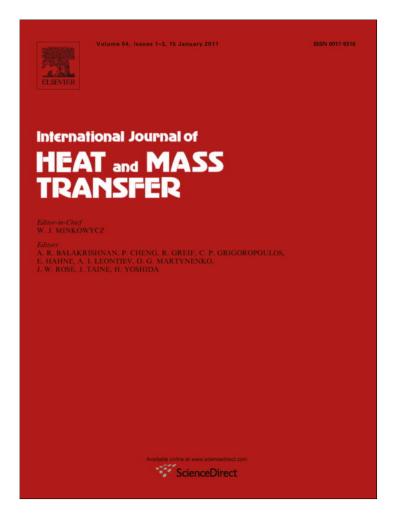
Provided for non-commercial research and education use. Not for reproduction, distribution or commercial use.



This article appeared in a journal published by Elsevier. The attached copy is furnished to the author for internal non-commercial research and education use, including for instruction at the authors institution and sharing with colleagues.

Other uses, including reproduction and distribution, or selling or licensing copies, or posting to personal, institutional or third party websites are prohibited.

In most cases authors are permitted to post their version of the article (e.g. in Word or Tex form) to their personal website or institutional repository. Authors requiring further information regarding Elsevier's archiving and manuscript policies are encouraged to visit:

http://www.elsevier.com/copyright

International Journal of Heat and Mass Transfer 54 (2011) 749

Contents lists available at ScienceDirect



International Journal of Heat and Mass Transfer



journal homepage: www.elsevier.com/locate/ijhmt

Erratum

Erratum to "A study of the Sherwood–Rayleigh relation for water undergoing natural convection-driven evaporation" [Int. J. Heat Mass Transfer 52 (2009) 3055–3063]

S.M. Bower, J.R. Saylor*

Department of Mechanical Engineering, Clemson University, Clemson, SC 29634-0921, USA

The authors regret that the computation of the evaporative mass flux from the tank \dot{m}'' failed to account for the flow from the beaker to the tank. As a consequence, Eq. (20) in the original paper should be replaced with the following five equations and accompanying text: $\rho g(h_b - h_t) = RQ$ (1)

where h_b and h_t are the heights of the water in the balance beaker and tank, respectively, and Q is the volumetric flowrate of water through the siphon tube. Assuming laminar, steady-state, fully developed pipe flow, the fluid resistance is given by $R = (128 \ \mu L)/(\pi d^4)$ where L is the length of the siphon tube, and d is the tube diameter. The fluid inertance is neglected. By conservation of mass, the flowrate through the siphon Q is:

$$\mathbf{Q} = -A_b \frac{dh_b}{dt} \tag{2}$$

The rate of change of the fluid height in the tank is therefore proportional to the sum of the siphon flowrate, Q, and the evaporative flowrate, Q_{ev}

$$Q + Q_{ev} = A_t \frac{dh_t}{dt} \tag{3}$$

By combining Eqs. (1) and (2), solving for h_t and taking its derivative with respect to time we obtain:

$$\frac{dh_t}{dt} = \frac{A_b R}{\rho g} \frac{d^2 h_b}{dt^2} + \frac{dh_b}{dt}$$
(4)

Combining Eqs. (3) and (4) and solving for the evaporative mass flux from the tank \dot{m}'' gives:

$$\dot{m}'' = \left(\frac{A_b}{A_t} + 1\right) \frac{(dm/dt)_b}{A_b} + \frac{R}{\rho g} \left(\frac{d^2 m}{dt^2}\right)_b \tag{5}$$

The above correction to Eq. (20) results in a change in the prefactor and exponent in the reported Sh-Ra power law relationship. The correct relationship is $Sh = 0.316 \text{Sc}^{1/3} Ra^{0.306}$. The prefactor and exponent appear in five other locations in the paper and should be corrected to read as follows:

- The fifth sentence of the abstract should read: "The resulting power law is $Sh \sim Ra^{0.306}$."
- The values of the prefactor and exponent in the first line in Table 1 should read: "B = 0.316" and "n = 0.306", respectively.
- Eq. (26) should read:

$$Sh = 0.316Sc^{1/3}Ra^{0.306}$$

(6)

- The caption in Fig. 6 should read: "...which gives B = 0.316 and n = 0.306 + 1."
- The third sentence of the conclusion should read: "The resulting *Sh*–*Ra* power law exponent was $n = 0.306 \pm 0.0096$ and the prefactor was $B = 0.316 \pm 0.0383$."

Unrelated to the above correction to \dot{m}'' , the following correction should also be made:

• The right-side y-axis label of Fig. 4 should read: "Mass Loss Rate/(kg/s)".

DOI of original article: 10.1016/j.ijheatmasstransfer.2009.01.034

^{*} Corresponding author. Tel.: +1 864 656 5621; fax: +1 864 656 4435.

E-mail address: jrsaylor@ces.clemenson.edu (J.R. Saylor).

^{0017-9310/\$ -} see front matter \odot 2010 Elsevier Ltd. All rights reserved. doi:10.1016/j.ijheatmasstransfer.2010.08.027