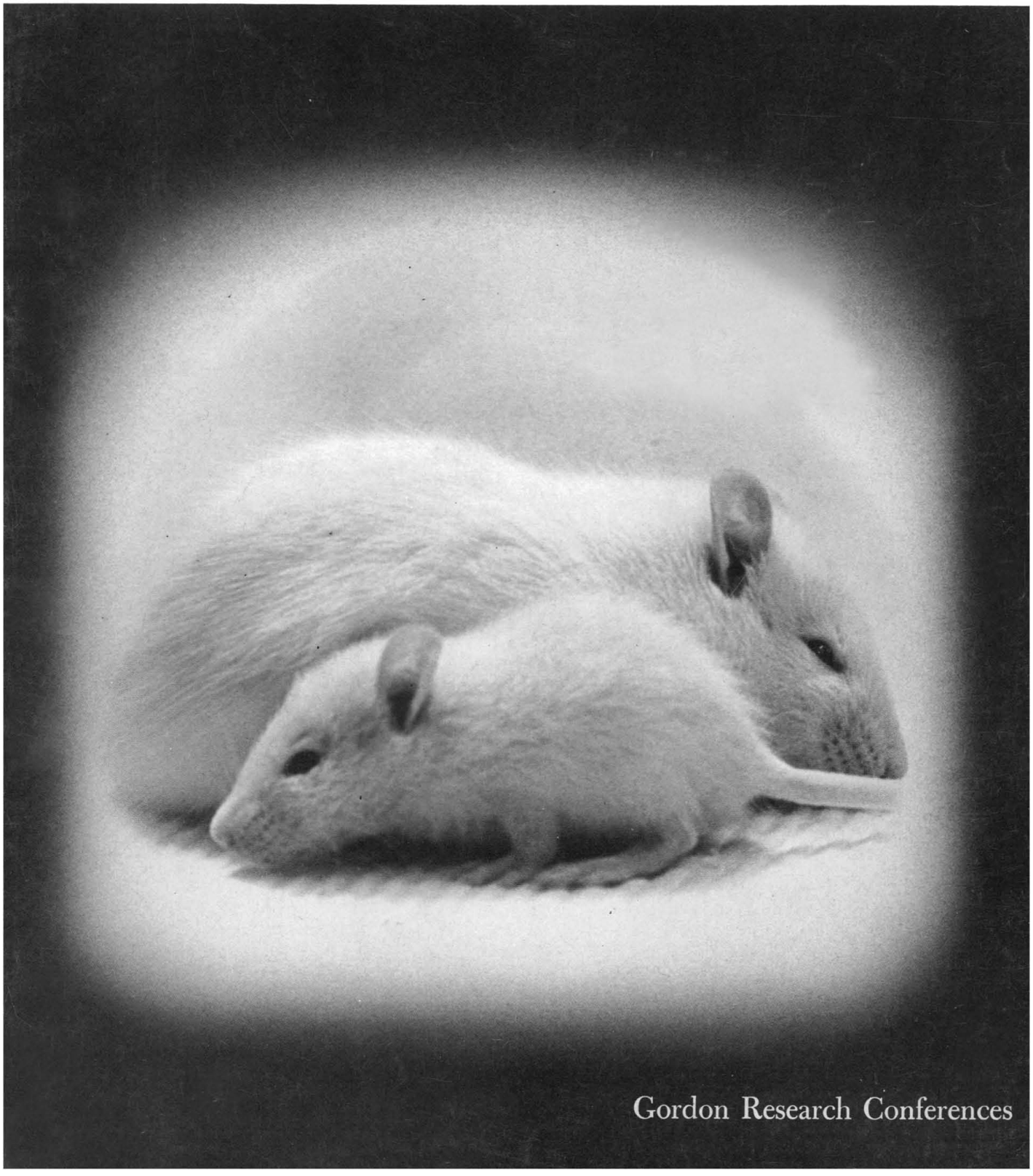
SCIENCE

12 March 1971

Vol. 171, No. 3975

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



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We're not here just to entertain you.

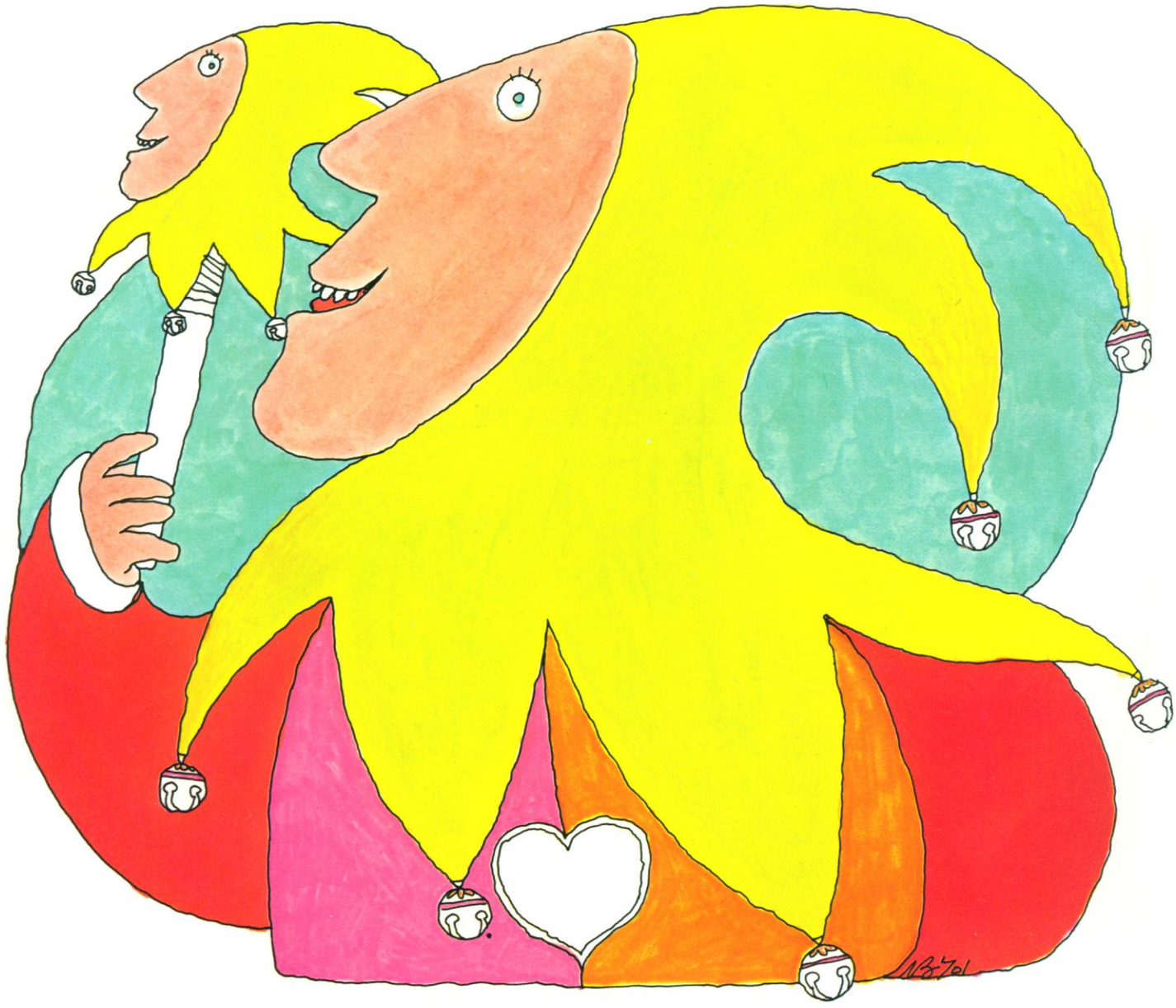
Panasonic, one of the greatest names in home entertainment, has a lot of products to interest industry as well. In order to produce all the home entertainment products we're famous for, the 2,500 engineers who back up Panasonic products have had to do a lot of research. Research that's led to some amazing new products.

For instance.We've developed a new Video Image Printer. A sophisticated device for making single or multiple 35 mm. slides from high density TV broadcast information. The Video Image Printer can be used to record micro data for business. Or invisible ray patterns for science. Or whatever high density information you want to record.

Advances like the Video Image Printer don't come from fooling around. We've had to invent new electronic components to make them possible. Like our "Hi-ZNR." A voltage dependent, nonlinear, zinc oxide resistor. The "Hi-ZNR" features varistor voltage from 300 to 30,000V and nonlinearity 10 times better than conventional silicon carbide varistors.

Then there are new products like our "Piezonator," our Ga-As pulse generating diode, and our junction type strain transducer. They're highly advanced, highly miniaturized microelectric devices bound to cause a big stir in the electronics industry.

Frankly, there's not enough room on this page to tell about all the good things Panasonic has to offer industry. Go to the IEEE show and see Panasonic at booths #2824-2831. You'll find us more than entertaining.



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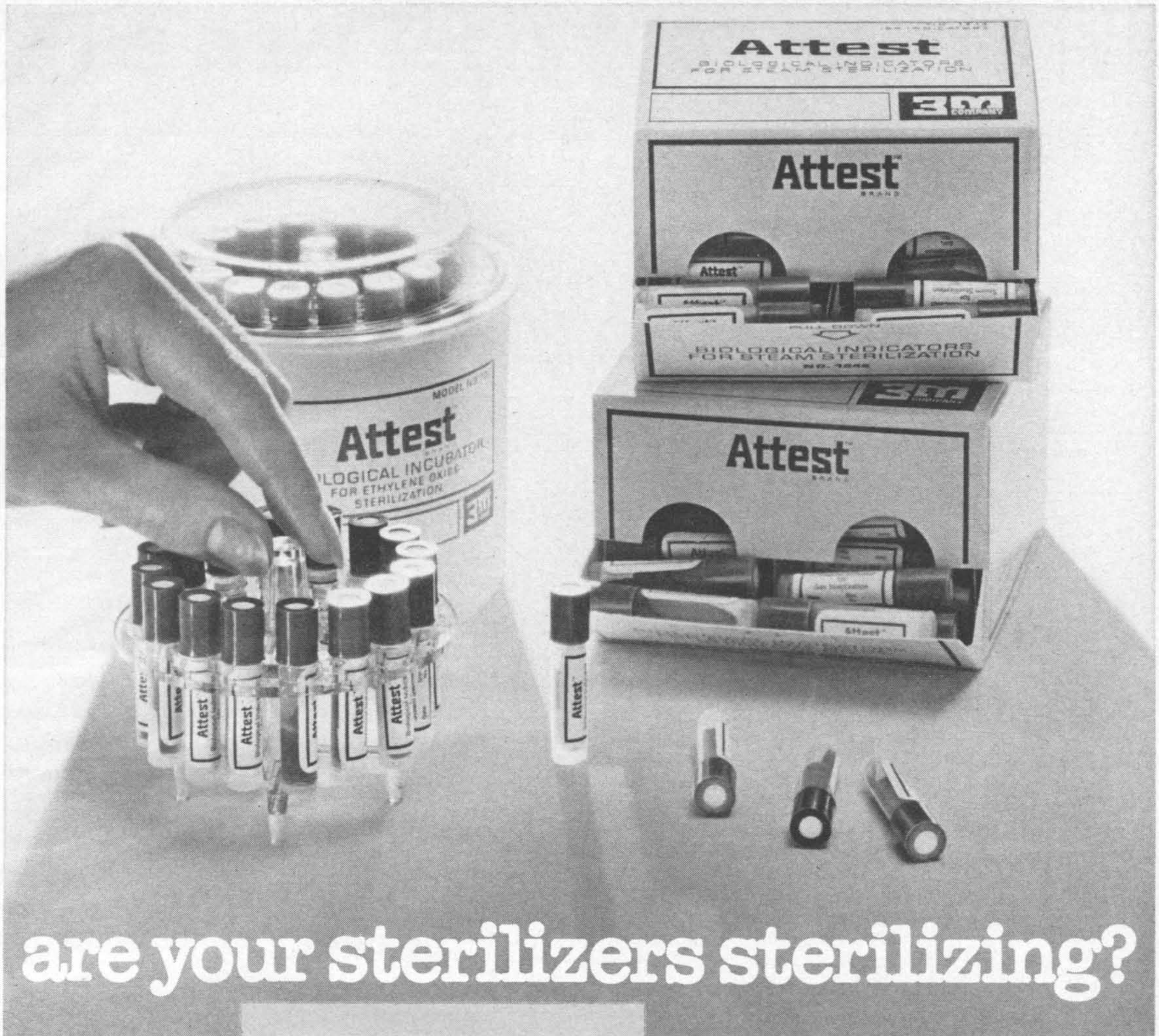

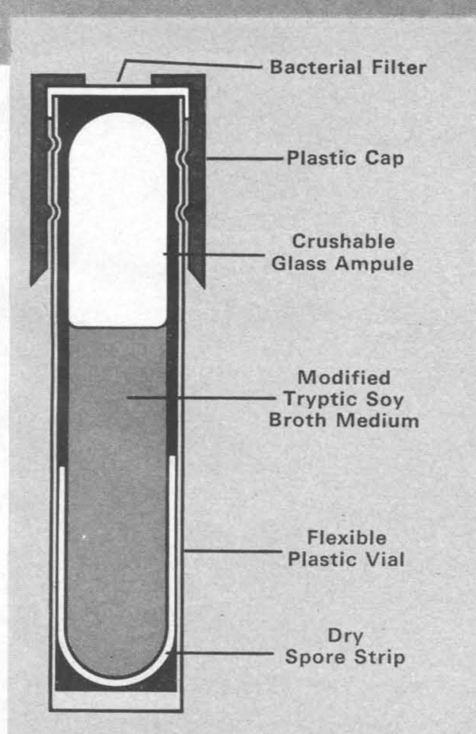

Schematic of ATTEST Indicator. After indicator is removed from sterilizer and becomes cool, ampule is crushed between thumb and forefinger, then placed in ATTEST Incubator.

New **Attest**™ Biological Monitoring System includes indicators and incubators color-coded for either steam or gas sterilizers.

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Medical Products Division 3M COMPANY

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12 March 1971
Vol. 171, No. 3975

SCIENCE

SCIENCE is published weekly, except the last week in December, but with an extra issue on the fourth Tuesday in September, by the American Association for the Advancement of Science, 1515 Massachusetts Ave., NW, Washington, D.C. 20005. Now combined with **The Scientific Monthly®**. Second-class postage paid at Washington, D.C. Annual subscription $12; foreign postage: Americas $3; overseas $5; single copies, $1 (back issues, $2) except **Guide to Scientific Instruments** which is $4. School year subscription: 9 months, $9; 10 months, $10. Provide 4 weeks notice for change of address, giving new and old address and zip codes. Send a recent address label. SCIENCE is indexed in the **Reader's Guide to Periodical Literature.**

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

COVER

Littermates nursed eight per mother by foster mothers receiving either adequate or low-protein diets grow at markedly different rates. At weaning the weight of deficient pups is 21 percent of well-nourished controls. The smaller rat has lower brain catecholamine levels and higher tyrosine hydroxylase levels as compared to his brother. See page 1017. [Robert C. Lyon, Graphic Arts Department, Massachusetts Institute of Technology]

If everyone were easily satisfied,

Zeiss microscopes are made for the microscopist who demands the best. Regardless of what Zeiss microscope you buy, you get the world's finest optics. And you get the ultimate in mechanical precision. Simply to look through the optics and to touch the focusing knobs on any Zeiss instrument is proof enough.

Our Universal Microscope is exactly what its name states—it is universal, and universally accepted for all applications. But we also offer another instrument, the WL, that for many applications is in the same class. Even if you normally find satisfaction hard to come by, you'll find it easily with one of these microscopes. Which one depends upon what you want to do.

The Zeiss WL Microscope

The WL is an outstanding instrument for most transmitted-light applications, including: brightfield, darkfield, phase contrast, Nomarski interference contrast, fluorescence, polarization, microprojection, photomicrography.

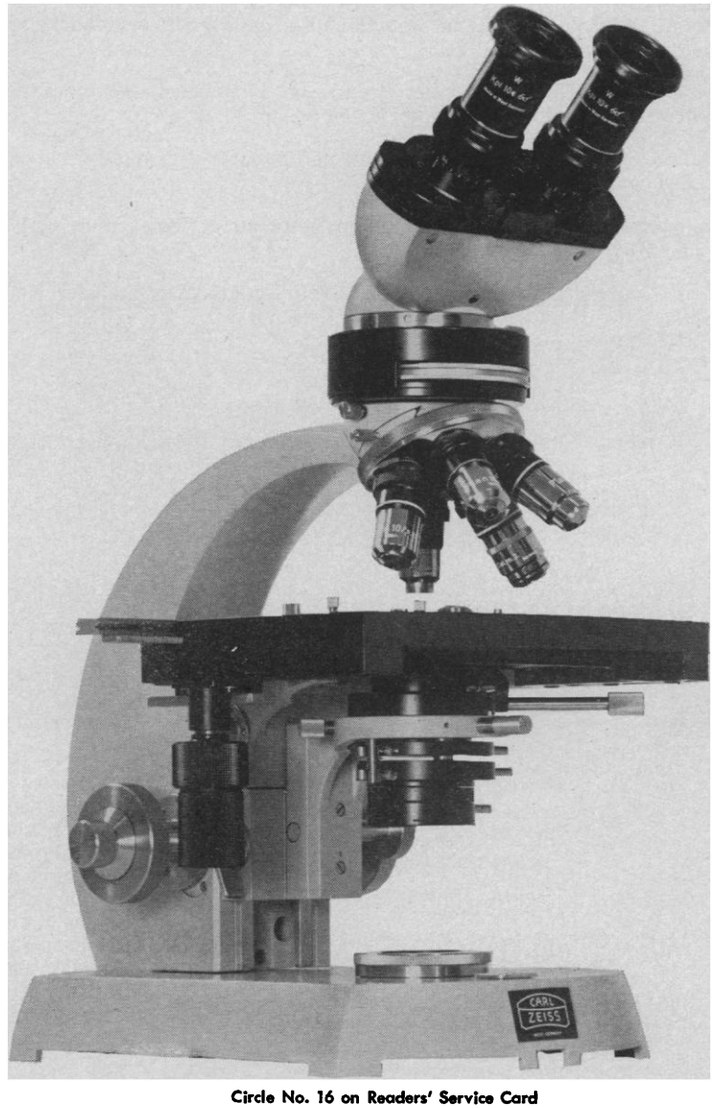
A look at just a few of its key features will give you an idea of its excellence:

1. Objectives—the most essential component of any microscope. Zeiss objectives are world-famous for their quality. Available for the WL is a complete line of Planapochromats from 4/0.16 to 100/1.3—and *only* Zeiss can offer so many. Complete lines, too, of Neofluars, Planachromats and Achromats. Each, in its class, is the world's best.

