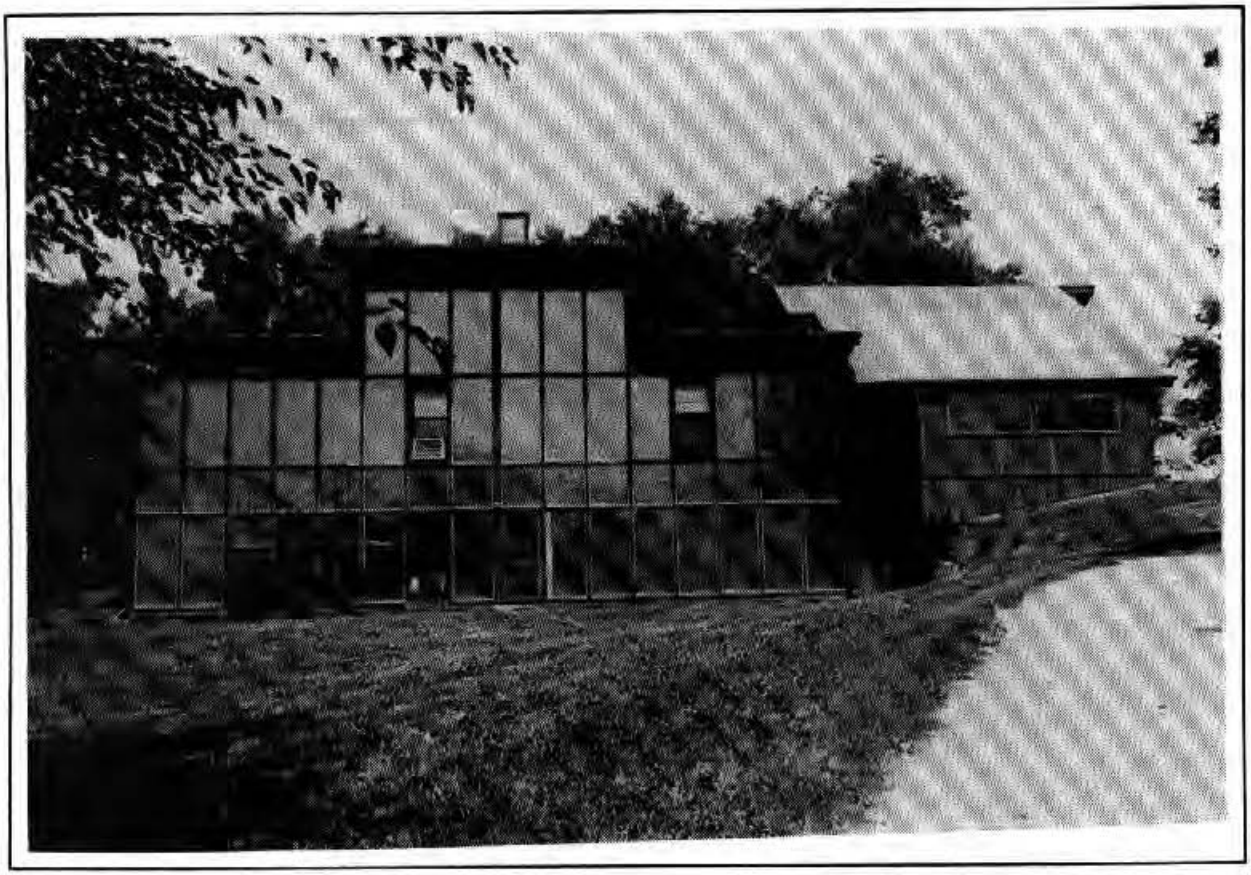
