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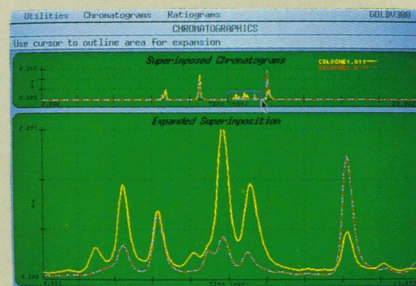
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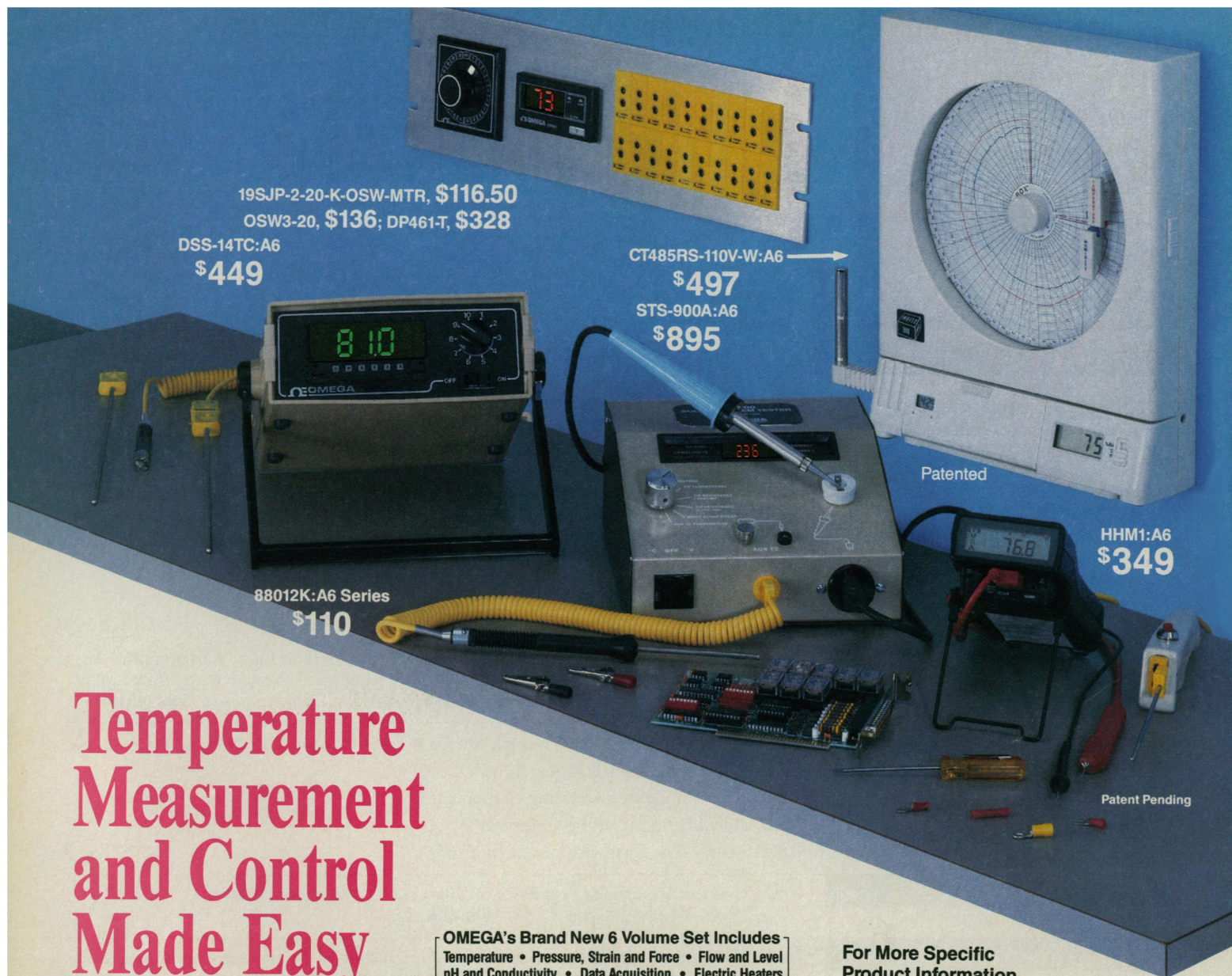
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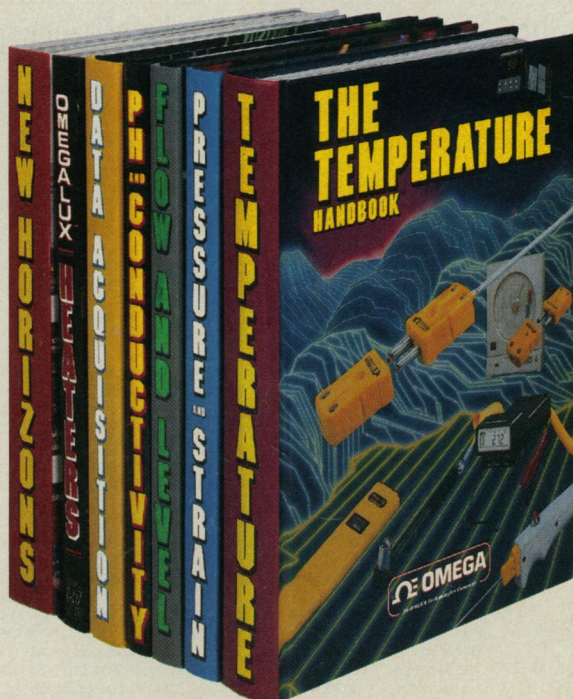
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COVER A graded size series (a twofold difference in mass from the smallest to the largest) of hatchlings from a single clutch of the lizard *Sceloporus occidentalis*. Large variation in hatchling size was achieved by removing various amounts of yolk from some eggs. Size manipulation, "allometric engineering," permits an experimental assessment of the effect of hatchling size on locomotor performance. See page 1106. [Photograph by Barry Sinervo]

