year. At certain times, the water in the middle and upper rivers may be so low that numerous portages are necessary. When the river is in flood, such obstacles may disappear entirely and the boats normally restricted to the middle river may proceed all the way to the head of navigation, or the lower and middle rivers merge into one. This characteristic will influence the time of year and the ease and practicability of conducting river operations. The probability that supply boats could not reach Poteca, on the Coco River, during the months of April and May, influenced the decision to abandon that outpost in April 1929. In commenting on the Nile Expedition of 1884-85, Callwell says, "And it must be added that the supply difficulties were enormously increased by the lateness of the

RIVER OPERATIONS IN GENERAL

start, by the unfortunate postponement in deciding on the dispatch of the expedition. A few weeks sufficed to convert the Nile between the second and third cataracts from a great waterway up which the steamers from below Wadi Halfa could have steamed with ease, into a succession of tortuous rapids passable only with difficulty by small boats." ("Small Wars, Their Principles and Practice," by Col. C. E. Callwell, 3d ed., p. 70.)

d. As the river empties into the ocean, the sediment which it carries is deposited to form a bar or shoal. In the case of large rivers, the shoal is usually so deeply submerged that it does not prevent the entrance of ocean going vessels. In those rivers usually found in the theater of small war operations, the bar may be so near the surface of the water that it is a real obstacle and may make the passage of even the ordinary ship's boat a dangerous undertaking, especially if the services of a local pilot are not available.

SECTION II
TYPES AND CHARACTERISTICS OF BOATS

	Par.	Page
General.....	10-3	5
Coastwise communications.....	10-4	5
Nature of the river.....	10-5	5
Lower river boats.....	10-6	6
Middle river boats.....	10-7	6
Upper river boats.....	10-8	6
Types of boats available.....	10-9	6
Method of propulsion.....	10-10	8
Influence of tactical principles.....	10-11	9

10-3. **General.**—The types and characteristics of boats which are to be used in a particular river operation depend upon several factors, of which the more important are:

- (1) Coastwise communications required.
- (2) Nature of the river.
- (3) Desirable boat characteristics for lower, middle, and upper river use.
- (4) Types of boats available.
- (5) Method of propulsion.
- (6) Influence of tactical principles.

10-4. **Coastwise communications.**—Navy vessels, motor launches, and local coastal schooners, normally will be used for maintaining coastwise communications. Unless a main supply base is located at the mouth of the river on which the operations are being conducted, coastal shipping will be used for the transportation of personnel and replacements, and primarily for the shipment of supplies.

10-5. **Nature of the river.**—The nature of the river, more than any other factor, determines the types of boats which will be used in river operation. The depth of the lower, middle, and upper rivers; the swiftness of the current; the distances between obstacles in the river; the number and length of the portages required; the season of the year; and the probability of securing native boatmen; each of these will have some effect on the decision. Ordinarily, at least three types of boats will be required because of the limitations as to draft in the various river levels. If the lower river is more

TYPES AND CHARACTERISTICS OF BOATS

than 300 miles long, or has a limiting depth of over 8 feet, boats of the coastwise type will be used in addition to the usual river types. On the other hand, if the length of the middle river is quite short, it may be more economical to use only two types of boats, those for the lower and upper rivers only.

10-6. **Lower river boats.**—Boats to be used on the lower river normally should be motor propelled, of 4 feet draft or less, and with a maximum speed of 15 miles or more per hour. Their propellers should be protected to prevent damage from submerged rocks or logs. If they are procured outside of the theater of operations, they should be of such size and weight as to permit them to be transported by Navy transports. They should be provided with .30 or .50 caliber machine guns mounted on swivel mounts at the bow, and light armor provided to protect the gunner, helmsman, and fuel tank.

10-7. **Middle river boats.**—Boats for use on the middle river should be of sufficient size to carry at least one squad and its equipment in addition to the boat crew. Normally these boats should have a draft of 2½ feet or less. The power plant may be an outboard motor or an inboard motor with the propeller protected against damage from rocks and other obstacles. A maximum speed of 20 miles per hour is desirable. These boats should be strongly but lightly built, to facilitate their passage through rapids and rough stretches of water, or their portage around such areas. The .30 caliber machine gun may be mounted forward, either on its regular tripod mount, or on a swivel mount if one has been provided.

