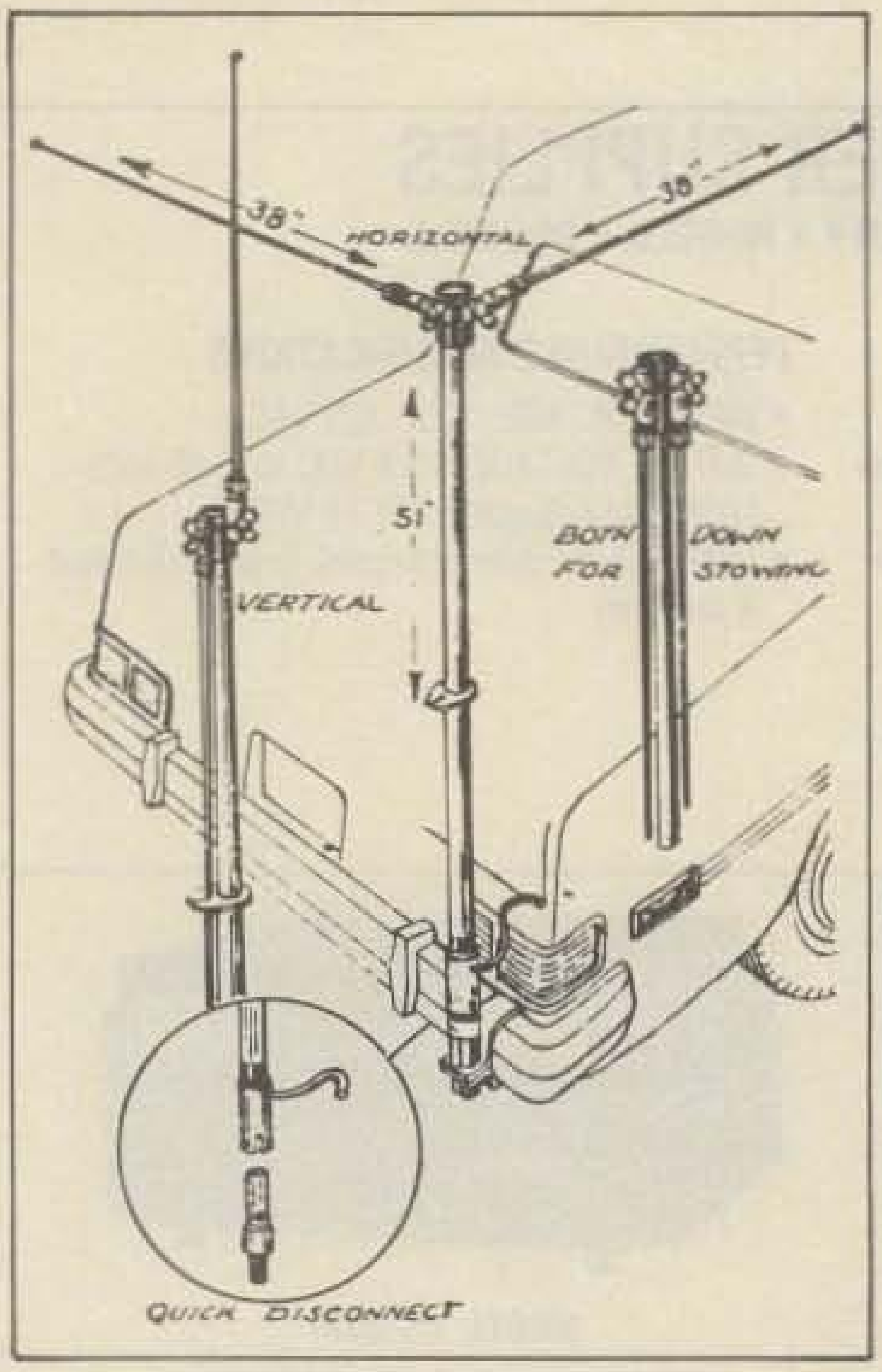

Fig. 3– Austin Omni mobile antenna.

