

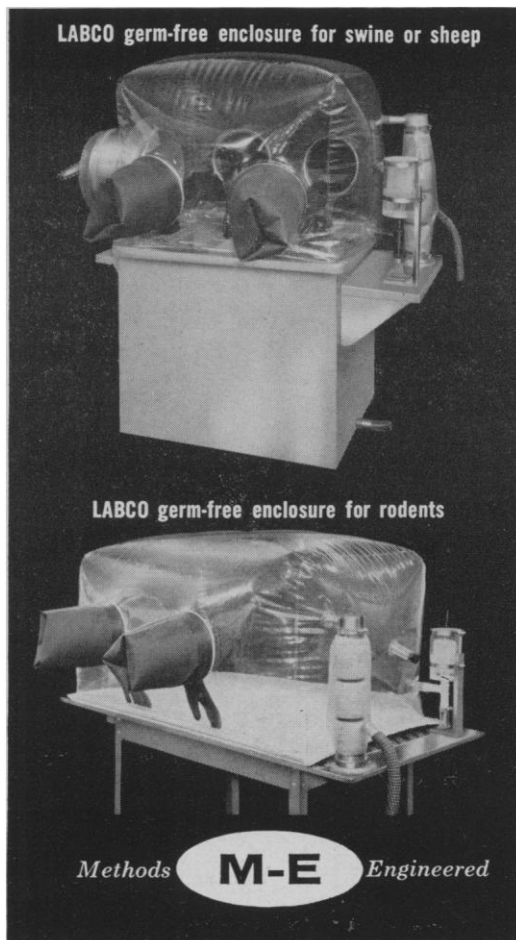
## New Germ-Free Enclosures for Swine, Sheep, or Small Animal Research

A new variation from the standard enclosures for germ-free animal research and care has been developed by Labco Division of Parteco, Inc. The new unit is a modification of the successful Labco designs for bench type units recently announced and are specifically designed for the permanent care of swine.

The lower portion of the stainless steel housing provides normal living quarters for the small pigs or lambs. A liftout grill on each side of a stationary stainless steel tray provides access to the lower housing area. The animals may be lifted to the top tray for inspection or medical treatment within a totally germ-free environment. Food, water and medication can be introduced to the area through a door in the unit which enables complete sterilization of all material entering the controlled area of the enclosure. Write for complete information on germ-free laboratory enclosures, standard and custom.

**LABCO DIVISION**  
PARTSCO, INC.

2977 Lamb Avenue, Columbus 19, Ohio



aged, its radiations became poisonous and produced debility and death. Most of the Lemurians abandoned Earth. Some remained, one branch becoming our own ancestors. The other branch degenerated completely, withdrew to a vast system of caverns, and became a misshapen, evil race of "deros." Coming upon some devices left behind by the Lemurians which project mind-controlling rays, the deros have amused themselves ever since by causing all types of aberrant thought and behavior in mankind.

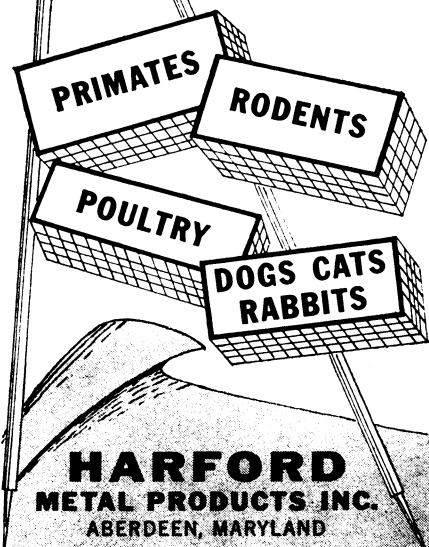
Obviously Shaver has predicted (i) solar particle emission, (ii) the aging and mutagenic effects of ionizing radiation, and (iii) recent findings as to the effect of direct electrical stimulation of various brain centers. In view of these prognostications, his other conclusions must be objectively re-examined—unless, that is, one simply feels, as I do, that while one bad apple spoils the rest, the accidental presence of one or two good apples does not redeem a spoiled barrelful.