10-8. **Upper river boats.**—For the upper rivers, the most suitable boats are those obtained locally from the natives. If these cannot be procured in sufficient quantity, substitutes should be of the light, shallow-draft, canoe-type boat, with fairly wide, flat bottoms and built as strongly as possible commensurate with their light weight. Provision should be made for the attachment of outboard motors, although the normal method of propulsion will be by hand in most situations. They will vary in size from small canoes capable of carrying one half of a squad plus the crew, to cargo canoes capable of carrying 8 to 10 thousand pounds of supplies in addition to the necessary crew. The average upper river boat should be of sufficient size to carry a complete squad with its equipment, in addition to the crew.

10-9. **Types of boats available.**—*a. Local boats.*—Local boats obtained in the theater of operations have been used in the past with a fair degree of success. Unless the operation is planned a considerable length of time before its initiation, local boats will probably be

TYPES AND CHARACTERISTICS OF BOATS

the only ones available. These boats should be purchased outright if they are to be used for combat purposes. If the owners will not agree to sell them, as is sometimes the case, it may be necessary to requisition them. Receipts must be given for such boats. A record should be made of the owner's name, if it can be ascertained, the date and place at which the boat was acquired, its condition, and the estimated value. This information should be forwarded to the area commander or other appropriate commander so that proper adjustment can be made of the owner's claim when it is submitted. If combat boats are rented on a *per diem* basis, the eventual cost for rent, plus the expense of repairs or replacements if the boats are damaged or lost, will be exorbitant. On the other hand, it is usually more economical to rent local boats which are to be used solely for the transportation of supplies after the river has been pacified. Local boats will be nondescript in character. This complicates the repair and upkeep of motor-propelled craft. They have one decided advantage, however, all of them will have been built for use on the river on which the operations are to take place and, in that respect, they probably will be superior to boats imported for the operation.

b. Regular Navy boats will seldom be available in sufficient numbers to meet the needs of the expedition. They may be used for coastwise communications and on the lower river, depending on the depth of the water and the presence of rapids or falls in that section of the river. They are too heavy, draw too much water, and are too slow to answer the helm for use in the middle river.

c. Marine Corps landing boats, especially the smaller types, probably can be used effectively in the lower and middle rivers. Their armament, uniformity of power plant and equipment, protected bottom and propeller, and the fact that trained crews may be available to handle them, are important advantages. Their weight may be a disadvantage for middle river operation if many portages are required.

d. There are numerous boats available in the United States which are suitable for small wars river operations and which can be purchased if the situation makes it necessary. They range in type from the larger shallow draft boats which can be used on the lower rivers, to canoes suitable for employment in the upper river. So far as possible they should have approximately the same characteristics as those found in the local theater of operations. Radical changes in type should be introduced with caution.

e. Rubber boats probably will be used extensively in future small wars river operations.

TYPES AND CHARACTERISTICS OF BOATS

f. Improvements and new developments are constantly taking place in boat design and boat materials. One can never expect to obtain a uniform flotilla of boats for river operations. The difficulty will always be to get enough boats of any description to meet the demands of the situation which are suitable for use in the particular river involved. It is probable that much better boats will be available in the future than have been utilized for such operations in the past.

10-10. **Method of propulsion.**—*a. General.*—Boats used in river operations will be motor propelled, rowed, paddled, poled, or towed, depending upon the type of boat being used, the nature of the river, and the tactical situation.

b. Inboard motor boats.—Inboard motor boats have the following advantages:

- (1) Speed.
- (2) Usually greater carrying capacity than other types of boats.
- (3) Requires small crew.

They have the following disadvantages:

(1) Noise of exhaust, even though muffled, discloses the location of the patrol and gives warning of its approach.

(2) Gasoline and oil must be carried for the period between the initiation of the patrol until the arrival of the first supply boats. This decreases the carrying capacity for troops and rations, which may be offset by the increased speed of the movement.

(3) They draw too much water for use in the upper river, or in some stretches of certain middle rivers.

(4) Their power plant often fails, or propellers are fouled or broken in rapids where power is most essential.

(5) Weight of the boat increases the difficulties of portaging around obstacles in the river.

Inboard motors are especially useful for transporting the main body and supplies of a large patrol, and in the system of supply in the lower and middle rivers.

c. Outboard motors.—(1) Outboard motorboats have the same advantages and disadvantages as inboard motorboats. They are more subject to failure during heavy rains than the inboard type.

