Dither

When working, early in World War II, on antiaircraft computing and gun-laying devices, I learned from British colleagues a new use of an old word. When building such devices, they often included a small eccentric or vibrating member which kept the whole mechanism in a constant state of minor but rapid-vibration. This they called the "dither."

The purpose, once one thinks a moment, is perfectly clear. Kinetic friction is less than static friction. If the parts are constantly in slight motion, then the whole device is alert, is on the jump, is ready to respond promptly to the earliest beginnings of forces seeking to move the gun, the little dither gimmick preventing any sluggish delay caused by static friction. The same phenomenon arises in other connections. For example, the types of flight instruments which are dependably responsive in an aircraft with reciprocating engines and a good deal of resulting general vibration might tend to stick or respond tardily in jet aircraft with their almost vibrationless flight.

We need a certain amount of dither in our mental mechanisms. We need to have our ideas jostled about a bit so that we do not become intellectually sluggish. The British are good at this, too, and use Hyde Park corner, His Majesty’s Loyal Opposition, and a variety of other techniques to make sure that mental static friction does not dominate.

It is a wonderful thing to have in science fresh, unorthodox, nimble, and vibrating minds. The recent phenomenon of Edwin Land’s essentially 17th-century type of discovery in the field of color vision is an excellent case in point. This really shakes every scientist, and in so doing it benefits him.

The same consideration, I think, furnishes an extremely powerful argument for carrying out as much basic research as possible under circumstances which involve eager young persons. My scientific godfather, Dean Charles Sumner Slichter of the University of Wisconsin, used to say that every laboratory ought to have “one damn fool who doesn’t know yet what you can’t do.” When a professor who does research also has the marvellous opportunity of teaching elementary courses he finds that the contacts with the youngsters constantly jostles his own mind. It may at times put him in a dither, but that is good for him.—WARRICK WEAVER, ALFRED P. SLOAN FOUNDATION, NEW YORK.
For Counting Tritium And Carbon-14

**Automatic**

Where considerable counting is done, the Model 314X Tri-Carb Spectrometer has proved invaluable in saving overall time and in utilizing laboratory personnel to better advantage. Completely automatic, it handles up to 100 samples and permanently records all data on paper tape. It can be operated around the clock without attendance.

**Semi-Automatic**

For laboratories that anticipate increased counting in the foreseeable future, Model 314S provides efficient handling of present requirements, plus easy conversion to fully automatic operation at moderate cost. This can be done at any time simply by adding the 100-sample turntable, digital printer and the transistorized automatic control cabinet.

**Manual**

Model 314 is for laboratories not anticipating increased counting in the near future. Even this model, however, can be converted to fully automatic operation, if and when required. This is done by replacing the manual with the automatic sample chamber and shield and by adding the digital printer and transistorized automatic control cabinet.

All three models offer all the advantages of the Tri-Carb Liquid Scintillation Method for counting alpha- and beta-emitting isotopes: sensitivity, versatility, simplicity of operation and ease of sample preparation.

For detailed information on the Tri-Carb Liquid Scintillation Method and specifications on Tri-Carb Spectrometers request latest bulletin.
Kodak reports on:
why it pays to be patient with the scientific mind... clear, competitive vision in the
2-8µ region of the infrared... before and after yogurt

Color film, fast but good
Has anything big come out of the Kodak Research Laboratories lately? Sure—Kodak High Speed Ektachrome Film,
now on sale at thousands of film counters in 20-exposure 135 magazines,
an outcome worth all the soothing of temperaments, all the technical
conferences, all the writing and reading of reports,
a film with an Exposure Index of 160 in Daylight Type and 125 in the Type
B (for 3200°K),
admitting no impairment of definition in return for speed,
asking little more light than fast black-and-white film in return for full color,
in slides that look right even if the photographer has not fussed much
about the frigidity of his film storage cabinet or the color balance of his illumination,
and awfully near right at twice the official Exposure Index with three
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Your dealer can arrange to have this film processed by Kodak, or any other labora-
tory offering this service. You can also do it yourself with the Kodak Ektachrome
Processing Kit, Process E-2, Improved Type.

