

SCIENCE

12 March 1971

Vol. 171, No. 3975

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



Gordon Research Conferences

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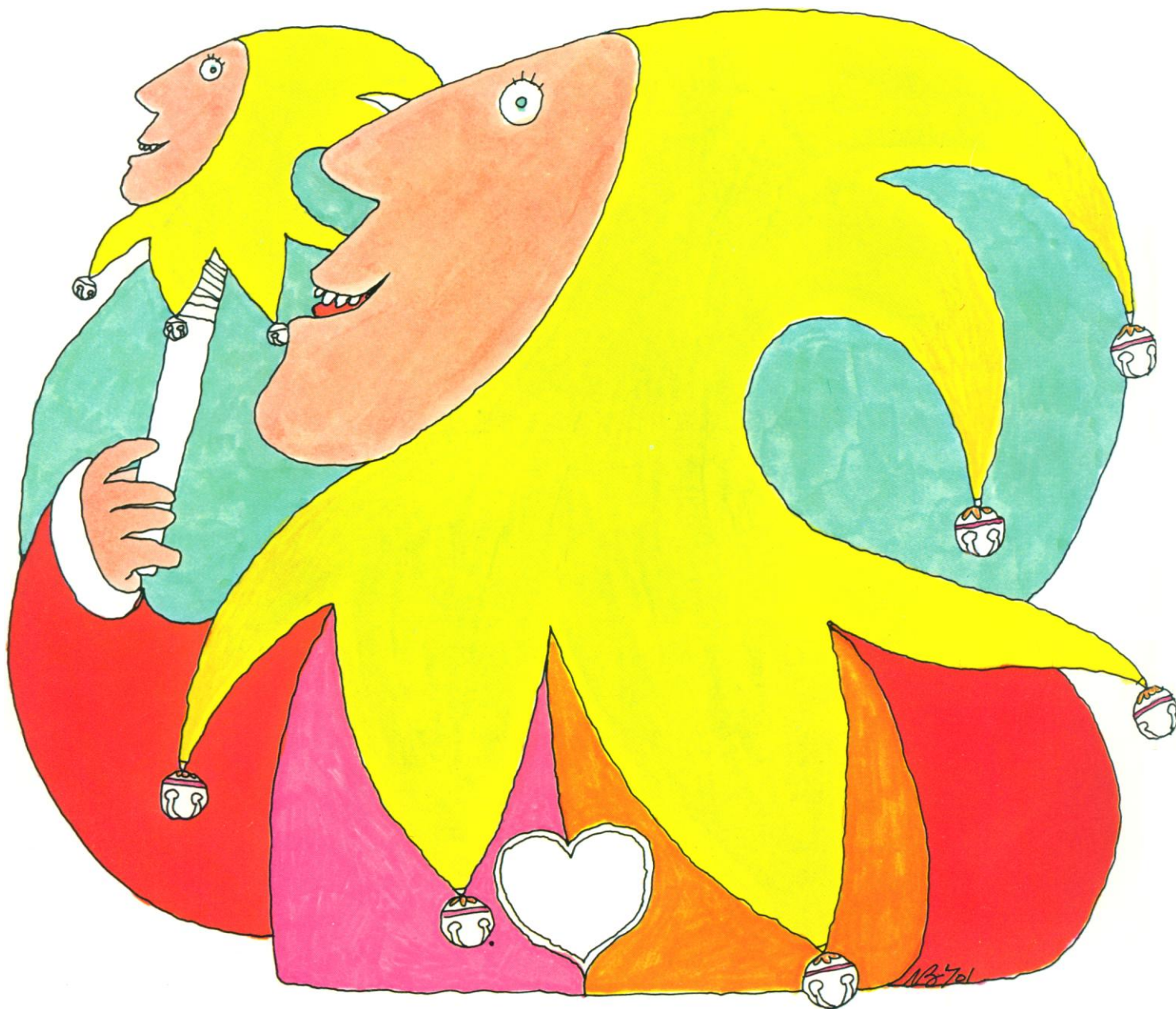
For instance. We've developed a new Video Image Printer. A sophisticated device for making single or multiple 35 mm. slides from high density TV broadcast information. The Video Image Printer can be used to record micro data for business. Or invisible ray patterns for science. Or whatever high density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

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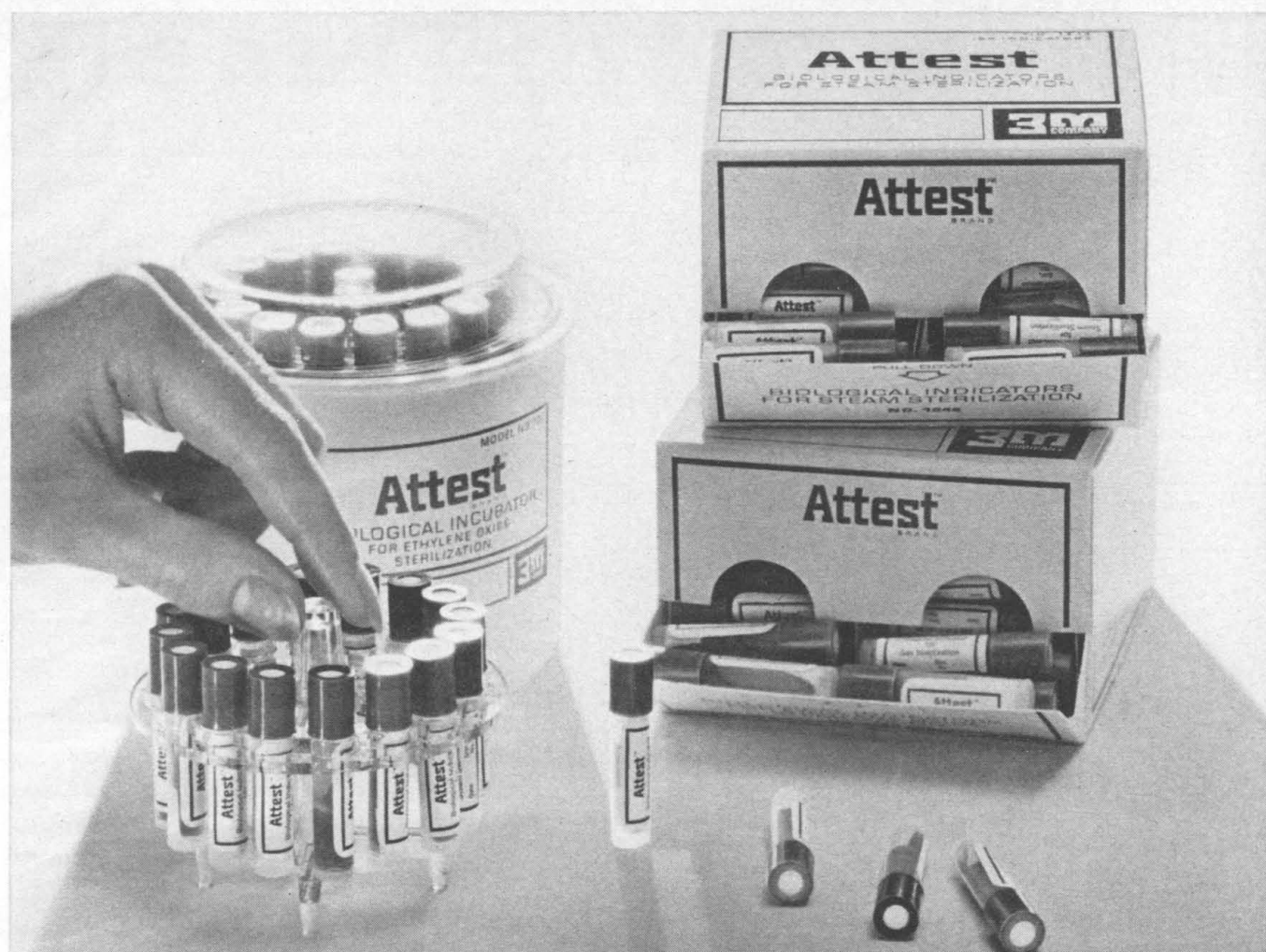
Then there are new products like our "Piezonator," our Ga-As pulse generating diode, and our junction type strain transducer. They're highly advanced, highly miniaturized microelectric devices bound to cause a big stir in the electronics industry.

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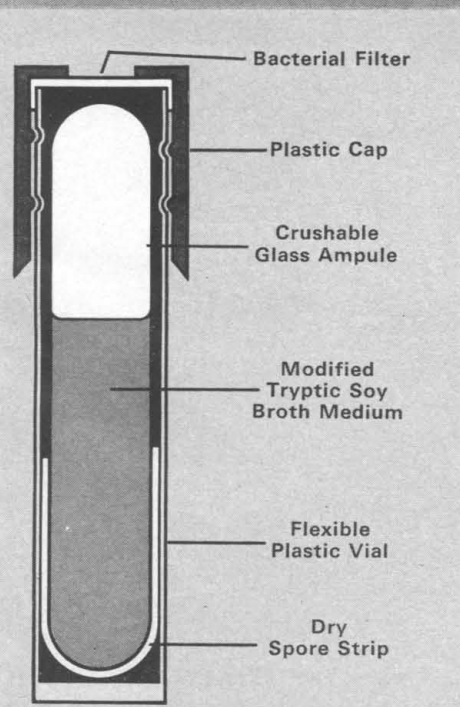


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COVER

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]

The American Association for the Advancement of Science was founded in 1848 and incorporated in 1874. Its objects are to further the work of scientists, to facilitate cooperation among them, to improve the effectiveness of science in the promotion of human welfare, and to increase public understanding and appreciation of the importance and promise of the methods of science in human progress.

