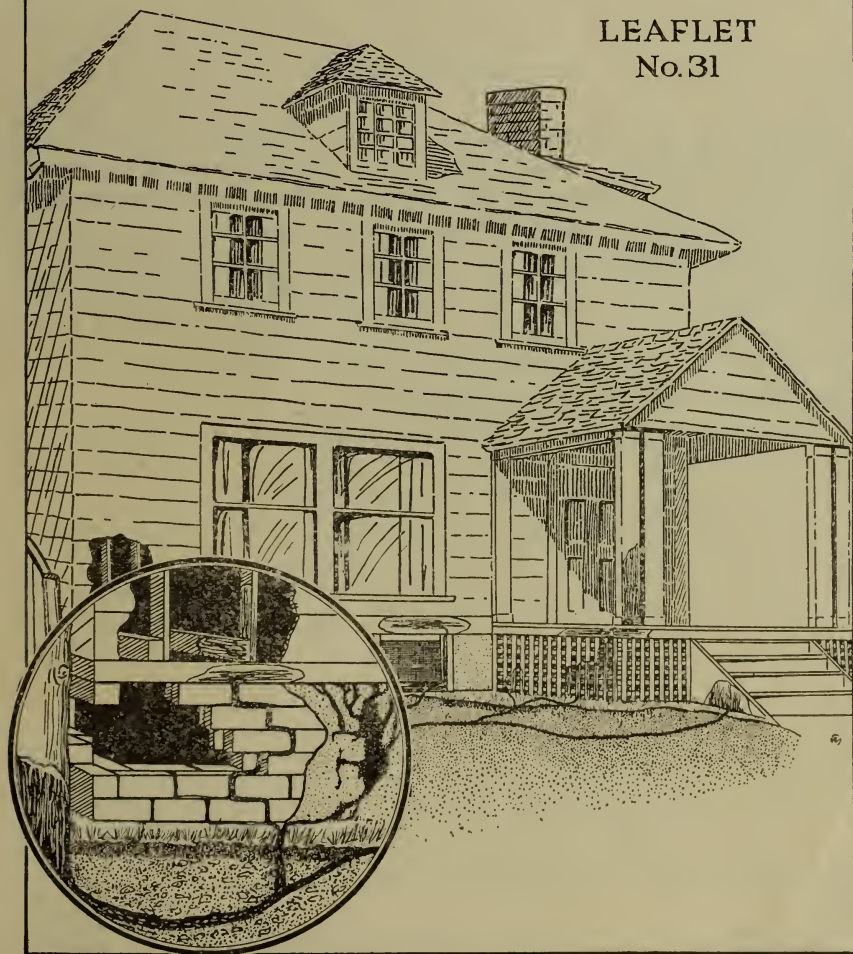


TERMITES ♦ ♦ ♦ IN ♦ ♦ ♦ BUILDINGS

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“FLYING ANTS”

When you find small, blackish, white-winged “ants” flying in large numbers in your house in the spring and fall, do not sweep them up, thinking they are merely outdoor ants, and then forget about them. They may be termites, or “white ants,” and perhaps are destroying the woodwork of your home. This leaflet will tell you how to find out if they are there, before they have done much harm. It will also tell you how to build your house so they can not get in, and how to get them out and keep them out if they are already in.

TERMITES IN BUILDINGS

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Where and What Are Termites?

People sometimes think that termites live only in tropical countries. This is a mistake. They are in the United States and are destructive wherever you find them. In the Southeastern, Central, Western, Southwestern, and Pacific Coast States, however, their damage to the woodwork of buildings is especially bad.

Termites are not true ants, although they look much like them and live in large colonies made up of different forms. The winged male and female termites which you see "swarming" for a short time in the spring or fall are on their way to start new colonies. These parent termites are not injurious, but their descendants, the wingless workers of the new colony, are very destructive. These you rarely see, because they do not crawl about in the open but stay in the earth underground or in wood. If they want to reach woodwork above ground, they build earthlike tubes to crawl through. So they are always under cover.

How Termites Damage Buildings

Termite damage is always hidden inside the wood. The interior rafters, joists, beams, or other timbers of a building may be entirely eaten out before the insect vandals are noticed, since they leave a protective outer shell. Such damage is then hard to repair. (Fig. 1.)

