

CHEMISTRY

# Fertility Vitamin E Made After 16 Years of Research

## Fed to Sterile Female Rats, Laboratory-Made White Powder Enables Them to Have Live Normal Babies

THE "essence of fertility," vitamin E, has at last been identified chemically, made in the laboratory and reduced to a chemical formula.

This culminates 16 years of research on the fertility vitamin. The achievement is announced in three highly technical papers in the journal, *Science*, (July 8) with some seven American scientists from three institutions participating.

Synthetic vitamin E, a white powder chemically named alpha tocopherol, when fed to sterile female white rats allows them to have normal babies as though they had never been deprived of natural vitamin E such as occurs in many foods.

The chemical part of the work is reported by Drs. Lee Irvin Smith, Herbert E. Ungnade and W. W. Prichard of the University of Minnesota School of Chemistry, and Dr. Oliver H. Emerson of Merck and Company Research Labora-

tories and the Institute of Experimental Biology at the University of California. At this same Institute the effect of the synthetic vitamin on animals was determined by Drs. Herbert M. Evans, Gladys A. Emerson and Oliver H. Emerson.

A number of other scientists have been working on the chemistry of this vitamin. Dr. P. Karrer of Switzerland, and his associates, H. Fritzsche, B. H. Ringier and H. Salomon, have also synthesized it.

Dr. Evans discovered vitamin E as the result of investigations begun 16 years ago.

Some physicians have reported that wheat germ oil, rich natural source of vitamin E, has helped some women to bear children, although they had been unable to bear living children before the vitamin treatment. Without the vitamin, Dr. Evans has found, female rats grow and are apparently not hurt in any

way except that they are sterile. When mated, their unborn young die. In male rats the reproductive germ cells all die when the animals are deprived of the vitamin.

Alpha tocopherol is apparently identical with vitamin E, but other chemicals, among them durohydroquinone, have been obtained which when given in larger amounts have a vitamin E-like action. This is not surprising, Dr. Evans points out, since it has already been well established that several chemical substances function as vitamins A and D respectively, and the same holds true for certain hormones or glandular products.

*Science News Letter, July 23, 1938*

BIOLOGY

## Lindbergh Glass Heart Uses Blood of "Living Fossil"

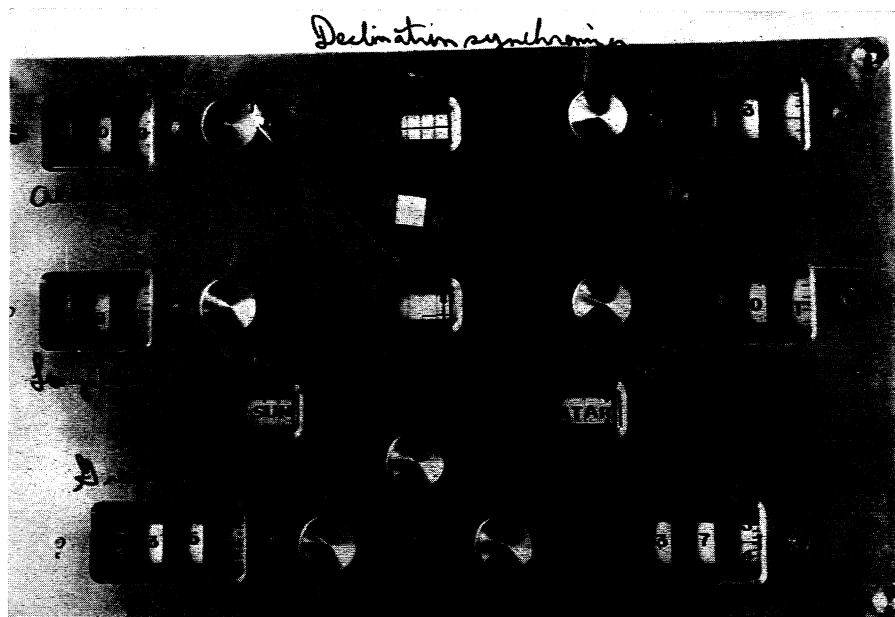
NEWEST triumph of Col. Charles Lindbergh's "glass heart" apparatus, in supplying oxygen along with the fluid it circulates to organs living outside the body, is accomplished by using blood of what might be termed a living fossil. And blue blood at that.

The creature that supplied the blood is a member of one of the oldest zoological aristocracies on earth, the horseshoe crab. Horseshoe crab shells are familiar to every stroller along the sea beach. They look somewhat like crabs, but are considerably more primitive, and they have a history running back hundreds of millions of years. They may even be ancestral to the rest of us, through a race of sea animals long since extinct, the ostracoderms.

The problem of supplying oxygen through the fluid in the "glass heart" long had the experimenters stymied. They found they could not use hemoglobin, the red pigment of ordinary vertebrate blood, because it very quickly broke down into a compound that would not carry oxygen, called methemoglobin.

Then, relates Dr. Richard Bing of Columbia University and the New York Presbyterian Hospital, it was decided to try the blood pigment of the horseshoe crab, a blue stuff known as hemocyanin. A lot of crabs had to be sacrificed to get a sufficient supply of blood, for each crab yielded only about 100 cubic centimeters, or a scant half-teacupful.

