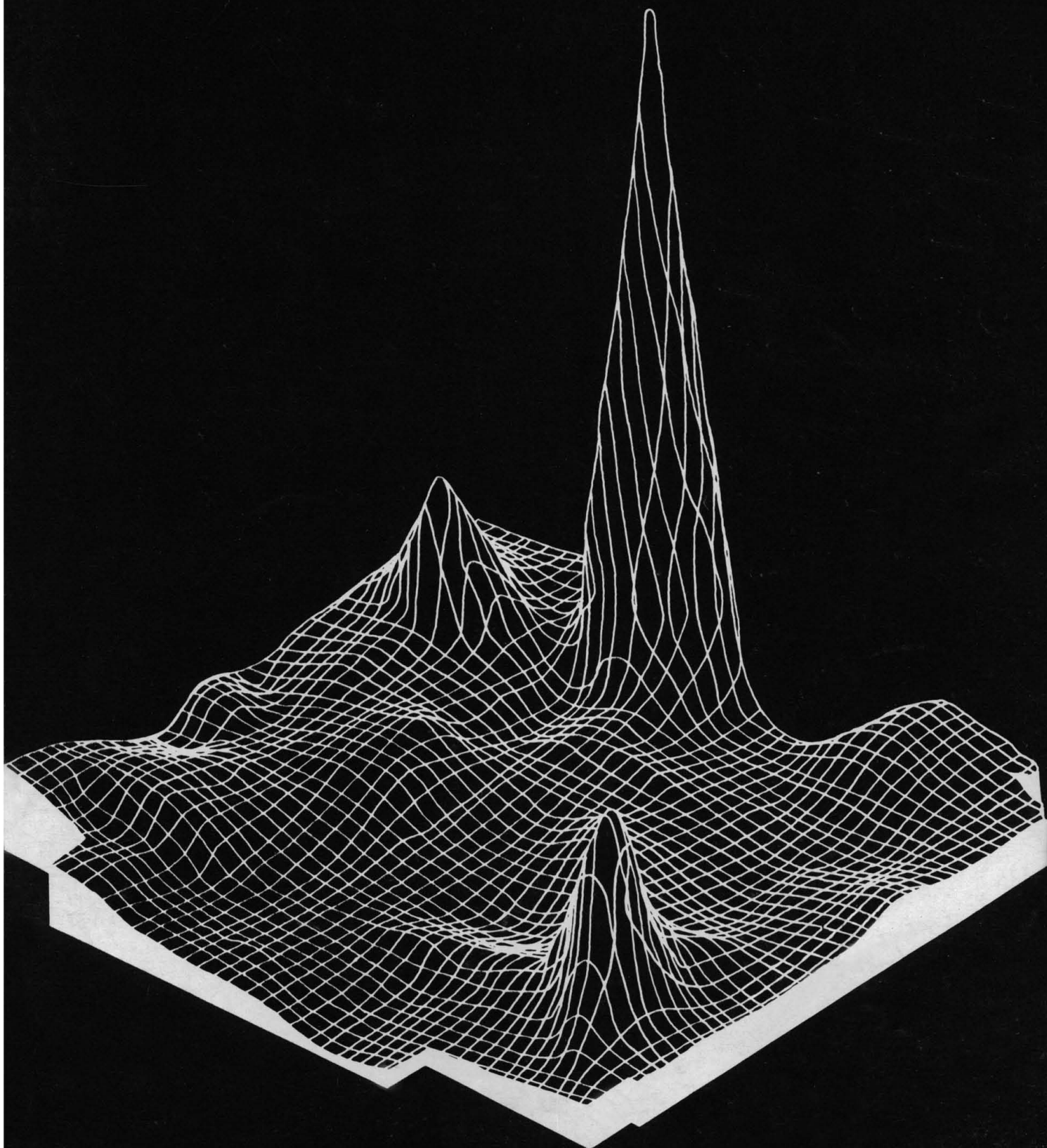


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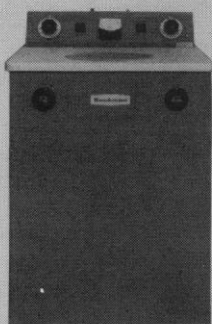
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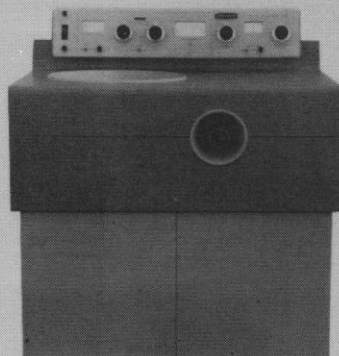
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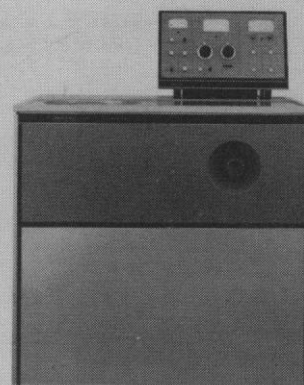
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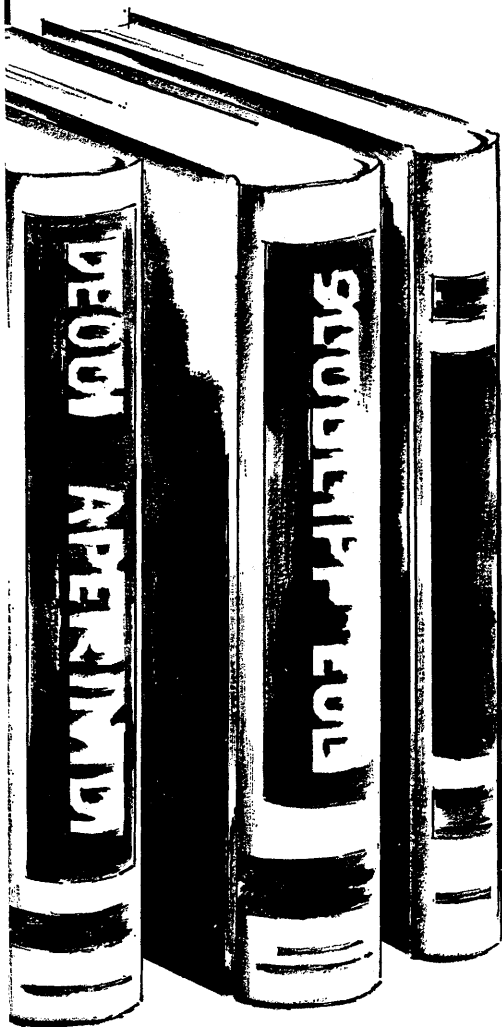
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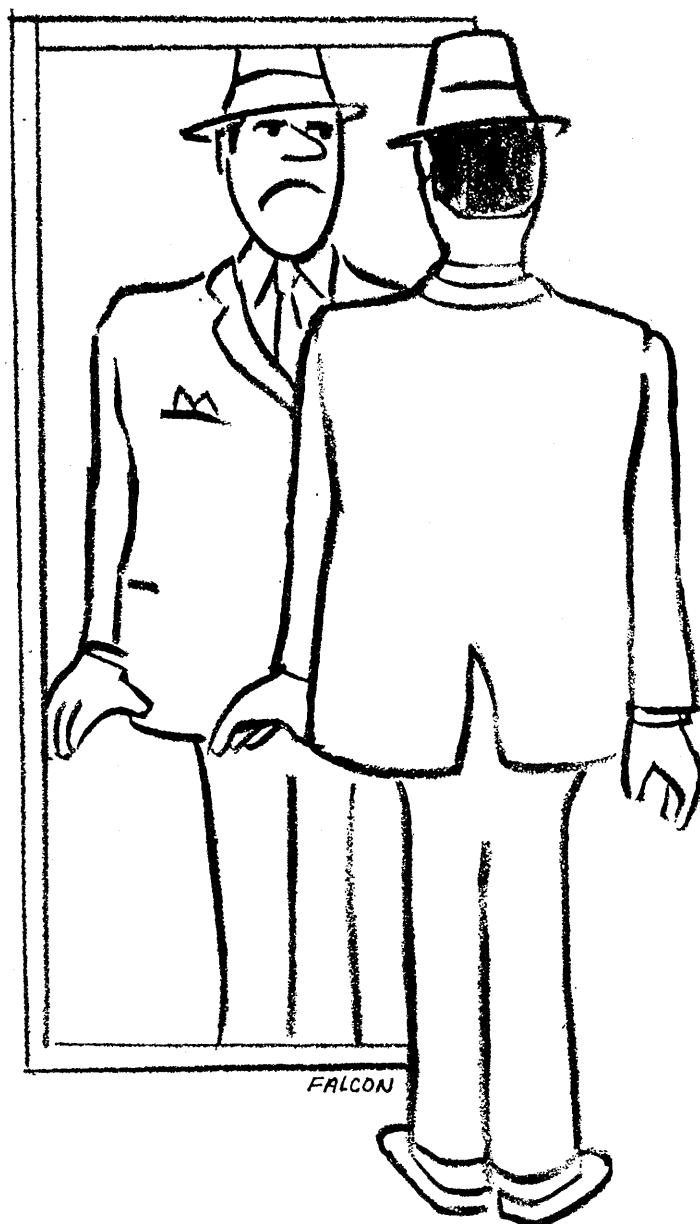
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COVER

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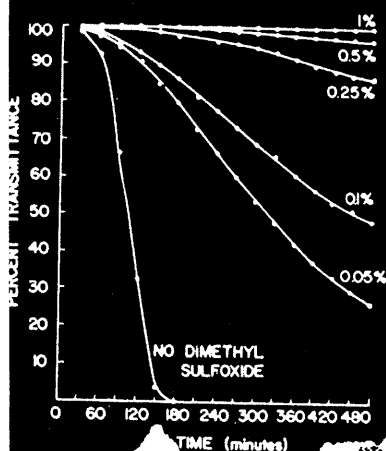
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Reagents. 2,2-Dimethoxypropane obtained from Eastman Organic Chemicals and redistilled from 78° to 80° C.

Methanolic HCl was prepared every two days by bubbling dry HCl into methanol until the concentration was 10% by weight. Methanol was spec-



troquality from Matheson Coleman & Bell Chemical Co.

Other chemicals were reagent grade. **Procedure.** Appropriate amounts of dimethyl sulfoxide were added to each of five tubes containing 0.5 ml. of DMP; and the volume in each tube was adjusted to 5 ml. with 10% methanolic HCl to give the following dimethyl sulfoxide concentrations: 1%, 0.5%, 0.25%, 0.1%, and 0.05%. A sixth tube contained 0.5 ml. of DMP and 4.5 ml. of 10% methanolic HCl but no dimethyl sulfoxide. Colorimetric readings were taken every 15 minutes over an eight-hour period at a wavelength of 525 mμ.

Two special mixtures were also prepared for gas chromatography. The following: Mixtures containing each of octanoic, decanoic, and lauric acids were placed into two sets of 12 ml. reaction flasks. The acids were dissolved in 4.5 ml. of 10% methanolic HCl, and 0.5 ml. of DMP was added to each tube; finally 0.01 ml. of dimethyl sulfoxide was added to each tube.

The effect of the catechols to a reaction mixture they could exert a physiological effect, or they might inactivate them.

Experimental¹⁰

Compounds.—Redistilled *p*-cresol (Matheson Coleman and Bell) was recrystallized from petroleum ether (b.p. 30–60°). *n*-Hexylamine (Matheson Coleman and Bell) was converted to the hydrochloride, which was recrystallized from an ethanol-ethyl acetate mixture. *p*-Tyramine hydrochloride (Distillation products) was recrystallized from an ethanol-ethyl acetate mixture. Hordenine sulfate and DL-metanephrine hydrochloride were obtained from the biochem. *p*-Synpatol Laboratory.

Reagents. Anthracene was prepared from anthraquinone by the method of Fieser (3) and was purified by recrystallization and zone refining. Naphthalene (Matheson Coleman & Bell No. 9082) was used without further purification. All solvents used were spectroquality grade.

Procedure. Standard solutions of anthracene and naphthalene in isopropyl alcohol were mixed in proportions to prepare 39 solutions, each containing 0.50 mg. per ml. of anthracene, and with naphthalene content ranging from 0.6 to 4360 p.p.m. of the anthracene content. These standard mixtures, in 4-ml. portions, were diluted with 125 ml. of isopropyl alcohol to give clear solutions. Portions of 125 ml. of distilled water were added to the standard mixtures to give colloidal dispersions. Measurements were made using a monochromator 40–60-mesh, reagent grade calcium oxalate monohydrate obtained from Matheson Coleman & Bell Co. The temperature chosen was the 60% weight loss point for the oxalate to carbonate decomposition. The confidence limits for the mean temperature based on 6 measurements at the 60% weight loss point were found to be less than 0.1° C.

and cells were used previously (1, 8, 9). *n*-Hexylamine (Matheson Coleman and Bell, commercial grade) was redistilled at 10 mm., and the fraction boiling at 185–7° C. was collected. The concentration was determined by pH titration. All other chemicals were reagent grade, and were used without further purification.

PHENYL ISOCYANATE, reagent grade, boiling point 60° to 62° C./20 mm. (Matheson Coleman & Bell). Add 10.55 grams (0.1 mole) of phenyl isocyanate to 50 ml. of dry toluene, dilute to 100 ml. with additional toluene, and store in the volumetric flask. If any crystalline precipitate forms the reagent is discarded.