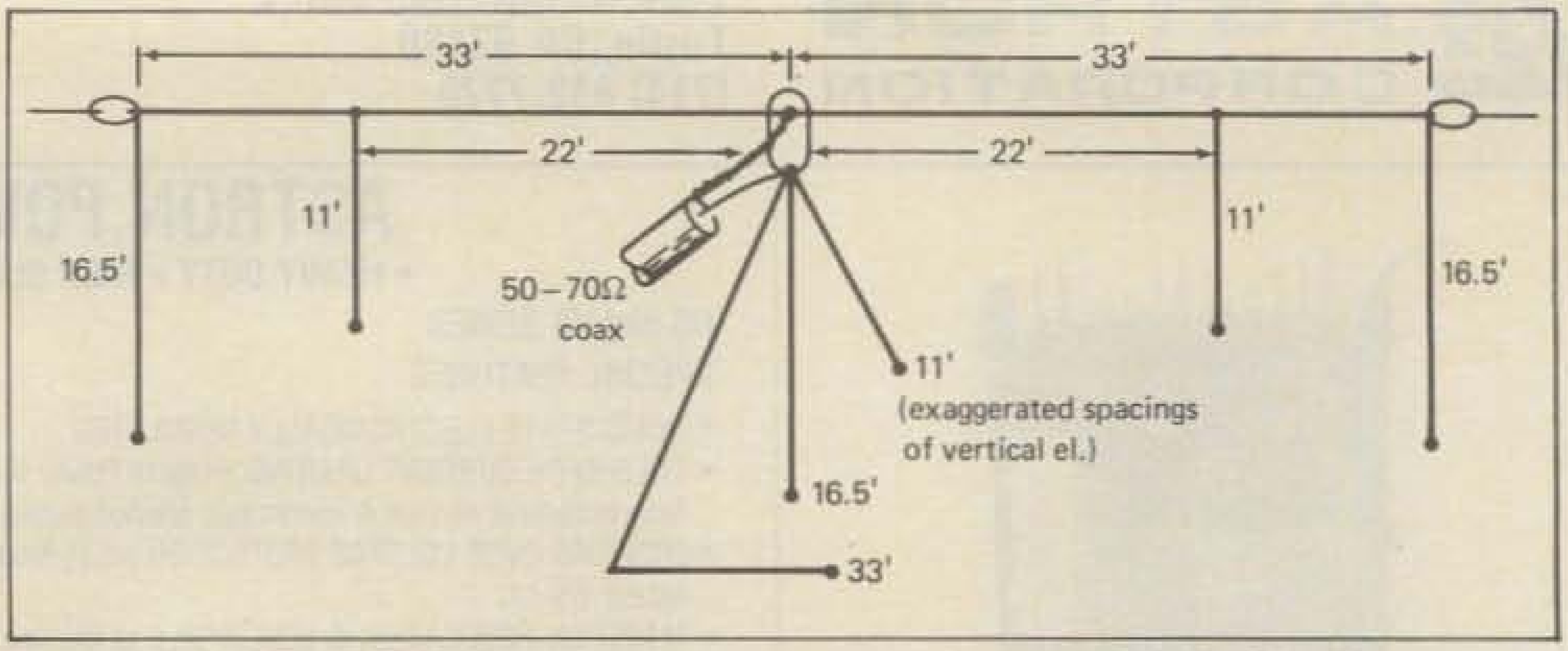

Fig. 4– WØMBP ABBBC Field-Day antenna (experimental) for 40, 20, 15 meters. If beams and towers are "a bit much" for Field Day, here is a simple, compromise antenna for 40, 20, 15 meters, as suggested by Cliff Francis, WØMBP. Cliff points out that the 40 meter vertical portion will resonate on 15 meters, to avoid adding another center radiator of 11 feet to the group, but he doesn't trust the characteristics of the 33 foot radiator if it must be folded due to the low height of the flattop. He adds that stakes are the easiest way to separate the center radiators, although he prefers to keep the flattop as "flat" as possible and the center wires almost vertical. Pruning can easily bring the s.w.r. below 2:1 on 20 and 15 meters, but 40 meters requires some effort if the antenna is below a quarter-wavelength or so on that band such that the 33 foot radiator must be folded. If folded, it is best kept well clear of the ground. Generally, the center radiator can be pruned roughly before Field Day commences, if pole heights are a known factor. Note that in the WØMBP antenna the center conductor of the coax is connected to the vertical radiators and the shield to the flattop. The antenna's name: the "Ambidextrous Bobtailed Bidirectional Broadside Curtain" antenna! So, does the ABBBC work? Cliff stresses that he is an antenna tinkerer, not an engineer, and thus his designs are experimental. With that in mind, cut it long, prune a lot, and see!

