

the fluid in which the two sexes are growing."

A study of the habits of the organisms over a period of three months showed that the normal sex reaction will not take place at certain times in the life history, notably during the first week following conjugation, during endomixis, and whenever the animal is overfed.

Dr. Sonneborn found that in cases of reproduction by division, sex is invariably inherited from the parent; while in cases in which conjugation or endo-

mixis has intervened, inheritance is determined strictly according to the Mendelian laws which govern inheritance of sex in man. Thus, the examination of several thousands of individuals has shown that the distribution of the sexes is purely a matter of chance.

As in the case of most other organisms, Dr. Sonneborn reports, "it is evident that the method of inheritance indicates that sex determination is nuclear."

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be strata of different density, which change the speed of sound. In mountainous country, there will be confusing echoes.

With all these factors, and others besides, to shift the sound hither and yon, a sound-detector is doing well enough if it can give the widest kind of a blunderbuss location for the oncoming plane. It is then up to the searchlights to spot it, the rangefinders to estimate height and distance, and the gunlayers to get the cross-hairs of their sights on it.

Then, with all the skill they can muster, and a dab of cannoneers' luck to help out, they may score a hit. Othello's occupation is far from gone, in the A.A. artillery, at least.

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PHYSICS

Mythical Gun That Aims Itself Seems Impossible to Silence

THAT ever-booming perennial, the gun that aims itself, has been getting into the papers again. The experts who know all about artillery because they can make a newspaper typewriter work (admittedly no mean feat!) tell us that somewhere on the deck will be a listening device, that will catch the distant sound of the approaching bomber's motors, even though the plane is hidden in night or fog. With no more than this to go on, the marvelous robot machinery of the guns will swing them around until their muzzles point squarely at the unseen foe. Boom! (or Bang!, if you prefer), and the enemy nosedives for Davy Jones's Locker.

It avails Navy ordnance men nothing to deny, even with curses and almost with tears, that such a device exists. They are only given credit for discretion and zeal in guarding the secrets of our nation's defenses. The whole legend of the gun that aims itself is a beautiful example of how a naive will-to-believe

can make even the most improbable legend puncture-proof.

An elementary knowledge of the physics of sound will show how difficult it is to get even an approximate idea of where a thing is merely by the noise it makes.

Sound, as everybody knows, consists of rapidly moving compression waves in air. When air moves, it dislocates and distorts the sound. We have all had experience with that, when we try to shout something to a companion on the other side of a field when a strong wind is blowing. The wind carries away our voices, we say. That is even scientifically correct.

The giant grotesque ear-trumpet-like things used by the Army to listen for approaching planes increase the range of the ear as field-glasses aid the eye. But they can be fooled. There may be two, three, or more quite independent winds blowing in the upper air, between them and the object of their search. There may

PHYSICS

Accelerated Weathering Tests Building Materials

ACCELERATED aging tests that include changes in temperature, humidity and light are part of the program of research which the National Bureau of Standards is applying to fibrous building materials like insulating and wall boards for both exterior and interior uses and sheathing papers. Part of the fund given to the Bureau for a general study of building material relative to low-cost housing projects, is financing the research.

The effects of serious artificial weather changes will be studied to see how they create distortion, expansion and contraction, cause mold growth, vary the moisture resistance and decrease the strength of the materials. Two research scientists have been added to the staff for this project which should supply information that will permit the house builder to make an intelligent choice between different types of materials and determine whether he can profitably substitute some of them for more expensive materials.

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