growth suddenly begins and continues at a rapid rate. This growth was shown to result from an adaptation of the streptococcus without using up the bacteriostatic substance. We give the name lactenin to this substance. In sufficient concentration it will completely prevent the multiplication of certain bacteria, such as the scarlet fever streptococcus, so that they finally die.

Lactenin preparations contain protein and it may itself be a protein. It is difficult to separate from the other proteins of whey, although the casein can be readily separated from milk leaving whey with the full activity of the original milk. This difficulty is met by digesting the other proteins with trypsin. Mild digestion does not injure the lactenin. The products of digestion can be removed by dialysis, or the lactenin can be precipitated with alcohol.

Owing partly to its combination with calcium phosphate, the lactenin-containing material in concentrated form is quite insoluble and forms at best a poor suspension. It is possible to remove the calcium phosphate, giving a more soluble material, but the conditions must be carefully regulated to prevent inactivation of the lactenin.

Dried lactenin preparations are 200 to 500 times as active as dried skimmed milk. The method used to determine lactenic activity is to measure the size of colonies of scarlet fever streptococcus growing in a thin layer of veal infusion agar jelly to which horse blood is added. The more lactenin present the smaller the colonies will be. One gram of dried material in 100 gallons of this media will produce perceptible inhibition, whereas one gram in 10 gallons will completely prevent the growth of these bacteria.

Either the dried material or neutral suspension of it will keep for months in the refrigerator without loss in activity. It is probably not a pure substance. It contains protein, but no reducing sugar or elements aside from carbon, hydrogen, oxygen and nitrogen. It exists as a salt of whatever cation may be present, particularly calcium, and appears to have a low isoelectric point.

Lactenin, while very active against some microorganisms, is less active against others.

We make no claims that lactenin is a preservative of the milk or that it could be used for a food preservative. Our investigations have not been concerned with this phase of the question.

It is not known whether lactenin inhibits the growth of mastitis streptococci in the udder, although this appears plausible.

We do not know whether the lactenin in milk has any effect on intestinal infections in animals which drink the milk. It is likely that the stomach acidity would destroy the lactenin.

Since suggestions have been made that lactenin might have a therapeutic value, we would caution against too much hope in this regard until experimental data can be obtained. Satisfactory injections have not been possible up to the present owing to the insolubility of the preparations and the physical properties of the suspensions.

F. S. JONES
H. S. SIMMS

DEPARTMENT OF ANIMAL PATHOLOGY,
THE ROCKEFELLER INSTITUTE,
PRINCETON, NEW JERSEY

AN ACCESSIBLE TROPICAL VEGETATION

IN his description of our collection from Barro Colorado Island Dr. Paul C. Standley[1] states that Mr. Salvoza and I must have visited the island at a particularly favorable time. While that may have been the case still I think the splendid success we had in finding plants new to that region was largely due to the fact that most of our collecting was done along the shore-line with the help of a cayuga (dug-out canoe), which was provided by the laboratory.

The difficulties of collecting in a tropical jungle have long been recognized and with good reason. The very tall trees are much interlaced with vines, and flowers or fruits are almost always inaccessible. When fallen specimens are available it is difficult to know certainly whether they are from one of the tall trees or from a vine which the tree supports.

Barro Colorado Island was cut off from the mainland when the valley surrounding it was flooded to a depth of eighty-five feet to form Gatun Lake and the channel of the Panama Canal.

Since the inundation was of very recent date, no littoral or shore-line vegetation has been formed and the mid-forest types which are almost inaccessible in the interior of the jungle very often overhang the shore with flowers and fruit being borne on the lower branches.

The many long, branched inlets allow a large part of the island to be explored from the shore.

Barro Colorado Island does have on it a most unusual collection of native Central American plants, and without doubt many of them are yet not listed as being present there.

The added feature of the accessibility of the flora makes it unique among tropical floras and speaks well for the foresight of the founders of the Institute of Tropical Research which is situated there.

WALTER N. BANGHAM
GOODYEAR PLANTATIONS COMPANY,
SUMATRA

[1] Paul C. Standley, *Jour. Arnold Arboretum*, April, 1930.