"Irtran"—ask for it by name
By dint of perseverance, knowledge, inspiration, judgment, experience, ambition,
ingenuity, and the concentrated power of many clear heads and skilful
hands, we have learned how to mold, grind, and polish a certain substance
to make rugged, optically precise windows and domes that transmit ef-
ciently the 2-8µ region of the infrared.
Around this whole package of technology we put a convenient string and
tag it with a new trademark, "Irtran." Immediately—so robust is the American
economy—we find ourselves in competition with some excellent fel-
low whom also possess the above-named qualities and who make a most excellent infrared-transmitting optical
material—a gem, synthetic but true, with a gem's name. To spell that name
out would be as unmanly as it is unnecessary for those caught up with
infrared-actuated swords and plow-shares.
Rather, we want such cognoscenti to spell out Kodak Irtran Optics, Type
AB-I.
They cost a lot less than the gem makers have a right to ask.
They see clearly through the 3-5.5µ windows of the atmosphere.

They stay clear to at least 800°C instead of permitting Heinrich Kirchoff's law
to blind them by their own emissivity.
They have a refractive index of only 1.301 at 6.7µ, paying scant tribute to
M. Fresnel's celebrated equation about reflection losses.
They survive all the high temperature, thermal shock, weathering, humidity,
and abrasion that the current tests for swords require.
Type AB-I is only the beginning of the Irtran business, we suspect. Quartz
was fine when lead sulfide was the practical detector; PbS quits at 4µ.
Now the longer wavelength sensitivity of cooled lead selenide, lead telluride,
and indium antimonide has outrun the transparency of good old quartz.
Soon the boys will be ranging on the 8 to 13µ window of the atmosphere.
For lenses with optical power they'll want infrared-transmitting material of
higher refractive index. Type AB-I may be only the beginning.

With what excitement the specifications for us to quote on will be drawn up and shot
to Eastman Kodak Company, Special Products Division, Rochester 4, N. Y.!

Acido orotico
Around the turn of the century it was brought to the world's attention that
the inhabitants of certain Bulgarian villages were a) living to ripe old ages
and b) consuming vast quantities of the ripe old fermentation products
of the local dairying. Echoes of this coincidence have rung forth at intervals since.
In the twenties a certain elderly biochemist who had seen much importance
in the correlation was a celebrated figure of Paris. In the thirties
American milk wagons were bedizened with signs advertising a certain brand
of fermented milk. In the forties the word "yogurt" entered the vocabu-
lar-y of the American intelligentsia. With the dawn of the fifties, the
Journal of the American Chemical Society (72, 2312) reported that cer-
tain strains of Lactobacillus bulgaricus throw when supplied with 6-carboxy-
uracil, a substance first synthesized in 1897 for academic exercise and later
shown to be identical with orotic acid. This name was derived from αισθα-
γει, why, by two Italians who had encountered the substance while making
lactose from milk whey liquors.
The flowering of biochemical sophi-
stication in the mid-fifties has ex-
cited a deeper curiosity about orotic acid. To some it looks like a significant
intermediate in the process by which living organisms fabricate nucleotides
for their DNA—the stuff of genes—
born amino acids at their dispo-
sal. This is big talk.
In Italy interest in acido orotico has been rekindled to a small-scale frenzy.
At the University of Urbino last June
a colloquium on pyrimidines (Acta
Vitaminologica, 12, 195-328) devoted
much of its attention to the compound.
One man claimed his evidence showed that a dietary deficiency of orotic acid
affects pregnancy, lactation, and
growth in the rat, that it is a vitamin-
like factor essential for the survival
of the newborn. One senses the closing of a
circle.

If we had not been invited to quote on 100
kilos of Orotic Acid recently, we might not
have looked up all this lore. We didn't get
the order, but in trying we made enough of it
to stock as Eastman 7784 (along with
2-Thiorotic Acid, Eastman 7783) for the
convenience of biochemical investigators. Anybody who wants to sell it from milk
trucks is strictly on his own.
We have some 3700 Eastman Organic
Chemicals to worry about. Catalog on
request from Distillation Products Indus-
tries, Rochester 3, N. Y. (Division of East-
man Kodak Company).

