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bour, and in the Penthouse near it, there is a square opening called the Grille. Part of the courts is divided into spaces called Chases, numbered on the wall from 1 to 6. The server stands in the Service court and serves the ball on the wall over the Penthouse. The ball must strike on the Penthouse roof, and then roll off into the receiving court. The player in the Hazard court strikes it on the bound where he likes, so long as it first strikes the ground on the opposite side of the net. Thus, he may strike it against the nearest wall so that it bounds back across the net.

The scoring is as in Lawn Tennis, except that the server may win a point by sending the ball into a "winning opening"—that is, the Grille, or the window in the Penthouse nearest the end wall.

SATLING.

DEFINITIONS AND INSTRUCTIONS.

Definitions and Instructions.

All sailing vessels are set down under the term ships, but, strictly speaking, a Ship is a vessel with three masts that are square-rigged; that is, the yards which support the square-sails are rigged at right angles to the masts. But all the sails are not square, the jib being triangular, and the spanker bow-sided, but not square. The hull or body of the vessel is divided into the fore-castle, before the foremast, the weakt, between the foremast and mainmast, and the quarter-deck, which is abaft or behind the mizzen-mast. These masts are fitted with other masts, slipping into each other, and securely connected for the purpose of bearing its appropriate sail. Thus, the foremast or forward one is the foremast, and bears the foretopsail; the one above that the foretop-gallant-mast, and bears the foretop-gallant-sail. The mainmast is divided in the same way into mainmast, and maintop-gallant-sail. The mizzen-mast is furnished with a sail rigged on the plane of the vessel's length, or "fore and aft;"; and the bowsprit or jib-boom, which projects from the front at more or less of an angle, supports with the foremast a triangular sail called the flying-jib-boom, which supports the flying-jib. There are usually square sails above the top-gallant-sails, that are called "royals," and distinguished by the names of the masts to which they are attached. Then there are additional sails, projecting on either side of the square-sails, that are used in light winds, called stud-sails.

A Brig is rigged on the same principle as the ship, but has only two masts; being a ship, as it were, with the mainmast taken out.

A Schooner is a vessel with two masts, rigged fore and aft. She may carry gaft-topsails, which are triangular sails, set above the main- and fore-sails, or one or two square topsails before. In the last case she is usually called a "topsail schooner." A schooner has sometimes three masts, and is known as a three-masted schooner, or as a ship-rigged fore and aft.

A Brigantine is a schoon

alone.

The Sharpie is a long flat-bottomed sailboat built very sharp in the bow, fitted with a centreboard and leg-o'-mutton or sprit sail, that is a sail extended by a sprit, and very useful in shallow water. It is often built with cabins and decks like other yachts.

The Cat-Boat has one mast and sail, like a sloop without a jib. The forward part is decked over and the mast is set close to the stem. Cat-boats are generally built wide and shallow and are fitted with a centreboard. They are sometimes large enough to have a cabin forward.

Characters of a Yacht.

Speed, safety, and accommodation are the three first qualities of a yacht. She ought to be pleasing to the eye when affoat, of such a breadth as to carry

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her canvas with ease, and at the same time so sharp in her bow and well shaped astern as to displace her weight of water smoothly and gradually, while she leaves it in the same way.

Various Kinds of Yachts.

Various Kinds of Yachts.

Yachts are of various kinds, according to their size. If more than eighty tons burden, the schooner is most suitable; for, as the spars are more numerous, they are proportionally lighter. The schooner, as has been before observed, has two masts—the foremast and mainmast; the one bearing the sail called the boom-foresail, and the other a mainsail. She has two or more head-sails, called stay-sail, forestay-sail, and jib. Her topsails are either square or fore and aft. The Outter has one mast and four sails—viz.: mainsail, maintopsail, foresail, and jib. Some smaller craft have larger jibs, and no foresail.

The Dandy-rigged Yacht differs from a cutter, in having no boom for her mainsail, which can consequently be brailed up by a rope passing round it. She has a mizzen-mast standing in the stera, which sets a sail called a mizzen, and which is stretched on a horizontal spar, projecting over the stern. This style of rig is more safe for a yacht, as the boom in ordinary cutters is liable to sweep persons overboard; and the sail can be taken in quicker by brailing it up than by lowering it down.

than by lowering it down.