2. Brightfield—Phase Contrast—Nomarski Interference Contrast without changing condensers or objectives. And there's no need for a centering telescope either, because the exclusive OPTOVAR Magnification Changer has an auxiliary lens for centering the light ring on the phase ring. The OPTOVAR also lets you easily change magnifications without changing eyepieces.

3. Stages—Rotating and Centering, Mechanical and Gliding, Polarizing—the most versatile, the sturdiest and smoothest made. Even if you exert pressure on these stages, they won't slip .

4. Attachments—There are cameras (35mm, 4 x 5, Polaroid®, motion picture and video), auxiliary binocular and monocular tubes, projection screens, drawing attachments, a refractometer, etc., etc.—just about anything you might ever want.



The Zeiss WL Microscope

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there would be no need for Zeiss.

The Zeiss Universal Microscope
With the Universal, you can do all the things in transmitted light you can do with the WL—plus a few others. What's more, this is a truly great instrument for reflected light. Perhaps its outstanding feature (aside from the magnificent optics and extra-sturdy stand) is the fact that you can switch from reflected to transmitted light, or vice-versa, just by flipping a lever, *without changing light sources*.

Let's take a closer look at the Zeiss Universal Microscope:

1. Objectives—the same great objectives as the WL has. And, in addition, a full line of Epiplans for reflected light work, and famous LUMINARS for photomacrography.

2. The Microscope Stand—the sturdiest stand of any desk-top microscope. This extra stability allows use of the Microscope Photometer for both reflected and transmitted light, and is of benefit if a great deal of 4 x 5 or motion picture photography is employed.

For reflected light, more intense light, or fluorescent illumination (including phase-fluorescence), the special illuminators, rather than being accessories, become *part* of the instrument, contributing to its ease-of-operation, compactness and sturdiness.

3. Attachments—The same cameras, projection screens, drawing attachments, etc., as for the WL—plus the Microscope Photometer and the Microhardness Tester.

To sum up, the Universal is the instrument to buy when your applications are truly *universal*, when you have to switch from one mode to another during your work. The WL is superb if you are mainly concerned with transmitted-light microscopy. But no matter which Zeiss microscope you choose, we know you'll be satisfied. Because both are made specifically for the microscopist who is *hard* to satisfy.

For more information on the WL or Universal (or on any of the others in our line) write Carl Zeiss, Inc., 444 Fifth Avenue, New York, New York 10018.

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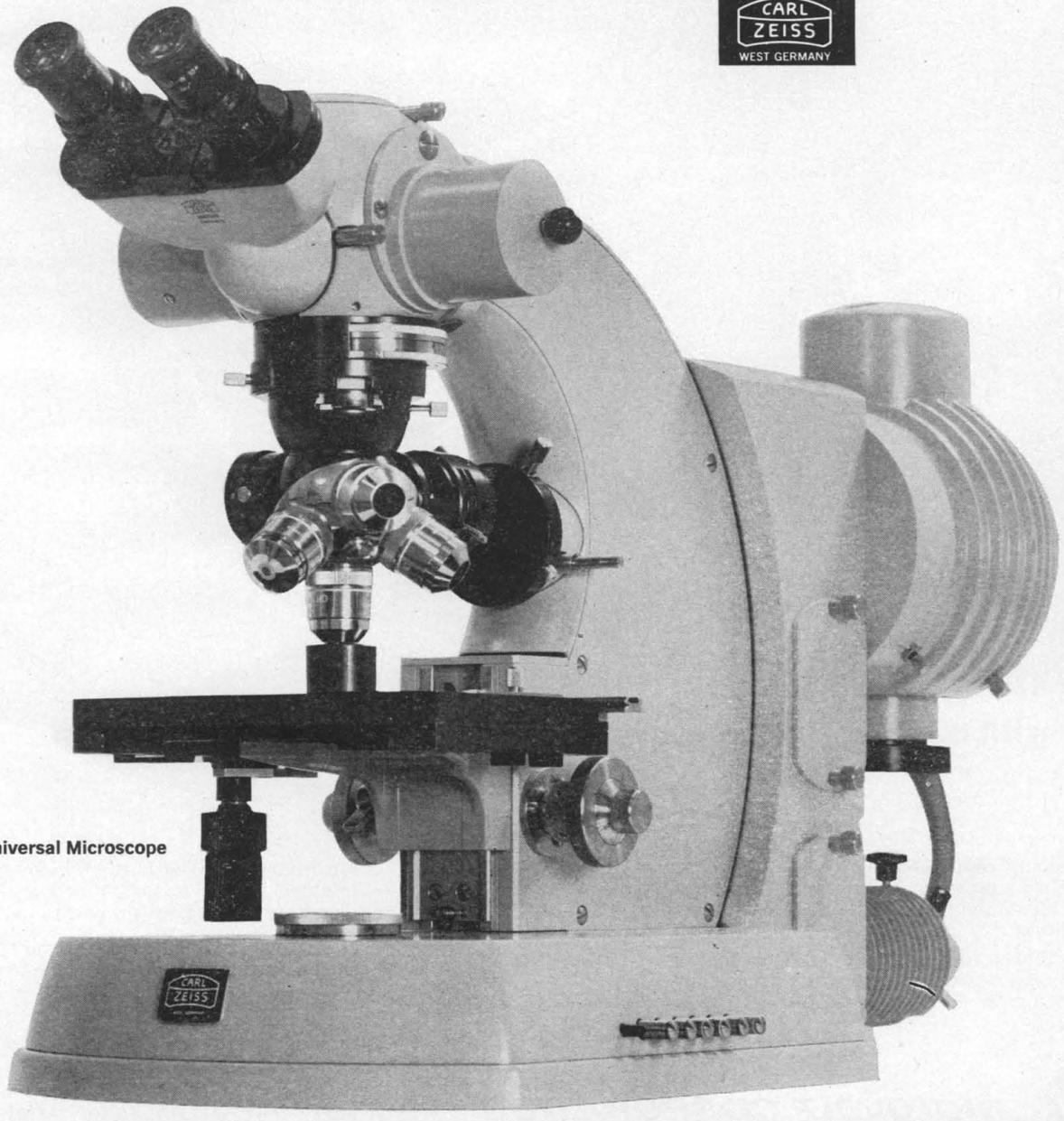

The Zeiss Universal Microscope

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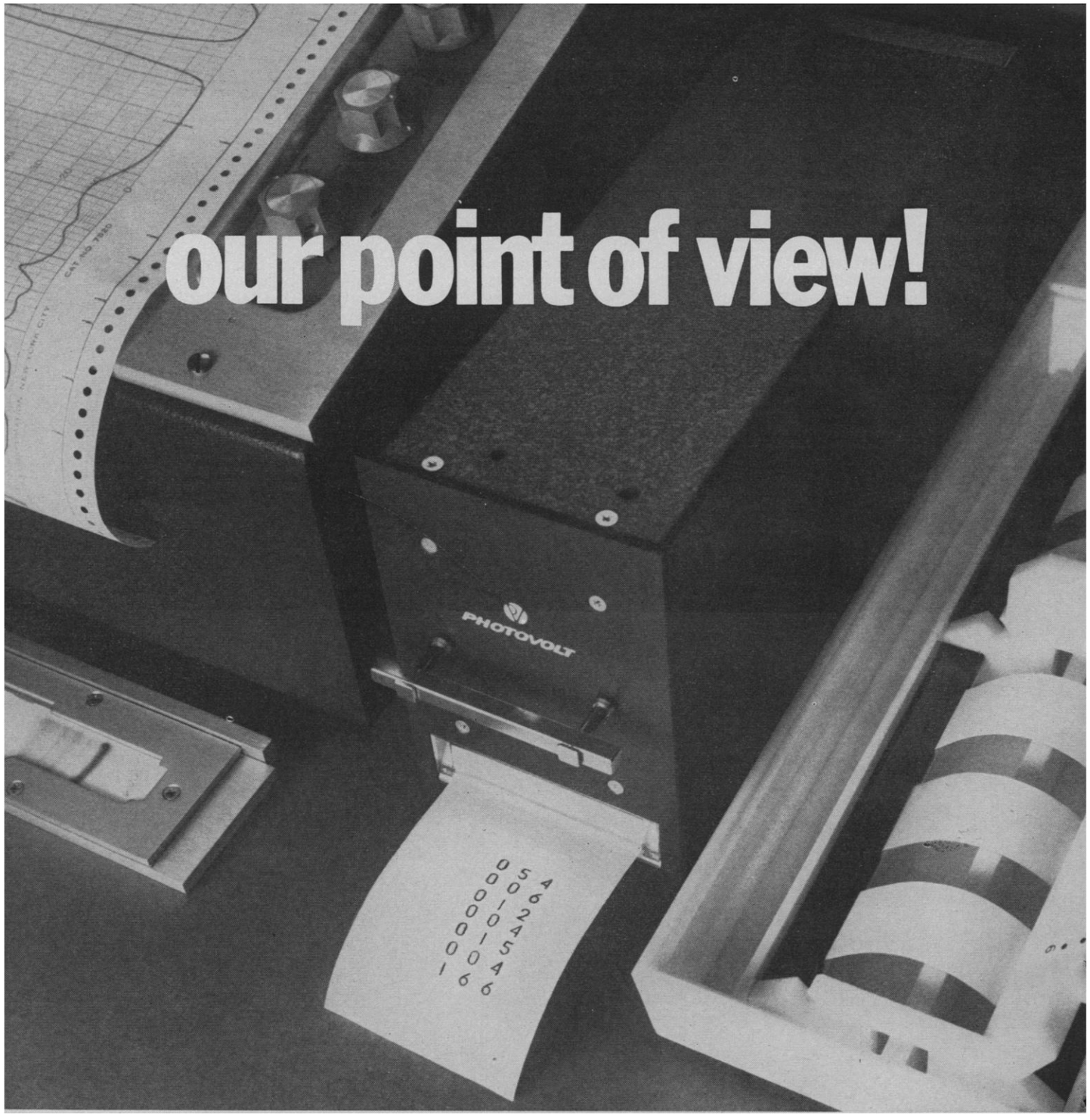

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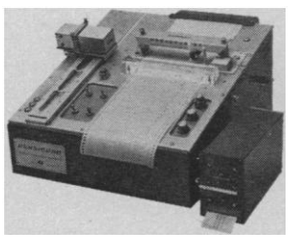

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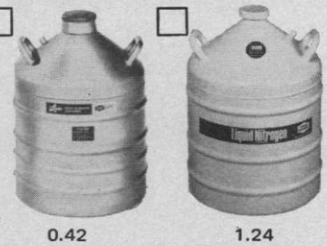

Evaporation rate (liters per day)	0.42	1.24
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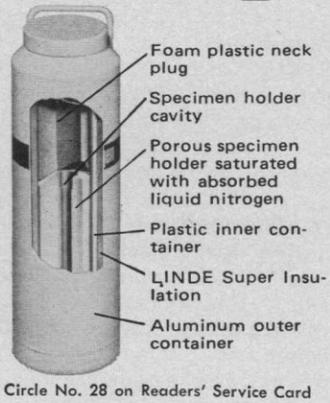

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The largest portable liquid nitrogen container available. Convenient for storing and transporting fluids. Weighs only 130 lbs. when full. Easily handled by a single laboratory technician.

Accessories are available for withdrawal of liquid nitrogen at low and medium pressure without tipping the container.

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NET-027: Specific activity 6.7 curies/mM
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For more information on this new advance in blood profiling write Department 128.

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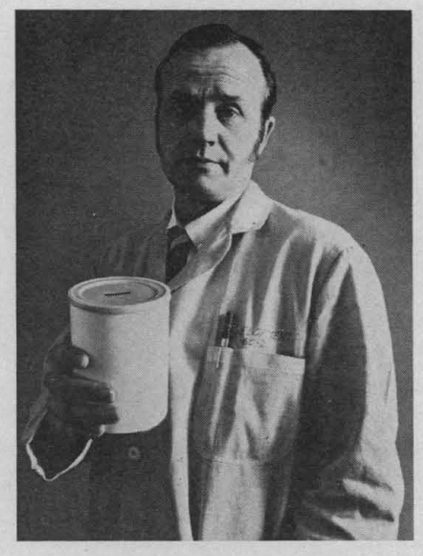
The new Cary 61. The CD spectropolarimeter that lets you save the money you probably don't have.



We've come up with a way to let you make the most of a tight budget without compromising quality. The new Cary 61 is an all solid-state, high performance CD-only instrument that costs less than $30,000 and can handle any research or routine CD spectropolarimeter problem.

THE BASIC 61

Practical design considerations make the new Cary 61 one of the easiest-to-operate instruments of its kind. Simplified controls allow rapid adaption of operating parameters to sample needs and permit savings in instrument set-up time. Built-in features include: dynode voltage recording for deriving the sample's absorption properties; provision for interfacing computer readout and control; and a specially designed, very spacious sample compartment which accommodates a super-conducting magnet for MCD studies, or other sample handling equipment.

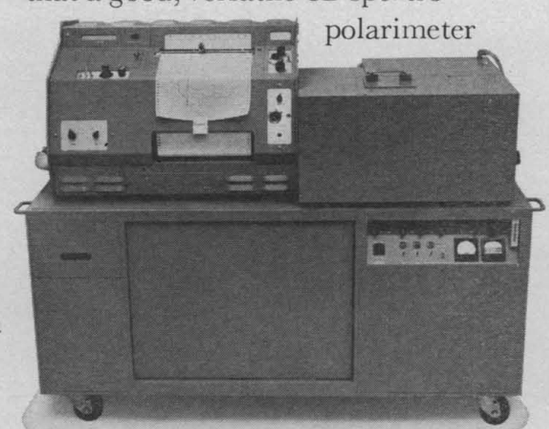
The performance-proven double monochromator and special optical design features of the Cary 61: minimize stray light, reduce the occurrence of artifacts, allow penetration into the ultraviolet with complete confidence, and sharply define small spectral details over its entire 185-800 nm range.

As for CD performance, if the 61 can't do it, nothing else can.

MORE CD FOR LESS

Simply add our unique "folded beam" optical accessory and you're set to perform CD difference measurements with extremely high sensitivity. All the while keeping additional expenses to a minimum.

The new Cary 61. Working proof that a good, versatile CD spectropolarimeter



and tight money are compatible.

For complete details or a demonstration, write Cary Instruments, a Varian subsidiary, 2724 South Peck Road, Monrovia, California 91016.

Ask for data file E007-110.