ALCOHOLS used as standards were reagent grade chemicals.

CATALYST. Add 0.404 gram of anhydrous octylate (catalyst T-9 from Matheson Coleman & Bell) to 50 ml. of dry toluene and dry under reduced pressure.

Solvents. The reagents were used as benzene solution using Spectroquality *p*-dimethylaminobenzaldehyde (Matheson Coleman and Bell), and in dilute mixture using the above mentioned reagents.

Apparatus. The distillation apparatus, and the loss point of the above reagents were determined. The confidence limits for the mean temperature based on 6 measurements at the 60% weight loss point were found to be less than 0.1° C.

We asked them. Here are some of the answers.

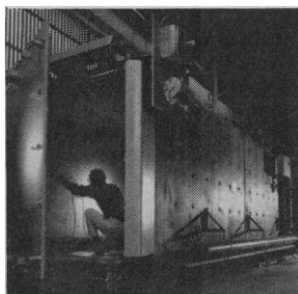
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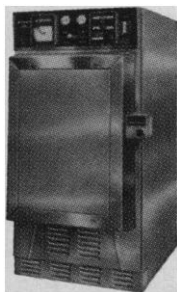
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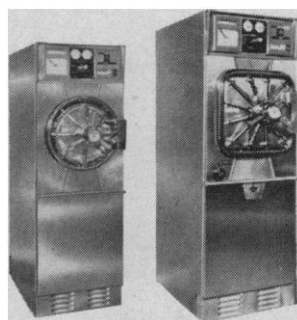
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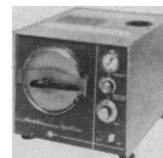
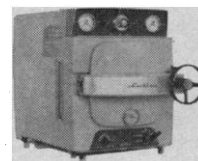
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New facts to change a lot of old ideas

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The new E. Merck (Darmstadt) high-capacity, abrasion-resistant glass plates

Fact I

Pre-coated Preparative Layer Chromatography.

A new fact in itself. For the first time a complete set of apparatus and pre-coated glass plates are available for separation of larger quantities—up to 0.5 gm. on a single 20 x 20 cm. plate.

Fact II

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Fact III

Seven significant advantages of preparative TLC over Column Chromatography:

1) Much shorter developing times—less than one day. 2) Sharper, clearly distinct separations because of the higher activity of the layer (smaller particle size range from 10-40 microns). 3) Substances are localized as a band on one surface, rather than in an undefined area. 4) The procedure requires only a fraction of the solvent volume necessary for column separations, and quantities ranging from 0.01 to 0.5 gm. can be separated on a single 20 x 20 cm. plate. 5) Identification of

substances is possible after each individual development (column separations are identified only after eluting the zones). 6) Zones are easily removed. 7) Ideal developing conditions can be selected by rapid pretesting on an analytical thin-layer plate.

Fact IV

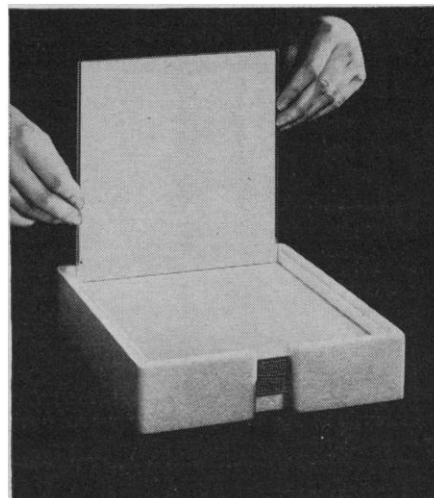
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November, 1966

FISHER PRODUCT REPORT

News about instruments, apparatus and reagent chemicals that make your work quicker, surer, safer and easier.

Smart, simple way to liberate bench-top space: Newest Fisher Isotemp® Oven.

It hangs. On useless wall space to free useful counter space. Out of the way, yet handy. Eliminates stooping and bending. It's a gravity-convection oven with a roomy double-door chamber having a capacity of more than 3 cu ft. Temperature, from 50° C to 200° C, is registered on a dial thermometer. Only 30 minutes to heat to 100° C, 75 minutes to reach 200° C. Heat is maintained within $\pm 2^\circ$ C. The control thermostat responds to as little as $\pm 0.5^\circ$ C change in temperature. If something goes amiss, the famous Isotemp "Safety Sentinel" thermostat takes over before any damage can happen. All controls, dials and pilot lights are located on an easy-to-reach, easy-to-see front panel. The new oven operates on 115-volt AC, 50/60-cycle current and costs \$365. Our product bulletin gives full details on what we believe you'll find is a smart idea in lab ovens.

(a) ☐

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(b) ☐

You could almost spell the name on the cap "P-U-R-I-T-Y."

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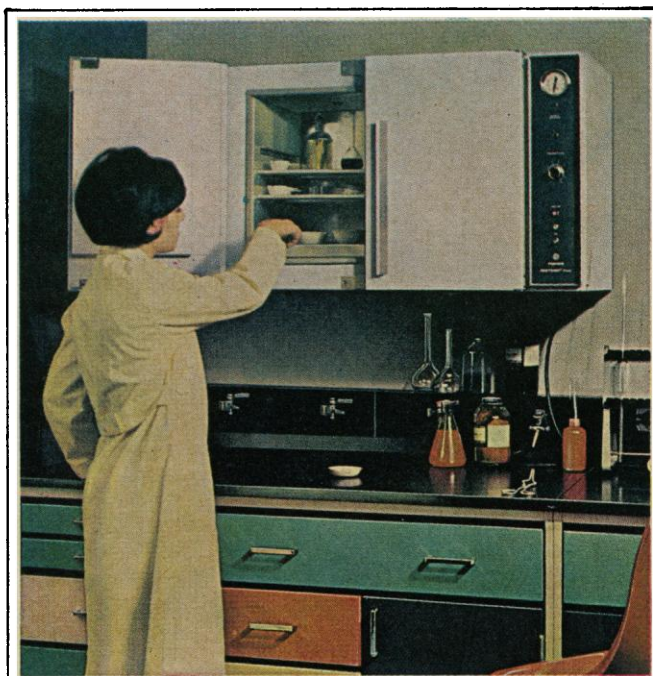


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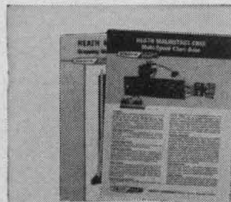
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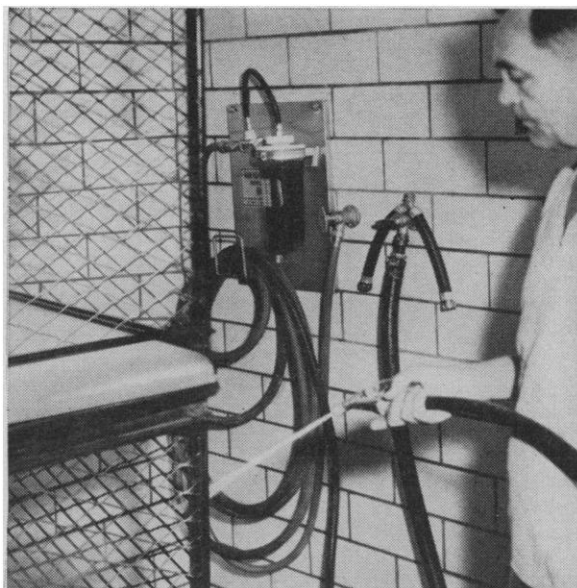
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Ionic conduction study leads to new concept in energy conversion device at Ford Motor Company.

Heart of the new sodium-sulfur battery recently announced by Ford Motor Company is a highly ionically conducting poly-crystalline ceramic, based on the compound beta alumina $\text{Na}_2\text{O} \cdot 11\text{Al}_2\text{O}_3$. This compound exhibits unusual two-dimensional diffusion and ion exchange properties.

A summary of the ion exchange properties of beta alumina when in equilibrium with mixtures of molten nitrates of monovalent cations is shown in Figure 1. The symbol X designates the cation shown with each curve.

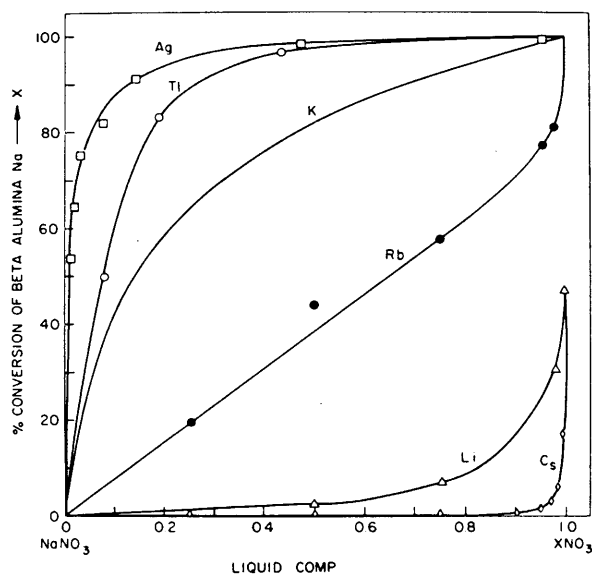


Fig. 1 Equilibria between beta alumina and various binary nitrate melts containing NaNO_3 and another metal nitrate at 300-350°C.

No anions of the molten salt enter the solid beta alumina phase. The equilibrium is unfavorable with cesium because the cesium ion is larger than the volume available at the cation location in the beta alumina, and is unfavorable for the lithium ion because this small ion can coordinate closer to the anions of melt than of the beta alumina.

In spite of the fact that beta alumina is a robust material with a melting point approaching 2000°C and a demonstrated resistance to molten salts, the diffusion rate of sodium ions in this material is as fast as the best

solid inorganic ionic conductors known. For example, when a 2mm diameter single crystal of this material is placed in molten sodium nitrate at 300°C, it will exchange one half of its sodium ions with the sodium ions of the melt in 60 seconds. In more scientific terms, the diffusion coefficient for the sodium ion in the crystal is $\sim 1 \times 10^{-5} \text{cm}^2/\text{sec}$ at 300°C and $4.0 \times 10^{-7} \text{cm}^2/\text{sec}$ at 25°C.

The two-dimensional character of the diffusion is strikingly shown in Figure 2. The sodium ions of this thin single crystal of beta alumina were originally completely exchanged with the lithium isotope Li^6 .

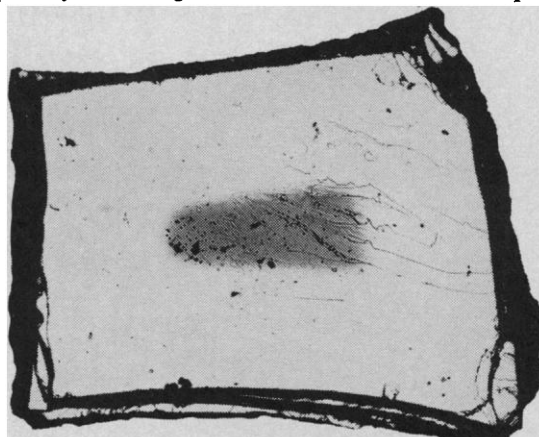


Fig. 2 Partially exchanged ($\sim 60\%$) Li^6 single crystal of beta alumina. The area of high Li^6 concentration has become dark under neutron irradiation ($\sim 10^{13}$ neutrons per cm^2 for 1 hour).

The crystal was then exchanged for a short period of time with molten Li^7NO_3 which resulted in a replacement of part of the Li^6 atoms with Li^7 atoms. The crystal was then irradiated with neutrons in the Phoenix reactor of the University of Michigan which caused the area containing a large amount of Li^6 atoms to turn dark in color. As can be seen in the photograph, the center portion contains the unexchanged Li^6 . This is a direct visual indication that the exchange is two dimensional in the plane of this thin crystal.

Science is always interested in findings that indicate a potentially new form of energy conversion. The development of this high-energy secondary battery system is a significant step in that direction.