POUL ANDERSON

3 Las Palomes, Orinda, California

## HARFORD CAGE SYSTEMS

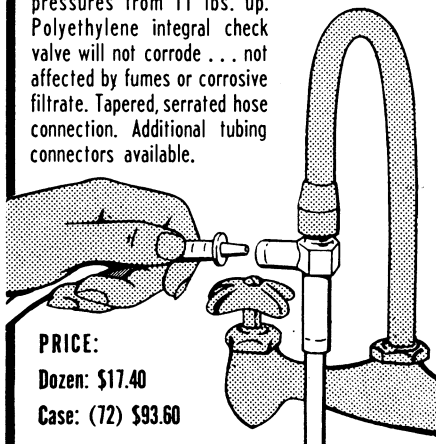
**WORLD'S LARGEST DESIGNER and MANUFACTURERS of ENVIRONMENTAL HOUSING FOR LABORATORY SPECIMENS**



## FILTER PUMP

### Corrosion-Free Polyethylene

Operates efficiently on water pressures from 11 lbs. up. Polyethylene integral check valve will not corrode . . . not affected by fumes or corrosive filtrate. Tapered, serrated hose connection. Additional tubing connectors available.



PRICE:  
Dozen: \$17.40  
Case: (72) \$93.60

Pioneer Plastics, Inc. is the manufacturing leader in plastic laboratory apparatus. Pioneer products have proven their economy and practicability in chemical laboratories through the world for more than 7 years.

WRITE FOR NEW CATALOG TODAY

ENGINEERED PLASTIC LABWARE PRODUCTS



**PIONEER PLASTICS**

Dept. 1, Box 8066

JACKSONVILLE 11, FLORIDA.

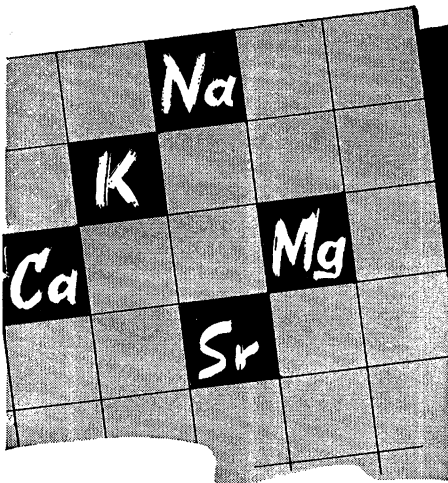
## The Possibility of Compound Formation by Helium

The recent letter "On the chemistry of inert gases" by George Wald (1) contains many points which deserve discussion. We wish to comment only on Wald's proposition that "it should be exceedingly difficult to prepare compounds of helium, in which the . . . 1s orbital is filled and no others are available. . . ." The statement is undoubtedly correct if one considers only ionic bonding, as in the first reported xenon compound,  $\text{Xe}^+\text{PtF}_6^-$  (2), or covalent bonding with heavy atoms, such as appears to be present in  $\text{XeF}_4$  (3).

However, helium has long been known to form covalent bonds in the species  $\text{HeH}^+$  and  $\text{He}_2^+$ , first observed in mass spectrometric studies of ionized gases. Recent mass spectrometric studies of the beta-decay of  $\text{HT}$  and  $\text{T}_2$  gases have shown that the predominant products are  $^3\text{HeH}^+$  and  $^3\text{HeT}^+$ , respectively (4). About 90 percent of the helium-3 product of the decay reactions is found as helium hydride molecule ions which survive the  $10^{-4}$  sec transit time of the mass spectrometer (5).

A qualitative explanation can be given for the stability of these diatomic

wanted...  
more  
candidates



#### razor-sharp analysis...

of each of the five elements here, all at the same time, from the same sample, is run-of-the-mill for the Technicon® Multichannel Flame Spectrometer. Determinations down to 1.0 ppm for Mg—0.01 ppm for Ca—0.01 ppm for Na. All with background rejection so stringent that it comes up with answers under noisy conditions so severe as to put lesser spectrometers completely out of the running.

**what bothers us**, though, is those empty spaces in the "bingo" card above. So great is the reserve of this remarkable instrument that taking the measure of the classic Alkali Quintet—all at once—taxes it not at all. With equal aplomb it can simultaneously analyze any added burden...twenty, thirty, fifty...of any kind of materials that can be excited by a hot flame.

**got any candidates** for spectrometry...however far out...that you'd like us to investigate for you? Jot 'em down in the blank boxes above, tear out and mail to the address below or...tell us in a letter...better still, phone us: OWen 3-1000 collect. (If you don't feel like going that far, maybe Technicon Bulletin MFS1 will give you some ideas. Do send for it.)

**TECHNICON  
INSTRUMENTS  
CORPORATION**

Research Park • Chauncey, New York

15 FEBRUARY 1963

ions. Bonding in  $\text{HeH}^+$  results from overlap of the  $1s$  atomic orbitals of the two atoms. Only two electrons are present, and both lie in a bonding molecular orbital (the  $\sigma s$  orbital). No inner electron shells are present to shield the nuclei, and the nuclei can therefore approach each other closely; this results in large overlap of the  $1s$  wave functions and so in large covalent exchange energy. The same factors lead to strong bonding in the isoelectronic hydrogen molecule (heat of dissociation = 103 kcal/mole).

