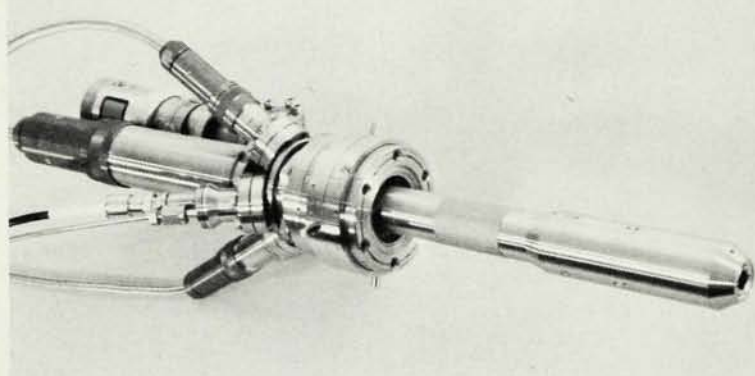


ELECTRON AND ION OPTICS GUNS / SOURCES

5 eV to 100 keV

High Brightness Electron Sources
High Brightness Ion Sources
UHV Electrostatic Optics, Power Supplies
Charge Neutralization Systems
Accessories for SEM, MBE, ESD, SIMS, AUGER, e^- Lithography
Custom UHV Apparatus



EMG-12 20 keV RHEED GUN ON 70 mm (2 $\frac{3}{4}$ in.) CONFLAT

KIMBALL PHYSICS INC.



KIMBALL HILL ROAD
WILTON, NH 03086

(603) 878-1616

UHV ELECTRON & ION SOURCES/OPTICS/SYSTEMS

AVS SHOW-Booths #105, 106

Circle number 87 on Reader Service Card

PRECISE TIMING 1 ns to 100 sec The 9500 Range of Digital Delay Generators



Twelve models in NIM and 3.5" rack-mount enclosures. Choice of one or two independent channels with or without remote control and all at very competitive prices. NIM units require only 12V and 24V.

- Timing starts at input trigger. No indeterminacy and low insertion delay.
- 1nS steps to 100mS with <100pS jitter and 1 part in 10⁸ stability.
- Fine control 0-2nS.
- Optional range extension to 100 seconds.
- TTL, ECL, and NIM Inputs and Outputs simultaneously available.
- Automatic Delay Increment Mode. (Delay increments every 1 or more triggers.) For Boxcar Averaging and other swept-delay applications.
- Remote Control by RS232, parallel (Centronics) port or IEEE-488 (GPIB) interface.
- Internal rate generator with crystal accuracy (PLL synthesized).

Precision Instruments Inc.

P.O. Box 11235 / Knoxville, TN 37939 / Tel: (615) 690-5608 / Tlx: 55-7444

Canada
Accurate Marketing Corp.
Pickering, Ontario
Tel: Toronto (416) 831-0852
Tel: Ottawa (613) 592-6108

France
Instrumat
Les Ulis
Tel: (6) 928.27.34
Tlx: 600961 Instrumat

Germany
Tennelec GmbH
D-8025 Unterhaching
Tel: (089) 6115060
Tlx: 5215959 Frie D

U.K.
Alrad Instruments Ltd.
Tel: (0635) 30345
Tlx: Easylink 19005205
or 946240 CWEASY G.

Circle number 88 on Reader Service Card

letters

the *Digest of Educational Statistics* of the Office of Education. Here, for example, are the numbers for 1960-61 from the 1964 edition: 0.385 million enrolled in physics, or 22% of the enrollment of 1.75 million in grade 12, or 4.7% of the 8.22 million in grades 9-12. Our data are consistent with those shown by John Layman in the September 1983 issue of *PHYSICS TODAY* (pages 28 and 29). It is difficult to guess their precision, but because they were presumably gathered consistently from year to year the trends are likely to be reliable.

Peter Froehle's letter points up a fact that we also tried to emphasize: The most important ingredient influencing the quality of the teaching, and hence ultimately the enrollment, is the teacher. Our congratulations to him and to the other dedicated and enthusiastic men and women who bring the excitement of physics to the classroom!

PETER LINDENFELD

GEORGE PALLRAND

Rutgers University

Piscataway, New Jersey

6/86

Einstein and the Vatican

I read with great interest Irving Klotz's letter (July 1985, page 13) and I certainly agree with most of what he states. But on the other hand I disagree with the omission of certain important aspects about Cardinal Pacelli (secretary of state to Pius XI and afterwards Pius XII) and about Galileo and his predecessors.

I do not think it is fair to imply that Pius XII disliked or resented Jewish people. If he did I deplore the attitude, but I have no reason to believe it.

Regarding Klotz's statement about "the policy of not irritating the Nazis," I think it is very easy to say that now. I believe the words of the great Spanish philosopher José Ortega y Gasset: "The man is he and his circumstance" (*El hombre es él y su circunstancia*). Several articles have been written in the last decade—some of them by Jewish authors—showing Pius XII's deep concern about the persecution of Jews. Many, many Jewish families were helped by the Vatican in that period. I have found that it is fashionable to attack Pius XII. However, I feel that sooner or later many historians and political scientists will agree that Pius XII acted in a wise, political manner on the one hand and showed profound human sympathy and charity in a rather secret fashion, pressured by circumstances, on the other.

Regarding Galileo's trial, there is no question about the deplorable treat-

Introducing the first turbo-pumped, portable helium leak detector was just the beginning ...



