BACTERIAL SPOT OF COWPEA

A RATHER destructive bacterial disease of cowpeas characterized by spots on the leaves, stems and pods has been noted in Indiana since 1919. On the leaves the spots are irregularly circular and one to three millimeters in diameter with a maroon border and buff center. The lesions are not noticeably delimited by the veins. Young lesions are greasy and water-soaked. On the pods the spots are irregularly circular, one to eight millimeters in diameter, and maroon in color, often with a sunken center and a watersoaked border. Early infection may cause a constriction of the pod and stunting of the distal portion. Seeds under pod lesions may be stunted, shriveled or discolored. Dark red, elliptical to linear, sunken lesions are formed on the petioles and stems. In addition to lesions on cotyledons, first leaves, hypoctyls and epicotyls, localized vascular infection and partial wilting may occur among seedlings grown from infected seed.

Numerous isolations and successful inoculations have proved that the disease is due to an apparently undescribed species of bacteria which may be briefly characterized as follows:

Bacterium vignæ, n. sp.[1]

Cylindrical rods, rounded at ends, solitary or in pairs; individual rods 1.5 to 2μ by 0.5μ; motile by 1 to 5 polar flagella at one or both poles; ærobic; no spores; no capsules. Gram negative; most readily stained with gentian violet.

Superficial colonies on potato agar, round, smooth, shining, raised, pulvinate, or umbonate; finely granular, often showing a concentric pattern, grayish white in reflected light, slightly greenish fluorescent in transmitted light.

Gelatin rapidly liquefied; casein digested and no acid produced in milk; nitrates not reduced; no gas with various carbohydrates and no acid except for small amount with dextrose and saccharose; starch not hydrolized.

[1] According to Migula's classification and the revision adopted by the committee of the Society of American Bacteriologists (Winslow, C.-E. A., Broadhurst, Jean, Buchanan, R. E., Krumwiede, Charles, Jr., Rogers, L. A., and Smith, G. H.: "The Families and Genera of the Bacteria," *Jour. of Bact.,* 5: 191, 229, 1920) the combination would be *Pseudomonas vignæ* n. sp.

Growth and greenish pigment formation in Fermi's and Uschinsky's solutions. No growth in Cohn's solution. Slow liquefaction of blood serum and Loeffler's blood serum.

Growth inhibited by 5 per cent. sodium chloride. Growth in +12 and —15 broth and in p_H 4.8. Greenish pigment formation in alkaline broth.

Thermal deathpoint, 50° C. Killed by one hour's exposure to sunlight. Slowly killed by freezing in water. Quickly killed by desiccation on glass, but very resistant to desiccation on cowpea seeds.

Group number, 211.2322033.

Pathogenic on *Vigna sinensis* (L.) Endl.

The disease is seed borne and may be avoided, it is believed, by using seed from disease-free pods. A more detailed account of this disease is forthcoming.

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A REVOLUTION RECORDER

IN Volume 2 of the *Anatomical Record,* 1908, I described an apparatus for recording the activity of small mammals. In that apparatus the number of revolutions of the cage was recorded in hours, minutes and seconds by a clock. The task of converting thousands of readings of the clocks into their equivalent numbers of revolutions has been so tedious and time consuming that a new device which gives the number of revolutions at reading has been substituted for the clocks.

This device consists of a gas meter index so modified that successive dials have a ratio of 1 to 10. A new dial (10, figure A) has been introduced and the drive gear on shaft "1" has been changed to make the ratio 1 to 10. The two figures A and B show the front and back view respectively. A ratchet wheel (R, figure B) with ten teeth is attached to the shaft of dial 1. The two pawls (P and p) are so weighted (w) as to keep them in contact with the ratchet wheel. A stop (s) prevents the pawls from being thrown completely off the ratchet wheel. The long arm of the lever (L 2) (not shown in the figure), which rests on the axle of the revolving cage, is lifted each revolution by a rod on the end of the cage. This