The hot

body will lose some entropy and the cold body will gain some.

Dò e¯‘wU wKQz GbUªwc\* nviv‡e, Avi kxZj e¯‘wU wKQz GbUªwc jvf Ki‡e| GLv‡b Zvc kw³i cwigvY GKB \_vK‡jI ZvcgvÎv wKš‘ wfbœ wQj| `AÎGe, Dò e¯‘wU hZUyKz GbUªwc nvwi‡q‡Q, kxZj e¯‘wU Zvi †P‡q †ewk GbUªwc jvf K‡i‡Q| d‡j wm‡‡÷‡gi †gvU GbUªwc, gv‡b Dò I e¯‘ kxZj e¯‘i GbUªwci mgwó †e‡o‡Q| Zvi gv‡b, ZvcMwZwe`¨vi wØZxq m~Î‡K Av‡iKfv‡eI ejv hvq| G ai‡bi wm‡÷‡gi\* GbUªwc KLbI n«vm cv‡e bv| KviY, †m‡ÿ‡Î wKQz cwigvY Zvc‡K ¯^Ztù~Z©fv‡e kxZj e¯Í †\_‡K Dò e¯‘‡Z cÖevwnZ n‡Z n‡e|

Av‡iKUz Mfxifv‡e wPšÍv Ki‡j m~ÎwU‡K †h-‡Kv‡bv e× wm‡÷‡gi\* R‡b¨ cÖ‡qvM Kiv hvq: GbUªwc KL‡bvB K‡g bv| aiv hvK wm‡÷‡g Av‡Q GKwU †iwd«Rv‡iUi (wd«R)| GwU kxZj e¯‘ †\_‡K DËß e¯‘‡Z Zvc cvVvq| GbUªwci †gvU cwigvY wn‡me Ki‡Z n‡j wd«R Pvjv‡bvi R‡b¨ e¨q nIqv kw³i K\_v gv\_vq ivL‡Z n‡e| GB e¨‡qi cÖwµqvi Kvi‡YB wKQz GbUªwc †e‡o hv‡e| d‡j memgq GKB NUbv NU‡e| wd«R VvÐv e¯‘‡K Mig K‡i wKQz GbUªwc Kgv‡e wVKB, wKš‘ wd«R Pvjy ivL‡Z wM‡q †h cwigvY GbUªwc evo‡e †mUv Gi †P‡q †Xi †ewk| cÖvK…wZK wm‡÷g¸‡jv‡ZI GKB NUbv N‡U| †hgb, wewfbœ Rx‡ei †`‡n ev ùwUK ˆZwii cÖwµqv| wm‡÷‡g‡i GK As‡ki GbUªwc K‡g hvq, wKš‘ Aci †Kv‡bv As‡k wVKB Zvi †P‡q †ewk cwigvY GbUªwc †e‡o hvq| me wgwj‡q, GbUªwc KL‡bvB K‡g bv|

mvgwMÖKfv‡e cy‡iv gnvwek^‡K GKwU GKwU e× wm‡÷g fvev hvq| GB A‡\_© †h, Gi ÔevB‡iÕ wKQzB †bB| Zvn‡j, ZvcMwZwe`¨vi wØZxq m~Î ¸iæZ¡c~Y© GKwU c~ev©fvm cÖ`vb K‡i| †mwU n‡jv, gnvwe‡k^i †gvU GbUªwc KL‡bvB K‡g bv| Avm‡j GwU AcÖwZ‡iva¨ MwZ‡Z †e‡oB P‡j| Avgv‡`i Lye Kv‡QB †Zv Gi GKwU bgybv Av‡Q| m~‡h©i K\_v ejwQ| m~h© Aweivg gnvk~‡b¨i kxZj AÂ‡ji w`‡K Zvc Qwo‡q w`‡”Q| Zvc Qwo‡q co‡Q gnvwek^ Ry‡o| wd‡i Avm‡Q bv KLbI| ¯úó GKwU AcÖZ¨vMvgx cÖwµqv|