The **ULVAC** DLMS-531 offers features and capabilities which make leak detection **quick, easy, and reliable**. The turbo-molecular pump is ready in only 3 to 4 minutes from a cold start and is immune to accidental venting. **Standard features:** built-in calibrated standard helium leak and push-button operation — lighted display, digital bar graph vacuum gauges, counter flow, rough valve/fore valve interlock, remote meter with adjustable audio alarm — requiring only 115V power. Detachable leak sensitivity from minimum of 3×10^{-10} std cc/sec. **Accessories:** two-piece mobile cart (pictured top left), 10-meter remote cable, sniffer probe, helium tank holder, and more. Call or write for more information.

... we've also made leak detection easy and reliable.

manufactured in the U.S.A. by:

ULVAC

NORTH AMERICA CORP.

P.O. Box 799P
Kennebunk, Maine 04043

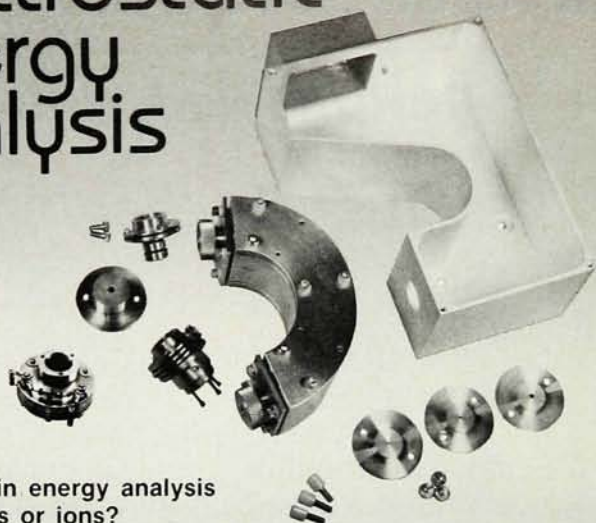
(207) 985-2973

AVS SHOW-Booths #906, 907

Circle number 89 on Reader Service Card



electrostatic energy analysis



Interested in energy analysis
of electrons or ions?

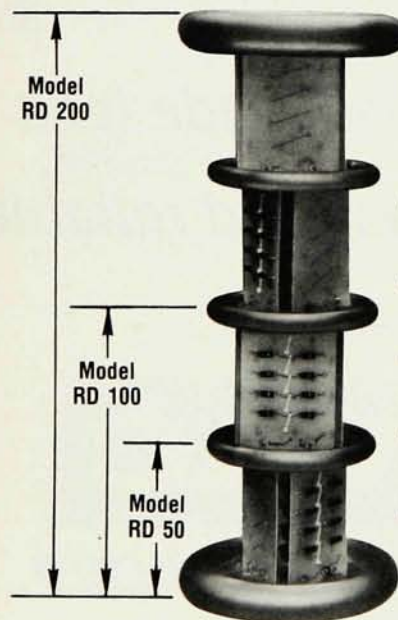
We provide an economical, tested line of modular equipment and provide design services tailored to your needs. Shown above: CP-602 Dual Channelplate Charged Particle Detector, EL-301 Einzel Lens, EG-401 Electron Gun, AC-901 Double Focusing Electrostatic Energy Analyzer, and SA-901 Shield Box. Call us for prompt and friendly attention.

comstock

P.O. BOX 199 OAK RIDGE, TENNESSEE 37830 (615)483-7690

Circle number 90 on Reader Service Card

NEW precision instrument for voltage measurement of high voltage D-C power supplies that also measures A-C ripple component



The Glassman RD Series

GLASSMAN HIGH VOLTAGE INC.

Route #22 (East), Salem Park, P.O. Box 551, Whitehouse Station, N.J. 08889
(201) 534-9007 • TWX 710-480-2839



Circle number 91 on Reader Service Card

- Three models rated at 50, 100, 200 KVDC max
- Measurements accurate to 0.25% of full scale
- Guarded and equipotentially shielded for minimum leakage
- Temperature coefficient: less than 100 ppm/degree C
- Voltage coefficient: less than 1 ppm/volt

letters

ment he received. I share Klotz's admiration for John Paul II in every respect but I also think that Ortega's statement is again applicable—Galileo was himself and his circumstance. It seems to me that to be strictly fair one should visualize the entire picture when one talks about Galileo and not just point to the unfair trial that he suffered.

I firmly believe that Galileo was, in a way, the "intellectual heir" of two great Catholic priest-scientists: the German Albertus Magnus and the less well-known Spanish Dominican friar Domingo de Soto. It is generally agreed^{2,3} that Domingo de Soto proved the law of falling bodies over half a century before Galileo started his academic career. Galileo obtained this information from manuscripts prepared³ by four Jesuit priests, professors at the Collegio Romano (today called the Universidad Gregoriana).

It is rather unfortunate that very few people even in the scientific field study in depth this famous question, but many find it easy to attack a particular religious sect or its representative.

References

1. J. Ortega y Gasset, *En Torno a Galileo (Esquema de las Crisis)*, Espasa-Calpe, Madrid, Spain (1965).
2. W. Wallace, *Prelude to Galileo*, Reidel, Dordrecht, The Netherlands (1981), p. 264.
3. D. de Soto, *Questiones Super Octo Libros Physicorum Aristoteles*, Universidad de Salamanca, Salamanca, Spain (1545).

P. A. A. LAURA

Institute of Applied Mechanics
Puerto Belgrano Naval Base

10/85

Argentina

The refereeing process

I wish to suggest a change in practice with regard to the refereeing of scientific papers—a change that, for once, seeks better treatment for the referee rather than for the author.

It is very frustrating, after putting substantial work in on a paper and making constructive suggestions for improvement, to hear no more. If the authors accept my suggestions and make modifications, I would like to know it. If they reject them, I would like to see their counter arguments. At the very least, I think it should be standard practice to send each referee a copy of the paper in the form that will be published or a reprint of the published paper.

ALWYN EADES

University of Illinois
Urbana, Illinois □

2/86