



### Pigs as Guinea Pigs

**B**ECAUSE people eat like pigs, and pigs are like people in a lot of ways, real pigs are being used instead of guinea pigs in a series of large-scale researches on diet, especially vitamins, conducted at the New Jersey Agricultural Experiment Station, with the chemical manufacturing firm of Merck and Company cooperating.

The object of the experiments is to get more accurate information about the value of various dietary combinations. Pigs are more satisfactory than the usual small laboratory animals like rats and guinea pigs, it is explained, because people and pigs really do have quite similar food habits, and their reactions to shortages of certain food elements are also alike. People and pigs have been found to respond similarly to the onset of pernicious anemia, for example, and pigs also develop pellagra and other diseases with skin symptoms in a very satisfactory manner—from the research dietitian's point of view.

At present there are a dozen pigs on diets at the experiment station. Eventually there will be fifty. They will probably be the most pampered porkers in the world, with a board bill running up to \$10,000 a year. This is because of the high cost of the special food they eat, and particularly of the large quantities of concentrated vitamins needed in the researches.

The New Brunswick pigs get a diet such as no pig (except the guinea pig, which isn't a pig) has ever eaten. Protein is supplied in the form of washed casein, the basic material of cheese. Carbohydrates are represented by refined dextrose, and a well-known brand of cooking fat, notable alike for its purity and absence of vitamins, takes

care of the fat requirements of the diet. This seeming luxury ration contains no known vitamins, so that if it were all that the pigs got they would still not thrive on it, despite its high cost.

Here is where the pigs earn their expensive keep. Vitamins are added or withheld, according to the program of the research staff, and the effects on the health of the pigs are carefully recorded.

### INVENTION

## New Swiss Burglar Alarm Operates Like Seismograph

**A** FIRE alarm which operates as soon as there is a smell of burning, and a burglar alarm which functions, like a miniature seismograph, from the vibrations of an intruder's steps, have recently been invented in Switzerland.

Descriptions of the new devices are given in *Mechanical Engineering* (August), taken from a Swiss publication.

Parts of a burning object, it is explained, are vaporized and become charged with electricity. The attraction between these charged particles makes complex structures of millions of atoms, which float through the air. The detector is an electrical apparatus in which a small amount of radium ionizes the air molecules, and sets up a small electrical current. When the big clumps of molecules come along, this current is greatly increased, and sets off the warning signal.

"The new fire alarm is said to be so sensitive that it functions even at the smallest fire," says the journal. "A little smoldering cotton waste which produces only smoke, but no flame, or an ounce of burning wood wool, or some pieces of newspaper, which burn without producing smoke, cause the alarm to be given at once in a medium-sized room. Generally, the sensitivity is adjusted so that no signal is sounded by the smoke of a few cigarettes or a cigar."

The burglar alarm responds to vibrations of very high frequency, set up by the forceful opening of a door or window, or even by a person's steps. These travel only a short distance, compared with the lower frequency vibrations which may be set up at the same time. When a train or truck passes outside, it may cause vibrations in the room

The research program calls for study from several angles. Not only will the pigs be looked upon as deputy human beings, in their direct reactions to the various diets; they will also be studied simply as what they are, animals destined eventually to provide meat and lard and other products, and the diets will be considered as they affect their ultimate market value.

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which are really much larger than those of the burglar. However, with the train, at a greater distance, only the low frequency vibrations reach the alarm device, and it is not tuned to these.

The alarm consists of a little ball, hung in a sealed glass tube. From the bottom of the ball projects a metal pin, which touches a wire ring, and completes an electrical circuit. When the quick vibrations come, the ball moves, and the circuit is momentarily broken. This operates a relay and sets off the alarm.

The sensitivity of the device is adjusted by the size of the ball, and certain other details.

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### PHYSIOLOGY

## Oxygen and Nitrogen Have Taste at High Pressures

**O**XYGEN and nitrogen are described in all chemistry textbooks as tasteless and odorless; yet they do have taste and they may have smell, if you can force enough of them on the appropriate nerve-endings. The tastes of the two most abundant atmospheric gases are described by two well-known British scientists, E. M. Case and J. B. S. Haldane. (*Nature*, July 19)

The tastes were noticed during researches on means for escaping from sunken submarines, during which several persons were exposed to high atmospheric pressures. Oxygen's taste, first noticed at pressures six times that of the normal atmosphere, is at once sweetish and sourish—"like dilute ink with a little sugar." The taste of nitrogen, not perceived until the pressure rose to eight or ten atmospheres, is variously described as "harsh, metallic and indefinable."

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