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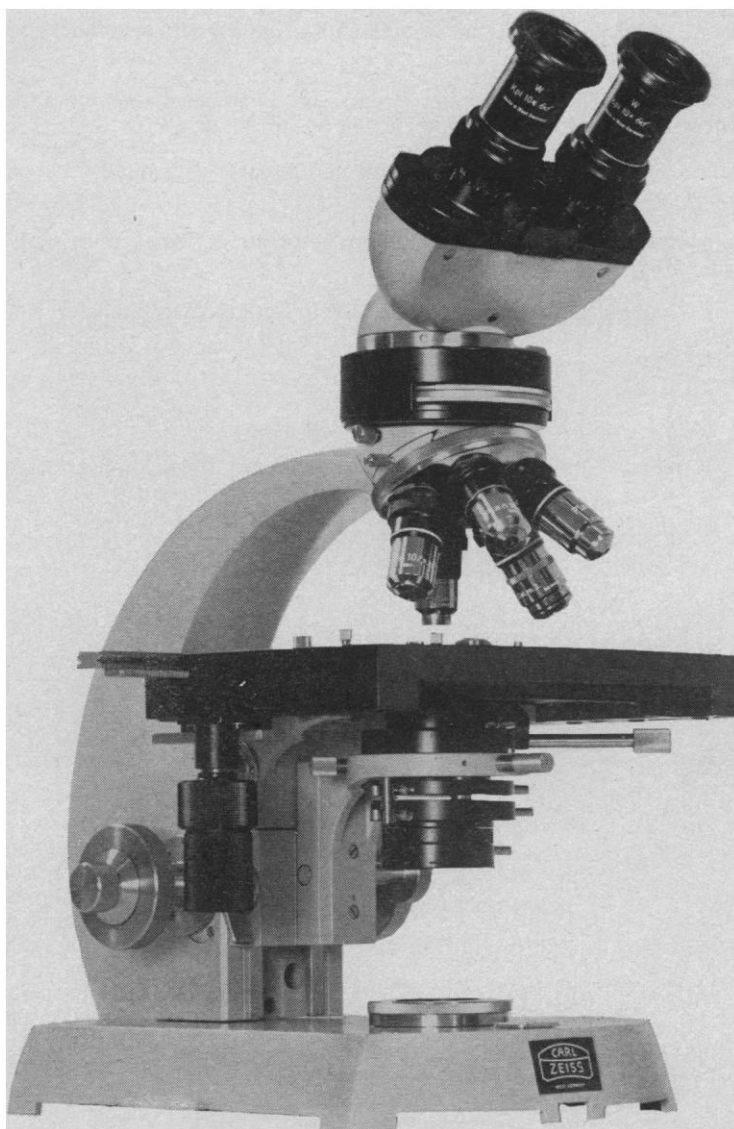
1. Objectives—the most essential component of any microscope. Zeiss objectives are world-famous for their quality. Available for the WL is a complete line of Planapochromats from 4/0.16 to 100/1.3—and *only* Zeiss can offer so many. Complete lines, too, of Neofluars, Planachromats and Achromats. Each,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

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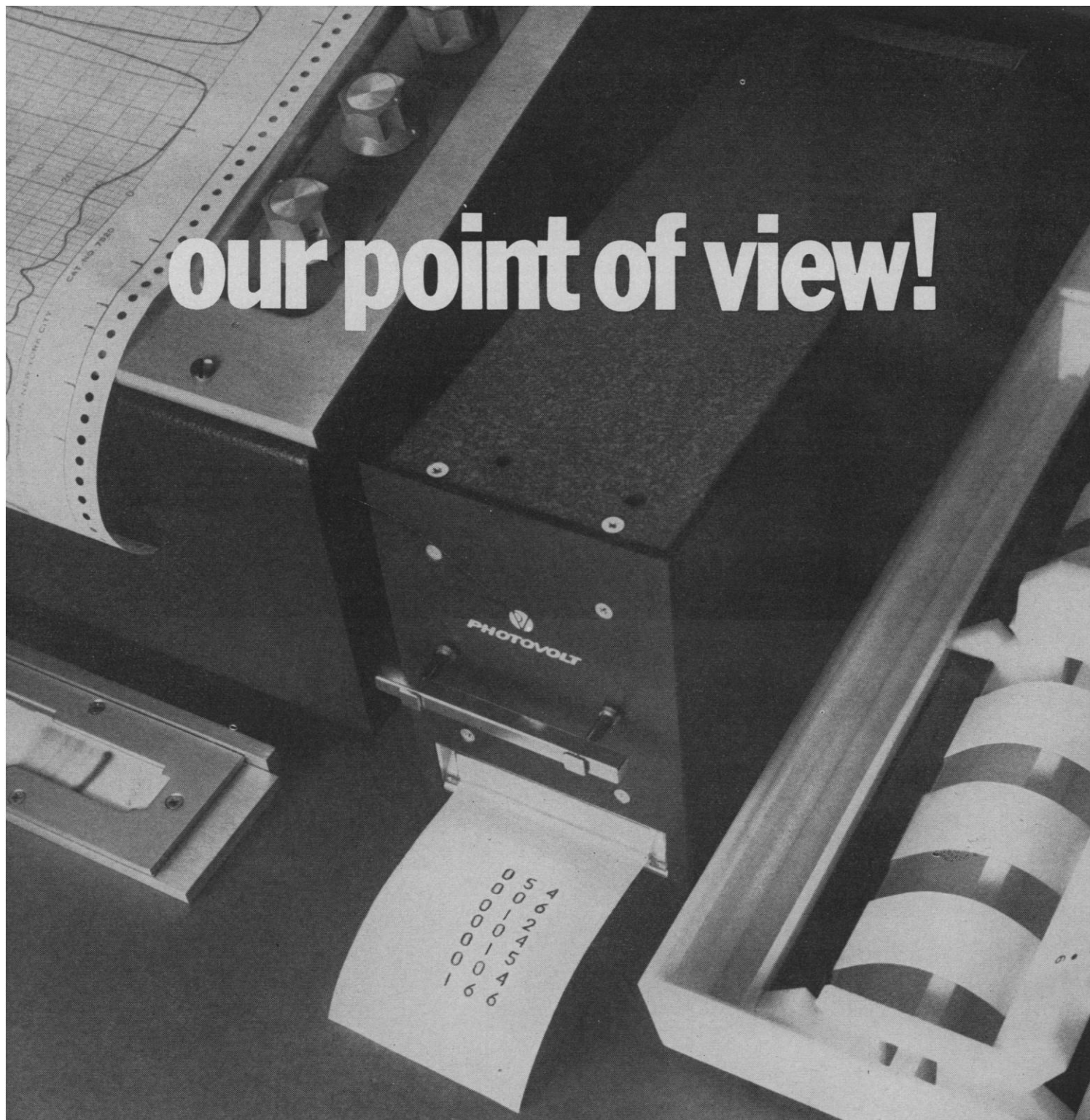
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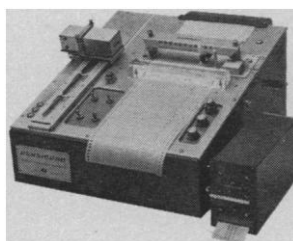
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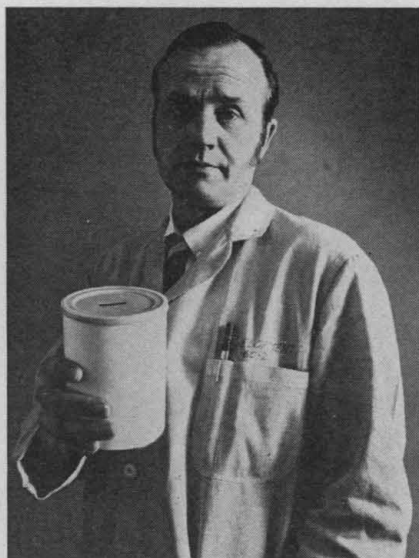


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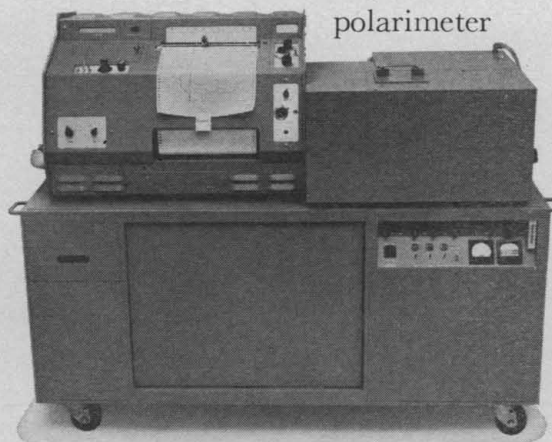
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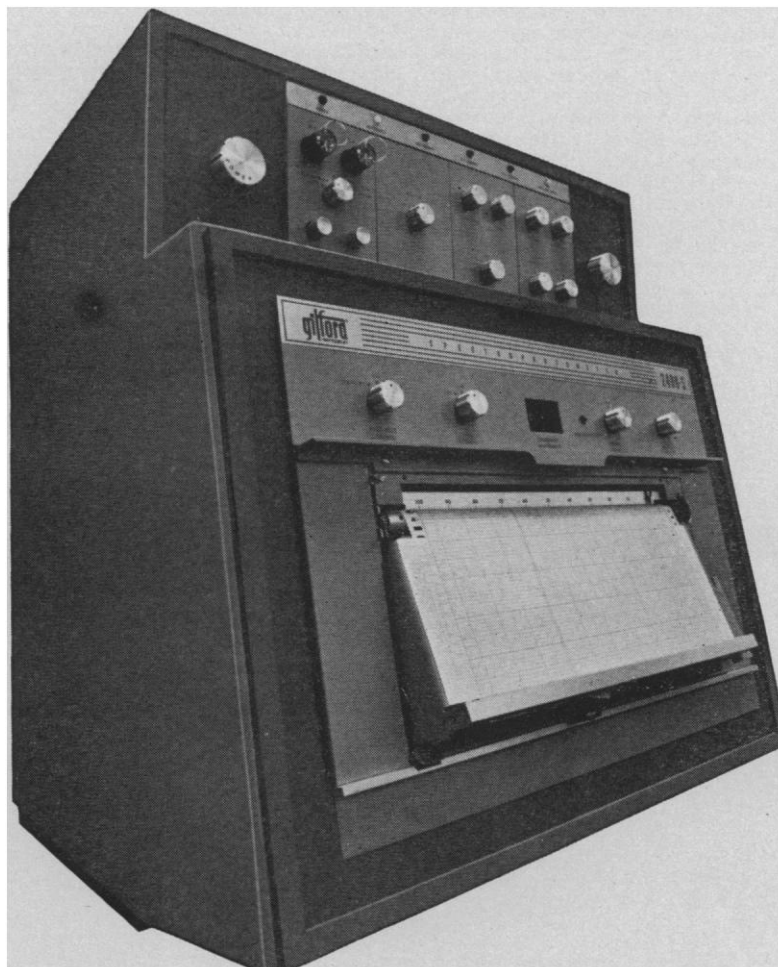
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12 MARCH 1971