The Hatteener has only two sails, a fore and main sail, of a triangular shape. Each has a spar standing from the deck to the peak of the sail, and a boom at the bottom, like a cutter. This rig, from setting more canvas abaft, is well adapted for narrow waters.

To Sail a Boat.

Getting into his little boat, the beginner, who should have a skilled grown person with him as companion, will soon learn the principles on which a boat tacks or is put about, how to jibe safely, how to reef the mainsail and the foresail and how to fit a reefed snotter, how to stow the sail and moor the boat, and how to pick up moorings and to come alongside. Sailing boats are usually made fast by a chain to a stone under water; when the boat gets under vou, the chain is let go, and is picked up again by a rope, one end of which is made fast to the chain, the other to a piece of wood or small cask called a buoy. To pick up this buoy again, sometimes the sails are lowered and the boat runs at it, but usually the boat is taken to leeward, and at the proper distance is luffed up, so as to come head to wind, and stop as nearly as may be over the buoy; and to do this with certainty requires much practice. The beginner should go where he has plenty of room, taking out a buoy or piece of wood, and practise picking that up till he can measure his distance pretty accurately. To do this, however, and in fact to sail a boat at all, a clear understanding of the principles of sailing los of great assistance.

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Everybody can understand how a boat can sail before the wind—a box for a boat, with a coat or umbrella for a sail, can do that, but to sail with the wind on the side, or to make way against the wind, is far more difficult; in fact, persons not accustomed to it often doubt the possibility of doing so. In explaining this, we will consider the sails as quite flat, for the nearer they can be brought to flatness the better, and wherever they are not flat there is a loss. Supposing the sails, then, to be flat, and the wind to strike them, part of the force is lost (as will be understood on mechanical principles), part of it presses against the flat surface of the sail, and perpendicularly to it. This tends partly to drive the boat ahead, partly to drive the boat bodily to leeward, and if the boat was a box or tub, she would go in a direction between the two; but as boats are usually constructed, they are sharp at the fore-end, and the surface opposed in that direction is not more than one-seventh of the surface which the nearly flat side opposes—hence the boat is driven easily ahead, but only a little or not at all to leeward; and boats are constructed so as to oppose as little resistance ahead and as much on the side as possible. Any boat will sail with the wind astern, and most boats will sail with the wind on the quarter—i. e., blowing in any direction between the stern and the broadside; but only good boats will sail with the wind on the none of the boat points of the compass, and to do that, the sails must be well set, and the boat pretty good. To explain how this is effected, let us suppose a boat with her head pointing exactly toward the wind, the her sails will only flap about and tend to drive her astern. Now suppose her bow gradually turned away from the wind; if the sails are hauled pretty flat, after a time, usually when her bow is four points or the eighth of a circle off from the wind, the sail

flag or vane just over the mainsail. Boats ought always to carry a weather helm —i. e., the bow should have a tendency to turn toward the wind. Putting weight in the bow makes the weather helm stronger, putting it in the stern or increasing the head sails has the reverse effect. When the wind is on the starboard or right-hand side of the vessel, she is said to be on the starbaard tack; when the wind is on the port, larboard, or left side, she is said to be on the port tack; and when vessels meet, that which is on the starboard tack either keeps straight or luffs, that which is on the port tack gives way and passes to leeward.

To sail with the wind on the bows the boat must have a keel. In a sailboat this is generally made movable, sliding up and down, within a well in the centre, and is sometimes called the sliding-keel, but more generally the centre-board. A skiff may be made to tack by holding the flat blade of a skull deep in the water, against the side of the boat, on the leeward side; but this is inconvenient.

While engaged in learning how to manage a boat it is as well to get an old sailor to teach you how to make the various knots, splices, and hitches for which you will have constant occasion.

Cautions and Directions.

Never leave anything in the gangway, and keep the decks clear. Coll up all ropes; and have a place for everything, and everything in its 1. place.

Take care that in tacking or jibing the boom does not knock you overboard. Stand clear of ropes' ends and blocks flying about, when you are tacking, 4 and the sails shaking.

and the sails shaking.

5. Keep a good lookout ahead, and also for squalls, which may generally be observed to windward.

6. Always obey the orders of the steersman promptly.

7. Keep all your standing rigging taut.

8. When the boat is on the wind, sit on the weather side.

9. Should the boat capsize, keep yourself clear of the rigging and swim ashore. The young yachtsman should on no account attempt to take command of a boat till he is thoroughly experienced, and should never go in one without having at least one experienced hand on board; he should always have his eyes open to what is going on, and be ever ready to lend assistance with the greatest promptifude. promptitude.