fvebvi welq n‡jv, GUv wK m¤¢e †h gvnwe‡k^i GbUªwc wPiKvj evo‡ZB \_vK‡e| g‡b Kiæb, Ggb GKwU cvÎ †bIqv n‡jv, †hLvb †\_‡K †Kv‡bv Zvc †ei n‡Z cv‡i bv, Avevi †Kv‡bv Zvc †mLv‡b cÖ‡ekI Ki‡Z cv‡i bv| aiæb †mLv‡b GKwU Dò I GKwU kxZj e¯‘‡K cvkvcvwk ivLv n‡jv| Zvc kw³ Dò e¯‘ †\_‡K kxZj e¯‘‡Z cÖevwnZ n‡e| GbUªwc evo‡e| wKš‘ GK chv©‡q kxZj e¯‘wU Mig n‡e Ges Dò e¯‘wU VvÐv n‡e| d‡j `y‡Uvi ZvcgvÎv mgvb n‡q hv‡e| G Ae¯’vq †cŠuQvi Avi †Kv‡bv Zvc wewbgq n‡e bv| cv‡Îi wfZ‡ii wm‡÷g GKwU wbw`©ó ZvcgvÎvq †cŠuQ‡e| m‡e©v”P GbUªwci GB myw¯’Z `kv‡K ZvcMZxq mvg¨ve¯’v e‡j| wm‡÷gwU wew”Qbœ \_vK‡j Avi †Kv‡bv cwieZ©b nIqvi K\_v bq| wKš‘ e¯‘¸‡jv‡K †Kv‡bvfv‡e cÖfvweZ Ki‡j wfbœ K\_v| †hgb aiæb, cv‡Îi evB‡i †\_‡K AviI Zvc mieivn Kiv n‡jv| †m‡ÿ‡Î Zvcxq NUbv AviI NU‡e| Ges GbUªwci m‡ev©”P mxgv Av‡iKUz evo‡e|

gnvwe‡k^i cwieZ©b m¤ú‡K© ZvcMwZwe`¨vi G m~Î¸‡jvi e³e¨ Kx? m~h© Ges AwaKvsk bÿ‡Îi K\_v hw` ewj, Zvc wbM©g‡bi cÖwµqv AviI eû wewjqY eQi a‡i Pj‡Z cv‡i| wKš‘ Gi †h †kl †bB Zv bq| GKwU mvaviY bÿ‡Îi Zvc Drcbœ nq Gi Af¨šÍ‡i msNwUZ wbDwK¬qvi cÖwµqvi gva¨‡g| c‡i Avgiv †`Le, m~‡h©i R¦vjvwb GK mgq dzwi‡q hv‡e| Ges mewKQz wVKVvK \_vK‡j GK mgq Gi ZvcgvÎv Gi cvk^eZx© gnvk~‡b¨i ZvcgvÎvi mgvb n‡q hv‡e|

‡nig¨vb fb †njgnjR Aek¨ wbDwK¬qvi wewµqvi K\_v Rvb‡Zb bv| (m~h© GZ wecyj kw³ Kxfv‡e Drcbœ K‡i Zv Zvui mg‡q ARvbv wQj) Z‡e wZwb GKwUi mvwe©K bxwZ Zvui Rvbv n‡q wM‡qwQj| †mUv n‡jv, gnvwe‡k^i mKj †fŠZ cÖwµqv GKwU P~ovšÍ ZvcMZxq mvg¨ve¯’v ev m‡ev©”P GbUªwci w`‡K G‡Mv‡”Q| Zvi c‡i Avi †Kv‡bv w`b ejvi g‡Zv wKQz NUvi m¤¢vebv †bB| cÖ\_g w`‡Ki we‡klÁiv mvg¨ve¯’vi w`‡Ki GB GKgyLx MwZ‡K bvg †`b ÔZvcxq g„Zz¨Õ (heat death)| Z‡e mevB gvb‡Zb †h evB‡i †\_‡K KvR K‡i ¯^Zš¿ wm‡÷g‡K Avevi mwµq Kiv †h‡Z cv‡i| wKš‘ msÁv Abymv‡iB gnvwe‡k^i ÔevB‡iÕ wKQzB †bB| d‡j, mvgwMÖK †mB Zvcxq g„Zz¨ †VKv‡bvi g‡Zv wKQzB †bB| Awbevh© GK cwiYwZ|

ZvcMwZwe`¨vi m~‡Îi Kvi‡Y gnvwek^ AcÖwZ‡iva¨fv‡e g„Zz¨i w`‡K GwM‡q hv‡”Q, G Avwe®‹vi eû cÖR‡b¥i weÁvbx I `vk©wbK‡K nZvk K‡i‡Q| †hgb evUv©Û iv‡mj Zvui *†nvqvB AvB A¨vg bU A¨v wµwðqvb* eB‡q wb‡Ri welYœ g‡bvfve Zz‡j ai‡Z wM‡q e‡jb,

