twenty-four branches bearing inoculated spurs died from cankers which had girdled them by the following May.

Preliminary observation and histological studies suggest that the bacteria enter the spur via the vascular traces of the leaf scar.

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Fusaria Isolated from South Indian Soils

In connexion with work on *Fusarium* wilt of cotton in South India, I took up in 1947 a detailed study of *Fusarium* floras of certain South Indian soils, particularly 'wilt-sick' black cotton soils. Wide occurrence of *Fusaria* in soils has been reported from a number of countries, though no such detailed survey has been undertaken in India. The present work was directed towards determining the different species of *Fusarium* that occur in 'wilt-sick' black cotton soils around Udamalpet (Coimbatore District, Madras State), mainly following the techniques of the traditional *Fusarium* investigations of Wollenweber, Reinking and others[1,2,3].

In the isolation of *Fusaria* from soils, the 'root burial' technique[4] was largely used, supplemented by the dilution-plate technique. In general the former gave a much better picture of the *Fusarium* flora than the latter, since *Fusaria* seldom appeared on dilution plates but could be easily recovered from bits of root initially buried in soils and later removed and plated out on suitable media. The following species of *Fusarium* were isolated from Udamalpet soils

1. *Fusarium avenaceum* (Fr.) Sacc.
2. *F. chlamydosporum* Wr. et Rg.
3. *F. culmorum* (W.G.Sm.) Sacc.
4. *F. equiseti* (Cda.) Sacc.
5. *F. javanicum* Koord.
6. *F. javanicum* Koord. v. *radicicola* Wr.
7. *F. oxysporum* Schlecht.
8. *F. poæ* (Peck) Wr.
9. *F. scirpi* Lamb. et Fautr.
10. *F. scirpi* Lamb. et Fautr. v. *acuminatum* (Ell. et Ev.) Wr.
11. *F. solani* (Mart.pr.p.) App. et Wr.
12. *F. solani* (Mart.) v. *Martii* (App. et Wr.) Wr.
13. *F. solani* (Mart.) App. et Wr. v. *minus* Wr.
14. *F. solani* (Mart.) App. et Wr. v. *striatum* (Sherb.) Wr.
15. *F. vasinfectum* Atk.

The importance, from the point of view of plant disease, of the occurrence of different species of *Fusarium* in 'wilt-sick' soils will become obvious when it is realized that considerable evidence has accrued in recent years indicating that some wilts and root rots of crop plants are caused by complex infections by more than one species of *Fusarium*. Details of the present work will be published elsewhere.

I am grateful to Prof. T. S. Sadasivan for much guidance and criticism during the course of the present work. My thanks are due to the National Institute of Sciences of India for the award of an I.C.I. Fellowship, during the tenure of which the major part of the work was carried out.

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Myxobacteria Mistaken for Nitrifying Bacteria

In connexion with the communication under this title by Miss Joyce B. Grace, published in *Nature* of July 21, p. 117, a careful re-reading of Winogradsky's papers on the subject[1] leads me to believe that he has described two quite different species under the name of *Nitrosocystis*. In the first place, there is the organism isolated by Romell[2] from forest soil by Winogradsky's later technique of placing grains of soil on the surface of silica gel plates. Imsenecki repeated this work, and obtained *Nitrosomonas*, and a non-nitrifying myxobacterium, *Sorangium symbioticum*[3]. In the second place, there is the zooglœa-forming species, isolated by Winogradsky from Zurich soil by the enrichment culture technique, originally described in 1892 as a *Nitrosomonas*, and reclassified by Winogradsky in 1933 as a *Nitrosocystis*. This species forms the 'hard colonies' mentioned by Kingma Boltjes[4], whose work Miss Grace dismisses with the statement that there was "no evidence that the cultures were pure"; the cultures in question, however, were single-cell isolations. As regards hard colonies, I have seen them formed by my own pure cultures of an ammonia-oxidizing bacterium, which I have every reason to believe is a *Nitrosomonas*[5]. I think that the formation of hard or soft colonies depends on the density of the silica gel in the plate, and also on whether the colony is buried or superficial; Kingma Boltjes observed both types on his plates made from pure cultures of *Nitrosomonas*.

I would be inclined to think that the first "*Nitrosocystis*" may be a myxobacterium, but that the second is a true nitrifier, so that the genus *Nitrosocystis* is still valid in this sense, unless further work should show it to be identical with *Nitrosomonas*. I do not feel qualified to express an opinion on the genera *Nitrocystis* and *Nitrosoglœa*.

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Effect of *cis*-Cinnamic Acid and some Isomeric Compounds on the Germination of Zygotes of *Chlamydomonas*

The effect of a number of organic acids as inhibitors of germination has been tested on the zygotes of the *blastikos* race of *Chlamydomonas eugametos*[1]. It was observed that *trans*-cinnamic acid inhibits germination to about 50 per cent even at a dilution of 10^{-7} gm./c.c. The experiment has now been extended to the three different allotropic modifications of *cis*-cinnamic acid and a few isomeric compounds. The percentage of inhibition of germination with respect to that of control is shown in the accompanying graph. The experimental method and evaluation have been described in greater detail elsewhere[2]. The percentage germination of the control (in *Volvox* solution) is $85{\cdot}92 \pm 0{\cdot}429$ per cent ($n = 1{,}186$ zygotes). The activity of cinnamic aldehyde is very small, since at 10^{-5} gm./c.c. the germination remains unaffected. A similar effect is also