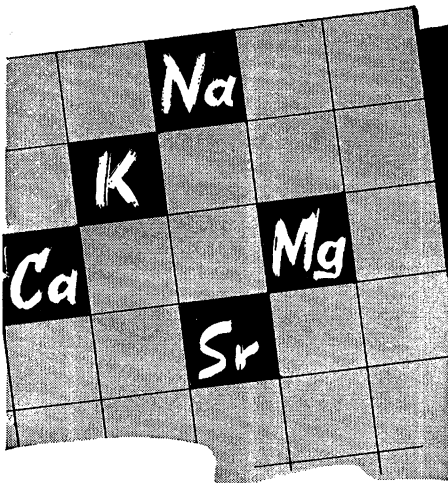


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ions. Bonding in HeH^+ results from overlap of the $1s$ atomic orbitals of the two atoms. Only two electrons are present, and both lie in a bonding molecular orbital (the σs orbital). No inner electron shells are present to shield the nuclei, and the 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 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 HeH^+ or 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

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5. It is possible that ~ 90 percent represents an upper limit on the proportion of 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).
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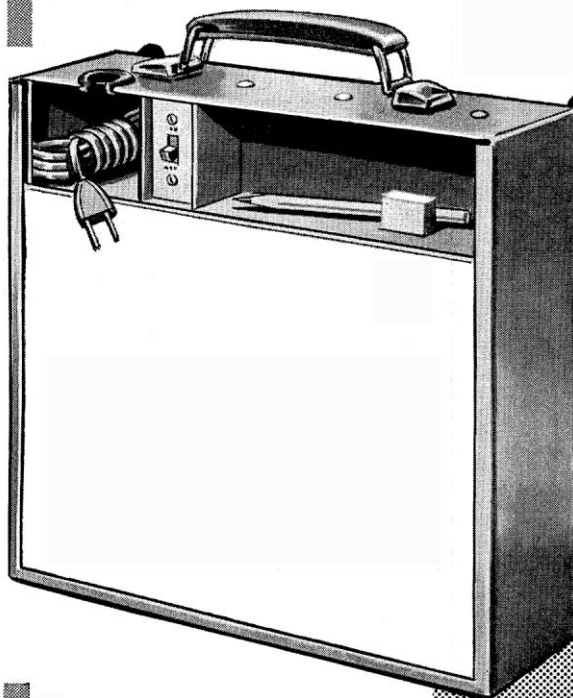
Physical Contact between Mother and Young

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

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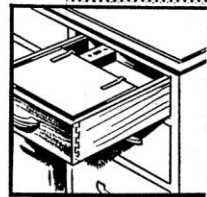
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contact between mother and young. Experiments with maternal (broody) hens (R. A. Majer, *J. Comp. Physiol. Psychol.*, in press) indicate that, if a broody hen is prevented from having physical contact with chicks while other cues are left intact, the hen's broody response quickly dissipates.

It is possible that the fear response hypothesized by Scott and the physical-contact variable interact to bring about a normal termination of the mother-young relationship in chickens. For example, as the chicks become relatively large the hen may show a fear response and avoid them as she does other large (adult) birds, thus terminating the period of physical contact. Lack of contact could reduce the maternal hormone level, bringing about a break-up of the maternal response.

The biological significance of such negative mechanisms is clear: without termination of one maternal relationship, other relationships, notably sexual relationships, may not commence.

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Civil Defense

A potential enemy will surely perceive civil defense moves of the type advocated by A. W. Bellamy [*Science* 138, 958 (1962)] in their strategic context. Regardless of our intent, the principal strategic effect of civil defense will be not to increase the chance of preventing all-out war but to perpetuate the "policy-backing" role of our offensive forces as a mechanism for threatening the enemy. For without civil defense our threats of massive retaliation, or of similar reaction incommensurate with provocation, acquire the nature of an embarrassingly transparent bluff.

The latest form of threat, known as the "no-cities" policy, makes obsolete Bellamy's statement that "there is general agreement that such an attack would result in heavy damage to the nation's industrial plants. . . ." According to the no-cities mythology, we can safely threaten to strike first ("pre-emptively") by planning an antiseptic attack on the enemy's offensive military forces alone, leaving his cities untouched. Being rational and a good loser, our opponent will retaliate in an equally antiseptic manner. Our superior force will then "prevail," thus justifying our pre-emptive action and the posture and

policy of threats that lay behind it. This fairy tale would be amusing were it not the crucial substance of Defense Secretary McNamara's Michigan speech and the unspoken rationale behind the United States' current strategic stance and the composition of its armed forces for all-out war. On 22 October President Kennedy's Cuban-crisis threat of "full retaliatory response" to lesser provocation made explicit the pre-emptive-threat basis of U.S. strategy, in keeping with his advocacy the previous year of U.S. civil defense as the answer to the Berlin problem.

What advocates of the "defended posture" habitually forget is the technological versatility of the offense in reshaping its policy. Preparedness is met by counterpreparedness. If the U.S. seriously prepares itself for the Office of Civil Defense Mobilization's 2 weeks of shelter occupancy, apparently endorsed by Bellamy, the obvious enemy response is to prepare for a long war (for example, by insuring relative invulnerability of his striking forces through designing them for mobility and concealment). If food and petroleum are to be stockpiled above ground, they become targets for high-yield thermal weapons. If crops are, as Bellamy believes, not seriously threatened by fallout, they can be attacked by specific anticrop agents. If neutral nations are to be called on for assistance in post-attack recovery, they can be subjected to nuclear blackmail. And so on; offense readjusts to meet defense. It remains true that there is no place to hide.

In view of the possible penalties to a policy of deterrence—the forcing of the arms race that would result from our opponent's inevitable search for measures with which to counter our disaster "insurance"—it seems unprofitable to make even the first moves in this game, unless possibly it can be demonstrated that those moves would exert strong economic leverage such that a small investment in defense on our part would necessitate a large compensatory outlay on the part of the opponent. Bellamy has attempted no such demonstration. Nor has he attempted an analysis of the relative time scales for developing defensive measures and offensive counter-measures. He has failed to recognize the strategic implications of his recommendations, which are based, apparently, on behavioral considerations.

Both the aggressively threatening humanitarianism of the no-cities policy and the curatively threatening humani-