

1 Dec 76

Dear Bruce,

Apropos the following:

1. Blood Pressure recording -

The Micron transducer and Sigma motor pump (Cormed) were both received. ~~text~~

The English also finally sent a unit combining transducer, pump and reservoir but it is so complex and potentially dangerous that it was not accepted and returned. After seeing the Millar intravascular transducer interfaced to the recorder and its advantages Dr. Gallucci (collaborator) wants to try it first as we discussed. I have the ^{Millar} HF unit on order for delivery the 20 Dec + we will start work to humans the 21st and be ready for the MK II pressurometer then. If the 1 intravascular unit isn't tolerated we will fall back to the Sigma motor infusion + Micron transducer system.

As to equipment. I will need the following accessories as long as we work on the system -

1. Two channel storage scope & camera (present rental unit is inadequate, barely)
2. High speed direct writer - a smaller less expensive unit is needed and the big unit from the lab should be returned for Bill will need it.

If development of analysis and other instrumentation is to be continued a DVM, ~~or~~ LF function generator, pwr.

I can occasionally use the old T-1. single channel recorder but if it ~~so~~ makes you feel better to have it collect more years of dust & neglect at the plant 2 can return it $\bar{3}$ great inconvenience.

supply and counter will continue to be needed. The rental units are adequate except for the counter. An XY platter will be required at some future date. The direction of future development will depend on you and will have to be settled.

Bruce ~~you~~ you and Gilber can't have 2 or more sets of standards to play by. I have to have 1 set. Another thing that you & I can't afford is to display ~~to~~ our gut feelings for it usually makes someone mad. I'm glad you did express them however on refusing to pay for lights etc. when you marked it "hobby shop". You're right - I have always approached the lab problems in "hobby shop" fashion. When ~~the~~ I started your first electronic efforts ~~at~~ c Mac it was a hobby shop approach c surplus from Henry's etc. and sketches while Lally had crews of draftsmen making worthless layouts & Walter brought more and bigger machines. When it was time to design things I used college kids & drove myself 60-80 hrs/wk. $\bar{3}$ overtime while Fen had crews of ^{8-4:30} engineers. Yeah, I was the hobby shopper & guess they were the pros but where did you get ^{the} money from? Oh yeah there was Art Baber another pro that I had to clean

house of and found Sanctuary for you.

You refused payment on one of two grounds - 1) I don't thought I was daddling you or 2) you felt I owed you that much.

1) I've treated your money like my own & be happy to compare ^{my} expenses to anyone else. ~~It's not my money~~

~~The~~ The only expense you have ever borne that could be considered excessive was the ~~total~~ difference between double & single hotel bill + a couple of meals the time I had Simon out.

In retrospect this was probably presumptive of me but I have repeatedly swallowed significant expense for your efforts ^{in order} to keep the state absolutely clean ^(~\$125 last month) - a great deal more + then some. O.K. No more presumptuous ^{ions} ~~ing~~ on my part & no more losses either.

This was ~\$15 yr.

2) As you know from time to time I have scrounged ~~one~~ ^{minor} nuts or bolts or terminals or a component for a radio simply because they are hard to get here and cost 10-20X in single retail pieces. Any other item such as the discarded parts bins or ~~other items~~ the like was cleared to you.

Now as to my understanding of the agreement for testing the

blood pressure system here and doing development which you well know will result in new ideas which I assumed you would acquire rights to as you always have. There were multiple sources of support available to me which in retrospect would have been simpler than having to bite but you said you would support it and under the circumstances it had to be totally ^{separately} supported. The support included instruments, insurance and a place to work. I chose the most logical ^{for the latter} - an adequate, unfinished shop space in the my garage put in for lab work. NAB would have provided space or I could have rented it. Instead I chose to put in the necessary door, lights & burgular system. Did you feel I owed you this because of past favors? Afraid this looked very similar to the situation at UNC when I scrounged gear, facilities paid a helper and delayed medical school to complete several advanced ideas which you own & are suing others for and which Cliff or Ray Cherry managed to shoot for 6-8 years. Can't play that game again Bruce.

These 5 + 10 K disagreements are only symptoms so decide what

your position is & let us both know what to expect. I know only one way to wish & that is a max effort but I am finally aware of personal responsibilities as well.

Gas analysis: this makes me just about as unhappy as you acting as if I were padding expenses... I brought you an idea whose time was ripe & gave or tried to give a solution to it but Cliff & Hooks cost 2 years & a pot full of development money. To save that money & to keep a good idea alive I undertook to salvage the situation doing what is distasteful ^{to me} - nuts & bolts design. Pushed & shoved & was whipping the lab in shape when you are conned into believing it's a dead end. How does this make me feel? - I thought enough of the idea & primarily your investment to put in an appreciable fraction of what's left of my productive life to salvage it & then you let blind salesmen bill it. I'll have more to say on this one to Cliff - He's essential, has done a great job but can only see the end of his nose.

In spite of it all ~~there~~ the surface has just been scratched on medical electronics & I'd like to see you leave a legacy of solid worth - not juggling for whatever buck looks good.