

other organs, but not in the veins. The function of the spleen in slowing the blood flow accounts for the beneficial effect of removing the spleen in congenital hemolytic jaundice, Drs. Ham and Castle pointed out.

Science News Letter, November 25, 1939

Religion Began With Sex

CAVE men and women in the Old Stone Age were worshippers of physical sex, it was declared in a paper offered to the Society by Prof. George A. Barton of the University of Pennsylvania. To these remote forebears of ours, sex was a religious as well as an emotional and a physical experience. Its expressions were extremely naive and direct; the complex structure of symbolisms and cults grew up much later, out of the original soil of cruder facts.

Science News Letter, November 25, 1939

Early Man in Burma

HUMAN beings on the same low level as Peking Man in China existed far to the south, in Burma, during the Ice Age, declared Dr. Helmut de Terra, noted explorer of ancient human sites in Asia. No skulls or other actual remains of this ancient race have yet been found, but the type of stone tools found "is so primitive as to suggest a low grade intelligence corresponding to the crude mental status of Peking Man . . . This type of Stone Age culture has its parallels in northern India, in China as well as in Java so that a center of dispersal may be surmised in southeastern Asia from which the most ancient technique of tool making was spread to various lands."

Science News Letter, November 25, 1939

New Theory of Diabetes

NEW knowledge of body chemistry in diabetes which contradicts previously held theories was reported by Drs. William C. Stadie, John A. Zapp and Francis D. W. Lukens, of the University of Pennsylvania.

"Over-production of sugar from fats is not the mechanism responsible for the excessive excretion of sugar in the diabetic," they conclude from their studies of chemical action in the liver of the diabetic animal.

Ketone bodies, chemicals produced when the body's chemical factory is upset by diabetes, have formerly been considered poisonous waste-products which the tissues could not use and which were

consequently excreted completely. This idea also needs "considerable revision," the Pennsylvania scientists found, as does the current theory of how fatty acids are burned and oxidized in the liver.

Science News Letter, November 25, 1939

Horse and Whale Compared

HORSE and whale were compared, as mechanisms for the release of energy, by Drs. George Crile and D. P. Quiring of the Cleveland Clinic Foundation. The horse was Equipoise, one of the most famous thoroughbreds of this generation. The whale was a white whale, representing a rather small species as whales go—average length, only 12 to 14 feet. The particular specimen examined was of almost exactly the same weight as Equipoise, both animals being a trifle under 1150 pounds.

The points that interested Drs. Crile and Quiring were the relative weights of four organs having most to do with energy release: brain, heart, thyroid and adrenal glands.

The whale's brain weight was nearly three times that of the horse's: 2355 grams as against 808.5. Its thyroid gland likewise was about three times heavier than the horse's: 108 grams as against 33.4.

The horse surpassed the white whale in weight of heart and adrenal glands: heart, 4455 grams as compared with 3181; adrenals, 46.62 grams as compared with 34.76.

Science News Letter, November 25, 1939

Growth Produces Cheer

IF THE population curve continues its present downward dive, the world is in for an age of pessimism, affecting everything from politics to religion. At least, this is what will happen if history repeats itself.

Prof. Josiah C. Russell of the University of North Carolina presented results of his studies of the general attitude and atmosphere in three great historic periods, one a time of declining population in Europe, from 200 to 900 A.D.; the second, the period of increasing population in England from 1086 to 1348; finally, the time of growth of the United States from 1789 to 1914.

In the great period of falling population, Prof. Russell found, people became pessimistic, paid less and less attention to material culture, and took refuge in religion, while the political organization became smaller and progressively decentralized, winding up in feudalism.

In the periods of rising population, on the other hand, people were optimistic, had "progressive" ideas, moved to big towns, concerned themselves less and less about religion, built increasingly large and complex political states, and generously credited "the government" with their prosperity.

Science News Letter, November 25, 1939

Maya Temple Bases Complex

PYRAMID is too simple a name for some of the complex and lofty bases on which Indians of America's Old Mayan Empire set their beautiful temples, declared Linton Satterthwaite, Jr., of the University Museum, University of Pennsylvania.

At Piedras Negras, Guatemala, where he has been excavating, a temple may have beneath it, from the ground up, a basal platform, a pyramid, a supplementary platform and a foundation platform. On the first three the Indians probably staged outdoor ceremonies connected with the temple rites, he suspects.

Science News Letter, November 25, 1939

PSYCHOLOGY—MILITARY SCIENCE

Propaganda Balloons Used in World War, Too

BBRITISH, dropping leaflets from air-planes, and Germans sending propaganda balloons over enemy territory are only following tactics developed to a high peak of efficiency during the World War by our own American Creel Committee.

Leaflets were then distributed to the Germans, at a cost of only a dollar a thousand, in balloons nine feet in diameter that carried 10,000 such messages and released them at the rate of 12 to 24 a minute, exploding when the errand was accomplished.

