

Central and South America, creating new pressures to clear the jungle.

If such efforts are to be productive, writes Harald Sioli of the Max Planck Institute for Limnology they must take into account the inherent diversity and weakness of jungle ecology. In the Amazon basin, this would involve restricting short-lived agriculture to the richer low-land soils and devoting the much larger upland areas to forest agriculture. The region, however, could apparently never be able to successfully support a large population.

The effect of large-scale destruction of the world's jungle can hardly be calculated, for they play a vital role in many of the world's natural cycles, including climate and production of oxygen. Even given that understanding, present political systems could hardly meet the task of preserving the jungles as a vital natural resource. "The prospect," writes Fosberg, "is discouraging indeed." □

## Prenatal sex hormones and sexual development

Sex hormones secreted by pregnant women play an important but not fully understood role in the prenatal and future development of their children. Researchers have found, for instance, that sex hormones influence physical, mental and intellectual development (SN: 1/8/72, p. 8). But because few pregnant women are actually subjected to excesses of male or female hormones, studies of their influences on humans have been relatively rare.

Pregnant diabetic women, however, are deficient in production and utilization of estrogen and progesterone (female sex hormones). To overcome this deficiency and to help with the hazardous pregnancy of the diabetic, the Joslin Clinic in Boston has been prescribing a synthetic estrogen (diethylstilbestrol) and more recently a naturally occurring substance (estradiol) to pregnant diabetics. Irvin D. Yalom, Richard Green and Norman Fisk of Stanford University have taken advantage of this situation to study the psychosexual development of male offspring of these women.

Forty such boys were given physical examinations and were interviewed on subjects such as onset of puberty, leisure activity, future goals, nocturnal emissions and aggression and assertiveness. The subjects were also observed throwing balls, swinging bats and running. The researchers conclude, in the April ARCHIVES OF GENERAL PSYCHIATRY, that the sons of hormone-treated diabetic mothers were "less aggressive, less assertive, [and] had less athletic skill and grace" than control groups of boys of the same age. □



Outlined by its walls, ancient Chan Chan spreads over 10 square miles of Peru.

## Of Kings and Skeletons

Taycanamo arrived, the legend says, on a raft. He appeared one day perhaps 800 years ago on the coast of what is now Peru and announced that he had been sent to rule by a great lord in a distant land. The legend says.

Of course Taycanamo may have been but a myth. After all, his coming is only a tale recorded by the Spanish conquerors of the Inca conquerors (whose traditions were kept largely by mouth) of the people of Chimor. But whatever its origins, the ancient kingdom of Chimor was a powerful and sophisticated presence on the Peruvian coastal desert, governed from a rich and mighty capital that was the largest pre-Columbian city in South America: Chan Chan.

As many as 50,000 people may have inhabited Chan Chan, and more than 2,000 other archaeological sites have been found in the Moche Valley that encloses Chimor. Chan Chan, however, was more than just big numbers. Four years of probing by more than 100 researchers have revealed that the sprawling city was the heart of a surprisingly elaborate civilization.

The mere mapping of the 10-square-mile city from aerial photos took six architects and draftsmen almost two years—some walls towered 25 feet above the unexcavated land—but it pointed up many patterns and unusual features. More than 125 curious, rectangular pits, for example, puzzled archaeologists until excavation revealed them to be vast, walk-in water wells, the first found in coastal Peru.

A shocking find was the discovery, apparently in the burial mound of one of the almost god-like kings who claimed descent from Taycanamo, of 200 to 300 young, female skeletons, "stacked like cordwood" but showing no marks of violence. The director of the Chan Chan project, Michael E. Moseley of Harvard University, and co-director Carol J. Mackey of San



Photos: Harvard

Workmen unearth an early storehouse.

Fernando State College in California believe that the women were poisoned or put to sleep and buried with the king to accompany him in his afterlife. Human sacrifice was known in the early New World but was not suspected on such a vast scale. Each of the 10 kings (nine if Taycanamo was only a myth) in the line that ended with the Inca onslaught in the late 15th century apparently had his own large burial compound, some of which, Moseley says, may contain as many as 1,000 skeletons.

Clues point to surprisingly highly developed agriculture among the Chimu, including the use of fertilizer, crop rotation and huge irrigation canals, one of which stretched more than 50 miles to bring water from another valley. Metalworking, advanced weaving and fishing were among the affairs of Chan Chan. □