J. Fluid Mech. (1970), *vol.* 40, *part* 4, *pp.* 859–861
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Addenda and Corrigenda

'Condensation on and evaporation from droplets by a moment method',
by ROBERT E. SAMPSON AND GEORGE S. SPRINGER,
J. Fluid Mech. vol. **36**, 1969, p. 577.

In our paper, the collision integrals for the fourth, fifth, and sixth moments were calculated using the following expression (Lees 1959):

$$\Delta Q_4 = \Delta[\tfrac{1}{2}mv_r\mathbf{v}^2] = \frac{P}{\mu}(-\tfrac{2}{3}q_r + P_{rr}u_r),$$

$$\Delta Q_5 = \Delta[mv_r^2] = \frac{P}{\mu}P_{rr},$$

$$\Delta Q_6 = \Delta[mv_r^3] = \frac{2}{3}\frac{P}{\mu}\rho(-2u_r\zeta_r^2 - \zeta_r^3),$$

where $\quad q_r = \langle\tfrac{1}{2}m\zeta_r\boldsymbol{\zeta}^2\rangle \quad$ and $\quad P_{rr} = -\langle\tfrac{1}{3}m(2\zeta_r^2 - \zeta_\theta^2 - \zeta_\phi^2)\rangle.$

Here $\boldsymbol{\zeta}$ represents thermal velocity. We assumed low mean velocities ($\mathbf{u} \ll \boldsymbol{\zeta}$), and evaluated the collision integrals by replacing the thermal velocities in the integrals by absolute velocities $\mathbf{v}$ ($\boldsymbol{\zeta} = \mathbf{v} - \mathbf{u} \approx \mathbf{v}$). This assumption was made in order to simplify the calculations. It was subsequently pointed out to the authors by Mr J. Haas that although this simplification does not affect the results significantly when $\lambda/R \gg 1$, it does have an effect on the mass transfer rate when $\lambda/R \ll 1$. For this reason we have re-evaluated the collision integrals using thermal velocities instead of absolute ones. The right-hand side of equation (4*d*) now becomes

$$-\frac{4}{15}\frac{C}{\lambda\bar{r}^2}\{\bar{n}_1(1-\cos\alpha)+\bar{n}_2(1+\cos\alpha)\} - \frac{2}{5}\frac{\bar{I}}{\lambda\bar{r}^2}\{\bar{n}_1\bar{T}_1(\tfrac{5}{6}-\cos\alpha+\tfrac{1}{6}\cos^3\alpha) + \bar{n}_2\bar{T}_2(\tfrac{5}{6}+\cos\alpha-\tfrac{1}{6}\cos^3\alpha)\}. \quad (4d)$$

In linearized form this is

$$-\{\tfrac{8}{15}C + \tfrac{2}{5}\bar{I}(\tfrac{1}{6}\cos^3\alpha - \cos\alpha)(N_1+t_1-N_2-t_2) + \tfrac{1}{3}\bar{I}(2+N_1+t_1+N_2+t_2)\}/\lambda\bar{r}^2. \quad (9d)$$

The only modification in the final expression for the mass transfer rate i (equation (11)) due to the above changes is in the denominator where the term $1/(2+8/15\lambda)$ is replaced by $(1+R/3\lambda)/(2+8/15\lambda)$. Therefore, in the limit $\lambda/R \to \infty$ the previous and present expressions for i are identical. In the opposite limit ($\lambda/R \to 0$) the ratio of the previously derived i to the present one is $(\sigma_c^{-1}+\tfrac{1}{8})/(\sigma_c^{-1}-\tfrac{1}{2})$. All other results of the paper remain unaffected with the exception of the right-hand sides of the last three six moment equations in the appendix (equations (A 4)–(A 6)). The six moment equations ((A 1)–(A 6)) were not used in the calculations, but were merely presented to enable interested researchers to compare the differences between the four and six moment results. In order to complete the equations we give below the modified forms of the right-hand sides of (A 4)–(A 6). It is noted here that the importance of the changes cannot be evaluated readily by inspecting the equations.