947

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 2 1/4" 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, pre-loaded 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 viewfinders.

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 in-

cludes 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.

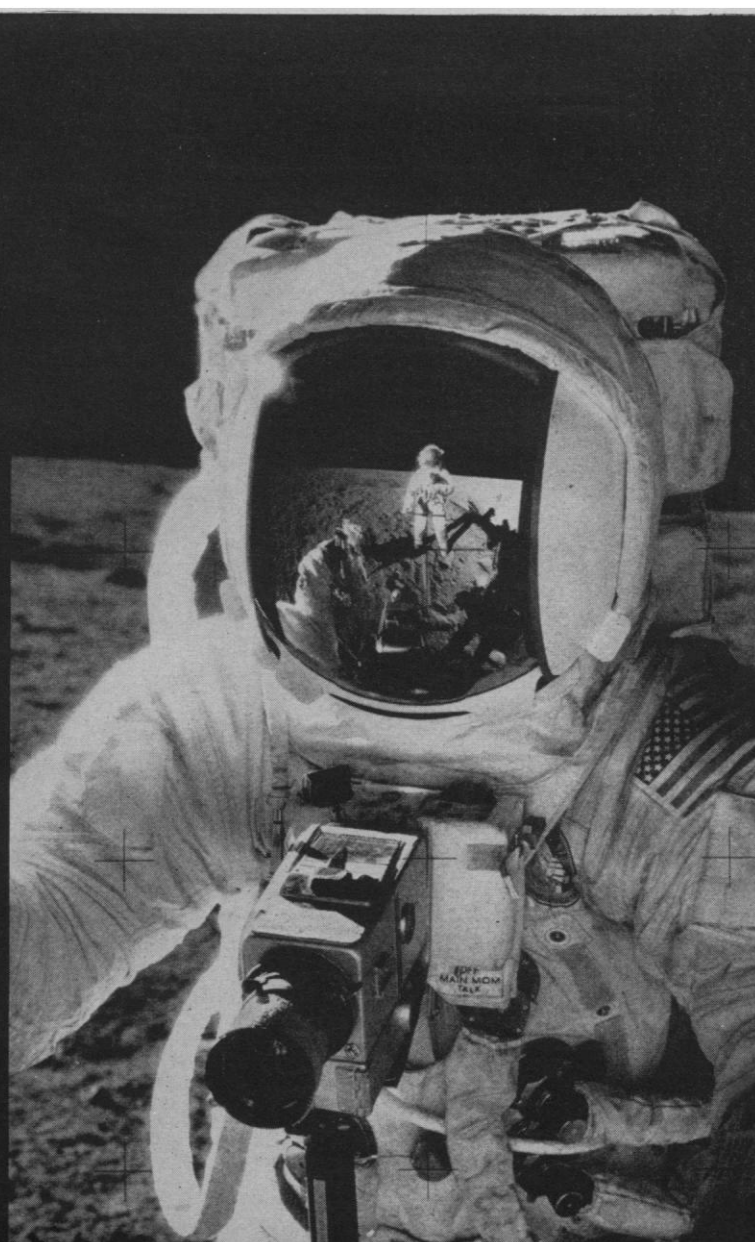
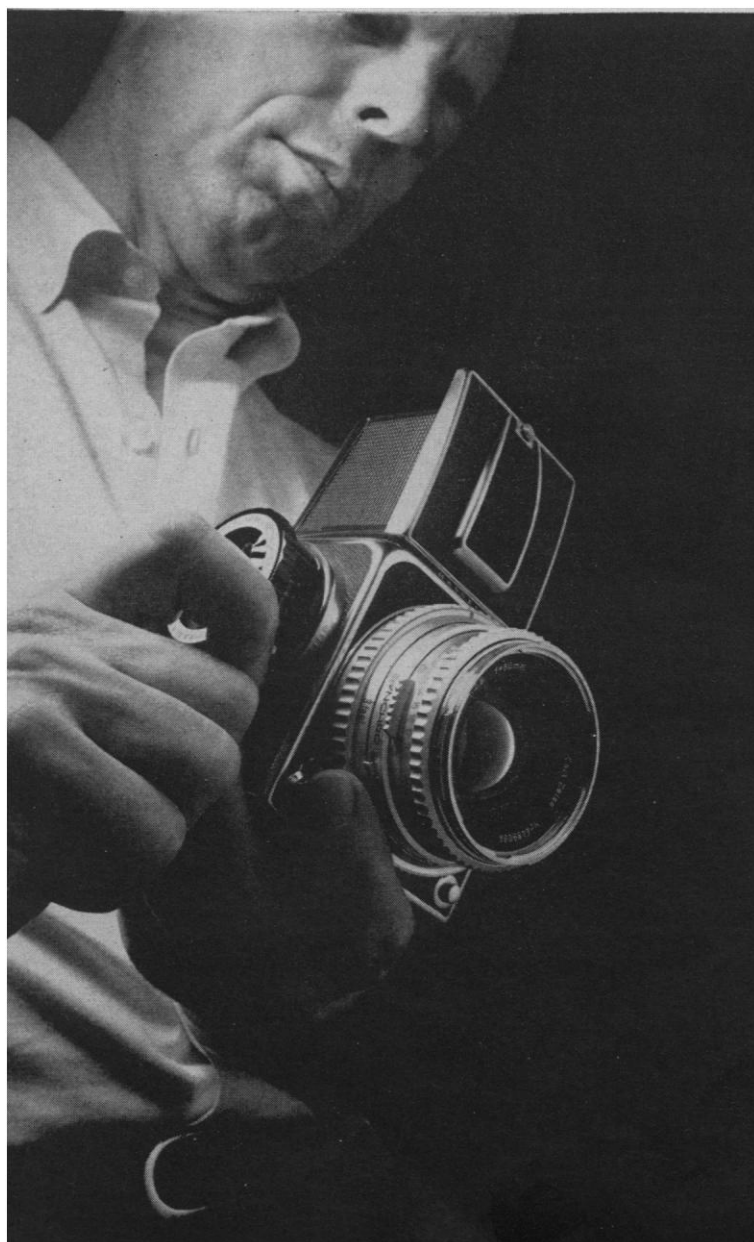
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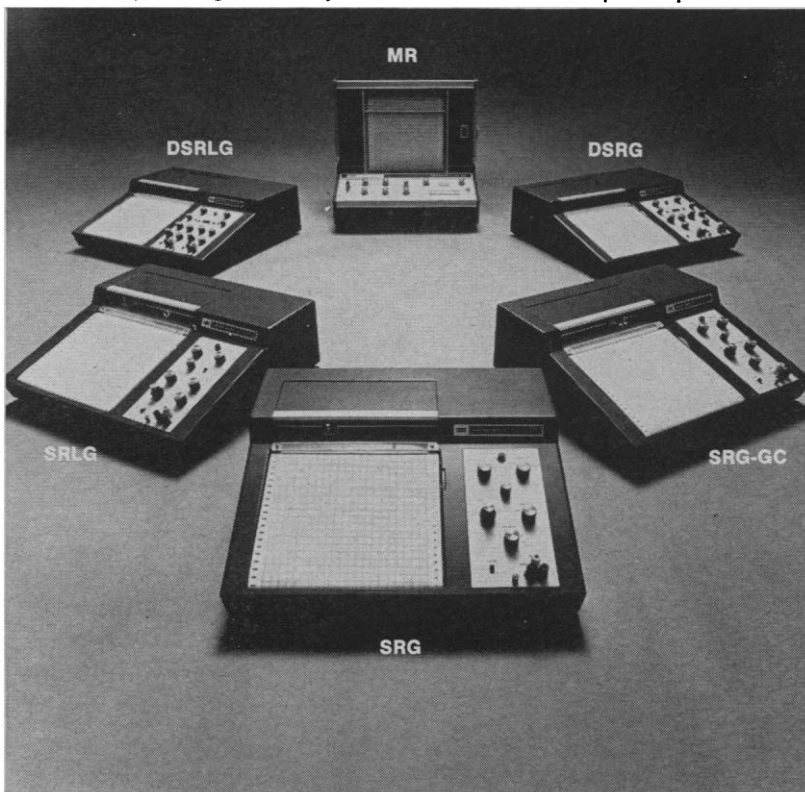
