

6/24

Helmholtz - in a private conversation while
strolling about in Potsdam - he expressed the
opinion that this was the solution of the difficulty,
though he admitted that the two motions
must be connected. The admission seems
to me to do away with the explanation.
It seems always very doubtful ~~how~~ how far
it is allowable to quote private conversations
of the person in question, it might draw him or his
name in question but when they are not then to give
them on a version of the affair it is better not to
allude to it at all, a memory is treacherous, which
Everybody finds out with other people, though
not always with themselves and I seem to remember
Helmholtz's words.
At any rate I do not see how to separate
the two motions. If you compress a gas
by moving a piston & suddenly heat it, it
seems to me quite clear that the breasting

what is done
motion must be converted into ^{vibration} oscillation,
not at all matter what the intermediate
steps are.

3. Imagine an enclosure large enough say to
surround the planetary system, kept at a uniform
temperature. Take away all matter from the
inside & then place into this a single molecule
somewhere near the middle. The molecule is supposed
to be at rest in the first instance but capable of
absorbing some of the radiation which falls on
it. Now ask yourself the following questions:
a. Will the molecule remain at rest. I fancy
not. I cannot imagine any vibration which
does not in some form produce unequal pressures
front or back and unless the molecule is acted
on perfectly symmetrically all round which from
what we know of the nature of light it cannot
be it will begin to move.
b. If you admit that translatory motion is initiated

interesting to know that the new gas is
diatomic (from values of specific heat)
and that supposing it is not a mixture
it does not fit into Mendel's eff.

Yours sincerely

Alfred Schuster.

6/24

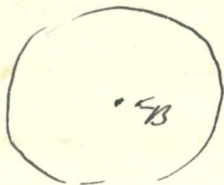
If you consider two molecules, & bring them nearer
nearer together, we know that until you
come close there is no work done, but it does
not follow that there are no forces. The latter
may exist but be irregularly sometimes in one direction
sometimes in the other.

I should like to see a theory of gas worked out
on the assumption that there are no impacts
at all but only forces, due to vibrations.

5th. If you look at the medium as a connected
system the Boltzmann theorem cannot be true.
Its crucial hypothesis is that any one variable
can have any assigned velocity (or infinitesimal)
unless all the others be at rest, or have other infinitesimal
velocities. If there is anything in the above
this cannot be; an infinite velocity of vibration of
one point would produce infinite force elsewhere
if the rest could not exist.

6. Sometime ago which I was trying to get
clear ideas about this by working out some
problems in ~~the~~ the concerning forces due to
radiation I was stopped by the following puzzle

A



A & B are two nearby particles & of the vibrations
has gone on for a sufficient time in ^{attain} many
say in the case of sound bodies certain forces
act when A & B satisfy the laws of action &
reaction.

Now suppose A to have been vibrating ⁱⁿ ~~in~~
long for the medium to have taken up its steady
state but that B is only just starting so that its
wave front does not yet reach as far as A.
Then with a force on B but not on A, the reaction

6/24 at the ~~transport~~
mouth in the medium. I could not quite see
how to treat the problem without taking account
of the reaction on the medium & this made it
very complicated. —

I do not know how far any of these speculations
are to be pursued. I put it down from
recollection of what I have thought at
various times but my ideas at present
are not very clear. —

What a sell for Dewar that
Obzewski has solidified the new gas
to white crystals & finds the critical
point & boiling point lower than that of
oxygen.

If you have not seen the advanced proofs
of Raschke & Ramsay you will be