

## Erecting a 331-Foot Suspension Bridge With Unskilled Labor

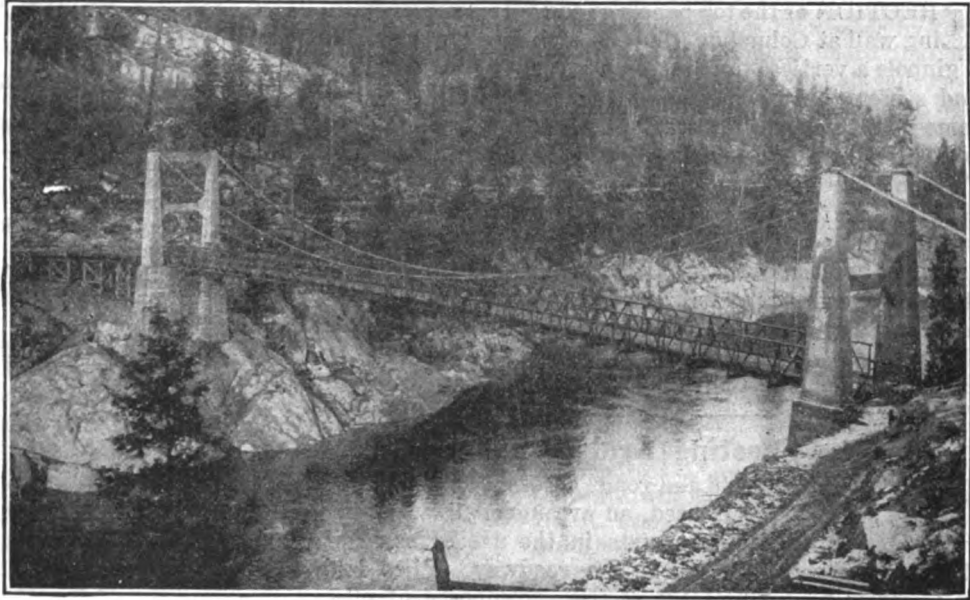
Sir—The article by William G. Grove in *Engineering News-Record* of July 3, 1919, p. 4, describing a 540-ft. suspension bridge, recalls a somewhat similar but smaller structure built at Brilliant, B. C., in 1913. This was for the Doukhobor society, composed of Russian peasants of a religious sect, living under a system of community ownership, so that the organization customary on construction work did not exist. Very few of them could talk any English, and I knew nothing of their language till I learned it on the job.

The bridge has a span of 331 ft. between centers of towers, with a 16-ft. roadway. The trusses are of steel, 9 ft. deep; the floor-beams are pairs of channels with hanger rods between and a kneebrace at each end. The towers are 50 ft. high above the piers and are of reinforced concrete. Each cable consists of four plow-steel wire ropes 2 in. in diameter, with about 37-ft. sag, this arrangement being adopted in order to use cables which the Doukhobors had bought before engaging engineers. Each rope socket is attached to two 2½-in. rods which pass through a steel anchor bedded in concrete in the solid granite. At the towers, the cables rest on saddles, under which are rollers. The cables are cradled in planes with a batter of 1 to 12 and there are 1½-in. guy cables on each side, attached to floor-beams.

As the men were not accustomed to working high in the air, considerable difficulty was experienced in getting them to try some of the operations. On the north

side of the river a 95-ft. tower was needed for hoisting concrete. Only three men were willing to build it, and even they would not take it down afterward, so it was pulled over and smashed on the rocks.

The cables were pulled across the river supported on a trolley cable, and after being swung free were adjusted to length. For placing clamps and hanger rods, a trolley cable was used on each side of the road; on



SUSPENSION BRIDGE AT BRILLIANT, B. C.

these were hung boxes in which the men worked. For entering the lower ends of hanger rods through the floor-beams, suspended chairs were used. All of the men working on steel erection wore safety belts, such as are used by telephone linemen. On one side of the river the steel was lifted by a small single-drum engine; on the other side hand tackle was used.

After the clamps were on the cables the method used was as follows: Hanger rods were put up for three panels; then three floor-beams with kneebraces attached were hung, after which the trusses in the three panel sections were put on. A couple of holes in the top chord splice were then caught, the bottom chords pulled together, and the diagonal put in. Then after the laterals were put in place the deck was extended. Bolts were used for field connections.

The bridge was built by the Doukhobor society, assisted financially by the provincial Government of British Columbia. It was designed by John R. Grant, of Cartwright, Matheson & Co., of Vancouver, B. C.; the writer was in charge of construction for the same firm.

A. M. TRUESDELL,  
American Bridge Co.  
Gary, Ind.



PLACING A THREE-PANEL SECTION OF SUSPENSION BRIDGE