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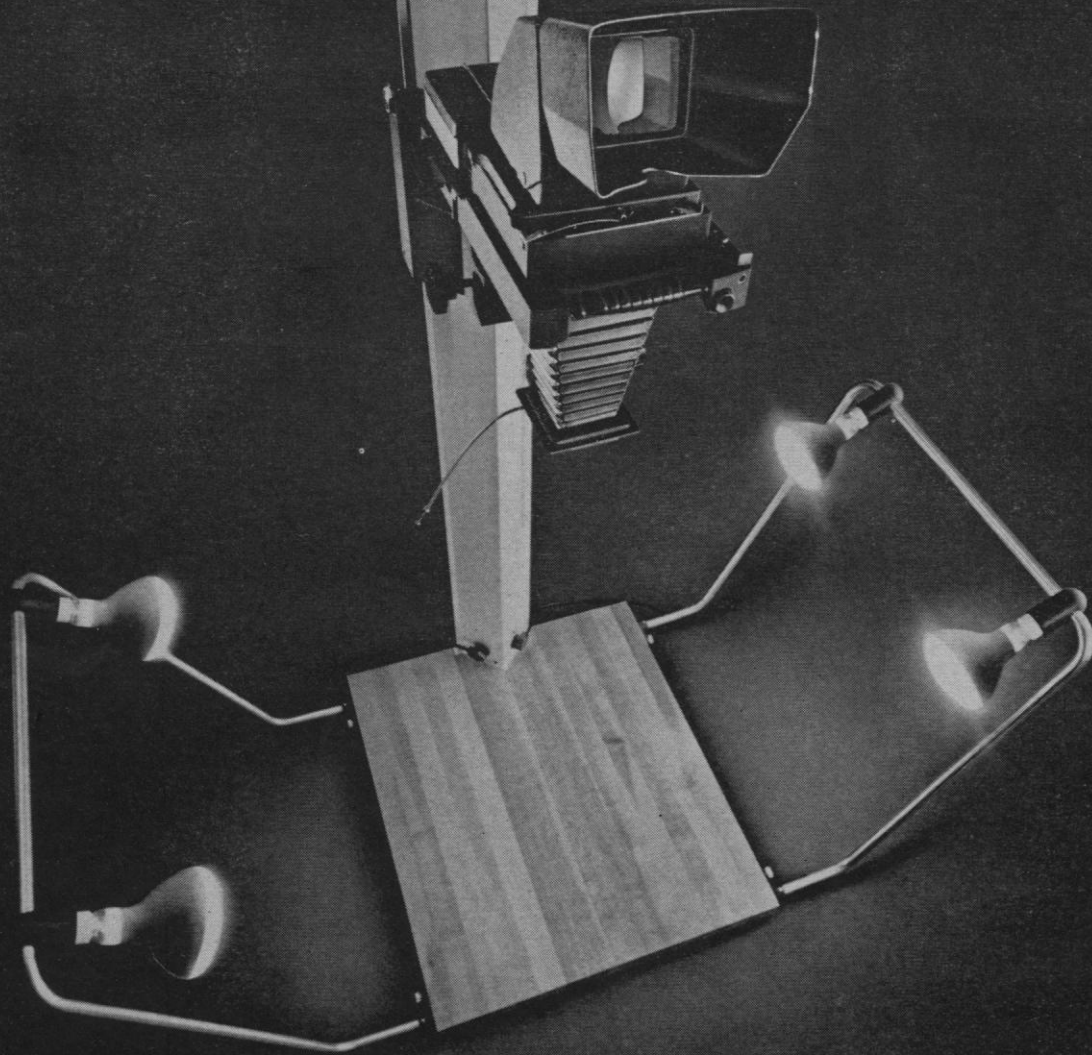
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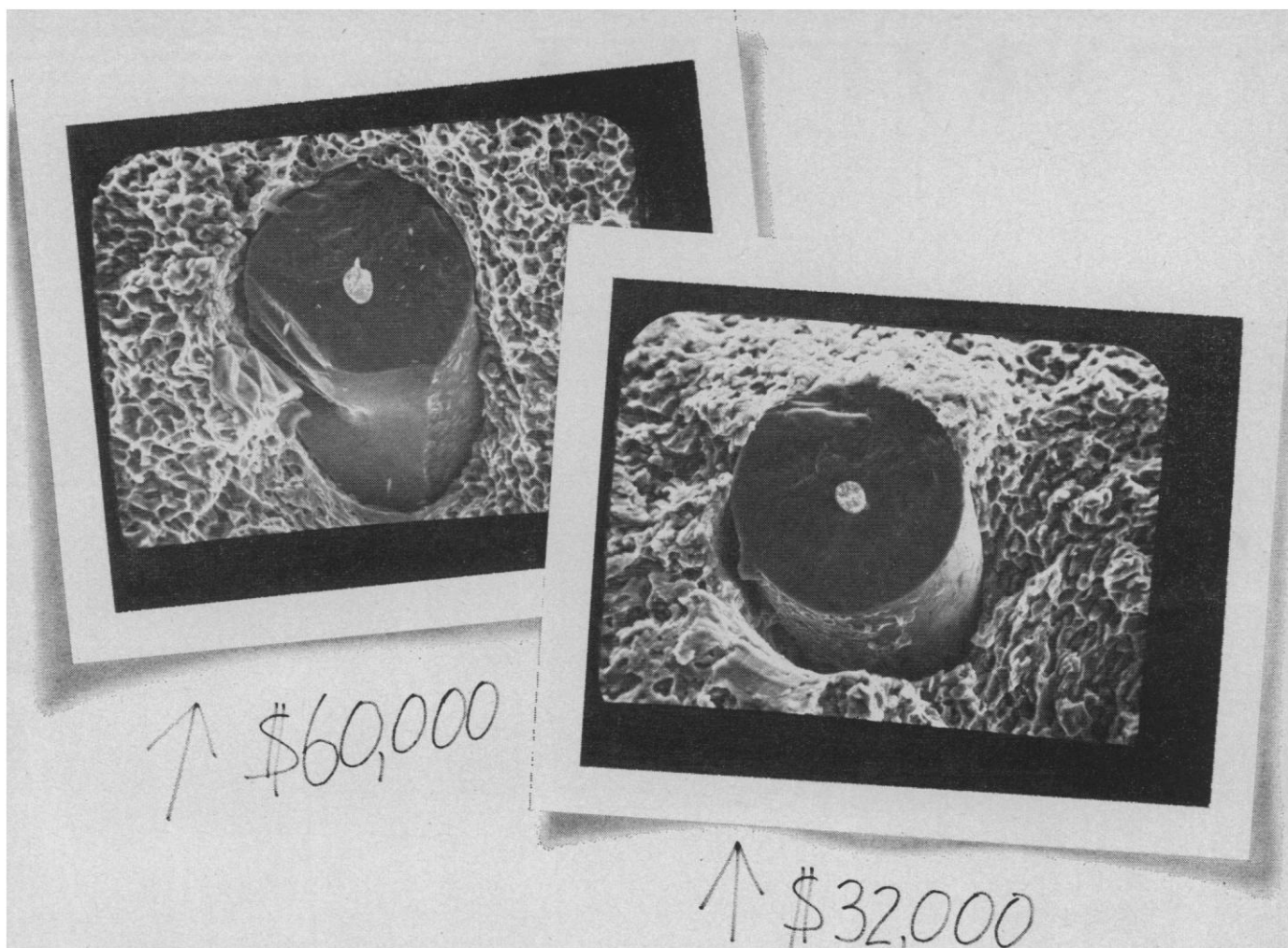
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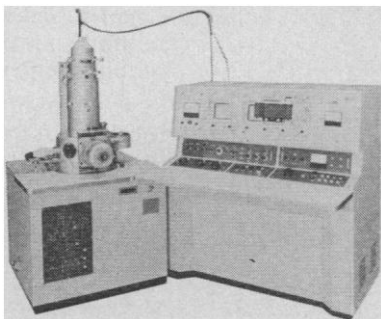
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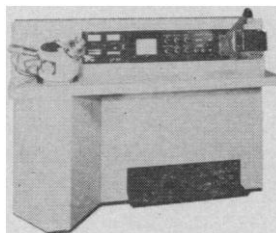
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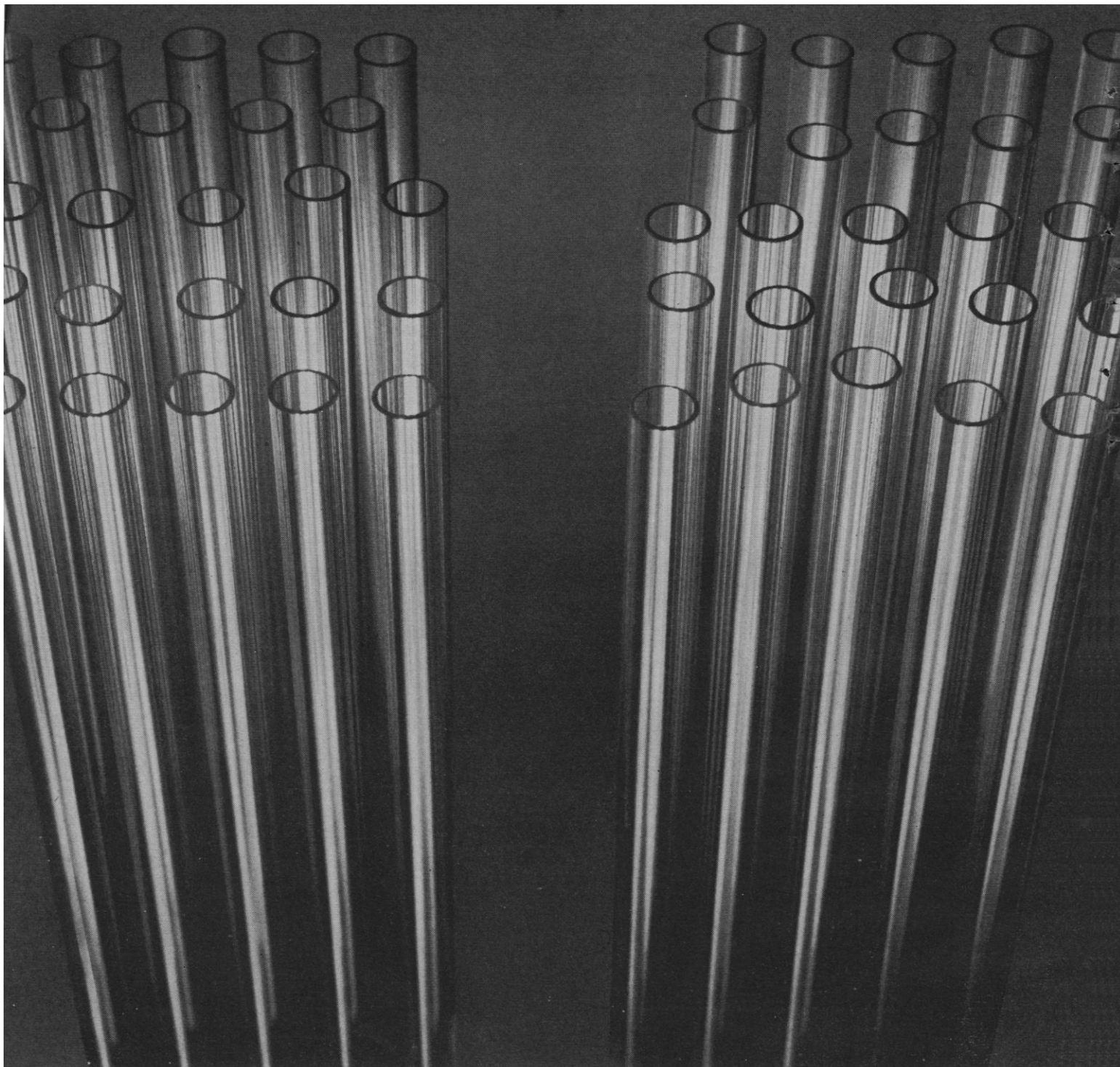