This is another advertisement where Eastman Kodak Company
probes at random for mutual interests and occasionally a little
revenue from those whose work has something to do with science
Meetings

Contamination of the Moon

A committee to consider the implications of contamination of the moon and planets by extraterrestrial exploration (CETEX) was established by the International Council of Scientific Unions (ICSU) in March 1958 and held its first meeting two months later in The Hague. On the basis of two days of discussions, CETEX decided that there is a real possibility that exploration experiments could contaminate the moon or the planets in such a way that other experiments, particularly biological, would be made impossible. The dangers of such contaminations, and steps to avoid them, were pointed out in the report of CETEX [Science 128, 887 (1958)] which was accepted by ICSU at its general meeting in Washington in October 1958: In addition, the parent organization asked CETEX to meet for a second time, with the help of appropriate technical experts, to draw up a code of conduct for space research and to suggest the correct sequence of experiments of different types.

The second meeting was held at The Hague 9–10 March 1959, the following members being present: M. Fiorkin, commissaire (Belgium); P. Alexander (Great Britain); J. Bartels (Germany); W. O. Fenn (U.S.); D. J. Hughes (U.S.); J. Roche (France); and J. Rösch (France).

It was impossible for CETEX to prepare a detailed sequence of space experiments, principally because of the short time interval between its two meetings and the complexity of the problems involved. Instead, it drew up some general principles governing space exploration that could serve as suggestions to COSPAR, the newly organized space research committee of ICSU, which presumably will include the work that CETEX has begun. These general principles are given below. Although the first report of CETEX was considered in detail at the second meeting, primarily only minor changes of a technical nature were made in it. The committee reaffirmed its position that the presence of life of any type on the moon is extremely unlikely and decided, as well, that the possibility that free radicals in explosive amounts exist on the moon is remote. A suggestion was added to the report that methods for sterilization of rockets be developed as rapidly as possible, and that sterilization be instituted as a standard procedure.

The general principles governing space research drawn up at the meeting are as follows.

"1) Space research offers a challenge and opportunities which should appeal to the most imaginative minds. The greatest encouragement must be given to novel and unconventional approaches and no proposal should be sanctioned which would hamper the experimenters' freedom of action unless there are compelling reasons. On the other hand, equally imaginative thinking is required when considering possible complications which can follow a particular type of experiment. Surprises are certain and unlikely possibilities must be borne in mind when dealing with the problem of contamination, which is better defined as the problem of reducing the risk whereby one experiment may spoil the situation for other subsequent enquiries. The question of deciding whether such a conflict is likely to arise can best be dealt with by a committee or working group engaged in planning, or advising on scientific experiments.

"2) Ideally scientists should be asked to inform COSPAR as early as possible of each space experiment which is envisaged and of the methods to be used in its execution. The broadly based committee of COSPAR containing scientists..."
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from all disciplines may be able to see much more clearly than the space re-  
search specialists possible conflicts introduced by such experiments and may be  
able to suggest ways of overcoming these difficulties.

"3) There are a number of obvious and necessary experiments which are  
bound to be done and here the COSPAR working group dealing with experiments  
may be able to suggest priorities. While it may not be possible to avoid all types  
of contamination a proper sequence can ensure that the collection of data is not  
thereby hindered. For example CETEX recommends positively that no 'soft'  
landing, which requires the release of large quantities of gases, should be made on  
the moon until experiments have been successfully carried out—or at least all  
reasonable attempts made—to determine the nature of the moon's atmosphere.

"4) In view of the great uncertainties which face space research all operations  
which are not capable of conveying meaningful scientific data are to be dis-  
couraged even if they do not appear to carry with them a known source of con-  
tamination. Risks with the unexpected must be taken as otherwise no space ex-  
ploration is possible but such risks must be justified by the scientific content of the  
experiment."  

Donald J. Hughes  
Brookhaven National Laboratory,  
Upton, Long Island, New York

Forthcoming Events

September

1-3. Association for Computing Machinery, natl., Cambridge, Mass. (J. Mosh-  
man, Council for Economic and Industry Research, Inc., 1200 Jefferson Davis High-  
way, Arlington 2, Va.)

Prudential Plaza, Chicago 1.)

1-7. History and Philosophy of Science (General Assembly, History Div., Inter-  
national Union of the History of Philosophy of Science), Barcelona, Spain. (R. Taton,  
IHUPS, 64, rue Gay-Lussac, Paris 5.)

1-8. Acoustics, 3rd intern. cong., Stuttgart, Germany. (E. Zwicker, Breitscheid-  
strasse 3, Stuttgart N.)

