While the idea is not new and originality for it cannot be claimed, the projectoscope was used very frequently this past campaign, being placed on the pan floor where it was readily accessible for examination of sugars, massecuites, and syrups, and several operators have expressed the opinion that it has been of considerable value to them in sugar end control.

The outstanding advantage of such a device is that it provides visual inspection by a group rather than by only one person at a time; defects and irregularities of sugar end products are pointed out. and seen simultaneously by all observers. This, of course, cannot be accomplished with the ordinary magnifier or microscope.

Due credit must be given J. B. McDonald for his suggestion of the application of the principles of the device in our industry and to Ivan E. Enwall for his assistance in the designing and building of the instrument.

# Beet Laboratory Pulp Mixer

PAUL. M. SMITH[1]

In a beet testing laboratory where a great, number of individual samples of beets are tested for sugar content each day, it is necessary for greatest accuracy, that the pulp samples produced by the rasp be thoroughly mixed before analysis. Primarily because of this fact and also because the mixing of these samples by hand is very laborious and the quality of mixing is (questionable at times, it was decided to design a machine which would eliminate to a considerable degree the labor as well as the human element involved. The following is a description of the machines which have proved highly successful in our beet laboratories during the past three campaigns.

To a 3-inch fiber pulley is attached a steel spur pinion which drives two brass gears. The gears are attached to 5/16-inch shafts, running vertically in bronze bearings fitted with Zerk grease fittings. On the opposite ends of the shafts are two %-inch hubs counter bored for 5/16-inch shafts. The two beaters are 4 inches across and 4 inches long and are constructed of No. 8 brass spring wire formed into a horseshoe shape. The wires are held in cross-bars, made of 1/2-inch key steel, by safety set-screws. A 1/4-inch shaft attached to each pair of cross-bars is inserted in the 3/4-inch hubs and is held by a set-screw. The bearing assemblies are held, by means of a 3/8-inch cap screw-, between two pieces of 1/2-inch by 3-inch flat iron on one of

[1]Chief Chemist, Great Western Sugar Company, Eaton, Colo.

which is mounted the driving motor. A sheet metal safety guard covers pulley and gears. The mixer is driven by a 1/20 h. p. constant-speed motor. The approximate speeds are: Motor 1.750 r.p.m. ; heaters 300 r.p.m.

The mixer is mounted in a position convenient to the operator, at such a height that will permit manipulation of the mixing bowl while the sample is being mixed, and runs continuously. A light sheet metal guard around the beaters to catch the small quantity of pulp thrown off the beaters between samples is desirable.

In operation the mixing bowl containing the sample of pulp is held in the hands of the operator and moved about so that all parting is obtained. The average size sample of pulp from 25 to 30 pounds of beets is completely mixed in about 15 seconds. The quality of the mixing can be checked by adding a small quantity of red ink to a sample of pulp and observing the distribution of the dye during the mixing.

With this device an operator is able to mix many hundreds of samples of pulp per shift and the fatigue of operators and the uncertainty of proper mixing by hand methods are eliminated, thus speeding up the work and increasing the accuracy of the tests.