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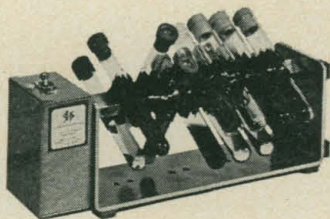
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953

$$y = b_0 + b_1x_1 + \dots + b_nx_n$$

x_1	x_2	x_3	x_4	y
1	-3	2	0	3
2	1	2	1	10
3	2	3	4	11
4	2	1	3	4
5	-2	-2	3	-11

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1. Key $\Pi = n+1$ (where n = total no. of variables) and key \square . 5
2. Key the VALUES keying \square after each.
3. Key SPECIAL FUNCTION \square to obtain different sums in the system of equations and $b(0), \dots, b(n)$.
 or
 Key SPECIAL FUNCTION \square to obtain $b(0), \dots, b(n)$ only.

$x(1)$	$x(2)$	$x(3)$	$x(4)$	Y
1,000	-1,000	2,000	.000	1,000
2,000	1,000	2,000	1,000	10,000
4,000	2,000	1,000	4,000	11,000
1,000	2,000	1,000	3,000	4,000
3,000	-2,000	-2,000	3,000	-11,000

These are the sums:

```

5,000 = total no. of samples
11,000 = SUM[x(1)]
-1,000 = SUM[x(2)]
6,000 = SUM[x(3)]
11,000 = SUM[x(4)]
17,000 = SUM[Y]
31,000 = SUM[x(1)**2]
22,000 = SUM[x(2)**2]
22,000 = SUM[x(3)**2]
35,000 = SUM[x(4)**2]
3,000 = SUM[x(1)x(2)]
13,000 = SUM[x(1)x(3)]
20,000 = SUM[x(1)x(4)]
8,000 = SUM[x(2)x(3)]
9,000 = SUM[x(2)x(4)]
11,000 = SUM[x(3)x(4)]
38,000 = SUM[x(1)Y]
53,000 = SUM[x(2)Y]
85,000 = SUM[x(3)Y]
33,000 = SUM[x(4)Y]
  
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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
*Department of Anthropology,
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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 inconsistent." 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 sociol-

ogists 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,
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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 consistent, moderate inconsistent, and sharp in-

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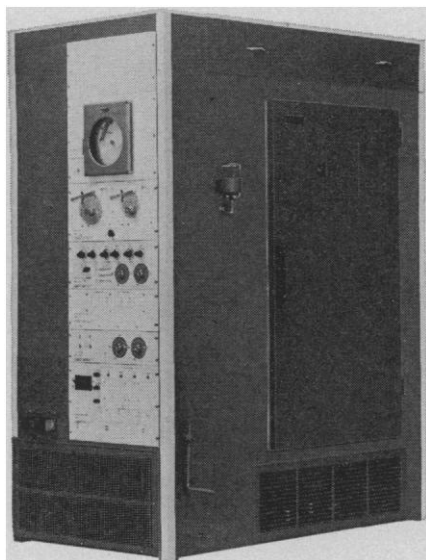
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consistents; figure 6 takes sighters from these same categories and shows that moderate and particularly sharp inconsistencies *when they report sightings are more likely to believe they are objects or vehicles from outer space.* (Chi-square value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

