June 9, 1949.

Dear Francis.

I am sending cultures of two Lac- mutants of h-, together with their colonial sibs. Each of the mutants appeared originally as a highly variegated colony on EMB agar. When streaked out, only pure - and # appeared, ~~mx~~ of each of which a single colony was picked. The sectorial occurrence makes it extremely likely that A and B were produced independently, but of course I have no genetic test for their identity. They show minor differences in tint on EMB lactose which may indicate that they are different. The # "sibs" are being sent as being as closely related as possible. This type of sectorial occurrence is quite common in K-12, and I think the result of nuclear segregation. I am checking for fermentation of other sugars, and for mutability, and will send you a postcard if anything relevant shows up. However, I don't intend to keep the cultures after acknowledgment of arrival. If they do turn out to be of some use, I will be very pleased, but don't bother mentioning their origin in any publication. There was no trouble finding them (in 12 plates), except that we over-irradiated h- in the first run; h- seems to be about twice as sensitive to UV as K-12.

h- was also plated out with some filtered sewage to look for phages, but it occurred to me that it would be wiser just to send you a sample of the sewage, which contains about 50 phages/ ml active against h-. The titer is at least ten times that high against B or K-12, so h- is really resistant to most phages. The best way to isolate phages is by dilution in "Hershey" layer plates.

While at Schermerhorn, I forget to ask Miss Lieb about the complex resistant mutants in K-12. If the "/2,3,4,6,7" mutant is really a single-step, (operationally) and was isolated in a crossable stock, I'd like very much to have a look at it.

Ravin wrote me at some length about his citrate-positive mutants. He said something about planning to publish a note very soon. I'm writing to you because he is your student, and you probably will know best how to manage this: the stock which he gave me is almost beyond doubt not a K-12 mutant, judging from its colonial and microscopic appearance, its inhibition by basic dyes (EMB, Endo's), and especially its lack of sensitivity either to T1 or to T6. If "C#" is a contaminant, its predilection for occurrence in heavily aerated cultures is explicable. But I'll eat my words if a C# from, say B-M- K-12, turns out to require biotin and methionine. But I thought it might be better for him to reach this conclusion (if correct) himself, rather than have it imposed. On the other hand, he shouldn't be encouraged to waste too much time on it if it's going to be unproductive.

Sincerely,