Nautical Terms.

Haul, to pull.

Taut, tight.

Starboard, to the right.

Port (Larboard), to the left.

Close-hauled; or, on the wind; or, flying to windward, steering close to the wind. Cutters have good way within five points of the wind; square-rigged vessels not within six.

Wind on the beam; or, sailing free, sailing with the wind across the waist of the vessel; her head is then eight points from the wind.

Before the wind, sailing with the wind right aft, or behind you, that is with the head sixteen points from the wind.

Sailing with the wind abait the beam, sailing with the head of the vessel more than eight points from the wind, but not sixteen.

Sailing with the wind before the beam, with the vessel's head less than eight points from the wind, but not close-hauled.

Luff, keep nearer the wind; keep your luff, means, keep close to the wind.

Belay, make fast.

Luff, keep nearer the wind; keep your luff, means, keep close to the wind.

Belay, make fast.

Steady, keep the helm amidships.

Haul aft, more toward the stern.

Put the helm down, put the helm to leeward.

Put the helm up, bring it to windward.

Leeward, the point to which the wind blows.

Windward, the point from which the wind blows.

Ship the tiller, fix it in the rudder head.

Unship, means, of course, exactly the reverse of the above.

Jibe, the act of bringing over the sail from one side of the vessel to the ther.

other

other.

Bend the sail, fix it in its proper place.

Bowse the sail well up, put it strongly into its place.

The throat of a mainsail (a fore and aft sail) is that part of a sail which is fixed to the gaff, close to the mast.

The Peak is that part of a sail which is fixed to the end of the gaff, which is away from the mast.

away from the mast.

The Gaff is a spar with a forked end, which is at the top of the fore and aft sail.

The Boom is a spar which is at the bottom of a fore and aft sail.

Head-sails, any sails at the head of a vessel; in cutters, foresail, forestaysail, jib, and any other she may carry before the mast, except a squaresail, which is sometimes used for running before the wind.

Fore and aft sails, such sails as the mainsail of a cutter when stretched fore and aft, by its sheets.

Sheets, the ropes by which the lower sails are made fast in the position desired; we say, for instance, "Haul taut the foresheet," which means, tighten the

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foresheet. Each sheet is distinguished by the name of the sail to which it is attached; for instance, the mainsheet means the sheet belonging to the mainsail; in like manner, jibsheet, foresheet, etc. The jib, however, has two sheets, one on each side of the forestay, for the convenience of tacking; the foresail has but one, which is made fast to the traveller of the foresheet horse; as the boat tacks, the traveller enables the foresail to pass from one side of the boat to the

Foresheet horse, a bar of iron which crosses from one gunwale to the other, to which the foresheet is fastened by means of a traveller; it is an inch or two above the deck.

Traveller, in the case of the foresheet horse, is the ring that passes backward and forward along the foresheet horse, as the foresall is jibed from one side to the other. Speaking generally, the term means an easy ring attached to a sail, and running upon a boom bowsprit or mast, to enable you to haul out or haul up a sail.

Yards, the sticks by which square-sails are set.

Square-sails, such sails as the main-topsail of a brig.

Tack, to turn a vessel from one side to the other, with her head toward the wind. When a vessel is obliged to tack several times to get to windward, we say she is beating to windward; when she is tacking to get up or down a channel, we say she is beating up or down:—by the by, in rough weather she often gets a beating in the attempt; when tacking to get off a lee shore, we say she is clawing off.

Halliards, the rope by which signals or sails are hoisted. We say, for instance, "haul taut the peak halliards," which is an order to hoist the peak of the

sail well up.

sail well up.

Lee runner and tackle, a substitute for a backstay; used in cutters, on account of its being easily removed when going before the wind.

Stays; in tacking, the vessel is said to be in stays from the time the jibsheet is let fly until the foresail draws.

Bobstay, the rope fixed at the end of the bowsprit, and fastened about half way down the stem. Chains are frequently used for this purpose.

