

Box 975
Chapel Hill, North Carolina
October 4, 1962

Mr. Wolff
MEDICON
2800 North Figueroa
Los Angeles 65, California

Dear Mr. Wolff:

Thank you for your last two letters. I had hoped very much to have answered the first one before now but school has started again.

First off, one might as well look at difficulties as well as advantages and we can already see one difficulty--distance. A second one is that I am not familiar with your company's aims and abilities or you with mine.

So much for the disadvantages. On the positive side, there is a tremendous and virtually untapped potential in the field of medical instrumentation, particularly in clinical application. I feel that one of the difficulties is insufficient knowledge and experience with the real requirements within the field. Unfortunately, doctors are among the most difficult, and oftentimes stupid, individuals to deal with and especially in the clinical area. It is almost axiomatic that a fairly extensive individual sales and service facility be established for any sort of clinical instrumentation that will see widespread use, assuming that this is more complex than the mercury thermometer.

Over the past few years, I have developed a variety of instruments that may have some potential. However, an instrument should be viewed in light of your plans and capabilities. It is usually best to expand logically and gradually into new fields rather than to make drastic jumps into new areas. With this in mind, I have a very simple integrator and counter which allows totalizing at volume either over a time or volume interval. This has proven of considerable use to a number of investigators. It would require packaging for production but is otherwise well tested. In addition, I am working on a computer for work and resistance computed directly and continuously from flow and pressure measurements. It remains to be seen how much potential these instruments have. Since pressure measurements are such an integral part of hemodynamic studies, a line of instruments using standard transducers might be an interesting adjunct to your flow meters. Here, a tie-up with an existing recorder manufacturer would, of course, probably be the most expedient. CEC of Pasadena, for example, have the best available ultraviolet direct-writing oscillograph. This has not been exploited in the field of medical instrumentation. This recorder, coupled with a few simple accessories such as pressure couplers, would make Honeywell's "Visicorder" look a bit archaic.

October 4, 1962

I am selling such a line of simple couplers. In the field of recording, one of the great needs of the moment is a poor man's magnetic recorder. Mnemotron has tried to fill this need and has on paper. Unfortunately, neither myself or my acquaintances have ever been able to come within a country mile of their specifications and their equipment is immensely unreliable. A well thought-out, inexpensive tape recorder is one of the big needs of medical instrumentation today. I have such a system that can be used with a variety of home-entertainment-type recorders which has proven adequate with extreme reliability. This system has previously only been used with AC signals, such as EKG and EEG. It is stable enough to be used with DC signals. Use of this recorder is already in the literature and more is in press now.

Still another area much further removed from your present line is telemetry. I have a small and extremely simple FM unit not greatly different from dozens of others in the literature except that these work fairly consistently. They include EKG, EEG, GSR, and EMG. I have supplied a number of these instruments to several institutions. We have found the EKG and EEG systems to be extremely useful in operating-room monitoring and monitoring of critical patients. These transmitters, which are used with commercial receivers, are simple, reliable, and very well tested but have little real advantage over units made by a number of other firms other than their reliability and simplicity.

At the moment, the item with the best commercial potential is a line of EKG equipment. The transmitter and receiver are used with the tape recorder to record data continuously from cardiac patients in a variety of situations. In addition, I have a line of simple computers to give a continuous record of various EKG quantities. Del Mar Engineering Labs (Avionics Research Products) attempted to exploit this last year with an \$8,000.00 instrument which did not work. They probably will have some proprietary claims on some of the computers. I think these claims will probably be used only as defense of a subject-carried tape recorder that is presently being developed by them in conjunction with a Dr. Holter. This unit will need some protection for it has rather severe limitations. Radio telemetry, tape recorder, and simple rate analyzer, of course, have no prior claims. In addition, I have done one model of a fairly unique EMG recorder that has proven to be both useful and reliable.

Again, the above is just a sort of speculation on items that might be of mutual interest to us. What would interest me most, however, is to be able to set down some goals for a line of much needed instruments and either fit existing work to it or make the modifications to hardware with which I am already familiar to meet these goals.

Respectfully yours,

William Thornton