(2) Outboard motors can be used with a fair degree of success in the upper river, although the presence of sandbars, rocks, sunken trees, and other debris, and the innumerable rapids normally encountered in this section of the river increase the difficulties of operation.

TYPES AND CHARACTERISTICS OF BOATS

(3) Outboard motorboats are especially useful for security units with a patrol operating entirely with motorboats; and for liaison and command missions.

(4) Outboard motors purchased for river operations should be of the multiple cylinder type and capable of developing at least 25 horsepower. Motors whose water intake is through the forward end of the propeller housing should not be purchased. They are prone to pick up too much sand, dirt, and other debris in the shallow waters in which they often have to operate.

d. Rowboats.—Rowboats will seldom be used in small war river operations. Disabled navy or large sized motorboats may have to be rowed for comparatively short distances.

e. Paddles.—Paddles are normally used as the means of propulsion with upper river boats which are not equipped with outboard motors. They may be used when moving against the current in quiet stretches of the river, depending upon the strength of the current, and will always be used when going downstream or from one side of the river to the other. They are used as rudders in boats of the canoe type. Because of their reliability under all conditions, they are part of the normal equipment of every middle and upper river boat, whether they are equipped with motors or not.

f. Poles.—In swift water, poles must be used to make headway against the current if the water is too shallow for the operation of motors or if the boat is not equipped with a motor. In many cases, poles can be used to assist a motorboat when passing through rapids and bucking an unusually strong current. They are part of the normal equipment of every middle and upper river boat.

g. Towing.—Towing will have to be resorted to when passing upstream through very bad rapids. Occasionally the overhanging branches close to shore may be grasped to haul the boat along. Before towing a boat through bad stretches of water, it should be unloaded at the foot of the rapid, and the load portaged around it. In some cases, such as falls or extremely bad rapids, the boat will have to be portaged also. In going downstream through dangerous rapids, towlines must be used to ease the boat and keep it under control.

10-11. Influence of tactical principles.—Tactical principles will have considerable influence on the type of boats selected for any particular river patrol. Security units should be transported in small, light, easily maneuverable boats, carrying one-half to a complete squad of men in addition to the crews. The command group requires

TYPES AND CHARACTERISTICS OF BOATS

a small, fast boat. Elements of the main body must be transported as units in order to facilitate their entry into action. Supply boats may be of an entirely different type than the combat boats. The necessity for speed will influence the composition of the flotilla. Even in the lower river, these tactical requirements may necessitate the employment of some middle and upper river craft; in the upper river sections, they will influence the size of the boats employed.

SECTION III

PREPARATIONS FOR RIVER OPERATIONS

	Par.	Page
Introduction.....	10-12	11
Organizing the river patrol.....	10-13	12
Crews.....	10-14	12
Boat procurement.....	10-15	13
Armament and equipment.....	10-16	13
Loading boats.....	10-17	14

10-12. **Introduction.**—*a.* When the decision to seize and occupy a river route has been reached, certain preparatory measures, such as the organization of the force to be employed and the assembling of boats and their crews, must be taken. In many respects these preliminary steps closely resemble the organization of infantry patrols discussed in Chapter VI, “The Infantry Patrol.”

b. In the majority of cases, the occupation of a river will proceed from the coastline inland. If the situation requires that the occupation begin near the head of navigation and work downstream, the difficulties of preparation are magnified, especially in the collection of the necessary boats, boat equipment, and native crews. The measures to be taken, however, are similar in either event.

c. If the river to be occupied is not already held by hostile forces, or no opposition is offered, the problem will be relatively simple, provided suitable and sufficient boats to handle the personnel and initial supplies are available. If the mouth of the river is held by the enemy, it must be seized as the first step. This operation does not differ from any landing against opposition, which is completely covered in the “Manual for Landing Operations.”

d. River operations are relatively unfamiliar to our forces. They utilize types of transportation whose capabilities and care are comparatively unknown to our personnel. The operations are conducted on routes of travel which are seldom accurately indicated on the available map, and they are executed over waterways of constantly changing characteristics. The condition of the water highways varies with the low or flood stage in the river and with the part of the river in which the boat is operating, whether lower, middle, or upper river. Every opportunity should be given the men

PREPARATIONS FOR RIVER OPERATIONS

to become water-wise and boat-wise, in order to build up their boat-handling ability and their self-confidence. Preparations for river operations should commence, therefore, as far as possible in advance of the date when such operations are expected to begin.

