

## BIOCHEMISTRY

# Single Cell Analysis?

► IT may not be long before scientists are accurately analyzing the chemistry of single cells, and this will mark a revolutionary development in science.

Already, largely through the efforts of Dr. Paul Kirk, professor of biochemistry at the University of California, it is possible to measure quantities that hardly outweigh a whisper.

Right now, Dr. Kirk, a pioneer of ultra-microchemistry, can weigh invisible quantities as small as a few billionths of a gram. It takes about 28 grams to make an ounce.

It will take instruments of about 100 times the sensitivity of present ones to pry into the biochemistry of single cells. Dr. Kirk is now working on such instruments, and, while there are problems, he sees none that are insurmountable.

Interpretations of biological phenomena in terms of single cells will bring greater understanding of life processes, he points out, for it is much easier to understand the biochemistry of a single cell than of a whole animal.

Furthermore, there is no loss in accuracy

with ultra-microchemical techniques for a great many purposes. Nor are these techniques more difficult to teach.

One of Dr. Kirk's Tom Thumb laboratories occupies hardly more than an ordinary table, and contains most of the paraphernalia of a large laboratory, though on a much reduced scale.

Dr. Kirk's conclusions are stated in a new book of his, *QUANTITATIVE ULTRAMICRO-ANALYSIS* (Wiley).

He writes: "In the field of biology, an understanding of the chemistry of the cell is the next great frontier to be conquered. Without chemical methods applicable to the study and analysis of single cells, there will remain a constant challenge to the analytical explorer.

"It can be stated dogmatically that there are no insurmountable problems to prevent the ultimate chemical analysis of single cells. Much investigation remains before this goal can be achieved, but achieved it will be, and probably along the lines already partly explored and indicated by past investigations."

Science News Letter, February 25, 1950

## ENGINEERING

## Panels for Radiant Heat Best Placed in Ceiling

► THE best place to put panels for radiant heating of a room is in the ceiling, not the floor, the American Society of Heating and Ventilating Engineers was told in Dallas, Texas, by L. P. Herrington and R. J. Lorenzi of the John B. Pierce Foundation, New Haven, Conn.

In this relatively new method of home heating, which seems to be rapidly growing in popularity and is the subject of wide-spread scientific investigations, hot water or steam pipes are embedded in floor, ceiling or sidewalls. Panels in which they are embedded become warm and transmit heat into the room by radiation.

The conclusions of the New Haven scientists come from studies recently made. Human beings were used for "guinea pigs." The purpose was to find what effect the location of the radiant heating panel had on the human body.

Since room temperature is closely related to the surface temperature of an occupant's skin and clothing, measurements were taken of the head temperatures, exposed skin temperatures, and clothing surface temperatures of the men used in the tests. Then, mean comfort votes and mean temperature votes were taken.

One of the primary conditions of thermal comfort, these investigators stated, is a skin temperature ranging from approxi-

mately 80 degrees Fahrenheit on the toes and sole of the foot to approximately 95 degrees on the trunk and certain facial areas, with an overall average for the skin surface of about 90 degrees. Physiological considerations, they said, support the view that floor temperatures above 75 degrees are not desirable.

Science News Letter, February 25, 1950

## ENGINEERING

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The new process which takes less space, fuel and time was worked out by Richard E. Reeves and other governmental scientists.

Science News Letter, February 25, 1950

## Words in Science— PSYCHOLOGY-PSYCHIATRY

► WHAT we know about the mind and how it works, what we have learned about its development from birth to death and from man's beginnings—all that comes under the science of psychology. Psychology, as we know it today, began its development in the 19th century and psychologists say that they still have a long way to go before they know very much about the mind. The psychologist is concerned with the normal mind.

But the psychiatrist is concerned with minds that stray from the normal. He learns a great deal of what the psychologist knows and then applies it in the treatment of persons whose minds are sick.

Science News Letter, February 25, 1950

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