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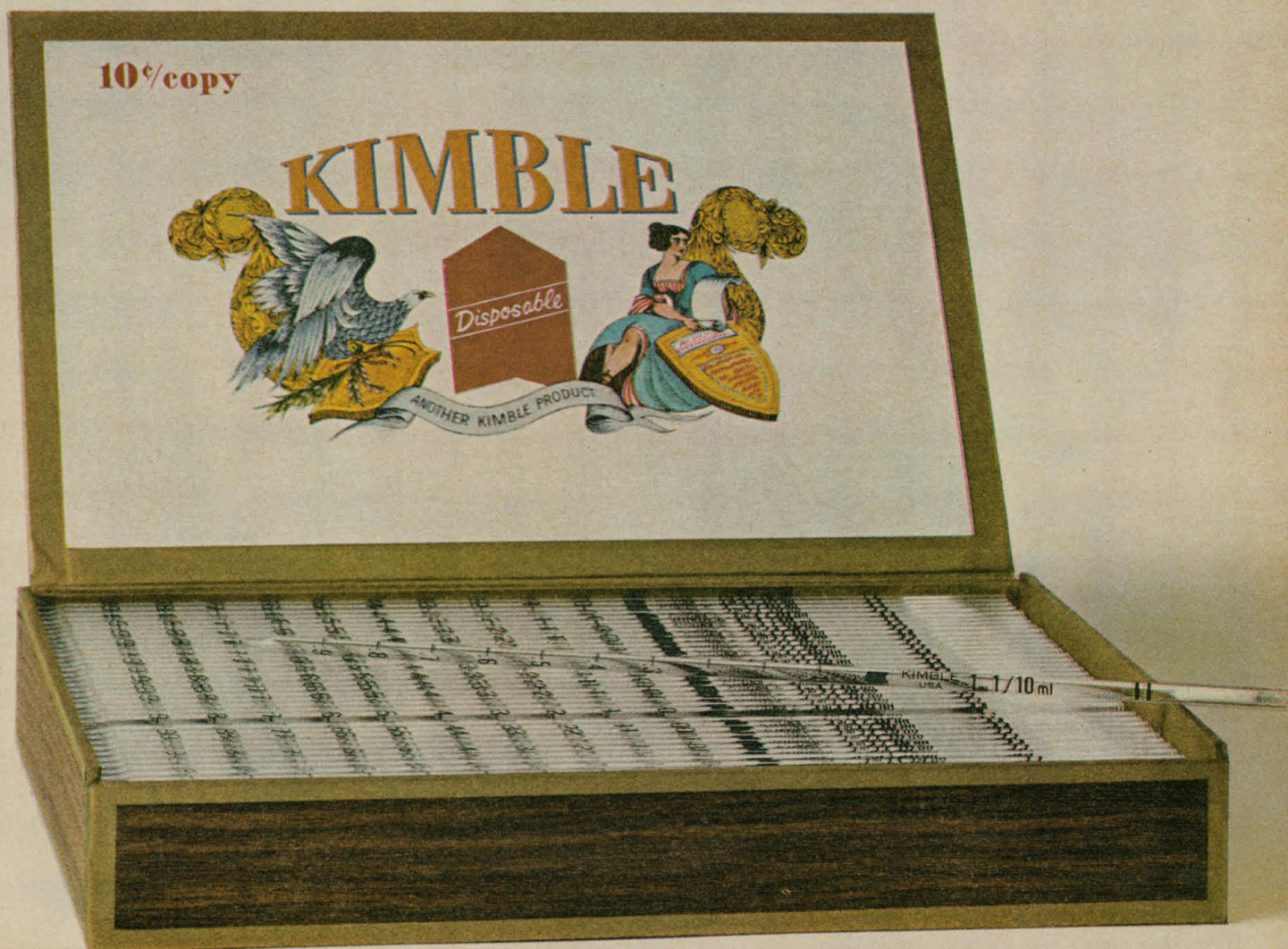


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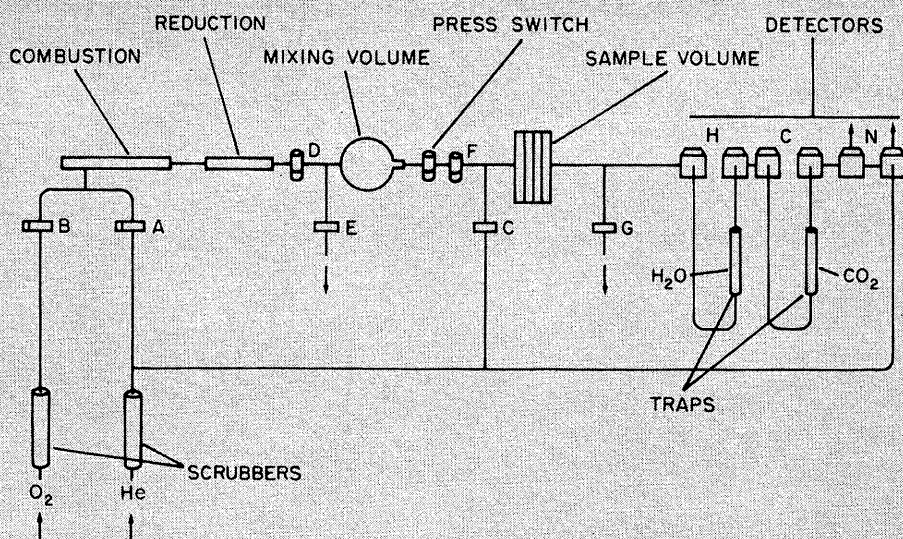
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Write for Ozone Data Sheet — A new Data Sheet containing physical constants, description of the gas, chemical properties, precautions in handling, regulators and controls, etc., is now available. Further inquiries on Matheson Ozone and its applications are invited. For Data Sheet, Price List or other information write to Technical Department, The Matheson Company, Inc., P.O. Box 85, East Rutherford, N.J. 07073.

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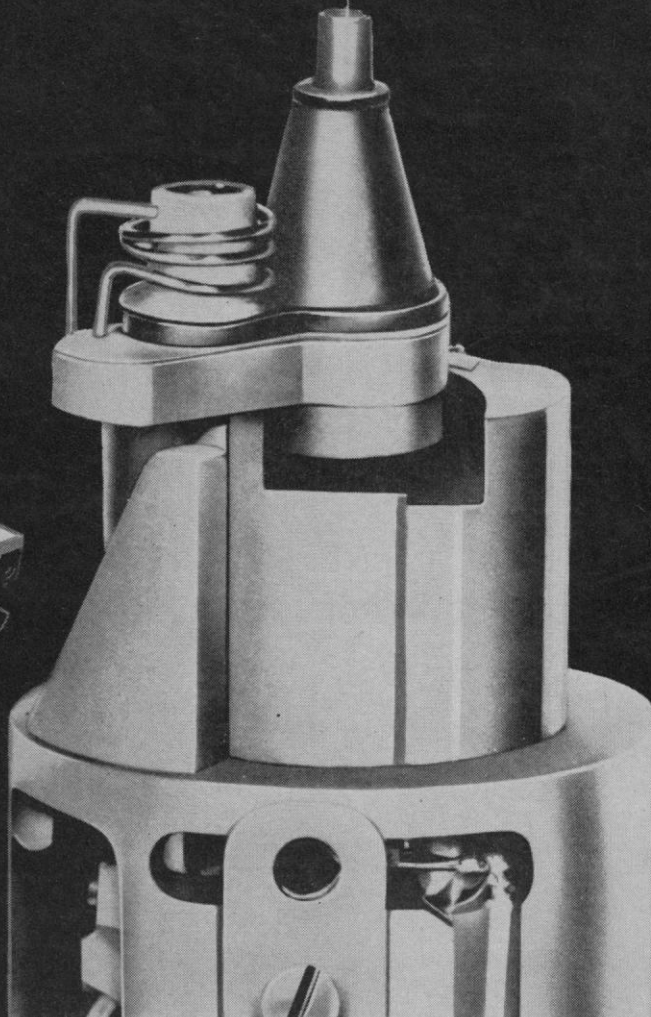
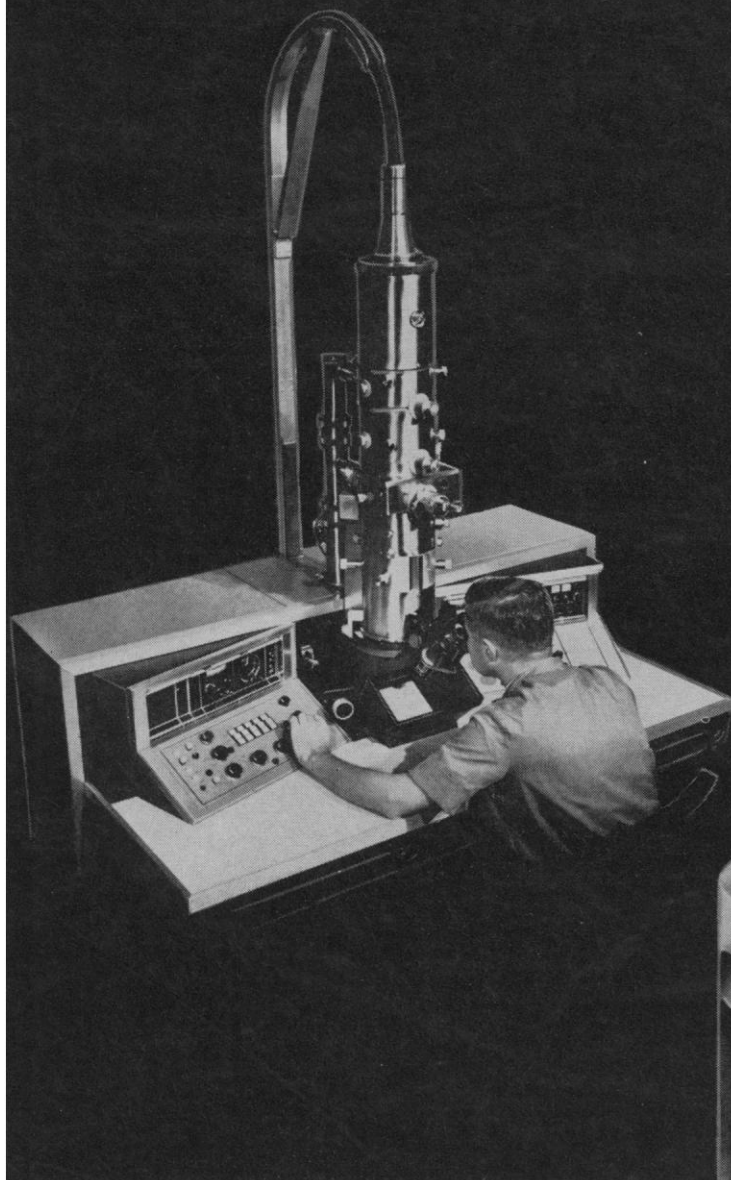
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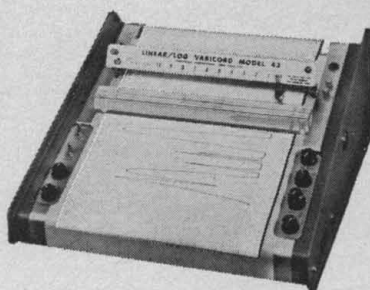
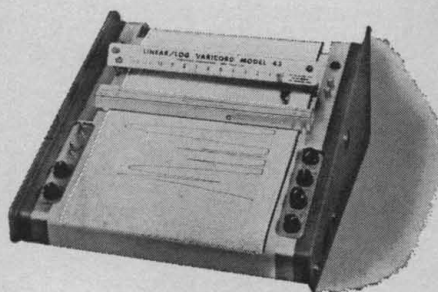
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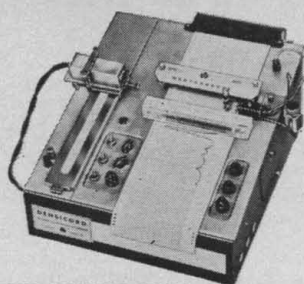
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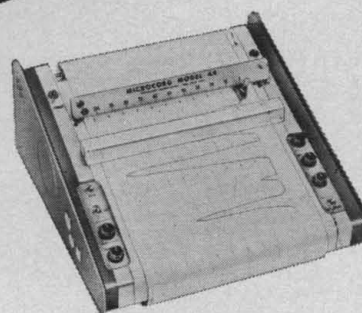
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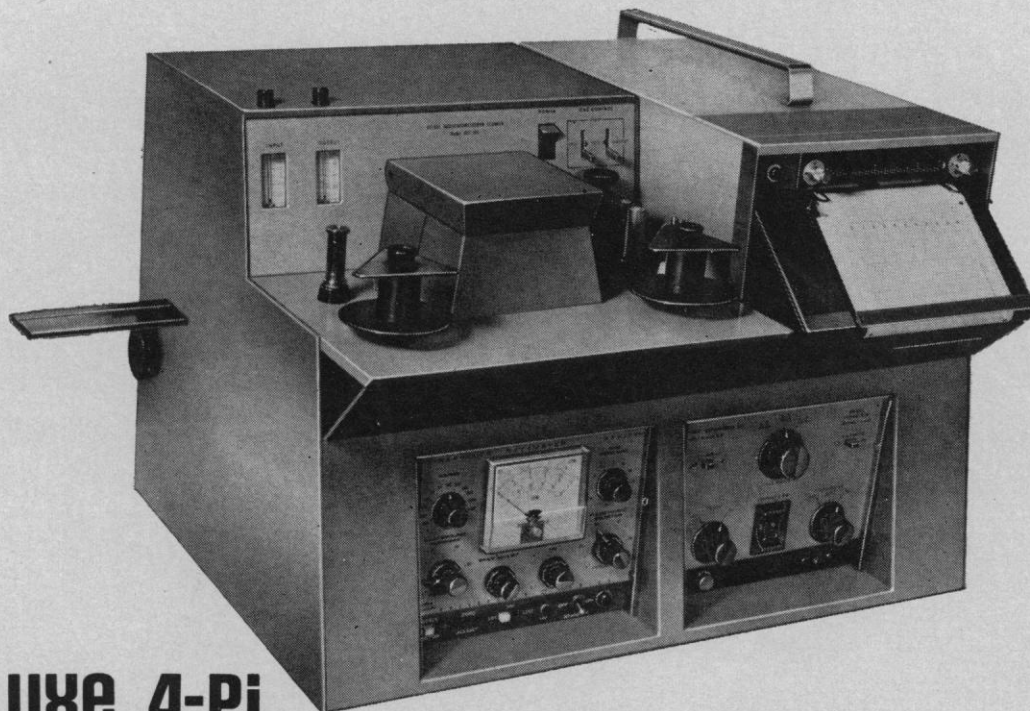
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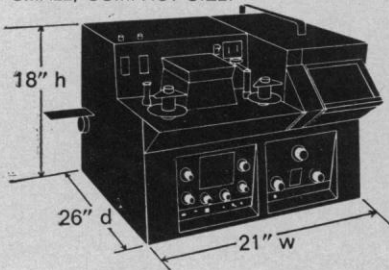
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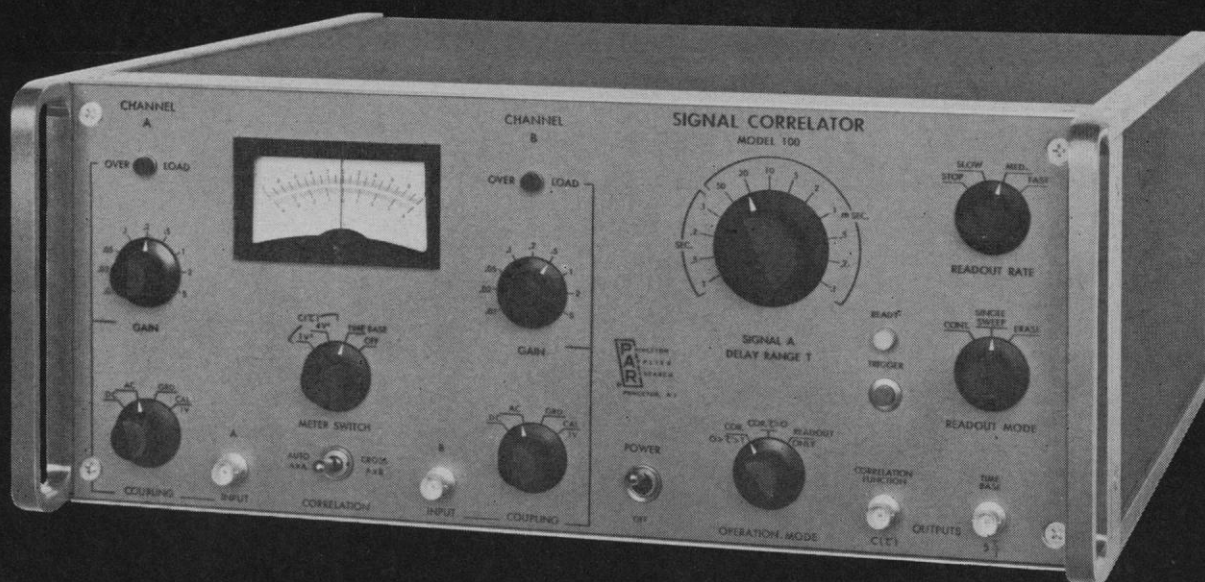
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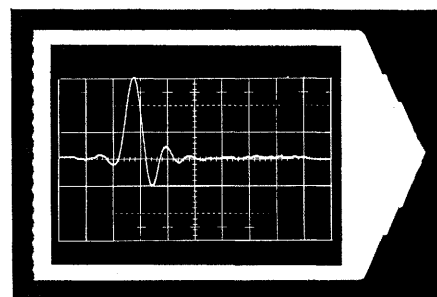
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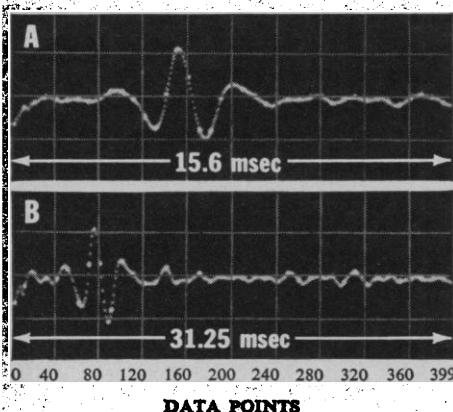
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If the examiner asks only questions jotted down in advance and allows the candidate to talk himself out in reply, then the exam might better have been written. Should the candidate either flounder or quickly demonstrate mastery, it may be best to probe elsewhere by politely interrupting with a different question. If one long struggle uses up most of the time allotted to a field, then, to compensate, short answers can be requested to a series of short questions. It is important, particularly with a marginal performance, that enough questions be asked to provide adequate sampling. If one examiner explores methods, or history, or relevant literature, another can turn to a different approach. Let us take advantage of the adaptability of the oral examination for making the most of time, achieving balance, finding strength and weakness, and assuring validity of the final judgment.