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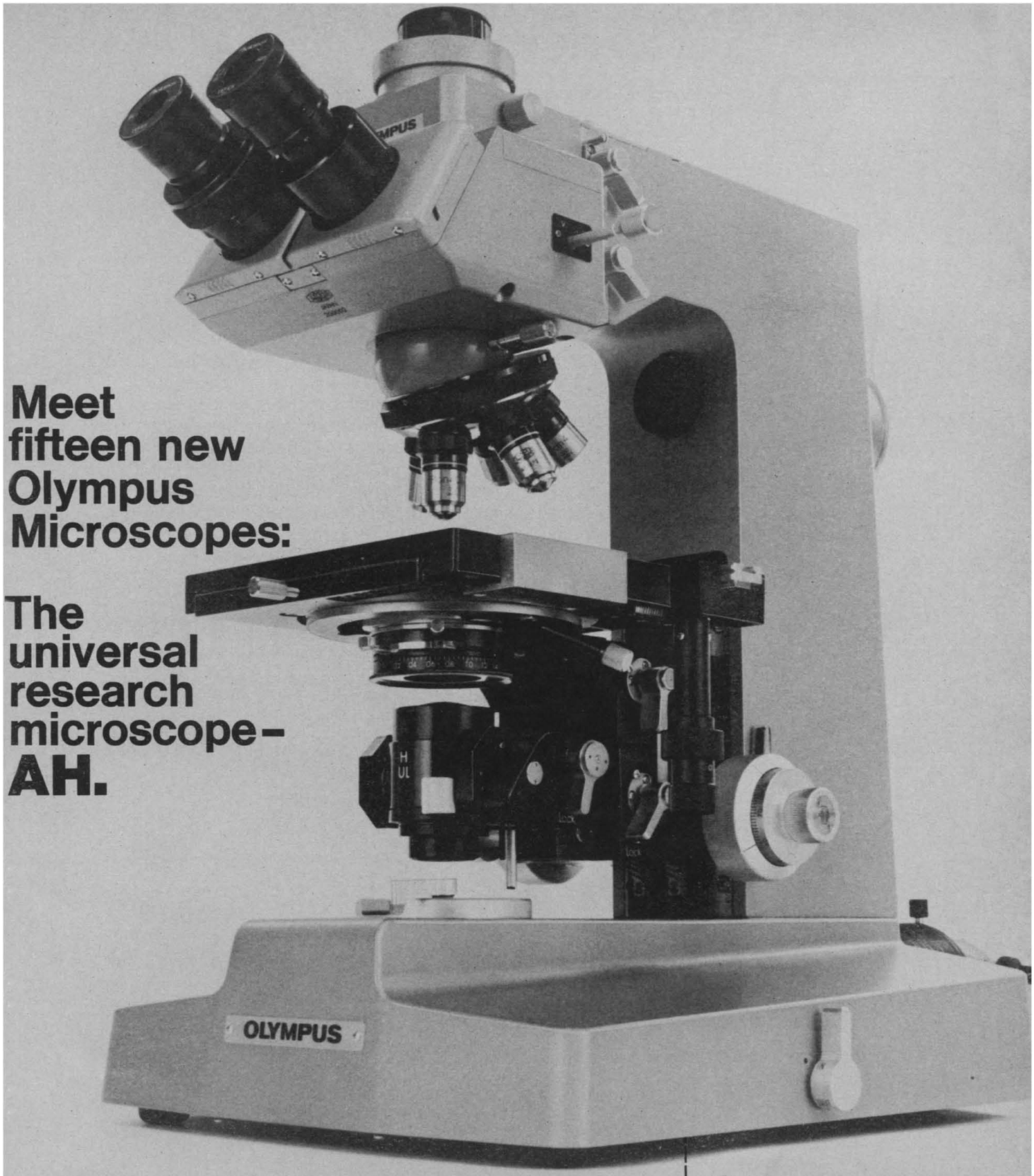

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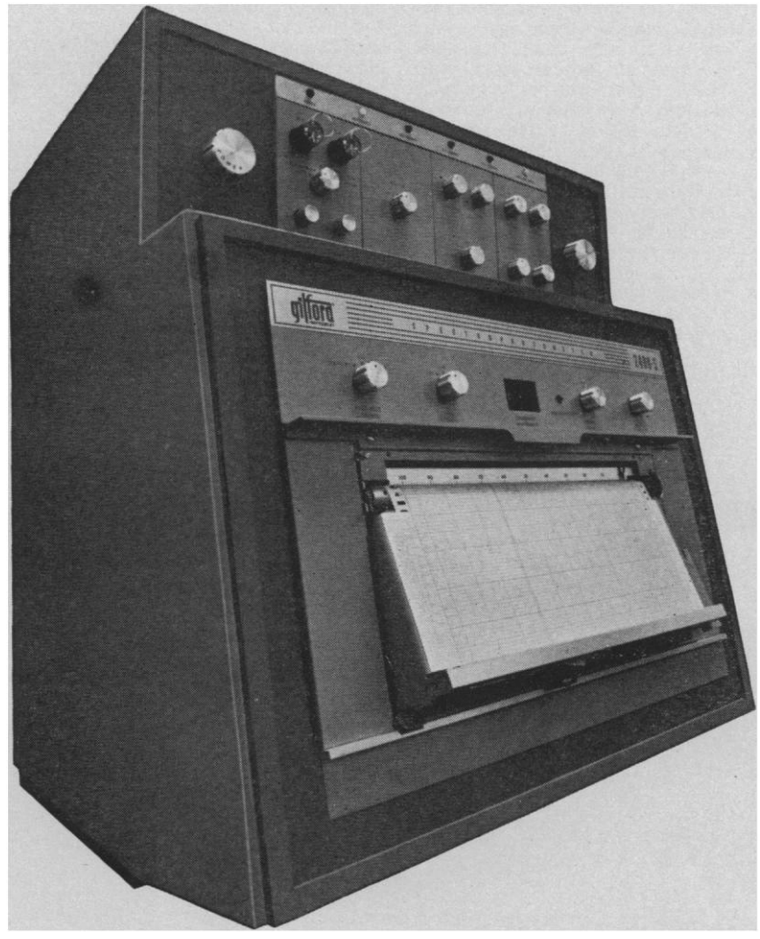

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What did we learn from building the moon camera?

We learned what a good camera we already had on earth.

Because the moon Hasselblad is basically our electrically-driven Hasselblad 500 EL.

We also learned that NASA's photographic needs were much the same as the needs of serious photographers anywhere.

NASA needed to bring back high-resolution photographs. (Don't *you?)* The Hasselblad 500 EL offered the superb optics of Carl Zeiss lenses, plus the large 2¼" square format.

NASA needed great shooting capacity. (Haven't *you* been in spots where you wish you'd had more film in your camera? Or could switch from black and white to color in mid-roll?) The 500 EL, with its interchangeable backs, offered a large capacity magazine. Which meant that no film would have to be loaded by the astronauts during the entire moon walk. A fresh, preloaded back could be snapped on as needed. In a matter of seconds.

NASA needed simplicity of operation. (Aren't there times when you, too, want to concentrate on your subject, not your equipment?) The 500 EL offered electrically-driven automatic film advance and cocking of shutter.

Most of all NASA needed fail-safe reliability. (After all, if *you* were going on a long trip and didn't know when you'd get there again, you'd want insurance, too.) Hasselblad had been the space camera since 1962, so there was no doubt that it would perform reliably on the moon.

There are, of course, some differences between the moon and earth Hasselblads.

For one thing, the moon Hasselblad has wings on the diaphragm and shutter speed rings so they can be operated with bulky gloves on.

It has an oversized shutter release button for the same reason.

And a longer handle on the magazine slide for the same reason again.

And a safety lock to prevent the film back from floating off into space during weightlessness.

The earth Hasselblad doesn't have any of these things because it doesn't need them.

On the other hand the earth Hasselblad has things the moon Hasselblad doesn't have. Or need. Like interchangeable film transport mechanisms, three focusing screens and viewers.

In its own way, the earth Hasselblad, with its reflex viewing system, is just as sophisticated as the moon Hasselblad. So rather than stand in awe of the astronauts' Hasselblad, it would be equally appropriate for the astronauts to stand in awe of *your* Hasselblad.

If you don't require an electrically-driven film advance, there are other Hasselblad bodies. All part of the Hasselblad system which includes three basic cameras, ten interchangeable Carl Zeiss lenses ranging from 40 to 500mm, five interchangeable magazines from 12 to 70 exposures, interchangeable viewfinders plus a large number of specialized accessories.

We didn't have to push technology to fantastic new limits to come up with the moon camera. We had such a product all along.

Which only goes to show that when you constantly shoot for the moon, you stand a good chance of making it.

For more information, see your Hasselblad dealer. For your free 48-page catalog on The Hasselblad System, write to address below:

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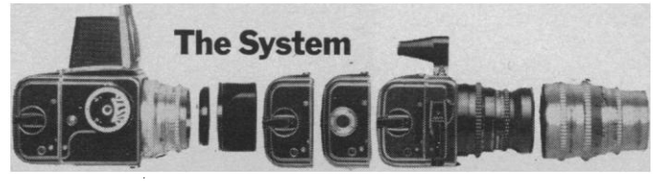
Other products: Bolex movie equipment, Hermes typewriters and figuring machines.



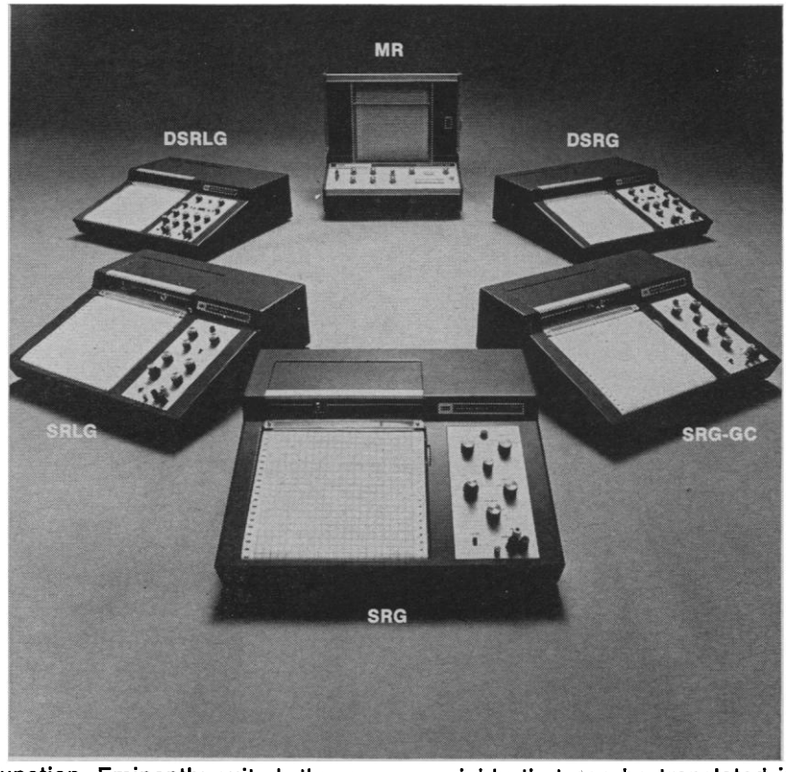
Potentiometric recorders: here's the picture.

Shown here, a portrait of all there is to know about potentiometric recorders. All from Sargent-Welch. And each deserves its own personality profile:

Model SRG: The basic recorder, distinguished by its advanced performance. Seven pre-calibrated spans. Three chart speeds. Guarded circuits and filtered inputs. Accuracy: ±0.25%. Reproducibility: ±0.1%. Full-scale pen response: Less than one second. Basic price: $1025.

Model DSRG: The SRG times two. That is, a dual-pen recorder, with two linear channels, for recording two time-related variables, side by side or overlapping, on the same chart. Same matchless performance as the SRG, but only a few inches wider. Think of it as a space- and paper-saver. Basic price: $1800.

Model SRLG: The SRG taken one step further, with the addition of a logarithmic function. Eminently suited, therefore, for recording (say) the log of absorbance with a spectrophotometer. Precision, non-circular gears — which do the job much better than electrical approximations to the log function. Basic price: $1325.



Model DSRLG: Another logical move. Two SRLG's in one dual-pen recorder. Think of what that means if you work with a spectrophotometer, photometer, or densitometer — simultaneous recording of both transmittance *and* absorbance. Or linear/log recording of any two time-synchronized variables. Basic price: $2225.

Model SRG-GC: Something special, for use with a gas chromatograph. Fast response, high AC rejection, floating input, three chart speeds, and continuously variable wide-range spans. Optional integrator for precise measurement of areas under recorded curve. Basic price: $1025 (with integrator, $1820).

Model MR: The ultimate recorder? Perhaps. Few can match it for precision, speed, sensitivity, and versatility. Measures and records (vs. time) any variable that can be translated into voltage or current, *or* that can be time-related by synchronous drive. Twelve ranges, twelve speeds. Basic price: $2850.

As we said, a complete picture of a complete line.

Now read the book.

0-214

Still, in all fairness, one picture and these few words don't do justice to our complete line of recorders. So we've prepared a fully illustrated, 30-page catalog. It's yours, without obligation, for returning the coupon. Do it now.

I'd like a copy of your recorder catalog. I'm especially interested in:

- ☐ Model SRG Recorder
- ☐ Model DSRG Dual-Pen Recorder
- ☐ Model SRLG Linear-Log Recorder
- ☐ Model DSRLG Dual-Pen Linear-Log Recorder
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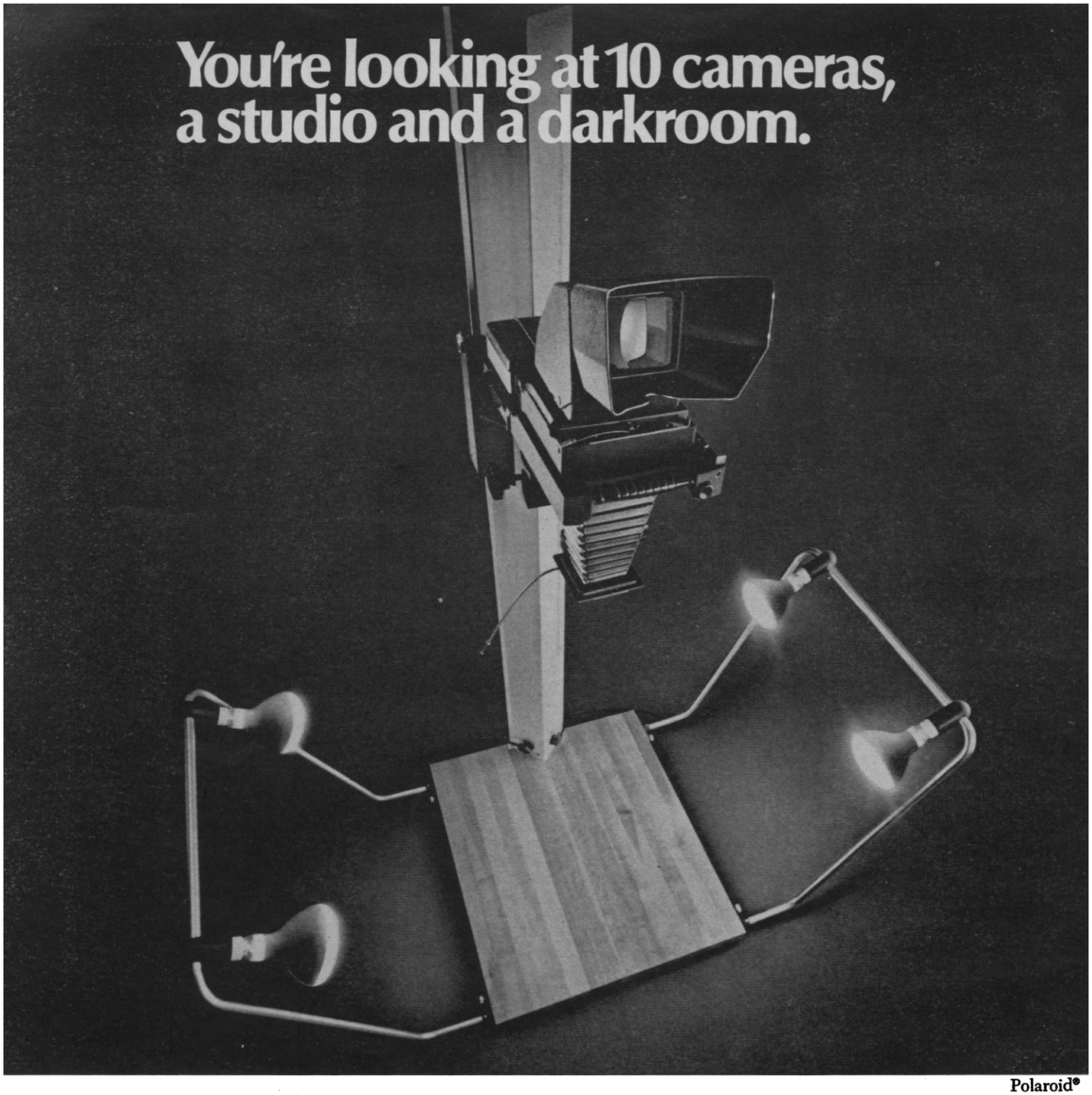

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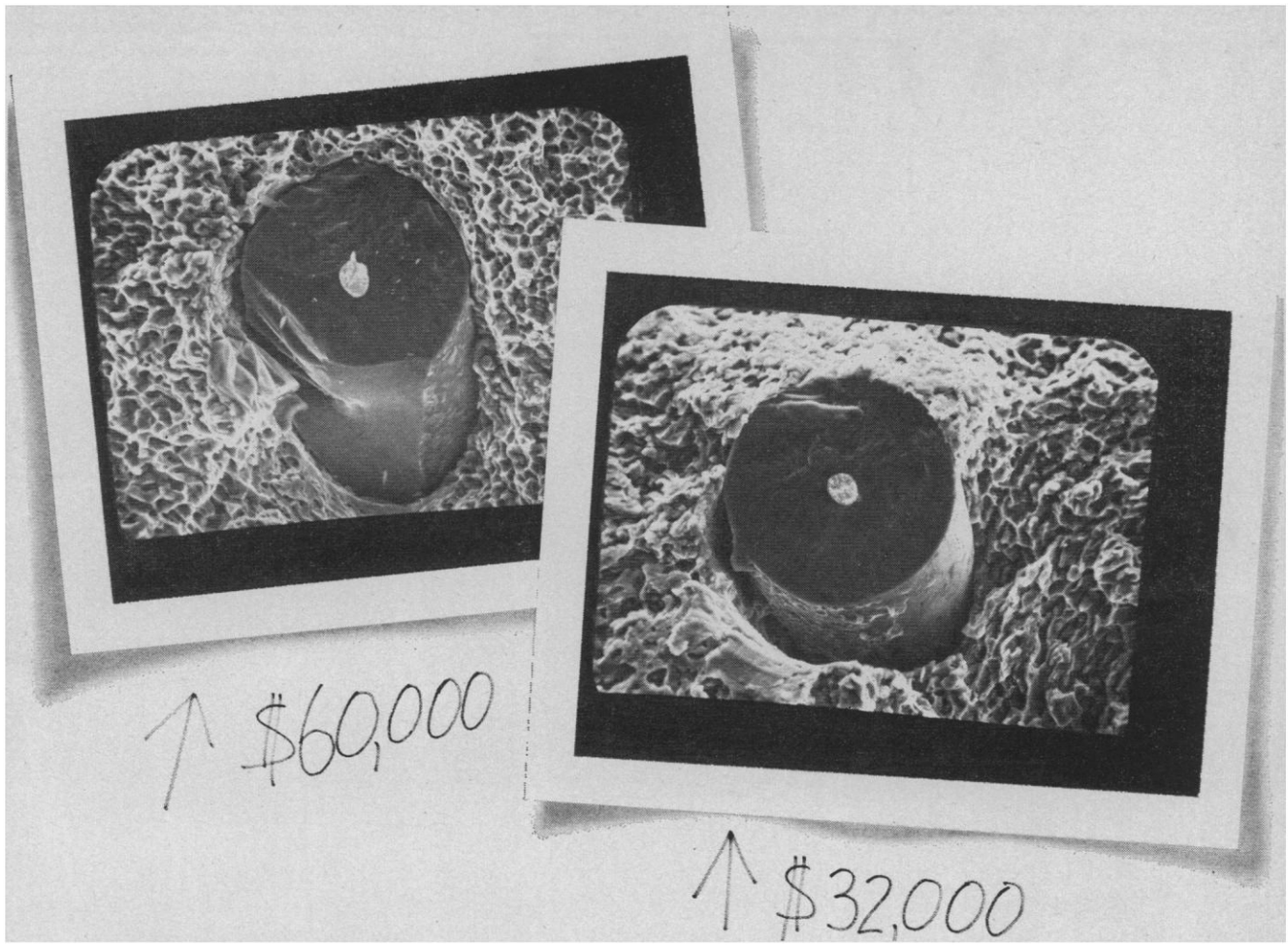