1-7 Oct. International Civil Aviation Organization (Meteorological Div.),  
Montreal, Canada. (ICAO, Maison de l'Aviation Internationale, Montreal.)

2-4. Allergy, 4th European cong., London, England. (British Assoc. of Allergists,  
Wright-Fleming Inst., St. Mary's Hospital, London, W.2.)

2-4. Cryogenic Engineering Conf., Berkeley, Calif. (K. D. Timmerhaus,  
CCE, Chemical Engineering Dept., Univ. of Colorado, Boulder.)

2-4. Crystal Imperfections and the Chemical Reactivity of Solids (Faraday  
discussion), Kingston, Ontario, Canada. (Faraday Soc., 6 Gray's Inn Sq., London,  
W.C.1, England.)

2-5. American Mathematical Soc. and  
Mathematical Assoc. of America (joint  
summer), Salt Lake City, Utah. (E.  
Pitcher, AMS, Lehigh Univ., Bethlehem,  
Pa.)

2-8. Foundations of Mathematics:  
Infinitistic Methods, symp., Warsaw, Poland.  
(A. Mostowski, Dept. of Mathematics,  
Univ. of California, Berkeley 4.)

2-9. British Assoc. for the Advancement  
of Science, 121st annual, York, England.  
(Secretary, BAAS, 18 Adam St., Adelphi,  
London, W.C.2, England.)

3-4. Magnesium in Agriculture, symp.,  
Morgantown, W. Va. (D. J. Horvath,  
Dept. of Animal Husbandry, West Vir-  
ginia Univ., Morgantown.)

3-5. Nephrology, 1st intern. cong., Ge-  
neva, Switzerland, and Evian, France. (G.  
Richet, Hospital Necker, 149, rue de  
Sevres, Paris 7th, France.)

3-6. American Sociological Soc., natl.,  
Chicago, Ill. (D. Young, Russell Sage  
Foundation, New York 22.)

3-9. American Psychological Assoc.,  
annual conv., Cincinnati, Ohio. (R. W.  
Russell, APA, 1333 16 St., NW, Wash-  
ington 6.)

4-7. International Federation of Sur-  
evyeors, annual (by invitation), Gracow,  
Australia. (IFS, 4, Kanaalweg, Delft,  
Netherlands.)

5-12. Application of Radiation Sources  
in Industry, intern. conf., Warsaw, Pol-  
land. (P. F. Tant, IAEA, Vienna, Austria.)

6-12. Standards on a Common Language  
for Machine Searching and Translation,  
intern. conf., Cleveland, Ohio. (Secretariat, Center for Documentation and  
Communication Research, Western Research Univ., Cleveland 6.)

6-12. World Confederation for Physo-  
therapy, 3rd intern. cong., Paris, France.  
(A. Nicolle and J. Dupuis-Deltor, Société  
d'Organisation des Congrès Français et  
Internationaux, 1, rue Chanez, Paris 16th.)

7-9. Psychometric Soc., Cincinnati,  
Ohio. (P. H. Dubois, Washington Univ.,  
St. Louis 5, Mo.)

7-9. Society of General Physiologists,  
Urbana, Ill. (F. G. Sherman, Dept. of  
Biology, Brown Univ., Providence 12.)

10-12. Institute for Management Sci-  
ces, Paris, France. (A. S. Manne, Dept.  
of Economics, Yale Univ., New Haven,  
Conn.)

7-11. American Soc. of Clinical Patho-  
ologists, Chicago, Ill. (C. E. Wells,  
2052 N. Orleans, Chicago 14.)

7-11. Illuminating Engineering Soc.,  
annual natl. conf., San Francisco, Calif.  
(A. D. Hinckley, IES, 1860 Broadway,  
New York 36.)

7-12. European Soc. of Haematology,  
cong., London, England. (E. Neumark,  
Dept. of Pathology, St. Mary's Hospital,  
London, W.2.)

7-12. World Medical Assoc., 13th gen-  
eral assembly, Montreal, Canada. (WMA,  
10 Columbus Circle, New York 19.)

8-15. Sociology, 4th world cong., Milan  
and Stress, Italy. (International Sociological  
Assoc., Skepper House, 13 Endleigh St.,  
London, W.C.1, England.)

9-10. Air Pollution, 2nd intern. cong.,  
New York, N.Y. (American Soc. for  
Mechanical Engineers, 29 W. 39 St.,  
New York 18.)