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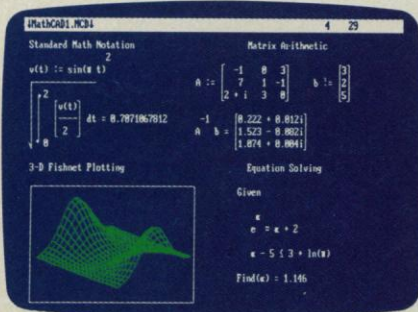
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This Week in **SCIENCE**

Pathologic amyloid

AMYLOID deposits in the brain and blood vessels are pathologic lesions associated with Alzheimer's disease, Down syndrome, and hereditary cerebral hemorrhage with amyloidosis of Dutch type. The amyloid β protein precursor and its plaque-associated fragment, amyloid β protein, have recently been subjected to detailed structural, functional, genetic, and metabolic analyses that are described on page 1058 and on pages 1120 to 1128.

AIDS model

A new animal model system for studying AIDS has been developed by Kestler *et al.* (page 1109): rhesus monkeys experimentally infected with a cloned simian immunodeficiency virus develop and die of a disease that is much like human AIDS. The monkey disease runs a time course that is appropriate for laboratory studies, and the viral genes are well defined and can be manipulated; therefore, the system appears suitable for studying pathogenesis and for testing strategies for preventing and treating disease. Palca elaborates on the potential of this model (page 1078).

Briny habitat

EXTREME hypersalinity can create conditions favorable for growth of chemosynthetic organisms. MacDonald *et al.* describe a "lake" of super-salty brine on the sea floor 650 meters below the surface in the Gulf of Mexico that is ringed by a thick band of deep-sea mussels that harbor chemosynthetic bacteria (page 1096). The lake's foundation is a crater that is thought to have formed when gases exploded through and collapsed the surface sediment. The brine is dense and prevents dissolved methane from mixing into the seawater. The stable interface of the brine and the overlying seawater supports mussel settlement, because both dissolved methane in the brine and oxygen in the seawater are available for the

chemosynthetic organisms. At the innermost edge of the mussel bed, distinct color banding in mussel shells demarcates the anoxic-oxic interface. A community of nonchemosynthetic organisms—fishes, eels, and crustaceans—was seen in association with the mussels.

Good vibrations

MUTUALLY beneficial relations exist between ants and two families of butterfly caterpillars: ants protect caterpillars from predators, and caterpillars secrete amino acids, sugars, and other nutrients used by the ants. In nature and in the laboratory, caterpillars that can emit vibrations are the most heavily guarded by ants; unguarded caterpillars are vulnerable to predation, so the ability to "call" may be important to caterpillar survival. Recordings of the vibrations of riodinid and lycaenid caterpillars in five distinct biogeographic regions around the world indicate that calling may be ubiquitous among and confined to ant-associated caterpillar species (page 1104). Many of the riodinid caterpillars that produce vibrations have vibratory papillae, but other caterpillars produce the vibrations in other ways. DeVries points out that, for attracting ants, the caterpillars have exploited a form of vibrational communication that the ants use among themselves while gathering food and in times of stress.