Ôhy‡Mi ci hyM a‡i K‡i hvIqv GZ me cwikÖg, GZ HKvwšÍKZv, GZ me Drmvn-DÏxcbv, gvby‡li eyw×gË¡vi GZ `viæY me wb`k©b †mŠiRM‡Zi g„Zz¨i mv‡\_ mv‡\_ nvwi‡q hv‡e, Avi gvby‡li mKj AR©b Awbevh©fv‡e gnvwe‡k^i aŸsmve‡k‡li wb‡P Pvcv co‡e — G K\_v¸‡jvi mv‡\_ mevB GKgZ bv n‡jI Gi wecÿ †Kv‡bv `k©b cÖ‡qvM K‡iI Gi †\_‡K evuPvi Avkv Kiv †h‡Z cv‡i bv| ïay GB m‡Z¨i Ici fi K‡iB, GB KwVb nZvkvi Ici `„pfv‡e `vuwo‡q †\_‡KB AvZ¥v‡K wbivc` Kiv †h‡Z cv‡i|Õ

ZvcMwZwe`¨vi wØZxq m~Î I Gi gi‡Yvb¥yL gnvwek^i welqK djvdj m¤ú‡K© A‡bKB gšÍe¨ K‡i‡Qb, gnvwek^ Avm‡j wbi\_©K wRwbm| Ges P~ovšÍfv‡e gvby‡li Aw¯ÍZ¡I A\_©nxb| GB nZvkve¨ÄK gšÍe¨ m¤ú‡K© Avwg c‡ii Aa¨vq¸‡jv‡Z K\_v eje| GB aviYv wVK wK fzj †mUvI Av‡jvPbv Kie|

gnvwe‡k^i P~ovšÍ Zvcxq g„Zz¨ †h †Kej fwel¨r gnvwe‡k^i K\_vB ej‡Q Zv wKš‘ bq, AZx‡Zi IciI f~wgKv Av‡Q Gi| GUv cwi®‹vi †h gnvwek^ hw` GKwU wbw`©ó nv‡i wbt‡kl n‡q †h‡Z \_v‡K, Z‡e Gi wPiKvj a‡i Gi c‡ÿ wU‡K \_vKv Am¤¢e| KviYUv Lye †mvRv| gnvwe‡k^i esl hw` Amxg nZ, Z‡e GZ w`‡b Gi g„Zz¨B n‡q †hZ| †h wRwbm wbw`©ó nv‡i †kl n‡q †h‡\_ \_v‡K †mUvi c‡ÿ wPiKvj wU‡K \_vKv m¤¢e bq| Ab¨ K\_vq, Aek¨B GKwU wbw`©ó mgq Av‡M gnvwe‡k^i Rb¥ n‡q‡Q|

GKUv eo welq n‡jv, Ebwesk kZ‡Ki weÁvbxiv GB eo djvdjwU fv‡jvg‡Zv eyS‡Z cv‡ibwb| 1920 Gi `k‡K gnvKvk ch©‡ÿ‡Yi gva¨‡g †evSv †Mj, AvKw¯§K GK gnvwe‡ùvi‡Yi (weM e¨vs) Gi gva¨‡g Rb¥ n‡q‡Q gnvwe‡k^i| Z‡e †`Lv hv‡”Q, ïay ZvcMZxq Kvi‡Yi Ici wfwË K‡iB gnvwe‡k^i GKwU wbw`©ó mg‡q ïiæi wel‡q Av‡M †\_‡KB `„p mg\_©b wQj|

wPÎ 2.2

Ijevm© c¨vivW·

g‡b Kiæb, gnvwek^ AcwieZ©bkxj| bÿÎ¸‡jv wbw`©ó GKwU Mo NbZ¡ wb‡q G‡jv‡g‡jvfv‡e Qwo‡q wQwU‡q Av‡Q| wP‡Î c„w\_exi Pivw`‡Ki GKwU wPKb †MvjvKxq †Lvj‡mi g‡a¨ Aew¯’Z bÿÎ‡`i wKQz bÿÎ †`Lv‡bv n‡jv| (‡Lvj‡mi evB‡ii bÿÎ¸‡jv wPÎ †\_‡K ev` †`Iqv n‡q‡Q|) G †Lvj‡mi bÿÎ¸‡jv †\_‡K Avmv Av‡jvB c„w\_ex‡Z cwZZ mg¯Í bvÿwÎK Av‡jvi †hvMvb †`q| GKwU wbw`©ó bÿÎ †\_‡K Avmv Av‡jv Gi †Lvj‡mi e¨vmv‡a©i eM© Abycv‡Z\* K‡g hvq| Avevi, †Lvj‡mi e¨vmva© evovi mv‡\_ mv‡\_ bÿ‡Îi msL¨vI †e‡o hvq eM© Abycv‡ZB| d‡j `y‡Uv cÖfve G‡K Aci‡K evwZj K‡i †`q| Zvi gv‡b, †Lvj‡mi †gvU `xwß\* Gi e¨vmv‡a©i Ici wbf©i K‡i bv| gnvwek^ Amxg n‡j G‡Z GiKg †Lvj‡mi msL¨vI Amxg n‡e| d‡j, c„w\_exi ey‡K G‡m cwZZ Av‡jvi cwigvYI Amxg nevi K\_v|