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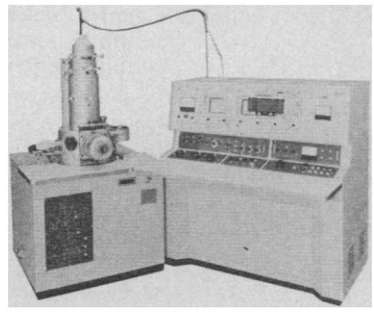

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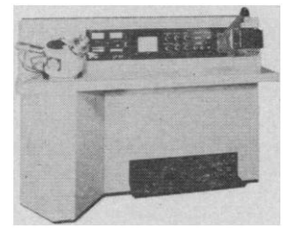

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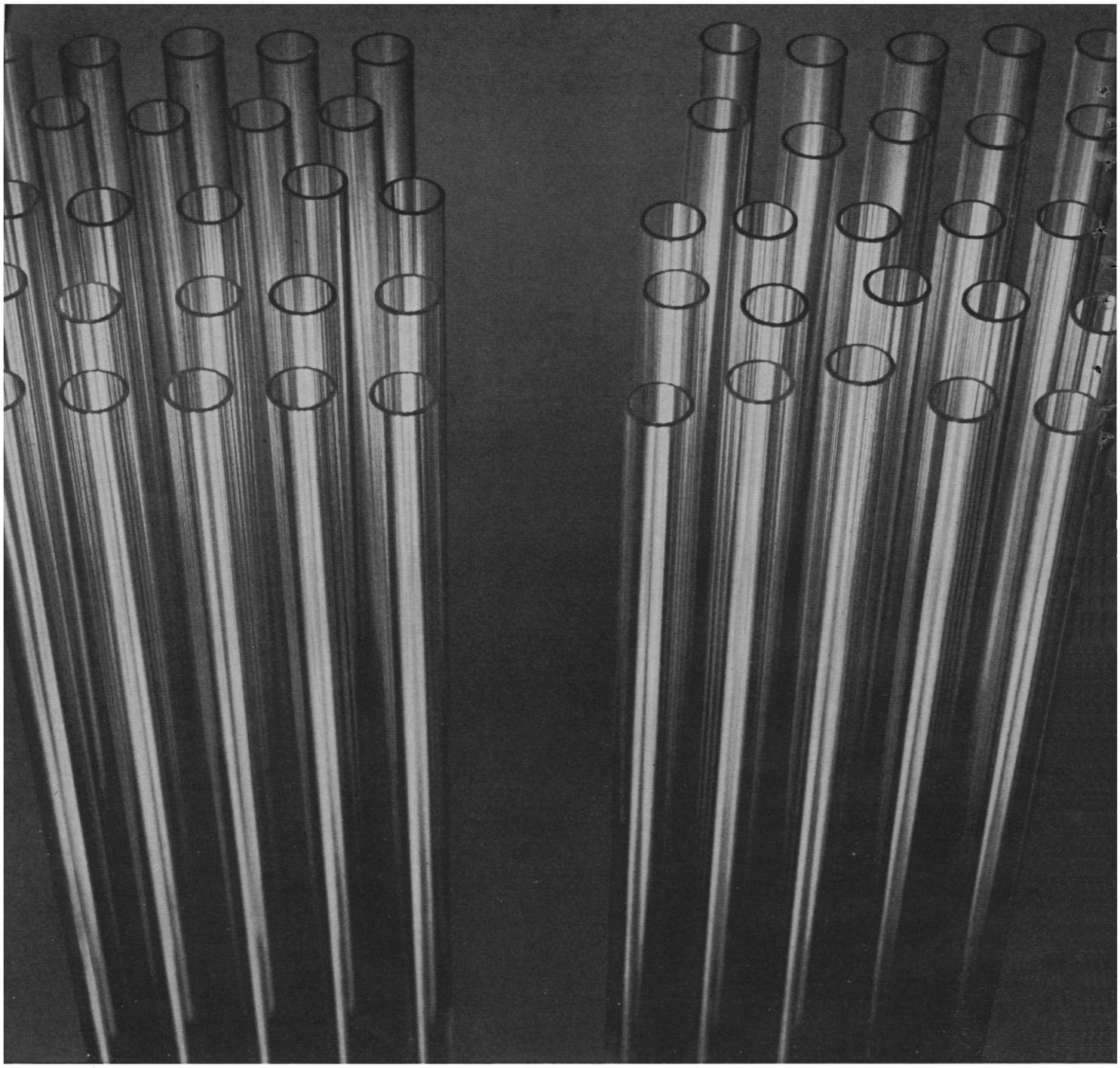

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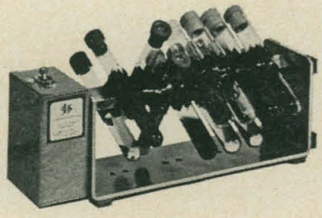

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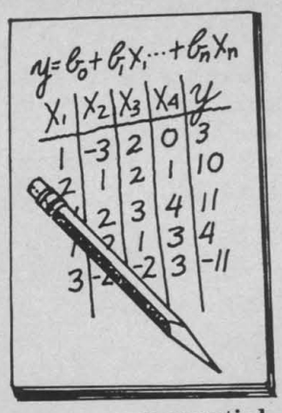

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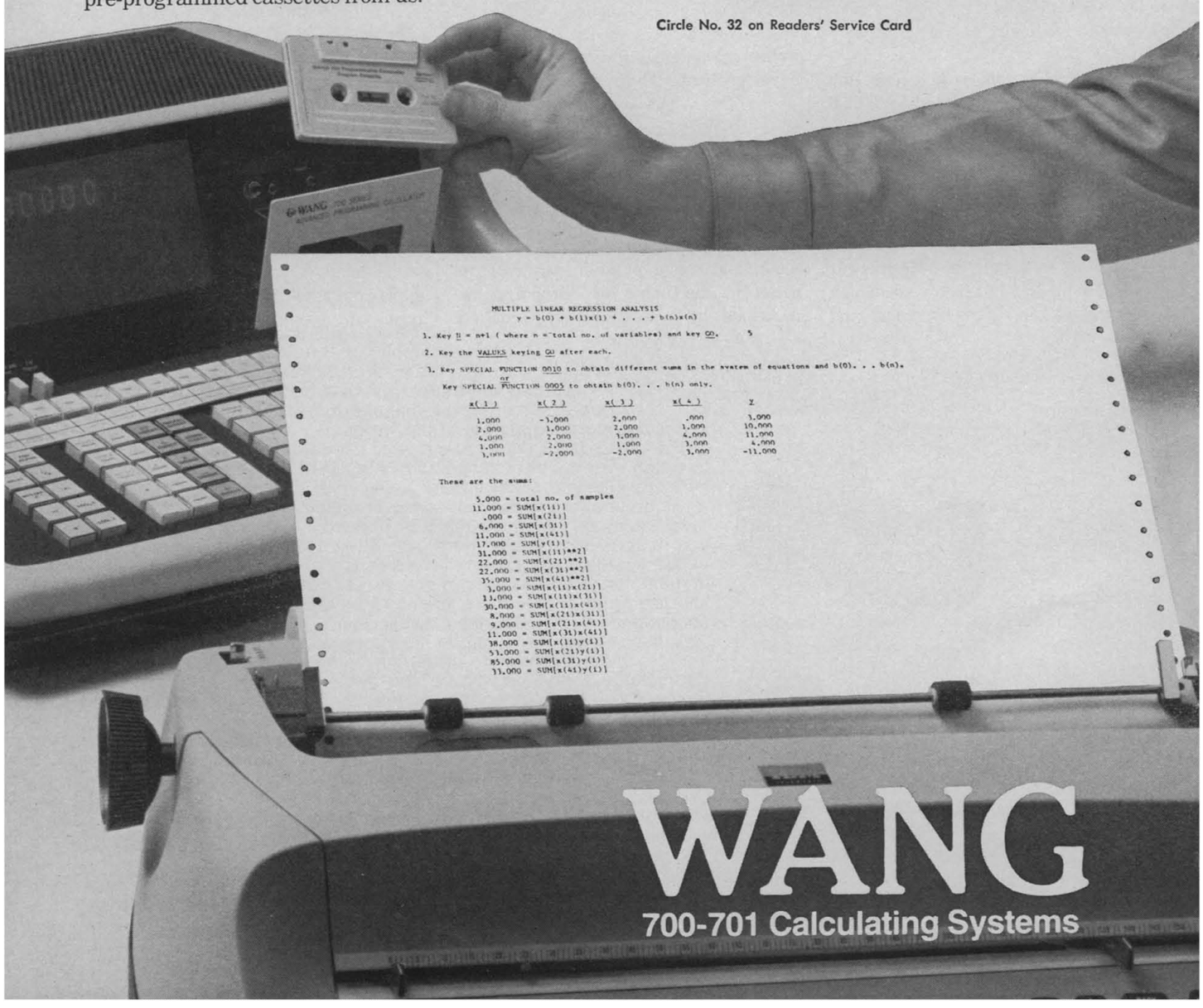

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many different cultivars of varying degrees of resistance (or susceptibility) to any one particular strain of fungal pathogen had been planted."

In fact, very many potato varieties were grown in Ireland (and elsewhere in Europe) when late blight first appeared in 1845. Contemporary accounts confirm that the various sorts showed marked differences in susceptibility to the disease. Thus in trials of 176 potato varieties carried out at the time by the Horticultural Society in London, tuber infection was found to range from zero to 64 percent. In the Netherlands a replicated study on 148 potato varieties grown on two different types of soil gave similar results, as did smaller-scale trials in Dublin's Botanic Gardens. It was the increased use of the less susceptible sorts, hitherto in limited cultivation, which enabled the potato to recover from the initial disaster and to survive as a major food crop over the lengthy period until breeding for resistance and the use of fungicides were introduced. A characteristic example was the American Early variety which had been grown on a small scale in England up to 1845, but which graduated to the status of a popular field crop under the name Dalmahoy after 1847.

The tragedy lay in the fact that the potato varieties most widely grown by the poor because of their high yields—such as the ill-famed Lumper in Ireland—were precisely those that succumbed most completely to the new disease. There was a time lag before the less susceptible sorts could be multiplied and brought into general use. In the interim a million Irish had died and another million fled.

P. M. AUSTIN BOURKE
Meteorological Service,
Dublin, Ireland

People Who See Flying Saucers

D. I. Warren ("Status inconsistency theory and flying saucer sightings," 6 Nov., p. 599) gives evidence that, among American white males over 21, the highest proportion of UFO sightings are from men with college education but moderate or low income or occupation ranking. He believes this supports the notion that UFO sightings are one reaction by these men to their status inconsistency; that they are one consequence of feelings of status frustration.

It is important to stress more clearly than Warren has the contrast between sighters who interpreted the UFO's as actual objects or vehicles from outer space (8 "believers"), and those who offered some more "normal" explanation (42 "nonbelievers"). Cross-tabulation of frequencies derived from figures 4 and 6 shows that among the nonbelievers with consistent or moderately inconsistent status, there are only about four fewer UFO sighters than would be expected if UFO sighting and status inconsistency were unrelated variables, and only about four more than expected sighters among men with sharp status inconsistency. The relationship in the sample is weak and may well be due to chance (gamma is .2, chi-square is significant at the 10 percent level but not at 5 percent). On the other hand, believers show a far stronger relationship with status inconsistency which is not likely to be accidental (gamma is .8, chi-square is significant at better than the 2 percent level). There are fewer than the expected numbers of UFO sighter-believers among men with consistent or moderately inconsistent status, and more than expected among men with sharply inconsistent status. It appears, then, that what Warren has demonstrated is only a doubtful relationship between status inconsistency and *any* UFO sightings and is primarily a relationship between status inconsistency and sightings coupled with belief in the "outer space" origin of the UFO's.

A more basic question is why the UFO sighters-believers came to have inconsistent statuses in the first place. Warren does not seem to have asked this question, and tacitly implies that if these men had not somehow found themselves underrewarded relative to their education, they would have been much less likely to experience the feelings of deprivation and marginality which led to their seeing (and believing in) UFO's. But, given the generally good academic job market at the time of the survey (1966), it seems likely that college educated men who could not get or did not want high income and high status jobs were men who already differed in significant ways from majority ways of thinking, behaving, or feeling. I suggest that status inconsistency per se may have had relatively little to do with these men's UFO experiences; rather, *both* the UFO experiences *and* their status inconsistency may be consequences or manifestations of other ways in which

they differed from the usual run of men. If so, adequate understanding would require knowing much more about the sighter-believers than seems possible from the survey data used by Warren.

GEORGE L. COWGILL
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Warren attributed the greater frequency of "sightings" among white males whose incomes lagged appreciably behind their educational and occupational levels to the "marginality" of their situation, saying: "Alienation and distrust of official explanations and a general questioning of the merits of the 'system' are common attitudes among status inconsistents." As mediating variables Warren postulated "status frustration and, especially, . . . perceived status deprivations relative to one's position on the social ladder." This explanation suggests that removal of status inconsistency, for example, by providing these individuals with higher pay, would reduce saucer sightings, and their concomitant attitudes.

This sociological report ignores an obvious alternative explanation. Like many present-day sociologists, Warren completely disregards individual differences between people, in this case, differences in degree of mental health. Sighting saucers, and especially believing that they represent extraterrestrial vehicles, might easily be considered neurotic and psychotic symptoms. Abnormally low income in the case of a person with a high amount of education is apt to be pathognomic of a level of functioning that has been reduced by mental illness to such a point that society is unwilling to remunerate him at the going rate for his educational level and nominal job classification. . . . The mental health interpretation also fits the fact that certain kinds of inconsistency in achieved status, as I infer from Warren's presentation, apparently do not lead to sighting saucers: for example, low education combined with high income. This is because they suggest a *high* level of functioning. . . .

Although Warren freely acknowledges that, "Another and reasonable, though not necessarily mutually exclusive, procedure for organizing social data might provide an equal degree of explanatory consistency," this is always true, and therefore no excuse, in view of the virtual monopoly that sociologists have over the presentation of certain kinds of data, for consistently ignoring obvious interpretations that are informed by knowledge from other sciences. Natural scientists should be made aware that many sociologists hold to a doctrinaire antireductionist position concerning the psychological explanation of social phenomena, particularly when individual differences may be involved. As it stands, Warren's acknowledgment of other possibilities is tantamount to being a disguised claim that the task of science is merely to point out the logically possible, not necessarily the empirically probable. It may be questioned whether such a peculiar science, which weaves its nomological net horizontally, but seldom vertically, is meeting its public responsibilities by presenting findings unconstrained by the need for epistemological consistency in *all* directions.

ROBERT A. GORDON
Department of Social Relations,
Johns Hopkins University,
Baltimore, Maryland 21218

Flying saucer sightings may have been an unfortunate choice of behavior phenomena by Warren to employ to support the theory of status inconsistency. Nearly all of those sightings have occurred in rural areas. The theory does not explain why status inconsistent individuals residing in cities almost never have reported such sightings.

Warren may perhaps explore the notion that the rural-urban dimension may be ordered along a status inconsistent continuum, so that those who reside in rural areas are more likely to be status inconsistent than those individuals who reside in cities. The theory needs more validation than has been supplied by Warren.

PETER DUBNO
Graduate School of Business Administration, New York University, 100 Trinity Place, New York 10006

In Cowgill's comparison of my figures 4 and 6 the cross-tabulations described are misleading. "Nonbelievers" and "believers" are calculated *only for the population of "sighters."* Therefore the statement by Cowgill that "among the nonbelievers with consistent or moderately inconsistent status there are only about four fewer UFO sighters. . . ." confuses the issue. What figure 5 shows is the incidence of reported sightings among white male status consistents, moderate inconsistents, and sharp in-

consistents; figure 6 takes sighters from these same categories and shows that moderate and particularly sharp inconsistents *when they report sightings are more likely to believe they are objects or vehicles from outer space.* (Chi-square value calculated with consistents versus moderate inconsistents is significant beyond the .065 level, direction predicted; that for consistents and sharp inconsistents is significant beyond the .001 level.)

