

erature to omit most steps in derivation of formulae. By this approach they have made it possible to read this part without pen and paper exercises.

The second section (80 p) describes the present practical applications of FNMR. It is this part of the book that readers of the *Journal of American Oil Chemists' Society* will find most interesting.

One of the applications mentioned is the continuous measurement of relaxation time  $T_1$  in a flowing liquid. The strong dependence of  $T_1$  on concentration of paramagnetic particles makes it a highly sensitive detection of minor amounts of metals and metal ions in the liquid. In problems of catalytic action of impurities and investigation of corrosion the method is likely to find some application.

Accurate measurements of flow rates can be performed by means of FNMR. The measuring device is located entirely on the outside of the flow and provides a convenient method for making measurements on corrosive or poisonous liquids. In cases where high or low pressure flows are involved the method can also be used with profit. Quoted in the text are measurements in the range  $50 \text{ cm}^3/\text{h}$  to  $5 \text{ m}^3/\text{h}$ .

Connected with the two previously mentioned methods is the spin labeling technique, where a strong magnetic field is applied to pulses to the flowing liquid. During the pulses magnetization builds up in the small part of the flow located in the field. Later it is possible to detect the distribution of magnetization along the stream and obtain valuable information about diffusion processes and turbulence in branched flow systems. The advantage of the method is that it is unnecessary to introduce traceable impurities or to use isotopic labeling.

For people working in high resolution spectroscopy FNMR is a present of little importance. Heterogeneity created by the flow conditions broadens the lines so that half line widths are of the order of a few Hz.

It is worth calling attention to the fact that while static NMR spectroscopy in general is associated with expensive equipment FNMR can be conducted in a much cheaper way, using less homogeneous magnets and home-made detection systems. For this purpose the authors have given a description of the construction of each type of apparatus followed by a discussion of the optimum adjustment of parameters for accurate measurements.

For chemists working either in research or plant development this book will be of interest as it represents the first survey of FNMR available. Little has yet been done in the technological application of FNMR. With this new book as basis the method will undoubtedly develop to a commonly applied control device.

KJELD SCHAUMBURG  
National Research Council  
Ottawa, Canada

## ASTM Session on Gas Chromatography

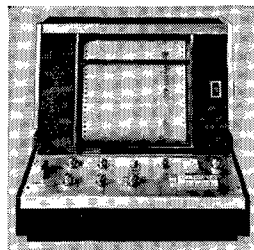
Committee E-19 on Gas Chromatography of the American Society for Testing & Materials announces the Fifth Annual Meeting on the Practice of Gas Chromatography to be held Oct. 10-12, 1966, at the Dennis Hotel, Atlantic City, N. J. For information pertaining to registration, write to M. G. Bloch, Socony Mobil Oil Co., Paulsboro, N. J. 08066.

## Cottonseed Clinic, 1967

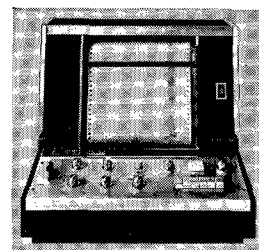
The 1967 Cottonseed Processing Clinic will be held February 13-14, according to G. H. Dunklin, president of the Mississippi Valley Oilseed Processors Association, and C. H. Fisher, director of USDA's Southern Utilization Research and Development Division.

Further information may be obtained from B. H. Wojcik, Assistant Director for Industrial Development, Southern Utilization Research and Development Division, P. O. Box 19687, New Orleans, La. 70119.

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often seems  
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instruments  
at work...and  
the specs  
tell you why.**

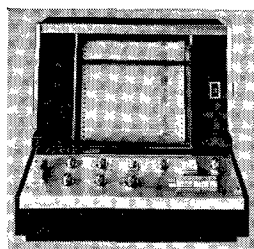


**DESCRIPTION:** SARGENT MODEL MR RECORDER—automatic, self-balancing, 10-inch potentiometer recorder. High gain amplifier; high stability solid state reference power supply needs no standardization. Line operated.

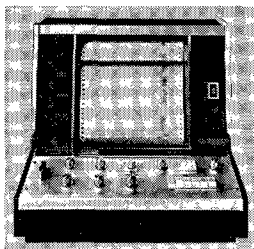


**QUANTITY RECORDED:** mV, V,  $\mu\text{a}$  and ma—selected by panel switch.

**ZERO DISPLACEMENT:** calibrated ranges of 10, 100, 1000 and 5000 of the selected units, upscale or downscale.

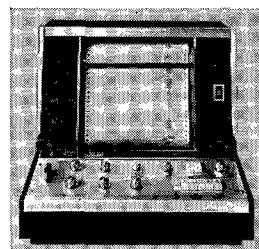


**ELECTRICAL RANGE:** twelve pre-calibrated ranges by switch selection—0.5, 1, 2, 5, 10, 20, 50, 100, 200, 500, 1000, 2000. Variable range expansion from 100% (off) to 40% of selected range.

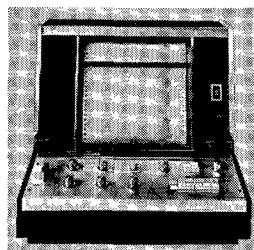


**LIMIT OF ERROR:** 0.1% or  $5 \mu\text{V}$ , whichever is greater.

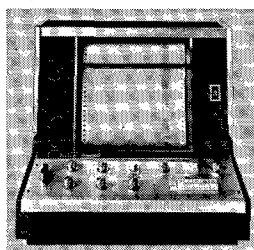
**SOURCE RESISTANCE TOLERANCE:** 50,000 ohms in most sensitive range, increasing with increasing range.



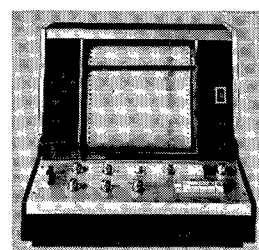
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