TECHNICAL NOTE

*A SIMPLE MECHANICAL UPTAKE ROLLER
FOR CUMULATIVE RECORDER DATA¹*

The usual paper speed of a standard cumulative recorder is 11 in. (30 cm) per hour, which results in an accumulation of more than 7 ft. of paper at the end of an experimental day. Handling this enormous volume of data so that performance during the previous day's experimental session can be readily compared with the session in progress has been a persistent problem in most operant laboratories. In this laboratory, several experimental paradigms generate 11 in. of paper per hour, 24 hr per day, seven days a week. This problem prompted the design of a simple mechanical paper roller shown in Fig. 1. Installation of this device permitted staff to process records in less than 10 min that had previously required over 1 hr of time.

A schematic of the mechanical uptake roller is shown in Fig. 2. The cost of construction from 0.25 in. (0.63 cm) Plexiglas and 0.5 in. (1.27 cm) aluminum rod and fittings is about \$6.00 per roller. The roller can be set up for use in about 10 min. It requires no maintenance until it becomes full after two or three weeks. The capacity of the roller is determined by the size of guide on each end shown at the top of Fig. 2.

An additional advantage of this roller device is that records can be stored neatly in a roll labeled as to the dates and session number. This prevents the tedious task of folding cumulative records for file folder storage and helps to insure that records are not damaged during routine processing.

An automatic paper roller driven from a coupling attached to a gear in the cumulative recorder has also been tested. It was found to be unsatisfactory because it did not allow unrolling the records rapidly to compare data between sessions.

The following series of steps should be completed when installing paper on the roller:

1. The first time installed, unroll approximately 5 ft of unused paper from recorder supply, thereafter leave same amount to begin next time.
2. Fold 0.75 in. (1.9 cm) from end of paper and bring up and under making a loop in the hanging loose paper.

3. Place folded end over roller shaft between paper guides.
4. Hold firmly (the folded end) with left hand and crank clockwise with right hand until tight around shaft.
5. Place paper roller weights with 0.25 in. (0.63 cm) dowl inside of loop at bottom.
6. If paper is tight around shaft remove left hand and continue to crank up as necessary.

To remove data from the roller shaft:

Fig. 1. Photograph of mechanical uptake roller for cumulative recorder data. The amount of paper displayed is dependent upon the height of the roller from the floor. The lowest Plexiglas roller serves as a weight and is not mechanically attached to the main frame of the uptake roller.

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Fig. 2. Schematic diagram for construction guide for mechanical paper uptake roller.

1. Remove end shaft mount bracket.
2. Unscrew left section of roller shaft and remove.
3. With the right hand push against right paper guide.

If the roller shaft is machined smoothly the roll will slide off easily.

NOTE: Removal and installation time is usually about 5 min per machine.

The following parts are used to build the mechanical uptake roller:

- 1—aluminum rod, 20 in. (50.8 cm) long, 0.5 in. (1.3 cm) diameter
- 2—cast aluminum mount brackets 0.5 by 2.5 in (1.3 by 6.35 cm) circumference
- 1—sheet 0.25 in. (0.63 cm) Plexiglas, approx 18 by 24 in. (45.7 by 60.9 cm)
- 1—0.375 I.D. by 0.875 (0.95 by 1.2 cm) O.D. steel

washer

- 1—0.5 I.D. by 1.375 in. (1.3 by 3.5 cm) O.D. steel

washer

- 1—0.1875 by 0.75 in. (0.48 by 1.9 cm) cotter pin
- 1—0.25 by 10 in. (0.63 by 25.4 cm) wood dowel
- 1—0.375 by 10 in. (0.95 by 25.4 cm) wood dowel
- 2—0.25 in. (0.63 cm) rubber gromets
- 2—0.375 in. (0.95 cm) rubber gromets
- 2—0.75 by 0.625 in. (0.48 by 1.6 cm) bolts
- 1—1.5 by 0.625 in. (3.8 by 1.6 cm) bolt
- 2—pieces angle steel 1.25 by 1.25 by 12 in. (3.2 by 3.2 by 30.5 cm).

Average construction time for one man is 4 hr. Approximate cost of construction, \$6.00 to \$10.00 each.

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