

tire, but without necessary duplicates of small parts, the latter cannot always be fixed. It is not a good plan to overburden a bicycle with repair kits and extra wearing apparel, but there are certain accessories which, if properly carried, will but very little interfere with the running of the wheel. One of the best ways to carry the kits is with special cases. These cases can be made by hand, can be ordered made to measurement, or can be purchased already made. Fig. 1 is specially designed for carrying wheel extras. It can be made of leather board, canvas board, or composition. The dimensions are suited to fit the inside of the frame between the rear tube and rear stays, under the seat-post, as shown in Fig. 3. The box is divided into apartments, and provided with small divisions in which are carried small screws, nuts, tire-repair outfits, etc. The door should be hinged and arranged to fasten tight. The usual line of cycle tools, such as wrench, oil-can, screw-driver, etc., is carried in the regular tool-bag next the steering-head. The apartment for tire repairs should contain parts of valves, plugs, cement, graphite, air-pumps, etc. Such an outfit will add but little weight to the wheel and will prove a source of great convenience.

Regulation canvas cycle-bags of several descriptions can be purchased at moderate prices and well designed for the purpose intended. Fig. 2 shows one of a simple design which, like the former carrier, can be made from board stock, and divisions inserted. This affair goes in the diamond, as shown in Fig. 3. One of the apartments in this box should be kept apart for emergency articles, such as an envelope of court-plaster, a package of lint, a can of vaseline and a bottle of liniment. Another apartment should be given up to a change of linen, and another to underwear. The apartment will hold all these and more if carefully packed. It is presumed that the tourist will so govern his distance that nightfall will find him near hotel

quarters, yet it is a good plan to carry a small roll blanket, which can be strapped to the handle-bars as shown. This blanket should be waterproof material, so that in case the tourist misses his route and is caught where he will have to lodge overnight in the open air, he can use the blanket as a shelter tent. The army bicycle corps use this plan. Fig. 4 is its plan of use. The wheel is placed upright and braced with a piece of fence-rail or branch from a tree. The wheel thus furnishes the ridge-pole, and as the edges of the blanket are provided with short ropes, it is easy to form a tent by pulling the blanket over and securing the ropes to the ground with short stakes. A man can curl up under this improvised shelter and be protected from the elements. The valise will do for a pillow, and the two or three garments carried in the valise and apartment box will do for bedding. No provision is made for food, because one meets with generous farmers along the line, from whom lunches may be obtained at small cost. Under ordinary circumstances there will be sufficient hotels on the route, in which both lodging and meals can be secured.

THE PREVENTION OF ACCIDENTS.

An important point in touring is the prevention of accidents to your wheel. Before you start, see that the wheel is free from rust and dirt. Nothing is more dangerous than these two. The depth of the rust is an unknown quantity; from the outside it may seem only a coating, and yet be eating clean through. As for dirt, it hides all sorts of defects. Lubricate the chain; see that there is no unnecessary friction at any point, and especially between links. Friction between links wears two links and is doubly dangerous. Watch, examine, and overhaul are needed. Throw out any parts that show any undue wear, defects or weakness. Remember that the strength of the whole bicycle depends on that of its weakest

B. F. FELLOWS.

ANSWERS TO CORRESPONDENTS.

James Lindsay Philadelphia, Pa.—The case you refer to us or decision is fully covered by Rule 12, of the Laws of Lawn Tennis. It says: "The server shall not serve till the striker-out is ready. If the latter attempt to return the service he shall be deemed ready." If any doubt existed as to the score, C. was perfectly right in refusing to play A.'s service until this had been settled, and if he did not make any attempt to return the service he had a perfect right to demand another ball.

W. L., Chicago.—The closest an ice-boat will go to windward is 30° , or $2\frac{2}{3}$ points. The best course or the one that will take the boat farthest to windward is 60° , or $5\frac{1}{3}$ points from the wind, when the advance to windward would be at the rate of half the velocity of the wind while the actual velocity is equal to that of the wind. The boat encounters the greatest apparent velocity of the wind when her course is 90° , or 8 points from the wind, when the apparent wind is twice the actual velocity. Hence the greatest speed of an ice-yacht is attained at 120° , or $10\frac{2}{3}$ points from the wind; then her speed is twice that of the wind, and the ap-

parent direction of the wind in 90° , or 8 points from its true direction. The best rate to leeward is made at 150° , or $13\frac{1}{2}$ points from the wind, when the advance leeward would be $1\frac{1}{2}$ times that of the wind, and the apparent velocity of the wind would be equal to its true velocity.

Z. A. B.—Write to your Representative in Congress, or to the War Department, Washington, D. C.

"Doubting Thomas."—Generally speaking, a low shoe is the most suitable, as it allows the freest ankle action, but weak ankles may require some support, in which case the high shoe for men and the boot for women are recommended. Lacing is always preferable to buttoning, as the latter method is too binding, and the foot and limb must conform themselves to a uniform constriction. In hard riding, too, buttons will be forced off of the very best shoes. A slight soreness is liable to follow the first wearing of high shoes or boots, but this may be relieved by the free application of cold water and a vigorous rubbing after each trip.