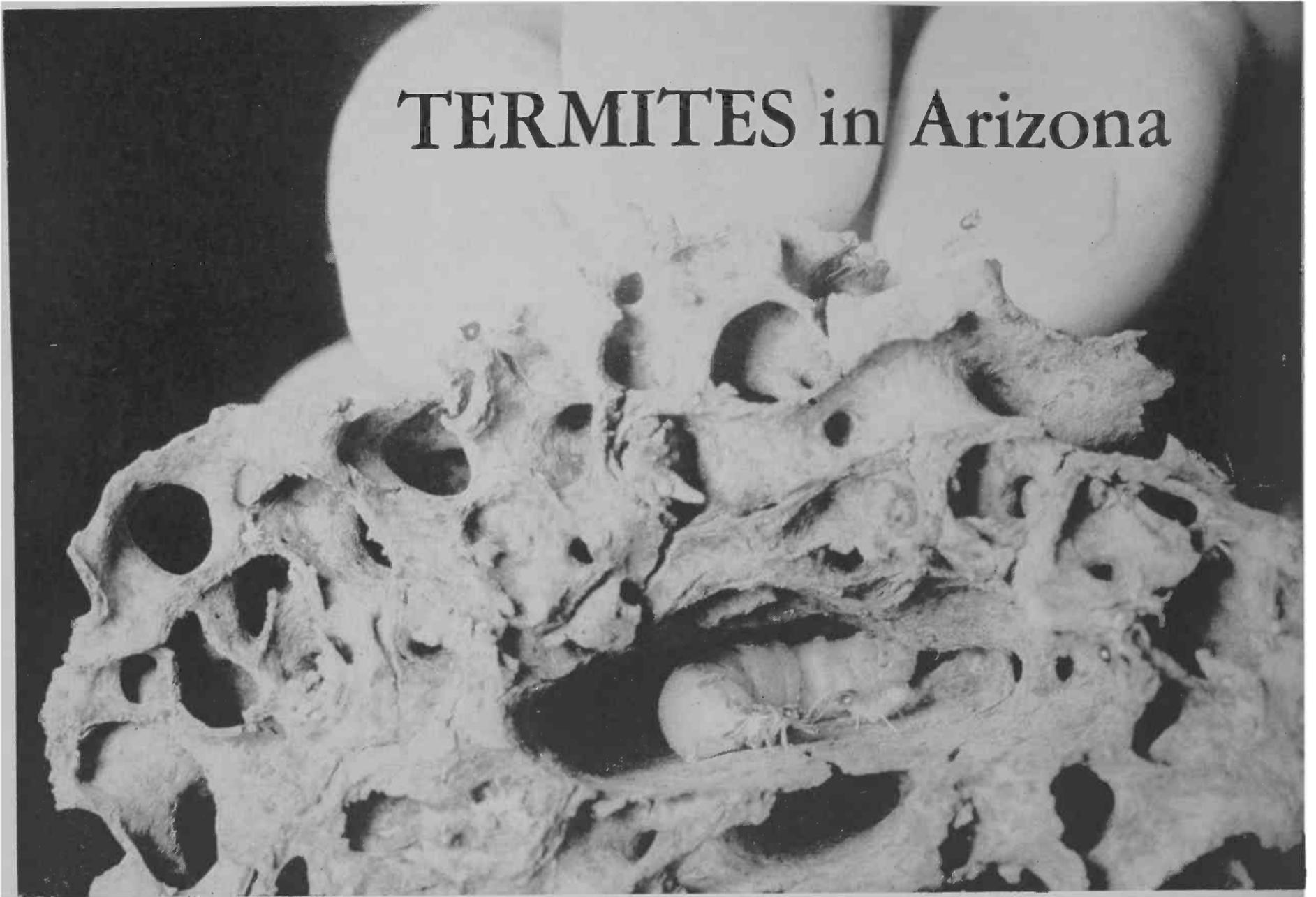


TERMITES in Arizona



by W. L. Nutting*

Arizona has more different kinds of termites within its borders than any other state. This boast could be made pridefully by none but a naturalist or biologist. The figures behind this impressive statement: 18 of the 40 species of termites known in the United States have thus far been found in this state. Indeed, 16 of these may be found in the desert and canyon country within 25 miles of Tucson. This puts Arizona at least three species ahead of California and one ahead of Texas. Since our knowledge of the Arizona insect fauna is still far from complete, the prospects of discovering two or three more are good.

A hasty and reassuring explanation is in order, however. Of this number only about a half-dozen are of any real economic importance — they present no more serious problems than do the termites of any other state through the South and West.

