PLANT PHYSIOLOGY

Cultivate Single Cells

See Front Cover

➤ A WAY has been found to cultivate higher plant tissues as single cells by Dr. Louis G. Nickell of Chas. Pfizer & Co., Inc., Brooklyn, N.Y.

Its development may prove to be one of science's most important tools for finding a chemical cure for cancer, as well as opening new investigations of the plant cell's basic machinery.

Sought after since the turn of the century as one of the great challenges to biological science, the Nickell method is reported in the *Proceedings of the National Academy of Sciences* (Nov., 1956).

What Dr. Nickell and his Pfizer coworkers have succeeded in doing is to propagate whole populations of separated, individual pole bean plant cells in a synthetic liquid of coconut milk and the deadly weed killer 2,4-D.

A photograph of the single plant cell in vitro is shown on the cover of this week's SCIENCE NEWS LETTER, as it appears through a microscope.

This new method for growing single plant cells in the laboratory has these advantages for scientists, particularly in the fight against cancer:

1. It permits manipulation of the cells of higher plant life in a way in which it was only possible to manipulate micro-organisms and animal cells in the past.

2. In most cases, every ingredient a plant cell needs for growing is known, thus allowing the determination of the exact effect on a plant cell of any chemical chosen to be added to the medium.

3. Plants develop many kinds of tumors, representing all the major types of cancers found in animals. How the plant responds to chemical agents developed to fight the tumors can now be gauged.

4. Plants also grow hereditary, virus, bacteria and chemically-induced tumors, and still others of unknown origin. These can now be studied and chemotherapeutic agents tried on them.

5. It may be possible to grow "a complete individual plant" from a single plant cell.

6. Basic similarities between plants and animals at the cellular level may be found.

The Pfizer scientist grew his single cells from parent tissue isolated in 1951. They were carefully nursed along and, finally, Dr. Nickell found his single, freely suspended pole bean plant cells. He reports that they were of three general shapes: spherical, varying in size; slipper-shaped, and gourd-shaped with one or two necks.

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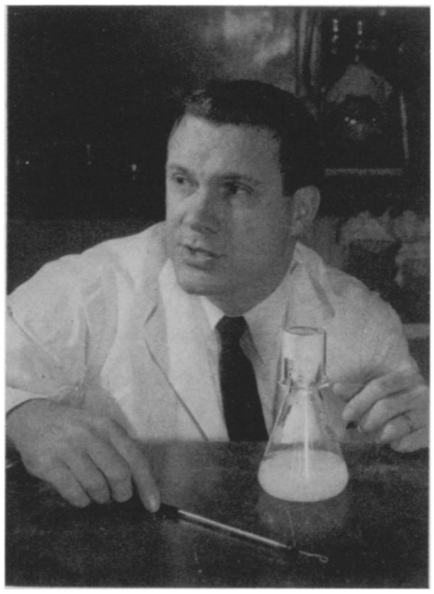

PLANT PHYSIOLOGIST—Dr. Louis G. Nickell, shown here, developed the first successful method for growing whole populations of single higher plant cells in liquid suspension in test tubes. The cell culture technique will pave the way for new studies in genetics and nutrition as well as aid in cancer research.

PHYSICS

Metal "Whiskers" Used To Study Atomic Binding

➤ "WHISKERS" made of metal are being used by scientists to study the enormous forces binding atoms together, Dr. R. L. Eisner of Westinghouse Research Laboratories, Pittsburgh, reported in New ,York.

At the American Association for the Advancement of Science meeting, he described a new technique for evaluating these forces by measuring the tensile strength of "whiskers" of iron and silicon.

These tiny strands of pure metals are often about one-hundredth the thickness of a human hair, and only about one-hundredth of an ounce of force is required to pull them apart.

Dr. Eisner said he had found that, when iron crystals were perfect, as they are in the "whiskers," the forces between atoms gave iron "a strength of more than half a million pounds per square inch."

Ordinary metal contains countless millions of structural imperfections that govern how and when the metal will break and they mask any measurements of the much larger forces holding the metal atoms together.

With Dr. Eisner's technique, changes in whisker length down to less than a millionth of an inch can be accurately measured.

Science News Letter, January 12, 1957

GENERAL SCIENCE

See Scientific Revolution

➤ SCIENTISTS of the world were called upon to rise to the benefits and dangers of "a new social revolution, the Scientific Revolution, even greater in its effect than the Industrial Revolution."

This was the theme the American Association for the Advancement of Science received in a report by one of its interim-committees at its meeting in New York.

Sounding the note as both a hope and a warning, the committee members told the scientists that "the health, longevity, comfort and security of mankind already have been markedly affected by the application of scientific discoveries and information. Much greater changes seem imminent in the near future and at a continually accelerated pace."

The committee's report, previewed in *Science* (Dec. 21, 1956), says that:

"The new revolution can be the source of good or evil, according to the use made of these discoveries and to the facility with which society and science recognize and adjust to the changing conditions.

"The proper functioning of the democratic process could greatly ease tensions and requires that society give both the natural and the social sciences a place in its councils at all levels of the social structure.

"In turn, scientific organizations may be obliged to accept a social responsibility commensurate with the importance of the social effect of science."

These are some of the conclusions made by the members of the Association's Interim-Committee on the Social Aspects of Science, which was authorized at the Association's annual meeting held in Atlanta in 1955.

The committee also believes, the report states:

"That society and science are now so intermeshed and interacting that scientific groups must re-evaluate their traditional 'isolationist' positions and accept the place in the democratic process demanded by the current importance of science."

The provisional report was presented by Dr. Ward Pigman of the University of Alabama Medical Center, Birmingham, Ala., chairman of the Committee; Dr. Barry Commoner, Washington University, St. Louis, Mo.; Dr. Gabriel Lasker, Wayne University College of Medicine, Detroit, Mich.; Dr. Chauncey D. Leake, University of Texas Medical Branch, Galveston, Tex.; and Dr. Benjamin Williams, Industrial College of the Armed Forces, Washington, D. C.

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