scribe 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.

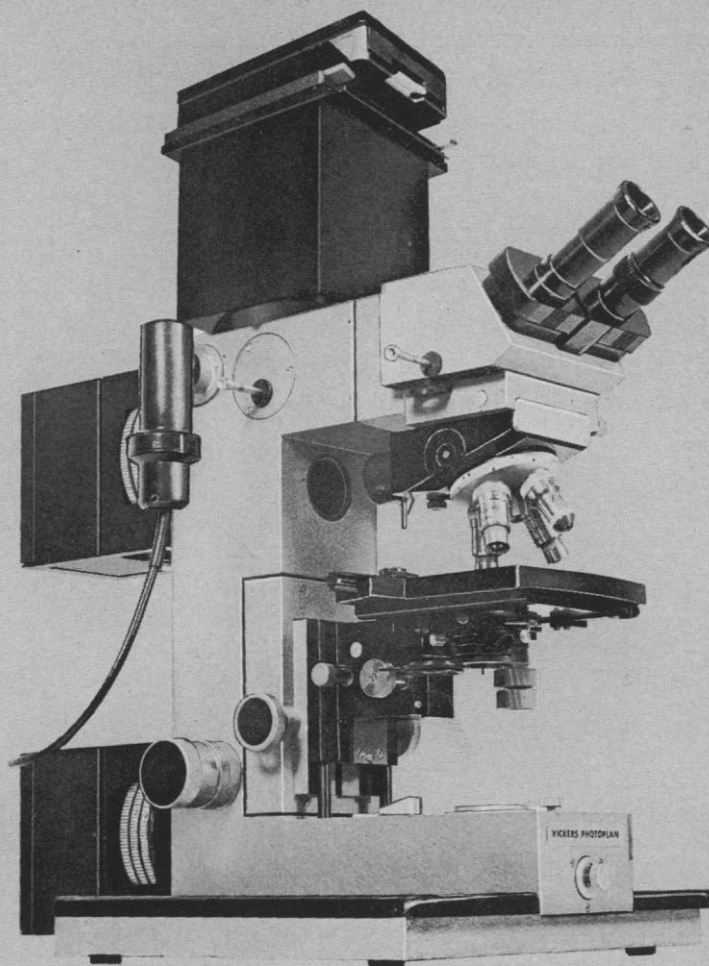
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*Office of the Dean,
University of Arkansas Graduate
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The picture on the left was taken in February 1963, and that on the right, in July 1965, of an area in Claiborne County, Tennessee. It was inadvertent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

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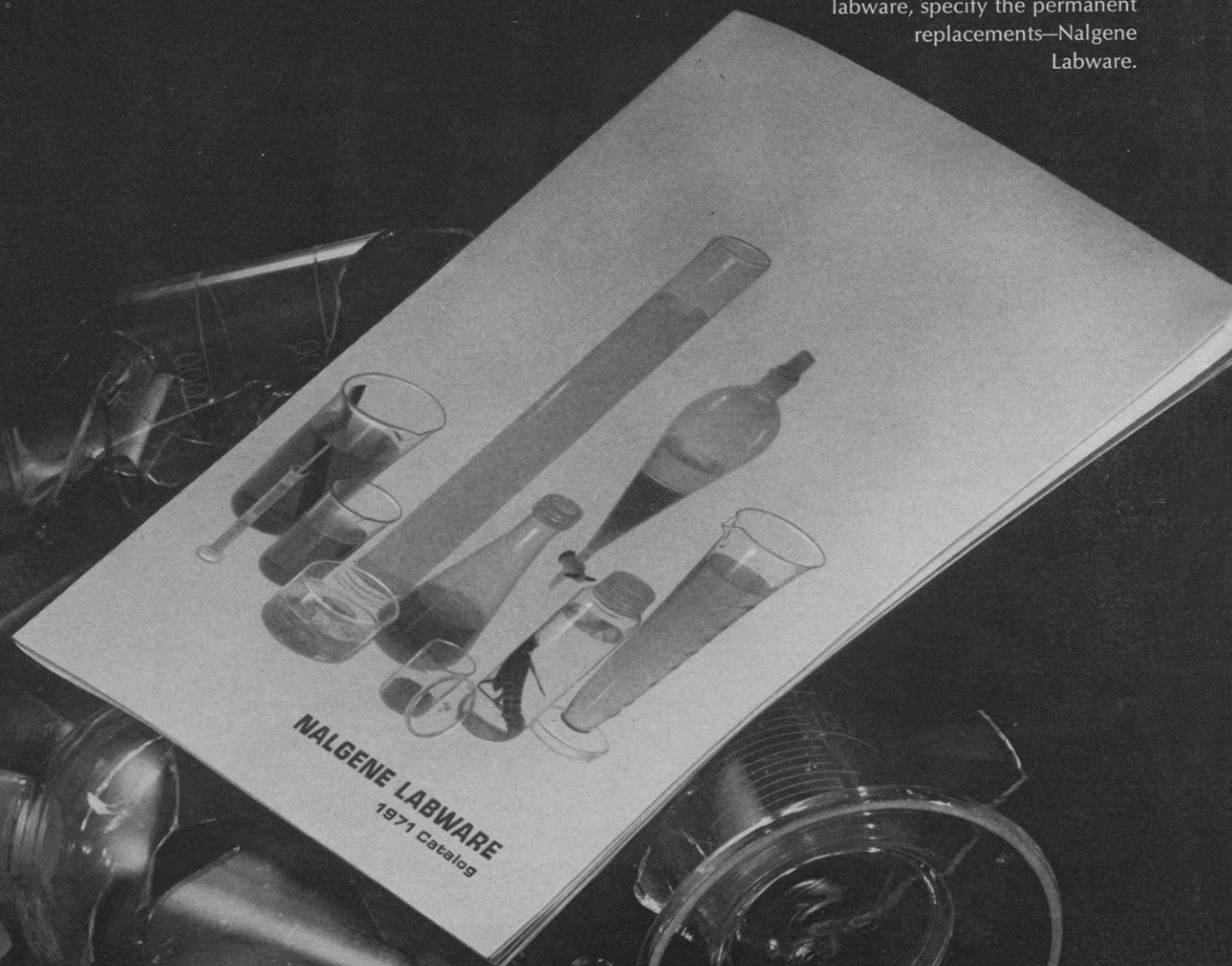
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Interdisciplinary Problem-Oriented Research in the University

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, re-oriented 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*

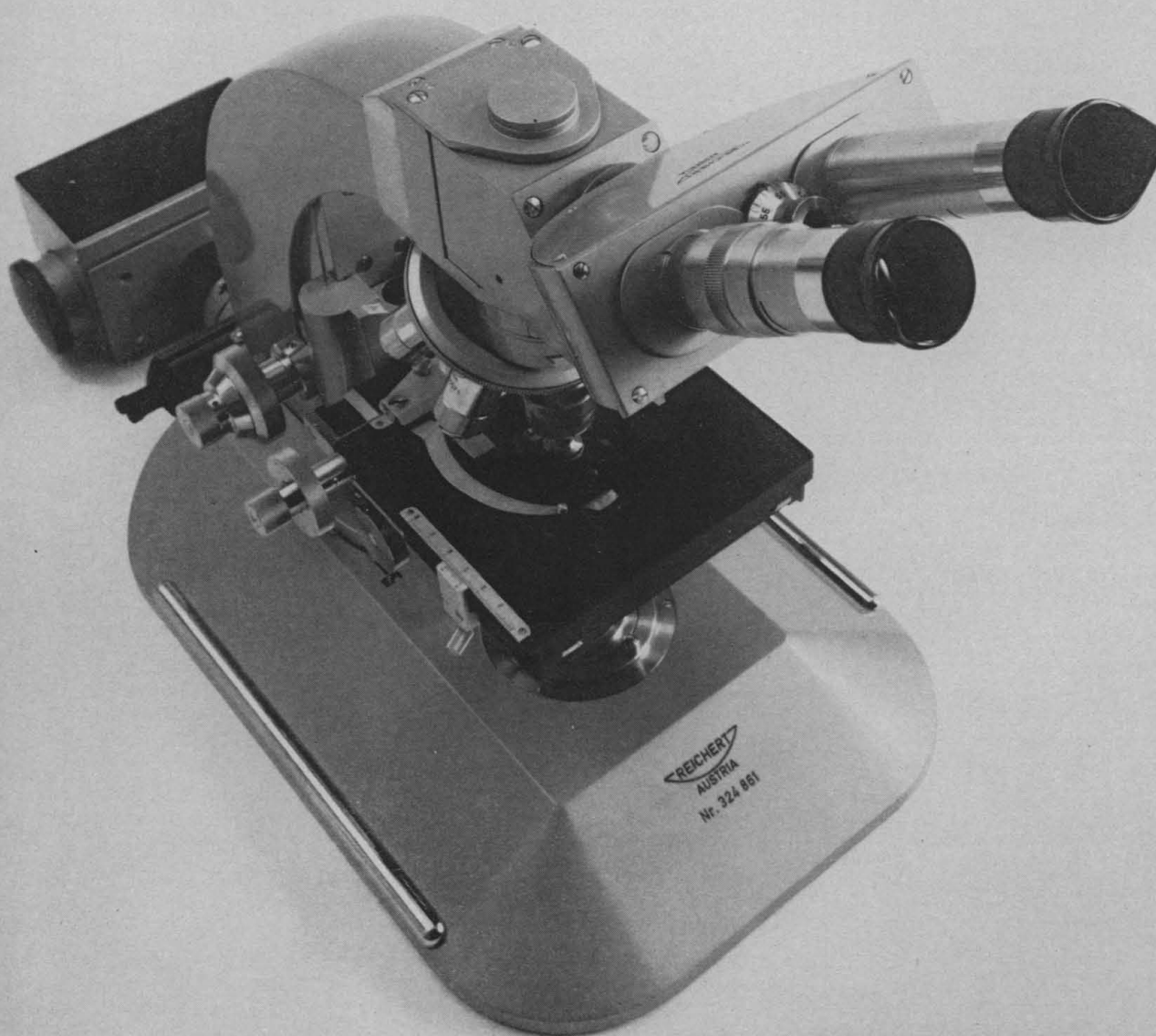
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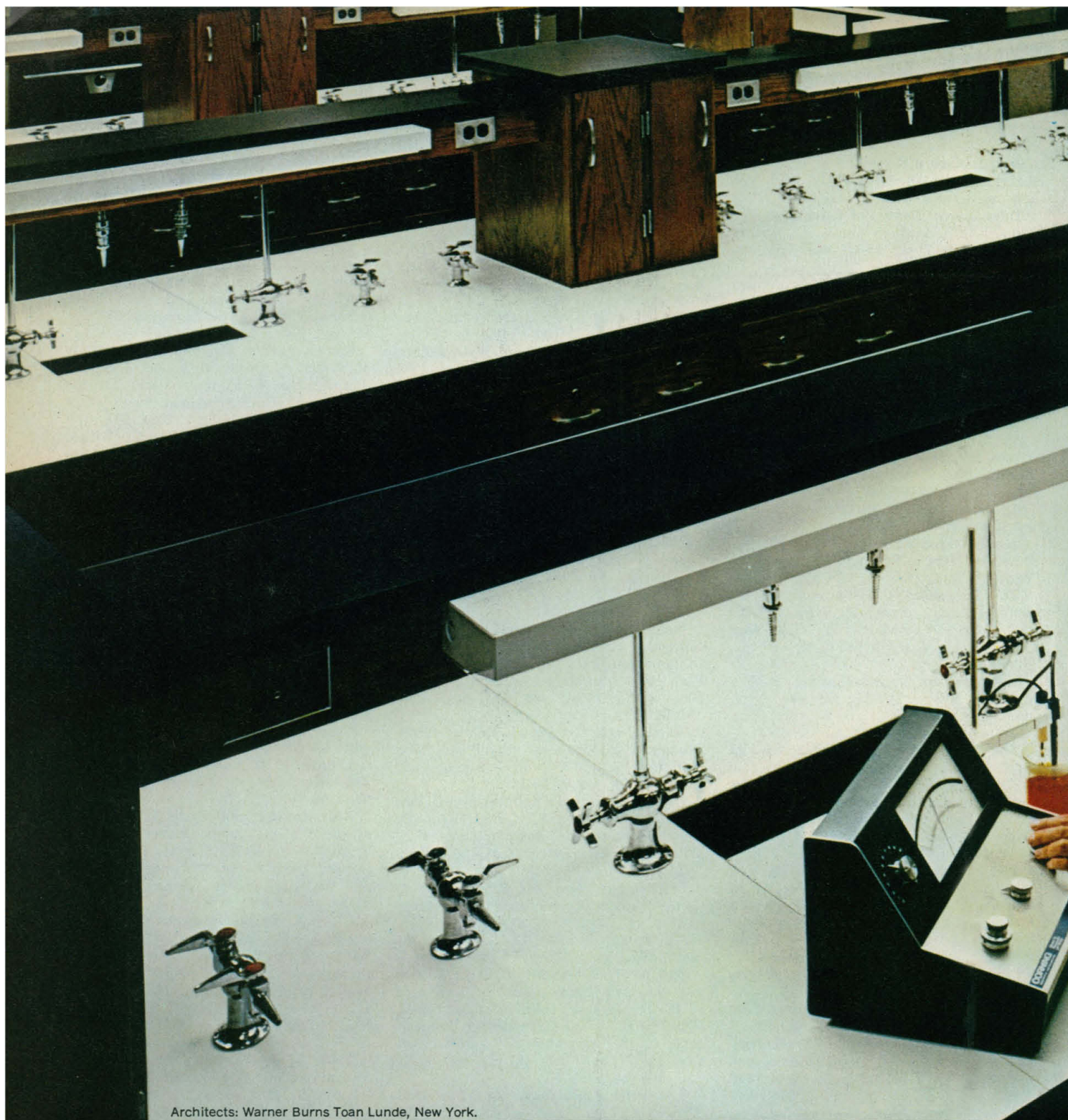
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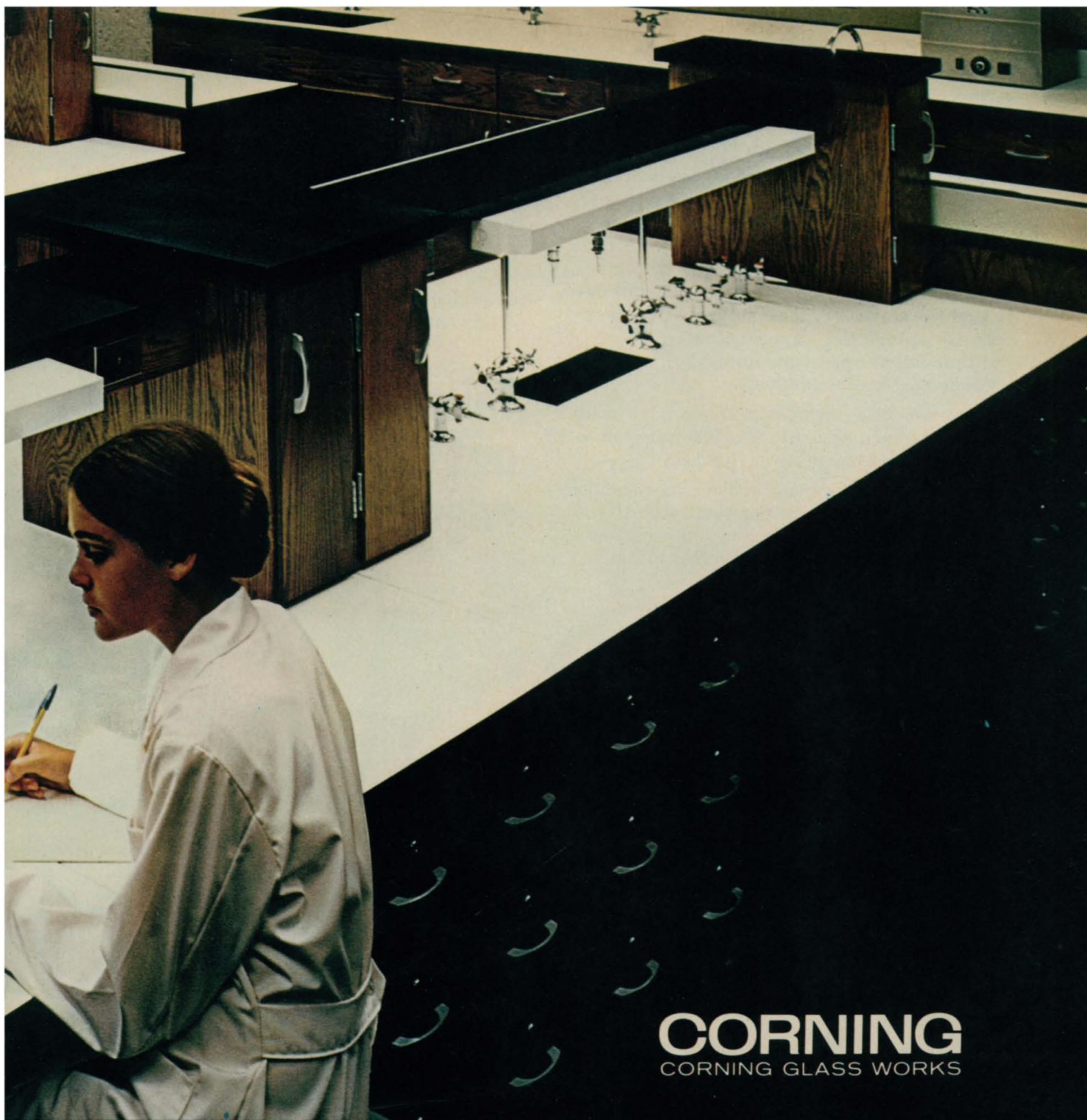


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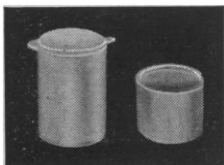
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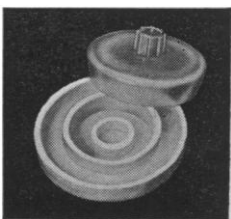
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McCord, "New photometric data on asteroids."

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. Warwick, "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 epitaxial bicrystal interfaces." (M.



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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)

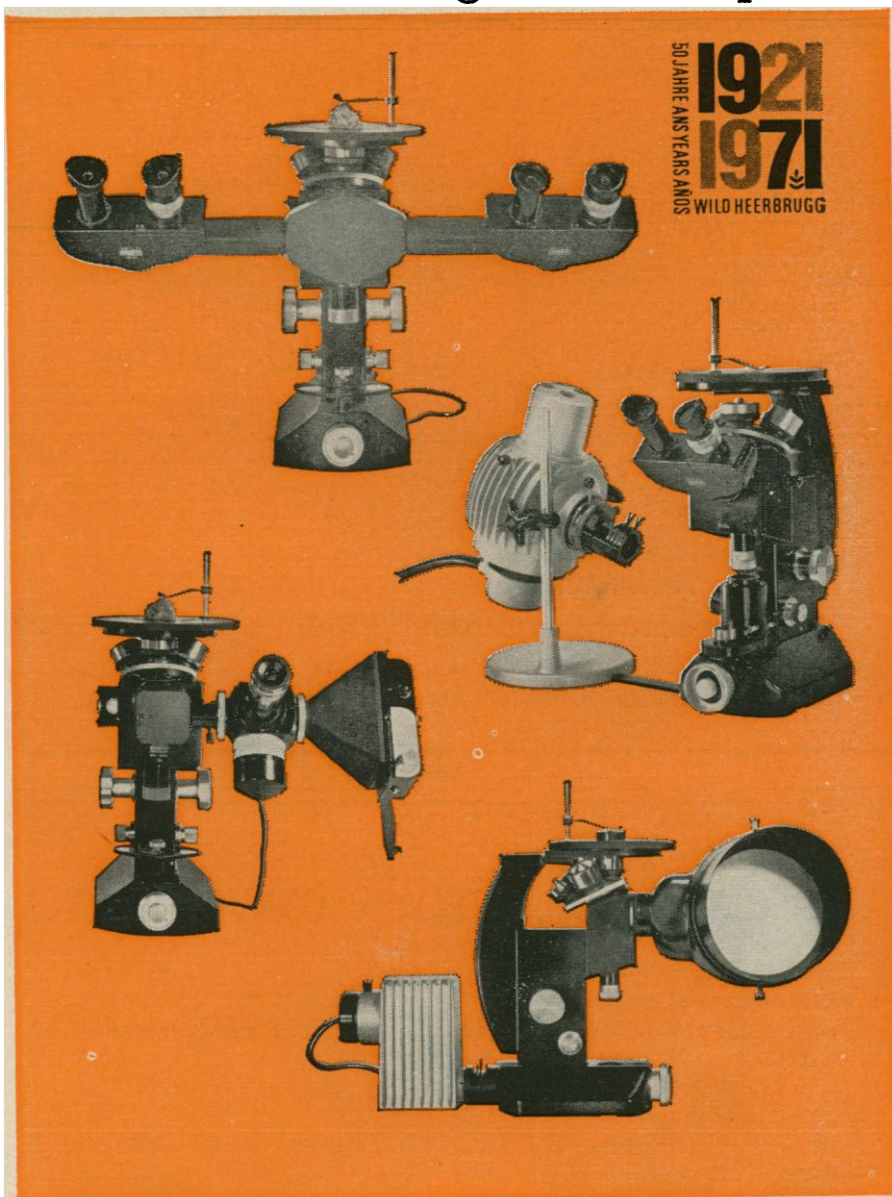
12-17. **American Physiological Soc.**, Chicago, Ill. (R. G. Daggs, APS, 9650 Rockville Pike, Bethesda, Md. 20014)

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. Christensen, Electronics in Medicine P-30, 330 W. 42 St., New York 10036)

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

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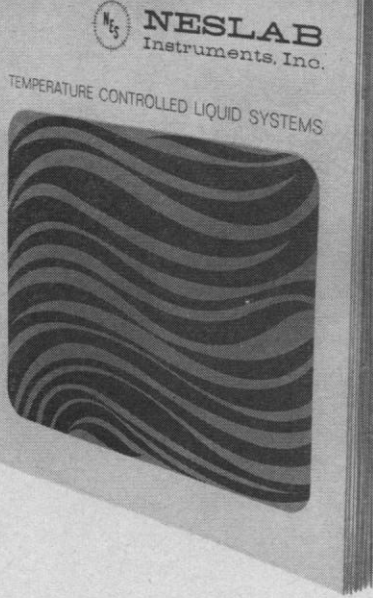
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13-16. **International Magnetism Conf.**, 9th annual, Denver, Colo. (G. Bate, IBM Corp., P.O. Box 1900, Boulder, Colo. 80302)

