Buisman[5] described a species of Phomopsis causing a canker on elm trees in Holland. As a result of cultural comparisons with cultures loaned through the courtesy of Dr. Buisman it appears that the organism isolated by her corresponds for the most part with that of the present study.

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## A NEW BACTERIAL DISEASE OF PEARS

IN the course of an investigation on the green fluorescent bacterial plant pathogenes, a very pathogenic organism belonging to this group was obtained from a plate given me by Mr. K. G. Parker who was at the time isolating *Erwinia amylovora*. The isolation was made from colonies with green pigments in the medium, appearing as a contamination. The presence of such green fluorescent organisms in isolation work is not an unusual occurrence. Frequently they are discarded as saprophytes, in some cases with good reasons. Their presence is usually given no significance because of their ubiquitous nature in plants, seeds, water and soil.

There is practically no information as to the relation these organisms have to economic plants. There is, however, an increasing realization that some of them are plant pathogenes. The organism here described is such an example and has not heretofore been known.

### SYMPTOMS OF THE DISEASE

The manifestation of blight on flowers, which turn dark brown and die, is very apparent. On matured leaves, black round spots are produced, while on young leaves similar spots have a yellow "halo" and the leaves often become distorted. Black, almost circular spots are produced on young and mature fruits, but more readily on the latter.

### PATHOGENICITY

Artificial inoculations on fruits, flowers, leaves and stems of a hybrid pear, *Pyrus communis* × *serotina*, clearly established the pathogenic nature of the organism. Cross inoculations revealed a wide range of hosts. Infection was obtained on *Vigna sinensis, Phaseolus vulgaris, Purearia hirsuta, Vicia faba* and *Syringa vulgaris*.

A study of the organism showed it to be a *Pseudomonas*, but a comparison with the descriptions of the known species of these bacterial plant pathogenes found on pear, *Pseudomonas barkeri* and *Pseudomonas nectarophila*, showed no identity. Its fluorescigenic character is readily observed in a medium consisting of 0.3 gm $MgSO_4$, 2 gm $K_2HPO_4$ and 3 gm asparagine per liter, adjusted to about pH 6.9. It is closely related to *Pseudomonas syringae, Pseudomonas vignae* and *Pseudomonas viridiflava*, but distinctly not identical to any of these species. The organism is named and briefly described.

*Pseudomonas utiformica* sp. nov.

Motile by one to two polar flagella; rods with rounded ends; 0.7–1.5 x 1.3–3.1 μ, occurring singly and in pairs; no spores; no capsules; gram-negative; not acid-fast; facultative anaerobe; green fluorescent; beef-extract agar colonies round or fimbriate, grayish white to slightly greenish; nutrient broth fairly turbid in 24 hours; gelatine liquefied; milk not curdled, alkaline; nitrate not reduced or weakly reduced; ammonia produced; $H_2S$ and indol not produced; dextrose, galactose, levulose, mannose, arabinose, xylose, sucrose, raffinose, manitol, glycerol, and salicin are fermented; no fermentation in rhamnose, maltose, lactose; starch and cellulose not digested; growth in malic, citric, succinic, formic, and lactic acids; no growth in tartaric acid.

Pathogenic on: *Pyrus communis* × *serotina, Vigna sinensis, Phaseolus vulgaris, Pueraria hirsuta, Vicia faba, Beta vulgaris, Syringa vulgaris, Prunus avium.*

The genus *Pseudomonas* is used according to Bergey's definition and as proposed by Burkholder. If the S. A. B. committee's recommendation for plant pathogenes is adopted the genus should be *Phytomonas*.