10-13. Organizing the river patrol.—Many of the same principles apply to organization of a river patrol as apply to that of an infantry patrol. The size of the patrol is determined by the same factors, except that the number and type of boats available must be taken into consideration. Individual armament, the proportion of supporting weapons to be attached, the necessity for additional officers, cooks, medical personnel and signal personnel, native guides, and interpreters are all considered in the estimate of the situation on the same basis as for a land patrol. The principles to be borne in mind are the same; the difference is that a river is used as the avenue of approach to the hostile area instead of a road or trail, and instead of riding animals or marching, boats are used.

10-14. Crews.—*a.* Whether enlisted or native boat crews, or a proportion of each, are included in the organization of the patrol depends upon the types of boats to be used, the nature of the river, the availability of reliable natives, and the general situation in the theater of operations. Very few natives who are good engineers and mechanics will be found in the usual small wars theater. If the nature of the river is such that only motorboats will be used in the patrol, the crews should consist of enlisted men, with a sufficient number of natives to act as guides in the bow of each boat. Even these can be dispensed with if the patrol is well trained in river work. On the other hand, if the operations are to take place in the middle and upper rivers, where innumerable rapids will be encountered, and boats have to be propelled by hand, natives should comprise the boat crews if they can possibly be obtained. The handling of shallow-draft boats, such as the canoe and sampan, in the upper river is an art not easily or quickly acquired. This is second nature to the native who has been brought up in the upper river country; whereas, only a very few enlisted men will be found who can learn to handle all types of river craft in all kinds of water. Every enlisted man who is detailed as a member of a boat crew depletes the number of effectives in the combat personnel. The procedure relative to hiring native boat crews does not differ from the hiring of native muleteers, and the same principles apply as with land patrols. Every situation must be estimated and decided upon its merits.

PREPARATIONS FOR RIVER OPERATIONS

b. The crew of a boat powered with an inboard motor should consist of a coxswain, an engineer, and a pilot. An outboard motorboat requires an engineer and a pilot only. Boats which are propelled by hand; that is, by poling when going upstream and paddling when going downstream, require a much larger crew in relation to the size of the boat. The smaller, upper river boats, capable of carrying from a half squad to a squad, should have a poling crew of three or four men at the bow, and a boat captain who handles the steering paddle or rudder at the stern. The larger supply and combat boats may require as many as twelve bowmen and two men at the stern. Smaller crews than these can operate, but the speed of the patrol will be adversely affected, and the dangers of capsizing or losing control of the boat in rough water will be increased.

10-15. **Boat procurement.**—*a.* After a decision has been made to engage in a river operation, the earlier the necessary boats are procured, the better are the chances for success. If such operations can be foreseen when the expedition is organizing in the United States, lower- and middle-river boats, and a few light-draft boats which may be suitable for use in the upper river, should be carried with the initial equipment, as well as a supply of outboard motors.

b. If suitable boats have not been provided, it will be necessary to purchase or charter local boats. If the supply of available craft exceeds the needs of the patrol, only the best of the various types required as determined by the composition of the patrol should be selected for the initial movement. It is advisable, however, to take possession of at least double that number so that they will be immediately available for supply and replacement purposes in the future. Boats should be inspected and inquiries made as to their river-worthiness before they are purchased. In many cases the supply of boats will be less than the required number or type, and the size of the patrol may have to be curtailed, or some compromise effected in the distribution of personnel, equipment, and supplies among the boats.

10-16. **Armament and equipment.**—*a. Organic.*—The organic armament and equipment, and the proportion of attached units, will not differ from that of an infantry patrol of comparable strength. For details, see Chapter II, "Composition of Forces," and Chapter VI, "The Infantry Patrol."

b. Individual.—The same principles apply to the amount of individual equipment carried in a river patrol as on an infantry land patrol. (See ch. VI, "The Infantry Patrol.") Each man, however,

PREPARATIONS FOR RIVER OPERATIONS

should be provided with a rubber, waterproof bag for carrying his personal equipment. The bag should be securely tied at the throat and distended to create the maximum airspace. If the boat capsizes, as is often the case, the bag will float and support the man in his efforts to reach the shore. Mosquito nets must always be included, especially in operations along the lower and middle rivers.

c. Boat.—For the armament of lower- and middle-river boats, see paragraphs 10-6 and 10-7. Each boat should be equipped with the following:

100-foot, stern and bow lines of 1 inch manila rope, in place ready for instant use at all times.

