

37.4 COMPOST PRIVY-SAUNA DESIGNED & BUILT BY AUTHOR
PHOTOS: EAST VIEW, BOB BROOKS - NORTH VIEW, JOHN RAABE

Algae harvest involves algae collection, sun-drying and admixture into animal (or human) food. Its use for human consumption is a consideration when one remembers that natives of the Republic of Chad have used algae as a staple food since prehistoric times. Likewise, Cortez observed in 1521 that, near what is presently Mexico City, natives “. . . sell some small cakes made from a sort of ooze which they get out of the great lake, which curdles, and from this they make a bread having a flavor something like cheese.” The blue-green algae that Cortez referred to has been identified as SPIRULINA — the very same variety of algae that Chad natives to this day collect from oases and form into cakes.

Bacteria and yeasts, discussed above, form the major source of single-cell protein. Fungi are included in the general single-cell food grouping, but they will not be covered in this book. Fungi have no significant food value. At best, mushrooms are a pleasantly-flavored addition to the diet.

Following the algae harvest, purified effluent can then be drained into a fish pond. Scum from the digester should also be drained into the pond. Fish thrive on the nutrient-rich effluent which finally ends up at the bottom of the pond in the form of stabilized sludge. Pond areas during alternate years are planted to a silage crop, as discussed in a previous chapter.

Human excreta — I almost said human “wastes”, but we need to get away from the concept of excreta as waste now that we have techniques for processing excreta in a sanitary and scientific manner — most definitely, human EXCRETA should be included in a homestead program of fuel-food-and-fertilizer production.

The first major obstacle to the utilization of human excreta is the receptacle — the common, stool-variety water closet. If an author is permitted just one chronic complaint or one indulgence-per-book mine will be registered against the flush toilet. A five-gallon wash-down of each evacuation nullifies subsequent utilization of the excreta material since water-borne sewage is destined, irretrievably, for the septic tank. Furthermore, the seat-height evacuation posture is one of the worst of our unhuman, “civilized” habits.

My personal peeve against faulty bathroom design-use goes back a dozen years when I first started developing an improved compost-privy design. A number of schemes were tried but abandoned for one or another reason. The most recently developed facility has worked exceedingly well. Its salient features are enumerated below under the headings of DESIGN — MATERIALS — STRUCTURE — FUNCTION. DESIGN: The fundamental design feature of my compost-privy is its adaptability into the larger homestead complex. It is designed to nestle between the greenhouse and the cooking-utility and sleeping areas, yet, at the same time, it retains an outside, lower-level access for loading and emptying the compost chamber. Ideally, organic-matter ingress and finished-compost egress should be directly accessible to the anaerobic digester or to the garden or greenhouse in the case where finished

compost is to be directly used on crops. The drawing below illustrates the latter arrangement and includes an upper-level sauna and a roof-level sun deck. Where another arrangement is preferred, a single-level privy can include the functions of washing, bathing and excavation.

FUNCTION: Aerobic decomposition takes place in a divided, cast concrete chamber. Twice a year a simple, metal baffle plate is turned to divert material from one chamber to another, and twice a year alternate chambers are cleaned out in preparation for a new batch of compost. Of primary importance to the proper function of the privy is the moisture content of the compost. Where there is too little moisture, aerobic organisms have difficulty securing a soluble food supply, moisture being their main, food-transport medium. Where there is too much moisture air spaces are reduced, preventing oxygen circulation through the mass. As a general rule privy moisture-content should be maintained at 50%. This 50% privy moisture content will include faeces, which is 70% moisture, urine, which is 90% moisture, garbage and vegetable trimmings, which are 20% moisture, and an expectable (but, nevertheless, greatly reduced) water-flush on the order of from one-to-several quarts.

The compost-privy becomes a practical consideration when compared with the standard, five-gallon-flush water closet which uses about four-and-one-half gallons of water too much. A recent booklet, **STOP THE FIVE-GALLON FLUSH!**, \$1.75, just released by McGill University's School of Architecture, Montreal, Canada, lists a number of toilet manufacturers throughout the world who make throne and squat toilets requiring a mere one-quart flush. Since the publication of McGill's booklet, a California plastics engineer has begun producing gel-finished fiberglass squat plates, illustrated below.