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## THE PRODUCTION OF MUCIFICATION OF THE VAGINAL EPITHELIUM OF RODENTS BY THE OESTROUS HORMONE

THE production of vaginal mucification by *corpus luteum* extracts which maintain pregnancy in overiectomized pregnant animals, as described in a recent article in SCIENCE by Harris and Newman,[1] is, we believe, not a test for progestin but a test for the small amount of oestrin which the extracts used by them undoubtedly contain. In 1928, one of us, (R. K. M.) with Hisaw and Weichert,[2] described the production of a similar reaction in the rat with *corpus luteum* extracts. Shortly after, in 1929, the other, (W. M. A.) with Corner,[3] described the produc-

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[2] F. L. Hisaw, R. K. Meyer and C. K. Weichert, "Inhibition of Ovulation and Associated Histological Changes." *Proc. Soc. Ex. Biol. Med.*, 25, 754, 1928.

[3] G. W. Corner and W. M. Allen, "Physiology of the *Corpus Luteum*. II. Production of a Special Uterine Reaction (Progestational Proliferation) by Extracts of the *Corpus Luteum*." *Am. Jour. Physiol*, 88, 326, 1929.

tion of progestational proliferation in the castrated rabbit with extracts of *corpora lutea.*

During the past year we have been fortunate enough to have the opportunity of working jointly in the same laboratory on these reactions in an attempt to ascertain whether progestin produces mucification. While engaged in this task, Robson, 1931[4], reported the production of vaginal mucification in mice with progestin-containing extracts which had been treated with alkali. The details were not given but the fact that progestin is readily destroyed by alkali makes these experiments of Robson quite significant. Furthermore, he was able to produce the reaction with small amounts of oestrin prepared from follicle fluid, the dose used being one half that necessary to produce cornification.

Previously to the report of Robson we had been able to produce mucification in the rat with *corpus luteum* extracts made by extracting the fresh tissue with acid alcohol, boiling alcohol, or benzene, active material being obtained regardless of the solvent used. These extracts also always produced progestational proliferation in the adult castrated rabbit and therefore contained progestin. The extracts we had used were quite crude and probably contained oestrin, since no chemical procedure was used which would absolutely remove it. Similarly, none of those experimenters[1, 2, 4, 5, 6, 7] who have produced mucification by *corpus luteum* extracts have proved that the extracts used did not contain oestrin. On the contrary, analysis of the methods used by these workers makes it quite certain that they all did contain oestrin. These findings led us to carry out experiments designed to produce mucification with standardized oestrin-containing preparations.

When the article by Harris and Newman appeared we had been able to produce mucification in the guinea-pig and mouse by continued dosage with small amounts of Squibb's amniotin (an oestrogenic preparation from the amniotic liquor of cattle). This did not of course do more than indicate that oestrin might be the factor. Since then we have produced mucification in one adult guinea-pig, new-born guinea-pigs, mice, and rats with Parke, Davis and Company's theelin (crystalline oestrogenic preparation from the urine of pregnant women). Being producible by theelin, it seems fairly evident that the mucification is not due to progestin since in the preparation of theelin hot aqueous alkali is used, a procedure which destroys the activity of progestin. We feel, therefore, that the ability of theelin to produce mucification makes it reasonable to suppose that those who have produced mucification with *corpus luteum* extracts were obtaining a result due to the oestrin present and not to other specific hormones which they contained (progestin, relaxin).

The method we have used in general is to castrate adult rats, mice, and guinea-pigs in heat and to start injections with the oestrin preparation the next day and to continue for many days. The vaginal reaction was carefully studied by daily smears and by serial biopsies in the rats and guinea-pigs. The biopsy method was very satisfactory, in the guinea-pigs especially, and certainly facilitated greatly the progress of the work. In the guinea-pig 0.5 r.u. for about 25 days will bring about mucification equal to that seen early in the second month of pregnancy but not equal to that seen 24 hours *antepartum.* In the mouse mucification indistinguishable from that of even late pregnancy is produced by 0.04–0.06 r.u. per day for 8 days. Similarly in the rat good mucification has been obtained but the exact dosage has not been as carefully ascertained. We have also produced good mucification in new-born female guinea-pigs by giving 5.0 r.u. per day for 4 days. Mucification has also been produced in mice with oestrin made by extracting male urine with benzene, thus showing that oestrin made from a source other than the female organism is capable of producing the result.

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[8] National Research Fellow in the Biological Sciences.

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