

Of the actual road sections exhibited, probably none were of greater interest than those supplied by Mr. J. A. Brodie, city engineer of Liverpool. These had been cut from the streets of that city and some of them had seen many years of service. One of these, I recall, consisted of six-inch Welsh granite setts above a six-inch concrete base, the two being separated by two inches of sand filler. The joints between adjacent setts appeared to be filled with grout. This road, subjected to constant heavy traffic, had stood for 41 years and appeared to be still in good condition. Another, of somewhat similar type, except that the binder between the individual setts was asphaltic instead of grout, had stood quite well under what was reported as medium traffic since 1883. Other samples gave evidence of remarkable wear in treated wooden blocks. One section consisted of creosoted dial blocks on an 8-inch concrete base. The blocks appeared to have been originally separated from each other in rows by tiny horizontal wooden strips. This road was in fair condition and had been in service since 1893. But the most ancient of all was the Roman road, discovered in 1897 at Rochester. The construction was substantial beyond doubt, since below the seven-inch paved roadway were: gravel, 9 inches; small flints, 7 inches; chalk, 5 inches, and large flints, 42 inches. Below this, finally, were timber caps and piles, the highway having doubtless been constructed across a marsh. The aggregate depth, exclusive of the timber, was 70 inches. John Bull has undoubtedly some substantial prototypes for his guidance when he turns his attention to the building of highways.

Finally, let me point out, the International Road Congress affords to the observer, mainly by contrast, a view of some of the anomalies of present-day civilization. Mr. John Burns, presiding at the final banquet of the Congress, held at the Hotel Cecil, on Saturday evening, June 28th, in moving the toast to the "International Road Congress," asserted that to the modern road was due the wonderful diminution of infantile mortality and infantile diseases, and that the lack of roads and communications had led to estrangement, hostility and misunderstanding between nations. This great International Congress, composed of representatives of the sober thought of fifty nations, goes somewhat farther and shows how the constructive arts afford a common meeting ground, prevent misunderstanding and promote good-fellowship and international good-will. But this all happens in a week when the Imperial Chancellor of Germany is asking his Reichstag for six new cavalry regiments "for the protection and security of the Fatherland," when the French populace are being forced into universal military service, and when in England the First Lord of the Admiralty has announced that because of the action of the Canadian Senate in rejecting the naval bill, the construction of three dreadnoughts will be accelerated. It is interesting to observe that he too makes use of that hoary fiction, "the safety, not of our trade, but of our lives." Meanwhile, the innocent citizen is perplexed to understand whose concealed hand is working the puppets. That the better spirit of the land is in some degree becoming disgusted with the whole sordid business is evidenced by an incident that happened at Sheffield during the week. A large number of the Roads Congress delegates were the guests of the Hadfield Steel Manufacturing Company at that city on the occasion referred to, and had been given an actual demonstration of the power of the modern projectile in penetrating armor plate. Sir Robert Hadfield, head of the great firm, in addressing the gathering, remarked significantly on its cosmopolitan character, and

hoped that when the Congress again met in England his firm would not be engaged in this kind of work. The anomaly of our present civilization is that while efforts looking toward the betterment of the race, its health, its comfort, its education and its happiness, were never more active than they are to-day, the perfection of engines for its destruction was never so complete.

PETER GILLESPIE.

London, July 3rd, 1913.

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Long Distance Measuring With a Stadia.

Sir,—In traversing with a stadia it may seem incredible to some that distances of 3,000 to 4,000 feet are reported to be read or measured. Where precise measurement is required this is not possible at a single setting, but when fairly close approximations are sufficient, such long traverse sights are not infrequently taken. The method used may be of interest.

In these cases only half the wire interval is employed, that is, a 13-foot rod may be read over a distance of 2,600 feet. In some transits the two half wire intervals are not precisely the same, and in cases where the wires are attached, it is impossible to properly adjust them for this work unless they are sent to a repair shop for alteration.

In reading half the wire interval the centre wire is focused on the top of the rod, and the lower wire is marked on the rod with a target, at, for example, ten feet from the top, corresponding here to a distance of 2,000 feet. In such long distances it will, of course, be impossible to read the rod directly, and one must depend upon the rod-man for its measurements. A target can easily be seen through the transit from a distance of 2,000 or 3,000 feet.

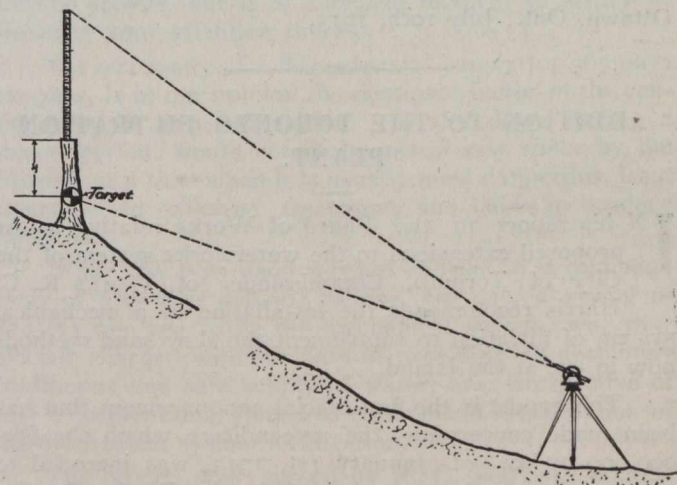


Fig. 1.—Showing Method for Use in Sights of Unusual Length.

The writer has taken many sights of this length in traversing lakes, no effort being made to read the rod, the position of the target only being viewed with the lower wire. As stated, the middle wire was focused upon the upper end of the rod and the reading was made downwards. Thus the target makes it much easier for the transit man, although its use is not required for shorter distances of, say, 500 to 600 feet.

The average 13-foot rod will read up to 2,600 feet in this way. When longer sights are required the accompanying illustration shows a convenient method to pursue.

The rod is held on the top of a tree stump as shown. It is sometimes necessary to cut a tree for the purpose of