

one to 10,000,000. Some are very weak and some are very loud. The weak vowels and weak parts of strong vowels can easily be "lost" in the roar of static.

With the compandor, sound intensities to be transmitted are squeezed, or compressed, so that the ratio of weak to strong sounds is only one to thirty-two. With this smaller variation in intensity the transmitted signal can "stand on its own legs" and fight back when severe static roar comes along.

At the receiving end of the radio telephone is an expander which takes the compressed signals and spreads them out into their original intensity range.

The value of "pepping up" the speaking tones to higher intensities has im-

proved transatlantic radio telephone transmission as follows:

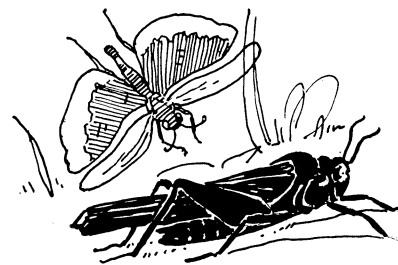
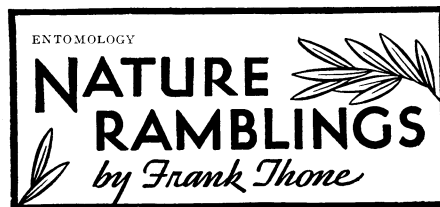
1. Enabled successful transmission of messages for a longer percentage of time, much of which was previously unusable for commercial purposes.

2. Reduced the static noise impairment of transmission during moderate or heavy static.

3. Made possible an economy of power necessary for transmission during light static.

The technique of "voice squeezing" for radio-telephone and its benefits to transatlantic telephone users are described in the current issue of the *Bell System Technical Journal* by Dr. R. C. Mathes and Dr. S. B. Wright.

Science News Letter, August 25, 1934



Double Trouble

UNABATED heat and drought over most of the country's major grain areas resulted in indirect as well as direct damage to the crops, by encouraging some of the most destructive of insect pests.

A survey by the bureau of entomology, U. S. Department of Agriculture, shows that the grasshopper situation throughout the West is still very serious. With late summer coming on, the insects are maturing and preparing to lay their eggs in the baked soil. There they will remain during the winter, and if the season is as warm and open as it was during the winter of 1933-34, the summer of 1935 can be expected to be another bad 'hopper year.

Chinch-bugs, though defeated in their effort at ground invasion of the cornfields after the small-grain crops had either been harvested or dried out by the drought, took to the air and entered the corn in considerable masses. They have not done the present year's crop serious harm in most places, but the insects now feeding in the cornfields will lay eggs, and the second generation of bugs, sheltered among the wild grasses in fencerows and on roadsides, will be ready for major mischief early next summer, unless a chill, rainy autumn diminishes their numbers.

Wheat in the Ohio valley was subjected to a severe attack of Hessian fly, and near the headwaters of the Ohio there was a serious outbreak of the black grain-stem sawfly. Red spider, favored by the drought, has been attacking a great variety of plants over all the eastern half of the country except the Southeastern states and New England. Corn earworm has been troublesome over practically the entire United States.

Science News Letter, August 25, 1934

ZOOLOGY

Rattlesnake's Rattles Not Part of Its Skin

RATTLESNAKES are not born with "buttons" on the ends of their tails. And their rattles are not simply thickened parts of their skins. These contradictions of two universally accepted articles of rattlesnake doctrine are upheld by L. M. Klauber of the Natural History Society of San Diego.

Furthermore, said Mr. Klauber, there is good evidence to believe that under natural conditions every time a rattler sheds its skin it does add a new rattle to its string, although most natural history books now declare that this does not always happen. The trouble with the books on this point, the San Diego zoologist said, is that their statements are based mainly on the skin-shedding habits of rattlers in captivity, which are usually not normal or healthy.

The "button" we see on the tip of a rattler's string of rattles, Mr. Klauber discovered through close observation of new-born little snakes, makes its appearance only after the snakeling has shed its birth-skin, which it does when it is only a few hours old. Before then, it bears a birth-button, or "prebutton" as Mr. Klauber has named it. This is so thin and fragile that it is not able to cling to the tail-tip when the skin is shed, but comes off with it.

Although related to the skin in origin, the rattles are not merely thickened parts of the skin, Mr. Klauber further stated. They are quite distinct from it, being formed of a hard, clay-like sub-

stance which is secreted by a definite body of tissue near the tail-tip, which he calls the rattle matrix. At first soft and doughy, the rattle dries as it matures, and springs away from the matrix that formed it. A fold of skin overlaps and holds the edge of the last-formed rattle, while the rest of the mechanism is held only by its interlocking joints, which permit enough free play to make the rattle buzz when the angry or excited snake vibrates its tail-tip.

Science News Letter, August 25, 1934

ARCHAEOLOGY

Oklahoma's Mound Builders Wore Fancy Stone Earrings

See Front Cover

SOME of the costume jewelry worn in ancient America was amusing stuff.

From eastern Oklahoma comes a stone earplug made by an Indian jeweler with interesting ideas of design. The plug, unfortunately broken, is ringed with a maze-like pattern of lines. Once you see it the right way, there is a series of Indian profiles in the puzzle picture.

The plug is from one of the mounds recently explored by Forrest E. Clements of the University of Oklahoma. The mounds revealed copper blades, well-made cloth, and other signs showing that a high Mound Builder culture flourished in Oklahoma.

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