Recently a primordial fungus with affinities in the Chytridiales has been found to be a frequent invader of the cells of the leaves, stalks and buds of sugar-cane affected with chlorotic streak disease. It has been observed in several varieties of cane collected from several islands of the Territory of Hawaii. In apparently healthy cane it has been found only where latent infection presumably existed. For convenience this fungus is tentatively referred to as a chytrid.

The chytrid in its most conspicuous form may be seen in longitudinal sections of the nodal region of the stalk with a hand lens at a magnification of 10 as an assortment of black spheres of various sizes. Under the compound microscope these spheres were found to range in size from about 5 microns to 60 microns, the smaller spheres being of the color and density of the host cell protoplasm, slightly larger ones gray, and the larger units opaque and black even with high magnification and intense illumination. The naked thallus of the fungus was observed in the same cells with one or more of the spherical bodies. The thallus is often attenuated into scarcely discernible strands with enlargements, resembling those of *Physoderma zeae maydis* Shaw, disposed at intervals on the inner surface of the host cell walls. Apparently the thallus may also assume the form of rounded or amoeboid bodies as well as attenuated masses of naked protoplasm elsewhere in the plant where it is more active, in the absence of the spherical bodies. Wherever observed the thallus was predominantly intracellular. It often contains black inclusions which serve to identify it where otherwise it would be undetected since the naked protoplasm of the invader is almost entirely lacking in contrast with the host cell protoplasm.

This chytrid apparently has heretofore escaped observation by sugar-cane pathologists, which may largely be attributed to the occurrence of the conspicuous phase of the fungus in tissues difficult to section, and to the longitudinal rather than radial distribution of the invading thallus.

A preliminary report concerning observations which indicate that the above-mentioned chytrid may be the causal agent of chlorotic streak disease, with photographs of the several stages of the fungus, was submitted February 19, 1940, for publication in *The Hawaiian Planters' Record.*

C. W. CARPENTER

EXPERIMENT STATION OF THE
HAWAIIAN SUGAR PLANTERS' ASSOCIATION

THE GENUS LISTERELLA PIRIE

I HAVE been informed that at the Third International Congress for Microbiologists, held in New York City, September 2–9, 1939, it was reported to the Committee on Nomenclature that the new name *Listerella* which I proposed for a genus of bacteria in 1927 had already been given to a Mycetozoan by Jahn[1] in 1906 and to one of the Foraminifera by Cushman[2] in 1939.

My proposed name, therefore, becomes a homonym, but as the genus has acquired some importance in both human and veterinary pathology and references to "Listerellosis" are becoming fairly common in literature, I think that a name as near to my original proposal as possible is desirable. I therefore propose *Listeria,* as the name for the genus of bacteria as defined by me in Publication No. XX of the South African Institute for Medical Research.[3] The type species of this genus is *Listeria monocytogenes* (Murray *et al.*) comb. nov. *Bacterium monocytogenes* Murray, Webb and Swann;[4] *Listerella hepatolytica* Pirie.[5]

J. HARVEY PIRIE,
Acting Director

THE SOUTH AFRICAN INSTITUTE
FOR MEDICAL RESEARCH,
JOHANNESBURG, SOUTH AFRICA

SCIENTIFIC CONSCIENCE

IN two of the recent numbers of SCIENCE, Professor Ashley-Montagu has pointed out how two early writers (Leonardo da Vinci and Francesco Lanza Terzi), both pioneers, exhibited fear that inventions with which they were concerned might be used for the destruction of mankind, rather than its preservation.[1] In this light it is interesting to note what Benjamin Franklin had to say on the subject.

Franklin had been present at the balloon ascents of Montgolfier and Charles and had written from Paris detailed accounts of these ascents to Sir Joseph Banks, the president of the Royal Society. In a letter to his friend Jan Ingenhousz—the physician to Maria Theresa—dated January 16, 1784, he wrote:

It appears, as you observe, to be a discovery of great Importance, and what may possibly give a new turn to human Affairs. Convincing Sovereigns of the Folly of wars may perhaps be one Effect of it; since it will be impracticable for the most potent of them to guard his Dominions. Five thousand Balloons, capable of raising two Men each, could not cost more than Five Ships of the Line; and where is the Prince who can afford so to cover his Country with Troops for its Defence, as that Ten Thousand Men descending from the Clouds might not in many places do an infinite deal of mischief, before a Force could be brought together to repel them?[2]