Cowgill's next point about the etiology of status inconsistency is worth investigating, but hardly a valid criticism of my own argument. Moreover, I frankly don't see how data on the academic job market is pertinent to the situation of the population of status inconsistents enumerated in the national Gallup study, since they are not necessarily college graduates but only persons who have attended college and academia hardly absorbs a significant portion of persons so described. The more basic idea suggested by Cowgill of reversing the implied causal ordering of variables—that is, status inconsistency is due to prior attitudes, values, or personality attributes rather than that status inconsistency produces such characteristics—is discussed in one other study with which I am familiar (*1*). Schizophrenic sons are found to be more status consistent than their fathers, but their educational achievement beyond the developmental years leaves them with a distinct disadvantage when they enter the job market. Schizophrenia, therefore, may be seen as a source or "cause" for status inconsistency.

I must take serious issue with Gordon's statement that "this sociological report ignores an obvious alternative" —it is neither obvious nor attractive from the standpoint of at least one canon of science: parsimony of explanation. The argument raised reminds me of the 19th century criticisms surrounding Emile Durkheim's empirical study of 1897, *La Suicide* (*2*). It is a most unfortunate flight of psychological reductionism to treat all socioeconomic differences as sources of individual pathology. Present-day psychiatry and clinical psychology by and large eschew such an imperialistic hegemony over social phenomena. On what basis but the most blatant class-bound parochialism can one argue that social stratification variables and psychopathological factors are reducible to one another or interchangeable? We do serious injustice to the diversity of our own society and mankind in general when we describe as "mental illness" all those differences of perspective, value, and behavior that upset the status quo of middle class "rationality"—particularly that of the academic elite. If Gordon wishes to measure the kinds of variables he is interested in, I wish him full success. To attack the appropriateness of the variables I employed as a "peculiar science" is to ignore over a century of European and American social research derived from the traditions of Durkheim, Max Weber, and others.

With regard to Dubno's discussion I would make two points: First, I agree that "reported sightings" as defined by reports of official governmental agencies (local, state, or federal) and "reported" in the sense of the Gallup interview data are different; secondly, rural-urban differences are likely to be invalid considering the population growth and lack of connection between sighting site and home residence.

On the first issue the Condon report suggests problems in the area of official statistics and "actual" incidence of sightings. One could obviously speculate that telling a Gallup interviewer about seeing a UFO and calling the local police are different social behaviors—the first calling for little initiative by the sighter, the latter involving the seeking out of public visibility. But both situations do not cover instances of observations reported only to friends or relatives or to no one.

In terms of the rural-urban differences there is no correlation found in the Gallup data and it would be hard to interpret such differences even if they were large. Since population growth has taken place mainly in suburban areas the traditional "rural-urban" dichotomy is increasingly of little value in social analysis. Furthermore, many central city dwellers when they travel to more sparsely populated areas may then be in a situation where the "probability of being exposed to the risk of sighting a UFO" greatly increases.

That, as Dubno suggests, rural dwellers may well be status inconsistent in the sense employed by the other criteria of inconsistency I employed is a plausible hypothesis to investigate. Let me reiterate the closing discussion in my original article (*3*):

> What has been attempted here is the employment of a sociological theory to account successfully for observed regularity in patterns of UFO sightings. Another and reasonable, though not necessarily mutually exclusive, procedure for organiz-

ing social data might provide an equal degree of explanatory consistency. This analysis merely emphasizes the need to utilize such approaches outside the confines of laboratory groups and the more convenient and established domains of social science.

DONALD I. WARREN
School of Social Work, University of Michigan, Ann Arbor 48104

References

1. H. W. Dunham, P. Phillips, B. Srinivasan, *Amer. Sociol. Rev.* **31**, 223 (1966).
2. E. Durkheim, *La Suicide*, translated by J. A. Spaulding and G. Simpson (Free Press, New York, 1951).
3. D. I. Warren, *Science* **170**, 603 (1970).

Bomb Craters

I would be interested in being referred to any literature on the ecological impact of bomb craters.

ARTHUR H. WESTING
Department of Biology, Windham College, Putney, Vermont 05346

"Before" and "After" Photos

I object to use of the photographs (4 Dec., p. 1119) that purport to illustrate the before and after of land reclamation practices on coal spoil banks. The area shown probably does represent progress in stabilizing the man-made barrens of stripping operations, but why the gilding of the lily by using a dormant season photograph as "before" and a midgrowing season photograph as "after?" Also, why the shift in perspective that eliminates the low waters edge vegetation in the foreground in the "before" scene?

This trick photography business is shabby. There are many examples of excellent coal spoil reclamation projects that are honestly photographed by many federal, state, and private agencies in the soil coal regions that are available should an illustration of this type be needed again.

R. E. MCDERMOTT
Office of the Dean, University of Arkansas Graduate School, Fayetteville 72701

The picture on the left was taken in February 1963, and that on the right, in July 1965, of an area in Claiborne County, Tennessee. It was inadvertent that pictures were used which were taken at different seasons.—ED.

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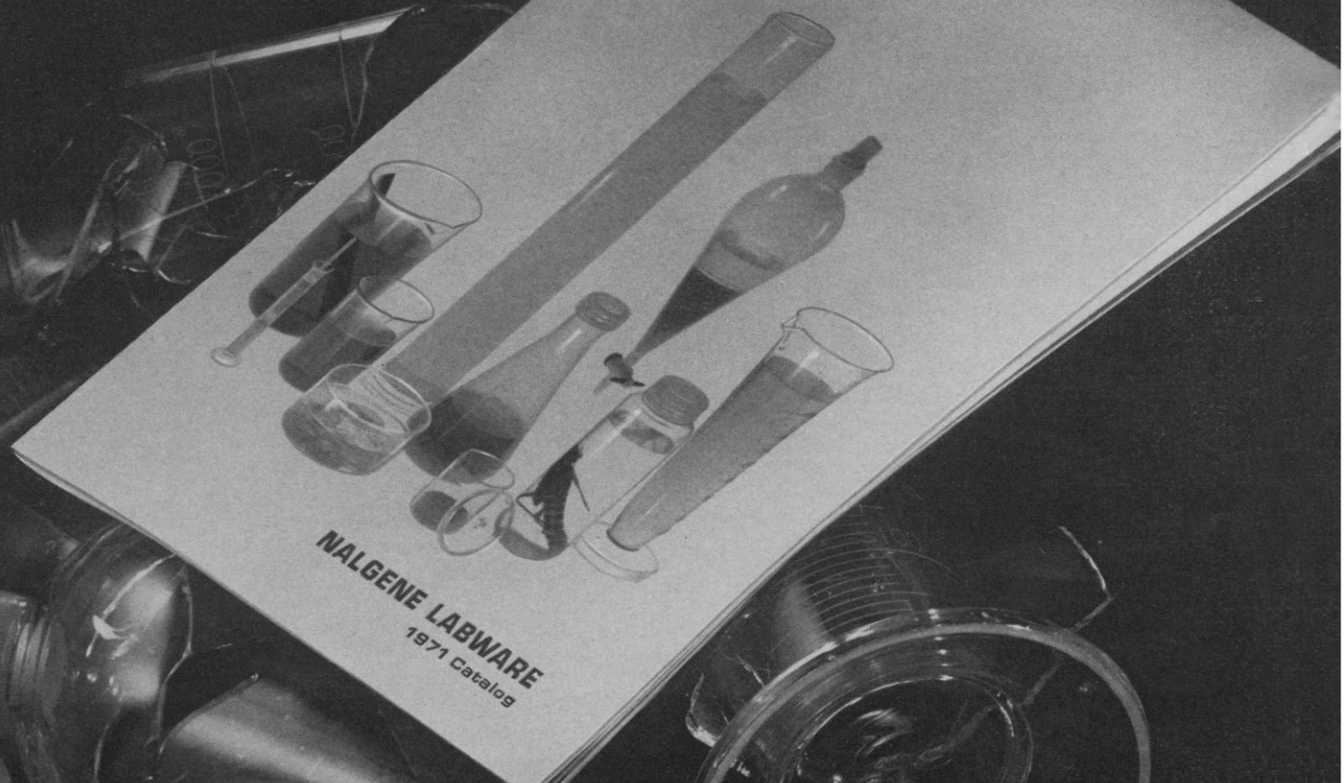

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12 March 1971, Volume 171, Number 3975 **SCIENCE**

Interdisciplinary Problem-Oriented Research in the University

The societal problems that face us today are thorny ones. Even though most of them have large scientific and technological components, their solutions more often than not demand the *simultaneous and interactive* efforts of a wide spectrum of talented professionals: scientists, engineers, social scientists, political scientists, lawyers, and doctors, to name only the most obvious. These are the efforts that we have in mind when we speak of interdisciplinary research.

Neither the concept nor the practice of interdisciplinary research is new. Government laboratories, industrial laboratories, and nonprofit research groups like the Rand Corporation have been engaging in interdisciplinary research for years—often, however, oriented toward defense problems. What is new is the realization that a similar but vastly expanded approach must be directed toward society's problems. This realization has resulted in urgent calls for new research institutions: National Environmental Laboratories, Institutes for Health and Medicine, reoriented National Laboratories, and so on. In such rosters of needed organizations, the universities are often missing. Apparently there is a common conviction that universities are not the place to obtain effective interdisciplinary research on societal problems. In my judgment this belief is both wrong and dangerous.

The reasons that are given for counting the universities out are well known. The universities, it is said, are discipline-oriented (physics, agronomy, sociology), an orientation inimical to interdisciplinary research. Furthermore, universities are oriented toward basic research, while the current need is for applied research. Finally, the pace of university research is too slow to be effective. There is a germ of truth in each of these points, but they do not encompass the whole truth and, in sum, are grossly misleading. Try, for example, to persuade a College of Agriculture or Engineering that it is not interested in applied research!

Why should one turn to the universities for interdisciplinary research? First, the universities are repositories of much of the necessary brainpower and knowledge. The ecologists, political scientists, and sociologists who are essential to these interdisciplinary studies are, in large measure, to be found in the universities.

Second, the universities have a deep concern. Faculty, and especially students, are sensitive to social problems, are eager to work on them, and are often prepared to change their previous ways of life to do so. The pressures of discipline orientation and the tradition of individual scholarship are strong among faculty members, but not strong enough to counter the pressures of social concern. Universities are changing rapidly and will change much more.

But the most important reason why the universities must become involved in interdisciplinary research—and the central reason why society must *insist* on their participation—is their obligation to youth. Coming generations must be taught about society's problems and about the best ways to solve them. College students must learn a genuinely interdisciplinary approach; this can only happen when their professors have personal knowledge of and commitment to interdisciplinary research and when there are programs wherein students can learn by doing—in short, when an interdisciplinary approach permeates the universities.

Pressure the universities if you will; castigate their occasionally overly narrow behavior; insist on changed structures and reward mechanisms. But for earth's sake, don't count them out. Without their active involvement, the future will be a good deal dimmer than it might otherwise appear.—F. A. LONG, *Cornell University*

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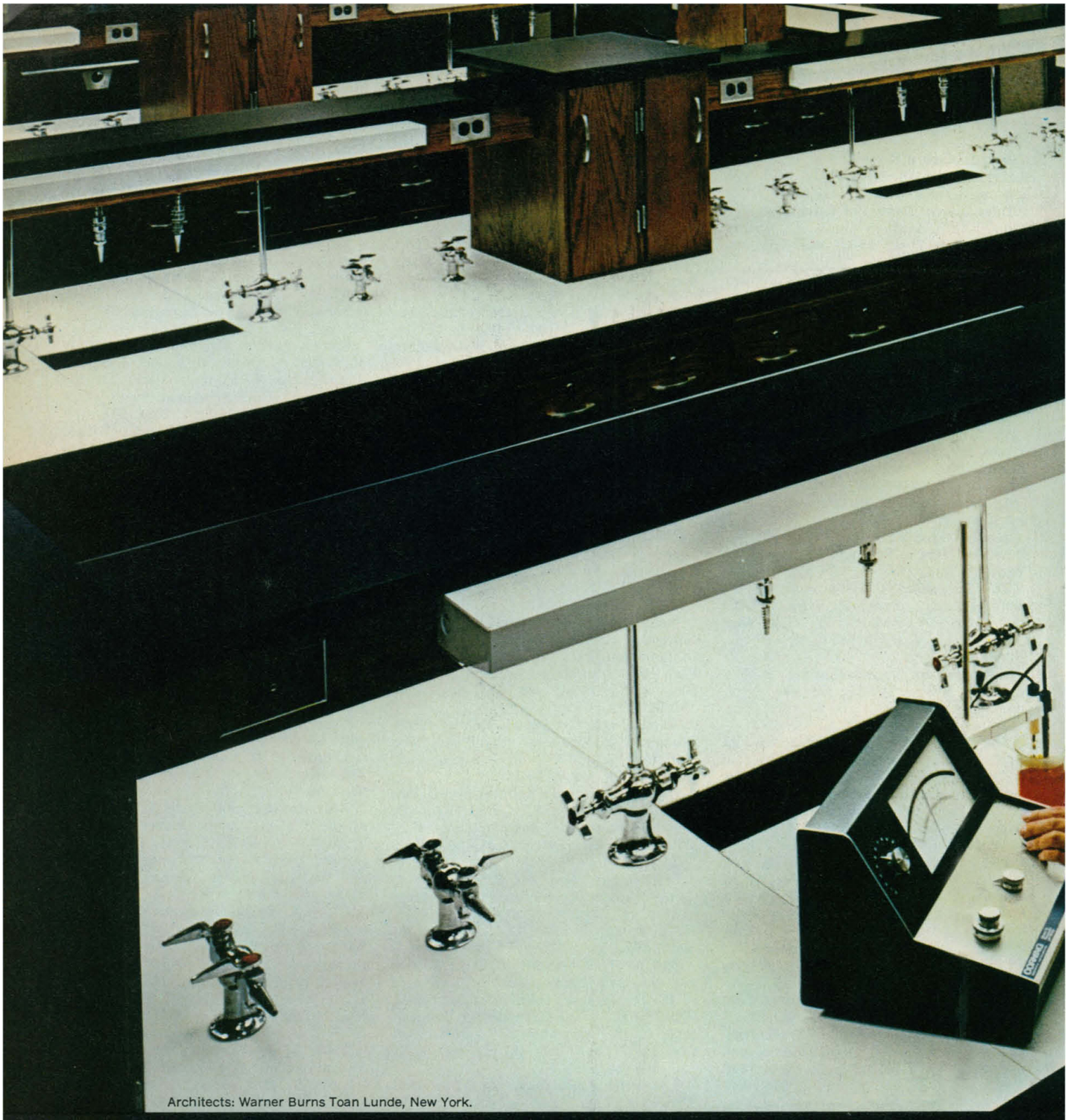

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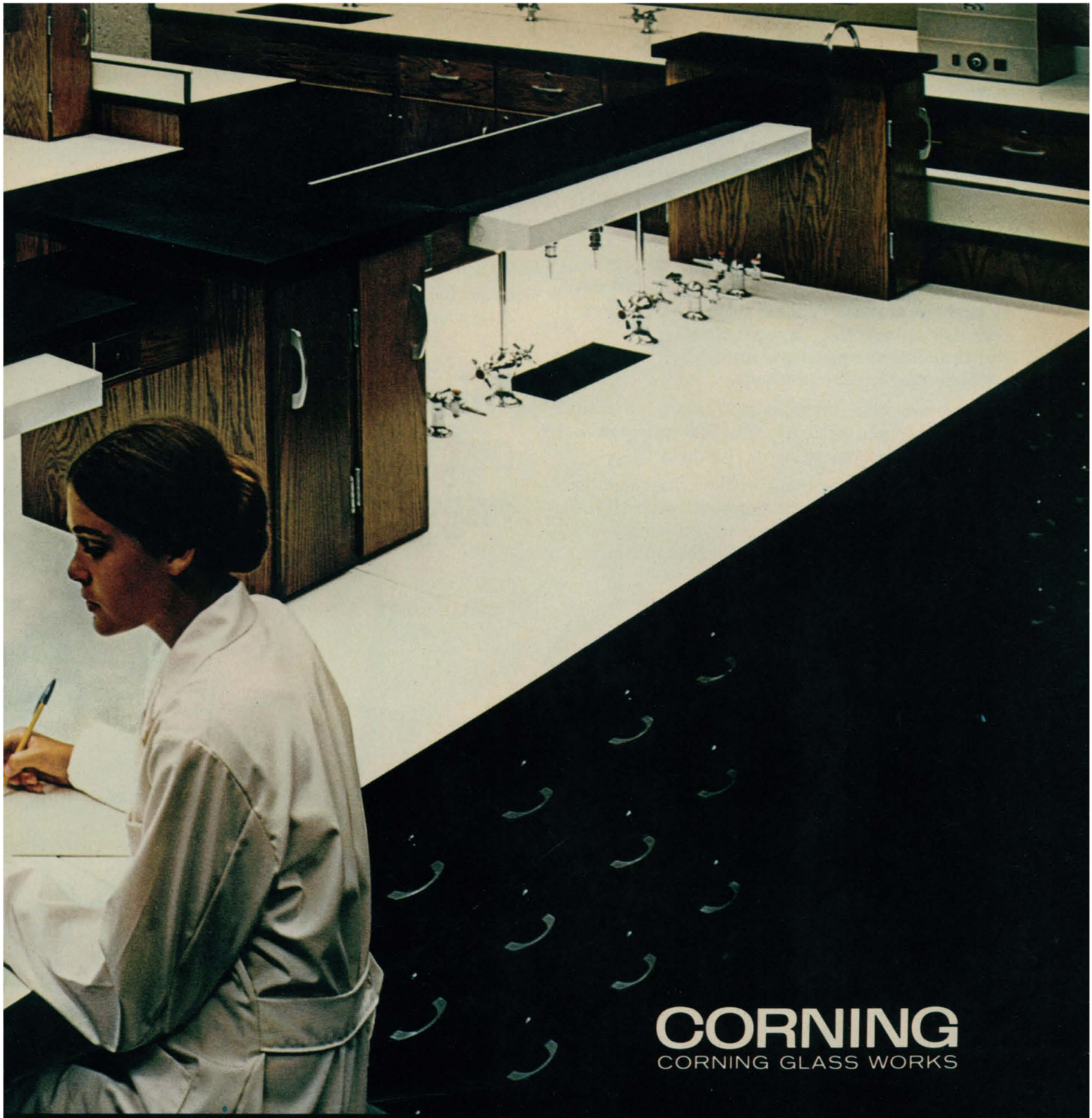

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6 July. N. Toksöz, "Lunar impacts—seismic data and cratering"; (speaker to be announced), "Terrestrial impacts—fireballs, meteorites, and craters"; W. C. Meecham, "Airwaves"; T. Owen, "Physical properties of comets"; E. Everhart, "Dynamical history of comets."