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)

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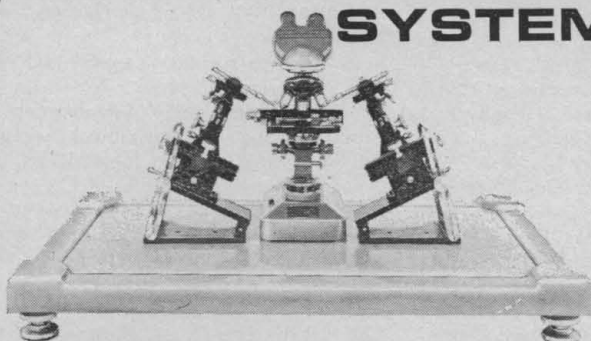
16-17. **American Assoc. of University Professors**, Philadelphia, Pa. (B. H. Davis, AAUP, 1785 Massachusetts Ave., NW, Washington, D.C. 20036)

18-19. **Montana Acad. of Sciences**,



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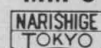
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18–22. **American Assoc. of Neurological Surgeons**, 38th annual, Houston, Tex. (M. I. O'Connor, AANS, 428 E. Preston St., Baltimore, Md. 21202)

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)

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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)

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search, Houston, Tex. (P. Drummond, American Soc. of Mechanical Engineers, 345 E. 47 St., New York 10017)

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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., Tele-dyne 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)

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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)

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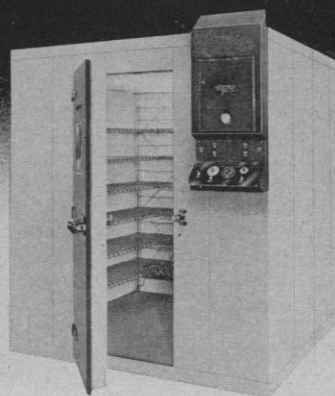
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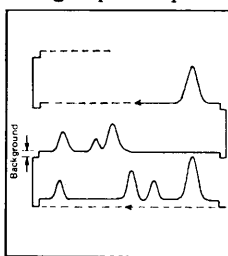
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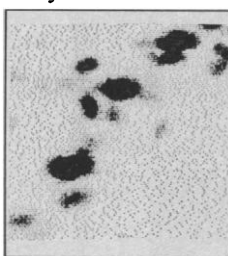
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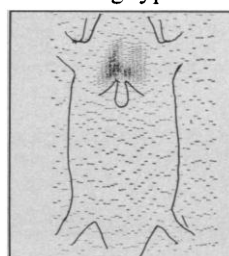
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Rapid City. (W. L. Hoffman, Physics Dept., Univ. of South Dakota, Vermillion 57069)

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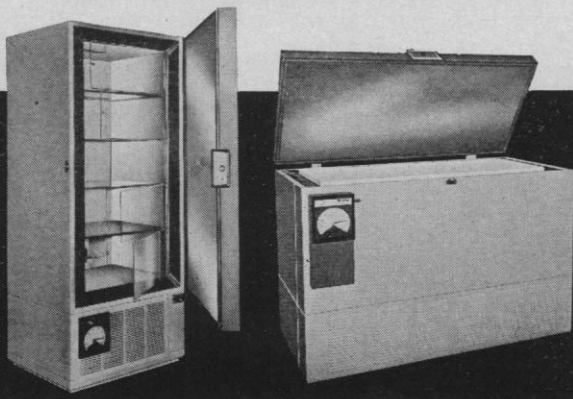
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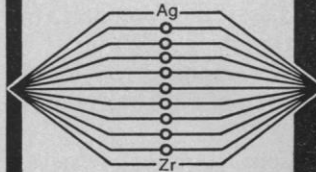
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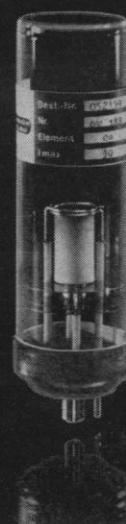


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26-28. **Frequency Control**, 25th annual symp., Atlantic City, N.J. (J. M. Stanley, Dept. of the Army, Headquarters U.S.A., Electronics Command, Fort Monmouth, N.J. 07703)

