

*Engineering*, who coordinated the summaries of new chemical achievements.

How wood can be protected and given metal coats by impregnating it with alloys of light-weight metals, such as lead, zinc, tin and antimony, has been perfected in Germany, the meeting was told.

Synthetic rubber, felt-coated steel, pyrex glass bricks and so-called plastic metals made of metal powders bound together with a cellulose compound were also exhibited.

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## ARCHAEOLOGY

## Modern Indians Surpassed By Monte Alban Jewelers

**T**HE PREHISTORIC Indians who fashioned the now famous Monte Alban jewels were finer craftsmen than can be found today among all the Indian jewelers of Mexico.

This is the tribute paid by Indian jewelers from the State of Guerrero who have examined the beautiful ornaments found last January in the treasure tomb of Monte Alban, Mexico.

The gold articles which the jewelers examined were pronounced over eighteen carat pure. What appears to be delicate filigree in some of the golden ornaments, experts recognized as not filigree at all. The articles were actually poured in molds very finely and skillfully carved. Other pieces were wrought in a hammered process, they said.

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## BIOCHEMISTRY

## Synthetic Hormones May Be Too Pure to Be Effective

**B**IOCHEMISTS are producing hormones that are too pure, Dr. Joseph C. Aub of Boston suggested before the meeting of the Association for the Study of Internal Secretions. These highly purified extracts do not produce the practical results on patients that earlier, impure extracts did, he pointed out. He suggested that in the process of getting pure crystals of a hormone, the chemist may have broken down the natural compound and gotten a "degradation product" lacking some essential of the original one produced by the gland in the body. He also warned the physicians against laying too much stress on glandular treatment alone and said there was no excuse for treatment with several glandular products at once.

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## GENETICS

# Genes, Once Hypothetical, Now Seen and Photographed

**G**ENES, the ultimate units in heredity, have been seen and photographed. So declares Dr. John Belling, biologist on the staff of the Carnegie Institution of Washington.

Genes have hitherto been dealt with as hypothetical entities by biologists, because no one has ever actually seen them. They were like the atoms and electrons that make up matter: physicists treat them as actually existing things, though it is impossible to give them visual demonstration. But now Dr. Belling believes that he has brought the genes out of their invisibility.

All living cells contain structures that presumably contain genes—the chromosomes within the nucleus. But to get clear-cut pictures of chromosomes not all cells will do equally well. In the cells of some organisms chromosomes are too numerous or too small to work with conveniently; in others their outlines are not clear-cut.

Dr. Belling found lilies suitable for his purpose. By exceedingly fine and skillful microscopic technique, he got the contents of the pollen "mother-cells," each only one four-hundredth of an inch in diameter, emptied out on glass slides. By suitable chemical treatment he made the small divisions of the chromosomes, known as chromomeres, sharply visible. By further manipulation he was able to detect, within each chromomere, an exceedingly minute object which he takes to be the gene itself. A typical cell of the type Dr. Belling has been working with contains about 4400 genes, arranged in 2200 pairs.

The picture on the cover of this week's SCIENCE NEWS LETTER shows chromomere strings in a single cell of a lily.

In commenting upon the function of cell structures, Dr. Belling says:

"A minute cell sphere with its 2200 gene pairs suggests the celestial sphere visible to the unaided eye and containing fewer than 3000 stars which can be seen at one time. These stars were supposed by some to exert a mystic influence on human beings. In the spherical cells of the organism, however, the genes actually do exert specific influences on the life of the organism in question,

whether of the lily or of man. In fact these influences are so great that if the effects of all the thousands of genes in a given organism were added together nearly the whole of its inheritance would be accounted for.

"These strings of chromomeres are of more consequence, therefore, than the threads of life which, according to the old fable, the Fates were supposed to spin. Indeed, in many of the old sayings relating to the influences of the stars, if the term gene or chromomere be substituted for star the saying would hold today. Could we but identify every one of the chromomeres in a man, (probably there are many more than in a lily), a reliable horoscope for him could be drawn up."

*Science News Letter, May 21, 1932*

## PLANT PHYSIOLOGY

## Secret of Photosynthesis Baffling to Scientists

**S**CIENCE has not yet solved the green leaf's secret of storing up the energy of sunlight by converting carbon dioxide into carbohydrates, it appears from research by Prof. G. Mackinney of the University of California's division of plant nutrition.

Vegetation has the ability of turning carbon dioxide, the gas exhaled by organisms and given off by fire, into carbohydrates, useful as starches, sugars and cellulose. Some six years ago Prof. E. C. C. Baly, professor of chemistry, University of Liverpool, reported the reduction of carbon dioxide to formaldehyde and carbohydrates in vitro, that is, in the test tube. Others worked on the same important problem with varying success. Prof. Mackinney has attempted to repeat the experiments but has been forced to conclude in his report to the American Chemical Society that "no procedure has yet been published whereby conditions for obtaining formaldehyde and carbohydrates in vitro can be duplicated."

Photosynthesis, as this process is called, is fundamental to the existence of life on earth through the utilization of sun energy.

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