Backstays, forestays, etc., etc.; each of these denote the particular part the rope supports. The former are ropes from the after part of the head of the topmast of a cutter-rigged vessel to the after part of the chains on each side of the ship; the latter is a rope from the topmast-head to the farther part of the bowsprit; it there passes through a block and comes in by the stem-head, and is then made fast to its cleat.

Cleat, a projecting piece of wood or iron, to which sheets or halliards are made

Cleat, a projecting piece of wood or iron, to which sheets or halliards are made

fast

Shrouds are also supports to the masts. Each shroud is distinguished by the part it is intended to support—for instance, the bowsprit and main-

Boom-guy, a small tackle, one end of which is hooked to the main-boom, and the other forward, to prevent the boom from swinging.

Topping-lift, strong ropes, which are near the end of the main-boom, and led through blocks on each side of the mast, just under the cross-trees, from whence it descends about half way, and is connected with the gunwale or deck

by a tackle.

Bow-line, a rope made fast to the foremost shroud, and passed through a thimble in the after lurch of the fore-sail, then round the shroud again, and round

Thimble, a small ring, of iron or brass, inserted into the sails.

Oringles, short loops of rope, with a thimble inside them, and spliced to the lurch of the sail.

Gaskets, ropes made by plaiting rope-yarns. Slack; take in the slack; draw in the loose rope.

Slack; take in the slack; draw in the loose rope.

Lanyard, a small rope.

Reef; taking in a reef, is tying in a portion of the sail.

Reef; taking in a reef, is tying in a portion of the sail.

Reef-tackle, a small tackle formed by two hook-blocks, one of which is hooked to the under part of the boom, about one-third of its length from the mast; and the other, farther aft. The fall is belayed to a cleat under the boom.

Earing, a short rope used in reefing, one end of which is made fast to the boom, at the same distance from the mast as the cringle, to which it belongs; it ascends and passes through the cringle, then descends and passes through a sheave on the side of the boom; then it is passed on board and stopped to the boom by means of its lanyard, or small line spliced into its end for the purpose; this lanyard is also to make it fast when the sail is reefed and the tackle removed. removed.

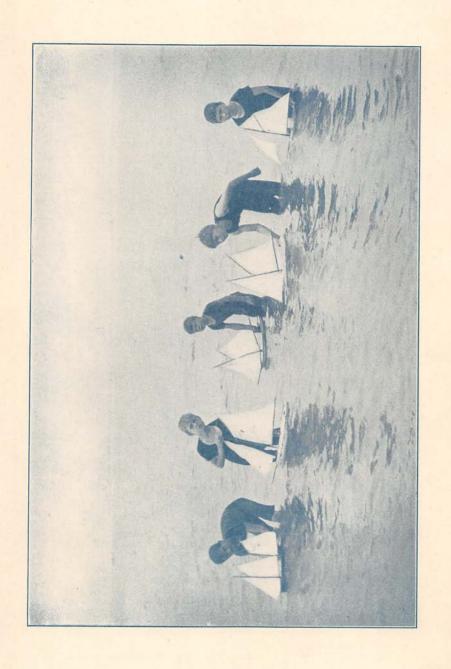
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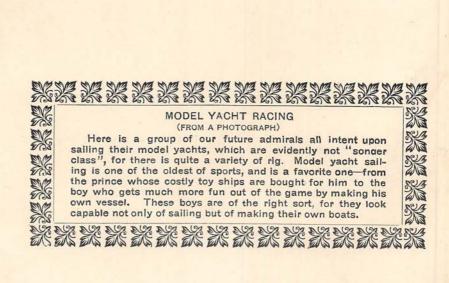
Bowsprit fid, a bolt of iron that passes through the bowsprit bits and the heel of the bowsprit, to keep the bowsprit in its place.

Bowsprit bits, two stout pieces of wood, between which the bowsprit passes. If the reader has noticed the way a carriage-pole is fixed, he will readily conceive how the bowsprit is fastened between the bits.

Channels, the places on the side of the vessel to which the shrouds are

fastened.





The quarter of a vessel, is the place on either side at which the side and the stem meet.

stem meet.

Midships, midway between the sides of the vessel.

Abeam, at right angles with the keel of the vessel. The term has risen from the beams of the vessel lying that way.

Cast her; in first making sail, it means placing the head of the vessel in the most advantageous position.

Wear to; come round on the other side of the wind, without backing.

Helm's-a-lee, the call of the helmsman when his helm is hard down in tacking.