1 paddle for each man required to use it.

1 pole, metal shod, for each man required to use it.

2 long range focusing flashlights.

1 gasoline or makeshift stove for preparing food.

d. Signal.—Patrols operating in the lower river should be equipped with a reliable two-way radio set. Patrols in the middle and upper rivers should carry the light, portable set and establish communication with the base each day. (See ch. II, "Organization.") Panels, message pick-up set, and pyrotechnics should be carried as with infantry patrols. (See ch. VI, "The Infantry Patrol.")

e. Medical.—Medical supplies should be packed and distributed among several boats in the patrol to reduce the possibilities of loss if one or more of the boats should capsize.

f. Ammunition.—The same principles apply as with an infantry patrol, especially as to the amount of ammunition which should be carried on the person. Because of the comparative ease with which it can be transported with a river patrol, it might be advisable to carry at least one complete unit of fire in the train. Like the medical supplies, the ammunition in reserve should be distributed throughout the entire boat flotilla, except the security units.

g. Rations and galley equipment.—See Chapter VI, "The Infantry Patrol."

10-17. Loading boats.—After all other preparations have been made, the boats, in order to facilitate an early start, should be loaded with as much of the patrol equipment and supplies as possible the day before the patrol is to clear its base. Each man should be required to carry his ammunition belt and similar equipment on his person, properly fastened at all times to avoid its loss if the boat is capsized. Arms should be carried within reach at all times. Individual packs are loaded in the boat the man will occupy;

PREPARATIONS FOR RIVER OPERATIONS

they can be used as seats in boats of the upper-river type. Boats assigned to the service of security should be lightly loaded and should carry only the personal gear of the men on that duty. Other boats in the flotilla should carry their proportionate share of the equipment and supplies. Even though a supply train is included in the flotilla, it is necessary to distribute some of the supplies among the other boats as a precautionary measure against their loss if the supply boats are capsized or broken in negotiating rough water. In navigating fast water, boats should be loaded down by the head for work against the current or down by the stern for work with the current, so that the deeper end will always be up-current. As the boat tends to pivot on its deeper end, the current will hold the boat parallel to the flow of the current.

SECTION IV

OCCUPATION OF A RIVER

	Par.	Page
The mission.....	10-18	17
Similarity to land operation.....	10-19	17
The day's march.....	10-20	18
Rate of movement.....	10-21	18
Boat formation.....	10-22	19
Reconnaissance and security.....	10-23	20
Initial contact with the enemy.....	10-24	21
A typical ambush.....	10-25	21
The attack.....	10-26	22
Garrisoning the river.....	10-27	22
Defensive measures.....	10-28	23
Passage of obstacles.....	10-29	23
Night operations.....	10-30	23
Supporting forces.....	10-31	24

10-18. **The mission.**—The missions which determine the necessity for the occupation of a river line have been stated previously: to provide an easier and more economical route of supply to the land forces; to deny the use of the river to the hostile forces; to interfere with enemy lines of communication which are perpendicular to the river line; or to secure an avenue of approach to the hostile area for the establishment of a base from which active land operations can be conducted. Each of these will affect the size and composition of the force employed, and the location of the garrisons established along the river.

10-19. **Similarity to land operations.**—The occupation of a river parallels in every respect the advance of a land patrol from its base, except in the means of transportation. After the initial base at the mouth of the river has been seized, a first objective is selected and patrols are pushed forward until it is captured. Reorganization takes place, supplies and reinforcements are brought forward, and the advance is resumed to the second objective. A third objective is selected and taken in the same way, and so on until the river is brought under control. If opposition is not expected and the mission is to garrison the river more or less equitably throughout its length, as in the case of using it as a route of supply or to deny it to the enemy, the advance may be continuous. The entire river force may

OCCUPATION OF A RIVER

leave the original base as a body, provided enough boats are available, and detachments are made as each outpost is established along the route. If opposition is anticipated, or if the supply of boats is not sufficient for the entire patrol, the advance will certainly be made by bounds from objective to objective, and eventually the major portion of the river force will be concentrated at the final objective where it is employed for coordinated land and river operations against the enemy in hostile territory.