$$\Delta Q_4 = \frac{\langle n\rangle}{n_v\lambda}\left(\frac{\pi kT_v}{2m}\right)^{\frac{1}{2}}\left[-\left(\frac{8k^3}{9\pi m}\right)^{\frac{1}{2}}x^2(F_1-F_2)-\frac{5k}{6}[y^3(G_2-G_1)+(G_1+G_2)]\right.$$
$$\left.+\langle v_r\rangle\left\{\tfrac{1}{2}k[(\tfrac{1}{6}y^3-2y)(D_1-D_2)+\tfrac{11}{6}(D_1+D_2)]-\frac{2}{3}\left(\frac{mk}{2\pi}\right)^{\frac{1}{2}}(1-y^4)(E_1-E_2)\right\}\right], \quad \text{(A 4)}$$

$$\Delta Q_5 = \frac{\langle n\rangle}{n_v\lambda}\left(\frac{\pi kT_v}{2m}\right)^{\frac{1}{2}}\left\{\tfrac{1}{2}k(y^3-y)(D_1-D_2)+\left(\frac{2mk}{\pi}\right)^{\frac{1}{2}}(E_1-E_2)(y^4-1+\tfrac{2}{3}x^2)\right.$$
$$\left.+\tfrac{2}{3}\langle v_r\rangle\left[\left(\frac{2mk}{\pi}\right)^{\frac{1}{2}}x^2(A_1-A_2)+m(B_1+B_2)+my^3(B_2-B_1)\right]\right\}, \quad \text{(A 5)}$$

$$\Delta Q_6 = \frac{\langle n\rangle}{n_v\lambda}\left(\frac{\pi kT_v}{2m}\right)^{\frac{1}{2}}\left\{\tfrac{1}{6}k\langle v_r\rangle[D_1(1-y^3)+D_2(1+y^3)]+\tfrac{1}{3}\langle v_r\rangle\left(\frac{2mk}{\pi}\right)^{\frac{1}{2}}\right.$$
$$\left.\times(E_1-E_2)(1-y^4)-\tfrac{1}{2}k[G_1(1-y^5)+G_2(1+y^5)]-\left(\frac{2k^3}{9\pi m}\right)^{\frac{1}{2}}(1-y^4)(F_1-F_2)\right\}. \quad \text{(A 6)}$$

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'High frequency sound waves in ideal gases with internal dissipation', by J. Dunwoody, *J. Fluid Mech.* vol. **34**, 1968, pp. 769–782.

On the fourth line of page 774, $\mathbf{u}(x^*,\alpha)$ should read $\mathbf{u}(x^*,\phi)$. Since $g(\phi) = u'(x^*,t)$, i.e. ϕ is the time that a wavelet leaves the station x^* then

$$x^* = \tilde{x}(\phi),$$

and instead of (4.9) we should have

$$\frac{\partial T}{\partial \phi} = 1+\frac{\gamma+1}{2a_0^2}g'(\phi)(\exp[-\lambda(x-x^*)]-1)-\frac{g(\phi)}{a_0}.$$

However the remaining equations in this section are correct.

At the end of page 777, $x = 0$ should read $x = x^*$ and in (6.1) again x should be replaced by x^*.

On page 779: in the first approximation the boundary conditions are applied at $x = 0$, since $x^* = 0$ to this order. Thus in (6.11), (6.16) and the following formula for the shock strength $e^{-\lambda(x-x^*)}$ should be replaced by $e^{-\lambda x}$.

The sentence following (6.11) should then be replaced by:

When these, appropriately factored by ω^{-1}, are added to (6.9) then the total corresponds to that solution obtained in §4, correct to $O(\omega^{-1})$.

In the sentence following (6.12), (6.10) and (6.8) should be replaced by $(6.10)_1$ and $(6.8)_1$ respectively.

Following (6.15) on page 780 the statement 'satisfies (5.7)' should be 'satisfies (5.8)'.

In the second approximation $s = (x - x^*)$, defined in (6.18), should be replaced by x throughout. The boundary conditions at $x = x^*$ on u_2 and α_2 are then satisfied to the order of approximation.

In (6.23) on page 782 the first term on the right-hand side should be replaced by

$$-\sigma(1-\cos\beta)/a_0$$

in order that (6.1) and (6.3) be satisfied.