7 July. (Speakers to be announced), "Recent lunar discoveries"; (speakers to be announced), "New developments in meteorite studies."

8 July. (Speakers to be announced), short contributions; W. B. Hubbard, "Interiors of major planets"; (speaker to be announced), "Present state of cosmology."

9 July. P. J. Gierasch, "Dynamics of lower atmospheres of Mars and Venus"; M. McElroy, "Upper atmosphere and atmospheric composition of Mars and Venus."

Statistics in Chemistry and Chemical Engineering

Alonzo Church, chairman; Fred C. Leone, vice chairman.

28 June–2 July. Morris Kaplan, "Statistics and consumer product evaluation"; Henry Scheffé, "Calibration"; Barry Margolin, "Analysis of categorical data"; Charles Bell, "Nonparametric methods"; J. S. Hunter and J. Kelly Lee, "Time series—applications"; Otto Dykstra, "Augmentation of experimental designs"; Charles Hendrix, "Empirical optimization"; Jacobo Sredni, "Testing adequacy of models."

Structural Macromolecules: Mucopolysaccharides

Albert Dorfman, chairman; Karl Meyer, vice chairman.

21 June. Structure of mucopolysaccharides and their protein complexes (Karl Meyer, discussion leader). Physiology and organization of connective tissue matrix (Martin B. Mathews, discussion leader).

22 June. Biosynthesis of acid mucopolysaccharides (Lennart Rodén, discussion leader). Degradation of acid mucopolysaccharides (Oscar Touster, discussion leader).

23 June. Differentiation of connective tissues (Jerome Gross, discussion leader). Cell interactions I (Aron A. Moscona, discussion leader).

24 June. Cell interactions II (Max Burger, discussion leader). Biological effects of mucopolysaccharides (Helen Muir, discussion leader).

25 June. Mucopolysaccharidoses (Albert Dorfman, discussion leader).

Textiles

Richard H. Braunlich, chairman; Arnold M. Sookne, vice chairman.

5 July. Polymer science as related to fiber properties (Arthur V. Tobolsky, discussion leader): Anton Peterlin, "Morphology and properties of oriented crystalline polymers"; Jack L. Koenig, "Laser Raman spectroscopy of polymers"; John O. Warwicker, "The structural causes of dye variations in polyamide and polyester fibers."

6 July. New fibers and fiber variants needed for future textile markets: Howard F. Elsom; Wilhelm Albrecht; Arnold M. Sookne. (Earl Peters, discussion leader.)

7 July. Fiber and fabric flammability (Richard E. Seaman, discussion leader): Joseph E. Clark, "Apparel and home furnishing fires—the government viewpoint"; Cameron A. Baker, "Flameproofing fabrics for consumer uses—the producer and retailer viewpoint"; Irving N. Einhorn, "Routes to achieve fiber and fabric flame retardancy."

8 July. Peter H. Britton and Arthur H. Drelich, "The discontinuous bonding of nonwoven fabrics"; Fred H. Steiger, "The adsorption of liquids by compressed fiber systems": A. Charles Tanquary, "Nylon 4—fact, fiction and the future."

9 July. John Peter Knudson, "Spunbonded web mechanics: some effects of interactions between filament properties, bond characteristics and filament distribution on fabric performance and end-use potential"; John Skelton, "The recovery of textile materials from imposed deformation"; Harry R. Billica, "Understanding fabric appearance factors."

Thin Films

R. B. Marcus, chairman; John B. Hudson, vice chairman.

Epitaxy

9 August. (D. Dove, discussion leader): D. W. Pashley, "The historical background to current problems in epitaxy"; J. H. van der Merwe, "Structural influences of the interaction across expitaxial bicrystal interfaces." (M.

Stowell, discussion leader): E. Bauer, "A critical look at the theory of epitaxy."

10 August. (J. Hudson, discussion leader): N. Cabrera, "Atomic collisions on surfaces"; J. Arthur, "The interaction of molecular beams with solid surfaces." (T. Hutchinson, discussion leader): H. Bonzel and N. A. Gjostein, "Diffusion on clean surfaces and the influence of adsorbed layers."

11 August. (E. Bauer, discussion leader): H. Sato, "Morphology of nuclei and epitaxial behavior on vapor deposition"; H. Poppa, "On the feasibility of reliable epitaxial nucleation measurements by *in situ* electron microscopy." (W. Jesser, discussion leader): J. W. Matthews, "Defects in thin epitaxial films."

12 August. (K. Lawless, discussion leader): P. Palmberg, "Application of LEED and auger spectroscopy to studies of epitaxial thin film growth"; W. R. Graham, "Studies of epitaxy by field ion microscopy." (H. Poppa, discussion leader): M. Stowell, "Small particle effects in thin film growth."

13 August. (R. B. Marcus, discussion leader): K. L. Chopra, "Critical survey of methods for growing epitaxial films"; B. Joyce, "The nucleation of epitaxial silicon films."

Toxicology and Safety Evaluations

Edward D. Palmes, chairman; Leon Goldberg, vice chairman.

2 August. Toxins of biological origin in food (Richard Henderson, discussion leader): John C. Ayres, "Microbial and algal"; Gerald N. Wogan, "Fungal." (Leo Friedman, discussion leader): Staffan Skerfving, "Toxicology of mercury in fish."

3 August. Adverse effects of physical environmental factors (Gordon J. Stopps, discussion leader): Frank Ellis, "High ambient temperatures"; Frederick Urbach, "Ultraviolet light." (Robert A. Scala, discussion leader): Carrol Weil, "Inter-laboratory reproducibility of certain toxicological experiments."

4 August. Codex alimentarius (Bernard L. Oser, discussion leader): Herbert Blumenthal, "Food additives"; John P. Frawley, "Pesticides." (Frank Blood, discussion leader): Virgil H. Freed, "Toxicological implications of pesticide distribution in the environment."

5 August. (David W. Fassett, discussion leader): Sidney Laskin, "Experimental lung cancer by inhalation of

environmental agents"; David L. Coffin, "Interaction of biological and chemical agents on the lung." (Edward D. Palmes, discussion leader): Horace W. Gerarde, "A minimal aural dose (MAD) of etymology."

6 August. (Leon Goldberg, discussion leader): Emil M. Mrak, "Implications for national policy of safety assessment of chemicals."

Forthcoming Events

April

6–8. Methods in **Air Pollution and Industrial Hygiene** Studies, 12th annual, Los Angeles, Calif. (E. Jeung, Air and Industrial Hygiene Lab., California State Dept. of Public Health, 2151 Berkeley Way, Berkeley 94704)

7–9. **Psychometric** Soc., St. Louis, Mo. (W. B. Schrader, Educational Testing Service, Princeton, N.J. 08540)

10. **Paleontological Research** Institution, Ithaca, N.Y. (K. V. W. Palmer, PRI, 1259 Trumansburg Rd. Ithaca 14850)

12–15. **Air and Stream Improvement**, 6th annual conf., Quebec City, P.Q., Canada, (D. H. Paterson, Canadian Pulp and Paper Assoc., 2300 Sun Life Bldg., Montreal, 110, P.Q., Canada)

12–15. National **Telemetering** Conf. and Exposition, 21st annual, Washington, D.C. (H.B. Riblet, Johns Hopkins Univ., Applied Physics Lab., 8621 Georgia Ave., Silver Spring, Md. 20910)

12–16. Federation of the American Societies for **Experimental Biology**, Chicago, Ill. (J. F. A. McManus, 9650 Rockville Pike, Bethesda, Md. 20014)

12–16. American **Geophysical** Union, 52nd annual, Washington, D.C. (G. D. Mead, Lab. for Space Physics, NASA Goddard Space Flight Center, Greenbelt, Md. 20771)

12–16. American Assoc. of **Immunologists**, Chicago, Ill. (H. Metzger, AAI, 9650 Rockville Pike, Bethesda, Md. 20014)

12–17. American Soc. for **Experimental Pathology**, Chicago, Ill. (R. E. Kuntti, ASEP, 9650 Rockville Pike, Bethesda, Md. 20014)

12–17. American Inst. of **Nutrition**, Chicago, Ill. (J. Waddell, AIN, 9650 Rockville Pike, Bethesda, Md. 20014)

12–17. American Soc. for **Pharmacology and Experimental Therapeutics**, Chicago, Ill. (E. B. Cook, ASPET, 9650 Rockville Pike, Bethesda, Md. 20014)

12–17. American **Physiological** Soc., Chicago, Ill. (R. G. Daggs, APS, 9650 Rockville Pike, Bethesda, Md. 20014)

13–15. **Frontiers in Education**, Atlanta, Ga. (B. J. Dasher, College of Engineering Georgia Inst. of Technology, Atlanta 30332)

13–15. National Conf. and Exposition in **Medicine**, Boston, Mass, (D. Christiansen, Electronics in Medicine P-30, 330 W. 42 St., New York 10036)

13–15. **Microwave Research** Inst., 21st

annual intern. symp., New York, N.Y. (J. Fox, Polytechnic Inst. of Brooklyn, 33 Jay St., Brooklyn, N.Y. 11201)

13–16. International **Magnetics** Conf., 9th annual, Denver, Colo. (G. Bate, IBM Corp., P.O. Box 1900, Boulder, Colo. 80302)

14–16. American Soc. for **Engineering Education**, Southeastern section, Clemson, S.C. (Mrs. L. Hitch, ASEE, Suite 400, 1 Dupont Circle, NW, Washington, D.C. 20036)

14–16. Institute of **Navigation**, natl. air mtg., Saddlebrook, N.J. (C. M. Waespy, ITT Avionics Div., 390 Washington Ave., Nutley, N.J. 07110)

14–16. National **Pollution Control** Conf. and Exposition, 4th annual, Detroit, Mich. (B. Reeves, 1107 S. Loop West, Houston, Tex. 77021)

14–16. Symposium on **Prescribed Burning in Forests of the Southeastern Coastal Plain**, Charleston, S.C. (Director, Southeastern Forest Experiment Station, P.O. Box 2570, Asheville, N.C. 28802)

14–17. American **Gynecological** Soc., Phoenix, Ariz. (B. M. Peckham, University Hospital, 1300 University Ave., Madison, Wis. 53706)

15–17. Symposium on **Application of Artificial Satellites to Geodesy**, Washington, D.C. (W. M. Hollister, Massachusetts Inst. of Technology, Room 406, Bldg. 33, Cambridge 02139)

15–17. Association of Southeastern **Biologists**, Richmond, Va. (D. C. Bliss, Box 278, Randolph-Macon Woman's College, Lynchburg, Va. 24504)

15–17. American Assoc. of **Physical Anthropologists**, Boston, Mass. (E. L. Fry, Dept. of Anthropology, Southern Methodist University, Dallas, Tex. 75222)

15–17. Eastern **Psychological** Assoc., New York, N.Y. (W. W. Cumming, 353 Schermerhorn Hall, Columbia Univ., New York 10027)

15–17. Joint meeting of Northwest **Scientific** Assoc., Idaho Acad. of **Science**, and Washington State **Entomological** Soc., Moscow, Idaho. (L. W. Roberts, Dept. of Biological Sciences, Univ. of Idaho, Moscow 83843)

15–21. American **Leprosy Missions**, 12th annual, Carville, La. (O. W. Haselblad, 297 Park Ave., South, New York 10010)

16. **"Behavior"** Symp., Fullerton, Calif. (L. A. Stevens, Life Science Symp., Fullerton Junior College, 321 E. Chapman Ave., Fullerton 92634)

16–17. Idaho **Acad. of Science**, Moscow, Idaho. (M. A. Fisher, Dept. of Physics and Mathematics, College of Southern Idaho, Twin Falls)

16–17. American **Burn** Assoc., San Antonio, Tex. (J. A. Bostwick, Jr., 1825 W. Harrison St., Chicago, Ill. 60612)

16–17. American Soc. for **Engineering Education**, North Central section, Pittsburgh, Pa. (L. Hitch, ASEE, Suite 400, 1 Dupont Circle, NW, Washington, D.C. 20036)

16–17. Northwest **Scientific** Assoc., Moscow, Idaho. (G. H. Deitschman, U.S. Forest Service, P.O. Box 469, Moscow 83843)

16–17. American Assoc. of **University Professors**, Philadelphia, Pa. (B. H. Davis, AAUP, 1785 Massachusetts Ave., NW, Washington, D.C. 20036)

18–19. Montana **Acad. of Sciences**,

Butte. (R. E. Juday, Univ. of Montana, Missoula 59801)

18–21. **Diesel and Gas Engine Power** Conf. and Exhibit, American Soc. of Mechanical Engineers, Toronto, Ont., Canada. (A. B. Conlin, 345 E. 47 St., New York 10017)

18–21. Association of American **Geographers**, Boston, Mass. (J. W. Nystrom. AAG, 1146 16th St., NW, Washington, D.C. 20036)

18–21. **Neutron Sources and Application**, Augusta, Ga. (C. Ice, Savannah River Lab., Aiken, S.C. 29801)

18–21. **Off-Shore Technology** Conf. Houston, Tex. (H. S. Field, Geophysical Research Corp., 136 Mohawk Blvd., Tulsa, Okla. 74106)

18–21. International **Systems** Meeting, Chicago, Ill. (R. L. Irwin, Systems and Procedures Assoc., 24587 Bagley Rd., Cleveland, Ohio 44138)

18–22. American Assoc. of **Cereal Chemists**, Dallas, Tex. (R. J. Tarleton, 1821 University Ave., St. Paul, Minn. 55104)

18–22. Illinois Acad of **General Practice**, 23rd annual, Arlington Park. (H. M. Robinson, 14 E. Jackson Blvd., Chicago, Ill. 60604)

18–22. **Industrial Medical Assoc.**, Atlanta, Ga. (H. N. Schulz, IMA, 150 N. Wacker Dr., Chicago, Ill. 60606)

18–22. American Assoc. of **Neurological Surgeons**, 38th annual, Houston, Tex. (M. I. O'Connor, AANS, 428 E. Preston St., Baltimore, Md. 21202)

18–23. American Assoc. of **Anatomists**, 84th annual, Philadelphia, Pa. (J. C. Finerty, Louisiana State Univ. School of Medicine, 1542 Tulane Ave., New Orleans)

18–23. **Geoscience Electronics** Symp., Inst. of Electrical and Electronics Engineers, Inc., Washington, D.C. (Office of the Technical Activities Board, IEEE, 345 E. 47 St., New York 10017)

18–23. Society of **Photographic Science and Engineering**, Chicago, Ill. (R. A. Eynard, SPSE, P.O. Box 2001, Teterboro, N.J. 07608)

18–24. Council for **Exceptional Children**, 49th annual, Miami Beach, Fla. (A. Gialas, CEC, 1411 S. Jefferson Davis Hwy., Arlington, Va. 20036)

18–25. North American **Clinical Dermatologic** Soc., Ocho Rios, Jamaica. (E. F. Finnerty, 510 Commonwealth Ave., Boston, Mass. 02215)

19–20. American Soc. for **Artificial Internal Organs**, Chicago, Ill. (E. F. Leonard, Dept. of Chemical Engineering, Columbia Univ., New York 10027)

19–20. Symposium on **Excited States of Matter**, Lubbock, Tex. (J. N. Marx, Dept. of Chemistry, Texas Technological Univ., P.O. Box 4260, Lubbock 79409)

19–20. Institute of Electrical and Electronics Engineers, **Power Conditioning Specialists** Conf., 2nd annual, Pasadena, Calif. (J. Dunlop, COMSAT Laboratories, Box 115, Clarksburg, Md. 20734)

19–20. American **Social Health** Assoc., Detroit, Mich. (E. G. Lippincott, 1740 Broadway, New York 10019)

19–21. **Great Lakes Research**, 14th annual conf., Toronto, Ont. Canada. (J. S. Seddon, Great Lakes Inst., Univ. of Toronto, Toronto 5)

19–21. **Ocean Technology** and Research, Houston, Tex. (P. Drummond, American Soc. of Mechanical Engineers, 345 E. 47 St., New York 10017)