10-20. **The day's march.**—As with land patrols, the day's march should begin as soon after dawn as possible. This is facilitated by the fact that most of the supplies and equipment may be loaded into the boats each evening as soon as the rations for the next 24 hours have been removed. Noonday halts should not be made for the purpose of preparing a hot meal. Midday lunches may be prepared and distributed in the morning although usually the ration situation will not permit such action. Unless tactical considerations prevent, the day's movement should be halted at least 2 hours before sundown in order to carry out the necessary security measures, make the camp, and feed the troops and boat crews before dark. The camp should be on fairly level ground, sufficiently above the water level to avoid flooding in the event of a rapid rise in the river during the night. Boats should be secured with a sufficiently long line to prevent their being stranded on dry land because of a sudden drop in the water level, or being pulled under and swamped because of a sudden rise in the river. Boat guards should always be posted over the flotilla.

10-21. **Rate of movement.**—The rate of movement will depend upon the type of boat being used, whether propelled by motor or by hand; the nature and condition of the river, whether in deep comparatively calm water, or in the strong currents and innumerable rapids of the middle and upper river; and the need for careful reconnaissance. A motor flotilla may average between 60 and 100 miles a day under the best conditions; a flotilla moving by hand power will average from 12 to 15 miles per day. The rate of advance will be that of the slowest boat in the column. Regardless of the rate of movement, some word of the approach of the patrol will usually precede it up river, especially if the area is well populated. If the state of the river permits, it may be possible, and in certain situations desirable, to overrun the hostile shore positions by utilizing the speed available to a motorboat flotilla. If the mission of the patrol is to drive the hostile groups out of the river valley, it may be better to

OCCUPATION OF A RIVER

advance slowly, sometimes by poling, in order to seek out the enemy by reconnaissance and engage him in combat.

10-22. **Boat formations.**—*a. General.*—Formations for a boat column advancing along a river, either up or down stream, parallels in every respect a march formation for an infantry patrol over land, and the same principles apply. (See "The Infantry Patrol," ch. VI). There should be an advance guard, a command group, a main body, a combat or supply train, and a rear guard. Tactical units, such as half squads (combat teams), squads, and platoons, should be assigned to separate boats so as to maintain freedom of maneuver and yet retain as much control over the various elements of the patrol as possible. The number and type of boats within the formation will depend upon the size and composition of the patrol and the nature of the river in which it is operating. Even in the lower river where no opposition is expected, some security elements should proceed and follow the main body. It would be a mistake to place an entire patrol consisting of a rifle platoon in a single lower river boat, or even to divide it into a point of a half squad in an upper river boat and the remainder of the patrol in a single lower river boat, if opposition is anticipated. To do so might immobilize the entire patrol if the main body should suddenly be fired upon from a concealed hostile position. On the other hand, it would be tactically unsound to employ only upper river boats containing one squad each or less for a patrol consisting of a reenforced rifle company. This would result in an elongated column and a corresponding lack of control. If the nature of the river and the type of boats available make such a disposition necessary, it would be better to employ the split column formation, described in Chapter VI, for large infantry patrols.

b. Type of boats employed.—The elements of the advance guard, the rear guard, and flank security units, as well as the command group should be assigned to small, light, fast boats of the upper-river type. This is especially true of the point, rear point, and command group. This facilitates the movement of the security elements and permits them to adjust the distances in the formation according to the terrain through which they are passing without slowing up unduly the steady progress of the main body. It enables the patrol commander to proceed rapidly to any part of the column where his presence is most urgently required. The remainder of the patrol may be assigned to types of boats which are best suited to the tactical requirements and the nature of the river.

