

New toploading balance is fast, accurate...yet **RUGGED!**

New Torbal ET-1 toploader (160g capacity, 1 mg accuracy) makes accurate weighing easier and more foolproof than ever before.

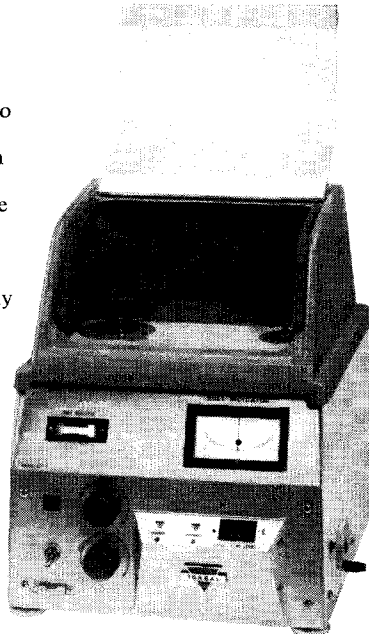
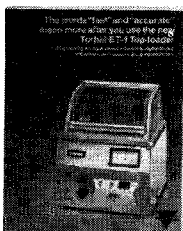
NEW EASE thanks to complete digital display without the use of optical projections or verniers to read, no estimating.

NEW EASE because the one piece construction of the exclusive Torsion weighing mechanism has no knife edges to chip, wear or collect dust—hence there's no loss in accuracy.

NEW EASE—thanks to the electronic null readout feature, the ET-1 is not affected by sensitivity changes—from temperature or humidity variations or effects of foreign matter or wear. As long as you can see the null needle move for a 1.0 mg weight change, then a difference of 1.0 mg in weight-reading means 1.0 mg—today, tomorrow, next month, next year.

NEW EASE because the ET-1's Torsion mechanism is far less affected by vibration than optical balances. You can use an ET-1 in conditions other balances can't take.

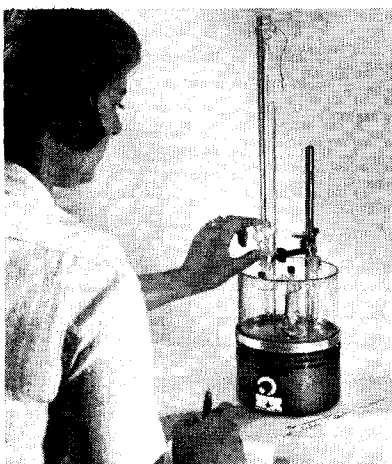
NEW EASE thanks to out-of-level accuracy. For minor changes in level of the ET-1, zero point does not change.



← WRITE FOR FREE BROCHURE.

THE TORSION BALANCE COMPANY Department A. Main Office and Factory: Clifton, N. J.; Sales Offices: Birmingham, Ala.; Chicago, Ill.; Richardson, Tex.; San Mateo, Cal.; Pittsburgh, Pa.; Plants and Offices in Montreal, Quebec, London, England and Waterford, Ireland

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Delmar-Brown² unit for rapid, automatic microdetermination of unsaturation

The Delmar-Brown² Micro Hydro-Analyzer* is a specialized unit for determining unsaturation of micro and ultramicro samples by means of catalytic hydrogenation.

Each hydrogenation reaction is carried to completion automatically. As many as five separate determinations can be completed within an hour.

The simple, compact unit permits rapid and convenient determination of unsaturation at the 5×10^{-5} mole level with an accuracy of $\pm 1\%$. It provides useful results at the 5×10^{-6} level.

Sodium borohydride is used both for *in situ* generation of the highly-active catalysts and also as the source of hydrogen for the hydrogenation reaction. Thus, the unit requires no standard solutions, no hydrogen cylinders, no thermostated gas burets, and no purification trains as required by ordinary microhydrogenation methods.

Other Delmar-Brown² hydrogenation units are available for synthesis of 1 to 1,000 grams of material and for analysis to the 0.0002 mole level.

*Patented in U.S.

Ask for Delmar Bulletin A-24.

Write to Coleman Instruments Division
of The Perkin-Elmer Corporation,
42 Madison Street,
Maywood, Illinois 60153.

PERKIN-ELMER

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INSTRUMENTATION

ment, particular advantages and obvious limitations, precision, accuracy, reliability, comparison with alternative methods and, above all, cost, time involved, and competence required of the operator. References will not be exhaustive and to obscure journals but to carefully selected articles which emphasize the proper significance of the method. It may come as a surprise, and not without interest to note that a criminologist can identify and establish the geographical origin of a dust or soil sample by simple sedimentation tests and without NMR. The "health" of a car battery is checked with a hydrometer and not by precipitation of the sulfuric acid as barium sulfate or by an acid-base titration with a potentiometric autotitrator. Milk is routinely checked, as required by numerous statutes, with a hydrometer (lactometer) even though elaborate tests, in special cases, require a determination of total solids, butter fat, enzymes, vitamins and presence or absence of pathogenic organisms. The book would remind us, as we have to be told repeatedly, that the microscope can yield an amazing amount of information, yet its possibilities are usually ignored.

Frequently, we are guilty of the heresy of telling our students that it is almost impossible to define analytical chemistry and, in making an inquiry, one can't really trust anyone's opinion. (We hasten to add that that includes their professor.) It all depends upon what business he's in. The man in petrochemicals has a firm answer, the important things are infrared, mass spectrometry, and NMR period. He will concede some interest in emission spectroscopy or atomic absorption spectroscopy if he is having catalyst troubles (Ni and V). The instances could be recited at great length. In this respect, the modern physician cannot afford to be ignorant of even one aspect of medical science. As a diagnostician, he would be helpless if his courses included bacteriology but not parasitology. As a good internist, he invariably seeks the advice and confirmation of a specialist, but his true forte is command of an extremely broad spectrum of all aspects of the profession.

We are thoroughly convinced that instrumental analysis faces one problem that has been with us for a long time. Somehow and somewhere we have to find a means for explaining general instrumental principles. Students do not come to us with enough background in practical physics to understand the equipment we already have. How are they to suggest improvements or new approaches?