But balloons were not the only agency for distributing propaganda behind enemy lines, it is revealed in the new book on the Creel Committee's work by James R. Mock and Cedric Larson, *Words That Won the War*.

"The methods of trench propaganda included not only airplanes and balloons," reports this new document, "but also devices for shooting leaflets into the German lines—rifle grenades, rockets, and mortars.

"The difficulty here was that enemy artillery promptly brought reprisals against the sector from which the propaganda had come—which is as impressive testimony as may be presented that the Germans held the paper bullets in higher respect than those of metal.

"Gibson wrote Irwin from Paris on April 17 of a way around this difficulty. There is a new plan to use Seventy-Fives which can be fired at the same time along a wide front, and in this way reprisals will be prevented. For this method special shells will have to be prepared, so it cannot be put into effect immediately. The shell is designed to carry a package of small pamphlets or tracts, and the explosion spreads them in a radius of several kilometers behind the lines."

Science News Letter, November 25, 1939

CHEMISTRY

New Gas-Oil Explosives Would Help U. S. in War

THE United States is better able to produce explosives than any other nation on earth. It has raw materials in abundance, the chemical industrial organization to secure large production and the transportation to put them where they are needed.

It is significant that this appraisal comes from the head of the Austro-Hungarian munitions industry during the World War, Prof. Ernst Berl, now research professor at the Carnegie Institute of Technology, Pittsburgh, and an American citizen. Surveying America's capacity to produce explosives, Prof. Berl in the technical journal, *Chemical and Metallurgical Engineering*, emphasizes that chemical advances make it possible to produce military explosives from raw materials not used for explosives manufacture in the last war.

From natural gas, from crude oil, by fermentation of carbohydrates, from sugars, from bituminous coals, there can be made explosives with unfamiliar names that are quite as devastating as TNT.

For instance, methane in natural gas can be converted into acetylene and into methanol (wood alcohol); formaldehyde can be made direct from methane or from methanol; acetaldehyde can be obtained from acetylene; combine acetaldehyde and formaldehyde, nitrate the product and there results pentaerythritetranitrate, one of the most important newer explosives.

TNT can be made from aromatics extracted from petroleum as well as from the coking of soft coal. And in dozens of other ways the newer chemical methods, primarily developed to promote better living in a peaceful world, can contribute to explosives for use in war.

Science News Letter, November 25, 1939

RADIO

Two-Way Facsimile Unit Developed For Aviation

Observer Can Spot Information on Map and Transmit; Secrecy Can Be Insured By Any Scrambling Method

A PICTURE of streamlined action in military reconnaissance through the use of new two-way facsimile communication has been demonstrated by W. G. H. Finch, communications engineer, before Army and Navy officials.

With the little 25-pound unit in an observation plane over the enemy lines it is possible to transmit back, immediately, to every battery at the front the location of troop concentrations, gun emplacements and other vital military intelligence.

The reconnaissance pilot merely takes along a prepared map of the region and marks on it the information discovered. This portion of the map is placed in the transmitting scanning unit and, in an instant, it appears at every battery which can reach the objective by gunfire.

By present methods the plane must fly back and drop messages over the lines or else take photographs and return to its base. The developed prints are then rushed to headquarters and then all batteries must be notified from G.H.Q.

Complete secrecy for the facsimile transmitting system can be obtained by any of the present "scrambled" radio methods which present a hodge-podge of signals to a receiver that might intercept the messages, but which is automatically decoded properly in the pre-arranged facsimile receivers.

Even "radio barrage"—the jamming of distorting signals on the same wavelength—has little effect on facsimile transmission, Mr. Finch said in an interview. This deliberate distortion has been tried experimentally. While it grays in the background it does not usually prevent the arrival of the intelligence superimposed upon it.

Tests on the *U.S.S. Fanning*, at sea, were made with the device in which a diagram of an engine part was received on shipboard at the same time that the ship's transmitters were trying to "jam" the signals by transmitting on the same wavelength. The diagrams came through and were legible.

While this military application has interest at the moment, it is really only one small aspect of the peacetime uses of facsimile which will be augmented by the new two-way unit.

Police departments are putting facsimile receivers into their squad cars and obtaining permanent written instructions for patrolmen. Where before officers could claim that they did not receive a message because of "dead spots" in a city, the facsimile receiver indicates such areas clearly. If a patrolman leaves his car and fails to hear a message the new facsimile brings him a permanent message on his return. Photographs of wanted criminals, and fingerprints also, can be transmitted swiftly.

For aviation, charts of data, weather maps and any information that can be put on a piece of paper can be winged swiftly by the mobile two-way units. Ear-phones can be used solely for radio beam signals and the co-pilot's duties as radio operator can be greatly diminished.

For ships at sea, navigational data and all other types of intelligence can be



SCIENCE AID TO POLICE

With this new facsimile instrument the policeman cruising in his radio scout car can actually see the picture of the man he is hunting.