OCCUPATION OF A RIVER

c. Distances in formation.—The distances between the elements of the column will vary with the terrain, the size of the flotilla, and the speed of movement. The principles involved are analogous to land operations in which the troops are proceeding along a fairly wide, open road. The leading elements should never be out of sight of the next element in rear for more than a minute or so at a time. Where the river is straight and wide, distances between the various parts of the column should be great enough to prevent the main body coming under machine-gun fire before the hostile position has been disclosed by the security detachments. Where the river is winding and tortuous the distance between groups should be shortened. If the distance between elements is too great each unit may be defeated in detail before the next succeeding unit can be brought up, disembarked, and engaged with the enemy.

d. Location of patrol commander in column.—The patrol commander's boat will usually move at or near the head of the main body.

e. Location of supply boats.—Normally the supply boat or boats should be located at the tail of the main body. The rear echelon of the command group acts as train guard. In the event of combat, the train guard assembles the boats of the flotilla and the crews, and moves the train forward to maintain liaison with the main body as the attack progresses. If the rear guard is committed to action, the train guard assumes its functions to protect the column from an attack from the rear. If the train is unusually long, as may be the case when a patrol is to establish an advance base at the end of its river movement, it may be advisable to detach the majority of the supply boats from the main column and form it into a convoy, following the combat part of the patrol at a designated distance.

10-23. **Reconnaissance and security.**—*a. Methods of reconnaissance.*—A river patrol employs the same methods of reconnaissance as an infantry patrol ashore. (See "The Infantry Patrol," ch. VI.) Since the route of advance is limited to the river, it is often necessary to halt the movement temporarily while small land patrols reconnoiter suspicious localities some distance from the river banks.

b. The advance guard.—The advance guard may consist of a point boat only, or it may be broken into a point, advance party, support, and reserve, depending upon the strength of the patrol. As in operations on land, the function of the point is primarily reconnaissance, to uncover and disclose hostile positions in front of the advancing column before the main body comes within effective range of the

OCCUPATION OF A RIVER

enemy's weapons. The upper-river type boat is best suited for this purpose; it can be handled easily and does not expose too many men to the surprise fire of an ambush laid along the shore lines. The elements of the advance guard should increase in strength from front to rear so that increasing pressure is applied as succeeding units engage the hostile position. If the river is wide, the advance guard should employ a broad front, with at least one boat near each bank. The main body should proceed near the center of the river to reduce the effects of hostile fire from either bank.

c. Flank security.—(1) It is almost impossible for men in boats to discover a well-laid ambush. When operating in hostile territory, or when there are indications that combat is imminent, shore patrols should precede or move abreast of the advance guard boats on each bank of the river. Although this will slow the rate of travel, it is an essential precaution unless speed is the most important factor in the mission of the patrol.

(2) Navigable tributaries entering the route of advance should be reconnoitered and secured by some small boat element of the patrol while the column is passing them.

d. March outposts.—March outposts should be established at every temporary halt. This is accomplished by reconnaissance to the front and rear by the point and rear point, respectively, and by the establishment of flank boat or shore patrols as necessary.

e. Security at rest.—Immediately upon arriving at a temporary or permanent camp site, boat reconnaissance patrols are sent up and down river for a distance of one or more miles depending upon the nature of the river. Trails and roads leading into the camp site and suspicious localities in the vicinity of the site are reconnoitered by land patrols. Other precautionary measures are taken as prescribed for infantry patrols. (See "The Infantry Patrol," ch. VI.)

10-24. Initial contact with the enemy.—The initial contact with the enemy in river operations may be in the nature of a meeting engagement, with all the elements of surprise for both forces found in such contacts, or, as is more often the case, it consists of uncovering his outpost positions. In either event, once contact has been made, the choice of position and the time of future engagements will pass to the hostile force attempting to prevent the further advance of the patrol. In most small war operations, these engagements will be in the nature of an ambush.

10-25. A typical ambush.—The typical hostile ambush will resemble those found in land operations. It will be located at a bend

OCCUPATION OF A RIVER

in the river in order to provide suitable locations for automatic weapons to enfilade the advancing column of boats. The nature of the river will be such that the boats will be forced close to one bank to negotiate the current. Along this bank will be located the main hostile position so sited that rifle and automatic weapon fire can be directed at the column from the flank. The terrain will be heavily wooded to afford cover and concealment. Under these conditions, the possibilities that the ambush can be detected by men in boats will be very slight. Portages, rapids, and canyons may also be selected as ambush positions in order to engage the patrol when it is widely dispersed and out of control of its commander.