(See issue of 19 June for comprehensive list)

S C I E N C E , V O L . 1 3 0
New Products

The information reported here is obtained from manufacturers and other sources considered to be reliable, and it reflects the claims of the manufacturer or other source. Neither Science nor the writer assumes responsibility for the accuracy of the information. A coupon for use in making inquiries concerning the items listed appears on page 350.

**IONIZATION GAGE** achieves linearity over a wide operating range by enclosure of the ionization region with a grid-like end covering that prevents straying of ions. Range of the gage for accurate measurements is said to be $10^{-10}$ mm-Hg with direct readings possible down to $10^{-12}$ mm-Hg. Flash filament technique permits estimation of partial pressures of adsorbable gases to $10^{-12}$ mm-Hg. Full-scale ranges from $0$ to $10^{-3}$ to $0$ to $10^{-10}$ mm-Hg are selectable. (N. R. C. Equipment Corp., Dept. 954)

**PULSE-HEIGHT ANALYZER** uses a ferrite-core memory system to store information in 400 channels. Capacity per channel is 65,545 counts. Linearity is better than 0.5 percent. Average dead time is 120 μsec. Maximum input counting rate without distortion or shift of data is greater than $5 \times 10^6$ count/min. Features include automatic print-out, memory subgrouping, and external programming. (Radiation Instrument Development Laboratory, Inc., Dept. 955)

**ELECTRIC BENCH FURNACE** for continuous operation at 1900°F and intermittent duty to 2100°F is said to achieve unusual compactness and efficiency by use of fibrous potassium titanate for insulation. One model with chamber volume 222 in.$^3$ has an over-all volume of 1160 in.$^3$; heat-up time 25 min from 70° to 1830°F; power consumption to hold at 1900°F, 580 w; and case temperature 260°F for inside temperature 1920°F. Weight is 17 lb. (Electric Hotpack Co., Dept. 957)

**VISCOMETER** of rotating cone type provides a constant rate of shear adjustable from 2 to 20,000/sec by a ten-turn potentiometer. Three models are available for maximum sample temperatures 30°, 100°, and 200°C. Speed is indicated directly, and full torque is available at all speeds. Gap is reproducible within ± 0.0001 in. Three cone diameters and three torque springs provide a wide range of viscosity. (Ferranti Electric Inc., Dept. 958)

**ANALOG COMPUTING COMPONENT** accepts three variable inputs $e_1$, $e_2$, $e_3$ and provides as output $e_4 = e_2/e_3$. Accuracy as a multiplier, including drift, is said to be better than ± 0.1 v in all four quadrants. A three-digit decade provides an adjustable voltage which serves as an adjustable scale factor for opera-

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The ability to record either mass spectra or mass ratios further widens the versatility of the Bendix Mass Spectrometer. The speed and ease of using this new Analog Output System are illustrated by the following example:

During a recent routine analysis performed at our Research Laboratories Division, one hundred mass spectra were recorded on a direct writing recorder in less than two hours. These were the mass spectra of the eluted components of a mixture being separated by a gas chromatograph and fed continuously into the Bendix Spectrometer for identification.

For complete details contact the Cincinnati Division, Dept. E6-5, 3130 Wasson Road, Cincinnati 8, Ohio. Export Sales: Bendix International Division, 205 E. 42nd St., New York 17, N. Y. CANADA: Computing Devices of Canada, Ltd., Box 508, Ottawa 4, Ontario.

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![Oscillogram of xenon spectrum.](image)

- **WIDE MASS RANGE**—Each spectrum covers 1 through 4000 a.m.u.
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tions involving only two variables. Dynamic response may be set, for example, to give less than 1-deg phase shift at 1 kcy/sec or 3 db attenuation at 14 kcy/sec. Standard range of inputs and outputs is ±50 v. No external equipment is necessary to obtain products, ratios, squares, square roots, or absolute values. (George A. Philbrick Researchers, Inc., Dept. 962)

**VOLTAGE MONITORING DEVICES** are available as indicators and relays. The indicator is an expanded-scale instrument graduated in arbitrary units and said to be accurate at the point monitored to ±0.25 percent for d-c and ±0.5 percent for a-c. Trip-point accuracy of the relay is claimed to be within ±0.25 percent for d-c and ±0.5 percent for a-c. A response delay of 75 msec is standard, but delay as high as 2 sec can be provided. (Voltron Products, Dept. 959)