Termites are social insects — like ants or bees — and live in colonies

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which may after a few years number many thousands of individuals. There is a division of labor in these colonies, for most of them are composed of workers, soldiers and reproductive forms. In certain forms child labor is the rule — the young do all the labor of “constructing” (gnawing out) the galleries, foraging for food and tending the king, queen and their brood. Soldiers defend the colony against ants and other insect enemies. Both workers and soldiers are usually pale colored, soft bodied and blind.

Quite different-looking male and female forms are generally produced at certain seasons of the year. These are darker-colored insects with two pairs of well-developed wings. Here in Arizona large numbers of the winged forms generally leave the colonies during periods of high humidity accompanying the summer or winter rains. The flight is short and the adults soon settle, lose their wings and pair to begin new colonies. Considering the numbers which start these flights, those which eventually succeed in establishing themselves

are very few indeed: adult termites are a choice item in the diets of many ants, spiders, lizards and birds.

In undisturbed country termites are scavengers, that is, they play an important role in converting dead wood and other plant materials into humus and plant food. For all practical purposes there are two main types: the so-called “dry wood” termites and the “subterranean” termites. Each type has a fairly definite place in nature, and differs considerably in its general habits, food preferences and choice of nesting sites. It follows then that their methods of attack on man-made structures and holdings will differ as will the resulting damage. Needless to say, the methods of termite prevention or control to be applied in each case will depend upon the type of termite involved and a knowledge of the extent and severity of the damage expected or found.

It might be of general interest and some value to summarize the differences between the two kinds of ter-

mites and their work. The dry-wood termites have relatively small and slower growing colonies. They can, and usually do, live in dry, sound wood without any contact with the ground or soil. Their "nests" consist of interconnecting chambers and holes cutting across the grain of the softer "spring" and the harder "summer" wood. Their dry fecal pellets or "sawdust", looking like tiny seeds, are often found in the galleries or in concealed places outside. The dry-wood termites often attack buildings, especially the flooring, sills, joists and rafters, and even furniture. For some of these reasons, the structural damage from their attack is generally much slower in appearing and less severe than that incurred from the subterranean type.

By comparison, the subterranean or desert termites form large colonies within a very few years. The main part of the colony or nest is always in the soil where a certain amount of moisture is necessary for their existence. They attack all types of dead wood and plant material in contact with the soil, and where this is not available they will build dry, mud-like shelter tubes over the ground, stone or concrete in order to reach attractive wood. These termites also frequently attack buildings, but more often restrict their workings to structures nearer the ground such as porches, baseboards, moldings, and trim. They generally confine their galleries to the softer spring wood and work parallel to the grain. Their dark brown fecal matter is used in plastering their galleries and tubes.

All of our termites were here long before the advent of man. With his arrival, and very recently with the wide use of wood and water in his own economy, the natural economy of some termites has been most favorably affected. Take, for example, the dark, western dry-wood termite, *Incisitermes minor*: its colonies are fairly abundant in the hard, dry logs and dead branches of ash and other trees in Sabino Canyon. For many years now, however, it has also been found in the hardwood floors in the older houses of Tucson an environment much to its liking. Or consider *Heterotermes aureus*, one of the commonest desert subterranean termites: it is at home beneath debris along the washes in the desert and foothills all around us. Cactus skeletons and other bits of dead wood provide its food. Now more than one Tucson householder is dismayed to find it building

mud tunnels on the side of his house and tunneling its way through the books on his shelves.

Only two other dry-wood termites and perhaps three or four other subterranean forms are at present of any real economic concern to us in Arizona. The remaining 11 or 12 species keep to their places in nature, over half of them being rare and little-known entomological curiosities. However, as Arizona expands, particularly residential living into desert and foothill areas, and mining operations in completely untouched regions, all of them are of potential economic importance.

This expansion could take place with a minimum of trouble and waste from termite problems. It will depend upon the honesty and diligence of homeowners and prospective buyers, builders and developers, control operators and responsible officials alike. It will require strict observance by all concerned of existing building regula-

tions and technical recommendations. Finally, it will demand a continuing review of preventative and control materials, and methods based upon a sound biological knowledge of these complex social insects.

In this regard, members of the Department of Entomology have had a continuing interest in the termites of Arizona dating back to the collections, identifications and recommendations of L. P. Wehrle and C. T. Vorhies in the '30's and '40's. During recent years an increasing amount of time has been spent in gathering and publishing the necessary basic biological information on the termite fauna of the Southwest, most species of which are found nowhere else in the United States. Research is currently being done on the relations between the seasonal flights of the winged reproductive stage to local weather conditions, as well as on their later behavior which leads to the foundation of new colonies.



Queen termite, workers and soldiers.