Some examiners allow candidates to pad answers against the chill of fresh questions. Some permit near answers to count as hits. Some feed answers or ask questions that can hardly be missed. ("What have you read lately? Tell us about it.") Some can be counted on to ask certain questions well known to the underground. Others require only an acquaintance with notes of their own courses. A difficult candidate for all examiners is the one who thinks and speaks slowly; he may require a second sitting to cover the material adequately. Let us maintain reasonable control of the pace, precision, and uniqueness of each examination, refusing to let gamesmanship substitute for scholarship.

Most examiners pass the test, many with distinction, yet low marks are too frequent to ignore. Let us make the effort to do our best.

MILTON HILDEBRAND

*Department of Zoology, University of
California, Davis, 95616*

Shrouds Around LSD

After my summer of one-way correspondence and long-distance calls, Dahlberg's letter (30 Sept.) regarding continued research with LSD was encouraging. Unfortunately, I have not been so lucky (for luck it must be, the logic eludes me), in obtaining LSD for research purposes. Last spring I designed an experiment to measure objective behavioral and performance

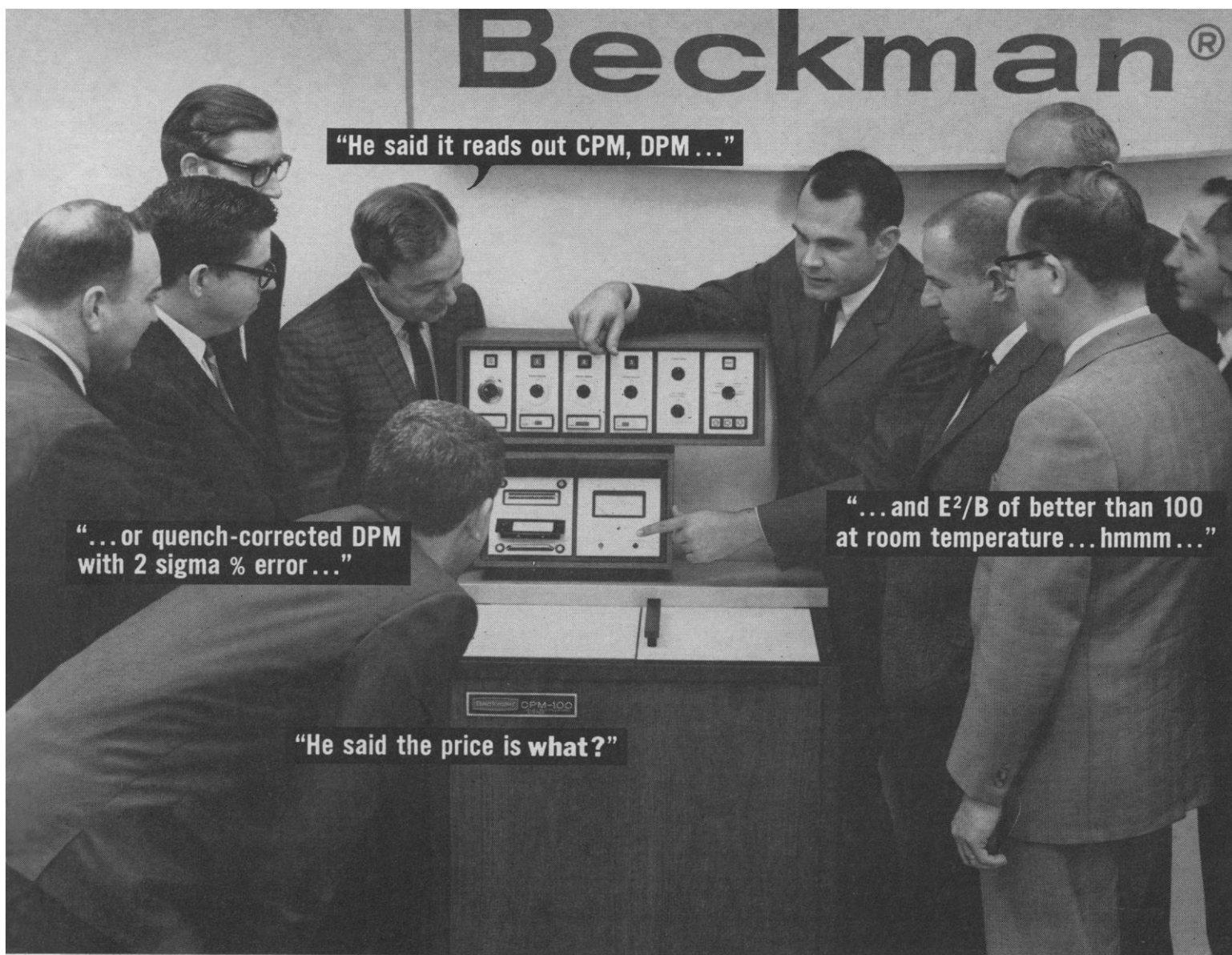
changes under the influence of LSD-25. With LSD fantasies running rampant, it seemed that a few facts would be useful. I hired a research assistant (on nonfederal funds) and we were about to start the project. Then came the send-it(LSD)-all-back-to-Sandoz letter. I objected, they commiserated, I sent it back. With the LSD went my approval to use the drug since this had been filed previously by Sandoz. They indicated that I should write to NIMH. Delayed but not discouraged, since I had formerly received an NIMH grant for LSD research from which resulted a book and several papers, I sent the proposal to them. I asked for approval and a small supply of the drug but *not* for funds. (Was this my error?) No reply for 1 month so I phoned—of course a committee had to meet, a stupid oversight on my part. It met and approved the proposal if I would change one step. Gladly, for it was a wise recommendation. Another month went by, no letter, no drug, so I phoned again. The committee had to meet again. (Will I never learn?) Eventually, upon phoning again, I learned that I did have the NIMH Committee's approval but I had to have someone in the Food and Drug Administration approve the distribution of the drug. I had spoken to only four different individuals at NIMH, but after speaking to five at the Food and Drug Administration, I despaired and hoped that my correspondence would eventually filter through to the appropriate person. The summer passed, the research assistant worked on his thesis, and I ran up a phone bill.

Contrary to Dahlberg's experience, the small amount of LSD research that we have undertaken in this research center has not gained me the reputation of being a "kook" but I have never been too sensitive to the criticisms of others whose pursuit of a quiet life is an excuse for being ineffectual. I have had the encouragement of the director of this institute and the chairman of the department of psychiatry, notwithstanding the obvious jeopardy of research with such a controversial agent as this.

I wish I could end this letter with the same phrase that Dahlberg used—that the work on LSD is proceeding as planned. Here it is not.

JOHN C. POLLARD

*Department of Psychiatry,
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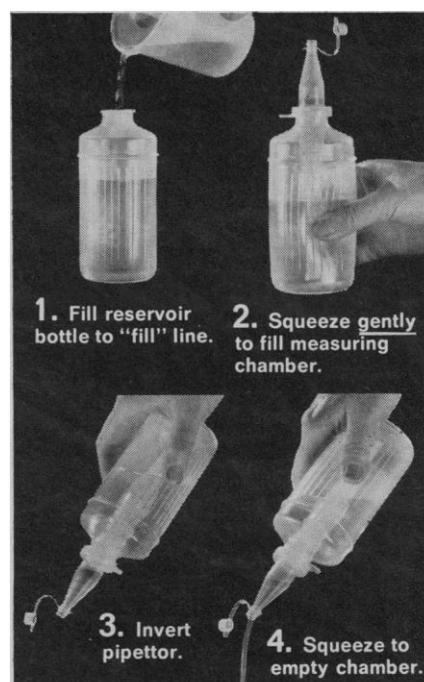
Fur, Lice, and History

In his contribution to the discussion on the evolution of hairlessness in man, Olson (Letters, 22 July, p. 364) suggests that disease-causing agents transmitted by ectoparasitic vectors may have selectively "wiped out the entire fur-bearing segment of the human population" because "the nonhairy members of the population probably took great pains to rid themselves" of body lice and ticks (the latter, by the way, are not insects) while their "furry cousins probably never could delouse or detick themselves." There are several lines of evidence derived from studies of modern hunter-gatherers and nonhuman primates which, in my opinion, make Olson's imaginative proposal untenable or at least improbable.

There is, first, the matter of grooming. Modern fur-bearing primates, with few exceptions (for example, the spider monkeys), are efficient delousers and detickers. Records for fleas, lice, and ticks on apes and monkeys, regardless of their state of arboreal or terrestrial adaptation, are rare for most species and extremely rare for species that indulge in mutual grooming activities. Fur-bearing primates are no less adept than hairless men in removing ectoparasitic visitors. Presumably this was also true for early, hairy hominids.