The termites which do the greatest damage to buildings and their contents, especially by weakening the supporting timbers, are those which live in the ground and attack wood indirectly from the ground. These ground-nesting termites can not live without moisture, and this they get from the earth. If shut off from moisture in the earth they dry up and die.

How Termites Get into Buildings

If your house is built in such a way that termites can get in, they very likely will. (See cover page.) It will not do to use wood in basements, or in the foundations of buildings, because these are the places where termite damage is most likely to start.

Termites are able to penetrate masonry walls where improper grades of mortar have been used in foundations, working up through the interior of walls.

By means of earthlike shelter tubes, termites are also able to crawl up through them over impenetrable walls and thus infest buildings.

These are the principal means by which termites get into buildings.

Protection of Basement Construction Essential

Irrespective of whether the proposed building, as to its main construction, is to be of masonry or wood, it is highly desirable, where

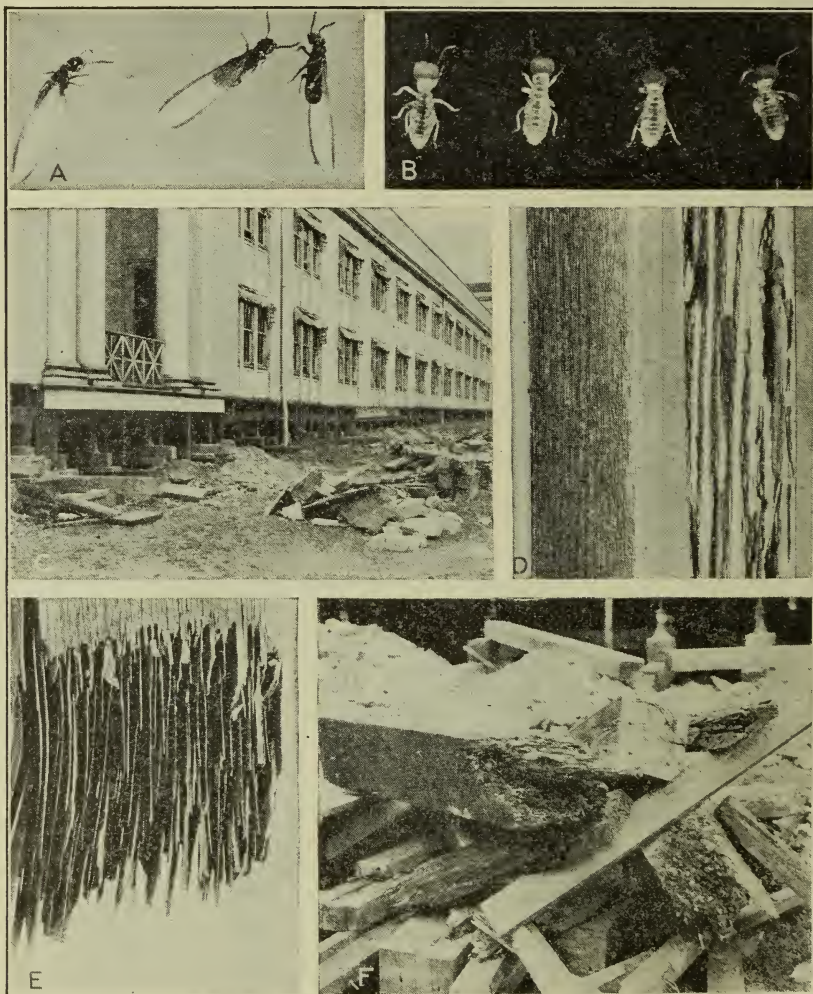


FIGURE 1.—Termites may add greatly to the first cost of a building that has been improperly constructed. A, Winged adults of an eastern subterranean termite, *Reticulitermes virginicus*. B, Mature workers of the common eastern subterranean termite, *Reticulitermes flavipes*. C, Temporary Government building in Washington, D. C., damaged from foundations to roof by subterranean termites. To prevent complete destruction of this building it was necessary to remove the untreated wooden foundation pillars and replace them with concrete pillars. D, Damage to oak flooring by *Reticulitermes flavipes*. Note that the damage is not apparent on the upper surface (left). E, Pine barn sill cut into ribbons by a subterranean termite, *Reticulitermes* sp., at Mayfield, Kans. F, Closer view of the termite-damaged, untreated wooden pillars of the Government building shown in C.

practicable, to eliminate wood from foundations, cellars, and basements. This means the substitution for wood of concrete or other stone equivalent for basement floorings, as well as the elimination

from basements of any other structural wood, including wood substitutes, such as fiber and composition boards and other substitutes containing cellulose. This prohibition does not apply to movable furniture.