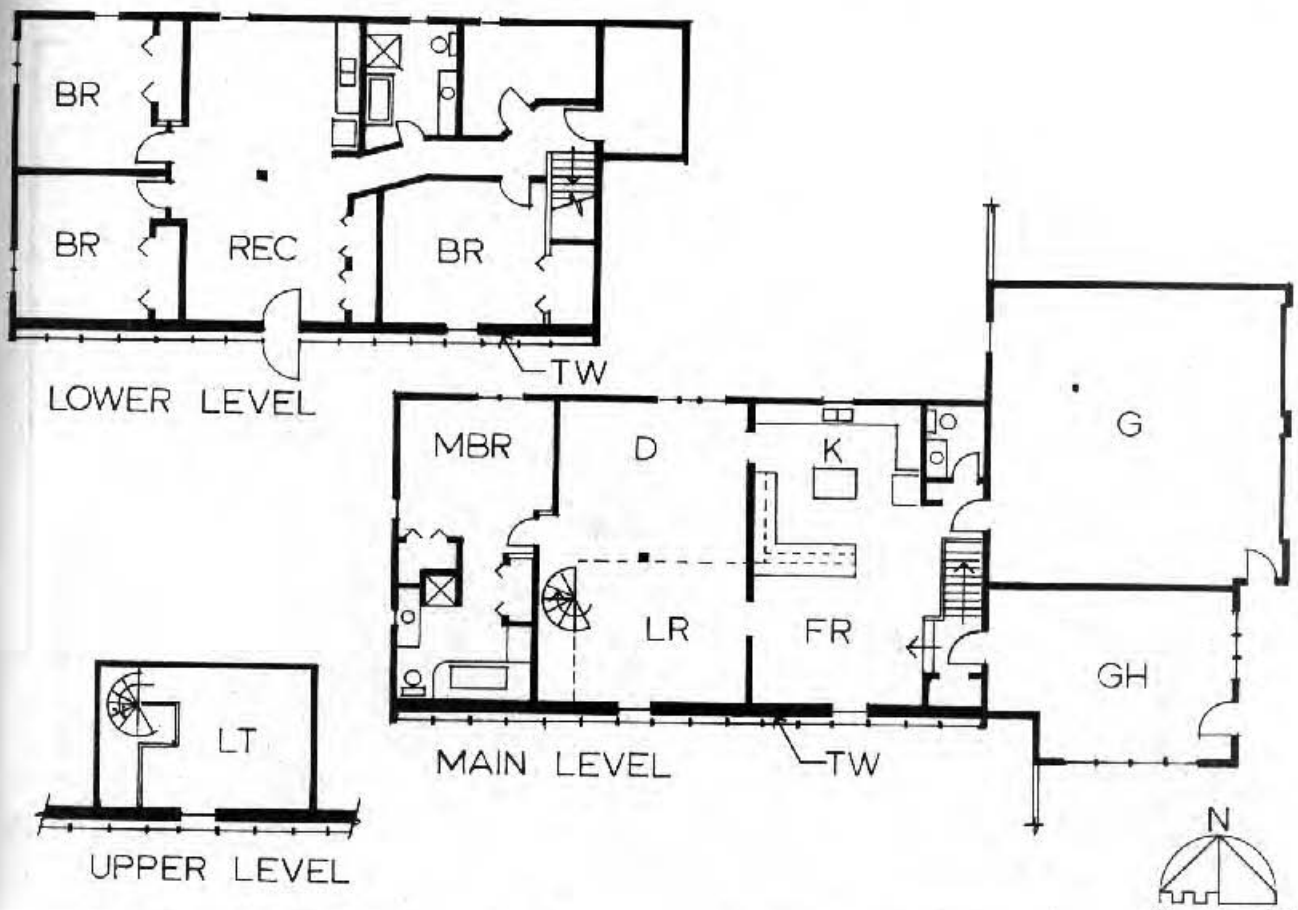