4, is not. Requiring only 20–25 feet of height, Cliff points out that even jointed dowel rods will support it. Coax-fed at the center, the ABBBC may or may not require an antenna tuner, depending on installation conditions. The antenna is easily rotated, too, because of the short support poles required. Thus, changing the antenna's directional characteristics should present little difficulty. The 40 meter radiator, representing the longest section, may be folded. However, if this is done, considerable adjustment might be required to achieve matching to coax.

John D. Tuchscherer, an avid tropical band s.w.l.'er and author of articles for various s.w.l. publications, wrote in with some nice words. John advises that "... you would be delighted and surprised to learn how many shortwave listeners and DXers read your column. Any articles on antennas for SW-DXers in future issues of *CQ* will be greatly appreciated." The s.w.l. who tunes the 49, 41, 31, 25, 21, 19, 16, and 13 meter bands has no antenna problems in hearing the big international broadcasters. The problem comes when the listener becomes a DXer and the DX is on 60, 90, and 120 meters, and he doesn't have the 100 to 200 feet needed to put up a half-wave dipole. It's akin to the problem of the amateur who wants to work DX on 75 and 80 meters.

John is apparently space-limited for antennas for low-band DX, and he sent along a sketch of a loaded attic antenna especially for reception of the so-called "tropical" bands. It is shown in fig. 5.

On another quite interesting subject, John also enclosed a copy of an article which he had written, "Gray Line DXing the Tropical Bands," which appeared in the March 1984 issue of *FRENDX*, the monthly bulletin of the North American Shortwave Association (NASWA). This article presents a very practical and simple approach to gray-line DXing that requires only a set of sunset/sunrise tables for the calculations. John advises that an adaptation of the *FRENDX* article will also appear as a chapter of the *DX Listener's Handbook*, published by Universal Electronics, 4555 Groves Rd., Suite 3, Columbus, OH 43232.

