

The grand total of these index numbers, for all eight nations studied, shows a progressive increase from the twelfth century, when the number was 2.7, doubling or more than doubling for each century until the seventeenth, when it had risen to 519.4. The eighteenth century, with an index number of 567.5, showed little increase, and during the nineteenth century the number actually fell to 318.9. But the twentieth century, with the World War and its smaller forerunners involving scores of nations, tens of millions of soldiers and millions of deaths, raised the index number to the appalling level of 13,736.0.

Dr. Sorokin and Gen. Golovin regard all wars before the seventeenth century as "comparatively insignificant"; but since that time things have become progressively worse. Even the nineteenth century, with its recession

from the preceding high points of the seventeenth and eighteenth centuries, was more than a hundred times worse than the "barbarous" Middle Ages so far as war was concerned.

"This refutes the theories," they commented, "that war tends to disappear with the progress of civilization. It means also that the commendable hopes that war will disappear in the near future are based on nothing more than wishes and a belief in miracles."

The two investigators could find no marked trend, cycle or periodicity in the occurrence of European wars, though there was some indication of such periodicity in three countries: Germany, Italy, and Russia. In all probability, they suggested, this "trendless" or erratic oscillation in the occurrence and intensity of war will continue indefinitely.

Science News Letter, December 30, 1933

ARCHAEOLOGY

95-Room House Unearthed In Lost City by CCC Workers

By M. R. HARRINGTON, of the Southwest Museum, in charge of the Lost City Project

CIVILIAN Conservation Corps boys, excavating ruins of the Lost City of the Moapa Valley which will soon be flooded by waters of Boulder Dam, have uncovered an ancient ruined building containing 95 rooms. It seems to have been the largest building in the Lost City, and is probably the largest structure of the Early Pueblo Period known. Its age is estimated at 1,200 to 1,500 years.

Most of the 95 rooms were small, some too small for a human being to live in. These latter were doubtless for storage. The larger rooms, many provided with fireplaces, were living rooms.

Strangely enough, the rambling, one-story structure had been three times destroyed and twice rebuilt. This is shown by three layers of ruined rooms, piled one above the other. Some time after the final rebuilding the occupants left for good. The roofs fell in and the adobe walls crumbled. Desert winds piled drift sand into a large sand dune over the spot.

To uncover the ruins, the CCC boys had to remove not only six feet or so of sand but thick growth of thorny mes-

quite bushes. (A worker is pictured on the opposite page.) None of the walls stands higher than three or four feet. They are of adobe clay or adobe with layers of stone between.

Finger marks which have remained in the adobe more than a thousand years were found. These were inprinted when some builder who must have been in a hurry laid on a course before the last one was dry. The adobe was squeezed out of shape by the weight above, and had to be pushed back with the fingers.

The excavators have found many articles, lost or abandoned when the inhabitants left their homes for the last time. Largest of these are metates, or grinding slabs for corn, and manos or hand-stones used with them. The smallest articles are grains of charred corn and tiny beads of shell. There are bushels of broken pottery, some with painted designs in black and white or black and red. An occasional jar or bowl is whole or restorable.

Among the most curious things found were a number of crude clay dolls, all broken. Most of them were in one place, in the main patio. Is it a question whether these were children's toys or were used in some ceremony.

Science News Letter, December 30, 1933

PHYSIOLOGY

New Protein-Digesting Enzyme Found in Pancreas

DISCOVERY of a powerful protein-digesting enzyme in the pancreas has just been announced by Drs. M. Kunitz and John H. Northrop of the Rockefeller Institute Laboratories in a report to *Science*.

The new enzyme, for which the name chymo-trypsin is suggested, was obtained by the action of minute amounts of the well-known pancreatic enzyme, trypsin, on crystals of a protein substance which Drs. Kunitz and Northrop obtained from fresh pancreas tissues. The newly-found protein they call chymo-trypsinogen.

The new enzyme, chymo-trypsin, is quite distinct from trypsin and except in its power to clot milk, its digestive activity is much less than that of trypsin.

The significance of the discovery lies in the fact that it gives new knowledge of how pancreatic enzymes or ferments become active, a matter that has never been agreed upon by scientists. It has long been known that these enzymes are not active in fresh pancreas or in freshly secreted pancreatic juice. They are activated by the action of a ferment from another part of the digestive tract. Since the new enzyme was obtained from apparently pure protein material, it seems to Drs. Kunitz and Northrop that the protein-digesting action of this and perhaps also of the other pancreatic enzymes is a property of the protein molecule.

