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Reflections on the Development of Digital "Stethoscopy" and the ViScope100

In the early decades of the 19th Century, Ludwig Van Beethoven was suffering from progressive hearing loss just as physicians were discovering the diagnostic power of hyperacusis. René Laennec in his 1819 book, *De auscultation's Mediate* (On Mediate Auscultation), first described the stethoscope, and its influence on diagnosis was staggering.

Since these epoch-making years the pace of progress in auscultation has been glacial. As a cardiologist, I am still using the same stethoscope today that I have for over two decades. Yesterday, I recommended this very model to one of my residents.

Progress in microprocessors has stimulated one of the most profound revolutions in the history of global society. Knowledge has become accessible and costless. For example, we are witnessing the demise of dictionaries, encyclopedias and perhaps newspapers. Medical diagnosis has been enriched by an explosion of imaging techniques that are remarkable for their speed, resolution and sheer quantity of information. But the most accessible and commonly encountered medical information, the heart sounds, have been nearly ignored in the digital revolution.

It is impossible not to believe that a rich trove of information will be gleaned from the marriage of digital processing, archiving and analysis with cardiac auscultation. The opportunity to work with the innovative group of engineers at HD Medical has reinforced this conviction. This collaboration arose from a several year relationship with Damon Coffman and our many discussions about how to bring digital power to auscultation.

One of the most exciting aspects of our research collaboration has been the evolution of the ViScope100. I use the current model in my teaching rounds and clinic and have come to appreciate the fidelity and sensitivity of the recordings and the ability to freeze the images for analysis and discussion. The new battery life, reduced sensitivity to noise and variable frequency response have resulted in an exciting and useful medical instrument.

The other aspect of our research collaboration has been the analysis of the mitral component of the first heart sound. We believe that the properties of this auscultatory staple are a window on the contractile integrity and reserve of the left ventricle. Our data on correlating S-1 with catheterization and echocardiographic data are supporting this contention.

Next academic year, we will expand our research to another area of intense clinical importance, the study of the P-2 and the estimation of pulmonary pressure.

Meanwhile we look forward to the next generation of ViScopes and to our continued collaboration and assured success.

Nelson B. Schiller, M.D., F.A.C.C.

A handwritten signature in black ink that reads "Nelson B. Schiller".