

## BIOLOGY

# Culture Tomato Root

► TWENTY-ONE YEARS ago a tiny bit of tomato root started growing in a glass flask. It has been growing steadily ever since, and shows every evidence of living far past the voting age.

Dr. Philip R. White has been forced to cut off and discard much of the culture every week to keep the ever-young root in bounds. He estimates that if all the discarded parts had continued to grow, the original root would have increased to a length of 10 to the 740th power miles. This unimaginable figure is written as the figure one followed by 740 zeros.

The long-lived tomato root culture is similar to the culture of embryo chick heart cells started by the late Dr. Alexis Carrel in 1912. This culture was discarded at 34 years of age.

The tomato root culture was the first permanently successful plant tissue culture. Dr. White started it by cutting off the embryonic root of a germinating tomato seed. He put this in a flask containing a special nutrient solution he had made up.

Throughout its life the root has grown

about a centimeter, a third of an inch, a day and has produced a branch about once a day. Every week, for more than 1,000 weeks, it has been cut back to a centimeter in length and all but the tip discarded or started in a new flask.

The bits which have been kept have grown many miles, and some have become "offspring" at other laboratories. The culture is at the Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Me., which is celebrating its 25th anniversary this year.

These clonal roots, genetically identical, have given rise to a new branch of plant science: the study of isolated cells and organs.

Knowledge of nutrition, tissue secretion, organic form and function, genetics, and plant tumors, viruses and parasites has come from study of the root culture. Dr. White is now studying the origin of plant tumors.

The culture was started at the Rockefeller Institute of Medical Research but was later transferred to the Laboratory in Bar Harbor.

Science News Letter, March 27, 1954

## PSYCHOLOGY

# Freudian Sex Symbols

► EVER SINCE Freud did his famous work on dream analysis, his followers have assumed that objects of certain shapes are universally accepted as symbols for the male and female sex.

Long and pointed objects such as knives, telephone poles, chimneys and noses were thought generally to represent the male sex, while boxes, houses, keyholes and ships stand for the female sex.

Doubt is now thrown on this assumption by an experiment conducted by Dr. Leon H. Levy of Ohio State University. Since the experiment was conducted in the public schools, the true purpose of the test was not made known to those taking part.

Dr. Levy also thought the indirect method would be less subject to any resistances or anxieties the children may have

had concerning sex. The experiment was therefore presented as a test of learning and memory.

First, a list of ten boys' and girls' names were presented followed by ten drawings. Of the names, five were of boys and five of girls. The shapes of the figures were also equally divided between those traditionally considered to be male symbols and those thought to represent the female sex. Both names and drawings were mixed at random. The children, 62 fifth-grade boys and girls, were asked to match up each name with one of the drawings.

Results showed no tendency to link the "symbols" for either sex with names for that sex.

In a second part of the experiment, flash cards were shown the children on each of which a name was shown with a "symbol." For part of the group, the drawings were correctly matched with names for that sex. For the rest, the "male symbols" were shown with girls' names and vice versa.

Results showed that the group for which symbol and name were "correctly" matched had no advantage in learning the pairings over those for whom they were mismatched.

Since man is a symbol-using animal, it is quite reasonable to expect him to develop many symbols relating to sexuality, the scientist comments in reporting the experiment to the *Journal of Consulting Psychology* (Feb.). But this experiment demonstrates that the symbols are not "universal."

Science News Letter, March 27, 1954

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