All privy washing and bathing water should be diverted from the composting chamber and drained into a separate leach field. The privy's central, two-inch, galvanized pipe handles the drain water adequately, and, at the same time, doubles as a fixture and a chamber vent.

STRUCTURE: The central pipe that provides water drainage and fixture and compost chamber ventilation to the outside also provides alignment during the structure's erection and, when finished, it provides structural support and bracing for walls, floor and roof. Concrete is poured by casting alternate, one-foot high layers in "climbing" plywood forms. As many as four, one-foot castings can be made in one day. Walls are cast vertically in the manner of children's hand-over-hand game. Light-weight plywood forms make it possible for one person to form the walls while working inside the structure without the need for external scaffolding. This is an especially important feature where a two- or three-story structure is involved, as in the case of the silo construction mentioned in the previous chapter. The same form and the same building system is used for both structures.

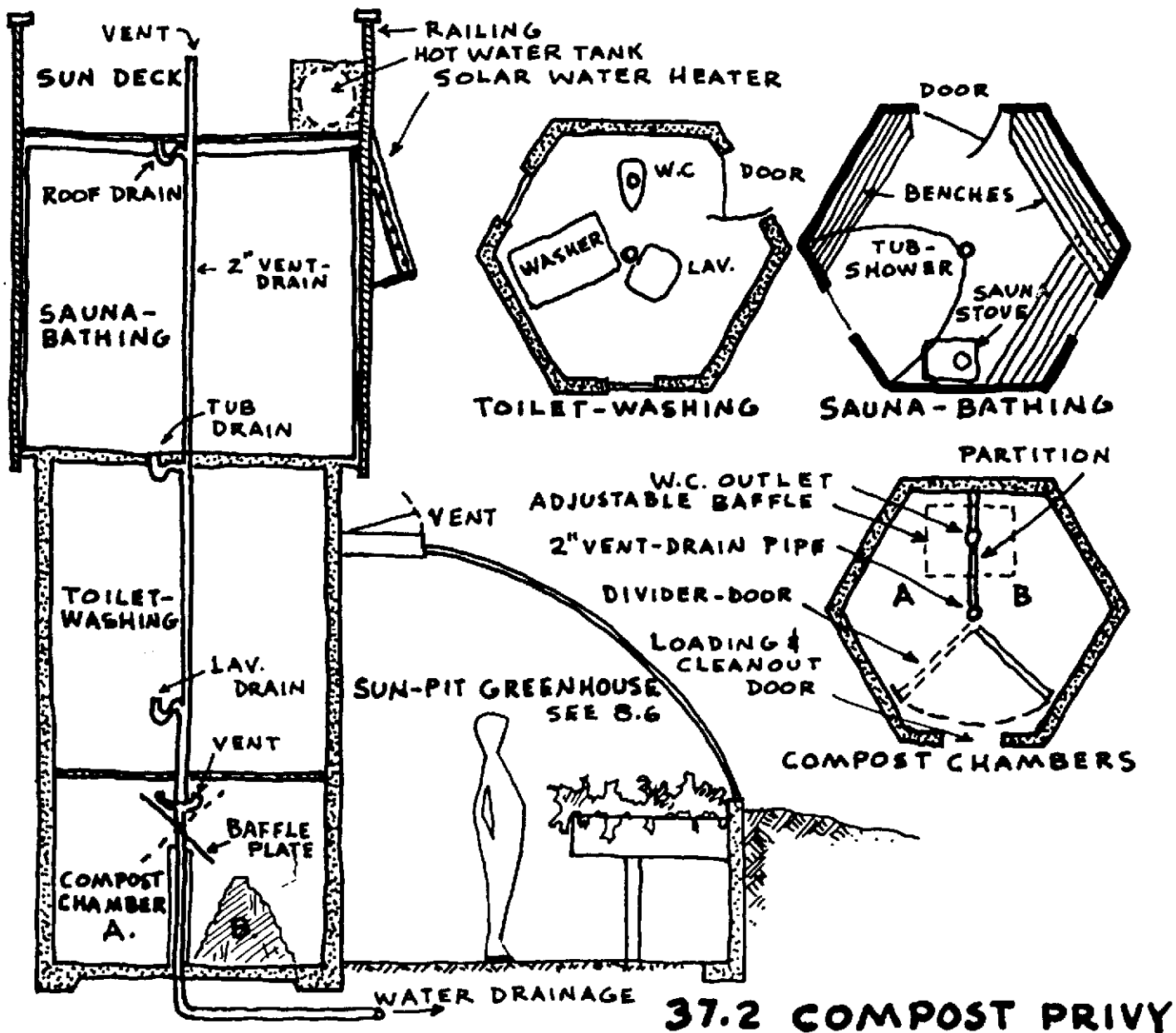
MATERIALS: Concrete was chosen as the basic wall material. Permanence makes it an essential choice for any underground (earth-covered) sections, for the compost chamber section and, certainly, for the feed-silo walls. When a gravity-fed water supply is desirable, concrete walls can be extended above the cast concrete privy roof to form a second-story, with another cast concrete roof over that to provide a place for a water storage. Inside, sauna-bathing facilities are properly faced with a moisture-absorbing material, such as redwood or cedar.