Lizard size and performance

HATCHLING lizards from Southern California have larger bodies and longer hindlimbs, move faster, and have more stamina than their counterparts in Oregon and Washington (page 1106). To test whether the differences in performance reflect differences in body size (allometric consequences), miniature California hatchlings were produced by removal of 10 to 50% of the total egg mass and compared with northern hatchlings of the same size (cover). Three weeks after a lizard had hatched, its speed on a labo-

ratory racetrack was charted, and at 4 or 5 weeks its stamina was measured on a treadmill. Speed proved to be a direct outcome of size: northern and southern hatchlings of the same size had equal burst speeds. But California lizards retained their edge in stamina even when miniaturized, showing that this trait is not fully size-dependent. "Allometric engineering" experiments and recent genetic engineering studies have added experimentation to allometric analyses, which previously were largely statistical. Sinervo and Huey note that, of these two experimental approaches, allometric engineering is at the present time the most likely to be widely applicable for studying how size affects the performance of offspring of many different egg-laying animals.

Cell fates

A photoablation technique has been developed that should have broad use in studies of cell-cell interactions during embryonic development (page 1115). The technique is illustrated in a study of communications among primary and secondary mesenchyme cells during development of sea urchin embryos. Primary mesenchyme cells typically produce skeleton; secondary mesenchyme cells, which are prevented from producing skeletal elements by a suppressive signal released from primary mesenchyme cells, produce muscle and pigment cells and portions of the coelomic sac. However, if primary mesenchyme cells are absent, some secondary mesenchyme cells can switch gears and form the larval skeleton. Etensohn replaced endogenous primary mesenchyme cells in embryos with cells tagged with a fluorescent label, rhodamine B isothiocyanate. Then, through exposure to green light, transplanted cells were eliminated after different elapsed times of development. The ablation experiments showed that only late in gastrulation and only for a brief time did the primary mesenchyme cells send the signal that could control and alter the fate of the secondary mesenchyme cells.

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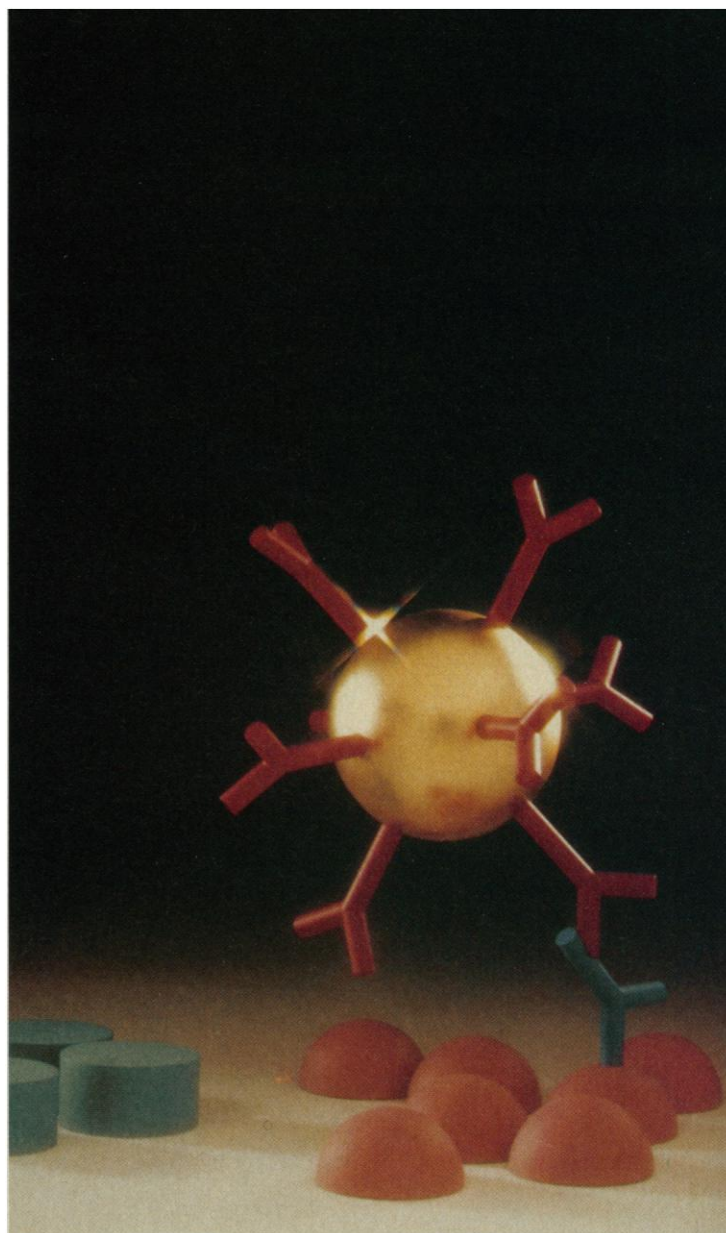
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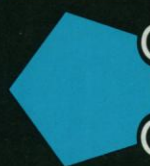


