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Letter from John Muir to Osgood & Smith, 1866-67 Winter

John Muir

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[Original in possession of Sarah Muir Galloway]

[Indianapolis, winter of 1866-67].

Gentlemen: [Osgood & Smith?]

The belt system of your shop is in a bad condition, and as belting is at once the nerves and sinews of factory life, the greatness of the importance of having it kept in good order need scarce be urged.

The difficulties seem to be:

- 1st Many belts are not right with regard to tightness
- 2nd " " have bad joinings
- 3rd " " are carelessly subjected to friction and thus torn and worn.

I carried home a piece of belting to study the effects of atmospheric changes upon it by means of the instrument herein sketched, and the result of my observations as far as they bear practically upon the matter in hand is simply that leather is expanded definitely and considerably by ordinary variations of temperature.

Belts, then, are longer in the day when running than during the night, not only because night is colder than day, but because they are heated more or less by friction on the pulley. Therefore if a belt be sufficiently tight when running it should be off the pulley at night. Otherwise it is liable to be strained and its elasticity destroyed by contraction, and when afterwards warmed by running it will be too loose and work imperfectly or portions of the belt must be repeatedly removed.

[diagram]

A is a strip of leather belting attached to the frame at B, the other end attached to a cord which passes over the pulley P upon the hand & a single glance at the instrument will show that any contractions and expansions that may occur in the belt will be indicated upon the graduated arc.