ENGINEERING-MEDICINE

African Dams Harm Health

➤ EFFORTS to better the lot of the peoples of Africa by building dams and reservoirs are resulting indirectly in vast harm to their health through failure to prevent the spread of disease-carrying snails, states Wendell Phillips, leader of the University of California African Expedition. Mr. Phillips is back in this country for a two-month stay, to prepare his report to President Robert G. Sproul of the University, on the first 14 months of the expedition's operations.

"Studies on the distribution of the snails that are carriers of the blood-fluke (Schistosoma) indicate that conditions for the breeding of these animals are becoming more favorable all over the territory covered, with the development of dams and reservoirs without sufficient snail control," Mr. Phillips explained.

"In Tanganyika it is estimated that new reservoirs become infested with snails, and infected with the parasitic flukes, within 12 to 18 months after installation. The rapid spread of the infection can be explained by troop movements, by the presence of camps for war prisoners and refugees, and, especially in the Congo, by the migration of native labor."

Another thing that is doing vast harm in Africa, he declared, is the practically universal grass- and bush-burning practice of the natives.

"They are the curse of Africa," the expedition leader stated. "The burning of the grass destroys the leaves of the trees, and also exposes the soil to desiccation for at least an additional month every year.

"Moreover, the fire destroys the thick bush which is unfavorable to tsetse flies, and gives rise to low secondary undergrowth which is extremely favorable to the flies."

The expedition is maintaining three parties in the field. One is working in Madagascar, under the direction of Dr. Harry Hoogstraal. This party is collecting mammals, and also carrying out a medical research program for the U. S. Navy. A second party led by the veteran Prof. Robert Broom and Dr. Basil Cooke, has had conspicuous success in its search for the fossils of ancient man and man-like apes. The third party has been operating in southwestern Africa, led by Dr. C. Koch, well-known Australian entomologist, and Dr. G. van Son, entomologist at the Transvaal Museum in Pretoria.

One outstanding cooperator with the expedition is himself a native of Africa: Prof. M. Mitwally of Farouk University in Cairo. He has recently finished a three-month trek, from Nairobi across Uganda, into Belgian Congo, thence into the Union of South Africa and Mozambique.

While on this long journey he had opportunity to study two native peoples who quite literally represent "the long and the short of it." Fairly near neighbors, in the general region of Victoria Falls, are the four-foot pygmies and the Watusi tribe, whose men average more than six feet in height.

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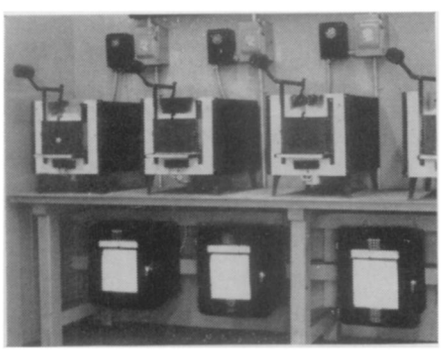

PLANT PHYSIOLOGY

Caesarian Operations Save Plant Embryos

➤ CAESARIAN operations are saving scientifically valuable hybrid plant embryos at the Smith College Genetics Experiment Station in Northampton, Mass.

Certain hybrid plants being studied by Dr. Albert F. Blakeslee and associates sometimes fail to produce seeds that will grow. Microscopic examination of the developing seed capsules showed that supporting plant tissues that normally supply nourishment to the growing plant embryos were instead developing abnormally, into what Dr. Blakeslee terms "plant ovular tumors", cutting off supplies to the young seeds and thus causing them to perish.

By careful surgical removal of the immature embryos, and culturing them as "incubator babies" on synthetic nutrient mixtures, they were kept alive and growing until they were able to strike root and take up normal existence on being transplanted into soil.

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ASTRONOMY

Distance from Earth to Sun Is Again Measured

➤ ANOTHER measurement of the distance from the earth to the sun, important as the astronomical unit by which the scale of the sun's family of planets is established, has been completed by Dr. Dirk Brouwer, director of Yale University Observatory in New Haven, Conn.

The mean distance to the sun is 92,960,000 miles, with a probable error of 35,000 miles either way, Dr. Brouwer reported to members of the American Astronomical Society meeting in New Haven. This result compares favorably with the currently used figure of 93,000,000 miles (with an uncertainty of about 11,000 miles), announced a few years ago by the Astronomer Royal of England, Sir Harold Spencer Jones.

A total of 5,100 observations during the years 1932 to 1942 of the exact time when the moon passes between us and a star, or occults it, were used for Dr. Brouwer's study. Although this method has been employed before, the material used in the study was large in quantity, and the analysis more detailed than in previous work of this kind.

Sir Harold based his calculations upon observations of the minor planet, Eros, made all over the world in 1930-31, when Eros made a close approach to the earth. Dr. Brouwer's method would have the accuracy of the Eros results only if some 25,000 occultations had been included in his analysis, instead of 5,100.

This independent method of measuring the distance to the sun has considerable value in confirming other measures, even if they are of higher accuracy. The attraction of the sun on the earth and the moon affects the motion of the moon around the earth in a very complicated way.

A periodic oscillation is the one used in Dr. Brouwer's study. Due to its presence in the moon's motion, the moon is about 1/15 of the moon's diameter behind its average motion at the time of first quarter and a similar amount ahead at the time of last quarter. At both new moon and full moon, our satellite's position among the stars is not affected by this particular oscillation.

The amplitude of the effect of the parallactic inequality is inversely proportional to the mean distance of the sun from the earth, so that if the amplitude of the oscillation can be found from observation, the sun's distance from the earth can be obtained.

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