Franklin's abhorrence of wars is well expressed in

[1] *Ber. d. deutsch. Bot. Ges.,* Vol. 23, p. 538.
[2] "Foraminifera, Their Classification and Economic Use," Sharon, Mass., p. 122, plate 12, fig. 13.
[3] "The Plague Problem in South Africa," by J. A. Mitchell, J. H. Harvey Pirie and A. Ingram, (Whole Vol. III, 1927, p. 169.
[4] *Jour. Path. and Bact.,* 29: 1926, 407.
[5] *Publ. S. African Institute for Med. Res.,* 3: 1927, 163.
[1] SCIENCE, 90: 180, 1939; and 90: 592, 1939.
[2] "The Writings of Benjamin Franklin," edited by A. H. Smyth, New York, 1907. Vol. ix, Letter 1473, p. 155.

another letter to Ingenhousz, dated February 11, 1788, in which he said:

I lament with you the Prospect of a horrid War, which is likely to engage So great a Part of Mankind. There is little Good gain'd, and so much mischief done generally, by Wars, that I wish the Imprudence of undertaking them was more evident to Princes; in which case I think they would be less frequent.[3]

I BERNARD COHEN

CARNEGIE INSTITUTION
OF WASHINGTON

"ROGER BACON WAS MISTAKEN"

IN SCIENCE of March 29, I find an article entitled "Roger Bacon Was Mistaken," in which the author attributes to Roger Bacon the statement that "hot water would freeze more quickly than cold water."

The present writer is not an authority on the writings of Roger Bacon, though he has given some attention to them, and he has no recollection of seeing any discussion of temperature changes in Roger Bacon's writings; but he is aware that some four hundred years later Francis Bacon devoted a considerable portion of his "Novum Organum" to a discussion of "The Form of Heat." In this discussion he says:

The preparation of bodies, also, for the reception of cold should not be omitted, such as that water a little warmed is much more easily frozen than that which is quite cold, and the like.

In his "Table of the Degree or Comparative Instances of Heat" he says in example 39:

A brick or stone or hot iron, plunged in a basin of cold water and kept there for a quarter of an hour or thereabouts, retains such a heat as not to admit of being touched.

Evidently, Lord Bacon in this case must have performed his critical experiment in the same manner as did the author of the article on Roger Bacon's mistake. In this latter instance it would be very interesting to know why the pint of water from mother's tea-kettle continued to cool faster than the pint from the kitchen faucet after they had both reached the same temperature.

FERNANDO SANFORD

STANFORD UNIVERSITY

PROFESSOR JOSEPH O. THOMPSON'S comments on the freezing of hot water sooner than cold water appealed to me rather keenly. When I was a schoolboy some of my elders said that the hot water pipes always froze first and that hot water, put in a vessel and exposed to the atmosphere, would freeze more quickly than cold water placed in a similar vessel. The idea appeared so preposterous to me that I performed exactly the experiment performed by Bacon. I got two deep pans of the same shape and size. One I filled with cold water and the other with hot water, placed them on a cold porch one evening and watched the rapidity with which each froze. I was pleased to note that the one containing cold water froze very much sooner than the one containing hot water, much to the disgust of my elders.

If Professor Thompson's volume of water which had been heated becomes rapidly less in volume than the cold water, the experiment does not seem to be carried out along strictly scientific lines.

The belief that hot water does freeze more quickly seems to be firmly ingrained in the public mind so that many persons believe if hot water is placed in the ice-cube compartment of an electric refrigerator it will freeze faster than if cold water is placed therein. Perhaps it will if a large portion of it is lost through evaporation.

M. W. LYON, JR.

SOUTH BEND, IND.

BEING mildly intrigued by Dr. J. O. Thompson's recent note: "Roger Bacon Was Mistaken,"[1] I repeated the experiment at Caribou, Colo. (elevation, 10,600 feet) on an evening during which the temperature fell from −14° C. to −17° C.

Four 500 cc glass cylinders and four ordinary pie-tins were used in the experiment. These were placed on the wooden floor of the cabin-porch. The volume of water used in each case was very nearly 250 cc. Twin-samples of water at various temperatures were placed in cylinders and pie-tins—and the times recorded for the first appearance of ice crystals. The results are given in the table:

Type of receptacle	Original temperature of water	Time of cooling to freezing point
Cylinder	93.3° C.	54 min.
Pie-tin	93.3° C.	31 "
Cylinder	30° C.	42 "
Pie-tin	30° C.	33 "
Cylinder	20° C.	39 "
Pie-tin	20° C.	31 "
Cylinder	10° C.	37 "
Pie-tin	10° C.	29 "

Perhaps it should be noted that at an altitude of 10,600 feet brook-water boils at 93.3° C. Slightly different results might have been obtained with distilled water at sea-level.

Only in one case did the originally boiling water freeze, (in a receptacle of the same type), more quickly than cold water, and even in this case the "cold" water was nearly lukewarm. It seems clear that the shape and heat-capacity of the receptacle are critical. Various other factors may be involved.

[3] *Ibidem*, Letter 1715, p. 633.

[1] SCIENCE, 91: 2361, 315, March 29, 1940.