THE ELIMINATION OF GUESSWORK DURING AUTO-TOWING

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After two years of successful operation over perfectly flat terrain, in a climate motivated by its extreme easterly seaboard location, and using methods held as impractical by early advisers, the South Jersey Soaring Society now feels that it has matured sufficiently to express its opinion in this Gliding publication. In response to recent interest in our latest towing refinement, we would like to submit our experiences for the benefit of those who might use them to advantage.

The South Jersey Soaring Society is based at a former World War II air base at Millville, New Jersey. The airport has four paved runways each 5000 feet long which proved to be an ideal set-up for auto towing gliders. Although we had a towplane available, 1400 out of the 1500 flights made during the first 20 months of our existence were made from auto tows. Normally, we prefer auto towing for the following reasons:

1. Several of our more active members had no previous flying experience. We found auto towing to be the fastest method of running up training flights. An experienced ground crew could launch the Pratt-Read every 3½ minutes. This includes a climb to 500 feet and a 360 degree landing pattern. We found that the most difficult phases of gliding instructing, the take-off, pattern, and landing, could be taught rapidly from auto tows. Two or three air tows to 3000 feet would then be sufficient for stall, steep turns and CAA check rides.

2. Even though we have our own Waco towplane, we found that we had to charge $1.00 per 1000 feet of altitude for air tows, the minimum charge being $2.00. On the other hand, we found that a charge of $.25 per auto tow covered the costs of the tow wire, hardware, parachute, galsoline, oil, and allowed approximately $.07 per tow for a maintenance fund for the tow car. For the $2.00 spent for an air tow to 2000 feet, we could get an equivalent of eight auto tows to 800 or 1000 feet of altitude.

3. We find a certain satisfaction in finding a thermal from an auto tow. We realize that the easy way is to take an air tow to 2000 feet and have our tow pilot fly around until he finds a nice fat thermal. With the auto tow, you have very little time to find a thermal. With the Pratt-Read, we consistently get 850 to 950 feet of altitude from an auto tow. A Club ruling prohibits thermal flying under 500 feet in Club-owned ships. Consequently, when you do hit lift, you have time for only one or two 360's. Practically all of our members consistently catch thermals from car tows, and all of our best flights have been made from auto tows.

During the first 20 months of our existence, our president, Otto Zauner, was kind enough to loan his 1949 Ford as a tow car. During these 1400 auto tows, we realized that the correct towing speed was a problem. The tow car driver easily recognized when he was going too slowly because the glider did not climb. However, he never knew when he was going too fast, especially on windy days. The usual fish tailing and wing wagging was found to be a poor form of communication since rough air gave the tow car driver false signals. The tow car overspeeding problem became more pronounced when the Club bought a 165 hp Buick to use as a tow car. This car had considerably more power than Otto's Ford and overspeeding occurred very easily.

Otto came up with the idea of using a tensiometer to use in the control of auto speeds. He purchased a used Bellows air cylinder and a 0 to 300 pound per square inch pressure gauge from a local concern for $5.00. The air cylinder was a double acting one having a piston diameter of approximately four inches. One of the pistons was removed so that it would give a pumping action only when the piston rod was pulled out. A glider hitch from a World War II cargo glider was mounted on the end of the piston rod. To keep the hitch in a vertical plane, a double acting hinge was welded to the cylinder and to the piston rod. A single hinge was fastened to the cylinder and to the bumper of the tow car. Figure 1 is a photograph of the installation. A spring, used to keep the piston at the unloaded end of the cylinder, can be noticed on the double acting hinge.

Fig. 1 — The pressure cylinder. Art Heavener shows how the hinged cylinder stays in alignment with the tow wire. The string attached to the release can be pulled by the tow car operator in case of emergency thereby releasing the glider.

Two oil lines can be seen at the end of the cylinder. One of these, a 3/16 copper line, connects the pressure side of the cylinder with a pressure gauge that is mounted on the instrument panel of the tow car. Figure 2 shows this installation. The face of the gauge was re-calibrated so that the force in the tow line could be read directly in hundreds of pounds.