

shell-mate. Presumably they started out evenly, but one of them may have dominated the other, Dr. Samuel F. Hildebrand, of the U. S. Bureau of Fisheries, who discusses turtle twins in the *Journal of Heredity* (Sept.) states that even turtles that are thus compelled to live side by side in the same house will frequently fight over morsels of food.

Turtle twins are known from all over the world, yet they seem to be comparatively rare. At one station of the Bureau of Fisheries, the hatchery in Beaufort, N. C., there are records of 100,000 young terrapins emerging from the shell, over a period of 25 years; yet only two cases of these conjoined twins have been observed.

Science News Letter, September 10, 1938

Chemistry

Synthetic Fertility Vitamin To Be Given Clinical Tests

American Chemical Society Hears Reports on New Drugs, Medicinal Value of Onions, and Gasoline From Coal

SYNTHESIS of the anti-sterility vitamin E is now an accomplished fact, and science stands on the threshold of being able to prove one way or the other whether certain kinds of human and animal sterility can be cured by feeding this vitamin E in the diet. At the meeting of the American Chemical Society in Milwaukee, the methods used in the laboratory creation of this important vitamin were described in a report by seven University of Minnesota chemists.

Lack Causes Sterility

Vitamin E is the factor in the diet whose absence has been proved to cause sterility in experimental animals, such as rats. It was originally discovered by Dr. Herbert M. Evans, of the University of California, in research begun some 16 years ago.

Ever since its discovery there has been much research seeking definite proof that the absence of this vitamin caused sterility in the larger, domesticated animals and even in man. Through the years studies with animals have shown evidence pro and con for this view. And there has grown up the suspicion, not yet confirmed clinically, that vitamin E—the so-called “essence of fertility”—might aid in certain types of human sterility.

Early in the present year, the Swiss scientist Dr. P. Karrer, and his associates, H. Fritzsche, B. H. Ringier, and H. Salomon, reported the synthesis of alpha tocopherol, a chemical apparently identical with vitamin E. Swiftly following, American scientists, banded together from three institutions, likewise reported synthesis of the vitamin.

Members of the department of chem-

istry at the University of Minnesota, who did the chemical side of the synthesis program, described the technical steps in its production. These scientists were Prof. Lee Irvin Smith, H. E. Ungnade, W. W. Prichard, J. W. Opie, S. Wawzonek, F. L. Austin and H. H. Hoehn. Cooperating in other phases of the work were Drs. Herbert M. Evans, Gladys A. Emerson and Oliver H. Emerson, of the University of California and Merck and Company.

In proving the effect on sterility of alpha tocopherol, the Minnesota chemists' report cited experiments in which sterile rats, lacking vitamin E in their controlled diet, were given doses as small as three milligrams of the chemical vitamin E and restored to fertility. Human tests have not yet been undertaken but are expected to be launched now that sizable supplies of the synthetic vitamin can be made.

Sedatives and Hypnotics

New sedatives and powerful sleep-producing drugs which do not harm the animal body have been developed by Bryn Mawr College chemists. The new drugs are a further step toward the long-sought goal of chemistry of finding a potent but harmless and non-habit forming drug to replace morphine, said Drs. Arthur C. Cope and Evelyn M. Hancock in presenting their report.

Many sleep-producing drugs have been derived in the past from barbituric acid derivatives but ordinary methods failed to create one special type; a class in which vinyl groups were attached to the barbituric molecule. The barbiturate sedative drugs as a type are not considered habit-forming, at least in the

creation of drug addiction. The Bryn Mawr chemists, however, have now solved the problem by special methods and have created over 40 new vinyl barbituric acid compounds. Several of these are effective in low dosage and are relatively non-toxic when applied to experimental animals. The new compounds produce either brief, moderate or long sleep, according to their chemical structure.

Synthetic Ephedrine

Research may soon free America and the rest of the world of dependence on a small area of China for its supply of ephedrine, the powerful alkaloid drug used in cases of low blood pressure and as an astringent nasal spraying agent, it was also reported at the meeting. Dr. Jonas Kamlet, of Israel Zion Hospital, New York City, described researches seeking the production of the drug synthetically.

Heretofore, he pointed out, the world's supply of ephedrine has come from the ma huang shrub, grown in a small area near Tientsin, China. This area was one of the first to be taken by the Japanese in their undeclared Chinese war and the supplies of the drug were stopped. The price, for a time, skyrocketed. Efforts to grow ma huang in other parts of the world are not notably successful.

Cost Still Excessive

Small amounts of ephedrine and its derivatives can now be produced in the laboratory, Dr. Kamlet reported, as he described a simplified method for its production. The synthetic ephedrine is identical with the natural variety but its cost is excessive. However, if the world's supplies were cut off, chemistry could come to the aid of medicine.

Grandmother's remedy of eating raw onions to cure a cold may not have been just superstition after all. The vapors of onions, that for centuries have made people cry, have the power to kill germs. E. F. Kohman, chemist of the Campbell Soup Company, told his colleagues of his research on the chemicals which onions liberate as their lachrymal agent. They are the potent aldehyde family of compounds. Most familiar of the aldehydes is formaldehyde, used in preserving biological and medical specimens and as a germicidal agent.