Second, man may actually have increased his ectoparasite burden, and the potential for transmission of disease-causing agents, by providing—particularly for lice—a rich array of clothing microhabitats as a substitute for body hair, and by providing—for other arthropod parasites which do not remain on the mammalian host continuously—an elaborate nest (the shelter, cave, or house). Early, presumably hairy, hominids probably harbored one variety of the louse, *Pediculus humanus*, which roamed through the hair forests of all body surfaces. Today man harbors two varieties, one adapted particularly to life on the scalp, the other to the body and to clothing where the eggs are deposited.

Third, all available data suggest that vector-borne epidemic diseases capable of "wiping out" segments of human populations must have been exceedingly rare prior to the development of agriculture and urban ways of life, with consequent increases in human population density and disruption of the natural environment. Hunt-



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er-gatherer population units are necessarily small and geographically dispersed; furthermore, these populations function (or have until recently) in relatively stable ecosystems. Vectors and infectious and parasitic agents of disease are also components of such systems. In the stable situation, transmission of autochthonous agents, especially by ectoparasites, is sporadic and focal—the diseases are endemic. New human susceptibles, appearing on the scene infrequently as newborns or migrants, will die sporadically, or survive as relative or absolute immunes. Epidemics undoubtedly occurred among the early hominids, as they do (rarely) among the modern hunter-gatherers and primates in undisturbed settings, but the majority of these epidemics must have been caused by agents transmitted by unspecialized, direct, respiratory and contaminative routes. Only agents of this kind can readily be introduced from outside into a stable ecosystem and a wholly susceptible population. Epidemics caused by vector-borne agents must have been rare, as is true among the modern primates and hunter-gatherers; and within the vector-borne group, epidemics due to transmission by ectoparasites must have been extremely rare.

FREDERICK L. DUNN

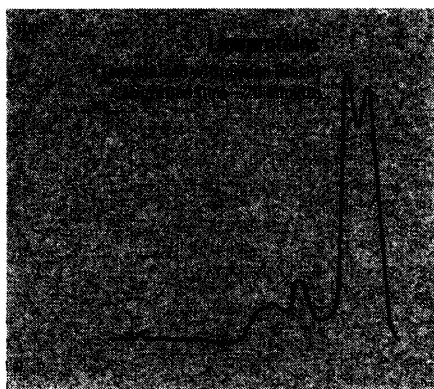
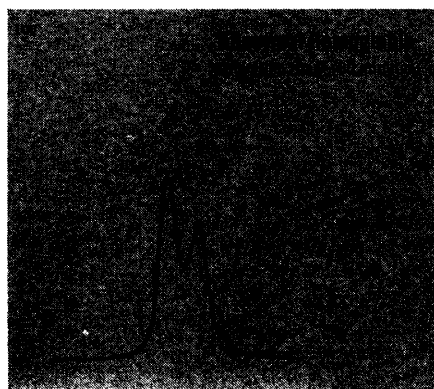
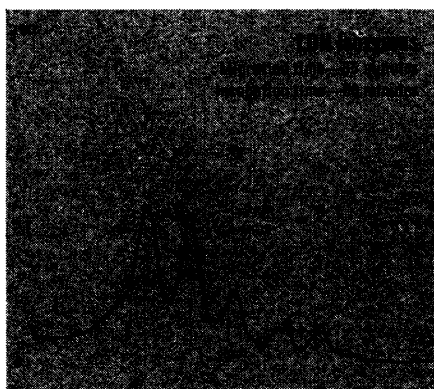
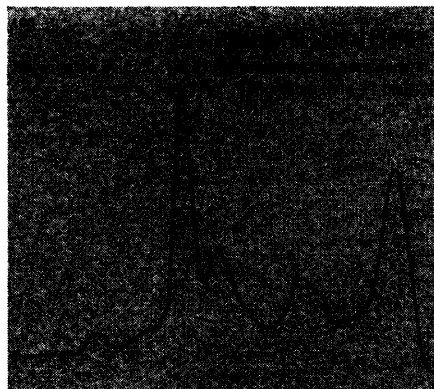
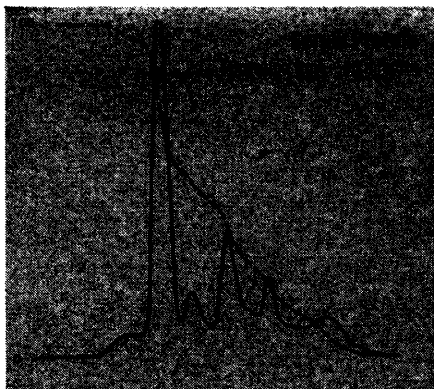
*Institute for Medical Research,
University of California ICMRT
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Gerontocracy

In *Science* (12 Aug. p. 723) it is reported, as it was too in the daily press, that the Fermi award for 1966 will be shared by three venerable nuclear scientists. It is not to belittle the immense merit of these scientists, but one cannot help being struck by the age of the happy laureates: respectively 87, 87, and 64, average: 79. I feel it is a pity to distribute such important awards to people already covered with honor, respect, and consideration when so many valuable young scientists await in vain any recognition of their efforts. I thought up to now that "gerontocracy" was the privilege of our old European civilizations. This event makes me change somewhat my opinion.

MICHEL PRIVAT DE GARILHE
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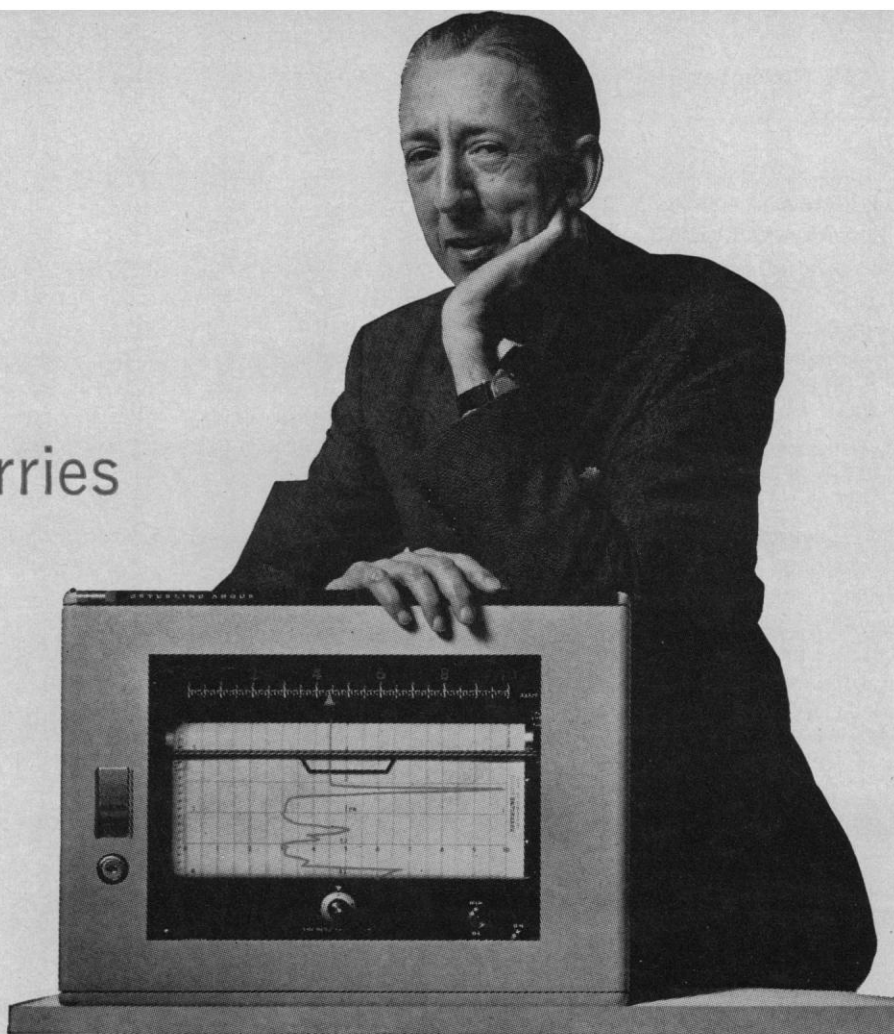
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The Worlds of Reflection and Action*

Every great modern university must balance its responsibilities to the worlds of reflection and action. There is a whole range of social roles between the ivory tower and the executive desk. At one end of the spectrum sits Thoreau by his pond, the poet in his garret, the scholar in his study. At the other sits the active citizen in his committee meeting, the leader surrounded by his followers. Every individual must decide where to place himself along that range. Each has to decide how much he wants to become personally involved in the action and effort of his society.

A society that aspires to creativity has urgent need of its detached scholars and critics, as well as of those who will become deeply involved in the world of action. Our society must have the wisdom to reflect *and* the fortitude to act. It must provide the creative soil for new ideas *and* the skill and patience and hardihood to put those ideas into action. The creative society will be one in which there is continuous and fruitful interaction between the two worlds of action and reflection. And no institution in our society can do more to keep that interaction vital and productive than the university. It must preserve within its walls an environment in which the relatively disengaged scholar, artist, critic, scientist, or writer can live and flourish. But it must also relate itself to the organized world of action.

There are those in the population, even in the alumni population, even on the boards of trustees of some universities, who resent the fact that the university is a haven for dissent, for criticism, and for the free examination of assumptions and practices. They often strive to diminish this fundamental role of a university. They seem to imagine that the chief role of the university is to endorse the status quo.

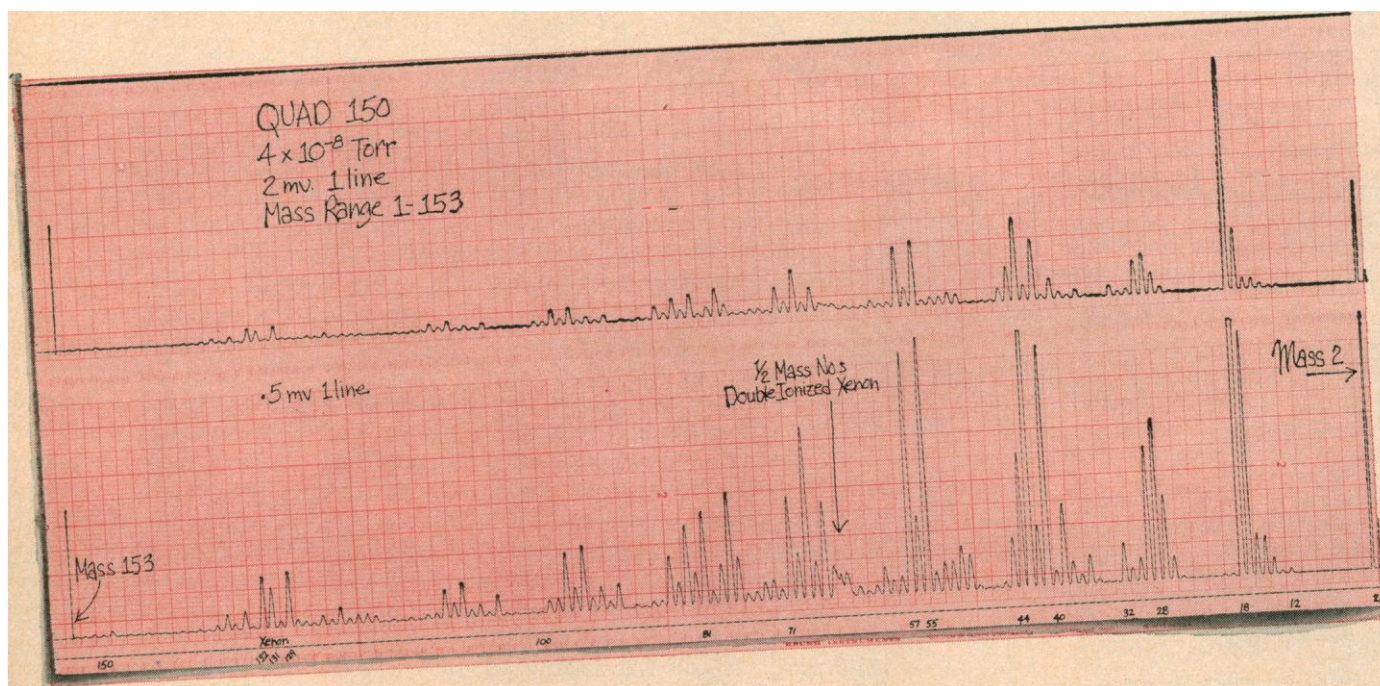
On the other side, there are some within the university community who seem to want to cut all ties with the rest of the society and to persuade every last student to choose the life of detachment and dissent. They do not like the way the society is run, but they are not inclined to prepare young people to run it better. And they communicate to their students a moral snobbism toward those who live with the ethical dilemmas of responsible action.

The life of reflection is not superior to the life of action, or vice versa. Both are essential to a vital society. Surely our universities should strive to be as effective in preparing young people for one role as for the other.

I hope that in preparing young men and women for lives as scholars and critics our universities will make them aware of the dangers of irresponsibility and moral snobbism. I hope that in preparing them for the world of business and government the universities will make them appreciative of the social function of the scholar, the dissenter, and the critic. Finally, I hope that the universities will persuade a reasonable proportion of their graduates to move back and forth between the two worlds.—JOHN W. GARDNER, *Secretary of Health, Education, and Welfare*.