Ready about, a command for all hands to be ready in tacking.

SAILING RULES.

1. Boats on the port tack must keep clear of those sailing on the starboard tack. In all cases of doubt the boat on the port tack must give way.

2. Boats sailing before the wind must give way to those going on either tack.

3. In case two boats are sailing before the wind, the one having the wind on the port side must keep out of the other's way. (The side on which the boom is settles the question as to direction of wind.)

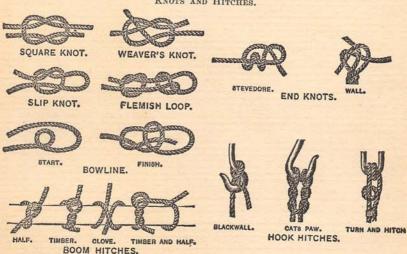
4. If both have the wind on the port side, the windwardmost must give way. But in any event the overtaking boat must keep clear of the one it is overtaking.

overtaking.

5. If two boats meet, both must put their helms to port.

6. In a race, if two boats approach a shore or buoy, and the one to leeward has not room to tack so as to clear the other, and yet would be in danger by keeping on her course, she must hall the other, which must tack at once. The leeward boat must tack as soon as there is room to do so.

KNOTS AND HITCHES.



The square knot is used for small ropes and cord. Tie it as shown, both ends passing outside together, or it may slip.

The weaver's knot or becket-bend is the best and quickest way to unite the ends of string for cord. It is also a good knot for ropes.

The bowline is the best knot for making fast to a post or ring. It will never slip and is easy to loosen.

Hitches are used in lifting lumber, logs, etc., and in making fast to hooks. The "timber and half hitch" is especially safe.

End knots are used to prevent a rope being drawn through a hole.

Cleat Hitches.

To make fast to a cleat, hauling on the rope with the right hand uppermost, pass the rope to the right side of the cleat, under the lower horn, over the upper horn, again (from right to left) under the lower horn, press the rope against the lower left side of the cleat with the thumb of the left hand to prevent its slipping, form a loop in the rope with the right hand, the rope crossing the cleat from left to right, drop this loop over the top horn, and pull tight. If this has been properly done the rope will cross the cleat from the lower left to the

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upper right corner, and bind down the loose end of the rope to the front of the cleat.

To loop up the loose rope neatly, pass the rope to the left hand (held two or three feet from the cleat) and over the upper horn until all but about four feet is looped up, wind the loose end around the hank thus formed downward, and pull the end through the hank at the bottom to fasten.

Yachting on the Ice.

Ice yachts are shaped like a triangle, and slide over the ice on runners like skates. They are generally cat-rigged or sloop-rigged, but sometimes with shear or double masts and a lateen sail, like one kind of catamaran. Ice yachts will sail very fast, sometimes more than a mile a minute.

Ice yachting is one of the most popular of sports in the Northern States and Canada, and especially on the Hudson River.

SAILING RULES OF THE HUDSON RIVER ICE YACHT CLUB.

RULE 1.—The following sailing rules and regulations shall govern and control all the regattas and all the races of this Club, and all contests sailed under its auspices, unless otherwise specified between parties making a match.

RULE 2.—Classification. Yachts shall be divided by sail area into four classes as follows: First class, measuring 600 square feet of sail area and over; Second class, measuring 450 and under 600 square feet. Third class, measuring 300 square feet and under 450; Fourth class, measuring less than 300.

RULE 3.—Objections. If any objection be made with regard to the starting of any ice-yacht in a race, such objection must be made in writing to the Regatta Committee at least one hour before a regatta.

RULE 4.—Entry of the Yachts. Unmeasured or unrecorded yachts, or yachts in arrears to this Club, cannot be entered for any race.

RULE 5.—Touching Buoys, etc. An ice-yacht touching any mark, boat, or buoy, used to mark out the course, shall forfeit all claim to the prize, except as in cases specified in Rules 7, 9, 10.

RULE 6.—Rule of the Road. When two yachts have to cross each other on the opposite tacks, the one on the starboard must invariably keep her course, and the one on the port tack must keep away and pass to leeward, or tack short, when the smallest doubt exists as to her being able to weather the other. All expenses of damages incurred by yachts on opposite tacks running on board each other, fall upon the one on the port tack, unless the one on the starboard tack has kept away with the intention of passing to leeward, in which case the expense of damages falls upon the yacht on the starboard tack, because, by her keeping away, she may have prevented the other passing to leeward. Should a vessel on the port tack attempt to weather one on the starboard tack when it does not seem possible to do so, the latter, rather than keep away, should put her helm down. Nothing should induce a vessel on the starboard tack to keep away.