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 Hwy., 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**,

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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. Society 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)

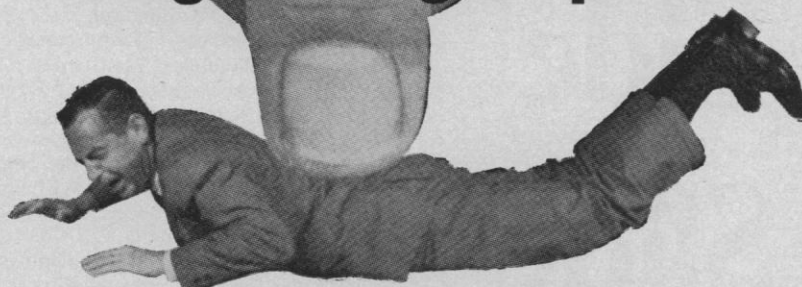
1. **American College of Psychiatrists**, Washington, D.C. (P. A. Martin, 857 Fisher Bldg., Detroit, Mich. 48202)

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)

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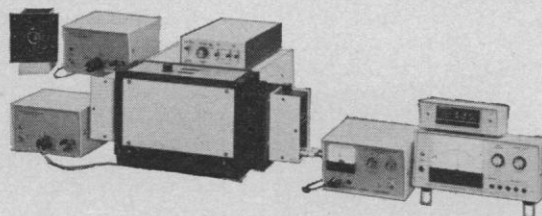
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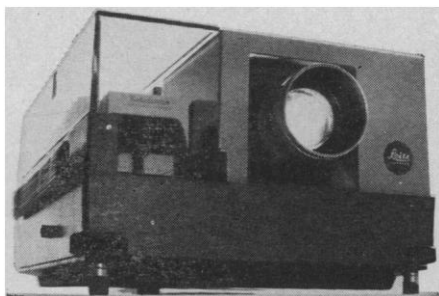
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2-6. American Oil Chemists Soc., Houston, Tex. (C. H. Hauber, AOCS, 35 E. Wacker Dr., Chicago, Ill. 60601)

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 Röntgengesellschaft, 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

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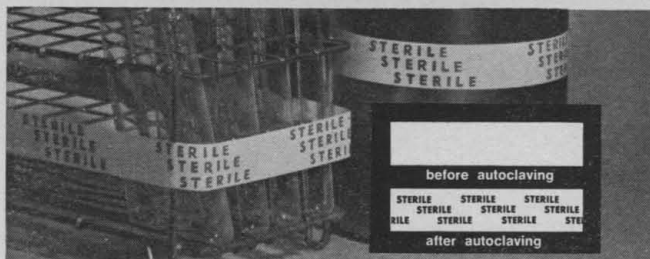
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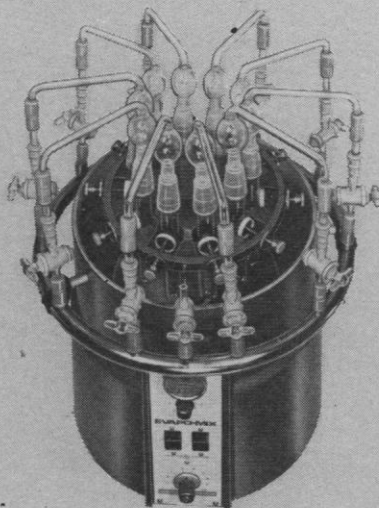
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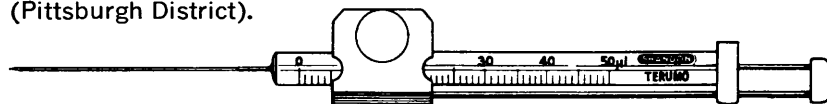
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annual, Boston, Mass. (R. J. Burk, Jr., RRS, 4211 39 St., NW, Washington, D.C. 20016)

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 Bernardino, 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)

SCIENCE, VOL. 171



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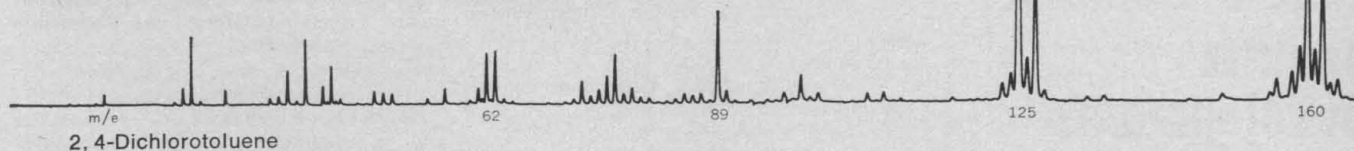
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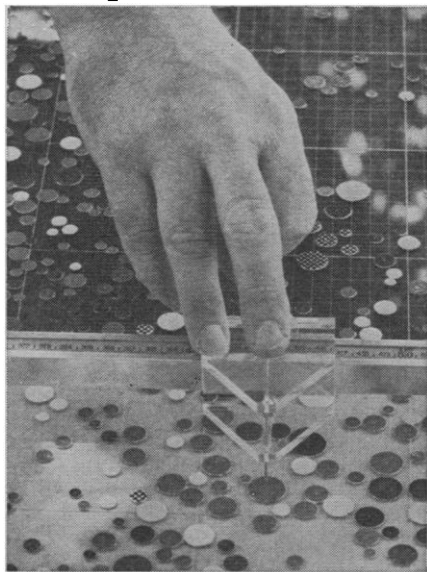


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12-14. Institute of **Electrical and Electronics Engineers**, electron ion and laser beam technical conf., Boulder, Colo. (Technical Activities Board, 345 E. 47 St., New York 10017)

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 instrumenta-

tion symp., New York, N.Y. (P. J. Womel-dorff, 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, VIIIth 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)