Timber or lumber can be used safely in buildings if it is raised above possible soil contact a suitable distance by rock, concrete, or brick foundations made with standard grades of mortar; or if suitably capped and if metal shields are put on to shut off passage tubes.

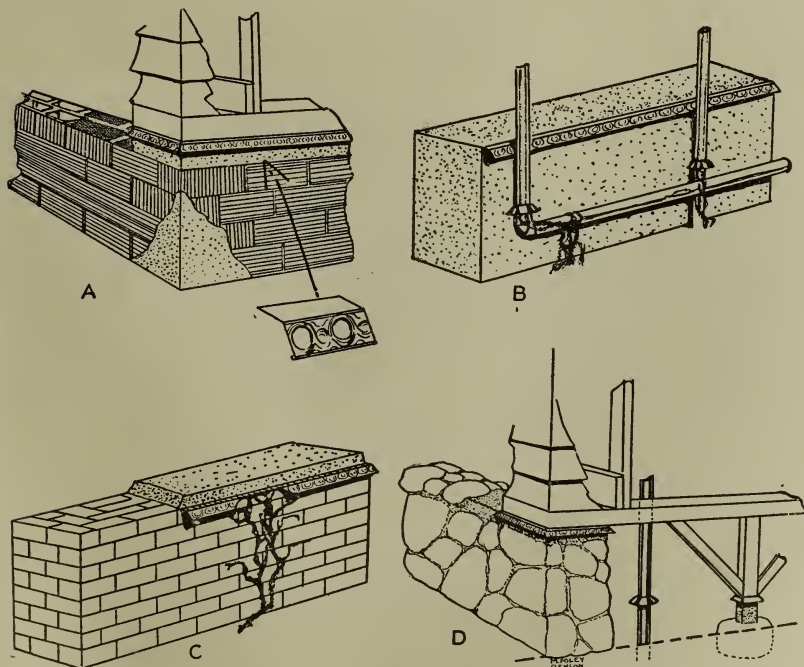


FIGURE 2.—How to insulate foundation units of hollow tile or solid masonry against termites. A, Foundation wall of hollow tile surfaced with stucco, showing metal termite shield in place. Notice how the top of the wall is capped with sheet slate and concrete. B, Concrete wall with termite shield at top, the horizontally laid piping fitted above bend with metal shield to shut off termite tubes. The vertical pipe also has a termite shield. C, Brick wall fitted with termite shield and capped with concrete. Notice how the shield mechanically blocks the earthlike shelter tubes of the termites. D, Stone wall fitted with termite shield and capped with concrete, the wooden posts insulated from the ground with base stone and concrete block. Notice the termite shields on the post and piping.

Cost of Termiteproofing Slight

A few hundred dollars additional (2 per cent of the first cost) spent in the beginning in proper building construction may save you thousands of dollars in repairs and replacements later. It is much simpler and cheaper to keep termites out of a building than to get rid of them and repair the damage after they are once in. The necessary repairs may be too costly for the small householder. But certain methods of construction that will prevent injury are entirely practical. (Fig. 2.)

How to Build Properly Where Wood Is Used

Here are some suggested regulations for preventing termite attack which should be made a part of city building codes:

Wood or fiber products, when an approved preservative has not been forced into the product, shall not be placed in the earth or within 18 inches thereof, excepting wood columns or posts over a concrete floor, which columns shall be provided with noncorroding metal or concrete base plates or footings 6 inches above the floor. This applies to steps, which shall be laid over a concrete base, projecting at least 6 inches beyond the supports of the steps.

Timber to be used in contact with the earth shall be thoroughly impregnated by a standard-pressure process with coal-tar creosote or other equivalent preservative. Timber should be completely cut to proper dimensions before treatment, whenever possible, but when cutting after treatment is unavoidable the cut surfaces shall be thoroughly coated with coal-tar creosote or other equivalent preservative.

Masonry foundations and footing shall be laid in Portland-cement mortar. Foundations built up of masonry units, whether hollow or solid, shall be capped below woodwork with at least 1 inch of Portland-cement mortar, or the mortar and slate, or solid or joined noncorroding metal, or other equally efficient seal.

