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Crystallization

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may be collected around ponds or along streams on any night during the warm weather, but common toads and tree frogs may be found around water only during the spring breeding season. This is usually in May, and as the males of these species sing lustily, it is easy to find them by following the direction of their songs. The tree frogs will often be found sitting on a bit of wood several feet from the bank. They may easily be captured with a net while holding the light directly upon them.

Earthworms may be collected in large numbers from almost all bluegrass lawn, especially where the soil is a rich, sandy loam. It is best to choose a lawn somewhat removed from the street as the glare of street lamps or the flash of automobile headlights tend to keep the worms in their burrows. Choose a warm night following an afternoon shower, or else wet the lawn thoroughly from a hose. The earthworms come out of their burrows shortly after dark, and may be captured as they lie stretched at full length, feeding. Each worm keeps its tail in its burrow and can withdraw into it with amazing rapidity, as the beginner at nocturnal collecting will soon discover. Many an eager grab will net only a handful of grass. When an earthworm is seized, it resists being pulled from the burrow, and unless care is exercised, the animal will break in two. Even when it does not break, the worm may be so injured by a strong pull, that it will soon die. Such injured worms should not be placed in the container with the others, as one dead, decomposing worm will soon cause the death or injury of the rest. Since worms mate at night, copulating pairs may often be captured as they lie stretched between adjacent burrows; they usually separate quickly when seized.

Grasshoppers are most easily collected in the late summer. A weedy fence-row along a corn field, or tall weeds along a country road, are favorable places for the capture of the large yellowish-green, differential locust or grasshopper. These insects roost along the stems of the weeds, and on a cool night may be collected by the hundreds. They furnish excellent food for captive garter-snakes and various fishes; when injected, or preserved whole without injection, they keep indefinitely as laboratory specimens.

If the biology teachers who read this article will make one nocturnal collecting trip, they will probably make another, as it is a fascinating game.

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CRYSTALLIZATION

Physics

One of the most interesting molecular phenomena in nature is known as crystallization. It is brought about in the arts of man and in nature by three methods. When a chemical salt, such as table salt, is dissolved in water and allowed to stand in a shallow dish until it dries, it will be observed that the solid residue appears as crystals. Those from common table salt will be cubical in form. However, every different salt will yield its own distinctly shaped crystal.

A second method consists of the slow cooling of a mineral substance from a molten condition. When sulphur is melted and allowed to cool slowly, beautiful slender hexagonal crystals are formed. Permanent crystals found in nature such as those of quartz or of diamonds and other precious stones were formed by this process of cooling from a molten condition under suitable conditions.

The third method in which crystals are formed is by sublimation. When a substance in a vapor condition changes slowly into the solid state without passing through the liquid state, it frequently assumes a crystallized form. Frost crystals on a window pane are an illustration of this method of crystal formation. A piece of camphor placed in a bottle with clean walls will sublime and form a layer of tiny crystals on the walls of the bottle. Flowers of sulphur, which are crystalline, are produced by vaporizing sulphur in a closed chamber and allowing the vapor to condense directly to the solid state.

In the arts, crystallization of salts from solution and crystallization by sublimation are both frequently used to purify substances for medicinal and other purposes.

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