19–21. National **Open Hearth and Basic Oxygen Steel** Conf. American Inst. of Mining, Metallurgical and Petroleum Engineers, 54th, Pittsburgh, Pa. (Meetings Officer, 345 E. 47 St., New York 10017)

19–21. **Railroad** Conf., Inst. of Electrical and Electronics Engineers, Inc., and American Soc. for Mechanical Engineers, New York, N.Y. (Meetings Officers, 345 E. 47 St., New York 10017)

19–21. **Structural Dynamics, and Materials**, 12th annual symp., American Inst. of **Aeronautics and Astronautics** and American Soc. of **Mechanical Engineers**, Anaheim, Calif. (A. E. Johnson, Jr., Teledyne Materials Research, 303 Bear Hill Rd., Waltham, Mass. 02154)

19–22. Southeastern **Surgical** Congr., Miami Beach, Fla. (A. H. Letton, SSC, 340 Boulevard, NE, Atlanta, Ga. 30312)

19–22. Southwestern **Surgical** Congr., Las Vegas, Nev. (J. A. Barney, SSC, 301 Pasteur Bldg., Oklahoma City, Okla. 73103)

19–23. **Space Congr.**, Canaveral Council of Technical Soc., 8th annual, Cocoa Beach, Fla. (N. A. Stein, McDonnell Douglas Astronautics Co., Box 600, Titusville, Fla. 32780)

19–23. **Structural Engineering**, American Soc. of Civil Engineers, Baltimore, Md. (W. H. Wisely, 345 E. 47 St., New York 10017)

20–21. **Electric Process Heating in Industry**, Milwaukee, Wis. (F. Pyecroft, Philadelphia Electric Co., 211 S. Broad St., Philadelphia 19105)

20–21. Association for the Advancement of **Psychoanalysis**, New York, N.Y. (A. Apolito, 80 Undercliff Rd., Montclair, N.J. 07042)

20–21. Institute of Electrical and Electronics Engineers, Inc.–American Soc. of Technical Engineers joint **Railroad** Conf., New York, N.Y. (F. Farinella, Public Service Electric & Gas Co., Room 8339, 80 Park Pl., Newark, N.J. 07011)

20–22. **Composite Materials: Testing and Design**, 2nd annual conf., American Soc. for **Testing and Materials**, Anaheim, Calif. (H. T. Corten, Talbot Lab., Univ. of Illinois, Urbana 61801)

20–22. **Power** Conf., Inst. of Electrical and Electronics **Engineers**, Inc., and American Soc. of Mechanical Engineers, Chicago, Ill. (Office of The Technical Activities Board, IEEE, 345 E. 47 St., New York 10017)

20–23. **Acoustical** Soc. of America, Washington, D.C. (B. H. Goodfriend, ASA, 335 E. 45 St., New York 10017)

21–23. Society of **Aerospace Material and Process Engineers**, 16th annual, Anaheim, Calif. (J. E. Gott, 1519 Padres Court, San Jose, Calif. 95125)

21–23. **Biometric** Soc., eastern North American regional, University Park, Pa. (F. B. Cady, Jr., Dept. of Statistics, Univ. of Kentucky, Lexington 40506)

21–23. **Nondestructive Evaluation in Aerospace, Weapons Systems, and Nuclear Applications**, 8th annual symp., San Antonio, Tex. (C. G. Gardner, P.O. Drawer 28510, San Antonio 78228)

21–23. Conference of the Soc. of **Photographic Scientists and Engineers**, Chicago,

Ill. (C. S. Heinmiller, Research Lab. Bldg. 81, Kodak Park, Eastman Kodak Co., Rochester, N.Y. 14650)

21–23. **Technical** Conf., Waynesboro, Va. (L. Rebenfield, P.O. Box 625, Princeton, N.J. 08540)

21–23. Symposium on **Testing for Prediction of Material Performance in Structures and Components**, Anaheim, Calif. (R. S. Shane, Natl. Materials Advisory Board, Natl. Academy of Sciences, 2101 Constitution Ave., NW, Washington, D.C. 20418)

21–24. Southwestern and Rocky Mountain Div., AAAS, Tempe, Ariz. (M. G. Anderson, P.O. Box 3 AF, Las Cruces, N.M. 88001)

21–1. Society of **Motion Picture and Television Engineers**, 109th annual, Los Angeles, Calif. (M. Denison, 9 E. 41 St., New York 10017)

22–23. **Fiber** Soc., annual spring technical conf., Chattanooga, Tenn. (L. Rebenfield, Box 625, Princeton, N.J.)

22–23. American **Pediatric Surgical** Assoc., Hamilton, Bermuda. (T. M. Holder, 39th and Rainbow, Kansas City, Kan. 66103)

22–23. American Assoc. of **Railway Surgeons**, Chicago, Ill. (C. Y. Werelius, 5800 Stony Island Ave., Chicago 60637)

22–24. Illinois State **Acad. of Science**, Peoria. (K. H. Harmet, Dept. of Biology Sciences, Northern Illinois Univ., De Kalb 60115)

22–24. American **Cleft Palate** Assoc., Pittsburgh, Pa. (K. R. Bzoch, Dept. of Communicative Disorders, College of Health Related Professions, University of Florida, Gainesville 32601)

22–24. International **Communication** Assoc., 19th annual, Phoenix, Ariz. (R. L. Smith, Dept. of Communication and Organizational Behavior, General Materials Inst., Flint, Mich. 48502)

22–24. Michigan **Acad. of Science, Arts and Letters**, Kalamazoo. (T. G. Overmire, 2117 Washtenaw Ave., Ann Arbor, Mich. 48104)

22–24. Ohio Acad. of **Science**, Akron. (J. H. Melvin, OAS, 505 King Ave., Columbus 43201)

22–24. **Population** Assoc. of America, Washington, D.C. (A. L. Ferriss, P.O. Box 14182, Benjamin Franklin Sta., Washington, D.C. 20044)

22–25. Association of **Clinical Scientists**, spring mtg., Hartford, Conn. (F. W. Sunderman, ACS, 2 Holcomb St., Hartford 06112)

22–24. Georgia **Acad. of Science**, Carrollton. (E. A. Stanley, Dept. of Geology, Univ. of Georgia, Athens 30601)

23–24. Iowa **Acad. of Science**, Dubuque. (R. W. Hanson, Dept. of Chemistry, Univ. of Northern Iowa, Cedar Falls 50613)

23–24. Louisiana **Acad. of Sciences**, Natchitoches. (G. W. Cobb, Dept. of Biological Sciences, McNeese State Univ., Lake Charles 70601)

23–24. Mississippi **Acad. of Sciences**, Hattiesburg. (C. Q. Sheely, Drawer CQ, State College, Miss. 39762)

23–24. South Dakota **Acad. of Science**, Rapid City. (W. L. Hoffman, Physics Dept., Univ. of South Dakota, Vermillion 57069)

23–24. Society for **Development Biology**, Midwest regional conf., Elmhurst, Ill. (R. Sweeney, Dept. of Biology, Elmhurst College, Elmhurst 60126)

23–24. American Soc. for **Engineering Education**, Rocky Mountain Section, Laramie, Wyo. (L. Hitch, ASEE, Suite 400, 1 DuPont Circle, NW, Washington, D.C. 20036)

23–24. American **Geriatrics** Soc., Chicago, Ill. (E. Henderson, 10 Columbus Circle, New York, N.Y. 10019)

23–25. Association of **Clinical Scientists**, Hartford, Conn. (F. W. Sunderman, Univ. of Connecticut School of Medicine, 2 Holcomb St., Hartford 06112)

24–29. American **Ceramic** Soc., 73rd annual mtg. and exposition, Chicago, Ill. (A. J. Metzger, Dept. of Ceramic Engineering, Ohio State Univ., 2401 N. College Rd., Columbus 43210)

25–28. Society for **Economic Botany**, Chicago, Ill. (L. Williams, New Crops Research Branch, U.S. Dept of Agriculture, Beltsville, Md. 20705)

26–27. Western States Section, **Combustion** Inst., spring mtg. Denver, Colo. (W. Unterberg, Western States Sec, Combustion Inst., 13433 Galewood St., Sherman Oaks, Calif. 91403)

26–28. **National Acad. of Sciences**, Washington, D.C. (B. Byers, NAS–NRC, 2101 Constitution Ave., NW, Washington, D.C. 20418)

26–28. **Frequency Control**, 25th annual symp., Atlantic City, N.J. (J. M. Stanley, Dept. of the Army, Headquarters U.S.A., Electronics Command, Fort Monmouth, N.J. 07703)

26–28. Association of **Iron and Steel Engineers**, spring conf., Cincinnati, Ohio. (W. C. Friesel, AISE, 1010 Empire Bldg., Pittsburgh, Pa. 15222)

26–28. Canadian Inst. of **Mining and Metallurgy**, 73rd annual, Quebec City, P.Q. (G. F. Skilling, 906-117, St. Catherine St., W, Montreal 2, P.Q., Canada)

26–28. **Radio Technical Commission for Marine Services**, Montreal, P.Q., Canada. (RTMCS Secretariat, P.O. Box 19087, Washington, D.C. 20036)

26–28. **Thermophysics**, 6th annual conf., American Inst. of Aeronautics and Astronautics, Tullahoma, Tenn. (E. Fried, General Electric Co., P.O. Box 8555, Philadelphia, Pa. 19101)

26–28. American Assoc. for **Thoracic Surgery**, Atlanta, Ga. (A. Hanvey, 7710 Carondelet Ave., St. Louis, Mo. 63105)

26–29. **Aerospace Medical** Assoc., Houston, Tex. (M. H. Goodwin, Aerospace Medical Assoc., Washington National Airport, Washington, D.C. 20001)

26–29. Society of **Automotive Engineers**, air transportation mtg., New York, N.Y. (W. I. Marble, 2 Pennsylvania Pl., New York 10001)

26–29. **Civil Aviation Medical** Assoc., Houston, Tex. (G. E. Henning, International Airport, San Antonio, Tex. 78216)

26–29. Conference on the **Management of Transmission and Distribution Systems**, London, England. (Inst. of Electrical and Electronics Engineers, Inc., Savoy Place, London W.C.2)

26–30. Institute of **Environmental Sciences**, 17th annual, Los Angeles, Calif. (R. T. Nichols, IES, 940 E. Northwest Hgwy., Mount Prospect, Ill. 60056)

26–30. Society of **Manufacturing Engineers**, Philadelphia, Pa. (R. W. Taylor, SME, 20501 Ford Rd., Dearborn, Mich. 48128)

26–30. Association for **Research in Vision and Ophthalmology**, Sarasota, Fla. (H. E. Kaufman, Dept. of Ophthalmology, Univ. of Florida, College of Medicine, Gainesville 32601)

26–30. American **Welding** Soc., San Francisco, Calif. (Meetings Officer, 345 E. 47 St., New York 10017)

26–1. American Acad. of **Neurology**. New York, N.Y. (S. A. Nelson, AAN, 4005 W. 65 St., Minneapolis, Minn. 55435)

27–28. National **Relay** Conf., 19th annual, Stillwater, Okla. (D. D. Lingelbach, School of Electrical Engineering, Oklahoma State Univ., Stillwater)

27–30. American **Chemical** Soc., Div. of Rubber Chemistry, 99th annual, Miami, Fla. (F. M. O'Connor, Harwick Standard Chemical Co., 60 S. Seiberling St., Akron, Ohio 44305)

27–30. American **College Health** Assoc., San Francisco, Calif. (J. W. Dilley, 2807 Central St., Evanston, Ill. 60201)

28. **Habitability in Space Stations**, Aerospace Medical Assoc. and American Inst. of Aeronautics and Astronautics, Houston, Tex. [C. C. Johnson, Spacecraft Design Office (EW) NASA Manned Spacecraft Center, Houston 77058]

28–1. **Geology of Industrial Minerals**,

7th annual, Tampa, Fla. (H. S. Puri, Board of Conservation, Geology Div., Box 631, Tallahassee, Fla. 32302)

28–1. Society of **Pediatric Research**, Atlantic City, N.J. (R. E. Greenberg, Dept. of Pediatrics, Stanford Univ. School of Medicine, Stanford, Calif. 94305)

29–30. Kansas **Acad. of Science**, Manhattan. (J. Weis, Div. of Biology, Kansas State Univ. Manhattan 66502)

29–1. Southwestern **Anthropological** Assoc. and the American **Ethnological** Soc. Tucson, Ariz. (P. Nash, AES Program, 540 N St., SW, Washington, D.C. 20024)

29–1. **Geological** Soc. of America. Northcentral section, Lincoln, Neb. (F. Handy, GSA, P.O. Box 1719, Boulder, Colo. 80302)

29–1. American Assoc. for the **History of Medicine**, Colorado Springs, Colo. (C. W. Bodemer, Dept. of Biomedical History, Univ. of Washington, School of Medicine, Seattle 98105)

29–2. International Soc. for the **History of the Behavioral and Social Sciences**, New York, N.Y. (J. Sullivan, Dept. of Educational Psychology, 933 Commerce, New York Univ., New York 10003)

29–3. American **Psychoanalytic** Assoc., Washington, D.C. (B. E. Moore, APA, 150 E. 73 St., New York, 10021)

30. Oklahoma **Acad. of Science**, Broken Bow. (J. T. Self, Dept. of Zoology, Oklahoma Univ., Norman 73069)

30–1. Minnesota **Acad. of Science**, Winona. (M. I. Harrigan, MAS, 3100 38th Ave., S. Minneapolis, Minn. 55406)

30–1. Nebraska **Acad. of Science**, Lincoln. (C. B. Schultz, 101 Morrill Hall, University Museum, Univ. of Nebraska, Lincoln 68508)

30–1. North Carolina **Acad. of Science**, Winston-Salem. (J. A. Yarbrough, Meredith College, Raleigh, N.C. 27602)

30–1. North Dakota **Acad. of Sciences**, Fargo. (B. G. Gustafson, Univ. of North Dakota, Grand Forks 58201)

30–2. Soc.ety of **Biological Psychiatry**, Washington, D.C. (C. Shagass, Eastern Pennsylvania Psychiatric Inst., Henry Ave. and Abbottsford Rd., Philadelphia 19129)

30–2. American Acad. of **Psychoanalysis**, Washington, D.C. (J. B. Miller, 510 E. 86 St., New York 10028)

May

1. **Arctic** Inst. of North America, Montreal, P.Q., Canada. (H. W. Love, AINA, 3458 Redpath St., Montreal)

1. American Soc. for **Clinical Nutrition**, Atlantic City, N.J. (C. E. Butterworth, Univ. of Alabama School of Medicine, Birmingham 35233)

1. Society for **Investigative Dermatology**, Atlantic City, N.J. (J. S. Strauss, Boston Univ. Medical Center, 80 E. Concord St., Boston, Mass. 02118)

1. American College of **Psychiatrists**. Washington, D.C. (P. A. Martin, 857 Fisher Bldg., Detroit, Mich. 48202)

1–2. American Federation for **Clinical Research**, Atlantic City, N.J. (J. E. Bryan, 2011 Eye St., NW, Washington, D.C. 20006)

2–4. American Soc. for **Clinical Investigations**, Atlantic City, N.J. (D. H. Nelson, Latter-Day Saints Hospital, Salt Lake City, Utah 84103)

2–6. American **Oil Chemists** Soc., Houston, Tex. (C. H. Hauber, AOCS, 35 E. Wacker Dr., Chicago, Ill. 60601)

2–6. American Assoc. of **Orthodontists**, 71st annual, New Orleans, La. (J. E. Brophy, AAO, 7477 Delmar Blvd., St. Louis, Mo. 63137)

2–7. Western Conf. on **Anesthesiology**, biennial mtg., Honolulu, Hawaii. (E. E. Smith, 2270 Kalahaua Ave., Honolulu 96815)

2–7. American Soc. for **Microbiology**, Minneapolis, Minn. (R. W. Sarber, ASM, 1913 I St., NW, Washington, D.C. 20006)

3–4. **Environmental Requirements for Laboratory Animals**, Manhattan, Kan. (Dr. Besch, Kansas State Univ., Dept. of Physiological Sciences, Leasure Hall, Manhattan 66502)

3–4. Symposium on **Metabolic Regulation**, Omaha, Neb. (M. A. Mehlman, Univ. of Nebraska College of Medicine, 42nd and Dewey, Omaha)

3–5. Rocky Mountain **Bioengineering** Symp., 8th annual, Fort Collins, Colo. (F. J. Gowen, U.S. Air Force Academy, Boulder, Colo. 80840)

3–5. Association for **Computing Machinery**, Symp. on Theory of Computing, 3rd annual, Shaker Heights, Ohio. (P. M. Lewis, General Electric Research and Advanced Development Center, Schenectady, N.Y. 12305)

3–5. Institute of **Mechanical Engineers**, intern. conf. on practical application of fracture mechanics to pressure vessel technology, London, England. (IME, 1 Birdcage Walk, Westminster, London, S.W.1)

3–5. Symposium on **Nonlinear Functional Analysis**, Madison, Wis. (E. H. Zarantonello, Mathematical Research Center, Univ. of Wisconsin, Madison 53706)

3–6. **Computer-Aided Design** Symp., 3rd annual, Newport Beach, Calif. (C. J. Mauck, Sandia Corp., Div. 8175, P.O. Box 969, Livermore, Calif. 94550)

3–6. Institute of **Electrical and Electronics Engineers**, industrial and commercial power systems and electrical space heating and air conditioning, joint technical conf., Detroit, Mich. (Technical Activity Board, 345 E. 47 St., New York 10017)