One finds, currently, very few Sanitation Department codes approving of the compost-privy concept. Fortunately, the majority of homesteaders locate outside building code jurisdiction where approval is not mandatory. Some people inside code-enforced districts have fought septic-tank-oriented City Hall — and won. They have done legal battle with the bureaucracies, armed with authoritative literature from The World Health Organization which, quite frankly, states that pathogenic bacteria and other parasites thrive in the anaerobic putrefaction of the septic tank environment for at least six months! In aerobic privy decomposition high temperatures destroy pathogens in a few hours!

Over the decades a number of people in the fields of medicine and agriculture have devoted their lives to establishing more rational sanitation. F. H. King followed the writings of Dr. Poore whose book, **ESSAYS ON RURAL HYGIENE**, was published in London in 1894. Poore raised vegetables on one-and-one-half acres of land kept fertile by the use of directly-applied but buried excrement from one hundred persons for a period of twenty-two years. It took four years to completely cover the garden, Dr. Poore writes, after which time, “. . . fertility and beauty of the garden have been increased enormously . . . No other crops, except cabbage, seem to flourish in the fresh material, but cabbage may be followed by potatoes, these by celery (planted between the rows), these by peas or beans and, after this, by parsnips or carrots without any fresh manuring and with a most abundant yield.”

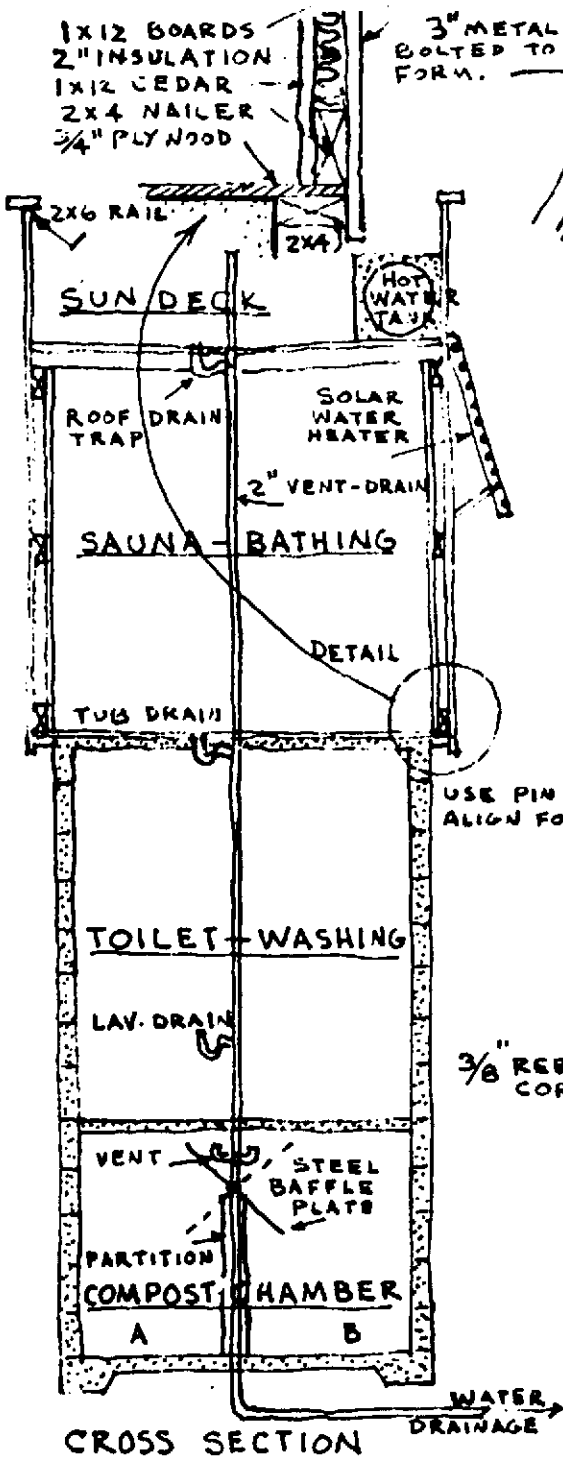
Another Poore quote makes a fitting close to this chapter:

“That in a country or semirural district, where it is possible to give a house a decent curtilage or small garden, it is easy for a householder to make the sanitation of his dwelling quite independent of the local authority. In fact, the householder is able, if he be so minded, to make his sanitation complete and to finish, on his own premises and to his own profit that ‘circulation of organic matter’ which is the law of nature and the only true basis upon which the science of sanitation can possibly stand firm. The householder can do piecemeal what no public authority has ever succeeded in doing wholesale, albeit that millions of £’s have been wasted in silly attempts.”