wKš‘ ev¯Í‡e GgbUv †`Lv hvqwb e‡j Ebwesk kZ‡Ki †R¨vwZw©e`‡`i‡K gnvwek^ GKwU AvMÖ‡nvÏxcK c¨vivW· nZeyw×‡Z †d‡j †`q| Rvgv©b †R¨vwZwe©` Ijev‡ii bvg Abymv‡i G‡K Ijevim c¨vivW· e‡j WvKv nq| wZwbB c¨vivW·wUi Rb¥ †`b| GwU GKwU mij wKš‘ Lye ¸iæZ¡c~Y© cÖkœ DÌvcb K‡i| iv‡Zi AvKvk †Kb Kv‡jv?

cÖ\_g `„wó‡Z G‡K †QvULv‡Uv mgm¨v g‡b n‡e| iv‡Zi AvKvk Kv‡jv, KviY bÿÎiv Avgv‡`i †\_‡K A‡bK A‡bK `~‡i Av‡Q| ZvB Giv Aby¾j| (†`Lyb wPÎ 2.2) wKš‘ aiæb, gnvk~‡b¨i †Kv‡bv †kl †bB| †m‡ÿ‡Î bÿ‡Îi msL¨v Amxg n‡Z †Zv †Kv‡bv evav †bB| Amxg msL¨K Ayb¾¡j bÿ‡Îi Av‡jvI GKÎ Ki‡jI †Zv cÖPzi Av‡jv nq| gnvk~‡b¨ cÖvq mylgfv‡e (mgvb GjvKvq cÖvq mgvb msL¨K) web¨¯Í Amxg msL¨K AcwieZ©bkxj bÿ‡Îi †gvU Av‡jvi cwigvY mn‡RB wn‡me K‡i †ei Kiv hvq| wecixZ eMxq\* m~Î Abymv‡i `~i‡Z¡i mv‡\_ mv‡\_ D¾&¦jZv K‡g Av‡m| Gi gv‡b n‡jv, `~iZ¡ wØ¸Y n‡j D¾¦jZv Pvi fv‡Mi GK fvM n‡q hv‡e| `~iZ¡ wZb ¸Y n‡j D¾¡jZv n‡e bq fv‡Mi GK fvM| Gfv‡eB Pj‡Z \_vK‡e| Ab¨ w`‡K hZ `~i ch©šÍ `„wó †`Iqv n‡e, bÿ‡Îi msL¨v ZZ evo‡Z \_vK‡e| Ges, mvaviY R¨vwgwZi gva¨‡gB †`Lv‡bv hvq, GKk Av‡jKel© `~‡i hZ bÿÎ Av‡Q, `yBk Av‡jvKel© `~‡i Zvi Pvi ¸Y bÿÎ Av‡Q| Avevi, GKk Av‡jKel© `~‡i hZ bÿÎ Av‡Q, wZbk Av‡jvKel© `~‡i Av‡Q Zvi bq ¸Y bÿÎ| Zvi gv‡b, `~i‡Z¡i e‡M©i mgvbycv‡Z bÿ‡Îi msL¨v †e‡o hv‡”Q Avi D¾¡jZv K‡g hv‡”Q| `y‡Uv cÖfve G‡K Aci‡K evwZj K‡i w`‡”Q| Zvi A\_© n‡jv, GKwU wbw`©ó `~i‡Z¡ Aew¯’Z me¸‡jv bÿÎ †\_‡K †gvU Kx cwigvY Av‡jv Avm‡e Zv `~i‡Z¡i Ici wbf©ikxj bq| `yBk Av‡jvKel© `~‡ii bÿÎiv hZUzKz Av‡jv †`‡e, GKk Av‡jvKe‡l©i `~‡ii bÿÎivI †mB GKB cwigvY Av‡jv †`‡e|