The U. S. Bureau of Mines' Pittsburgh plant for converting coal into petroleum is now able to obtain from 70 to 75 per cent. yields of oil convertible to gasoline, it was reported by an eight-

man team of government scientists.

Thus, potentially, the Pittsburgh area of the coal mining region could produce some 12,000,000,000 tons of oil that could be made into gasoline if the time ever comes when it is needed. This estimate is based on the best and latest calculation of the amount of recoverable coal in the Pittsburgh coal bed, which is placed at about 16,020,000,000 tons.

In a small, experimental plant at Pittsburgh, having a capacity of 100 pounds of coal a day, the U. S. Bureau of Mines chemists are taking coal in the powder form, mixing it with heavy oil, squeezing it to pressures of over 3,000 pounds to the square inch and heating it to 824 degrees Fahrenheit. Under the heat and pressure, extra hydrogen atoms are added to the coal molecules. Out of the treatment comes an oil suitable for conversion into gasoline.

The report on the percentage yields of coal from Pittsburgh seam coal was prepared by Dr. H. H. Storch, Dr. L. L. Hirst, C. O. Hawk, R. L. Boyer, P. L. Golden, I. I. Pinkel, J. R. Schaeffer, and R. H. Kallenberger. The work at the Pittsburgh hydrogenation plant is directed by Drs. Hirst and Storch, under the general supervision of Dr. A. C. Fieldner, chief of the technologic branch of the U. S. Bureau of Mines.

Science News Letter, September 10, 1938

GEOGRAPHY

New-Found Alaska Ice Field Covers Immense Territory

ICE AGE in the Twentieth Century: that is what the Alaska glacier field discovered by the Harvard University-National Geographic Society Expedition turns out to be. It is the largest non-polar ice cap on earth—a latter day piece of the Pleistocene. It stretches over a distance of 235 miles, or as far as from Washington to New York.

It has never been seen before because it is cupped in a vast nest of mountains which include some of the loftiest and most difficult peaks in North America. Only the coming of age of the airplane as an instrument of exploration has made its discovery possible.

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• 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.

ARCHAEOLOGY

Find One-God Pharaoh In Strange Company

BRITISH archaeologists, digging at an ancient fort-town called Sesebi in Egypt, recently unearthed three temples. In depths of one, they entered a crypt. On the walls they found some extraordinary paintings of Pharaoh Akhnaton.

There sits Akhnaton keeping company with Egypt's god of immortality, Osiris. In another scene he poses with Geb, god of earth. Farther on, he amiably sits with more gods.

If this were some other Pharaoh, it might be commonplace. But Akhnaton is famed in history as the religious reformer who swept out Egypt's legion of specialized gods, and proclaimed one god.

Defying Egypt's most powerful priests, Akhnaton worshiped a god formless and eternal, but showing himself to his children in the golden sun disk and life-giving rays of sunlight.

It was a religious revolution, no less. The idealistic king built a brand new

capital city down the Nile at El-Amarna. In roofless shrines, his court worshiped the sun.

To find this king consorting with various gods is, therefore, an unusual sight. The explanation, of course, is that the temples date from early in his reign, about 1370 B. C., before he broke with the old faith.

Akhnaton even dedicated the temples at Sesebi to the old gods, for cornerstone deposits have been found. They bear the name he used at the start of his reign—Amenhotep IV. Since that name honored Amen, the god he most hated, he naturally took another when the upheaval came.

The temples unfold an early chapter in Akhnaton's career. But we will never know the most interesting thing of all: what the young king thought when he dedicated those temples, and inspected his portraits taken with the old gods.

Science News Letter, September 10, 1938

ARCHAEOLOGY

Exploring Is Slow in Ancient Land of Sheba

HOW VERY little the world knows about Southwest Arabia is emphasized by the recent journey across it from the Red Sea to the Indian Ocean by the British explorer H. S. Philby.

Here is presumably the land ruled by that romantic lady, the Queen of Sheba. The Queen's fabulous wealth and her visit to King Solomon are familiar enough after 3,000 years to figure in crossword puzzles and quiz games. And yet her cities, palaces, and even documentary proof of her existence remain to be dug out. Arab resistance to intrusion of foreigners remains a barrier to systematic programs of digging such as archaeologists like to plan in order to restore the ancient history of a region.

Meanwhile, Mr. Philby has made discoveries which many people would have supposed were commonplace knowledge. All of Arabia, for example, has been credited with having only one river worth the name. But he saw half a

dozen rivers flowing continually from lofty sources in this darkest—that is least known—corner of Arabia.

Arabia's most beautiful oasis has heretofore been unknown, also, or practically so. Najran, in Mr. Philby's estimation, deserves the highest praise for beauty. He spent two weeks at Najran. One foreigner had been there before him—a Frenchman in 1869. Castle ruins mark a great city there, awaiting archaeological explorations.

Even the Arab steed has been misunderstood, it may be, for the explorer paused at many inscribed rocks to copy the writings and sketchy pictures. And he was struck by the pictures of fighting men and hunters mounted on horses.

These records he has turned over to experts. But he hazards a guess that horses came to Arabia long before the sixth century A. D., which was the earliest time for their appearance that old literary sources definitely proved.

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