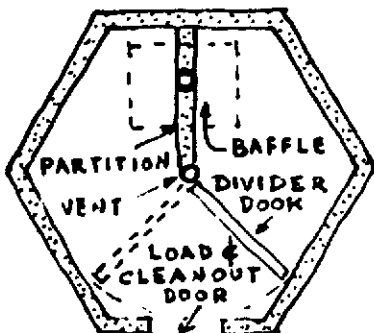


COMPOST PRIVY CONSTRUCTION DETAILS

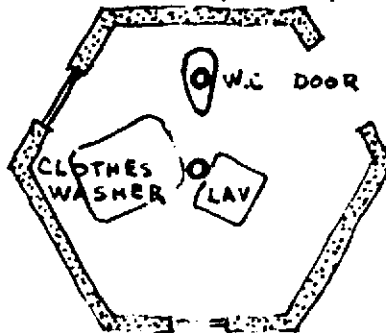
CONSTRUCTION DETAILS



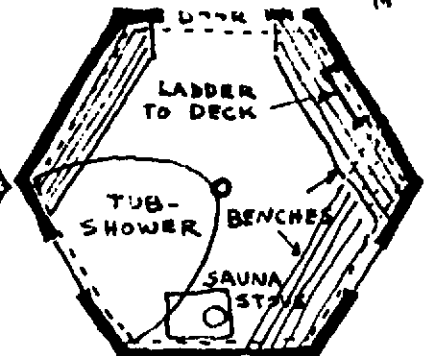