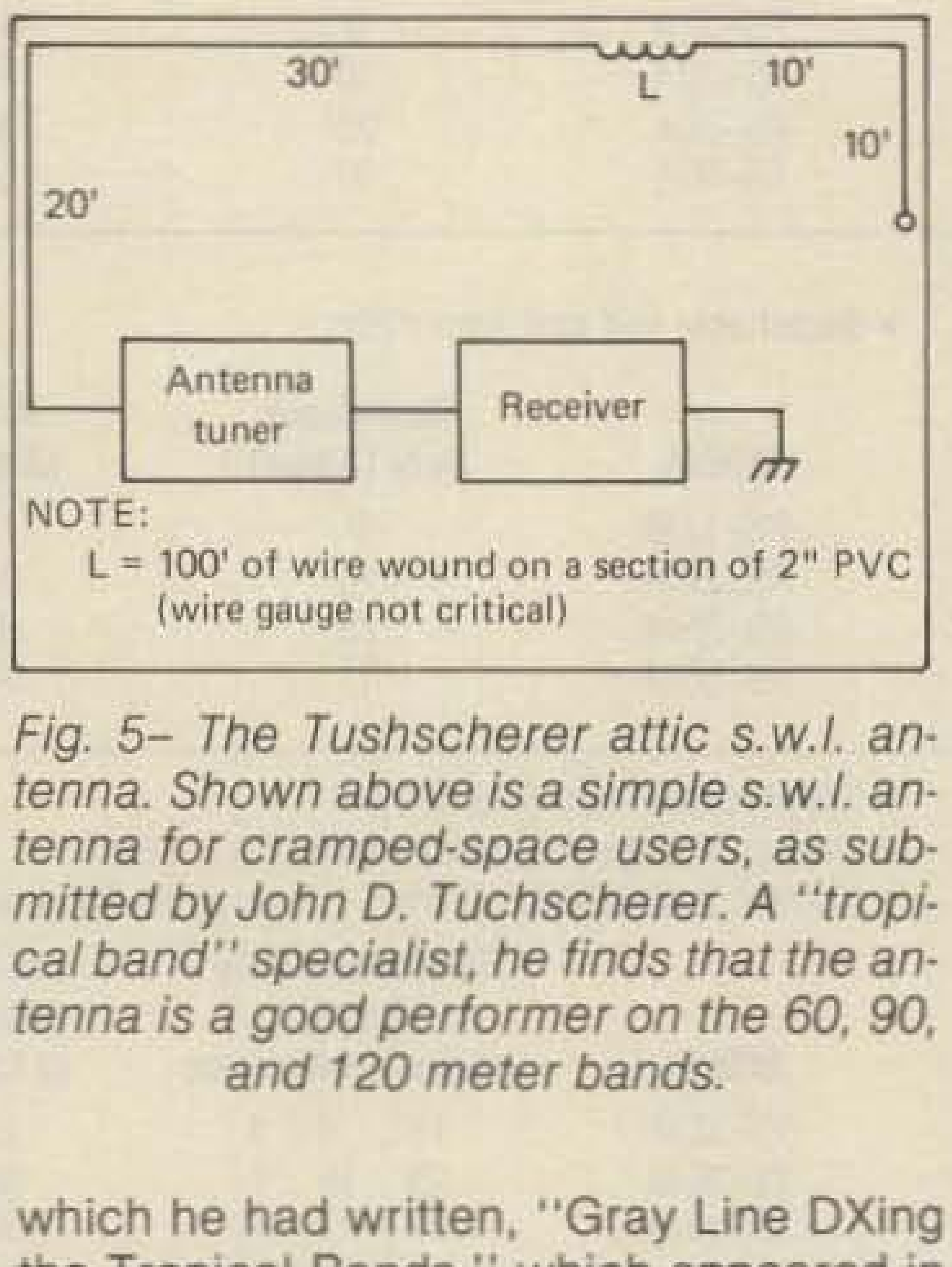

Fig. 5– The Tushscherer attic s.w.l. antenna. Shown above is a simple s.w.l. antenna for cramped-space users, as submitted by John D. Tuchscherer. A "tropical band" specialist, he finds that the antenna is a good performer on the 60, 90, and 120 meter bands.

For those readers who missed our coverage of gray-line propagation in a previous column (including discussion of the "DX Edge" calculator in the May issue) and are unfamiliar with this specialized aspect of propagation, following is a mini-review.

Observation has shown that enhanced conditions for working DX often occur at sunrise and sunset. The line between day and night is known as the circle of illumination, or terminator; it forms a great-circle path. In reality this path is a band rather than a narrow line, which is known as the "gray line" among s.w.l.'s and amateurs. For practical purposes, the width of the gray line can be a variable that is determined by the user, often arbitrarily set at 15 degrees, which is of sufficient width to determine which countries can be found along this great-circle path. For any location on earth, the gray line is in effect twice each day: once in the morning and once in the evening, each plus or minus "x" minutes from sunrise to sunset. For most applications, a time window of ± ½ hour is adequate to determine which countries can be found, and this window corresponds to the gray-line width of 15 degrees described above.

That signal enhancement frequently occurs along the gray line is primarily caused by the fact that the atmospheric D-layer (which absorbs high-frequency signals) is disappearing at the station which lies on the sunset side of the gray line, while the layer hasn't fully built up on the sunrise side. Note that the condition of approximate sunrise at your location and sunset at the other location (or vice versa) must occur for true gray-line propagation.

Various methods to calculate the gray line have been developed. These include the Dalton method, which involves the