RULE 7.—Courses. Any ice-yacht purposely bearing away or

her helm down. Nothing should induce a vessel on the starboard tack to keep away.

RULE 7.—Courses. Any ice-yacht purposely bearing away or altering her course to leeward, and thereby compelling another ice-yacht to bear away to avoid a collision, shall forfeit all claim to the prize, and pay all damages that may ensue—unless, when two ice-yachts are approaching the windward shore, a buoy or stake boat, together with a free wind, and so close together that the weathermost cannot bear away clear of the leewardmost, and by standing further on would be in danger of running on shore, or touching a buoy or stake boat; then such leewardmost ice-yacht, on being requested to bear away, is immediately to comply, and will forfeit all claim to the prize by not doing so. The weathermost ice-yacht must, however, bear away as soon as the one she hails, if she can do so without coming into contact.

RULE 8.—Rounding Buoys, etc. When rounding a mark, boat, or buoy, the ice-yacht nearest thereto is to be considered the headmost ice-yacht; and should any other ice-yacht in the race compel the ice-yacht which is nearest to any mark, boat, or buoy, to touch said mark, boat, or buoy, the ice-yacht so compelling her shall forfeit all claim to the prize; her owner shall pay for all damages that may occur; and the ice-yacht so compelled to touch a mark, boat, or buoy, shall not suffer any penalty for such contact.

RULE 9.—Courses. Ice-yachts going free must invariably give way for those by the wind on either tack.

RULE 10.—Courses. When two ice-yachts (by the wind) are approaching the shore, a mark, boat, or buoy, together, and so close to each other that the leewardmost cannot tack clear of the weathermost, and by standing further on would be in danger of running on shore, or touching a mark, boat, or buoy; such weathermost ice-yacht, on being requested to put about, is immediately to comply,

and will forfeit all claim to a prize by not doing so. The leewardmost ice-yacht must, however, tack at the same time as the one she hails, if she can do so without coming into contact.

RULE 11.—Pushing. Unfair pushing is strictly forbidden in any race for a prize; any ice-yacht infringing upon this Rule, in the opinion of the Regatta Committee, shall forfeit all claim to the prize.

RULE 12.—Ballast. No ice-yacht shall increase or diminish ballast during a race.

RULE 13.—Time of Performance. Section 1. In case the distance assigned for the race shall not have been performed in the time specified by the Regatta Committee, the race shall be repeated at such time as the Regatta Committee may appoint.

SEC. 2. If any ice-yacht, however, shall perform the distance in time specified for her class, it shall be deemed a race for that class.

SKATING.

BY

ARTHUR G. KEANE, M. D.

KATING is one of the earliest of sports and it is one of which no one country or nation can claim a monopoly, for any climate sufficiently severe to form ice will turn out its share of people to indulge in this prince of winter pastimes, and even in countries in which ice rarely or never forms, artificial ice rinks are made upon which lovers of the graceful art may disport themselves. About 1905 artificial ice rinks became fashionable in Melbourne and other cities in Australia-and some of the most gorgeous fêtes, carnivals, and competitions there given have rivalled those of the Canadians themselves.

Few there are who are unable to enjoy its pleasures, for it is only those who are the victims of some physical disability who need be debarred from participating in this health-giving exercise.

Its history dates back for centuries, the people of the far North of Europe being probably the first to take advantage of the ice's slip-

pery surface.

The skating implements of that age were of the most primitive form, being made of the bones of the various domestic animals. Those most frequently used were the metacarpal bones of the horse, ass, and ox. These were ground down and fastened to the feet by means of thongs passed through holes drilled in the bones for that purpose.

As can easily be imagined, it would be almost impossible to strike out on skates of this kind, and most historians unite in claiming that they were used merely as runners while the skater propelled him-

self by means of a spiked stick.

These skates have been found in Holland, Denmark, North Germany, and Switzerland. It is claimed that this same style is still in use in Iceland, and the British Museum now owns an Icelandic pair made from the metacarpals of the cow.