Table 1

	Hæmocytometer count	Estimated numbers: Agar disk method	Estimated numbers: Test-tube method
Experiment 1			
Saline control	500,000	311,000	650,000
Soil	500,000	5,080 (1 per cent recovery)	931,000
Experiment 2			
Saline control	500,000	380,000	931,000
Soil	500,000	41,400 (8 per cent recovery)	520,000

All figures represent number of organisms/gm. soil or ml. saline

from the disk and tube dilutions obtained in two experiments are given in Table 1.

Both disk and tube methods gave a satisfactory 'recovery' of numbers from the suspensions in saline, having regard to the limited accuracy of a dilution method. The test-tube method also gave satisfactory recovery from the soil suspension; but with disks, recovery was only 1 per cent and 8 per cent in the two experiments.

A recovery test was then made in unsterilized soil to see whether sterilization of the soil had produced substances harmful to growth. A counted suspension of *Nitrosomonas* was added to fresh soil. Numbers were then estimated by the disk method from this soil and from an uninoculated control soil. In a later experiment, a similar test was made with the tube method. The results (Table 2) again show that the fresh soil has interfered with the recovery of added numbers in the disk method, but not with the tube method.

Table 2. RECOVERY OF *Nitrosomonas* FROM UNSTERILIZED SOIL

	No. of organisms added, per gm. soil	No. of organisms estimated, per gm. soil
Agar disk technique		
Uninoculated soil	0	6,040
Inoculated soil	600,000	22,400 (3·75 per cent recovery)
Test-tube technique		
Uninoculated soil	0	59,000
Inoculated soil	500,000	729,000

These results point to some factor introduced by the soil which interferes with growth on agar disks, but not in test-tubes, where it is perhaps diluted out. The nature of this factor will be further investigated.

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Nucleus and Spindle of *Bacillus megaterium* in Fission and Sporulation

IN a recent communication in *Nature*, Yuasa[1] contends that the 'side-body' of the spores of *Bacillus megaterium* is identical with the spindle of the dividing yeast nucleus, and acts as such in a mitotic division of the bacterial nucleus.

This is quite unacceptable for the following reasons: (1) The theory of a mitotic division in *B. megaterium*, advanced by DeLamater[2], so far from being regarded even as a problematical alternative to the now classical concept of the bacterial nucleus[3], has been very severely criticized on both theoretical and practical grounds by leading authorities in all parts of the world[4]. (2) The 'side-body' has now been proved conclusively to be an artefact caused by partial ejection of the turgid nuclear contents of the spore[5]. (3) The 'large-body' in the vegetative bacillus, which Yuasa claims to be identical with the 'side-body', appears from his diagrams to represent the polar aggregate of basophilic material associated with the growing tip of the cell[6].

The apparent contention of Yuasa that the authors whom he quotes themselves equate this structure in the sporing bacillus with the 'side-body' (that is, the ejected nucleus) of the spore is without foundation.

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Use of Capacity Measurements for the Study of Oxide Films on Metals

ESTIMATES of the thickness of oxide films on metals have long been made by immersion in an electrolyte and measurement of the capacity of the condenser formed by the film as dielectric[1]. It has, however, been pointed out by R. Huddle (private communication) that such measurements are liable to error if the film contains cracks, for these permit the electrolyte to approach closer to the metal/oxide interface. This should cause the 'capacity' thickness to be less than that derived from measurements of gain of weight, for example. A rise in the capacity of anodized films under condition of breakdown has been reported by Young[1].

This behaviour has been turned to advantage in the examination of the films formed in the corrosion of zirconium alloys. When the latter are exposed to water at about 300° C., the rate of corrosion, as measured by the gain of weight, at first falls with time. At a certain stage, called 'breakaway'[2], the film on most alloys becomes less protective, and the rate changes to a constant, higher, value. All the specimens examined in these experiments had suffered breakaway, except those of the alloy 'Zircaloy 2' (1·5 per cent tin, 0·13 per cent iron, 0·05 per cent nickel, 0·12 per cent chromium, balance zirconium), which is very resistant to corrosion.

Specimens of the alloys detailed in Table 1 were pickled in a solution containing 45 c.c. nitric acid (concentrated), 5 c.c. hydrofluoric acid (48 per cent solution), 50 c.c. water and then weighed. After exposure to water at 325° C. for periods up to about 500 hr. they were reweighed, wires were attached to them, and they were waxed, leaving 1 cm.^{2} (apparent