[96r]
Ockham
Sat^{dy} 6th Feb^{y}
['1841' added by later reader]

Dear M^{r} De Morgan. Had I
waited a day or two longer,
I need not have troubled
you with my letter of Wed^{dy},
& I can only reproach
myself now with having been
a little too <u>hasty</u> in my
examination of the Theorem in
pages 68, 69, and having
sent you an enquiry which
certainly indicates some
negligence. I fear this letter
[96v] may not be in time to
stop one from you. [something crossed out]
However I will try to
send it by an opportunity this
afternoon. __
But, to show you that I
now understand the matter
completely :_
In the first place the question
of the Denominator, or the
Numerator, being all of the
<u>same</u> sign, in such [something crossed out] collection of
expressions as
$\frac{a-b}{m-n}, \frac{c-a}{p-m}, \frac{d-c}{r-p}, \frac{e-d}{q-r}$ &c
has <u>nothing whatever to do</u>
<u>with the letters effacing each</u>
<u>other</u> when the above are
[97r] put into the form,
$\frac{(a-b)+(c-a)+(d-c)+(e-d)}{(m-n)+(p-m)+(r-p)+(q-r)}$ &c ;
whether $(a-b)$, &c be positive
or negative, or some one &
some the other, still
$\frac{a-b+c-a+d-c+e-d}{m-n+p-m+r-p+q-r}$ &c
must $= \frac{e-b}{q-n}$
In the second place, the

Denominator must be all of
the same sign, in order
to fulfil the conditions of
the Lemma in page 48 ;
& this is the reason why
the condition is made respectively
$\psi\ x$ always increasing or
[97v] always decreasing &c. _
For $\varphi\ x$, it matters not
whether it alternately increases
& decreases (provided always
that it be continuous). _

I believe I now
have the whole quite clear;
& I shall be more careful
in future.
I enclose a paper upon
pages 70, 71, 72, 73.
It is merely the general
argument, put into my own
order & from ; & I send
it in order to know if
you think I understand as
much about the matter as
[98r] I am intended to do.
You know I always have
so many metaphysical
enquiries & speculations which
intrude themselves, that I
never am really satisfied
that I understand anything ;
because, understand it as
well as I may, my
comprehension can only be
an infinitesimal fraction of
all I want to understand
about the many connexions
& relations which occur to
me, how the matter in
question was first thought of
[98v] or arrived at, &c, &c.
I am particularly curious

about this wonderful Theorem.
However I try to keep
my metaphysical head in
order, & to remember Locke's
two axioms. __
You should receive this about
6 o'clock this evening, if not
before. I fear you will
have written to me today
however. _ Believe me

Yours most truly

A. A. Lovelace