The blood itself was not used, but the hemocyanin was extracted and purified through a long series of chemical steps. When it was added to the circulating fluid in the right proportions it worked quite successfully, keeping various mam-



### EASY OPERATION

*Like the dials of your radio set, the knobs of the robot navigator are easily twirled to give the aviator his position in the trackless airways.*

malian organs like kidneys and thyroid glands alive for several days.

Hemocyanin contrasts oddly with hemoglobin in one respect. Hemoglobin containing oxygen is bright red, and

when the oxygen is gone it turns blue. Hemocyanin is blue when oxygenated, and when its oxygen is exhausted it has no color at all.

*Science News Letter, July 23, 1938*

## GEOLOGY

## New Gold Strike Comes To Nevada; Rich Ore Found

### Between 500 and 600 Claims Staked Out on Four-Mile Range; Ore Worth Up to \$2,000 a Ton Near Surface

**D**ISCOVERY of high-grade ore running up to \$2,000 a ton in value on new claims has precipitated a gold rush to Cimarron District, 29 miles north of Tonopah, Nev., opening up a new field destined, perhaps, to create a boom camp equal to the old days of the roaring west.

Since E. M. Booth, soldier of fortune, made the rich strike last month between 500 and 600 claims have been staked out over a mineral range four miles long.

The range is part of the geological upheaval which made Tonopah and Goldfield such fantastically rich gold camps.

Surface showings of the new strike are so phenomenal that ore with values up to \$2,000 a ton is being encountered 20 feet below the surface of a 7,500-foot peak. Shrewd and conservative mining men predict that the strike could easily surpass Goldfield and Tonopah, both teeming mining camps in their heyday, producing some \$500,000,000 in gold together.

Nevada has not had a strike in more than a decade that has created so much excitement as have values uncovered in the Cimarron District.

Less than a month ago 12 of the 16 claims staked out by Prospector Booth and his wife were purchased by Pacific Butte Mines Company for \$185,000, in addition to other considerations, bringing to him the realization of a lifetime dream to strike it rich.

The company, headed by Fred Vollmar, veteran Silver Peak mine operator, now is driving a 500-foot cross-cut tunnel through the center of the rich claims which cover an area of approximately one mile square. This tunnel is now over 75 feet long. Booth panned a wide section of the mineral range and believes that he staked the heart of the district which he named Cimarron.

The cross-cut is being driven into the mountain 200 feet below the high-grade strike, much of which is free gold, and within a few feet of where Mrs. Booth struck a vein that assayed \$168 a ton.

From surface showings, Booth has concluded that the cross-cut will top five veins, and possibly two more which he suspects exist.

The purpose of this tunnel is to determine the width and depth to which the veins go into the earth. Should the cross-cut verify surface showings officials plan immediate construction of a mill capable of handling 2,000 tons of ore daily, making it the largest gold operation in the state.

Charley Taylor of Tonopah, who retired years ago after making a fortune in Goldfield, declared that Cimarron has better showings than either Tonopah or Goldfield at the start. He said Cimarron might easily surpass the other two fields. Tonopah produced at least \$270,000,000 in gold and silver, and Goldfield yielded \$155,000,000.

Twisting roads to the diggings are now being scraped and graded so that mining equipment may be brought in. A tri-weekly air service is being started between Los Angeles and Tonopah to carry interested mining operators. Five tons of mine rails, large air pipe, ties and lumber have already been carried into the region from Tonopah, indicating that extensive work is under way.

*Science News Letter, July 23, 1938*

## ● Radio

Every Friday at 7:30 p. m. EDT, 6:30 p. m. EST, 5:30 p. m. CST, 4:30 p. m. MST, or 3:30 p. m. PST, Science Service cooperates with the Columbia Broadcasting System in presenting over the Columbia coast to coast network a new series of "Adventures in Science" presenting dramatizations of important scientific advances and discussions by eminent scientists.

## SOCIOLOGY

## England's Older Men Face Lifetime of Unemployment

**T**HOUSANDS of men seeking eagerly, despairingly, for work will never work again.

That is the problem that a nation must face when it is brought to accept long unemployment as an inevitable burden. That is the human story just coming out of England in the report of a painstaking research, "Men Without Work" (Macmillan), made to the Pilgrim Trust.

The older man in England is not willing to do without work. He doesn't want the dole. To him, financial independence is a necessity like his bread and ale. His home, his own home, is a castle to be defended against all attacks of fate. When forced to accept aid he still pays insurance so that death at least may be independent.

"I am respectable," he says of himself proudly.

Yet to reconcile older men to state support is the duty of England's social scientists today, it is believed.

"Until measures are taken to create work for these older men, it is most desirable that they should be able to adjust themselves to the probability of not doing much work again for the rest of their lives." So reads the report to The Pilgrim Trust. And it is a problem indeed to facilitate that adjustment.

Many of them feel, the investigators found, "that they cannot be satisfied with the rest of their lives lived out 'on the dole.'"

"Anyone who has visited a number of these older men, and knows the hopelessness of men faced with an empty future—whom neither education nor work has ever given an opportunity to learn how to spend leisure—knows the urgency of their case," warns this very human document.

"Five years in a man's life is a long time; and if at the end of five years' uncertainty there is only (as there is now) the certainty of a pension at a yet smaller rate, it is a fate that can scarcely be tolerated.

"The ordinary working man is not very easily moved, and the sight of some of these older men, broken down and unable to speak for the moment as they looked ahead into the future, is not one that will be soon forgotten."

*Science News Letter, July 23, 1938*

In Greek law courts, speakers were timed by water clocks.