* This editorial is adapted from remarks delivered at the 75th Anniversary Convocation of the California Institute of Technology, Pasadena, 24 October 1966.

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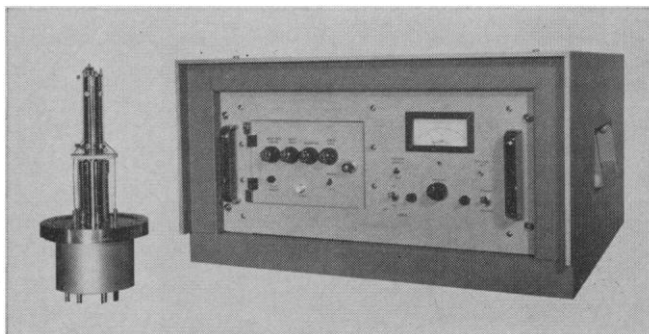
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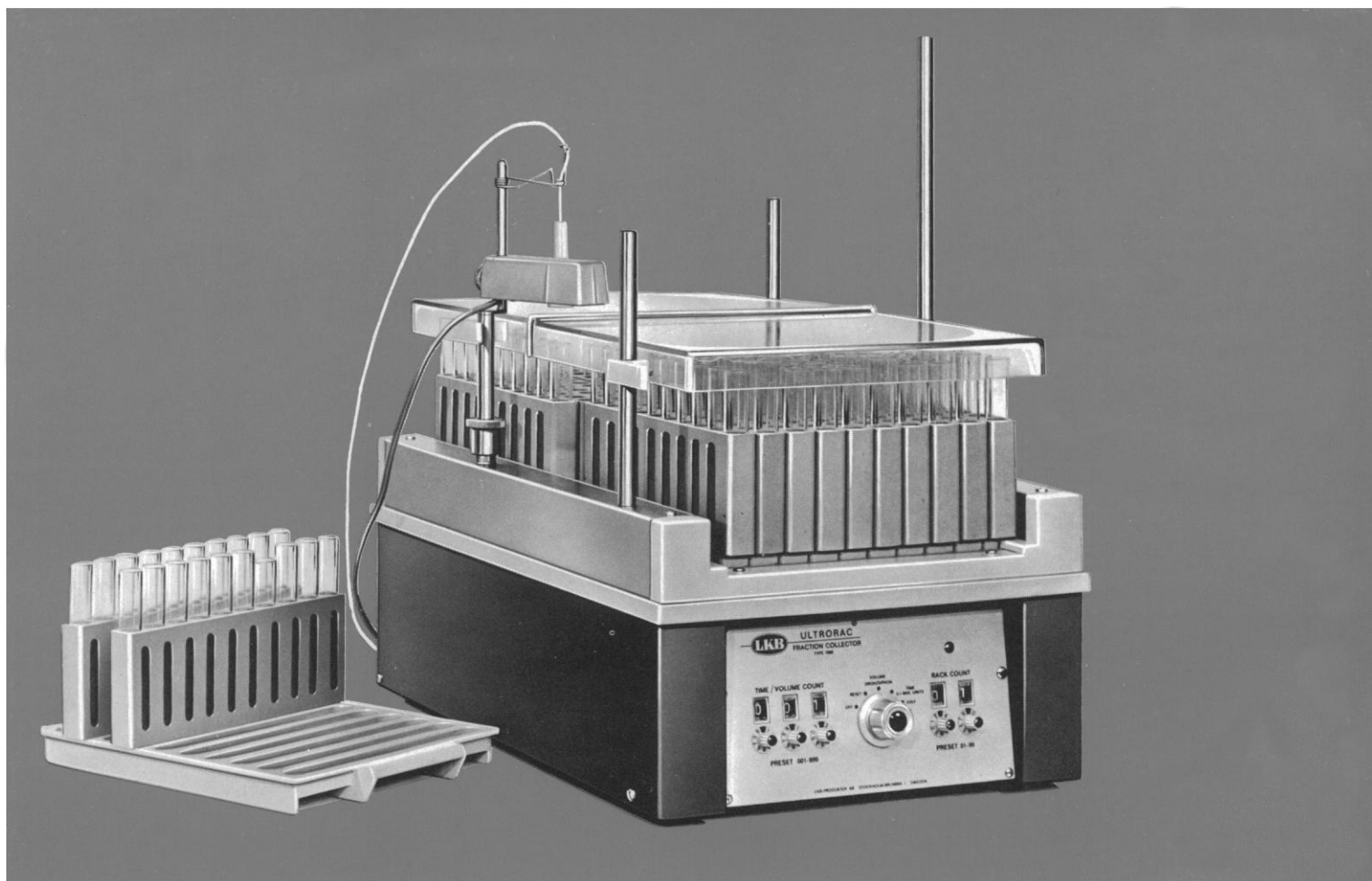


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Introduction

The LKB Ultrarac is an innovation in the field of fraction collection. It is presently the smallest fraction collector, 13.5 in (33 cm) × 20 in. (50 cm), which combines the capacity (200 test tubes) of much larger units with such compact design. It will even fit in a domestic refrigerator.

The instrument gives users reliable collection, ease of operation, easily varied test tube capacity and freedom of choice in the method of collection. The standard Ultrarac will control fraction size by timed flow collecting and drop counting while facilities for volumetric siphoning are optionally available.

Independent rack movement gives increased versatility

The simple rack moving mechanism makes the Ultrarac versatile. Any number of racks, each of ten test tubes, can be removed from the collecting platform without interrupting the collection process. It would be possible to continuously remove racks and add others thereby postponing indefinitely the end of a run.

Separate plastic rack trays holding ten racks facilitate the removal of filled test tubes, in order of collection, for storage, further processing or washing.

Given constant time operation, the fractions from two experiments can be collected simultaneously, each column filling half the available number of racks.

Advanced design of tube racks

Fraction collection is made easier due to the advanced design features incorporated in the plastic racks.

Firstly, they have a seam down the centre which enables them to be opened out, with a hinge-type action, to stand on three points without any other support. Tests so far carried out show that after more than 2,000,000 flexings the plastic seam neither breaks nor cracks.

Secondly, each tube compartment has a stainless

steel spring which snugly positions tubes having diameters from 15 mm to 18 mm (max), without rattling. All racks are blue in colour except one, the starter rack, which is grey. By positioning the grey rack so that it is always filled first in any collecting operation, its subsequent position will serve to indicate the progress of the run.

ADDITIONAL FEATURES

Remote Control

For ease of operation all controls have been grouped on a panel at the front of the collector. This control unit can be easily withdrawn from the collector and placed in a separate cabinet whenever remote control working is desirable. The separate cabinet, a 5 meter extension cable, and a coverplate for the front of the collector unit are optionally available.

Stainless Steel Apparatus Masts

Sturdy half inch (12 mm) diameter stainless steel rods which can be easily and quickly positioned and adjusted in height are provided to form apparatus masts which will enable chromatographic columns and other auxiliary devices to be mounted at correct heights above the collecting tubes.

Safety and protection

To secure fully reliable working LKB have enclosed all counters and relays on the UltroRac in a hermetically sealed control unit. Break-downs, due to corro-

n Collector LKB 7000

sion of switches by laboratory atmosphere, are avoided and also any fire risk is considerably diminished. The remaining switches are of a magnetically operated, hermetically sealed dry-reed type.

To protect empty tubes and collected fractions from dust particles or other air-borne impurities a two-piece plastic dust protection cover is provided to shield all tubes on the collecting platform.

All metallic parts liable to come in contact with liquids are of stainless steel and all racks and slide tracks are of polypropylene.

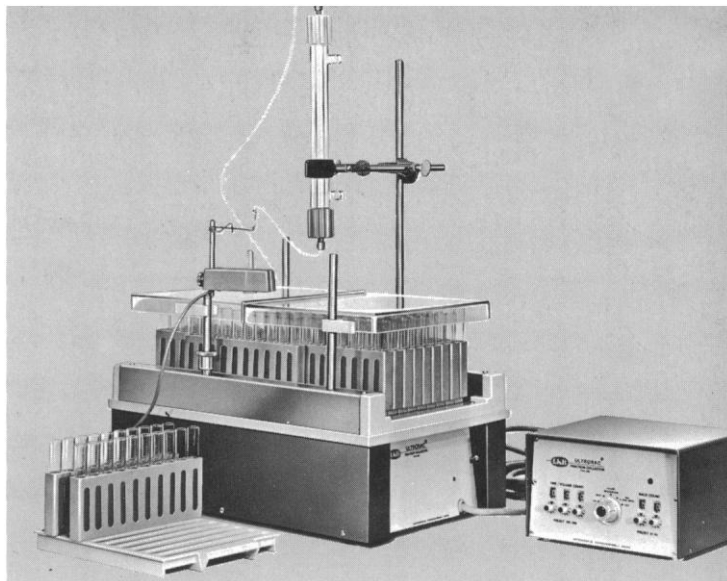
Operation

Rack filling can be preset, as soon as the set number have been filled a counter operates an automatic shut-down.

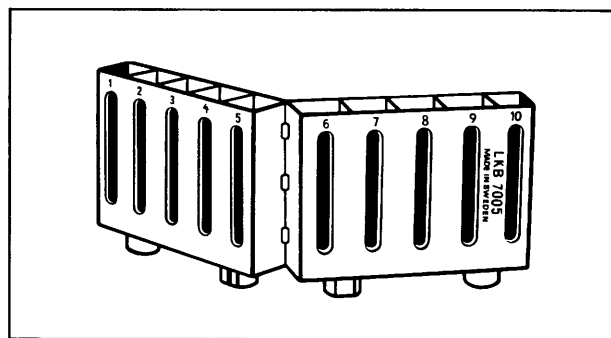
Fraction changes are initiated by electrical pulses from the triple decade counter which can be set to initiate a fraction change after any number of pulses from 1—999.

Two power outlets enable auxiliary equipment to be connected.

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The UltroRac with control unit in separate cabinet ready for remote operation



Plastic racks of advanced design, stand without support

The UltroRac, complete with separation column, ready for operation in a normal domestic refrigerator



ORDERING INFORMATION

LKB 7000-1 UltroRac Automatic Fraction Collector * For 115 V, 60 cps

Basic assembly for timed-flow collecting and drop counting consisting of main unit and control unit, and including:

1 pc 7004 Drop Counter Head, 20 pcs 7005 Tube Rack, 20 pcs 7006 Rack Carrier, 2 pcs 7007 Dust Cover, 1 pc 7008 Rod for Drop Counter Head and Siphon Stand, 2 pcs 7009 Rod for Dust Cover, 1 pc 7010

Adapter Cable for Recorders 6520A, and H, 2 pcs 7011 Rack Tray, 2 pcs 7016 Apparatus Mast; Tools, Fuses and Instruction Manual.

LKB 7000-2

Similar to 7000-1 but wired for 220 V*, 50 cps.

* NOTE: Standard units are wired for 115 V and 220 V. Customers requiring other voltages in the range 100, 127, 200 and 250 V must alter the transformer tapings to the appropriate value.

OPTIONAL ACCESSORIES

7013, Separate metal case to contain the Control Unit when it is being used remote from the collector.

7014, 5 meter cable to connect Main Unit to Control Unit for remote working.

Assembly for volumetric siphoning including 3404B Siphon Stand with cable, plug and 7015 Adaptor.

3430A, Event Marker, produces an electrical impulse of amplitude adjustable up to 100 mV to indicate on chart of any potentiometric recorder used together with a flow analyzer, each time distributor or racks make a step.

Not required for LKB Recorders 6520A and 6550A.

TECHNICAL SPECIFICATIONS

Methods of collection:	Timing, Drop Counting or Siphoning	Power consumption:	50 W without auxilliary equipment, 400 W maximum permissible including outlets
Time range:	0.1 min. to 99.9 min.	Tube sizes:	15 mm to 18 mm max diameter 75 mm to 200 mm length
Timer step interval:	0.1 min.	Fraction marking:	Internal contact closes for 1.2 seconds. The contact is connected to an external socket on the rear panel
Drop counter range:	1 to 999 drops	Materials:	The racks and slide track are of polypropylene and all metallic parts liable to come in contact with liquids are made of stainless steel
Siphoning:	Siphon stand, with 5 to 25 ml siphons optional accessory	Dimensions:	Length 50 cm (20 in) Width 33 cm (13.5 in) Height without tubes 20 cm (8 in) Height with 160 mm tubes 34 cm (13.5 in)
Automatic shut-down:	Operates after preset number of racks from 1 to 99	Weight of Main Unit and Control Unit:	20 kg (44 lbs)
Duration of fraction tube change:	Approx. 2 sec.		
Number of tubes:	200		
Number of racks:	20 (10 tubes each)		
Temperature range (ambient)	0° to 45°C		
Power requirements:	100, 115, 127, 200, 220 and 250 V. Voltage variations of $\pm 10\%$ of the set value do not impair the functioning of the collector		
Frequency:	50 or 60 cps (different timers)		

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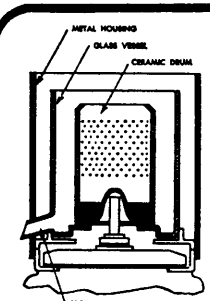
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out priorities for scientific research and development.