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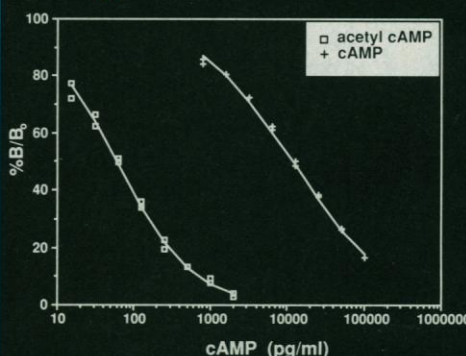
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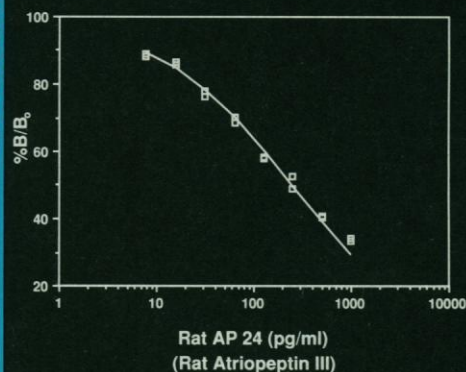
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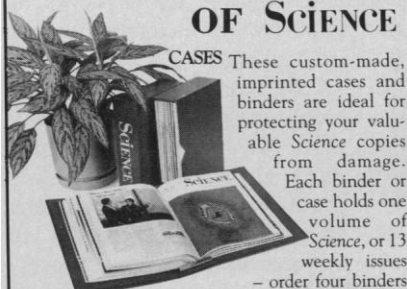
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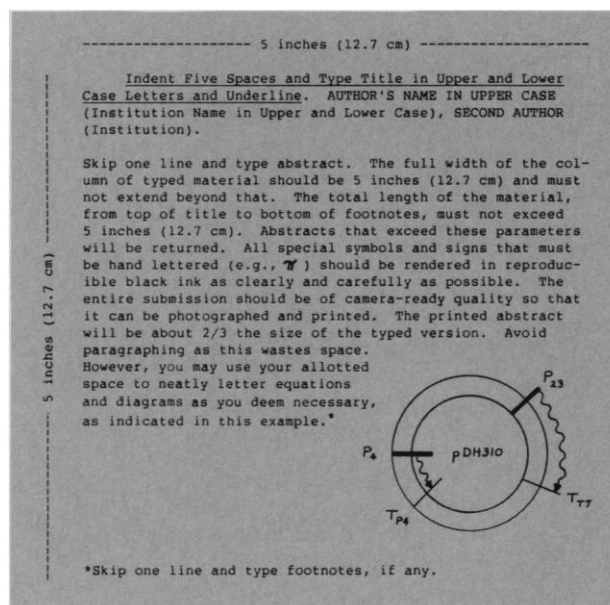
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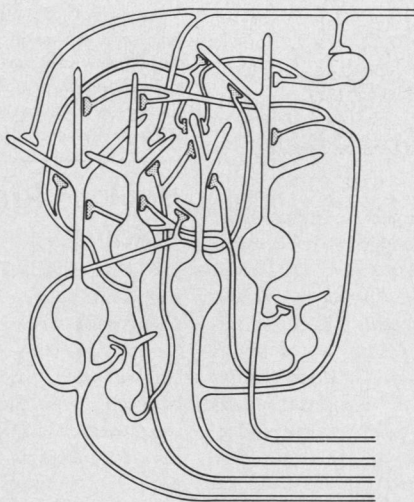
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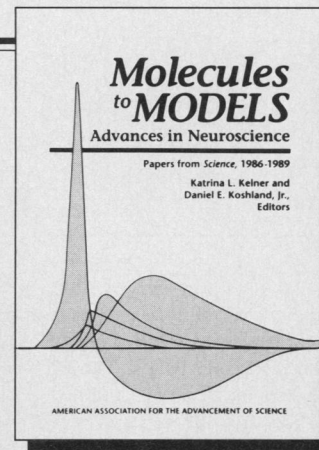
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