A simple method was devised relating the electrophoretic mobility of a protein determined by disc gel electrophoresis to its size and charge characteristics. The method is applicable to a single protein or to mixtures of proteins, provided a specific detection test is available. Knowing the relative size and charge of proteins is not only useful for their differential characterization but also as a predictive aid in their purification.

The method itself is simple as are the approach to the problem was purely an empirical one, the usual case in method development. A very simple method of estimating the relative size and charge of a protein was eventually found by determining its electrophoretic mobility as a function of gel concentration. A log-linear plot of the data gave the sought-after straight line relation. The slope of the line was related to the size of the protein and the intercept, the charge.

"With this crude but functional equipment, our approach to the problem was purely an empirical one, the usual case in method development. A very simple method of estimating the relative size and charge of a protein was eventually found by determining its electrophoretic mobility as a function of gel concentration. A log-linear plot of the data gave the sought-after straight line relation. The slope of the line was related to the size of the protein and the intercept, the charge.

"The excitement I felt about our discovery was heightened as this was my first independent creation as an assistant professor. The thrill was abruptly dampened when our paper was rejected by a leading biochemistry journal as being inappropriate. We submitted it to another journal where it was rapidly reviewed and accepted. We subsequently applied the method to the enzyme isomer problem and showed that the paradigm existing in 1962 was incorrect and extended the method to the case of proteins binding noncharged ligands.

This extension, in contrast to the original paper, has gone virtually unnoticed.

"I believe the paper has been popular because of its wide applicability and simplicity. The method itself is simple as are the interpretations of the results. Unfortunately, many of the recent putative theoretical attempts to mathematically relate mobility and the size and charge of a protein have neither simplified nor explained the fundamental principles of gel electrophoresis, but rather obfuscated them. The axiom relating simplicity and acceptability seems verified by the popularity of this paper."