10-26. **The attack.**—Men in boats present a concentrated, vulnerable target to a hostile force ashore. The hostile fire should be returned by the weapons carried on the boats as normal armament. A few riflemen may be in such a position that they can open fire without endangering the crew or other members of the boat. However, any fire delivered from a moving boat will be erratic and comparatively ineffectual. The full power of the attacking force cannot be developed until the troops are on shore and deployed for the fight. If the attack occurs in a wide, deep stretch of river in which the boats can be maneuvered, it may be possible to run past the hostile fire and land the troops above the ambush to take the attack in the rear and cut off the enemy's prearranged line of retreat. Usually the ambush will be so located that this is impossible. In that event, the leading boats should be beached toward the hostile position. Disembarking, the men in these boats take up the fire and hold the hostile force in its position. Those boats not under the initial burst of fire should be brought upstream as close to the hostile position as possible, the troops disembarked, and the attack launched from the flank to envelop the ambush, overrun the position, and intercept the hostile line of withdrawal. Ordinarily the patrol should land on one side of the river only. In some situations it may be desirable or necessary to land on both banks, especially if the hostile force is deployed on both sides of the river. This action increases the difficulties of control, and may result in inflicting casualties among friendly personnel. Once the troops are ashore, the tactics are similar to those employed by regular infantry patrols.

10-27. **Garrisoning the river.**—*a.* The location of the various posts to be established along the river is determined by: foreign settlements and investments which require protection; junctions of important river-ways; location of intersecting roads and trails; supply

OCCUPATION OF A RIVER

dumps and reshipping points between the lower and middle rivers or the middle and upper rivers; and the strength, aggressiveness, and disposition of the hostile forces.

b. The strength of each post will depend upon its mission and the hostile forces in the area. The largest forces should be located at those points on the river which are most vulnerable to attack, or from which combat patrols can operate to best advantage against hostile forces.

c. The distance between posts on the river is determined by the existing situation. If the hostile force is active and aggressive in the area, the posts should be within supporting distance, not over 1 day's travel upstream, from each other. If the hostile force is weak, unaggressive, or nonexistent, a distance of 150 miles between posts may not be too great a dispersion of force.

d. In some situations, it may be necessary to establish outposts on navigable tributaries to the main river in order to protect the line of communications. This is especially important if the tributary leads from hostile areas or if trails used by the hostile force cross its course.

10-28. **Defensive measures.**—*a.* Each garrison along the river must be prepared for all-around defense. Wire entanglements or other obstacles should be erected, machine guns and other defensive weapons should be supplied, and normal defensive measures taken. Active patrolling by land and water should be maintained. Communications by radio or other means should be established with the area headquarters and with other outposts along the river. Boats should be supplied to each outpost for reconnaissance, liaison, and local supply purposes, and as a means for evacuation down river in case of necessity.

10-29. **Passage of obstacles.**—Obstacles in the river, such as narrows, gorges, bad rapids, and falls, whether they can be navigated or require a portage, are similar to defiles in ordinary warfare and similar protective measure must be taken. A combat patrol should proceed to the head of the obstacle, and flank security patrols should reconnoiter both banks of the river and dangerous commanding localities, in order to secure the safe passage of the main body through the obstacle.

10-30. **Night operations.**—Night operations may be conducted:

- (1) To make a reconnaissance.
- (2) To make a search.
- (3) To secrete small detachments and picket boats.

OCCUPATION OF A RIVER

(4) To send out a patrol.

(5) To change the location of a post.

(6) To avoid aimed fire from shore and to avoid combat. Night operations must be conducted by poling or paddling, never by motor, if secrecy is to be attained. Movements upstream against the current at night are extremely slow, difficult, and fatiguing to crew and combat force alike. They should be avoided except in the most urgent situations. They have all the attendant difficulties of a night march by an infantry patrol. See "The Infantry Patrol," Ch. VI.) On the other hand, night movements by boat downstream with the current can be silently and easily executed if the night is clear and if the river is free of dangerous obstacles. Such night movements are often profitably employed in river operations.

10-31. **Supporting forces.**—*a. Infantry patrols.*—River operations often can be coordinated with the operations of infantry patrols if the trail net is satisfactory and such supporting troops are available in the area. Such coordinated efforts should be employed whenever possible to effect the seizure of important towns or localities along the river, or to increase the probability of inflicting a decisive defeat upon the hostile forces.

b. Aviation.—Aviation support is fully as important for the successful conclusion of river operations as for the corresponding land operations. For details, see Chapter IX, "Aviation."