The Eurich home has 2900 sq ft of living space divided equally between two levels with an additional 12' x 14' loft area located above the living room. A 20' x 16' greenhouse/airlock entry creates a light, warm, and spacious entrance to the house (opposite left).

Although a full height, two-story 12" filled concrete block Trombe wall is the major passive solar heating system, the Eurich house functions not unlike a double shell with mass -- the Trombe wall and a 6" thick concrete basement floor slab; sun warmed air rises along the Trombe wall and moves by convection through the upper living spaces to a north wall plenum, then through an air passageway comprised of concrete blocks laid under the basement floor slab and back to the bottom of the Trombe wall where the process is repeated.

Dick Eurich has developed a unique multiple-layer glazing system (opposite right) with nearly the same solar transmission value as double pane glass but with a higher net solar radiation gain. The multiple glazing system consists of an outer glazing of 1/8" tempered glass and four inner glazings of clear teflon. The multiple glazings also serve as an insulation barrier, and, because the system has a lower heat loss than conventional triple pane windows, night shutters are not needed.

The summertime cooling strategy utilizes a cool tube system comprised of two tubes 65' and 45' long buried between 4' and 4.5' deep. Air is drawn through the tubes into the building on its north side and circulated through the air passageway beneath the basement floor slab to the Trombe wall and exhausted out the roof. The less than ideal performance of the cool tube system the owner has experienced could be enhanced by burying the tubes between 8' and 12' underground.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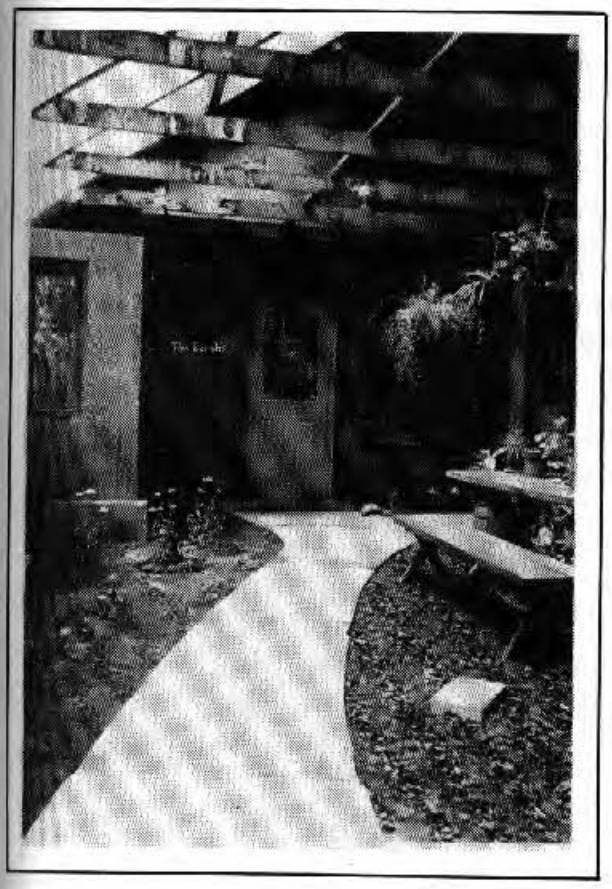


