and are less liable to break. Bows may be backed with a thin layer of clarified calfskin or fiber to protect the back from being scratched. A fiber backing, however, is too inelastic and interferes with the reciprocal action of the bow and may cut down the smoothness of draw.

There is a difference between defects in a bow and deficiencies. The former exist in nearly every stave and must be compensated for by the bowyer when making the bow. Deficiencies may be of commission or of omission. Knots, pins, and small worm holes in the belly can be neutralized by raising or drilling out as a dentist drills out a decayed tooth, and inserting a "Dutchman", or plug. The back is most important. Almost any defect may be compensated for if the back is good. Bowstaves are like people; those grown in protected localities, though beautiful to look at, are often weak and supple and lack character, whereas those who have had to struggle for an existence often come through scarred and unsightly, but are made of sterner stuff. Osage Orange and Yew bows may be somewhat crooked and wavy, for they are made so that the profile follows the natural flow of the grain. Lemonwood bows, however, are symmetrical and pleasing to the eye.

Bows should be made so that they are quite stiff and bulky in the handle, but bend in an otherwise even, graceful arc from the handle section to the tips. The working strains are thus evenly distributed and the probability of breaking is at a minimum. A hinged bow is one that has a sharp bend or "hinge" in one or both limbs. This places most of the strain in one place, increasing the chance of breakage. A whip-ended bow is stiff in the center and for several inches above and below the handle, but bends evenly from there to the tips. Whip-ended bows are pleasant to use, and are of good cast but are prone to easy splintering in the back and have an accentuated tendency to follow the string. A bow that bends in the handle may describe the "perfect arc" of the poets, but will kick unmercifully and be very disagreeable to use. The handle may be made of velvet, plush, leather, or cord; the material may vary but should be comfortable and firm. The string, usually of linen, should be strong enough for the bow, but should not be too heavy as this markedly decreases the cast of the bow. Absolute lack of stretching is an imperative quality for any bow string.

Lapp — Mr. Hoffman has told you a good deal about bows and their construction, and while he is catching his breath, I shall say a few words about their selection. When picking out a commercial bow, have the salesman pull the bow to a full draw several times. If it will stand this test you can be sure that it will not immediately break after you leave the store. This test should be applied by the salesman because commercial houses will not guarantee a bow against breakage after it leaves their place of business. After it is yours, take care that it is never drawn beyond the point of your normal draw.

Do not make the mistake of buying a bow that is too strong. Ordinarily men should not take up the sport with a bow weighing more than 42-45 pounds. Most women will start with bows between 20-30 pounds. A bow that is too strong will cost the shooter in fatigue, loss of form, and accuracy.

The principal factor in the care of a bow is to see that it is never overdrawn. It is said that a bow fully drawn is 7/8 broken and for the novice this cannot be over-emphasized. In stringing the