centage were found to have developed bunted heads. Doubtless, other species of *Tilletia* discharge their secondary conidia violently and will therefore yield to the methods described above.

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A THERMOPHIL NITRITE FORMER

AN investigation of the thermophil bacteria of pine woods soils in North Carolina was undertaken as a part of the requirements of the Ph.D. degree at Ohio State University. A thermophil nitrite former was among the organisms studied. Enrichment cultures in inorganic salt solution were made. From these, single cells were isolated with a Barber pipette. In all experimental work done with this organism cultures grown from single cells were used. A brief description of the organism follows.

The organism was found to be an obligate thermophil with an optimum temperature at 55°–60° C. and a minimum at 40° C. It was not killed after eight hours at 100° C. nor after forty-five minutes under sixteen pounds pressure at a temperature of 120° C. in the autoclave but was killed after sixty minutes. It was found also to be an obligate aerobe.

Morphologically, it was a large, motile, spore-bearing rod found singly and in chains. The spores were terminal and exceeded the vegetative rod in diameter. The flagella were peritrichic in arrangement. When it was stained with Gram's stain, three forms were noted, a large Gram positive rod, both sporulating and vegetative, which varied in size from 3.8 to 8 micra in length and 1 to 2 micra in width; a more slender Gram negative form, also sporulating and vegetative, which varied from 3.5 to 7 micra in length and .5 to 1 micron in width; also a transitional form having a Gram negative core on which were Gram positive fragments in the form of bars and granules. From experimental evidence these were found to be different ages of the same organism. The Gram positive were young, the negative old, and the granular middle aged.

The colonies appeared as minute white dots with dense centers, when grown on mineral salt agar plates.

When incubated at 55° C., as all cultures were, the organism could oxidize ammonium salts to nitrite in amounts ranging from one to five parts of nitrite nitrogen per million. This oxidation was most active in a pH of 9.4, very slight at pH 6.3 and ceased at pH 4.8.

It grew on all ordinary organic media, but as a result its oxidizing power was retarded upon reinoculation into mineral salt media, except in the case of potato.

When dextrose was added to the mineral salt medium, concentrations of 2 per cent. and 1 per cent. completely inhibited nitrite formation, .5 per cent. and .25 per cent. retarded and 0.1 per cent. had no detrimental effect.

Peptone, 1 per cent., in mineral salt medium temporarily checked nitrite formation, then active oxidation followed.

Free CO_2 from the air was necessary as the source of carbon. However that from the carbonate in the medium was sufficient to support a very slight oxidation.

Ammonium salts were used as a source of energy by the organism whenever available, except in one instance, when starch was added to the mineral salt medium.

Since this organism was in all the surface layers of soil tested in both North Carolina and Florida and formed nitrites between 55°–60° C., which is contrary to all findings reported, it is evidently a *new genus* and a *new species*. Considering this fact it seemed advisable to suggest a name. The name is *Nitrosobacillus thermophilus* Campbell (*Gen. et. sp. nov.*).

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MUSEUM TAGS OF CHEMICAL PROOF PAPER

A RECURRING problem in museum technique is offered by the necessity of numbering specimens preserved in alcohol, formalin, or other liquid. The use of metal tags for this purpose has been general, pure tin being by far the best material available. Metal tags are, however, subject to corrosion in formalin solutions or even in alcohol to which formalin specimens have been transferred. There is some difficulty in securing tin of uniformly pure composition, and even a slight impurity may greatly activate the process of corrosion.

The paper known as Dennison's fiber-proof paper, manufactured by the Dennison Manufacturing Company, Framingham, Massachusetts, was devised especially as a chemical-proof paper for laundry tags. I assume it to be a paper impregnated with albumin, which is subsequently hardened by treatment with formaldehyde. This paper comes in 20″ x 24″ sheets, somewhat variable in thickness. The lot now in use at Field Museum of Natural History is .346 mm thick. This paper does not soften in water, alcohol or formalin solution.

The 20″ x 24″ sheets, in our practice, are cut into ⅜″ strips. These are printed with rules set ¼″ apart on one side and the initials F.M.N.H. set exactly between the rules, on the other. Numbers are then stamped *into* the paper, to a depth of about half the thickness of the stock, by means of an automatic