Rheology is the science of the deformation and flow of matter, normally relating to fluids and semi-solids. Oil, drilling fluids, paints, adhesives, coatings, plastics, rubber, some food products and cosmetics, and a variety of slurries are fitting examples. The more sophisticated rheological techniques often apply to medical and academic, as well as industrial research. Interests usually include shear stress, shear rate, temperature, pressure, time effects and shear-history effects.

Over time, rheology has evolved into an interdisciplinary technology that studies the flow behavior of a wide variety of materials. We characterize the flow properties of materials from a perspective that includes colloid chemistry, chemical engineering, mechanics, mathematics, physics and other technical disciplines. More generally, practical rheology deals with the measurement of viscoelastic materials.

The intelligent application of rheological data can lead to the formulation of new products, improved manufacturing techniques, faster and more efficient processing, improved uniformity and quality control, and decreased operating costs.

This is the scientific background of Fann's viscometers and consistometers. In the most basic terms, Fann designs instruments to measure rheology (which includes viscosity and consistency) as accurately as possible, so that you can produce better products and perform research tasks at less total cost.

To get to today's state of the art; the development of these instruments went through a series of theoretical phases and applied technology. In 1687, Sir Isaac Newton probably became the first to state a relationship between velocity and resistance to flow for a rotating solid cylinder in a uniform and infinite fluid. Couette's 1890 concentric cylinder viscometer represents the first practical rotational viscometer. Stormer, in 1909, and MacMichael, in 1915, furthered the technology.

In 1919, Bingham and Green determined that paint wasn't a true liquid, but a solid having both a yield value and what we now call plastic viscosity. They invented the Bingham Plastometer, a pressurized capillary viscometer that allowed them to vary the pressure and observe the resulting flow rate. By 1927, Markus Reiner had worked out the mathematics that produced the Reiner-Riwlin equation for plastic solids. Ambrose and Loomis recognized the importance of the plastic flow properties of oil well drilling fluids in 1931.

A series of advances in petroleum engineering led to the Model 30 V-G (Viscosity-Gel) Meter developed in the 1940's by James Fann. Then Savins and Roper worked to standardize a two-speed direct indicating viscometer for drilling fluids use. People such as Fred Chisholm and B.Q. (Jack) Green of Magnet Cove Barium Corporation (later Magcobar) applied this technology to drilling fluids and trained hundreds of drilling fluids engineers in the use of such instruments.

James Fann put the many theories and equations to practical use, thus solving some serious problems within a specific industry. Later Fann improvements led ultimately to the viscometers that are part of the foundation of today's oilfield technology. With billions of dollars spent each year to produce oil, it's only natural that the petroleum industry would cut no corners; take no unnecessary chances on inferior instruments that potentially could waste vast sums of money.

This is precisely why the name on three-quarters of all oilfield viscometers is **fann**®. And, why Fann sells more coaxial cylinder viscometers than anyone else in the world.

Fann Instrument Company offers to you the same historical significance, plus the values that are inherent in efficient manufacturing techniques, effective quality control, communicative service and in-stock availability.

fann®

The Original Testing Equipment Company™