mgm¨v nq hLb Avgiv m¤¢ve¨ mKj `~i‡Z¡i mKj bÿ‡Îi Av‡jv GKÎ Kwi| gnvwe‡k^i hw` †Kv‡bv mxgvbv bv \_v‡K, Zvn‡j †Zv g‡b nq c„w\_ex‡Z G‡m cov Av‡jvi †gvU cwigv‡Yi †Kv‡bv mxgv \_vK‡e bv| AÜKvi nIqv †Zv `~‡ii K\_v, iv‡Zi AvKvk Zxeª Av‡jv‡Z Sjgj Kivi K\_v|

bÿÎ‡`i mmxg mvB‡Ri K\_v gv\_vq ivL‡j mgm¨vwU AviI eo n‡q †`Lv †`q| c„w\_ex †\_‡K †Kv‡bv bÿÎ hZ `~‡i \_vK‡e, Gi AvcvZ mvBRI ZZ Kg n‡e| c„w\_ex †\_‡K †`L‡Z `y‡Uv bÿÎ GKB †iLv eivei n‡j Kv‡Qi †Kv‡bv bÿ‡Îi A‡cÿvK…Z `~‡ii bÿÎ‡K Avovj K‡i †dj‡e| gnvwek^ Amxg n‡j GUv NU‡e Amxg mqsL¨K evi| GUv‡K wnmv‡e ai‡j Av‡Mi wm×všÍ wKš‘ cv‡ë hv‡e| c„w\_ex‡Z G‡Z †cŠuQv Av‡jv A‡bK †ewk n‡e GUv wVK, wKš‘ †mUv Amxg n‡e bv| c„w\_ex †mŠic„ô †\_‡K cÖvq 10 jvL gvBj `~‡i \_vK‡j c„w\_exi AvKv‡k †h cwigvY Av‡jv AvmZ GUv cÖvq Zvi mgvb n‡e| G iKg Ae¯’vb Aek¨B Lye A¯^w¯ÍKi n‡e| e¯‘Z, Zxeª DËv‡c c„w\_ex wb‡g‡li g‡a¨B ev®úxf~Z n‡q †hZ|

Amxg gnvwek^ †h Avm‡j GKwU gnvRvMwZK Pzwjøi g‡Zv AvPiY Ki‡e G aviYv bZzb wKQz bq| GUv Avi Av‡M Av‡jvwPZ ZvcMZxq mgm¨v Avm‡j GKB K\_v| bÿÎiv gnvk~‡b¨ Zvc I Av‡jv Qwo‡q w`‡”Q| GB wewKiY\* µgk Rgv n‡”Q gnvk~‡b¨| hw` bÿÎ¸‡jv Amxg mgq a‡i R¦‡j, Zvn‡j cÖ\_g `„wó‡Z g‡b nq wewKi‡Yi ZxeªZv Amxg n‡e| wKš‘ gnvk~b¨ w`‡q mÂvwjZ nevi mgq wKQz wewKiY Ab¨ bÿ‡Îi Ici wM‡q c‡o cybt‡kvwlZ n‡e| (Avgiv †h †`wL wbKUeZ©x ZviKviv `~‡ii ZviKv‡`i Av‡jv Avovj K‡i iv‡L, GUv †mB GKB K\_v|) d‡j wewKi‡Yi ZxeªZv †e‡o Pj‡e| GUv Pj‡e GKwU mvg¨ve¯’v AwR©Z nIqv ch©šÍ| G Ae¯’vq wbM©gb I †kvl‡Yi nvi mgvb n‡q hv‡e| GB ZvcMZxq mvg¨ve¯’v AwR©Z n‡e ZLwb, hLb gnvk~b¨ wewKi‡Yi ZvcgvÎv bÿ‡Îi c„ô ZvcgvÎvi mgvb n‡q hv‡e| G ZvcgvÎv n‡jv K‡qK nvRvi wWwMÖ †mjwmqvm| d‡j mgMÖ gnvwek^ Zvcxq wewKi‡Y cwic~Y© nIqv DwPr| hvi ZvcgvÎv n‡e K‡qK nvRvi wWwMÖ †mjwmqvm| Ges iv‡Zi AvKvkI AÜKvi nevi e`‡j GB ZvcgvÎvq ÀjR¦j Kivi K\_v|