The Soviet Communist Party Program and directives were, quite naturally, adopted in due course by Czechoslovakia and other Bloc countries. By now, they all have prepared their so-called "perspective" planning of scientific development to the year 1970. This is an interesting experiment which accords with the policies formulated at the Congress and with Party decisions. Teams of scientists, technicians, and economists are asked to evaluate the feasibility of directing research and development toward specific scientific and technological objectives in terms of available human, material, and financial resources.

As our own government concern with, and expenditures for, scientific activity grow, the responsible agencies may find it worthwhile to follow attentively the course of Czechoslovak science in the coming years.

M. RECHCIGL, JR.

Forthcoming Events

December

19-20. British **Biophysical Soc.**, winter mtg., London, England. (W. Gratzner, Biophysics Dept., King's College, 26 Drury Lane, London W.C.2)

19-21. **Acceleration Biology**, Sunnyvale, Calif. (Univ. of California Extension, Berkeley 94720)

26-31. **American Assoc. for the Advancement of Science**, annual, Washington, D.C. (R. L. Taylor, AAAS, 1515 Massachusetts Ave., N.W., Washington, D.C. 20005)

In addition to the 20 sections of the Association and five AAAS committees, the following organizations have arranged sessions at the AAAS annual meeting 26-31 December in Washington, D.C.

Mathematics

American Mathematical Soc. (E. Pitcher, Lehigh Univ., Bethlehem, Pa.)

Association for Computing Machinery (D. Leiti, Heliodyne Corp., Rosslyn, Va.)

National Council of Teachers of Mathematics (J. Gates, 1201 16 St., NW, Washington, D.C.)

Society for Industrial and Applied Mathematics (J. H. Griesmer, I.B.M., T. J. Watson Research Center, Yorktown Heights, N.Y.)

Physics

American Astronautical Soc. (S. F. Singer, Univ. of Miami, Coral Gables, Fla.)

American Meteorological Soc. (J. E. Masterson, Natl. Center for Atmospheric Research, Greenbelt, Md.)

Harvard Project Physics (F. J. Rutherford, Harvard Univ., Cambridge, Mass.)

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(R. S. Melville, Natl. Inst. of General
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20014)

Geology and Geography

Association of American Geographers,
Middle Atlantic Div. (D. J. Patton, Carne-
gie Inst. of Washington, Washington,
D.C.)

National Geographic Soc. (R. Gray,
The Society, Washington, D.C.)

National Speleological Soc. (W. B.
White, Pennsylvania State Univ., Univer-
sity Park)

Zoological Sciences

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Herpetologists' League (J. E. Huheey,
Dept. of Chemistry, Univ. of Maryland,
College Park)

Society of Systematic Zoology (R. P.
Higgins, Wake Forest College, Winston
Salem, N.C.)

Zoological and Botanical Sciences

American Soc. of Naturalists (R. D.
Hotchkiss, Rockefeller Univ., New York,
N.Y.)

Association of Southeastern Biologists
(E. Quarterman, Vanderbilt Univ., Nash-
ville, Tenn.)

Beta Beta Beta Biological Soc. (Mrs.
F. G. Brooks, Box 515 Ansonia Sta., New
York, N.Y.)

Ecological Soc. of America (C. D.
Monk, Laboratory of Radiation Biology,
Bldg. 772-G, Aiken, S.C.)

Society for the Study of Evolution (E.
C. Olson, Univ. of Chicago, Chicago,
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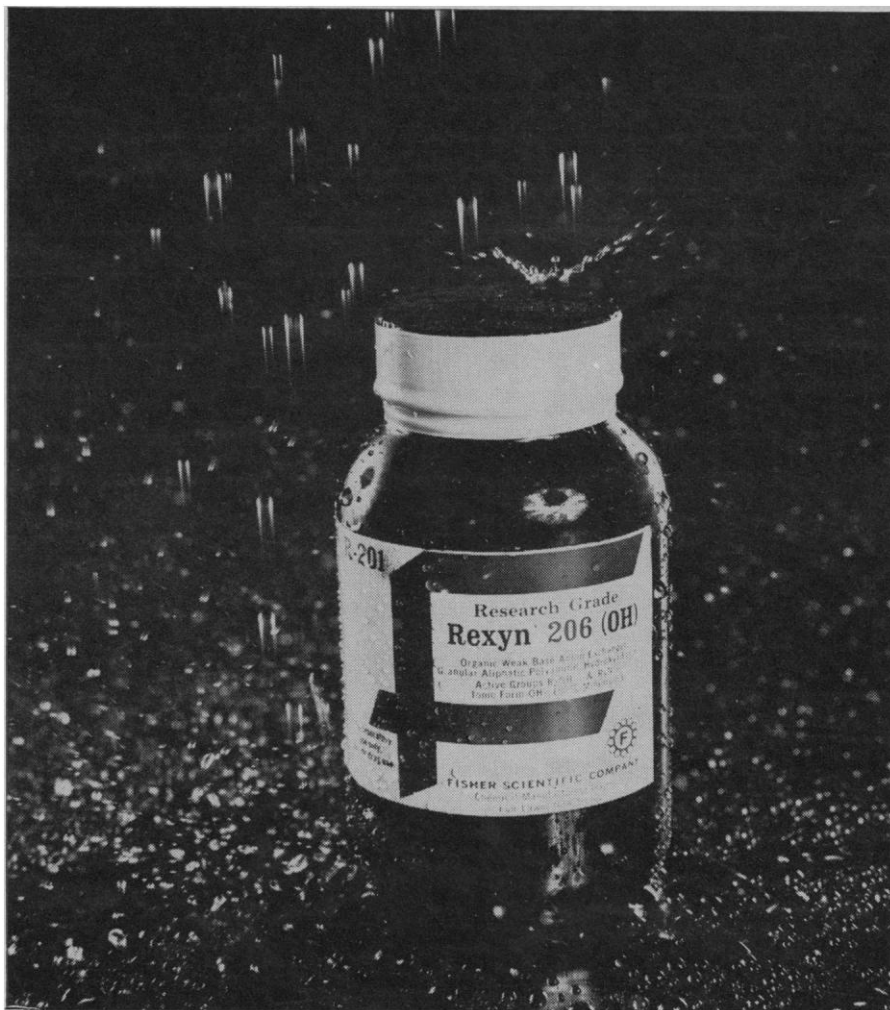
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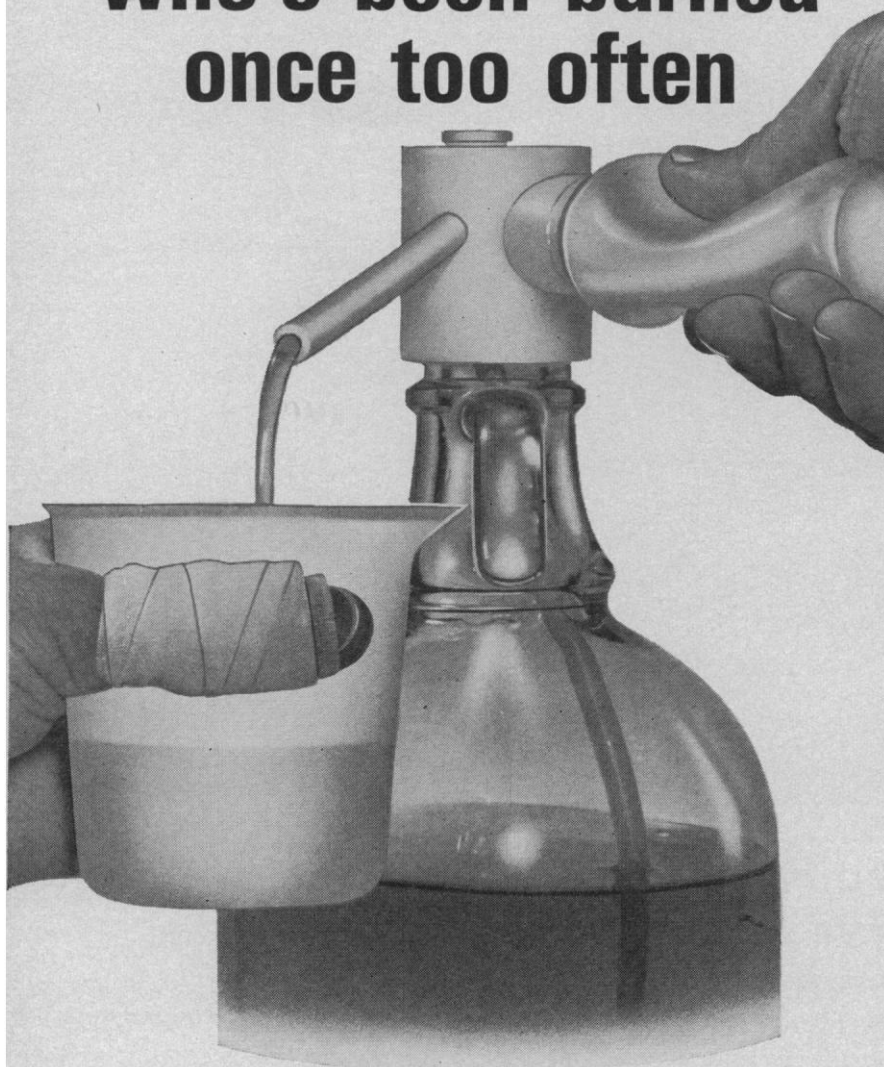


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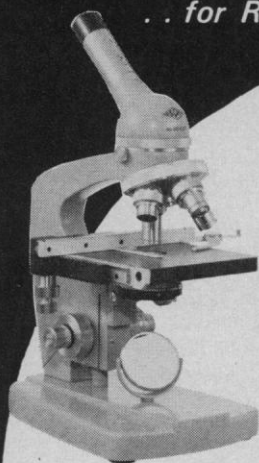
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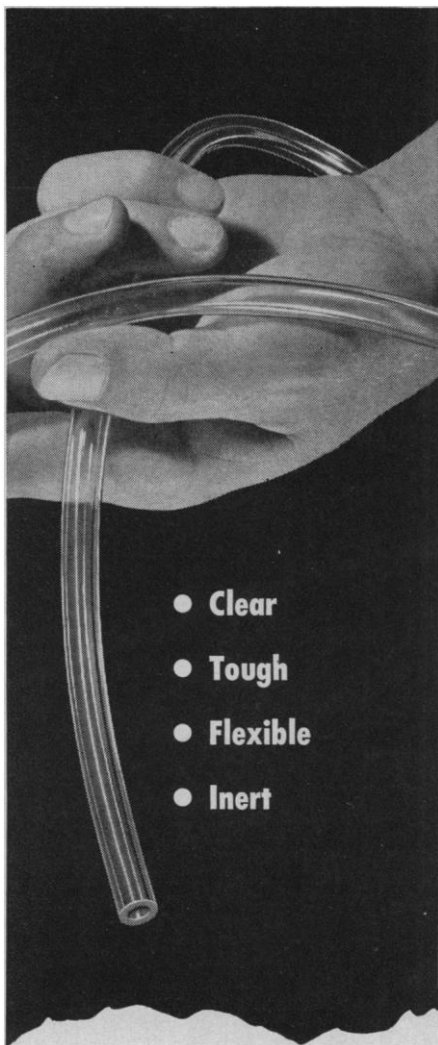
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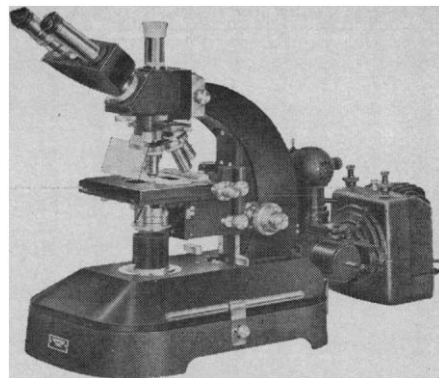
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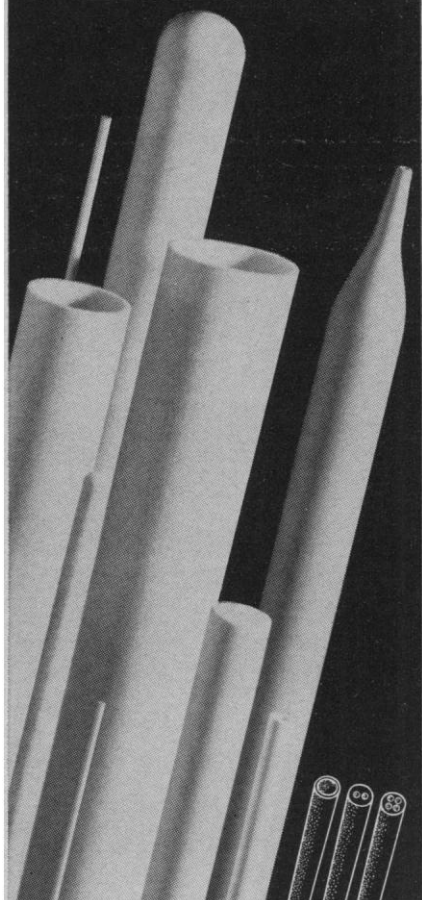
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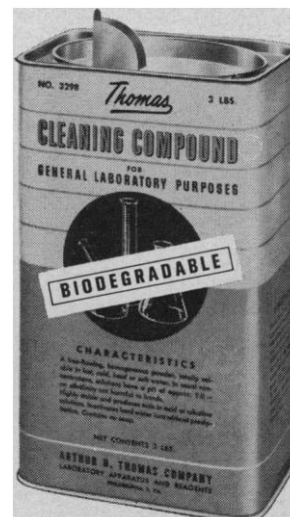
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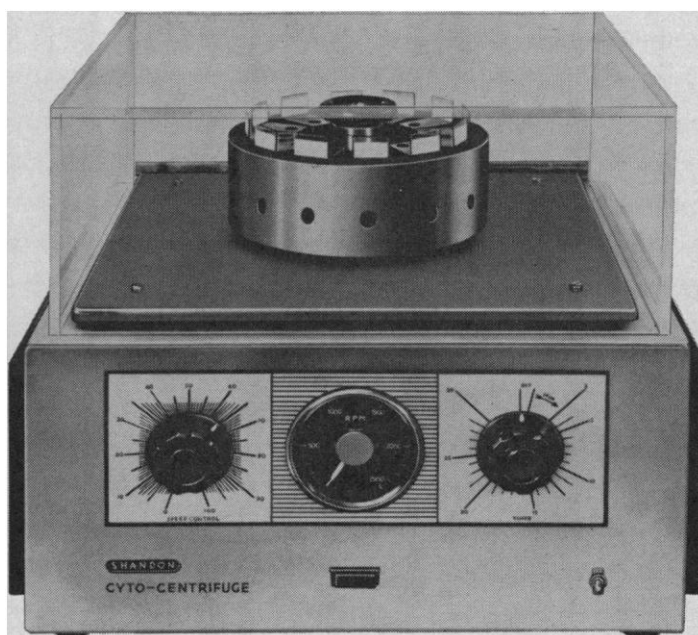
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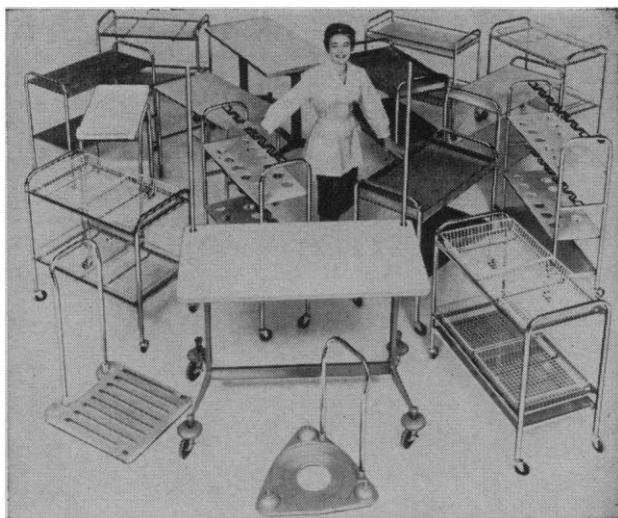