**DIGITAL MICROMETER** scans up to 99 gaging points and prints dimensional data with accuracy ±0.0001 in. and identification number. Operation can be manual, semiautomatic, or completely synchronized with manufacturing and inspection processes. Optional outputs include digital display, card-punch input, or alarm. (Daytronic Corp., Dept. 969)

**OSCILLOGRAPH** records a laterally undulating track on a narrow plastic tape. The track is optically projected within the instrument to produce an enlarged image on its viewing screen. No processing is required. The tape is loaded into the instrument on 3-in. reels. According to the manufacturer, frequency response for direct recording is from d-c to 5000 cy/sec. A magnetic memory unit will be available as an accessory to permit higher frequencies to be recorded. A pickup head to permit playback of the record will also be available. (Microsound Inc., Dept. 967)

**VOLTAGE REFERENCE** uses a silicon diode element to provide output reference voltage either 8.4 or 16.8 v d-c. Voltage regulation is ±0.01 percent for ±10 percent line voltage variation. Temperature coefficient is ±0.001 percent/°C from −55° to +100°C. Units are available for a-c or d-c operation. Output ripple of a-c types is less than 0.004 percent. (International Rectifier Corp., Dept. 964)

**DEW-DURATION RECORDER** uses a sensitive element of goldbeater’s skin said to be unaffected by relative humidity conditions and to respond only to actual water deposition. The instrument is designed to be placed between rows of plants and is made of noncorroding materials. Recording is said to start and cease within 5 min of the appearance or disappearance of visible dew on foliage. The waxed-paper chart is driven by a spring clock at 1 rev/day for 7 days. (American Instrument Co., Dept. 960)

**ALphanumeric PRINTER** accepts digital data from digitizers, magnetic or perforated tape, and electronic counters or computers and prints out at rates up to 48,000 digits per second. For logging digitized data from a series of analog-to-digital converters a scan and print-out rate of 200 three-digit numbers is said to be realizable. Up to 63 characters are available. Printing is on multiple-copy fanfold paper; up to four copies can be made. (Potter Instrument Co., Dept. 966)

**PROGRAMER** is a 13-channel tape device giving a program duration of 10.6 min at a tape transport speed of 3 in./sec. Designed to control up to 13 functions simultaneously, it provides electrical pulses at predetermined intervals. Pulses are produced by a brush which senses slots punched in 35-mm insulating tape. (Beattie-Coleman Inc., Dept. 961)

**JOSHUA STERN**
National Bureau of Standards
Washington, D.C.
made after removal by filtration of almost all living plant and animal cells and larger particulate matter. We were interested in whether the bound polyphosphates on clay micelles can be released and used by phytoplankton, but we had difficulty with analyses of soluble phosphorus and did not get all the data desired. Several analyses showed, however, that soluble phosphorus was almost nil, indicating the complete removal of this form by plankton. Furthermore, we did have several short-period (rather than minor) blooms of phytoplankton which almost certainly required more than minimal quantities of phosphorus.

A single bloom of Anabaena in each of the two more fertile ponds reached 10,000 and 40,000 colonies per cubic centimeter, respectively. In two ponds the average population of phytoplankton was around 300 to 500 cells per cubic centimeter.

We have a longer paper in preparation which gives more complete data.

L. A. WHITFORD
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North Carolina State College
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Professions

The letter entitled “What is a profession?” [Science 129, 1688 (1959)] prompts me to send you the definition credited to Justice Brandeis: “A profession is an occupation requiring preliminary intellectual training, pursued primarily for others and not merely oneself, and accepting as the measure of achievement one’s contribution to society rather than individual financial reward.”

A. R. PATTON
Colorado State University, Fort Collins

W. W. Benton, in his letter “What is a profession?” states, “Only three of these require certification, namely, medicine, education and, in some states, engineering” (italics mine).

This statement is incorrect, as all our 50 states and Puerto Rico now require registration for an engineer to practice. This, of course, means independently and for a consideration. Thus, an engineer can practice his profession without being registered if this is done under the supervision of a registered professional engineer, who assumes the responsibility for such engineering work.

SAMUEL I. SACKS
706 Widener Building,
Philadelphia, Pennsylvania

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