Please recopy for J.L.

TWA IN FLIGHT

3/20/73

Dear Tom — SUMEX S.V. lessons.

We have still not found and justified a credible game for our robot to play. Yet as I tried to tell Klaus the brain needs a hand ~~to~~ as well as an eye to promote its own growth in a reality-oriented context. I should articulate more clearly to the study section (1) this orientation of our effort and (2) that there are still also prospects of early biomedical utility. Perception (e.g. speech recognition) may be a better model of successive, reciprocal refinements of hypothesis and data acquired. There is certainly much more simulation that could be set up within DENDRAL to justify this approach — e.g. "intelligent" search of the dictionaries of solved subproblems which is tantamount to a dynamic manipulation of GOODLIST oriented by data reference.

So whatever the outcome of SUMEX, there is still a lot of introspective research that can be done, the "real time" instrument being a tape drive.

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(2)

But I would like to see us put more imagination into building "hands". I think NSF would be receptive to proposals for new kinds of instruments; and if we have a hell now we should be thinking of more definitive pre-designs for digitally controlled mass spectrometers. These will certainly entail new approaches to internal calibration. I wonder about trying to take something like PFK, seek PFK^{++}, and filter out the near-integral masses (or the PFK^{+} ones that would interfere with a given sample peak) with a low resolution m.s. that gates the reference ions into the beam.

For metastable work we need to learn how to improve M^{+} yields at low ionization voltages; or alternatively to de-excite the excited states (~~collisions~~ collisions with ?)

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Tom — let's have a session soon

say Monday 2^30 to extract lessons and positive directions from the SUMEX S.U.

(1) what is most we can do with minimum new hardware chemistry
e.g. in re Genetics Res. Ctr.

(2) Simulation mode of real time Dendral

(3) Better part A Efforts

i.e. external memory simulates instrument

plans for

(4) looking into other PDP10s on net. Financial problem?

(5) new instrument ideas on MS
controllable machine
photo image recording
continuous internal calibration for HRMS
may need "intelligent control" for gating reference gas
2-D metastable scans
controlling energy of excitation — laser inputs in flight?
consult Gilda

(6) OTHER Parameters; OTHER AREAS of analysis that might better exercise our ideas of Real Time AI. (what is a more exciting instrument than GC/MS?)

(over)

JGL.

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whoever can come of the senior level

ECL EAF TR

Bruce B

Dennis

Carl Dj. (opt. for him - but urge him if he has some definite ideas

Alan D.

also we must schedule a SIGBIG soonest for general briefing. Friday 23d. at noon* or at 4? or 3/27 or 3/28.

*ask Ruth to verify whether my AR date is 3/23 or 3/27

Can Dennis arrange a demo of DENDRAL (any part) for lecture 3/29 8:15 pm at or near Rm 20 Chemistry? (Lois Durham ext 4480 solicited it)