In the case of frame buildings, a metal termite shield shall be provided, continuing completely around the top of the masonry foundation, including all pillars, supports, and piping, below the woodwork of the building, on both the inside and outside surfaces. Such a shield may be formed of a strip of noncorroding metal (such as copper, or zinc, or an alloy composed of 28 per cent of copper, 67 per cent of nickel, and 5 per cent of iron, manganese, and silicon), firmly inserted in the surface of the masonry, or between the foundation and the wood, with the projecting edge bent downward at an angle of 45° and extending horizontally at least 2 inches from the face of the foundation. In masonry buildings this shield can be inset in the masonry at a height at least 18 inches above the ground.

Floor sleepers or joists imbedded in masonry or concrete, or laid on concrete which is in contact with the earth, shall be impregnated with an approved preservative.

Expansion joints between concrete floor and wall shall be filled with liquid asphaltum and the right-angle joint covered with a sanitary cement mortar or Portland-cement concrete finish of an arc of at least 2 inches in length.

The ends of wooden beams or girders entering masonry or concrete shall not be sealed in but shall be provided with boxes affording an air space at the end of the piece of not less than 1 inch at side of member, unless the ends of such timbers are impregnated with coal-tar creosote or other approved preservative.

Where there are spaces under floors near the earth, they shall be excavated so that there will be no earth within 18 inches of the wood, and they shall be provided with cross ventilation. Such ventilating openings shall be proportioned on the basis of 2 square feet for each 25 lineal feet of exterior wall, except that such openings need not be placed in front of such building. Each opening shall be provided with 20-mesh noncorroding-metal screening, including windows in attics.

Where timber is used in roofs of the flat type, the roof shall, unless protected on the weather side, with a waterproof covering, have a slope and runoff sufficient to provide proper drainage.

All wooden forms on foundations shall be removed from masonry work within 15 days; grading stakes shall be removed before laying concrete floors.

How to Locate Damage

At once look over carefully all woodwork touching or near the ground to find out how the termites got in. Discover where the flying forms came out of the woodwork. This will indicate where the workers are in the wood. Often you will find large numbers of dead winged termites or the shed wings near by.

When you try to stop further damage by termites in buildings you should realize that their numbers may be constantly increased

from some undiscovered, outside nest. Killing the swarming winged adults, although it may prevent the founding of new colonies, will not stop the damage to the woodwork by the workers inside.

Another warning that termites are around is the branching shelter tubes on foundation timbers or other woodwork, or reaching from the ground to the woodwork over the surface of stone, brick, or other foundation material through which the termites can not burrow.

Remedies the Same as Preventives

In repairing termite-damaged buildings use the same suggestions as for the construction of new buildings. If you do so you can get rid of termites in buildings where they are already working.

Disconnecting Wood from the Ground

You will save time and expense if you disconnect the woodwork from the ground. Especially will this be so in the case of old frame buildings where extensive repairs would not be practicable. When you disconnect untreated foundation timbers from contact with the soil the termites in the other woodwork, furniture, and stored material in the building will also die, even if they have reached the second or third floors. Timbers structurally weakened so as to endanger the buildings, or disfigured woodwork, of course should be removed. However, if the wood is kept moist by some other means, such as water leakage, the termites will continue to work. This applies especially to damp corners of basements near outside water pipes, bathrooms, kitchens, and the like.

Wooden floors laid directly on the ground, or on tar or tar paper, or on beams on the ground, or set in concrete, should be removed. There should be a layer of concrete, or of other artificial stone effectively sealed with proper mortar or concrete, between the earth and the wood.

Capping and Facing

A frame building need not be raised or jacked up to cap the wall, but the upper tier of bricks can be removed, a few at a time, and the wall capped.

Where poor grades of mortar have been used in masonry walls below the ground, it may be necessary for you to coat the outside or inside of the wall with Portland cement or concrete to keep termites from boring through.

Metal Termite Shields

Termite shields of metal can be inserted over the masonry foundations of buildings already constructed.

For a more complete description of termites and their habits, see *Farmers' Bulletin 1472*, U. S. Department of Agriculture.¹

¹ SNYDER, T. E. PREVENTING DAMAGE BY TERMITES OR WHITE ANTS. U. S. Dept. Agr. *Farmers' Bul.* 1472, 22 p., illus. 1926.