SCHWAB

LINCOLN

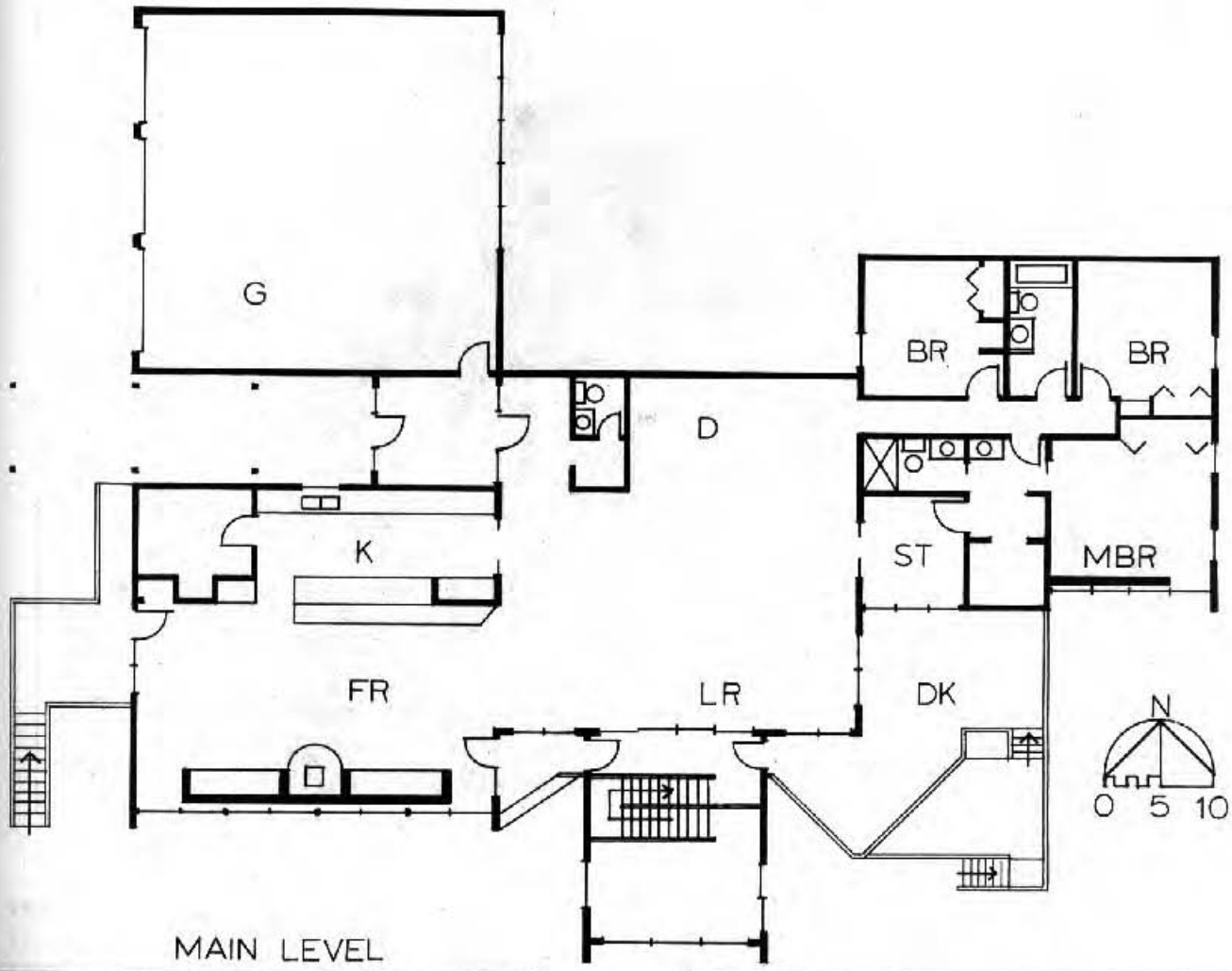
TROMBE WALL-MIXED PASSIVE

The Schwab home, designed by Bob Alfieri of Lincoln, is both architecturally stunning and energy efficient. The home has 3850 sq ft of living space on each of two floors, and rooms with vaulted ceilings in the open floor plan are bathed in light from the south glass or the overhead skylight in the bedroom wing.

The house primarily relies on Trombe wall passive solar heating, although some direct gain and greenhouse strategies are also used. The Trombe wall is floor to ceiling height in the basement, but it is only half-wall height (opposite left and right) in the family room on the main level to permit an essentially unrestricted view to the south. The 12" Trombe wall is of solid brick which has been grouted to eliminate air voids, and, thereby, improve thermal conductance. The Trombe wall totals 400 sq ft of wall surface area, and the Trombe wall glazing area is 600 sq ft.

The Schwab house also has 132 sq ft of direct gain glazing, and 220 sq ft of greenhouse glazing in the two-story attached sunspace. The greenhouse, which is adjacent to the living room, has an exterior meshed fiberglass screen for summer shade control. Four ceiling fans circulate warm air during the winter, and backup heat is supplied by two Tetco groundwater to air heat pumps, which are in turn backed by an electric resistance heating system.

Windows on both the main and lower levels have night insulation shades (opposite left and right) with an R value of 13. The movable insulation, by Thermal Technology, operates automatically in response to outside temperature sensors. The automatic system also has a manual overide.



MAIN LEVEL