3–6. American Soc. of **Lubrication Engineers**, Boston, Mass. (Meetings Officer, 838 Busse Hwy., Park Ridge, Ill. 60068)

3–7. International Symp. on **Man-Made Lakes, Their Problems and Environmental Effects**, Knoxville, Tenn. (W. C. Ackermann, Scientific Committee on Water Research, Illinois State Water Survey, Box 232, Urbana 61801)

3–7. American College of **Obstetricians and Gynecologists**, San Francisco, Calif. (M. Newton, 79 W. Monroe St., Chicago, Ill. 60603)

3–7. American **Psychiatric** Assoc., Washington, D.C. (B. W. Hogan, APA, 1700 18th St., NW, Washington, D.C. 20009)

4–5. **Appliance Technical** Conf., 22nd annual, Chicago, Ill. (S. Mazzoni, Underwriters Laboratories, Inc., 207 E. Ohio St., Chicago, Ill. 60611)

4–6. **Industrial Waste** Conf., 26th annual, Lafayette, Ind. (D. E. Bloodgood, Sanitary Engineering Dept., Purdue Univ. School of Civil Engineering, Lafayette 47907)

4–6. Society for **Information Display**, intern symp., Philadelphia, Pa. (R. Glusick, General Electric Co., Electronics Park 3-252, Syracuse, N.Y. 13201)

4–8. Student American **Medical** Assoc., St. Louis, Mo. (C. Hewitt, SAMA, 2635 Flossmoor Rd., Flossmoor, Ill. 60422)

5–6. American Soc. of **Mechanical Engineers**, textile engineering conf., Auburn, Ala. (A. B. Conlin, ASME, 345 E. 47 St., New York 10017)

5–7. **Chemical Marketing Research Assoc.**, New York, N.Y. (C. W. Slade, Jr., MRA, 100 Church St., New York 10007)

5–7. International Symp. on **Growth Hormone**, 2nd annual, Milan, Italy. (E. Trabucchi, Dept. of Pharmacology, School of Medicine, University of Milan, Milan)

5–7. **Operations Research** Soc. of America, 39th annual, Dallas, Tex. (H. J. Greenberg, Computer Science/Operations Research Center, Inst. of Technology, Southern Methodist Univ., Dallas 75222)

5–8. **Geological** Soc. of America, southeastern section, Blacksburg, Va. (F. Whitmore, Jr., U.S. Geological Survey, E-501 Natl. Museum, Washington, D.C. 20242)

5–8. Royal Soc. for the **Prevention of Accidents**, natl. industrial safety study conf. and trade exhibition, Scarborough, England. (G. W. Drewitt, Conf. Officer, RSPA, Terminal House, 52 Grosvenor Gardens, London, S.W.1, England)

5–9. Florida **Medical** Assoc., Bal Harbour. (W. H. Parham, FMA, 735 Riverside Ave., Jacksonville, Fla. 32203)

6–7. Canadian **Aeronautics and Space** Inst., Montreal. (Secretary, CASI, 77 Metcalfe St., Ottawa 4, Ont., Canada)

6–7. National **Information Retrieval** Colloquium, Philadelphia, Pa. (D. King, Graduate School of Library Services, Rutgers State Univ., New Brunswick, N.J. 08903)

6–8. Mid-Central States **Orthopaedic** Soc., Colorado Springs, Colo. (P. Lovan, 14 Douglas Pkwy., Wichita, Kan. 67206)

6–8. Midwestern **Psychological** Assoc., Detroit, Mich. (W. Hill, Dept. of Psychology, Northwestern University, Evanston, Ill.)

7–8. Red Cross Scientific Symp. of the American Natl. Red Cross on **Glycoproteins of Blood Cells and Plasma**, Washington, D.C. (G. A. Jamieson, American Natl. Red Cross, Blood Research Lab., 9312 Old Georgetown Rd., Bethesda, Md. 20014)

7–9. Pennsylvania Soc. of **Anesthesiologists**, Lancaster. (L. J. Hampton, 300 Highland Ave., Hanover, Pa. 17331)

7–9. Society of American **Archaeology**, Norman, Okla. (T. P. Culbert, Dept. of Anthropology, Univ. of Arizona, Tucson 85721)

8–11. German **Roentgen** Congr., 50th annual, Stuttgart. (Postanschrift, Deutsche Rontgengesellschaft, Konzerthaus, Stuttgarter Liederhalle, 7, Stuttgart N, Berliner Platz)

9–12. Symposium on **Measurements in Fluid Dynamics**, Pittsburgh, Pa. (H. E. Weber, Pennsylvania State Univ., Gulph and Hendersons Rds., King of Prussia, Pa. 19406)

9–12. **Neurosurgical** Soc. of America, Sea Island, Ga. (W. F. Collins, Jr., 789 Howard Ave., New Haven, Conn. 06510)

9–13. **Radiation Research** Soc., 19th

annual, Boston, Mass. (R. J. Burk, Jr., RRS, 4211 39 St., NW, Washington, D.C. 20016)

9–14. Electronics Div., **Electrochemical** Soc., spring mtg., Washington, D.C. (V. A. Phillips, General Electric R&D, P.O. Box 8, Schenectady, N.Y. 12301)

9–15. American **Gastroenterological** Assoc., Bal Harbour, Fla. (J. A. Benson, 3181 SW Sam Jackson Park Rd., Portland, Ore. 97201)

9–16. World Union of **Prophylactic Medicine and Social Health**, 4th annual mtg., Venice, Italy. (Secretariat, Ospedale al Mare, 30126, Lido di Venezia, Venice)

10–12. American Inst. of **Aeronautics and Astronautics** joint strategic missile sciences mtg., Annapolis, Md. (R. Hartunian, Aerospace Corp., 1111 Mill St., San Bernadino, Calif. 92408)

10–12. **Aerospace Instrumentation** Symp., 17th annual, Las Vegas, Nev. (J. F. Piccolo, EG&G, Inc., Las Vegas 89101)

10–12. American Soc. of **Mechanical Engineers**, natl. congr. on pressure vessels and piping, San Francisco, Calif. (A. B. Conlin, ASME, 345 E. 47 St., New York 10017)

10–12. **Radioecology**, 3rd annual symp., Oak Ridge, Tenn. (D. J. Nelson, Ecological Sciences Div., Oak Ridge National Lab., Oak Ridge, Tenn. 37820)

10–12. American College of **Sports Medicine**, Toronto, Ont., Canada. (D. E. Herrmann, 1440 Monroe St., Madison, Wis. 53706)

10–13. American **Proctologic** Soc., Las Vegas, Nev. (H. Gibson, 320 W. Lafayette, Detroit, Mich. 48226)

10–13. National Conf. on **Static Electrification**, 3rd annual, London, England. (Secretary, Institute of Physics and the Physical Soc., 47 Belgrave Sq., London, S.W.1)

10–14. Symposium on **Measurement and Control of Flow**, Pittsburgh, Pa. (R. B. Dowdell, College of Engineering, Univ. of Rhode Island, Kingston 02881)

10–14. Society of **Plastics Engineers**, Washington, D.C. (C. C. Campbell, SPE, 656 W. Putnam Ave., Greenwich, Conn. 06830)

10–14. International **Solar Energy** Soc., Greenbelt, Md. (B. Goldberg, Smithsonian Radiation Biology Lab., 12441 Parklawn Dr., Rockville, Md. 20852)

10–15. World Congr. on **Prevention of Occupational Accidents and Diseases**, Vienna, Austria. (E. Bakule, Allgemeine Unfall-Versicherungsanstalt, Webergasse 2, Vienna 20)

11–13. Institute of **Electrical and Electronics Engineers**, cement industry tech. conf., Seattle, Wash. (Technical Activities Office, 345 E. 47 St., New York 10017)

11–13. **Engineering for Conservation of Mankind**, 6th annual, Sacramento, Calif. (R. Soohoo, University of California, Dept. of Electrical Engineering, Davis, Calif. 95616)

11–14. Virginia Acad. of **Science**, Blacksburg. (R. C. Berry, 5907 Brookfield Rd., Richmond, Va. 23227)

11–14. **World Future** Soc., Washington, D.C. (J. A. Scott, WFS, Suite 578, 1629 K St., NW, Washington, D.C. 20006)

12. American Soc. for **Gastrointestinal Endoscopy**, Miami Beach, Fla. (J. A. Rinaldo, ASGE, 16001 W. Nine Mile Rd. Southfield, Mich. 48075)

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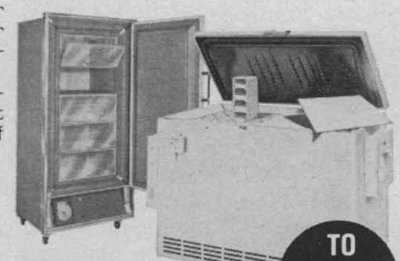

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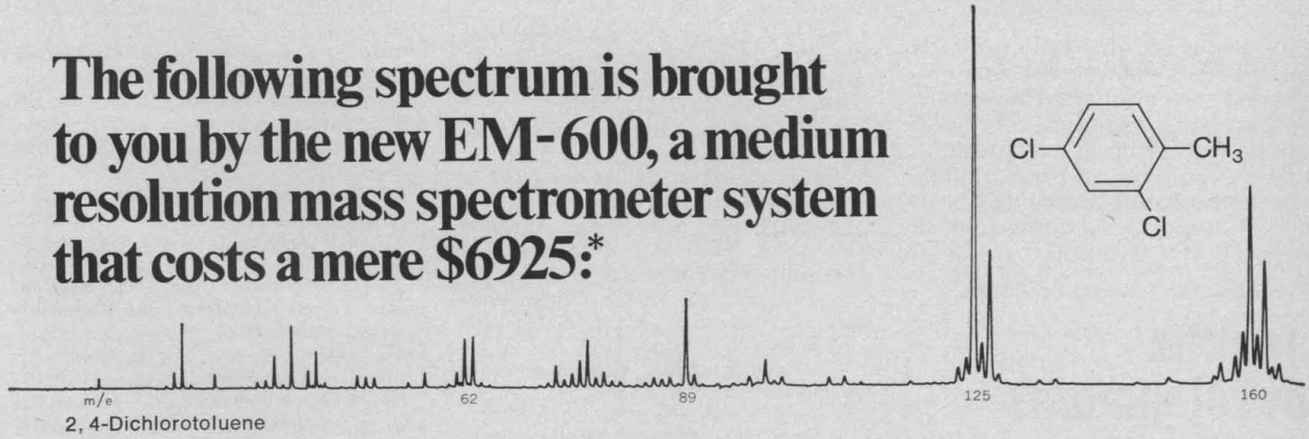

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12–14. Institute of **Electrical and Electronics Engineers**, electron ion and laser beam technical conf., Boulder, Colo. (Technical Activities Board, 345 E. 47 St, New York 10017)

12–14. American Assoc. of **Genitourinary Surgeons**, Oakbrook, Ill. (O. S. Culp, AAG, 200 First St., SW, Rochester, Minn. 55901)

12–14. **Dialogues in Microscopy**, New York Microscopical Soc., New York, N.Y. (J. A. Reffner, Univ. of Connecticut, Storrs 06268)

12–15. **Geological** Soc. of America, Rocky Mountain section, Calgary, Canada. (F. Whitmore, Jr., U.S. Geological Survey, E-501, Natl. Museum, Washington, D.C. 20242)

12–15. American Inst. of **Industrial Engineers**, Boston, Mass. (J. F. Jericho, AIIE, 345 E. 47 St., New York 10017)

12–16. **Medical** Assoc. of Georgia, Atlanta. (E. F. Smith, 938 Peachtree St., NE, Atlanta 30309)

13–14. Southern **Textile Research** Conf., 11th annual, Tilton Head Island, S.C. (W. N. Parsons, Lowenstein Research Center, Lyman, S.C.)

13–15. **Mineralogical** Assoc. of Canada and **Geological** Assoc. of Canada, joint annual mtg., Sudbury, Ont. (D. H. Williamson, Dept. of Geology, Laurentian Univ., Sudbury)

13–15. Society of **Research Administrators**, western section, Seattle, Wash. (K. B. Hobbs, Battelle Seattle Research Center, 4000 NE 41 St., Seattle, Wash. 98105)

13–15. Association of **University Radiologists**, Durham, N.C. (E. C. Lasser, University Hospital of San Diego County, San Diego, Calif. 92103)

14–15. American Soc. for **Engineering Education**, Pacific Northwest section, Alberta, Canada. (L. Hitch, ASEE, 1 Dupont Circle, Washington, D.C. 20038)

16–19. National Conf. on **Breast Cancer**, 2nd annual, Los Angeles, Calif. (R. N. Grant, American Cancer Soc., 219 E. 42 St., New York 10017)

16–19. **Illinois State** Soc., Arlington Heights. (R. White, ISS, 360 N. Michigan Ave., Chicago 60601)

16–19. American **Mining** Congr., Pittsburgh, Pa. (Meetings Officer, AMC, 1100 Ring Bldg., Washington, D.C. 20036)

16–19. International **Pulp and Paper Instrumentation**, Philadelphia, Pa. (G. G. Eastwood, Engineering Research Dept., Kimberly-Clark Corp., Neenah, Wis. 54957)

16–19. National **Tuberculosis and Respiratory Disease** Assoc., Los Angeles, Calif. (J. E. Perkins, NTRDA, 1740 Broadway, New York 10019)

16–20. American **Dermatological** Assoc., Sky Top, Pa. (B. Kennedy, 1542 Tulane, New Orleans, La. 70112)

16–21. **Social Welfare, Human Aspirations and National Priorities**, 98th annual conf., Dallas, Tex. (J. R. Hoffer, Natl. Conf. on Social Welfare, 22 W. Gay St., Columbus, Ohio 43215)

17–19. National **Aerospace Electronics** Conf., Dayton, Ohio. (P. J. Logus, Technical Program '71 NAECON, 265 Canterbury Dr., Dayton 45429)

17–19. **Instrument** Soc. of America, 14th annual, national power instrumentation symp., New York, N.Y. (P. J. Womeldorff, Illinois Power Co., 500 S. 27 St., Decatur, Ill. 62525)

17–19. American **Thoracic** Soc., Los Angeles, Calif. (L. G. Wayne, ATS, 1740 Broadway, New York 10019)

17–20. Australian **Biochemical** Soc., Brisbane. (J. N. Mansbridge, Dept. of Biochemistry, Univ. of Queensland, St. Lucia, Q. 4067 Australia)

17–20. Symposium on **Blood Transfusion and Blood Utilization**, 7th annual, Tehran, Iran. (F. Ala, VIIth Cong. of the World Federation of Haemophilia, P.O. Box 13/1438, C.I.C.I. Tehran, Iran)

17–20. American Soc. of **Mechanical Engineers**, design engineering conf. and show, New York, N.Y. (A. B. Conlin, ASME, 345 E. 47 St., New York 10017)

17–20. International **Microwave** Symp., Washington, D.C. (R. V. Garver, Harry Diamond Labs., Washington, D.C. 20438)

17–20. American Inst. of **Mining Metallurgical and Petroleum Engineers** and Metallurgical Soc., spring mtg., Atlanta, Ga. (A. B. Conlin, AIMMPE, 345 E. 47 St., New York 10017)

17–20. American **Urological** Assoc., Chicago, Ill. (R. J. Hannigan, AUA, 1120 N. Charles St., Baltimore, Md. 21201)

17–21. Canadian Congr. of **Applied Mechanics**, 3rd annual, Calgary, Alberta. (L. G. Currie, Dept. of Mechanical Engineering, Univ. of Toronto, Toronto 5, Ont., Canada)

17–21. International Conf. on **Oral Surgery**, 4th annual, Amsterdam, Netherlands. (N. Rowe, Royal College of Surgeons, Lincoln Inn Fields, London, A.C.2, England)

17–21. **Otolaryngological** Soc. of Australia, Adelaide. (D. B. Arnott, 43 Lower Fort St., Sydney, Australia 2000)

17–21. International Symp. on **Remote Sensing of Environment**, 7th annual, Ann Arbor, Mich. (J. J. Cook, Center for Remote Sensing Information and Analysis, Willow Run Labs., P.O. Box 618, Ann Arbor 48107)

18–20. **Computer** Conf., Atlantic City, N.J. (J. Moshman, Moshman Associates, Inc., 6400 Goldsboro Rd., Washington, D.C. 20034)

18–20. National Conf. on **Environmental Effects on Aircraft and Propulsion Systems**, 10th annual, Trenton, N.J. (R. J. Skeba, Dept. of the Navy, Naval Air Propulsion Test Center, Trenton 08628)

18–21. American Inst. of **Aeronautics and Astronautics** and Canadian **Aeronautics and Space** Inst., London, England. (Secretary, AIAA, 1290 Ave. of the Americas, New York 10019)

18–21. International Instruments **Electronics and Automation** Exhibition, London, England. (Secretary, Inst. of Physics and Physical Soc., 47 Belgrave Sq., London, S.W.1)

18–21. Society for **Experimental Stress Analysis**, spring meeting, Salt Lake City, Utah. (Secretary, SESA, 21 Bridge Sq., Westport, Conn. 06880)

19–21. American **Helicopter** Soc., 27th annual, Washington, D.C. (K. B. Amer, Aeronautical Engineering Div., Hughes Tool Co., Aircraft Div., Bldg. 2, T7B, Culver City, Calif. 90230)

19–21. British Congr. of **Obstetrics and Gynecology**, London, England. (J. Alvey, 47 Fitzwilliam Sq., Dublin, Ireland)