Science News Letter, December 30, 1933

ENGINEERING

Unemployed Engineers Begin Aerial Mapping

PUTTING a large number of unemployed engineers and assistants quickly to work on an aerial mapping project that promises to be highly valuable to many Governmental agencies—this is the goal of a new Civil Works Administration Program.

Airplanes will soon be flying over selected agricultural agencies in ten southern states, while cameras take overhead views of farms and fields. On the ground below, groups of workers will chain off individual properties and plot to scale the results shown on the air pictures. Fitted together, the air photographs will then form a great mosaic picture map of the land.

During 70 days an allotment of \$650,000 is to be expended for this purpose. Mapping of 40,000 square miles will proceed as far as possible, with 500 engineers and some 1,500 assistants taking part. The states engaging in the project are Alabama, Arizona, Arkansas, California, Georgia, Louisiana, Mississippi, New Mexico, South Carolina, Texas and the District of Columbia.

The U. S. Geological Survey has charge of the project. Advising and conferring with the Survey are representatives from Governmental agencies which expect to find the maps useful. These include the Bureau of Census, Agricultural Adjustment Administration, Coast and Geodetic Survey, Corps of Engineers of the U. S. Army, and the Army Air Corps. It is believed that many additional uses for the maps will occur, once they become permanent Government records.

Science News Letter, December 30, 1933

ENDOCRINOLOGY

Opposite Sex Effects From Pituitary Hormones

FROM the pituitary gland located at the base of the brain come two hormones which produce opposite effects on the sex glands of mature fowls, it appears from the report of Drs. Oscar Riddle and his associates, Ernest L. Lahr and Dr. Robert W. Bates, of the Carnegie Institution of Washington.

One of these hormones has for some time been known to cause rapid and premature growth in the sex glands of young animals. Dr. Riddle and associates have now found that small amounts of this same hormone cause enlargement of the ovaries of mature hens, also.

Another hormone of the many produced by the pituitary gland, the one which stimulates milk production in mammals, has the reverse effect on the ovaries of mature fowls, causing a marked decrease in their size. The same opposite effect of these two hormones was observed on the sex glands of adult doves, both male and female.

These observations reinforce other evidence previously obtained indicating that not one but two hormones of the anterior pituitary are concerned in regulating the size and activity of the sex glands and that their normal adult size can be increased or decreased by giving the appropriate hormone.

Science News Letter, December 30, 1933

BACTERIOLOGY

More Carotene Found In Bacteria Than in Carrots

New Method for Estimating Number of Living Bacteria; Acidophilus Milk Keeps Best Without Refrigeration

NEARLY twice as much carotene, the principal yellow pigment that gives carrots their color and from which animals produce vitamin A, is found in certain bacteria or "germs" as in carrots themselves, M. A. Ingraham and C. A. Baumann of the University of Wisconsin reported at the meeting of the Society of American Bacteriologists in Philadelphia.

These bacteria manufacture the carotene in their microscopic bodies. Production of carotene has always been associated with the presence of chlorophyll, green coloring matter of plants. Bacteria are on the borderline between the animal and plant worlds. Consequently it is interesting to observe, the Wisconsin bacteriologists pointed out, that while the bacteria are like animals in having no chlorophyll, they seem like plants in their ability to produce carotene.

Carotene is of importance because from this plant substance animals are able to produce vitamin A. No evidence was found for the presence of this vitamin in any of the bacterial extracts that contained carotene. However, rats

that were sick from lack of vitamin A recovered when fed bacterial cells containing carotene. The response of the rats could be entirely accounted for by the amount of carotene they received, the investigators stated.

Living and Dead Separated

A method of estimating the numbers of living and dead bacteria or "germs" growing in a tube or plate of artificial media, was reported by Dr. W. C. Frazier and A. J. Boyer of the U. S. Department of Agriculture.

Scientists have never before been able to make this distinction between living and dead bacteria in a culture, though many attempts at it have been made. If the method lives up to its present promise it is expected to have wide practical application.

When bacteria grow on artificial media, they form colonies. But scientists wishing to transfer some of these bacteria to another medium have at present no way of telling in advance which colony is made up of living bacteria capable of reproducing and carrying on the strain and which colony may be



DISCOVERY OF CITY AND SELF

Reconstruction of the Lost City and of men broken by joblessness goes on side by side. The picture shows one of the young CCC workers unearthing an ancient Indian pot. (Story on opposite page.)