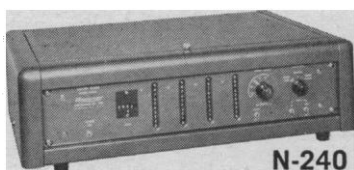


This versatile scaler performs a variety of functions. With various plug-in accessories it is a complete proportional, scintillation or GM counting system. By itself, it may be used as a system component.

Sensitivity, adjustable from -2.5 to -5 volts: can be increased to -1 mv by using the optional A-250 plug-in preamplifier. Pulse pair resolution $1 \mu\text{sec}$. Maximum continuous repetition rate, 25,000 cps. Preset counts between 10 and 400,000 selectable in 8 steps. The N-850 is a dual purpose optional timer operating from 1 sec. to 60 min. Accuracy, ± 0.1 sec. Voltage range of the optional P-4252 high voltage power supply is $+300$ – 2500 volts. Line regulation is .01% per volt change in line, 105–125 volts. Current, 1 ma.



A Decade Scaler designed primarily for analytical systems requiring reliability, versatility and high speed. Positive or negative pulses, with an amplitude of 4 volts, selectable by a switch. 4 preset counts, from 10 to 100,000 also selectable by a switch. A Hamner N-850 or N-804 Timer may be used for preset time operation. Pulse pair resolution, $1 \mu\text{sec}$. 4 electronic decades permit a continuous repetition rate of 250,000 cps.



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ioral disciplines related to public health (for example, epidemiology, sociology, psychology, and public health education). We hope the committee will include in its membership persons competent to advise in these areas, and that the committee will devote its major efforts to considering what can be done to meet the complex problem of minimizing the health hazards of tobacco.

IRWIN D. J. BROSS

MORTON L. LEVIN

GEORGE E. MOORE

Roswell Park Memorial Institute,
Buffalo, New York

Martian Antifreeze

Reading Frank R. Salisbury's highly stimulating "Martian biology" [*Science* 136, 17 (6 Apr. 1962)] made me feel again the importance of interdisciplinary communication. Although Salisbury did not mention it, glycerol may well be an extremely important element in the metabolism of living things on Mars, where the temperature alternates between freezing and thawing each night and day. Glycerol is a product of glucose metabolism and is formed in large amounts by certain microorganisms and even by some insects. Its ability to protect cells, tissues, and protozoa against damage from freezing to low temperatures is well known, and indeed it is used routinely in the preservation of spermatozoa and red blood cells [see, for instance, A. U. Smith, in *Biological Applications of Freezing and Drying*, R. J. C. Harris, Ed. (Academic Press, New York, 1954), pp. 1–62]. It is tempting to speculate that glycerol, ethylene glycol, or some similarly acting compound may protect the Martian organisms during their nightly freeze to -100°C and leave them free to metabolize when they warm up in the daytime.

NORMAN D. LEVINE

College of Veterinary Medicine,
University of Illinois, Urbana

The interesting suggestion by Levine that glycerol might provide the necessary protoplasmic antifreeze for survival during the Martian night is certainly a good one. I have often thought in terms of such protoplasmic antifreezes but lacked the specific information cited by Levine. Because of this it had seemed more likely to me that Martian "plants" might simply freeze and survive the freezing, but at this



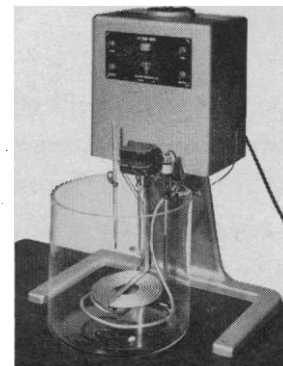
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stage of the game I am completely open-minded concerning anything which may be encountered when we finally arrive on the surface of Mars. It is quite reasonable to expect that many of our sciences, interdisciplinary and otherwise, will bloom forth in an almost unprecedented manner after this momentous event.

FRANK SALISBURY

Department of Botany and
Plant Pathology, Colorado
State University, Fort Collins

Questions and Answers

A recent editorial [*Science* 136, 231 (20 Apr. 1962)] offers some almost irresistible questions.

1) (Are scientists unfeeling or passionate?) Of course they have their feelings in perfect balance. You will probably get letters declaring this in passionate terms.

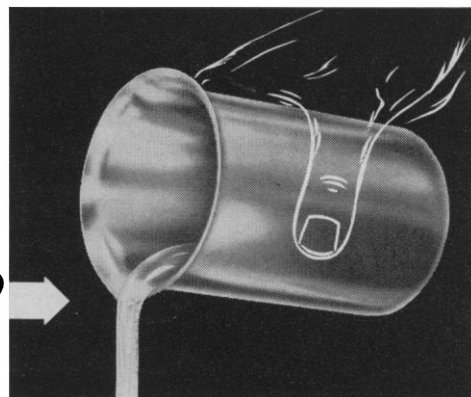
2) (Are political and scientific freedom related?) Scientists see red whenever freedom is mentioned, any kind. But don't let public opinion polls be used to demonstrate truth. Cupidity, curiosity, and/or love of power are more common than debates over freedom, in and out of science.

3) (What do laymen do when scientists disagree?) They decide. They have to. It occurs daily. Politicians disagree, so laymen select presidents. Doctors disagree, so laymen choose the path to follow. Scientists disagree, and laymen put their bets on one or the other. Players disagree, and a layman, the umpire, decides. Lawyers disagree, and jurists and juries declare answers.

4) (What is different about what a scientist does?) Not a thing, except that he polishes the brass "SCIENTIST" on his door before going to work. The idea that a scientist is something apart, or something to which to aspire, is a carefully nurtured illusion.

5) (Are scientists unusually moral?) Faking experiments is rare, but the facts around us cannot be faked. The test tube never lies; the experiment is never wrong. Errors arise occasionally in observations but commonly in interpretations and deductions. Except for a degree of wariness or special familiarity with his subject, the scientist is no better than anyone else in moral outlook. In effect, he may well be worse, because of the well-fostered notion that he is faultless, or that objective attitudes lead always to truths.

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