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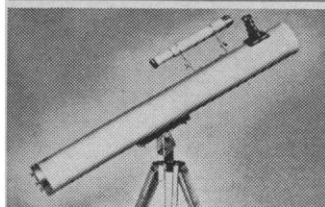
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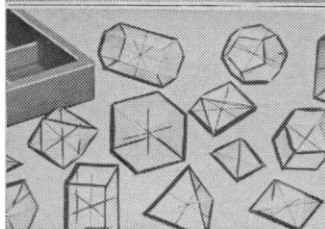
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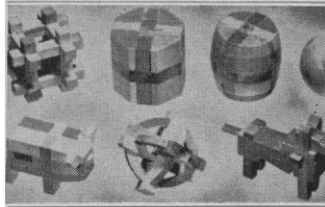
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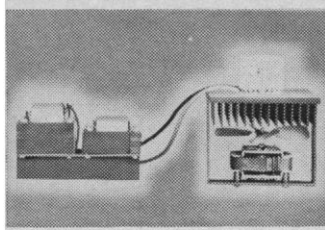
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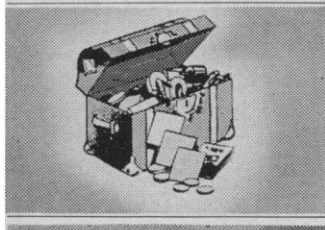
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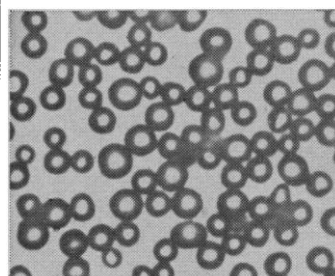
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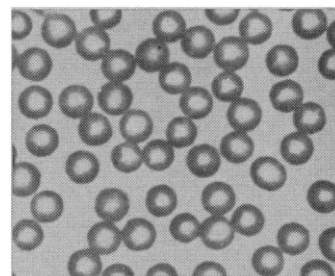


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Prevention and Treatment of Mental Retardation. Irving Phillips, Ed. Basic Books, New York, 1966. 477 pp. Illus. \$12.50. There are 25 papers.

Primary Productivity in Aquatic Environments. Proceedings of an I.B.P.P.F. Symposium (Pallanza, Italy), April-May 1965. C. R. Goldman, Ed. Univ. of California Press, Berkeley, 1966. 464 pp. Illus. \$7. There are 24 papers and 3 abstracts.

Principles of Microbial Ecology. Thomas D. Brock. Prentice-Hall, Englewood Cliffs, N.J., 1966. 320 pp. Illus. \$7.75.

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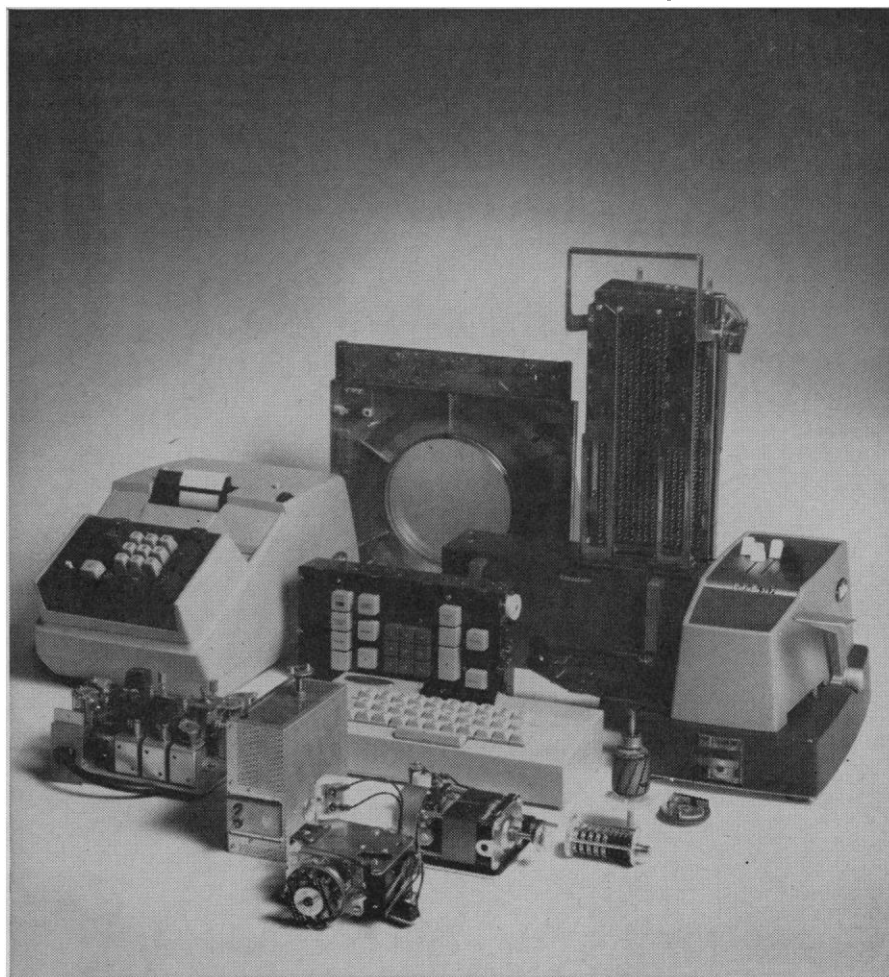
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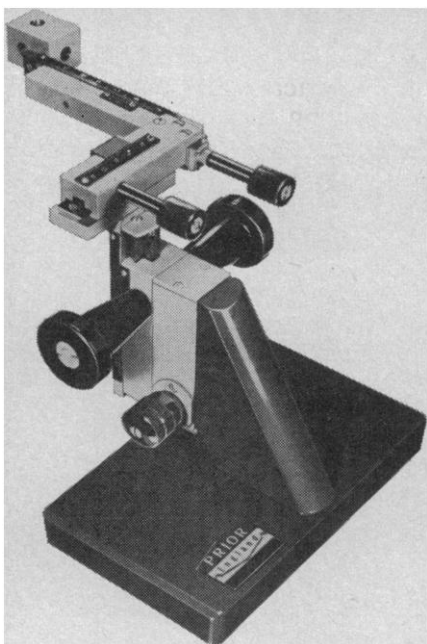
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Readings in Clinical Psychology. R. D. Savage, Ed. Pergamon, New York, 1966. 821 pp. Illus. \$23. There are 44 papers.

Scientific Aspects of Pest Control. A symposium arranged and conducted by the National Academy of Sciences-National Research Council (Washington, D.C.), February 1966. C. E. Palm, chairman, Steering Committee. Natl. Acad. of Sciences-Natl. Research Council, Washington, D.C., 1966. 482 pp. Illus. Paper, \$5. There are 28 papers.

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Structure, Form, Movement. Heinrich Hertel. Translated from the German edition (Mainz, 1963) by Scripta Technica. Milton S. Katz, Translation Ed. Reinhold, New York, 1966. 263 pp. Illus. \$17.50.

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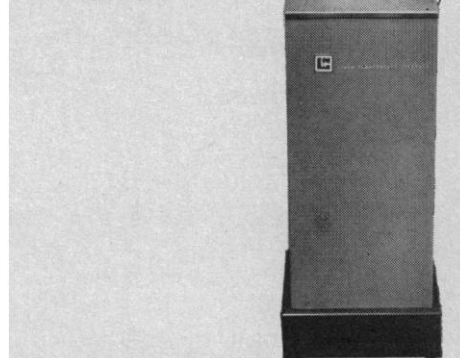
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General

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From Earth to Heaven. Isaac Asimov. Doubleday, Garden City, N.Y., 1966. 216 pp. \$4.50.

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A Geologist's View of Cape Cod. Arthur N. Strahler. Published for the American Museum of Natural History. Natural History Press, Garden City, N.Y., 1966. 125 pp. Illus. \$4.95.

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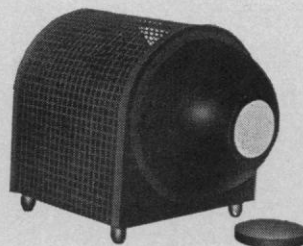


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Mel Thistle. Univ. of Toronto Press, Toronto, Canada, 1966. 469 pp. \$7.

The Integration of Technologies. Leslie Holliday, Ed. Hutchinson, London, 1966. 167 pp. Illus. 30s. There are 15 papers.

Interactions of Man and His Environment. Proceedings of the Northwestern University Conference (Evanston, Ill.), January 1965. Burgess H. Jennings and John E. Murphy, Eds. Plenum Press, New York, 1966. 180 pp. Illus. \$9.50. There are 17 papers.

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Knowledge and Power: Essays on Science and Government. Sanford A. Lakoff, Ed. Free Press (Macmillan), New York, 1966. 512 pp. \$10.95. There are 15 papers.

Land, Sea, and Sky. An introduction to the wonders of natural science. George Groh. Macmillan, New York, 1966. 94 pp. Illus. \$2.95. Juvenile book.

The Literature of Agricultural Planning. J. Price Gittinger. Natl. Planning Assoc., Washington, D.C., 1966. 136 pp. Paper, \$2. Planning Methods Series No. 4.

LSD on Campus. Warren R. Young and Joseph R. Hixson. Dell, New York, 1966. 192 pp. Illus. Paper, 60¢.

Man and Space. Lester M. Hirsch. Pitman, New York, 1966. 218 pp. Paper, \$2.95.

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Mathematics on Vacation. Joseph S. Madachy. Scribner, New York, 1966. 251 pp. Illus. \$6.95.

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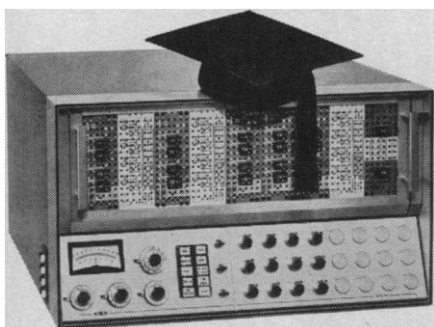
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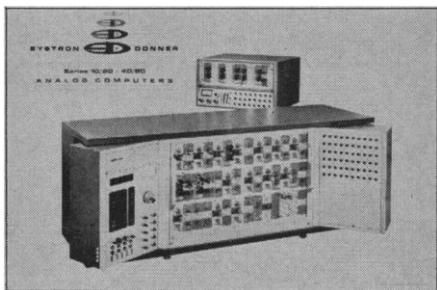


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