5

ATHENAEUM
551 South Hill Avenue, Pasadena 5, California

February 13, 1954

Dear Francis,

I now understand ½ of RNA. Consider the following (1) in RNA from plant viruses the base ratios are not complementary (2) in RNA from all other sources. the ratios are complementary. This is not an obvious fact as much of the data is sloppy but the good papers show the ratios and are the ones to be considered. The conclusive data are in Smellie (It smells right !!!) and Davidson Biochem J. (May 1953). 3) The x-ray diagrams (both powder + fibre) from both complementary and non complementary RNA are identical

From this we can deduce

(over)

1) the structure of the non complementary RNA cannot be two stranded + complementary. In fact, it is likely a one stranded helix (the x-ray pattern is horribly helical.

2) the complementary must also exist (at least after isolation) in the single stranded form.

3) both types will however replicate by complements. The 2 stranded form we shall postulate to be less permanent than the one stranded beast.

4) The plant viruses contain only one of the two possible complements and always the same one. This seems phony but I see no way out.

We must find out

1) the structure of the one stranded form. We have a structure which is neither very ugly nor very cute but which seems to vaguely agree with

Delbruck. The others are not convinced but are not intuative creatures. and so do not count. I do not believe the base ratios could be so good if they did not imply self replication - Also cannot believe in 8 ways for RNA to replicate. hence do not mind the asymmetry in Alert Virus picture. Also it would be strange for DNA & RNA to be so similar and yet have different replication schemes.

I think this idea is worth letter to Nature which I am now writing. Do you agree? The again shows value of reading over expts. Idea came 3 days ago after spending 3 days reading all literature on base analysis: Chargaff has failed again!!! Really very funny. The important thing is to ignore data which complicates life.

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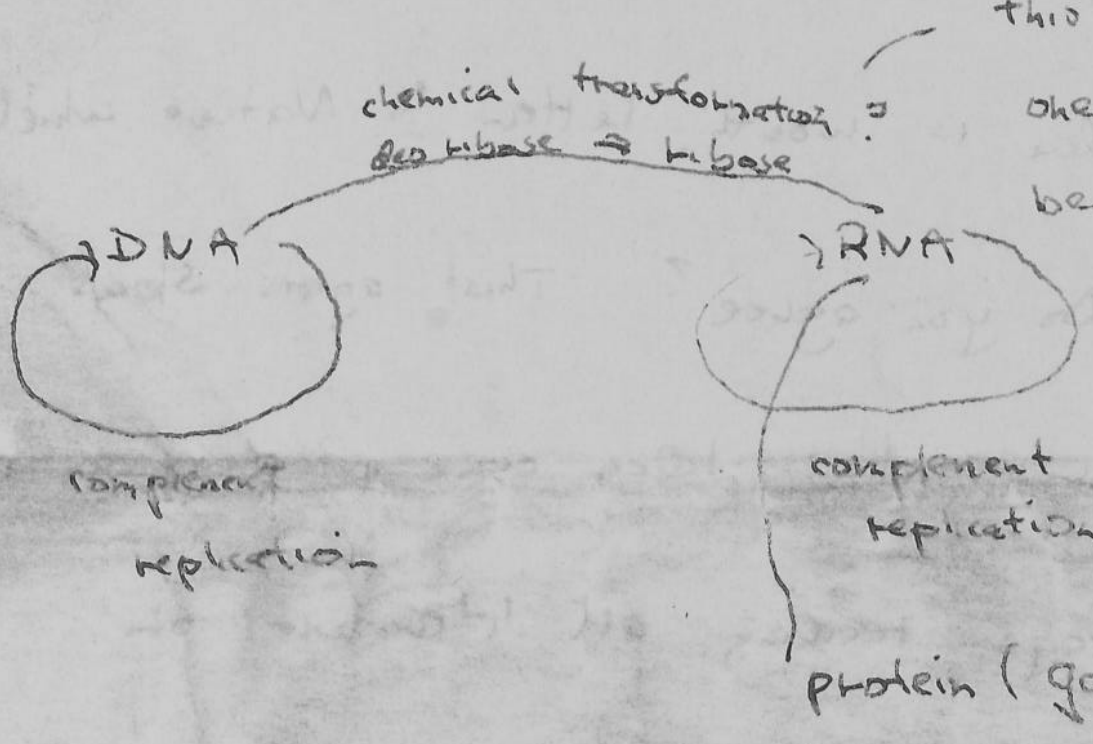
2) the structure of the two stranded beast This may be nasty since we have no x-rays but is worth the effort since this may be the beast which grows proteins.

In any case we now visualize the mysteries of life as follows.



this is why we find 2 strands one to keep code - the other to be transformed to RNA which sneaks to cytoplasm and makes protein

All of this is slightly mad but as it is cute. I think it is correct. Your comments seriously desired. Have consumed Feynman and slightly

7

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what do we do after protein specificity is solved. I really do not want to do genetics or watch birds. or think about phospho lipids

About you trip to Midwest. I did write Lurie. He replied favorably and so I don't feel I owe Lurie again. I think it best for you to write directly.

It is now raining like hell. When not much smog. However life is not so depressing as initially. Even so L.A. is basically deadly. An going to drunken brawl this evening and so it is good that I have written now and not planning to do so tomorrow.

would feel best if you did not pass on contents of this letter until note to Lurie is in

Jim