CROSS SECTION



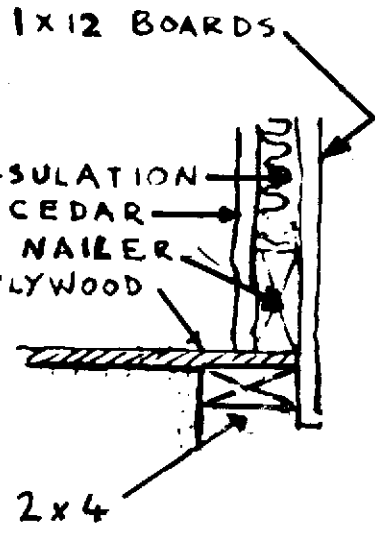
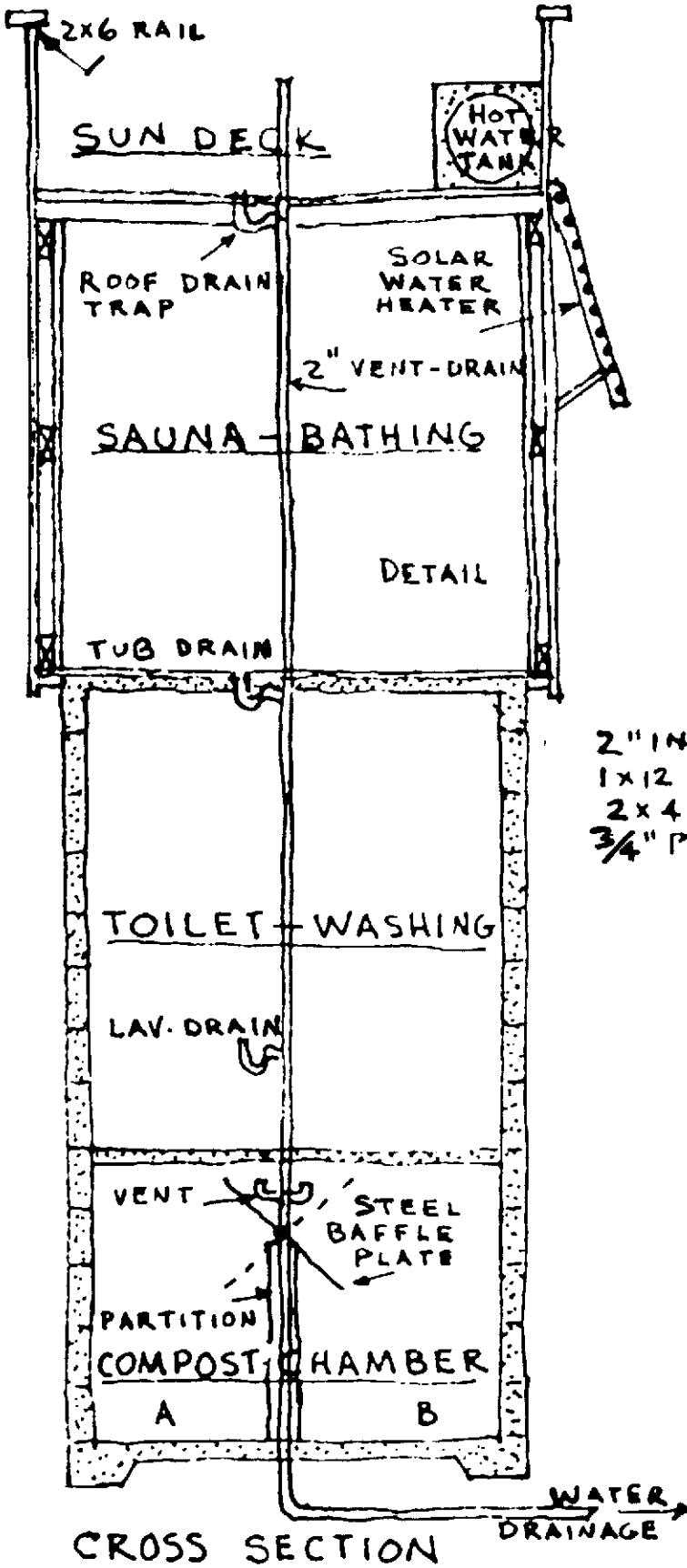
COMPOST CHAMBER



TOILET - WASHING



SAUNA - BATHING



CROSS SECTION