The same considerations apply to  $\text{He}_2^+$ , with the exception that an antibonding electron is also present, reducing the effect of the two bonding electrons. However, the equivalence of the nuclei is favorable, and the most recent quantum mechanical calculations suggest that dissociation energies for both species are in the range 40 to 50 kcal/mole (6). These estimates offer some hope that compounds of  $\text{HeH}^+$  or  $\text{He}_2^+$  with anions may be isolable, although they will probably be endothermic. The availability of  $^3\text{HeT}^+$  from tritium gas may make it possible to detect very small quantities of helium hydride compounds radiochemically.

ROBERT WEST  
LARRY HASKIN

Department of Chemistry,  
University of Wisconsin, Madison

#### References and Notes

1. G. Wald, *Science* **138**, 1350 (1962).
2. N. Bartlett, *Proc. Chem. Soc.* **1962**, 218 (1962).
3. H. H. Claassen, H. Selig, J. G. Malm, *J. Am. Chem. Soc.* **84**, 3593 (1962); C. L. Chernick et al., *Science* **138**, 136 (1962).
4. A. H. Snell, F. Pleasonton, H. E. Leming, *J. Inorg. Nucl. Chem.* **5**, 112 (1957); S. Wexler, *ibid.* **10**, 8 (1959).
5. It is possible that ~ 90 percent represents an upper limit on the proportion of  $\text{HeH}^+$  species generated, but in any event the proportion must be high. For a discussion see S. Wexler, *J. Inorg. Nucl. Chem.* **10**, 8 (1959).
6. A. Evett, *J. Chem. Phys.* **24**, 150 (1956); P. N. Reagan, J. C. Browne, F. A. Matsen, *J. Am. Chem. Soc.* **84**, 2650 (1962).

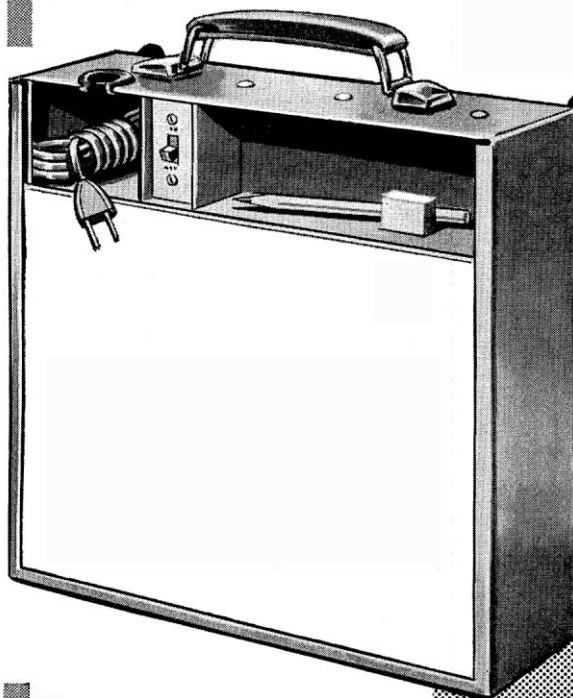
#### Physical Contact between Mother and Young

In the article "Critical periods in behavioral development" [*Science* **138**, 949 (1962)] J. P. Scott suggests that there must be negative mechanisms, including perhaps fear responses and rejection of strange young, which prevent or bring to an end the social relationship between mother and young.

To these components I would add a third possible factor—lack of physical

# Portable Cool... Glow Box

THE SCIENTIST'S LIGHT BOX



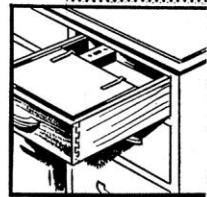
#### TILTS EASILY FOR TABLE-TOP USE

Model 12-12D for  $8\frac{1}{2}'' \times 11''$  curves, charts, spectra, X-ray film, biological samples, etc. Model 12-20E for double size sheets  $11'' \times 18''$ .



#### FITS STANDARD DESK DRAWER FOR STORAGE OR USE

Keep GLOW BOX in your desk drawer immediately available whenever you wish to examine, compare, or trace. It's so convenient!



#### STANDS UPRIGHT FOR DEMONSTRATIONS

The uniform, diffuse light focuses attention on displays of samples for lectures, demonstrations, etc.



SEND CARD FOR LITERATURE

**I<sup>2</sup>R**

INSTRUMENTS for  
RESEARCH and  
INDUSTRY  
CHELTENHAM, PA.